Settlements and Billing

Configuration Guide: Real Time Regulation Down Capacity Settlement

**CC 6670**

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 RT Regulation Down 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. 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. This Charge Code deals with Regulation Down 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 Regulation Down Capacity settlement pays Scheduling Coordinators for awarded Regulation Down capacity in the Real-Time Market. This Charge Code applies whenever Real-Time Regulation Down 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.

Regulation Down capacity is awarded to Regulation Certified Generator Resources and System (inter-tie generating dynamic import) resources with Automatic Generation Control (AGC). The awarded Regulation Down Capacity for each commitment interval is paid at the Regulation Down Ancillary Service Marginal Price (ASMP) of the commitment interval of the relevant RTUC Trading Hour for the resource.

The Real-Time Regulation Down 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 Regulation Down capacity amount should be calculated for resources with awarded Regulation Down capacity Bid in Real-Time. |
| 2.0 | Regulation Down capacity is settled on an hourly basis at the resource level. |
| 2.1 | The Regulation Down pricing will be based on Regulation Down Ancillary Service Marginal Prices (ASMP) for the resource for Ancillary Service interval for the relevant Real Time hour. |
| 3.0 | RT Regulation Down Capacity Settlement Amount value shall be calculated for each resource by the sum of products calculated for Real-Time Awarded Regulation Down Bid Capacity and the Regulation Down Ancillary Service Marginal Prices (ASMP) for the resource 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 Services  EDAM BAA resources cannot provide Ancillary Service for CISO BAA  EDAM 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 |
| --- |
| AS Pre-Calculation |

## Successor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| Non Compliance Regulation Down Settlement (CC 6624) |
| Regulation Down Obligation Settlement (CC 6694) |
| Regulation Down Neutrality Allocation (CC 6696) |
| RTM Net Amount Pre-calculation |

## Inputs – External Systems

|  |  |  |
| --- | --- | --- |
| Row # | Variable Name | Description |
| 1 | RTRegDownCapacityASMP rtQ’mdhc | Real-time Regulation Down Ancillary Service Marginal Price (ASMP) for resource r FMM Interval for the relevant Real Time hour c **($/MW)** |
| 2 | PTBChargeAdjustmentRTRegDownBidBQ’Jmdh | RT Regulation Down PTB Pay Charge Adjustment Amount Business Associate B for Trading Day d and Trading Hour h **($)** |
| 3 | 15MinuteRTMRegDownAwardedBidQuantity BrtuT’I’Q’M’VL’W’R’F’S’mdhc | Real-Time Regulation Down Awarded Bid capacity for resource r. **(MW)** |
| 4 | RTMRegDownBidPrice BrtuT’I’Q’M’VL’W’R’F’S’mdh | RTM Regulation Down 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 | RTAwardedRegDownBidCapacity BrtF’Q’S’a’mdhc | AS Pre-Calculation |

## CAISO Formula

### RT15MRegDownSettlementAmount BrtuT’I’Q’M’VL’W’R’F’S’mdhc = ((-1) \* 0.25 \* (15MinuteRTMRegDownAwardedBidQuantity BrtuT’I’Q’M’VL’W’R’F’S’mdhc \* RTRegDownCapacityASMP rtQ’mdhc ))

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

### RTRegDownSettlementAmount BrtuT’I’Q’M’VL’W’R’F’S’mdh =

 RT15MRegDownSettlementAmount BrtuT’I’Q’M’VL’W’R’F’S’mdhc

Note: TotalRTRegDownSettlementAmount Bmdh and CAISOHourlyTotalRTRegDownSettlementAmount mdh are calculated as part of the reporting structure and will not be configured as individual charge types.

### RT15MRegDownBidCostAmount BrtuT’I’Q’M’VL’W’R’F’S’mdhc = ((-1) \* 0.25 \* (15MinuteRTMRegDownAwardedBidQuantity BrtuT’I’Q’M’VL’W’R’F’S’mdhc \* RTMRegDownBidPrice BrtuT’I’Q’M’VL’W’R’F’S’mdh ))

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

## 

## Outputs

|  |  |  |
| --- | --- | --- |
| Row # | Name | Description |
| 1 | RTRegDownSettlementAmount BrtuT’I’Q’M’VL’W’R’F’S’mdh | Real-Time Regulation down Capacity Settlement Amount due Business Associate B for resource r Entity Component Type F’ Entity Component Subtype S’ for Trading Day d and Trading Hour h **($)** |
| 2 | RT15MRegDownSettlementAmount BrtuT’I’Q’M’VL’W’R’F’S’mdhc | RT 15M Regulation Down Settlement Amount for resource r for Trading Day d and Trading Hour h and FMM interval c **($)** |
| 3 | In addition, all inputs are required to be accessible for review by analysts and report on Settlement Statements. |  |
| 4 | RT15MRegDownBidCostAmount BrtuT’I’Q’M’VL’W’R’F’S’mdhc | RT 15M Regulation Down Bid Cost Amount for resource r for Trading Day d and Trading Hour h and FMM interval c **($)** |

# Charge Code Effective Date

| Charge Code/  Pre-calc Name | Document Version | Effective Start Date | Effective End Date | Version Update Type |
| --- | --- | --- | --- | --- |
| Real Time Regulation Down Capacity Settlement (CC 6670) | 5.0 | 04/01/09 | 10/31/13 | Documentation Only |
| Real Time Regulation Down Capacity Settlement (CC 6670) | 5.1 | 11/01/13 | 4/30/14 | Configuration Impact |
| Real Time Regulation Down Capacity Settlement (CC 6670) | 5.1a | 5/1/14 | 6/30/15 | Documentation Only |
| Real Time Regulation Down Capacity Settlement (CC 6670) | 5.2 | 7/1/15 | TBD | Configuration Impact |
| Real Time Regulation Down Capacity Settlement (CC 6670) | 5.3 | TBD | Open | Configuration Impact |