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|  | | Settlements & Billing |
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| Configuration Guide: | RUC Reliability Capacity Up Tier 1 Allocation | |
|  |  | |
|  | CC 8806 | |
|  |  | |
|  | Version 5.0 | |

Table of Contents

1. Purpose of Document 4

2. Introduction 4

2.1 Background 4

2.2 Description 4

3. Charge Code Requirements 5

3.1 Business Rules 5

3.2 Predecessor Charge Codes 7

3.3 Successor Charge Codes 7

3.4 Inputs – External Systems 8

3.5 Inputs - Predecessor Charge Codes or Pre-calculations 8

3.6 CAISO Formula 8

3.7 Outputs 11

4. Charge Code Effective Dates 15

# Purpose of Document

The purpose of this document is to capture the requirements and design specification for a Settlements Charge Code in one document.

# Introduction

## Background

During the Day Ahead Market, if the scheduled Demand is less than the CAISO Forecast of CAISO Demand, Residual Unit Commitment (RUC) Reliability Capacity Up (RCU) is procured to ensure that enough committed capacity is available and on line to meet the forecasted Demand as well as any forecasted shortfalls of minimum Generation requirements.

RUC RCU Bids (above the minimum Load) may only be submitted if an Energy Bid has also been submitted in the IFM. If a resource is under Resource Adequacy (RA) obligation for a specific amount of capacity, the RA capacity must participate in RUC RCU with a RUC Bid Price of $0/MW. If a RUC RCU Bid is not submitted for the RA capacity, then CAISO will insert a $0/MW proxy bid per hour for the full amount of RA capacity. Non-zero RUC RCU Bids may be submitted for the portion of a resource’s capacity that is not RA capacity. Capacity not pre-dispatched as RMR may also submit non-zero RUC RCU Bids.

Resources that have Compliance Recission due to an FMM capacity range that does not support their DA Energy Schedule plus the Reliabiltiy Capacity Up will be charged at a resource specific RCU No-Pay Penalty Price for the undelivered MW quantity.

RUC RCU payments are the product of Awarded RUC RCU capacity and the RUC RCU Price specified for each PNode. Together, RUC RCU settlements and Unavailability No-Pay Settlements are under CC 8800, and RUC RCU Bid Cost Recovery Uplifts under CC 6620 are allocated in two tiers. First, CC 8806 RUC Reliability Capacity Up Tier 1 Allocation is based upon Net Positive Demand Deviation. Next, any remaining costs are allocated pro-rata to metered Demand under CC 8807RUC Reliability Capacity Up Tier 2 Allocation.

## Description

Charge Code “CC 8806 – RUC Reliability Capacity Up Tier 1 Allocation” will perform the calculations necessary to implement the business rules identified in the Business Rules of the following section here below.

# Charge Code Requirements

## Business Rules

| Bus Req. ID | Business Rule |
| --- | --- |
|  | This Charge Code shall be calculated on a daily basis. |
|  | For adjustments to the Charge Code that cannot be accomplished by correction of upstream data inputs/recalculation or operator override Pass Through Bill Charge logic will be applied. |
|  | Actual Scheduling Coordinators (SCs) are referenced by Business Associate ID, and CAISO shall settle with Business Associates (BA) through these IDs. |
|  | The formulas herein adopt the convention that payments made by CAISO to BAs will be negative, while payments received by the CAISO from BAs (charges to BAs) will be positive. (In other words, the signs reflect the flow of money from the point of view of the CAISO.) |
|  | Settlements will allocate RUC Reliability Capacity Up (RCU) costs in 2 tiers |
|  | RUC Reliability Capacity Up (RCU) costs includes the Net RUC Bid Cost Uplift. |
|  | **Tier-1 RCU Cost Allocation**  For each individual component, and on hourly basis:   * Tier-1 RCU Allocation Cost = Tier-1 RCU Allocation Quantity \* Tier-1 RCU BAA Allocation Price. |
|  | **Tier-1 RCU Allocation Quantities (See table below)** |
|  | **Tier-1 RCU BAA Allocation Price**  For each BAA, and on hourly basis, this price shall be calculated as follows:   * Min (RCU BAA Average Price , RCU BAA Derived Price) * where * RCU BAA Average Price = [Sum of (RCU Payments - RCU No Pay Amounts) across BAA] / [Sum of (RCU Award - RCU No Pay Quantity) across BAA]. * RCU BAA Derived Price = Sum of (RCU Payments - RCU No Pay Amounts) across BAA / Sum of Tier-1 RCU Allocation Quantity across BAA. |
|  | Treatment of MSS   * If MSS operator has elected to load follow to manage its own load variability, it shall NOT get RCU Tier-1 nor RCU Tier-2 cost allocations based on the MSS operator’s net portfolio uninstructed deviations. This is because MSS Operator that has elected to Load Follow is required to provide sufficient resources in DAM to follow its Load within the MSS Deviation Band. * Otherwise, for both RCU Tier-1 and RCU Tier 2 cost allocations, MSS resources shall be settled in a similar manner as non-MSS resources, regardless of their Net versus Gross selection. |
|  | Treatment of ETC, and TOR   * System shall exclude the ETC and TOR self-schedules from RCU Tier-1 and RCU Tier-2 allocations up to the valid and balanced portion of ETC and TOR self-schedules.   In contrast, System shall consider quantities above the valid and balanced portion of the ETC or TOR self-schedules in RCU Tier-1 and RCU Tier-2 cost allocations. |
|  | For each BAA, if the RCU obligation is higher than the RCU awards, all of the RCU cost will be allocated to RCU Tier-1, otherwise, RCU cost will be split between Tier-1 and Tier-2. |
|  | This cost allocation does not apply to WEIM-Only BAAs.  WEIM-Only BAAs do not participate in EDAM and will not be cost allocated for Reliability Capacity. |

**Tier-1 RCU Allocation Quantity:**

|  |  |
| --- | --- |
| **Component Type** | **Tier-1 RCU Allocation Quantity** |
| Virtual Bids | Max(0, SC Net Virtual Supply Awards)  Applies only if the BAA has total net virtual supply. |
| Load | ABS (Net Negative Measured Demand) i.e. Under-scheduled Load  Exclude:  a) Net negative demand associated with balanced ETC/TOR rights,  b) Net negative deviation for Participating Load (PL) resulting from a market dispatch |
| MSS (which Load Follow) | The MSS is exempted. |

## Predecessor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| PC MSS Netting |
| Pre-calc – Bid Cost Recovery Sequential Netting |
| PC ETC TOR CVR Quantity |
| Pre-calc – Measured Demand Over Control Area |
| CC 6011 - Day Ahead Energy, Congestion, Loss Settlement |
| CC 6013 Convergence Bidding DA Energy, Congestion, Loss Settlement |
| CC 8076– Day Ahead Imbalance Reserve Up Tier 1 Allocation |
| CC 8800 –RUC Reliability Capacity Up Settlement |

## Successor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| CC 4989 – Rounding Adjustment Settlement |
| CC 8807 –RUC Reliability Capacity Down Tier 2 Allocation |
| CC 8816 –RUC Reliability Capacity Down Tier 1 Allocation |

## Inputs – External Systems

| Row # | Variable Name | Description |
| --- | --- | --- |
|  | WEIMOnlyBAAFlag Q’md | Flag indicating an EIM BAA that participates in the WEIM only, not EDAM. |
|  | PTBAdjBAHourlyRCUTier1AllocAmtBQ’JM’mdh | PTB Adjustment for the Tier 1 RCU cost allocation amount portion |

## Inputs - Predecessor Charge Codes or Pre-calculations

| Row # | Variable Name | Predecessor Charge Code/ Pre-calc Configuration |
| --- | --- | --- |
|  | BAHourlyResRCUAwardedQuantity BrtQ’F’S’mdh | CC 8800 –RUC Reliability Capacity Up Settlement |
|  | BAHourlyResRCUPaymentAmount BrtQ’F’S’mdh | CC 8800 –RUC Reliability Capacity Up Settlement |
|  | BA15MResRCUNoPayQuantity BrtQ’mdhc | CC 8800 –RUC Reliability Capacity Up Settlement |
|  | BAHourlyResRCUNoPayAmount BrtQ’mdh | CC 8800 –RUC Reliability Capacity Up Settlement |
|  | BAAHourlyTotalDANetVirtualSupplyAwardQuantity Q’md | CC 6013 – Convergence Bidding DA Energy\_Cong\_Loss Settlement |
|  | BAHourlyDANetVirtualSupplyAwardQuantity BQ’mdh | CC 6013 – Convergence Bidding DA Energy\_Cong\_Loss Settlement |
|  | BAATotalRUCUpliftAllocationAmount Q’mdhcif | Pre-calc – Bid Cost Recovery Sequential Netting |
|  | BASettlementIntervalResCompEntityUIEQuantity BrtQ’M’F’S’mdhcif | CC 8076– Day Ahead Imbalance Reserve Up Tier 1 Allocation |
|  | BAMSSLoadFollowingFlagBM'md | CC 8076– Day Ahead Imbalance Reserve Up Tier 1 Allocation |

## CAISO Formula

The daily settlement for this charge code for each Business Associate by Trading Day is derived according to the formulation below.

**Note:** The following calculation is listed starting with the final charge calculation and progressively detailing the intermediate calculations and Settlement input.

* + 1. **BAHourlyRCUTier1AllocAmount BQ’mdh =**   
       BAHourlyTotalRCUTier1AllocQuantityBQ’mdh\* BAAHourlyRCUTier1AllocPrice Q’mdh
    2. **PTBAdjustmentBAHourlyRCUTier1AllocAmount BQ’mdh =**   
       Sum (J, M’) { PTBAdjBAHourlyRCUTier1AllocAmt BQ’JM’mdh }
    3. **BAHourlyRCUTier1FinalAllocAmount BQ’mdh =**   
       BAHourlyRCUTier1AllocAmountBQ’mdh + PTBAdjustmentBAHourlyRCUTier1AllocAmountBQ’mdh
    4. **BAATotalHourlyRCUTier1AllocAmount Q’mdh =**   
       Sum (B) {BAHourlyRCUTier1FinalAllocAmountBQ’mdh }
    5. **BAAHourlyRCUTier2CostAmount Q’mdh =**   
       BAAHourlyTotalRCUPayAmount Q’mdh - BAATotalHourlyRCUTier1AllocAmountQ’mdh

**A. Virtual Awards, Load Resources, and MSS LF Tier 1 RCU Allocation Quantities**

* + 1. **BAHourlyTotalRCUTier1AllocQuantity BQ’mdh =**   
       BAHourlyNetVirtualSupplyRCUTier1AllocQuantityBQ’mdh + BAHourlyTotalLoadResRCUTier1AllocQuantityBQ’mdh

Excluding records where BAHourlyMSSLF\_RUCTier1AllocQuantityBQ’mdh exist.

* + 1. **BAHourlyNetVirtualSupplyRCUTier1AllocQuantity BQ’mdh =**   
       If (BAAHourlyTotalDANetVirtualSupplyAwardQuantity Q’md > 0 )

Then BAHourlyDANetVirtualSupplyAwardQuantity BQ’mdh

Else 0

End If

* + 1. **BAHourlyTotalLoadResRCUTier1AllocQuantity BQ’mdh =**   
       Sum (r, t, M’) {BAHourlyLoadResRCUTier1AllocQuantity BrtQ’M’mdh }
    2. **BASettlementIntervalResRUCNegUIEQuantity BrtQ’M’F’S’mdhcif =**

Min(0, BASettlementIntervalResCompEntityUIEQuantity BrtQ’M’F’S’mdhcif)

* + 1. **BASettlementIntervalResRUCPosUIEQuantity BrtQ’M’F’S’mdhcif =**

Max(0, BASettlementIntervalResCompEntityUIEQuantity BrtQ’M’F’S’mdhcif)

* + 1. **BAHourlyLoadResRCUTier1AllocQuantity BrtQ’M’mdh =**

Sum (F’, S’, c, i, f) {Abs(BASettlementIntervalResRUCNegUIEQuantity BrtQ’M’F’S’mdhcif)}

where Resource\_Type (t) = ‘LOAD’ and Entity\_Component\_Type (F’) not in (‘PMPST’, ‘PMPP’)

Excluding records where WEIMOnlyBAAFlag Q’md, and BAMSSLoadFollowingFlagBM'md exist.

* + 1. **BAHourlyMSSLF\_RUCTier1AllocQuantity BQ’mdh** =   
       Sum (r, t, M’, F’, S’, c, i, f)

{ BAMSSLoadFollowingFlagBM'md **\*** BASettlementIntervalResCompEntityUIEQuantity BrtQ’M’F’S’mdhcif }

Excluding records where WEIMOnlyBAAFlag Q’md exists.

**B. Tier 1 Price Calculations**

* + 1. **BAAHourlyRCUTier1AllocPrice** **Q’mdh =**

Min ( BAAHourlyRCUTier1AveragePrice Q’mdh , BAAHourlyRCUTier1DerivedPrice Q’mdh)

* + 1. **BAAHourlyTotalRCUPayAmount** **Q’mdh =**

BAAHourlyRCUPayAmount Q’mdh + BAAHourlyNetRUCBidCostUpliftAmount Q’mdh

* + 1. **BAAHourlyRCUPayAmount** **Q’mdh =**

Sum (B, r, t, F’, S’){ BAHourlyResRCUPaymentAmount BrtQ’F’S’mdh - BAHourlyResRCUNoPayAmount BrtQ’mdh }

* + 1. **BAAHourlyNetRUCBidCostUpliftAmount** **Q’mdh =**

Sum (c, i, f){ BAATotalRUCUpliftAllocationAmount Q’mdhcif }

* + 1. **BAAHourlyTotalRCUAwardQuantity** **Q’mdh =**

Sum (B, r, t, F’, S’){ BAHourlyResRCUAwardedQuantity BrtQ’F’S’mdh }

* + 1. **BAAHourlyTotalRCUNoPayQuantity** **Q’mdh =**

Sum (B, r, t, c){ BA15MResRCUNoPayQuantity BrtQ’mdhc }

* + 1. **BAAHourlyRCUTier1AveragePrice** **Q’mdh =**

(BAAHourlyTotalRCUPayAmount Q’mdh)*/* BAAHourlyTotalRCUAwardQuantity Q’mdh

* + 1. **BAAHourlyTotalRCUTier1AllocQuantity Q’mdh** =

Sum (B) {BAHourlyTotalRCUTier1AllocQuantity BQ’mdh }

* + 1. **BAAHourlyRCUTier1DerivedPrice** **Q’mdh =**

BAAHourlyTotalRCUPayAmount Q’mdh */* BAAHourlyTotalRCUTier1AllocQuantityQ’mdh

## Outputs

| ID | Name | Description |
| --- | --- | --- |
| -- | In addition to any outputs listed below, all inputs shall be included as outputs. | All inputs. Refer to section 3.6 and 3.7 above for input descriptions. |
|  | BAHourlyRCUTier1AllocAmount BQ’mdh | Tier 1 allocation of RCU costs |
|  | PTBAdjustmentBAHourlyRCUTier1AllocAmount BQ’mdh | PTB for Tier 1 RCU cost allocation component |
|  | BAHourlyRCUTier1FinalAllocAmount BQ’mdh | Tier 1 RCU cost allocation component including any relevant PTB adjustment |
|  | BAATotalHourlyRCUTier1AllocAmount Q’mdh | Total Tier 1 RCU cost allocation per BAA |
|  | BAAHourlyRCUTier2CostAmount Q’mdh | Total Tier 2 RCU costs to be allocated per BAA |
|  | BAHourlyTotalRCUTier1AllocQuantity BQ’mdh | BA Total Tier 1 RCU allocation quantity. Combines total resource level, and net virtual supply. Excludes MSS that is load following. |
|  | BAHourlyNetVirtualSupplyRCUTier1AllocQuantityBQ’mdh | Allocation quantity for a BA with net virtual supply provided the entire BAA is also net virtual supply for the Trading Hour. |
|  | BAHourlyTotalLoadResRCUTier1AllocQuantity BQ’mdh | Tier 1 RCU allocation quantity for all load resources per BA |
|  | BASettlementIntervalResRUCNegUIEQuantity BrtQ’M’F’S’mdhcif | Negative UIE quantity values for RUC assessment |
|  | BASettlementIntervalResRUCPosUIEQuantity BrtQ’M’F’S’mdhcif | Positive UIE quantity values for RUC assessment |
|  | BAHourlyLoadResRCUTier1AllocQuantity BrtQ’M’mdh | Tier 1 RCU cost allocation quantity contribution for LOAD resource type |
|  | BAHourlyMSSLF\_RUCTier1AllocQuantity BQ’mdh | Tier 1 RUC cost allocation quantity at MSS level (if load following). Will be used for exemption purposes for both RCU and RCD. |
|  | BAAHourlyRCUTier1AllocPrice Q’mdh | Tier 1 RCU cost allocation price |
|  | BAAHourlyTotalRCUPayAmount Q’mdh | Total RCU costs (payment and bid cost uplift) to be allocated per BAA |
|  | BAAHourlyRCUPayAmount Q’mdh | Hourly RCU payments per BAA |
|  | BAAHourlyNetRUCBidCostUpliftAmount Q’mdh | Hourly net RUC Bid Cost uplift amount |
|  | BAAHourlyTotalRCUAwardQuantity Q’mdh | Total RCU schedule quantity per BAA |
|  | BAAHourlyTotalRCUNoPayQuantity Q’mdh | Total RCU no pay quantity per BAA |
|  | BAAHourlyRCUTier1AveragePrice Q’mdh | Tier 1 RCU average price per BAA |

|  |  |  |
| --- | --- | --- |
|  | BAAHourlyTotalRCUTier1AllocQuantity Q’mdh | BAA hourly total RCU Tier 1 allocation quantity |
|  | BAAHourlyRCUTier1DerivedPrice Q’mdh | Tier 1 RCU derived (interim) price per BAA |

# Charge Code Effective Dates

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Charge Code/  Pre-calc Name | Document Version | Effective Start Date | Effective End Date | Version Update Type |
| RUC Reliability Capacity Up Tier 1 Allocation | 5.0 | 05/01/2026 | Open | Configuration Impacted |