Settlements & Billing

Configuration Guide: Flexible Ramp Forecasted Movement Settlement

CC 7070

Version 5.4

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# Purpose of Document

The purpose of this document is to capture the business and functional requirements of a charge code in one document.

# Introduction

## Background

The Flexible Ramping product (FRP) is designed to ensure that there is sufficient ramping capability available in the financially binding five-minute interval to meet the forecasted net load for interval t+5 and cover upwards and downwards forecast error uncertainty.

FRP will help the system to maintain and use dispatchable capacity, as well as provide the market more transparent and less volatile price signals when undergoing forecasted ramp-constrained conditions. It will be procured and dispatched to meet five minute to five minute net forecast (load forecast minus VER forecast) changes plus uncertainty and will be modeled as a ramping capability constraint.

The ISO will financially settle FRP in the fifteen-minute market (FMM), and the five-minute market (RTM), with rescission of payments applied to resources with UIE (uninstructed imbalance energy) or OA (operational adjustment) amounts, positive or negative, which are imposed on reserved FRP capacity awards. Settlement and allocation of FRP costs will happen on a daily basis for the forecasted movement portion and uncertainty award portion. The ISO will use the day-ahead forecasted movement to determine the deviation settlement of FMM forecasted movement. At the end of the month, the uncertainty award allocation will be reversed and will be re-allocated based on the month’s net UIE or OA values.

As no economic bids are applied to FRP, FRU/FRD awards will be exempt from grid management charges (GMC). Additionally, dispatchable resources will have their FRP awards and forecasted movement assessments - ignoring rescission settlement - included as part of daily RTM bid cost recovery calculations.

## Description

For each Settlement Interval, this charge code will generate the Flexible Ramp forecasted movement assessment that goes into RTM Net Amount pre-calculation for BCR contribution as well as the flexible ramp forecasted movement assessment inclusive of rescission that gets allocated in CC 7076 – Flexible Ramp Forecast Movement Allocation.

# Charge Code Requirements

## Business Rules

| **Bus Req ID** | **Business Rule** |
| --- | --- |
| 1.0 | For each Settlement Interval, this charge code will settle the Flexible Ramp forecasted movement, and apply rescission, if any, to avoid double payment for UIE. |
| 2.0 | Forecasted movement MW shall be converted into MWh values for the DAM, FMM, and RTD. |
| 2.2 | FMM forecasted movement shall settle at the difference between (FMM flexible ramp up price (FRUP) and FMM flexible ramp down price (FRDP). FMM incremental forecasted movement is calculated as the FMM forecasted movement less DAM forecasted movement.  Upward (or positive) FMM forecasted movement shall be paid at this price difference, FMM FRUP – FMM FRDP; while downward (represented as negative) FMM forecasted movement shall be charged at this price difference, FMM FRUP – FMM FRDP. |
| 2.3 | RTD forecasted movement per 5-minute interval shall settle as incremental changes between FMM and RTD forecasted movements at the price difference, RTD FRUP – RTD FRDP. RTD incremental forecasted movement is calculated as the RTD forecasted movement less FMM forecasted movement.  Upward (or positive) RTD incremental forecasted movement shall be paid at the RTD FRU the price difference, RTD FRUP – RTD FRDP; while downward (represented as negative) RTD forecasted movement shall be charged at the price difference, RTD FRUP – RTD FRDP. |
| 3.0 | The resource UIE (at interval t) for the case of supply and load, and resource OA (operational adjustments; also at interval t) for the case of interties, shall be compared with the resource’s RTD FRP award (at interval t) plus RTD forecasted movement (at interval t) to determine the rescission quantities.  Any overlap between the UIE (or OA) and the FRP award (FRU or FRD) plus the forecasted movement will be rescinded. The overlapped quantity with the uncertainty portion will be rescinded first and this becomes the uncertainty award rescission quantity; while any remaining overlap quantity will be rescinded for the forecasted movement, and this becomes the forecasted movement rescission quantity. *In other words, the uncertainty award is rescinded first and the forecasted movement rescission follows for the remainder.*  For FRU rescission process, positive UIE for generation including dynamic system resource, positive OA for non-dynamic import resources, and negative OA for export resources shall be compared with the FRU award and positive (for generation, including dynamic system resource, or imports) or negative (for exports) forecasted movement.  (Fact) |
| 3.1 | Any forecasted movement rescission quantities shall settle at the price difference, RTD FRUP – RTD FRDP. |
| 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 logic will be applied. |
| 5.0 | When an eligible resource has an interval with a negative MWh meter, CAISO will not charge for the energy of those intervals. |
| 6.0 | Forecasted movement shall settle by FRUMP and FRDMP host control area ID. For each resource, the host control area ID shall either be EIM\_Area or BAA specific depending upon passing of the sufficiency test. |

## Predecessor Charge Codes

| **Charge Code/ Pre-calc Name** |
| --- |
| CC 7071 – Flexible Ramp Up Uncertainty Capacity Settlement |
| CC 7081 – Flexible Ramp Down Uncertainty Capacity Settlement |
| Real Time Energy Pre Calculation |

## Successor Charge Codes

| **Charge Code/ Pre-calc Name** |
| --- |
| CC 7076 - Flexible Ramp Forecast Movement Allocation |
| PC Flexible Ramping Product |
| PC RTM Net Amount |

## Inputs – External Systems

| **Input Req ID** | **Variable Name** | **Description** |
| --- | --- | --- |
|  | BAHourlyResourceDAMFlexRampForecastedMovementMWQty BrtQ’uT’I’M’AA’pQL’F’S’mdh | DAM flex ramp forecasted movement quantity (in MW) |
|  | BA15mResourceFMMFlexRampForecastedMovementMWQty BrtQ’uT’I’M’AA’pQL’F’S’mdhc | FMM flex ramp forecasted movement quantity (in MW) |
|  | BA5mResourceRTDFlexRampForecastedMovementMWQty BrtQ’uT’I’M’AA’pQL’F’S’mdhcif | RTD flex ramp forecasted movement quantity (in MW) |
|  | FMMIntervalPnodeFlexRampUpPrice AA’Qpmdhc | Nodal FMM FRUP, nodal flex ramp up price for FMM (in $/MWh) |
|  | FMMIntervalPnodeFlexRampDownPrice AA’Qpmdhc | Nodal FMM FRDP, nodal flex ramp down price for FMM (in $/MWh) |
|  | DispatchIntervalPnodeFlexRampUpPrice AA’Qpmdhcif | Nodal RTD FRUP, nodal flex ramp up price for RTD (in $/MWh) |
|  | DispatchIntervalPnodeFlexRampDownPrice AA’Qpmdhcif | Nodal RTD FRDP, nodal flex ramp down price for RTD (in $/MWh) |
|  | BAFlexRampExemptAssessmentFlag Bmd | An exemption flag that prevents specific assessment under this charge code. This has a value of 1 for any specific BAID (B) that is not subject to settlement or relevant assessment under this charge code. |
|  | PTB\_BAFRForecastedMovementChargeAdjustmentAmount BQ’Jmdhcif | PTB charge adjustment for forecasted movement settlement (in $) with BAA attribute. |
|  |  |  |

## Inputs - Predecessor Charge Codes or Pre-calculations

|  |  |  |
| --- | --- | --- |
| **Input Req ID** | **Variable Name** | **Predecessor Charge Code/ Pre-calc Configuration** |
|  | BA5mResFRUForecastedMovementRescissionQuantity BrtQ’uT’I’M’L’F’S’mdhcif | CC 7071 – Flexible Ramp Up Uncertainty Capacity Settlement |
|  | BA5mResFRDForecastedMovementRescissionQuantity BrtQ’uT’I’M’L’F’S’mdhcif | CC 7081 – Flexible Ramp Down Uncertainty Capacity Settlement  This quantity is coming in as non-negative value. |
|  | ResourceWholesaleExemptionFlag *rmdhcif* | Real Time Energy PC |

## CAISO Formula

#### BA5mResFRForecastedMovementSettlementAmount BrtQ’uT’I’M’L’F’S’mdhcif =

BA5mResFRDForecastedMovementSettlementAmount BrtQ’uT’I’M’L’F’S’mdhcif + BA5mResFRUForecastedMovementSettlementAmount BrtQ’uT’I’M’L’F’S’mdhcif +

*Note: These sub formulations below are calculated for the purposes of the allocation*

#### BAA5mFRDForecastedMovementSettlementAmount Q’mdhcif =

Sum(B, r, t, u, T’, I’, M’, L’, F’, S’)

BA5mResFRDForecastedMovementSettlementAmount BrtQ’uT’I’M’L’F’S’mdhcif

#### BAA5mFRUForecastedMovementSettlementAmount Q’mdhcif =

Sum(B, r, t, u, T,’ I’, M’, L’,F’, S’)

BA5mResFRUForecastedMovementSettlementAmount BrtQ’uT’I’M’L’F’S’mdhcif

#### BA5mResFRUForecastedMovementSettlementAmount BrtQ’uT’I’M’L’F’S’mdhcif =

If

ResourceWholesaleExemptionFlag *rmdhcif* = 0

THEN

BA5mResTotalFRUForecastedMovementAssessmentAmount BrtQ’uT’I’M’L’F’S’mdhcif + BA5mResFRUForecastedMovementRescissionAmount BrtQ’uT’I’M’L’F’S’mdhcif

ELSE

0

Implementation Note: Do not calculate this settlement amount when BAFlexRampExemptAssessmentFlag Bmd = 1.

#### BA5mResFRDForecastedMovementSettlementAmount BrtQ’uT’I’M’L’F’S’mdhcif =

If

ResourceWholesaleExemptionFlag *rmdhcif* = 0

THEN

BA5mResTotalFRDForecastedMovementAssessmentAmount BrtQ’uT’I’M’L’F’S’mdhcif + BA5mResFRDForecastedMovementRescissionAmount BrtQ’uT’I’M’L’F’S’mdhcif

ELSE

0

Implementation Note: Do not calculate this settlement amount when BAFlexRampExemptAssessmentFlag Bmd = 1

#### BA5mResFMMFlexRampDownForecastedMovementAssessmentAmount BrtQ’uT’I’M’L’F’S’mdhcif =

Sum(A, A’, Q, p)

(-1)\*BA5mResFMMIncFlexRampDownForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif \* (FMMIntervalPnodeFlexRampUpPrice AA’Qpmdhc - FMMIntervalPnodeFlexRampDownPrice AA’Qpmdhc)

Implementation Note: Both 15-minute prices for flex ramp up and down above will be duplicated in each of the corresponding three five-minute intervals of the 15-minute interval.

#### BA5mResFMMFlexRampUpForecastedMovementAssessmentAmount BrtQ’uT’I’M’L’F’S’mdhcif =

Sum(A, A’, Q, p)

(-1)\*BA5mResFMMIncFlexRampUpForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif \* (FMMIntervalPnodeFlexRampUpPrice AA’Qpmdhc - FMMIntervalPnodeFlexRampDownPrice AA’Qpmdhc)

Implementation Note: Both 15-minute prices for flex ramp up and down above will be duplicated in each of the corresponding three five-minute intervals of the 15-minute interval.

#### BA5mResRTDFlexRampDownForecastedMovementAssessmentAmount BrtQ’uT’I’M’L’F’S’mdhcif =

Sum(A, A’, Q, p)

(-1)\* BA5mResRTDIncFlexRampDownForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif  \* (DispatchIntervalPnodeFlexRampUpPrice AA’Qpmdhcif - DispatchIntervalPnodeFlexRampDownPrice AA’Qpmdhcif )

#### BA5mResRTDFlexRampUpForecastedMovementAssessmentAmount BrtQ’uT’I’M’L’F’S’mdhcif = Sum(A, A’, Q, p)

(-1)\* BA5mResRTDIncFlexRampUpForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif  \* (DispatchIntervalPnodeFlexRampUpPrice AA’Qpmdhcif - DispatchIntervalPnodeFlexRampDownPrice AA’Qpmdhcif )

#### BA5mResFMMFlexRampForecastedMovementAssessmentAmount BrtQ’uT’I’M’L’F’S’mdhcif =

BA5mResFMMFlexRampUpForecastedMovementAssessmentAmount BrtQ’uT’I’M’L’F’S’mdhcif + BA5mResFMMFlexRampDownForecastedMovementAssessmentAmount BrtQ’uT’I’M’L’F’S’mdhcif

#### BA5mResRTDFlexRampForecastedMovementAssessmentAmount BrtQ’uT’I’M’L’F’S’mdhcif =

BA5mResRTDFlexRampUpForecastedMovementAssessmentAmount BrtQ’uT’I’M’L’F’S’mdhcif + BA5mResRTDFlexRampDownForecastedMovementAssessmentAmount BrtQ’uT’I’M’L’F’S’mdhcif

#### BA5mResTotalFRDForecastedMovementAssessmentAmount BrtQ’uT’I’M’L’F’S’mdhcif =

BA5mResFMMFlexRampDownForecastedMovementAssessmentAmount BrtQ’uT’I’M’L’F’S’mdhcif + BA5mResRTDFlexRampDownForecastedMovementAssessmentAmount BrtQ’uT’I’M’L’F’S’mdhcif

#### BA5mResTotalFRUForecastedMovementAssessmentAmount BrtQ’uT’I’M’L’F’S’mdhcif =

BA5mResFMMFlexRampUpForecastedMovementAssessmentAmount BrtQ’uT’I’M’L’F’S’mdhcif +BA5mResRTDFlexRampUpForecastedMovementAssessmentAmount BrtQ’uT’I’M’L’F’S’mdhcif

#### BA5mResFRDForecastedMovementRescissionAmount BrtQ’uT’I’M’L’F’S’mdhcif =

Sum(A, A’, p, Q)

(-1) \* BA5mResFRDForecastedMovementRescissionQuantity BrtQ’uT’I’M’L’F’S’mdhcif \* (DispatchIntervalPnodeFlexRampUpPrice AA’Qpmdhcif - DispatchIntervalPnodeFlexRampDownPrice AA’Qpmdhcif)

Where BA5mResourceRTDFlexRampForecastedMovementMWQty BrtQ’uT’I’M’AA’pQL’F’S’mdhcif exists

#### BA5mResFRUForecastedMovementRescissionAmount BrtQ’uT’I’M’L’F’S’mdhcif =

Sum(A, A’, p, Q)

BA5mResFRUForecastedMovementRescissionQuantity BrtQ’uT’I’M’L’F’S’mdhcif \* (DispatchIntervalPnodeFlexRampUpPrice AA’Qpmdhcif - DispatchIntervalPnodeFlexRampDownPrice AA’Qpmdhcif )

Where BA5mResourceRTDFlexRampForecastedMovementMWQty BrtQ’uT’I’M’AA’pQL’F’S’mdhcif exists

#### BA5mResDAMFlexRampUpForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif =

(1/12)\*(INTDUPLICATE(Max(0, BAHourlyResourceDAMFlexRampForecastedMovementMWQty BrtQ’uT’I’M’AA’pQL’F’S’mdh )))

Implementation Note: Each hourly value of BAHourlyResourceDAMFlexRampForecastedMovementMWQty BrtQ’uT’I’M’AA’pQL’F’S’mdh that comes from being duplicated from the twelve 5-minute intervals is then divided by twelve to convert the MW into MWh.

#### BA5mResDAMFlexRampDownForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif =

(1/12)\*(INTDUPLICATE(Min(0, BAHourlyResourceDAMFlexRampForecastedMovementMWQty BrtQ’uT’I’M’AA’pQL’F’S’mdh )))

Implementation Note: Each hourly value of BAHourlyResourceDAMFlexRampForecastedMovementMWQty BrtQ’uT’I’M’AA’pQL’F’S’mdh that comes from being duplicated from the twelve 5-minute intervals is then divided by twelve to convert the MW into MWh.

#### BA5mResFMMFlexRampUpForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif =

(1/12)\*(INTDUPLICATE(Max(0,BA15mResourceFMMFlexRampForecastedMovementMWQty BrtQ’uT’I’M’AA’pQL’F’S’mdhc )))

Implementation Note: Each hourly value of BA15mResourceFMMFlexRampForecastedMovementMWQty BrtQ’uT’I’M’AA’pQL’F’S’mdhc that comes every fifteen minutes will be duplicated for each of the three relevant five-minute intervals of such fifteen minute interval. All these values are then divided by 12 to convert the MW into MWh.

#### BA5mResFMMFlexRampDownForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif =

(1/12)\*(INTDUPLICATE(Min(0,BA15mResourceFMMFlexRampForecastedMovementMWQty BrtQ’uT’I’M’AA’pQL’F’S’mdhc )))

Implementation Note: Each hourly value of BA15mResourceFMMFlexRampForecastedMovementMWQty BrtQ’uT’I’M’AA’pQL’F’S’mdhc that comes every fifteen minutes will be duplicated for each of the three relevant five-minute intervals of such fifteen minute interval. All these values are then divided by 12 to convert the MW into MWh.

#### BA5mResRTDFlexRampUpForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif =

(1/12)\*(Max(0,BA5mResourceRTDFlexRampForecastedMovementMWQty BrtQ’uT’I’M’AA’pQL’F’S’mdhcif ))

#### BA5mResRTDFlexRampDownForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif =

(1/12)\*(Min(0,BA5mResourceRTDFlexRampForecastedMovementMWQty BrtQ’uT’I’M’AA’pQL’F’S’mdhcif ))

#### BA5mResFMMIncFlexRampUpForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif =

BA5mResFMMFlexRampUpForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif – BA5mResDAMFlexRampUpForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif

#### BA5mResFMMIncFlexRampDownForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif =

BA5mResFMMFlexRampDownForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif – BA5mResDAMFlexRampDownForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif

#### BA5mResRTDIncFlexRampUpForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif =

BA5mResRTDFlexRampUpForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif - BA5mResFMMFlexRampUpForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif

#### BA5mResRTDIncFlexRampDownForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif =

BA5mResRTDFlexRampDownForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif - BA5mResFMMFlexRampDownForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif

## Outputs

| **Output ID** | **Name** | Description |
| --- | --- | --- |
|  | In addition to the outputs below, all inputs are required to be accessible for review by analysts and report on Settlement statements. |  |
|  | BA5mResFRForecastedMovementSettlementAmount BrtQ’uT’I’M’L’F’S’mdhcif | Total Flex Ramp settlement amount for forecasted movement **($)** |
|  |  |  |
|  |  |  |
|  | BAA5mFRDForecastedMovementSettlementAmount **Q’mdhcif** | Flex Ramp Down settlement amount for forecasted movement by BAA **($)** |
|  | BAA5mFRUForecastedMovementSettlementAmount Q’mdhcif | Flex Ramp Down settlement amount for forecasted movement by BAA **($)** |
|  | BA5mResFRUForecastedMovementSettlementAmount BrtQ’uT’I’M’L’F’S’mdhcif | Flex Ramp Up settlement amount for forecasted movement by BA **($)** |
|  | BA5mResFRDForecastedMovementSettlementAmount BrtQ’uT’I’M’L’F’S’mdhcif | Flex Ramp Down settlement amount for forecasted movement by BA **($)** |
|  | BA5mResFMMFlexRampDownForecastedMovementAssessmentAmount BrtQ’uT’I’M’L’F’S’mdhcif | FMM Flex Ramp Down forecasted movement assessment amount **($)** |
|  | BA5mResFMMFlexRampUpForecastedMovementAssessmentAmount BrtQ’uT’I’M’L’F’S’mdhcif | FMM Flex Ramp Up forecasted movement assessment amount **($)** |
|  | BA5mResRTDFlexRampDownForecastedMovementAssessmentAmount BrtQ’uT’I’M’L’F’S’mdhcif | RTD Flex Ramp Down forecasted movement assessment amount **($)** |
|  | BA5mResRTDFlexRampUpForecastedMovementAssessmentAmount BrtQ’uT’I’M’L’F’S’mdhcif | RTD Flex Ramp Up forecasted movement assessment amount **($)** |
|  | BA5mResFMMFlexRampForecastedMovementAssessmentAmount  BrtQ’uT’I’M’L’F’S’mdhcif | FMM Flex Ramp forecasted movement assessment amount **($)** |
|  | BA5mResRTDFlexRampForecastedMovementAssessmentAmount BrtQ’uT’I’M’L’F’S’mdhcif | RTD Flex Ramp forecasted movement assessment amount **($)** |
|  | BA5mResTotalFRDForecastedMovementAssessmentAmount BrtQ’uT’I’M’L’F’S’mdhcif | Total Flex Ramp Down Forecasted Movement Assessment amount **($)**  This value does not include any rescission amounts. |
|  | BA5mResTotalFRUForecastedMovementAssessmentAmount BrtQ’uT’I’M’L’F’S’mdhcif | Total Flex Ramp Up Forecasted Movement Assessment amount **($)**  This value does not include any rescission amounts. |
|  | BA5mResFRDForecastedMovementRescissionAmount BrtQ’uT’I’M’L’F’S’mdhcif | Flex ramp down forecasted movement rescission amount **($)** |
|  | BA5mResFRUForecastedMovementRescissionAmount BrtQ’uT’I’M’L’F’S’mdhcif | Flex ramp up forecasted movement rescission amount **($)** |
|  | BA5mResDAMFlexRampUpForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif | DAM Flex Ramp Up forecasted movement MWh quantity **(MWh)** |
|  | BA5mResDAMFlexRampDownForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif | DAM Flex Ramp Down forecasted movement MWh quantity **(MWh)** |
|  | BA5mResFMMFlexRampUpForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif | FMM Flex Ramp Down forecasted movement MWh quantity **(MWh)** |
|  | BA5mResFMMFlexRampDownForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif | FMM Flex Ramp Up forecasted movement MWh quantity **(MWh)** |
|  | BA5mResRTDFlexRampUpForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif | RTD Flex Ramp Up forecasted movement MWh quantity **(MWh)** |
|  | BA5mResRTDFlexRampDownForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif | RTD Flex Ramp Down forecasted movement MWh quantity **(MWh)** |
|  | BA5mResFMMIncFlexRampUpForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif | Incremental FMM Flex Ramp Down forecasted movement MWh quantity **(MWh)** |
|  | BA5mResFMMIncFlexRampDownForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif | Incremental FMM Flex Ramp Down forecasted movement MWh quantity **(MWh)** |
|  | BA5mResRTDIncFlexRampUpForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif | Incremental RTD Flex Ramp Up forecasted movement MWh quantity **(MWh)** |
|  | BA5mResRTDIncFlexRampDownForecastedMovementMWhQuantity BrtQ’uT’I’M’AA’pQL’F’S’mdhcif | Incremental RTD Flex Ramp Down forecasted movement MWh quantity **(MWh)** |

# Charge Code Effective Dates

| Charge Code/  Pre-calc Name | Document Version | Effective Start Date | Effective End Date | Version update Type |
| --- | --- | --- | --- | --- |
| Flexible Ramp Forecasted Movement Settlement (CC 7070) | 5.0 | 11/01/16 | 9/30/2020 | Configuration Impacted |
| Flexible Ramp Forecasted Movement Settlement (CC 7070) | 5.1 | 10/1/2020 | 10/31/2021 | Configuration Impacted |
| Flexible Ramp Forecasted Movement Settlement (CC 7070) | 5.2 | 11/1/2021 | 10/31/2022 | Configuration Impacted |
| Flexible Ramp Forecasted Movement Settlement (CC 7070) | 5.3 | 11/1/2022 | 4/30/2026 | Configuration Impacted |
| Flexible Ramp Forecasted Movement Settlement (CC 7070) | 5.4 | 5/1/2026 | Open | Configuration Impacted |