Settlements & Billing

Configuration Guide:  Day Ahead Congestion – AS Spinning Reserve Import Settlement

CC 6710

Version 5.5

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# Purpose of Document

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

# Introduction

## Background

Suppliers of awarded Ancillary Services (AS) in the Day Ahead market (DAM) are paid the Ancillary Service Marginal Price (ASMP) for the Day Ahead market at the relevant interties. However, because AS capacity imports and Energy schedules compete for transmission capacity at interties, the suppliers of awarded Day Ahead AS capacity imports will also be charged Congestion Costs based on applicable Shadow Prices at binding intertie constraints associated with the resources.

This Charge Code is part of the family of Charge Codes for settling Day Ahead A/S Congestion costs emanating from the following AS product awards: (1) Regulation Up Import, (2) Regulation Down Import, (3) Spinning Reserve Import, and (4) Non-spinning Reserve Import.

To the extent an Ancillary Service procured in the IFM from a System Resource becomes undispatchable due to an intertie transmission derate, in rescinding the Ancillary Service capacity payment, the CAISO shall credit back to the Scheduling Coordinator Congestion Charge assessed pursuant to Section 11 of the CAISO Tariff, but at the higher of the Day-Ahead and simple average of the fifteen (15) minute Real-Time Shadow Prices on the corresponding intertie. The keyword “lower” in the Tariff is replaced here with “higher” to account for the usual sign of the shadow prices - these are usually negative values, and thus preserve the intent of the FERC order.

The Billable Quantity that will be refunded shall be limited to the Undispatchable Capacity that was due to a transmission derate.

## Description

This Charge Code applies to System Resources for awarded Spinning Reserve import capacity whenever Congestion is present in the import direction over the intertie constraint associated with the resource, on an hourly basis at the resource level. The Settlement Amount is the product of (a) the Award and non-contract eligible QSP MW import capacity of Day-Ahead Spinning Reserve AS and (b) the negative of Day-Ahead import direction Shadow Price for the intertie constraint associated with the resource for the Trading Hour. A congestion hedge (or no congestion charge) applies to TOR/ETC contract usage for the portion of QSP which falls under the remaining entitlement capacity of those particular contracts. For the QSP beyond the entitlement, congestion charges shall be applied. Revenues collected from this Charge Code will be used to fund the settlement of CRRs.

A refund of Congestion Charge is embedded in this Charge Code. The refund is limited to the quantity of Undispatchable Capacity due to a transmission derate as per CAISO Tariff Section 11, and shall be assessed at the higher of the Day-Ahead and simple average of the fifteen (15) minute Real-Time Shadow Prices for Import of AS Spinning Reserve for the relevant Trading Hour, assuming usual negative shadow prices.

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# Charge Code Requirements

## Business Rules

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| Bus Req ID | Business Rule |
| --- | --- |
| 1.0 | The Congestion Charge for Spinning Reserve import at a System Resource per hour is the product of (a) the awarded MW plus non-contract eligible QSP hourly capacity of Day-Ahead Spinning Reserve AS and the (b) negative of Day-Ahead import direction Shadow Price for the resource for the Trading Hour. |
| 1.1 | The charge per BA per hour h is the sum of all the congestion charges for Spinning Reserve import at its System Resources for the hour. |
| 1.2 | If congestion is present in the export direction, Day Ahead AS Spin Importers will not be paid nor charged for the counter-flows over the applicable intertie constraint associated with any resource. (Fact) |
| 1.3 | Non-contract eligible QSP is the portion of QSP scheduled under contracts but beyond the available rights capacity. (Fact) |
| 1.4 | 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. |
| 1.5 | A refund of Congestion Charge shall be given to System Resources, where the refund is limited to the quantity of Undispatchable Capacity due to a transmission derate as per CAISO Tariff Section 11, assessed at the higher of the Day-Ahead Shadow Price and the simple average of RTPD Shadow Prices over the hour of the resource, for Import of AS Spinning Reserve for the relevant Trading Hour.  The keyword “lower” in the Tariff is replaced here with “higher” to account for the usual sign of the shadow prices - these are usually negative values. |
| 1.5.1 | The Spin import Undispatchable Capacity MW value due a refund cannot exceed the MW values for DA Award plus the non-contract eligible portion of QSP for Spin import. |
| 1.5.2 | Hourly RTPD Shadow Price for a resource is obtained by taking the simple average of the four 15-min RTPD Shadow Prices of the resource within the same Trading Hour. |
| 1.6 | AS qualified self-provision using ETC/TOR contracts, particularly Day-Ahead Spinning Reserve QSP, that is within the remaining capacity entitlement of such contract shall not be charged for congestion. (Fact) |

## Predecessor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| Ancillary Services Pre-Calculation |
| ETC/TOR/CVR Quantity Pre-Calculation |
| Spin and Non-spin No Pay Quantity Pre-Calculation |

## Successor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| CC 6700 - CRR Hourly Settlement |
| CC 6720 – Day-Ahead Congestion – AS Non-Spinning Reserve Import Settlement |
| CC 6750 – Day-Ahead Congestion – AS Regulation Up Import Settlement |
| CC 6715 – Real-Time Congestion – AS Spinning Reserve Import Settlement |
| CC 6725 – Real-Time Congestion – AS Non-Spinning Reserve Import Settlement |
| CC 6755 – Real-Time Congestion – AS Regulation Up Import Settlement |

## Inputs – External Systems

| Row # | Variable Name | Description |
| --- | --- | --- |
| 1 | HourlyResourceDASpinImportShadowPrice rtmdh | Day-Ahead Shadow Price for resource r for Trading Hour h. It is the marginal value of relieving the particular intertie constraint (associated with the resource) for congestion in the import direction. ($/MW)  Note: This usually comes in as negative. |
| 2 | PTBChargeAdjustmentDACongestionSpinAmount BJmdh | Pass Through Bill (PTB) amount for this Charge Code. ($) |
| 3 | OTCReductionFlag a’mdh | The flag is set to a value of 1 whenever there is a reduction of the OTC in RTPD (RTUC) from the Day-Ahead capacity. In such a case, there was a transmission derate at the intertie constraint.  The MW OTC capacity at the highest level ITC associated with a resource will be used as the basis for checking this reduction. The highest level ITC contains any ITC associated with a resource, and will thus reflect any relevant transmission derate.  This flag has a value of 0 or is Null or is not created if no reduction from DA to RTPD in OTC capacity for an ITC for Trading Hour h. |
| 4 | DailyResourceToHighestITCMapFactor ra’md | Resource to Highest level ITC mapping. This is a one-to-one mapping, available on a daily basis. |
| 5 | FMMIntervalResourceRTSpinImportShadowPrice rtmdhc | Real Time Shadow Price for Intertie resource. The marginal value of relieving particular intertie constraint(s) (associated with the resource) for congestion in the import direction. ($/MW)  Note: This usually comes in as negative. |

## Inputs - Predecessor Charge Codes or Pre-calculations

| Row # | Variable Name | Predecessor Charge Code/  Pre-calc Configuration |
| --- | --- | --- |
| 1 | DASpinAward BrtQ’F’S’mdh | Ancillary Services Pre-Calculation |
| 2 | DASpinNonContractEligibleQSP BrtF’S’mdh | ETC/TOR/CVR Pre-Calculation |
| 3 | BA15mResourceUntaggedSpinQuantity  BrtQ’F'S'mdhc | Spin and Non-spin No Pay Quantity Pre-calculation |

## CAISO Formula

DA Congestion Spin amount for Business Associate B, Resource r, and Trading Hour h:

DACongestionSpinAmount BrtF’S’mdh=

(DACongestionSpinAwardChargeAmount BrtF’S’mdh

+ DACongestionSpinQSPChargeAmount BrtF’S’mdh

+ DASpinUndispatchableCapacityRefundAmount BrtF’S’mdh)

Where DACongestionSpinAwardChargeAmount BrtF’S’mdh=

Sum (Q’)(-1) \* DASpinAward BrtQ’F’S’mdh \* HourlyResourceDASpinImportShadowPrice rtmdh

Where DACongestionSpinQSPChargeAmount BrtF’S’mdh=

(-1) \* DASpinNonContractEligibleQSP BrtF’S’mdh \* HourlyResourceDASpinImportShadowPrice rtmdh

Where DASpinUndispatchableCapacityRefundAmount BrtF’S’mdh =

DASpinUndispatchableCapacityQty BrtF’S’mdh \* max(HourlyResourceDASpinImportShadowPrice rtmdh, HourlyResourceAverageRTSpinImportShadowPrice rtmdh)

And Where HourlyResourceAverageRTSpinImportShadowPrice rtmdh =

(1/4)\* FMMIntervalResourceRTSpinImportShadowPrice rtmdhc

And Where DASpinUndispatchableCapacityQty BrtF’S’mdh =

min[(DASpinAwardEligibleQuantity BrtF’S’mdh + DASpinNonContractEligibleQSP BrtF’S’mdh),

(HourlyUntaggedSpinCapacity BrtF’S’mdh \* DAtoRTPD\_OTCReductionFlag rtmdh)]

And Where DASpinAwardEligibleQuantity BrtF’S’mdh = Sum (Q’) DASpinAward BrtQ’F’S’mdh

And Where HourlyUntaggedSpinCapacity BrtF’S’mdh =

Sum (Q’,c) BA15mResourceUntaggedSpinQuantity BrtQ’F'S'mdhc

Where Resource Type t = ITIE

DAtoRTPD\_OTCReductionFlag rtmdh =

 DailyResourceToHighestITCMapFactor ra’md \* OTCReductionFlag a’mdh

BAHourlyDACongestionSpinAmount Bmdh=

Sum(r,t,F’,S’) DACongestionSpinAmount BrtF’S’mdh

Note: This is provided as part of reporting structure and is not configured as an individual charge type. This is shown as a reporting BD in the BD matrix file.

CAISO total DA congestion revenue from Spin for Trading Hour h:

CAISOHourlyTotalDACongestionSpinAmountmdh=

** BAHourlyDACongestionSpinAmount Bmdh

Note: This is provided as part of reporting structure and is not configured as an individual charge type. This is shown as a reporting BD in the BD matrix file.

## Outputs

| Output Req ID | Name | Description |
| --- | --- | --- |
| 1 | In addition to any outputs listed below, all inputs shall be included as outputs. | All inputs. |
| 2 | DACongestionSpinAmount BrtF’S’mdh | The Congestion charge for Business Associate B for scheduling Spin at a congested resource for Trading Hour h of the DAM. ($) |
| 3 | BAHourlyDACongestionSpinAmount Bmdh | The Congestion Charge for Business Associate B for scheduling Spin for Trading Hour h of the DAM. ($)  This is provided as part of reporting structure and is not configured as an individual charge type. This is shown as a reporting BD in the BD matrix file. |
| 4 | CAISOHourlyTotalDACongestionSpinAmount mdh | The CAISO total DA Congestion revenue from spin imports for Trading Hour h. ($)  This is provided as part of reporting structure and is not configured as an individual charge type. This is shown as a reporting BD in the BD matrix file. |
| 5 | DASpinUndispatchableCapacityRefundAmount BrtF’S’mdh | The amount of Spinning Reserve Congestion Charge refund for Undispatchable Capacity due to transmission derates affecting Scheduling Point / System. ($) |
| 6 | HourlyUntaggedSpinCapacity BrtF’S’mdh | Hourly untagged Spinning Reserve, which contains the Undispatchable Capacity due to a transmission derate, affecting Scheduling Point / System Resource. (MW) |
| 7 | DAtoRTPD\_OTCReductionFlag rtmdh | OTC reduction in the ITC associated with a resource. (MW) |
| 8 | DASpinUndispatchableCapacityQty BrtF’S’mdh | The recognized Day-Ahead Spinning Reserve Undispatchable Capacity due to a transmission derate that is eligible for refund. (MW)  This is for Business Associate B, resource r, resource type t, Entity Component Type F’, Entity Component Subtype S’ for Trading Hour h. |
| 9 | DASpinAwardEligibleQuantity BrtF’S’mdh | The recognized Day-Ahead Spinning Reserve |
| 10 | DACongestionSpinAwardChargeAmount BrtF’S’mdh | The congestion charge for DA AS Spinning Reserve Import Award. This includes the charge for Undispatchable Capacity that would be refunded in valid cases. |
| 11 | DACongestionSpinQSPChargeAmount BrtF’S’mdh | The congestion charge for DA AS Spinning Reserve Import qualified self-provision. This charge includes ETC/TOR contract usage beyond the rights capacity. |
| 12 | HourlyResourceAverageRTSpinImportShadowPrice rtmdh | The hourly average Real Time Import Shadow Price for a resource. |

# Charge Code Effective Dates

| Charge Code/  Pre-calc Name | Document Version | Effective Start Date | Effective End Date | Version Update Type |
| --- | --- | --- | --- | --- |
| CC 6710 – Day Ahead Congestion - AS Spinning Reserve Import Settlement | 5.0 | 04/01/09 | 03/31/10 | Documentation Edits Only |
| CC 6710 – Day Ahead Congestion - AS Spinning Reserve Import Settlement | 5.1 | 04/01/10 | 4/30/14 | Configuration Impacted |
| CC 6710 – Day Ahead Congestion - AS Spinning Reserve Import Settlement | 5.2 | 05/01/14 | 6/30/15 | Configuration Impacted |
| CC 6710 – Day Ahead Congestion - AS Spinning Reserve Import Settlement | 5.3 | 07/01/15 | 10/31/2021 | Configuration Impacted |
| CC 6710 – Day Ahead Congestion - AS Spinning Reserve Import Settlement | 5.4 | 11/01/2021 | 4/30/2026 | Configuration Impacted |
| CC 6710 – Day Ahead Congestion - AS Spinning Reserve Import Settlement | 5.5 | 5/1/2026 | Open | Configuration Impacted |