Settlements and Billing

Configuration Guide: Day Ahead Congestion – AS Regulation Down Import Settlement

CC 6760

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 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 are also 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 AS 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

CC 6760 Day Ahead Congestion – AS Regulation Down Import Settlement will perform the calculations necessary to implement the business rules identified in the Business Rules section below.

# Charge Code Requirements

## Business Rules

| Req ID | Business Rule |
| --- | --- |
| 1.0 | The Congestion Charge for Regulation Down import at a System Resource per hour is the product of (a) the awarded MW hourly capacity of Day-Ahead Regulation Down AS and the (b) negative of Day-Ahead export 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 Regulation Down import at its System Resources for the hour. |
| 1.2 | If Congestion is present in the import direction, Day Ahead AS RegDown Importers will not be paid nor charged for the counter-flows over the applicable intertie constraint associated with the resource. (Fact) |
| 1.3 | Not used. |
| 1.4 | For adjustments to the Charge Code that cannot be accomplished by correction of Downstream 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 11.10.9.1, assessed at the higher of the Day-Ahead Shadow Price and the simple average of RT Shadow Prices over the hour of the resource, for Import of AS Regulation Down 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 Regulation Down import Undispatchable Capacity MW value due a refund cannot exceed the MW values for DA Award Regulation Down import. |

## Predecessor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| Ancillary Services Pre-Calculation |
| Regulation No Pay Quantity Pre-Calculation |

## Successor Charge Codes

| Charge Code/ Pre-calc Name |
| --- |
| CC 6765 – Real-Time Congestion – AS Regulation Down Import Settlement |
| CC 6700 - CRR Hourly Settlement |

## 

## Inputs - External Systems

| Row # | Variable Name | Description |
| --- | --- | --- |
| 1 | HourlyResourceDARegDownExportShadowPrice rtmdh | Day-Ahead Shadow Price for the resource for Trading Hour h. It is the marginal value of relieving the particular intertie constraints associated with the resource, for congestion in the export direction. ($/MW)  Note: This usually comes in as negative. |
| 2 | PTBChargeAdjustmentDACongestionRegDownAmount BJmdh | Pass through Bill (PTB) amount for this charge code. ($) |
| 3 | OTCReductionInExportDirectionFlag a’mdh | The flag is set to a value of 1 whenever there is a reduction of the OTC in the export direction in RTPD (RTUC) from the Day-Ahead capacity of an ITC. 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 there is no reduction in OTC capacity. |
| 4 | DailyResourceToHighestITCMapFactor ra’md | Resource to Highest level ITC mapping. This is a one-to-one mapping, available on a daily basis. |
| 5 | FMMIntervalResourceRTRegDownExportShadowPrice rtmdhc | Real Time Shadow Price for a resource. It is the marginal value of relieving the particular intertie constraints (associated with the resource) for congestion in the export direction. ($/MW)  Note: This usually comes in as negative. |

## Inputs - Predecessor Charge Codes or Pre-calculation

| Row # | Variable Name | Predecessor Charge Code/ Pre-calc Configuration |
| --- | --- | --- |
| 1 | DARegDownAward BrtQ’F’S’mdh | Ancillary Services Pre-Calculation |
| 2 | BAHourlyNoPayRegDownBid\_DAImportCongQuantity BrtQ’F’S’mdh | Regulation No Pay Quantity Pre-Calculation |

## CAISO Formula

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

DACongestionRegDownAmount BrtF’S’mdh =

(DACongestionRegDownAwardChargeAmount BrtF’S’mdh

+ DARegDownUndispatchableCapacityRefundAmt BrtF’S’mdh)

Where DACongestionRegDownAwardChargeAmount BrtF’S’mdh =

Sum(Q’)(-1) \* DARegDownAward BrtQ’F’S’mdh \* HourlyResourceDARegDownExportShadowPrice rtmdh

Where Resource Type t = ITIE

Note: This filter is redundant as the quantity input is already filtered in AS Pre-calculation.

And DARegDownUndispatchableCapacityRefundAmt BrtF’S’mdh =

(DARegDownUndispatchableCapacityQty BrtF’S’mdh

\* max (HourlyResourceDARegDownExportShadowPrice rtmdh, HourlyResourceAverageRTRegDownExportShadowPrice rtmdh))

Where HourlyResourceAverageRTRegDownExportShadowPrice rtmdh =

** (0.25 \* FMMIntervalResourceRTRegDownExportShadowPrice rtmdhc)

And Where DARegDownUndispatchableCapacityQty BrtF’S’mdh =

Sum(Q’) Min [DARegDownAward BrtQ’F’S’mdh,

(BAHourlyNoPayRegDownBid**\_**DAImportCongQuantity BrtQ’F’S’mdh \* DAtoRTPD\_OTCReductionInExportDirectionFlag rtmdh)]

Where Resource Type t = ITIE

DAtoRTPD\_OTCReductionInExportDirectionFlag rtmdh =

 DailyResourceToHighestITCMapFactor ra’md \* OTCReductionInExportDirectionFlag a’mdh

DA AS Regulation Down Congestion Charge per Business Associate B and Trading Hour h:

BAHourlyDACongestionRegDownAmount Bmdh = ** DACongestionRegDownAmount 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 Regulation Down import for Trading Hour h:

CAISOHourlyTotalDACongestionRegDownAmount mdh =

** BAHourlyDACongestionRegDownAmount 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 | DACongestionRegDownAmount BrtF’S’mdh | The Congestion Charge for scheduling RegDown at a congested Import Resource r where location type t = ITIE. ($) |
| 3 | BAHourlyDACongestionRegDownAmount Bmdh | The Congestion Charge for scheduling RegDown for Trading Hour h of the DAM. ($)  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 | CAISOHourlyTotalDACongestionRegDownAmount mdh | The CAISO total DA Congestion revenue from RegDown Imports for Trading Hour h. ($)  This is provided as part of reporting structure and is not configured as an individual charge type. This is shown as a reporting BD in the BD matrix file. |
| 5 | DARegDownUndispatchableCapacityRefundAmt BrtF’S’mdh | The amount of Regulation Down Congestion Charge refund for Undispatchable Capacity due to a transmission derate affecting Scheduling Point / System Resource. ($) |
| 6 | DARegDownUndispatchableCapacityQty BrtQ’F’S’mdh | The recognized Day-Ahead Undispatchable Capacity due to a transmission derate that is eligible for refund. (MWh) |
| 7 | DACongestionRegDownAwardChargeAmount BrtF’S’mdh | The congestion charge for DA AS Regulation Down Import Award. This includes the charge for Undispatchable Capacity that would be refunded in valid cases. |
| 8 | HourlyResourceAverageRTRegDownExportShadowPrice rtmdh | The hourly average Real Time Export 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 6760 –Day Ahead Congestion - AS Regulation Down Import Settlement | 5.0 | 04/01/09 | 11/30/2012 | Documentation Edits Only |
| CC 6760 –Day Ahead Congestion - AS Regulation Down Import Settlement | 5.1 | 12/01/12 | 4/30/14 | Configuration Impacted |
| CC 6760 –Day Ahead Congestion - AS Regulation Down Import Settlement | 5.2 | 5/01/14 | 6/30/15 | Configuration Impacted |
| CC 6760 –Day Ahead Congestion - AS Regulation Down Import Settlement | 5.3 | 7/01/15 | 10/31/2021 | Configuration Impacted |
| CC 6760 –Day Ahead Congestion - AS Regulation Down Import Settlement | 5.4 | 11/01/2021 | 4/30/2026 | Configuration Impacted |
| CC 6760 –Day Ahead Congestion - AS Regulation Down Import Settlement | 5.5 | 5/1/2026 | Open | Configuration Impacted |