

Imbalance Energy Offset

Charge #1401 Imbalance Energy Offset Allocation

(New Charge Type effective 08/01/03)

Description

Established as a public benefit, non-profit corporation, the ISO is responsible to ensure that the Settlements process achieves an accounting trial balance of zero (revenue neutrality). Charge type #1401 is the adjustment account that is used by the ISO to offset balances related to the settlement of the following charges:

Pre-Phase 1B	Phase 1B
CT 401 - Instructed Energy	CT 4401 - Instructed Energy
CT 406 - UFE Settlement	CT 4406 - UFE Settlement
CT 407 - Uninstructed Energy	CT 4407 - Uninstructed Energy
CT 410 - Unscheduled RMR Energy	CT 4410 - Unscheduled RMR Energy
(Transmission Losses settled in CT 407)	CT 4450 – Transmission Loss Obligation

Purpose

Settlement charges for Instructed Energy, Unaccounted for Energy (UFE), Uninstructed Energy, Unscheduled RMR Energy, and Transmission Loss Obligation are expected to balance out for **each settlement interval**, resulting in revenue neutrality for the ISO. The ISO is said to be “revenue neutral” when the “Accounts Receivable” are equivalent to the “Accounts Payable” for market participants. However, revenue neutrality may not always occur due to the following operational realities:

- Interchange Inadvertent Energy:**
 Scheduled import and export energy is deemed delivered by the ISO and Adjacent Control Areas. However, operating realities often lead to inadvertent (i.e., unscheduled) energy flows during each interval.
- Zonal Price Difference:**
 During periods of inter-zonal congestion, it is likely that a price differential will occur due to differences in the imbalance Energy prices that are set in each zone (region). For example, if a Generator in NP15 produces 10 MWh of imbalance Energy at a MCP of \$35 that is consumed by a Load in SP 15 where the MCP is \$30, it will create a revenue mismatch of \$5. This revenue mismatch will be offset through the Imbalance Energy Offset.
- Unaccounted for Energy (UFE) Settlement:**
 UFE is calculated for each Utility Distribution Company (UDC) service area and is allocated to all SCs with scheduled export and measured load within a zone. During periods of inter-zonal congestion, the regional imbalance energy prices may be different. This can cause a price difference for UFE charges that result because Pacific Gas & Electric’s (PG&E) service area extends from NP15 into ZP26. A regional imbalance energy price difference may result in a cash neutrality balance because the pro-rata allocation of UFE charges for the PG&E service area will not offset the deviations that may have occurred in only one of the two active congestion zones within PG&E’s service area.

- **Calculation of Import Deviation vs Import Transmission Losses:**

For Settlements purposes, Import schedules are “deemed delivered”. The Import Deviation due to transmission losses is calculated by multiplying each SCs import schedule by the Transmission Meter Multiplier (TMM or losses). However, import losses that contribute to UFE are determined by multiplying actual deliveries (after submission of tie meter data) at the tie point by the TMM. The difference in these methods contributes to a cash neutrality mismatch.

Charge Calculation and Calculation Components

This charge is settled on a ten minute interval basis with the settlement amount pro-rata allocated to metered Load, adjusted export volumes and Metered Sub-System (MSS) net-metered demand.

Equation

ISO Settlement Amount (\$)	=	Price(\$/MWh)	*	Quantity (MWh)
Imbalance Energy Offset (Charge or Refund)		Total \$ amount to be collected or refunded / Total ISO Load and adjusted export volumes in ISO Control Area		Individual SC Load and Export volume in ISO Control Area

Components of the Equation

Price: This is determined by dividing the total amount to be paid out or the total cost to be collected from SCs for the given trading interval by the total measured MWh and adjusted export volumes in the ISO Control Area.

Quantity: This is the total measured load and adjusted exports for each individual SC in the ISO’s Control Area.

Example

Upon completion of running the Settlements process for a particular trading interval, the ISO’s Imbalance Energy Offset indicates a shortage of \$857.29 for the interval. The imbalance amount of \$857.29 will result in the following charge allocation to SCj.

Total amount to be collected from all market participants: **\$857.29.**

Total ISO measured load and scheduled export for 10 minute interval: **4652.67 MWh**

Total SCj measured load and scheduled export: **16.43 MWh**

Resulting Neutrality Adjustment due ISO =

(\$857.29 / 4,652.67 MWh) * 16.43 MWh = \$3.03

Verifying the Charge from Settlement Detail Record

Charge component	How to verify
Quantity (SC load)	<ul style="list-style-type: none"> Sum up the individual SC metered loads plus adjusted export quantities. This should equal the value found in column 7 of the Settlement Detail Records. Divide the total charge or refund amount (column 22) by the allocation base (column 23). This should equal the price in column 8. Multiple value in column 7 by column 8 to get settlement amount in column 9.
Per unit price	
Amount due ISO or amount due SC	

Linking Settlement Statement File information to Equation Map

The following is an abbreviated section from the settlement detail record documented in the California ISO Specification for Settlement Files. The California ISO Specification for Settlement Files is located at <http://www.caiso.com/clienterv/settlements/>

The numbers to the left of the “Field” column represent the numbers used in the imbalance energy offset equation map following the abbreviated table.

	Field	Type	Max Field Length	Domain	Description
1	Record Type	Varchar	1	'D'	Indicates the type of record
2	Charge Type	Number	4		Code indicating the type of settlement (see charge matrix)
3	Line Item Number	Number	12		Unique identifier for the settlement record
4	Trading Date	Date			The trading date of the settlement
5	Trading Hour	Number	2		The trading hour of the settlement
6	Trading Interval	Number	2	0,1,2,3,4,5,6	For Charge Types that are processed at 10-minute intervals: the trading interval of the settlement For Charge Types that are settled hourly, this field will be 0.
7	Billable Quantity	Number	11,2		The quantity billed
8	Price	Number	10,5		The rate at which the quantity is billed
9	Settlement Amount	Number	11,2		The total amount of the settlement
22	Total Charge/Refund Amount	Number	11,2		Total amount to be charged or refunded through an allocation process For Charge Types 487 and Charge Type

				<p>1481, this field contains the total excess cost amount paid in Charge Type 481 to the energy suppliers that need to be collected from the market in Charge Type 487 and Charge Type 1481</p> <p>For Charge 1277 the field contains the total excess cost amount paid in CT 271 for the zone that needs to be collected from the market.</p>
23	Allocation Base/Metered Quantity	Number	13,4	<p>Total quantity used to calculate the rate for allocation process.</p> <p>For Charge Type 256: Total Day Ahead path utilization in the direction of congestion.</p> <p>For Charge Type 4410: Unit's metered output.</p> <p>For Charge Type 4487: Sum of Uninstructed Energy (from all SCs having net negative Uninstructed Energy in the Trading Interval) in the control area.</p> <p>For Charge Type 1471 this field contains the total load and export from all SCs in the control area.</p> <p>For Per Unit Charges: Allocation base for the per unit allocation.</p> <p>For Charge Type 1277 this field contains the total load and export from all SCs in the zone.</p>

$$\text{Settlement Amount} = \text{Billable Quantity} \times \text{Rate}$$

9
7
8

**Rate = Total Charge or Refund (22)
divided by Allocation Base/Metered
Quantity (23)**

References

ISO Tariff, Section 11.2.9 (c)
SABP 3.1.1(c)