



**CALIFORNIA ISO**

Charge Type 4504  
Core Reliability Services  
Export Energy and Transmission Services Net Energy - Mohave

Updated  
June 23, 2005

## 1.1. Version 0.2 - CT 4504 GMC Core Reliability Services Export Energy and Energy and Transmission Services Net Energy – Mohave

### 1.1.1. Description

Core Reliability Services are the basic services needed to manage the Control Area reliably and safely. The billing determinant for this function should be reflective of the costs of maintaining the operational control at all times of the day and seasons of the year, as well the stress that entities place on the transmission system. The billing determinant selected is the sum of gross Export Real Time Flow plus transmission losses for applicable system resources for a Scheduling Coordinator for all Settlement Intervals in a trade month. Export RT Flow is calculated as the sum of all the Deemed RT Scheduled Energy Quantity plus transmission losses for specific system resources. The sign convention for the Deemed RT Scheduled Energy Quantity, positive values are used to distinguish an export from an Import for System Resources (where negative values designate an Import) and only positive quantities are used as exports. Export quantities for OOM and Supplemental Energy are also included. An entity's exports from the grid reflect the burden that the entity places on the operation of the transmission system. Core Reliability Services must be provided at all times of the day. Also included in the CRSE/ETSE Mohave is the scalable portion of Grid Reliability Services. Scalability implies an increasing relationship with flows, outages and disturbances within the Control Area. The costs of managing the Control Area will be higher to the extent that total flows increase. The billing determinants selected is Gross RT Exports for Mohave share participants SRP and NEVP exports. The billing determinant represents total flows on the transmission grid by Mohave Participants SRP and NEVP.

### 1.1.2. Configuration History

The following table sets out changes in the configuration of this charge type from when it was first created until it is retired.

Version number is expressed as a sequentially increasing number for each configuration change. A new version is established for each production release after successful testing and is shown as an integer increase (0.1, 0.2, 0.3). Changes under development will be indicated by an incremental version number (that is, 1.1, 1.2, 1.3) until the production release.

The Effective Start and End dates reflect the actual trades for which the configuration applies. Update Date is the actual calendar date of configuration guide edits.

Version #	Effective Start	Effective End	Author	Update Date	Description of Changes
0.1	Stage 1	Stage 2	M. McGuffin & E. Siegel	5/30/04	Original version
0.2	Stage 1	Stage 2	E. Siegel	1/30/05	Assigned a Charge Type number.

### 1.1.3. Calculation Formula

The ISO formula for the Core Reliability Services Export Energy and Energy and Transmission Services Net Energy –Mohave is as follows:

***Core Reliability Services Export Energy and Energy and Transmission Services Net Energy Mohave Settlement Amount***  $_{smd} = \text{Monthly GMC Core Reliability Services Export}$

**Energy and Energy and Transmission Services Net Energy Mohave Quantity<sub>smd</sub> \* GMC Core Reliability Services Export Energy and Energy and Transmission Services Net Energy Mohave Rate<sub>m</sub>**

Where

**GMC Core Reliability Services Export Energy and Energy and Transmission Services Net Energy Mohave Rate<sub>m</sub> is the current FERC approved rate for the CAISO Control Area**

And

**Monthly GMC Core Reliability Services Export Energy and Energy and Transmission Services Net Energy Mohave Quantity<sub>smd</sub> =  $\sum_{rQ} \sum_Z \sum_h \sum_E$  (Deemed Delivered Real time**

**Scheduled Energy<sub>srQtzEmdh</sub>**

Where

**Deemed Delivered Real time Scheduled Energy<sub>srQtzEmdh</sub> > 0**

And

**Location type (t) = System Resource**

And

Where

**BAID/Location ID/Interchange ID Mohave Flag = True**

Where

**s = Business Associate**

**r = Location ID**

**t = Location Type**

**Z = Zone**

**Q = Interchange Index**

**m = Month**

**d = Trade day**

**h = Trade Hour**

*i = Settlement Interval*

*f = Dispatch Interval*

*E = Energy Type*

Equation Name	Description
GMC CRSE/ETSE Mohave Settlement Amount	The total amount charged to a Scheduling Coordinator for CRSE/ETSE Mohave in a Trade Month (hourly values are output daily)
Monthly GMC CRSE/ETSE Mohave Quantity	The total CRSE/ETSE Mohave quantity for a Scheduling Coordinator in a Trade Month (hourly values are output daily).
GMC CRSE/ETSE Mohave Rate	The current FERC approved rate for CRSE/ETSE Mohave
Deemed Delivered Real Time Scheduled Energy Quantity	The total gross Exports for a System Resource for a Settlement Interval. The gross Export quantity provided to Settlements represents the sum of gross HA Export Schedules plus Real Time Export Schedule adjustments. In the CRSE/ETSE Mohave calculation, Deemed RT Scheduled Energy Quantity is the Hourly sum of all positive quantities for System Resources for a Scheduling Coordinator in a Dispatch Interval.

### 1.1.4. Calculation Exceptions

**NOTE:**  
 For this calculation, only Export quantities from the following BAID/Location ID/Interchange ID combinations are to be used in this calculation

The following Scheduling Coordinators, Locations (and Interchanges where appropriate) require special treatment with regard to the CRSE/ETSE Mohave calculation.

BA ID #	Scheduling Coordinator Name (Short Name)	Location ID	Interchange ID (if applicable)	Exception / Treatment	Quantity	Variable Name	Effective Start Date	Effective End Date	Comments
1014/1268	SCE1, SCE2	MEAD_2_WALC	SCE_NEVP_111 SCE_SRP_111	Exclude all exports from Core Reliability Services – Exports Calculations	Exports		1/1/04	Open	Schedules Submitted by SCE for Mohave Share participants (SRP and NEVP)

### 1.1.5. Calculation Bill Determinants

Input Name	Type	Interval	Sign	Description	Source	Variable Name	Alias	Rounding	Actual Attributes	Derived Attributes
Deemed Delivered Real Time Scheduled Energy Quantity <i>Where Location Type = "C"</i>	I	Hourly	+/-	The total Hourly RT flows for Exports for System Resources. Both positive and negative values will be transferred to the Settlements System, however only positive quantities indicate an Export, and only Export quantities are used in the calculation	STLMTS – System Resource Energy Pre-Calc	<i>Configuration Specialist</i>	<i>Configuration Specialist</i>	9	Trade Date, Trade Hour, BA ID, Location ID, Interchange ID, Location Type, Energy Type, Zone ID	

Input Name	Type	Interval	Sign	Description	Source	Variable Name	Alias	Rounding	Actual Attributes	Derived Attributes

**In reviewing this table:**

- Type indicates whether the Bill determinant is provided by an external system (S) or calculated as an intermediate value by another process (I).
- Interval is the interval of the incoming record
- Source for the moment is the expected supplying system. This will be replaced with actual system names in the “as built” version of the configuration guide.
- Actual attributes are parameters used in the calculation that are expected to be supplied with the source data.
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**Specific Master File data used by this charge type is as follows:**

Master file Data	Description	Type	Variable Name	Detail	Actual Attributes	Derived Attributes
Location	Valid Location	Primary record	<i>Configuration Specialist</i>		BA_ID, Location ID, Location Type, Zone ID	
BA	Valid Business Associate	Primary record	<i>Configuration Specialist</i>		BA_ID	

**In reviewing this table:**

- Type indicates whether the Master file is one of the following:
  1. A primary record (such as SC, or resource)
  2. An association (which is a connection between any two primary records, such as ownership)
  3. An attribute (such as a flag or equivalent specific to a primary record that can be used for billing, for example resource type)
  4. A roll up group where a primary record is within a further hierarchy (such as region, zone etc, noting that locations, etc are primary records in their own right)
- Details are the actual flag or association.

These are summarized in total for settlements in Volume 3, Interface Configuration

**Specific Standing data used by this calculation are as follows:**

Input Name	Type	Interval	Unit of Measure	Description	Source	Variable Name	Alias	Rounding	Actual Attributes	Derived Attributes
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Input Name	Type	Interval	Unit of Measure	Description	Source	Variable Name	Alias	Rounding	Actual Attributes	Derived Attributes
GMC CRSE/ETSE Mohave Rate	T	Annual	\$/MWh	Monthly rate for CRSE/ETSE Mohave based on forecasted Hourly MW values	STLMTS			9	Rate, Effective Start Date, Effective End Date	
CRSE/ETSE Mohave Inclusion by BA / Location Interchange	EF	Periodic	NA	True or False – Include Quantity by BA / Location / Interchange	STLMTS			NA	BA_ID, Location ID, Interchange ID, Effective Start Date, Effective End Date	

**In reviewing this table:**

- Type indicates whether the Bill determinant is standing data for a Tariff Rate (T), a rate calculated as an intermediate value by another process (CR), or a Exception Flag (EF).
- Interval indicates the frequency with which the input is updated.
- Source for the moment is the expected supplying system. This will be replaced with actual system names in the “as built” version of the configuration guide.

### 1.1.6. Calculation Attributes

Billable quantity and summary levels must be indicated as attributes. All quantity and pricing inputs must satisfy these attributes for bill determinants to be calculated.

Attribute Name	Order	USE	Sum	Key Value	Notes
Market Type		Y			Standard attribute, use TBD
Major group		Y			Standard attribute, use TBD
Charge Group		Y			Standard attribute, use TBD
Trade Date		Y			
Trade Hour		Y	Y		Sum to Hourly
Settlement Interval		Y			
Dispatch Interval		Y			Sum to 10-min Interval
Zone ID		Y			
BA ID		Y	Y		Used to sum by customer
Location ID		Y			
Interchange ID		Y			
Location Type		Y			
Energy Type		Y			All Energy Types included

Calculation Details	Value	Notes
Calculation Frequency	Daily	
Number of Intervals	25	For each SC
Prerequisite Calculation	System Resource Energy Pre-Calculation	

### 1.1.7. Calculation Flowchart

The high-level calculation flowchart for the **Monthly Core Reliability Services Export Energy and Energy and Transmission Services Net Energy Mohave GMC** is shown below. The flowchart will have ?? levels:

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### 1.1.8. Output Requirements and Definitions

Output requirements include details of which charge type outputs are to be reported to participants in the detailed Quantity, Price, and Charge detail format. The specific participant outputs are defined, together with any intermediate outputs needed to validate charges prior to publishing results, or used as inputs in other charge calculations.

Output type	Level	Expected quantities	Unique Output	Rounding	Output	Variable Name
Detailed BQ output and Bill Determinant	Hourly CRSE/ETSE Mohave Quantity by SC	# of SCs * 25	Yes	9		
Detailed BQ output	GMC CRSE/ETSE Mohave Rate	1	Yes	9		
Detailed BQ output	Daily CRSE/ETSE Mohave Settlement Amount	# of SCs	Yes	9		
Daily settlement statement	Hourly GMC CRSE/ETSE Mohave Settlement Amount	# of SCs * 25	Yes	9		
Invoice	SC by bill period	# of SCs	Yes	9		

## 1.1.9. Adjustments and Rounding

### 1.1.9.1. Adjustments

Automatic adjustments to this charge type will occur in the event of revised data input from source data, recalculations to a required Pre-calculation, or a revised GMC CRSE/ETSE Mohave rate, by performing a recalculation against the prior run.

### 1.1.9.2. Rounding Adjustments

As this product type is a charge calculation only, no rounding adjustment is required.

## 1.1.10. Validation and Testing

### 1.1.10.1. Validation

This calculation is validated in the Pre-Settlement Validation Run. The table below sets out the validation checks that must occur:

Validation	Timing	Description	Applicable to
Inclusions are accurately reflected.	During	Calculation error produced when this condition is not met.	Initial and recalculation run types
GMC CRSE/ETSE Mohave Settlement Amount $\geq 0$	After	Calculation error if this condition is not met. Initial settlement of GMC CRSE/ETSE Mohave must be a positive value (that is, a charge to Scheduling Coordinators).	Initial run types
Sign convention for GMC CRSE/ETSE Mohave Settlement Amount	After	Calculation error. Incremental runs of CRSE/ETSE Mohave must maintain the proper sign convention for the Settlement amount if CRSE/ETSE Mohave rate updates impact the direction of the charge. Payments to SCs must be negative settlement amounts, and additional charges to SCs must be positive settlement amounts	Recalculation run types
Deemed RT Scheduled Energy Quantity	During	Calculation error if condition is true. Only Export quantities are used in the CRSE/ETSE Mohave calculation, which are represented as a	Initial and recalculation run types

Validation	Timing	Description	Applicable to
by System Resource > 0		positive value.	
Control Area Totals >= 0	After	Calculation Error if any of the Control Area summations are zero or negative.	Initial and recalculation run types

### 1.1.10.2. Testing

The following conditions must be tested prior to release of any configuration to production:

#### Calculation Specific Testing:

Detail standard tests that need to be conducted for this calculation:

Test Condition	Description	Applicable to
Inclusions are accurately reflected	All exceptions listed must be incorporated into the calculation correctly.	Initial and recalculation run types
Sign Convention	The sign conventions on input data assumed as part of this configuration are correct. In other words Deemed RT Scheduled Energy Quantities are positive.	Initial and recalculation run types

#### Successor Calculation or Charge Type Specific Tests

Test Condition	Description	Applicable to
CRSE/ETSE Mohave Inclusions are correctly applied	All exemptions are excluded correctly from subsequent calculations	CRSE/ETSE Mohave
CRSE/ETSE Mohave Inclusions effective dates handles correctly	Exceptions past their termination date and prior to the effective start date are ignored	CRSE/ETSE Mohave

### Revision Table

Date	Description
March 18, 2005	Original
June 23, 2005	Adjusted sign convention for exports in section 1.1.3