



[PRIVILEGED INFORMATION REDACTED]

July 16, 2003

The Honorable Magalie Roman Salas
Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

FILED
OFFICE OF THE SECRETARY
03 JUL 17 PM 4:15
FEDERAL ENERGY
REGULATORY COMMISSION

**Re: California Independent System Operator Corporation
Technical Supplement to Source Data
Provided Pursuant to the June 25, 2003 FERC Orders to Show Cause
Concerning Gaming and/or Anomalous Market Behavior,
Docket Nos. EL03-137-000, et al., and EL03-180-000, et al.**

Dear Secretary Salas:

In accordance with the Orders to Show Cause Concerning Gaming And/OR Anomalous Market Behavior issued by the Federal Energy Regulatory Commission ("Commission") on June 25, 2003, in Docket Nos. EL03-137-000, et al., and EL03-180-000, et al., the California Independent System Operator Corporation ("ISO") respectfully submits for filing the enclosed materials it has produced to the Identified Entities. The materials include an explanatory cover letter, the Technical Supplement dated June 15, 2003, with attachments, and two compact disks containing the source data underlying the ISO's report entitled "Supplemental Analysis of Trading and Scheduling Strategies Described in Enron Memos" released in June 2003.

To the extent that the source data has not been publicly released by the Commission in Docket Nos. EL00-95-000, et al., or PA02-2-000, the ISO requests that the data be treated as confidential under the terms of the June 30, 2003 Protective Order issued in those dockets. The ISO is requesting this treatment because the source data consists of market data that may be confidential and/or commercially-sensitive under ISO Tariff Section 20.3. While the Protective Order does not technically include the Order to Show Cause proceedings, the ISO is sending the materials subject to that Protective Order in order to accomplish distribution within the time specified by the Commission. The ISO has marked the disks "Protected Materials - Not Available to Competitive Duty Personnel."

Magalie Roman Salas
Docket Nos. EL03-137-000, et al., and EL03-180-000, et al.
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In addition to producing the materials to the Identified Entities, the ISO will post this transmittal letter and the enclosed hard-copy documents on the ISO's Home Page. Due to the voluminous size of the electronic files and confidentiality considerations, the source data will not be posted.

Consistent with the provisions of 18 C.F.R. §388.122 (2003), the ISO is providing one complete and unredacted copy of this filing, along with fourteen copies of the filing with the source data redacted. Two extra copies of the redacted version of this filing are also enclosed. Please stamp these copies with the date and time filed and return them to the messenger.

Very truly yours,



Beth Ann Burns
Litigation Counsel



July 15, 2003

Linda Lee, Attorney
Legal Division
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

**Re: California Independent System Operator Corporation
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Provided Pursuant to the June 25, 2003 FERC Orders to Show Cause
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Dear Ms. Lee:

On June 25, 2003, the Federal Energy Regulatory Commission ("FERC") issued two Orders to Show Cause Concerning Gaming And/Or Anomalous Market Behavior, in Docket Nos. EL03-137-000, et al., and EL03-180-000, et al. Pursuant to those Orders, and the Notice of Extension of Time issued on July 11, 2003 in Docket Nos. EL03-180-000, et al, the California Independent System Operator Corporation ("ISO") is providing to FERC Staff and the Identified Entities all of the specific transaction data for each of the Gaming Practices discussed in the ISO Report, including an explanation of the screens used to identify the transactions in question.

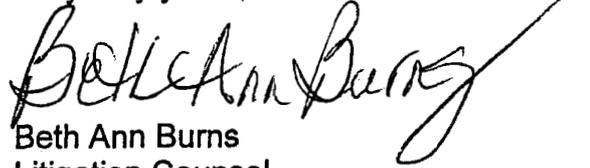
Enclosed are the ISO's Technical Supplement, dated June 15, 2003, and the source data underlying the ISO's report entitled "Supplemental Analysis of Trading and Scheduling Strategies Described in Enron Memos" released in June 2003 ("ISO's June Report"). The Technical Supplement provides a guide for locating and assembling the source data for the ISO's analysis of Enron-style trading and scheduling practices so that Market Participants named in the June 25 FERC Order can respond and perform their own analysis using data reflecting their transactions. The methodology, "screens", and selected summary results of the ISO's analysis were previously provided, and discussed in detail, in the ISO's June Report.

The source data and work files associated with the ISO's June Report are contained on the two enclosed compact discs. Attachment A to the Technical Supplement provides a listing of all source data and work files, and identifies the specific disc and directory in which each of these source data and work files can be found. Attachment B provides a listing and explanation of each field in each of these files.

Linda Lee, Attorney
July 15, 2003
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Please contact me if you have any questions.

Very truly yours,

A handwritten signature in black ink, appearing to read "Beth Ann Burns", with a long, sweeping flourish extending to the right.

Beth Ann Burns
Litigation Counsel

cc: Contact List

**California Independent System Operator Corporation
Technical Supplement to Source Data
Provided Pursuant to the June 25, 2003 FERC Orders
to Show Cause Concerning Gaming and/or Anomalous Market Behavior,
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July 15, 2003

On June 25, 2003, the Federal Energy Regulatory Commission ("FERC") issued two Orders to Show Cause Concerning Gaming And/Or Anomalous Market Behavior in Docket Nos. EL03-137-000, et al., and EL03-180-000, et al. Pursuant to those Orders, and the Notice of Extension of Time issued on July 11, 2003 in Docket Nos. EL03-180-000, et al, the California Independent System Operator Corporation ("ISO") is providing to the Identified Entities all of the specific transaction data for each of the Gaming Practices discussed in the ISO Report, including an explanation of the screen that it used to identify the transactions in question.

This document complies with FERC's directive and provides a guide for locating and assembling the source data underlying the ISO's analysis of Enron-style trading and scheduling practices so that Market Participants¹ named in the June 25 FERC Order can respond and perform their own analysis using data reflecting their transactions. The methodology, "screens", and selected summary results of the ISO's analysis have been previously provided in the ISO's report titled "Supplemental Analysis of Trading and Scheduling Strategies Described in Enron Memos" released in June 2003 ("ISO's June Report"). The source data and work files associated with the ISO's June Report are being provided on two CDs included with this document. Attachment A to this document provides a listing of all source data and work files being provided with this document, and identifies the specific CD and directory in which each of these source data and work files can be found. Attachment B provides a listing and explanation of each field in each of these files.

I. Overscheduling Load

A detailed description of the methodology, data and screens used in the ISO's analysis of this strategy, is provided on pages 5 through 14 of the ISO's June Report. Attachments to this supplemental document provide detailed descriptions of the data contained in the source and work files associated with the ISO's analysis of overscheduling load.

II. Circular Schedules

A detailed description of the ISO's analysis of this strategy is provided on pages 15 through 17 of the ISO's June Report. The files "CF_Field Descriptions.xls" and "Death

¹ Capitalized terms that are not defined herein are used in the sense given in the master Definitions Supplement, Appendix A to the ISO Tariff.

Star Field Descriptions.xls” provide a more detailed description of the data contained in the source and work files associated with the ISO’s analysis of circular schedules. All interchange Schedule details are contained in the *l_interchange_sch* table, including initial (pre-Congestion Management) and final MW values, import/export indicators, Energy type of the Schedule, and tie point.

MW values for Schedules after the close of the Hour-Ahead market are contained in two places:

- For the pre-September 2000 period, information is contained within the *l_interchange_sch* table as mkt_type “R” records. In the absence of an “R” record, the Schedule was left unchanged after the close of the Hour-Ahead Market. If an “R” record exists with a non-zero hrly_mw value, then the Schedule was changed after the close of the Hour-Ahead Market to the fin_mw value.
- Starting September 1, 2000, the MW values for all Schedules after the close of the Hour-Ahead Market are contained in the *CAL_ISO_4_HAM_Sch* tables. In the absence of a record in the *HAM_Sch* tables corresponding to a non-zero final Hour-Ahead Schedule, the Schedule is deemed to have been cut after the Hour-Ahead Market.

For identification of Schedules using Existing Contracts (“ETCs”) information is contained in the *Source_sink_interchg* table. The hrly_mw value in the *Source_sink_interchg_etc* table contains the total amount of the ETC reservation for the Schedule.

Interchange Schedules can be linked to the ISO internal zone, external zone, branch group, and geographical region by the *Bg_tp_zn_cz_region* table.

Branch group Congestion prices are contained in the *Cong_prc* tables, with a positive final flow value indicating scheduled flows in the import direction and a negative value indicating scheduled flows in the export direction. Note that for Path 15 and Path 26, the import direction is from south to north.

III. Ancillary Service Buy-back

A detailed description of the ISO’s analysis of this strategy is provided on page 18 of the ISO’s June Report. The files “A/S Buy-back Field Descriptions.xls” and “Buy-back Field Descriptions.xls” provide a more detailed description of the data contained in the source and work files associated with the ISO’s analysis of this practice.

All pairs of Day-Ahead/Hour-Ahead Schedules where a buy-back occurred are provided in the table *as_price_quantity*. This table contains final Day-Ahead and Hour-Ahead quantities of Ancillary Services procured as well as the Market Clearing Price. All data needed to calculate gains from the buy-back practice are provided in this table.

As noted in footnote 20 of the ISO's June Report, three screens were used to filter out sellback transactions.

- 1) If all Day-Ahead A/S Schedules on a specific branch group were curtailed in the Hour-Ahead Market (and there was more than one Day-Ahead A/S Schedule on that branch group), then all sellbacks of resources on that branch group during that hour were screened from the analysis. This screen was designed to filter out cases in which A/S Schedules over inter-ties may have been curtailed due to limits on imports of A/S imposed by the ISO.
- 2) If there were multiple sellbacks on the same branch group with the same percent of capacity purchased back in the Hour-Ahead Market from each A/S Schedule on that branch group, then all sellbacks of resources on that branch group during that hour were screened from the analysis. This screen was designed to filter out cases in which A/S Schedules over inter-ties may have been curtailed due to limits on imports of A/S imposed by the ISO.
- 3) If the quantity of the Hour-Ahead sell-back for an individual A/S Schedule did not exceed 1% of the original Day-Ahead procurement (for each A/S resource Schedule, not the entire A/S portfolio of the Scheduling Coordinator ("SC")), then the Schedules with this sell-back were screened from the analysis. This screen was designed to filter out minor reductions in Day-Ahead A/S Schedules that may appear in Hour-Ahead Market data for several reasons, such as rounding by the market software.

Provided below is a summary of additional information needed to replicate these screens.

- The table *cal_iso_4_imp_sch2*, found in the Source Data folder to the MW Laundering/Ricochet strategy provides all A/S Schedules across the ties. This table can be used in the calculation of filters (1) and (2) described above.
- The table *bg_to_tp* is included to allow mapping of A/S purchases across inter-ties to their corresponding branch group (using the *tie_point* field to link tables).
- No additional information is required to employ the third filter ($\leq 1\%$) described above.

Note that if the table *cal_iso_1_as* from the 100-day discovery proceeding is used, the MW and bid price values for Non-spinning Reserve in that table are incorrect and must be replaced with the corresponding values from the *cal_iso_4_gen_sch2* and *cal_iso_4_imp_sch2* tables, also from the 100-day discovery proceeding.

IV. Wheel Out

A detailed description of the ISO's analysis of this strategy is provided on pages 21 through 23 of the ISO's June Report.

Calculations for the "Wheel Out" strategy used the same source data as the circular Scheduling strategy, with particular attention paid to the change in the MW value of the import/export Schedule after the close of the Hour-Ahead Market. Thus, field descriptions of various files provided under the circular scheduling strategy provide a more detailed description of the data contained in the source and work files associated with the ISO's analysis of the "Wheel Out" strategy.

Calculations of Congestion charges for each Schedule were performed in the same fashion as with circular scheduling. A preliminary screen to determine whether a tie-point was derated to zero in all of the markets was created by calculating the sum of the MW values of all interchange Schedules on each tie point. Results of the zero-rated path determination are provided in the *Zeroratedpaths_00_02.xls* spreadsheet. If the sum of all interchange Schedules on each tie point was between -0.05 and 0.05, then the tie was further checked in the Scheduling and Logging for ISO California ("SLIC") database to determine if the tie was, in fact, out of service or under a full scheduling limitation. Results of that check are contained within the working file *WheelOut_FERCWorksheet.xls*.

The file *WheelOut_FieldDescriptions.xls* and field descriptions provided under the Circular Schedules strategy provides a more detailed description of the data contained in the source and work files.

V. Ricochet/Megawatt Laundering

A detailed description of the ISO's analysis of this strategy is provided on pages 21 through 23 of the ISO's June Report.² As noted in previous ISO reports, the ISO interprets the terms "ricochet schedules" and "megawatt laundering" as referring to a variety of scheduling and trading practices. The ISO's June Report included summary results for only one general form of these scheduling/trading practices. In addition, as noted in previous ISO reports, the ISO's analysis does not include "megawatt laundering" that may have occurred by exporting and importing by two different entity identifications.³

² Results provided with this document reflect the following changes in the methodology described in the ISO's June Report. (1) Rather than restricting analysis of the potential "overlap" between exports and imports by each SC to a regional level (i.e., the Southwest and Northwest), this analysis is based on total export/imports between the ISO Controlled Grid and neighboring Control Areas. This refinement was made to ensure that results included potential "ricochet" and "MW laundering" that involved transfers of Energy exported from the ISO Controlled Grid between different Control Areas or regions (such as from the Southwest to the Northwest using transmission of Los Angeles Department of Water and Power) prior to being re-imported to the ISO. (2) The analysis in the ISO's June Report was also corrected to include real time imports made by entities through the California Power Exchange Corporation ("PX") as an SC, which were significant for several entities, such as British Columbia Power Exchange Corporation. (3) Entities with minimal levels of total potential overlap between exports and real time imports (< 5,000 MWH) were screened out of the analysis.

³ For example, the ISO's analysis would not generally capture cases in which one entity exported Energy under its PX or ISO participant identifier, and another entity imported Energy in real time under a different PX or ISO participant identifier. The one exception to this is the analysis which includes OOM

- Data and work files being provided with this document include source data, work files and summary results that may be used to assess a variety of different scheduling/trading practices in the general category of “ricochet schedules” and “megawatt laundering”. Figures 1 through 3 summarize results of three such scheduling/trading practices within the ISO’s understanding of the general category of “ricochet schedules” and “megawatt laundering”. Figure 1 shows summary results of all potential overlap between Day-Ahead/Hour-Ahead exports from ISO Controlled Grid and real time imports based on the basic methodology described in the ISO June Report.
- Figure 2 shows results for the same analysis, expanded to include real time imports made by entities through Out-Of-Market (“OOM”) sales to CERS.
- Figure 3 shows summary results of potential overlap between Day-Ahead/Hour-Ahead exports from the ISO Controlled Grid and OOM sales of real time Energy directly to the ISO at prices in excess of the \$750/\$500/\$250 “hard caps” that were in effect until December 2000.

import sales through California Energy Resources Scheduling (“CERS”), which the ISO is generally able to track back to the entity selling the energy through CERS.

**Table 1. Potential Real Time Energy Imports Exported in Day-Ahead/Hour-Ahead Schedules (MW)
(Excludes OOM Imports through CERS)**

ID	Company Name	Jan - Apr 2000	May - Oct 1, 2000	Oct 2, 2000 - Jun 21, 2001	Total
BCHA	British Columbia Power Exchange Corporation	0	140,543	147,116	287,660
PSE	Puget Sound Energy	0	139,198	135,854	275,052
PAC	PacificCorp	0	206,101	32,694	238,795
APS	Arizona Public Service Company	0	97,078	14,144	111,222
IPC	Idaho Power Company	0	51,507	40,070	91,578
EESI	Enron Energy Services, Inc.	1	35,960	4,993	40,954
PGE	Portland General Electric	0	15,285	11,152	26,437
SETC	Sempra Energy Trading Corporation	86	21,781	3,923	25,790
AVEI	Avista Energy Inc	0	11,082	14,041	25,124
BPA	Bonneville Power Administration	0	15,879	6,828	22,707
WESC	Williams Energy Services Corporation	50	1,241	21,060	22,351
AQPC	Aquila Power Corporation	2,105	16,064	0	18,169
LDWP	Los Angeles Water and Power	0	3,069	8,071	11,140
SRVP	Salt River Project	0	8,648	1,858	10,506
PSNM	Public Service Company of New Mexico	0	6,594	628	7,221

**Table 2. Potential Real Time Energy Imports Exported in Day-Ahead/Hour-Ahead Schedules (MW)
(Includes OOM Imports through CERS)**

ID	Company Name	Oct 2, 2000 - Jun			Total
		Jan - Apr 2000	May - Oct 1, 2000	21, 2001	
BCHA	British Columbia Power Exchange Corporation	0	140,543	414,611	555,155
PSE	Puget Sound Energy	0	139,198	135,854	275,052
PAC	PacificCorp	0	206,101	33,109	239,210
WESC	Williams Energy Services Corporation	50	1,241	194,149	195,440
APS	Arizona Public Service Company	0	97,078	34,801	131,879
IPC	Idaho Power Company	0	51,507	40,070	91,578
EESI	Enron Energy Services, Inc.	1	35,960	4,993	40,954
SETC	Sempra Energy Trading Corporation	86	21,781	16,250	38,117
AVEI	Avista Energy Inc	0	11,082	15,377	26,459
PGE	Portland General Electric	0	15,285	11,152	26,437
BPA	Bonneville Power Administration	0	15,879	6,828	22,707
AQPC	Aquila Power Corporation	2,105	16,064	0	18,169
LDWP	Los Angeles Water and Power	0	3,069	8,363	11,432
SRVP	Salt River Project	0	8,648	1,858	10,506
PSNM	Public Service Company of New Mexico	0	6,594	628	7,221
SCEM	Southern Company Energy Marketing, L.P.	0	1,375	4,082	5,457

**Table 3. Potential OOM Energy Imports at Prices Over ISO "Hard Caps"
Exported in Day-Ahead/Hour-Ahead Schedules (MW)
(Through December 8, 2000)**

ID	Company Name	Jan - Apr 2000	May - Oct 1, 2000	Oct 2 - Dec. 8, 2000	Total
BCHA	British Columbia Power Exchange Corporation	0	0	40,401	40,401
PSE	Puget Sound Energy	0	0	10,995	10,995
PAC	PacificCorp	0	0	5,071	5,071
AVEI	Avista Energy Inc	0	0	2,991	2,991
LDWP	Los Angeles Water and Power	0	300	2,359	2,659
PGE	Portland General Electric	0	0	1,388	1,388
IPC	Idaho Power Company	0	0	1,214	1,214
SRVP	Salt River Project	0	0	846	846
APS	Arizona Public Service Company	0	300	524	824
DETM	Duke Energy Trading and Marketing, L.L.C.	0	0	120	120
PSNM	Public Service Company of New Mexico	0	0	25	25
EESI	Enron Energy Services, Inc.	0	0	5	5

As indicated in the ISO's June Report, the two key sources of data used in the ISO's analysis of the Megawatt Laundering/Ricochet strategy are net exports from the ISO Control Area and real-time imports into the ISO Control Area. Provided below is a detailed description of how the source of these data being provided with this document can be utilized to replicate the ISO's analysis:

- **Net Exports from the ISO Control Area:** The *px_trans* table can be used to construct the Day-Ahead imports to and exports from the ISO Control Area through the PX Day-Ahead Market. The table *px_mst_aff* allows mapping of PX affiliate ID's to ISO affiliate ID's. Use records where the *resource_type* field is equal to 'Export' and 'Import'. For net exports from the ISO Control Area not through the PX, use the fields *i_ha_mw* and *e_ha_mw* from the *cal_iso_4_imp_sch2* table. The tables *ms_bg_to_region* and *bg_to_tp* can be used to identify the location of the import or export.
- **Real-time Imports into the ISO Control Area - BEEP:** Real-time Energy imports through the ISO Real-Time Market are taken from the *bp_se*, *bp_sp*, *bp_ns*, and *bp_rp* fields from the *cal_iso_4_imp_sch2* table. The ISO affiliate identification can be recovered from records in this table that show Energy procured from the PX by extracting the PX affiliate identification from the *interchg_id* field and converting it to an ISO affiliate identification using the *px_mst_aff* table.
- **Real-time Imports into the ISO Control Area - OOM:** Imports through OOM purchases made by the ISO are taken from the *iso_oom* table. Imports through OOM purchases made by CERS are taken from the *cers_oom_data* table. The *interchg_id* field from the *iso_oom* and *cers_oom_data* tables and the *sc_id_mst_aff* table will aid in identifying the ISO master affiliate identification for records in these tables where that identification is not already complete.

Additional tables with source data are included to provide prices and other portfolio information that may be relevant in determining whether the Megawatt Laundering/Ricochet strategy was employed.

The files "MW Laundering Field Descriptions.xls", "MWL_Field Descriptions.xls", and "Field Descriptions.xls" provide a more detailed description of the data contained in the source and work files.

VI. Cut Counterflow

A detailed description of the ISO's analysis of this strategy is provided on pages 26 through 28 of the ISO's June Report.

As with analysis of the Wheel Out strategy, calculations for the Cut Counterflow Schedules strategy used the same data as the Circular Schedules strategy. Particular emphasis was placed on the Schedule changes after the close of the Hour-Ahead Market. Schedules that were determined to have been reduced after the close

of the Hour-Ahead Market and were originally scheduled in a direction against Congestion (e.g., counterflow) were subsequently screened through the ISO's SLIC database to determine whether the ISO initiated the curtailment for reliability reasons, the SC cut the Schedule due to procurement difficulties, or the Schedule was reduced for other reasons.

The cut counterflow Schedules and results from the SLIC screen are kept in the CutCounterflows_FERCworksheet.xls worksheet. The file entitled "CutSchedules_FieldDescriptions.xls" and field descriptions provided under the Circular Schedules strategy provide a more detailed description of the data contained in the source and work files.

Technical Supplement - Attachment A

Directory of Source Data and Working Files Provided on Disk 1 and Disk 2

Directory of Source Data and Working Files Provided on DISK 1 and DISK 2

DISK 1

Directory of Disk 1\Ancillary Service Buy-back - Get Shorty\Source Data

BG_to_TP.csv	Branch Group - Tie Point Mapping Table
[see also AS Buy-back Data and Tables.xls].txt	Place-holder and note
Buy-back Field Descriptions.xls	Field Description Tables
AS_Price_Quantity.csv	Ancillary Service Price/Quantity Table

Directory of Disk 1\Ancillary Service Buy-back - Get Shorty\Work Files

AS Buy-back Data and Tables.xls	Summary tables and supporting work file data
AS Buy-back Field Descriptions.xls	Field descriptions for work file

Directory of Disk 1\Circular Schedules - Death Star\Source Data

BG_REGION_ZONE.csv	Branch Group - Region - Zone Mapping Table
BG_TO_TP.csv	Branch Group - Tie Point Mapping Table
BG_TP_ZN_CZ_REGION.csv	Branch Group-Tie Point-Region-Zone Table
CAL_ISO_4_HAM_Sch_00Q3.zip	Real-time schedule Data, 2000 Q3 after 9/1/00
CAL_ISO_4_HAM_Sch_00Q4.zip	Real-time schedule Data, 2000 Q4
CAL_ISO_4_HAM_Sch_01Q1.zip	Real-time schedule Data, 2001 Q1
CAL_ISO_4_HAM_Sch_01Q2.zip	Real-time schedule Data, 2001 Q2
Circular Schedule Field Descriptions.xls	Field Description Tables
CONG_PRC.zip	Congestion Prices
CONTRACTS_IN_USAGES_ETC.zip	Existing Rights Encumbrances by Branch Group
I_INTERCHANGE_SCH_2000Q1.zip	Day-Ahead, Hour-Ahead, and Real-time schedules 00Q1
I_INTERCHANGE_SCH_2000Q2.zip	Day-Ahead, Hour-Ahead, and Real-time schedules 00Q2
I_INTERCHANGE_SCH_2000Q3.zip	Day-Ahead, Hour-Ahead, and Real-time schedules 00Q3
I_INTERCHANGE_SCH_2000Q4.zip	Day-Ahead and Hour-Ahead schedules 2000 Q4
I_INTERCHANGE_SCH_2001Q1.zip	Day-Ahead and Hour-Ahead schedules 2001 Q1
I_INTERCHANGE_SCH_2001Q2.zip	Day-Ahead and Hour-Ahead schedules 2001 Q2
SC_ID_MST_AFF.csv	Scheduling Coordinator-Holding Affiliate Mapping
SOURCE_SINK_INTERCHG_ETC.zip	Existing Rights Interchange Scheduling

Directory of Disk 1\Circular Schedules - Death Star\Work Files

Death Star Period Gains by SC.xls	Death Star Gains by period, SC
Counterflow Gains 00-01.xls	Counterflow Congestion revenues
Death Star Field Descriptions.xls	Death Star Data Field Descriptions
Death Star Data.xls	Suspected Circular Counterflow schedules
CF Field Descriptions.xls	Counterflow Gains Field Descriptions
Counterflow_Gains_summary.xls	Counterflow Gains Summary

Directory of Disk 1\CutCounterflows\Source Data

See Circular Schedules for Source Data.txt

Directory of Disk 1\CutCounterflows\Work Files

CutSchedules_FieldDescriptions.xls	Cut counterflows (FERC Worksheet) Field Description
Counterflow Non-firm Gains Enron.xls	Enron Non-firm gains
CutCounterflows_FERCworksheet.xls	Cut Counterflow schedules
Cut_Schedules_fina_allscsl.xls	Cut Counterflow schedules (intermediate worksheet)

Directory of Disk 1\MW Laundering - Ricochet\Source Data

BG_TO_TP.xls	Branch Group - Tie Point Mapping Table
BEEP_STACK_IMP.zip	Import bids from BEEP stack
CAL_ISO_4_Gen_Sch2_00Q1.zip	Generation Schedules 2000 Q1
CAL_ISO_4_Gen_Sch2_00Q2.zip	Generation Schedules 2000 Q2
CAL_ISO_4_Gen_Sch2_00Q3.zip	Generation Schedules 2000 Q3
CAL_ISO_4_Gen_Sch2_00Q4.zip	Generation Schedules 2000 Q4
CAL_ISO_4_Gen_Sch2_01Q1.zip	Generation Schedules 2001 Q1
CAL_ISO_4_Gen_Sch2_01Q2.zip	Generation Schedules 2001 Q2
CAL_ISO_4_Imp_Sch2_00Q1.zip	Interchange Schedules 2000 Q1
CAL_ISO_4_Imp_Sch2_00Q2.zip	Interchange Schedules 2000 Q2
CAL_ISO_4_Imp_Sch2_00Q3.zip	Interchange Schedules 2000 Q3
CAL_ISO_4_Imp_Sch2_00Q4.zip	Interchange Schedules 2000 Q4
CAL_ISO_4_Imp_Sch2_01Q1.zip	Interchange Schedules 2001 Q1
CAL_ISO_4_Imp_Sch2_01Q2.zip	Interchange Schedules 2001 Q2
CAL_ISO_SUPP_INTRNL_INTERCHG_00Q1.zip	Inter-SC trades 2000 Q1
CAL_ISO_SUPP_INTRNL_INTERCHG_00Q2.zip	Inter-SC trades 2000 Q2
CAL_ISO_SUPP_INTRNL_INTERCHG_00Q3.zip	Inter-SC trades 2000 Q3
CAL_ISO_SUPP_INTRNL_INTERCHG_00Q4.zip	Inter-SC trades 2000 Q4 before 11/18/2000
CAL_ISO_SUPP_INTER_SC_TRADES_00Q4.zip	Inter-SC trades 2000 Q4 after 11/18/2000

CAL_ISO_SUPP_INTER_SC_TRADES_01Q1.zip
CAL_ISO_SUPP_INTER_SC_TRADES_01Q2.zip
CERS_OOM_DATA.zip
Field Descriptions.xls
GEN_UNIT.zip
ISO_OOM.zip
ISO_PRC_1.zip
ISO_PRC_2.zip
ISO_Price_Cap.zip
IMP_UNIT.xls
MS_BG_TO_REGION.xls
MW_Laundering_Field_Descriptions.xls
PX_Const_Price.zip
PX_MST_AFF.xls
PX_Trans.zip
PX_UNC_PRC.zip
SC_ID_MST_AFF.xls

Inter-SC trades 2001 Q1
Inter-SC trades 2001 Q2
Data for CERS OOM purchases
Field description for some tables
Generating unit information
Data for ISO OOM purchases
ISO incremental prices (up to 01-Sep-2000)
ISO incremental prices (01-Sep-2000 fwd)
Price caps
Import location information
Maps branch group to region
Field description for some tables
PX day-ahead constrained market price
Maps PX affiliate to ISO affiliate
PX day-ahead transactions
PX day-ahead unconstrained market price
Maps ISO SC_ID to master affiliate

Directory of Disk 1\MW Laundering - Ricochet\Work Files

Laundry Data (10 Jul 2003).xls
MWL_Field Descriptions.xls
Potential Capacity Laundered (Rev 10 July 2003).xls

Data used in summary tables
Field descriptions for Laundry Data table
Summary tables for Megawatt Laundering

Directory of Disk 1\Wheel Out\Source Data

See Circular Schedules for Source Data.txt

Directory of Disk 1\Wheel Out\Work Files

WheelOut_FieldDescriptions.xls
Zeroratedpaths_00_02.xls
Zeroratedpaths_detm.xls
WheelOut_FERCWorksheet.xls

Wheel Out (FERC Worksheet) Field Descriptions
Zero rated paths, 2000-2002
DETM schedules on 5/28/2000
Wheel Out (FERC Worksheet)

DISK 2

Directory of Disk 2\Load Overscheduling - Fat Boy\Source Data

bg_cz_zone_region.xls	Branch group - zone - region mapping table
bg_tp_cz_zone_region.xls	Branch group-tie point-zone-region mapping table
exp_mkt_info_00q1.zip	Hourly ex-post prices, 2000 Q1
exp_mkt_info_00q2.zip	Hourly ex-post prices, 2000 Q2
exp_mkt_info_00q3.zip	Hourly ex-post prices, 2000 Q3, until 9/1/2000
generation_sch_00q1.zip	Generation Schedules, 2000 Q1
generation_sch_00q2.zip	Generation Schedules, 2000 Q2
generation_sch_00q3.zip	Generation Schedules, 2000 Q3
generation_sch_00q4.zip	Generation Schedules, 2000 Q4
generation_sch_01q1.zip	Generation Schedules, 2001 Q1
generation_sch_01q2.zip	Generation Schedules, 2001 Q2
i_interchange_sch_00q1.zip	Interchange Schedules, 2000 Q1
i_interchange_sch_00q2.zip	Interchange Schedules, 2000 Q2
i_interchange_sch_00q3.zip	Interchange Schedules, 2000 Q3
i_interchange_sch_00q4.zip	Interchange Schedules, 2000 Q4
i_interchange_sch_01q1.zip	Interchange Schedules, 2001 Q1
i_interchange_sch_01q2.zip	Interchange Schedules, 2002 Q1
load_exclusion_list.xls	Load ID exclusion list (for curtailable load)
load_id_zone.xls	Load ID - congestion zone mapping
Load Overscheduling Field Descriptions.xls	Field Descriptions
load_sch_00q1.zip	Load Schedules, 2000 Q1
load_sch_00q2.zip	Load Schedules, 2000 Q2
load_sch_00q3.zip	Load Schedules, 2000 Q3
load_sch_00q4.zip	Load Schedules, 2000 Q4
load_sch_01q1.zip	Load Schedules, 2001 Q1
load_sch_01q2.zip	Load Schedules, 2001 Q2
rt_exp_mkt_info_00q3.zip	10-minute imbalance energy prices, 2000 Q3
rt_exp_mkt_info_00q4.zip	10-minute imbalance energy prices, 2000 Q4
rt_exp_mkt_info_01q1.zip	10-minute imbalance energy prices, 2001 Q1
rt_exp_mkt_info_01q2.zip	10-minute imbalance energy prices, 2001 Q2
ss_measurements_00q1.zip	Hourly resource meter readings, 2000 Q1
ss_measurements_00q2.zip	Hourly resource meter readings, 2000 Q2
ss_measurements_00q3.zip	Hourly resource meter readings, 2000 Q3
ss_10min_measurements_00q3.zip	10-minute resource meter readings, 2000 Q3
ss_10min_measurements_00q4.zip	10-minute resource meter readings, 2000 Q4
ss_10min_measurements_01q1.zip	10-minute resource meter readings, 2001 Q1
ss_10min_measurements_01q2.zip	10-minute resource meter readings, 2001 Q2
tie_gmm_00q1.zip	Tie Meter Multipliers, 2000 Q1

tie_gmm_00q2.zip
tie_gmm_00q3.zip
tie_gmm_00q4.zip
tie_gmm_01q1.zip
tie_gmm_01q2.zip
udc_gen_ids.xls
udc_load_ids.xls
unit_gmm_00q1.zip
unit_gmm_00q2.zip
unit_gmm_00q3.zip
unit_gmm_00q4.zip
unit_gmm_01q1.zip
unit_gmm_01q2.zip

Tie Meter Multipliers, 2000 Q2
Tie Meter Multipliers, 2000 Q3
Tie Meter Multipliers, 2000 Q4
Tie Meter Multipliers, 2001 Q1
Tie Meter Multipliers, 2001 Q2
UDC Generation ID mapping (for PX period)
UDC Load ID mapping (for PX period)
Generation Meter Multipliers, 2000 Q1
Generation Meter Multipliers, 2000 Q2
Generation Meter Multipliers, 2000 Q3
Generation Meter Multipliers, 2000 Q4
Generation Meter Multipliers, 2001 Q1
Generation Meter Multipliers, 2001 Q2

Directory of Disk 2\Load Overscheduling - Fat Boy\Work Files

LO_Field Descriptions.xls
Load Overscheduling Tables.xls
load_sc_system_00q1.zip
load_sc_system_00q2.zip
load_sc_system_00q3.zip
load_sc_system_00q4.zip
load_sc_system_01q1.zip
load_sc_system_01q2.zip

Aggregated SC Systemwide Load Field Description
Summary Tables
Aggregated SC Systemwide Load, 2000 Q1
Aggregated SC Systemwide Load, 2000 Q2
Aggregated SC Systemwide Load, 2000 Q3
Aggregated SC Systemwide Load, 2000 Q4
Aggregated SC Systemwide Load, 2001 Q1
Aggregated SC Systemwide Load, 2001 Q2

Technical Supplement - Attachment B

**Field Descriptions for Tables Provided on Disk 1 and Disk 2
that Contain Source Data**

Ancillary Service Buy-back,
A/k/a "Get Shorty"

AS PRICE QUANTITY

<u>Field Name</u>	<u>Description</u>
OPR_DT	Operation date.
OPR_HR	Operation hour.
SC_ID	Schedule Coordinator identification.
MST_AFF	Master Business Affiliate.
UNIT_ID	Unit identification.
TIE_POINT	Tie point identification.
INTERCHG_ID	Interchange identification.
MKT_TYPE	Market type (D=DA and H=HA).
AS_TYPE	Ancillary service type.
FIN_MW	Final procured MW.
BID_PRC	Bid price.
MCP	Market clearing price.

EC-TIP

Field Name

BRANCH_GRP

TIE_POINT

Description

Branch Group of which Tie Point is a part of

Tie Point

A/S Buyback Gains Data (All)

Field Name	Field Description
year_month	Operating month (YYYY.MM)
OPR_DT	Operating date
OPR_HR	Operating hour
MST_AFF	Master affiliate identification
SC_ID	Scheduling coordinator identification
UNIT_ID	Unit identification
TIE_POINT	Tie point identification
INTERCHG_ID	Interchange identification (for A/S capacity scheduled across external tie points)
AS_TYPE	Ancillary service type (restricted to Spin (SP), Non-spin (NS), and Replacement (RP) Reserve)
da_fin_mw	Final MW procured in the day-ahead market
da_price	Market clearing price in the day-ahead market
da_fin_cost	Cost of final MW procured in the day-ahead market ($da_fin_mw * da_price$)
ha_fin_mw	Final MW procured in the hour-ahead market (< 0 indicates A/S buy-back)
ha_price	Market clearing price in the hour-ahead market
ha_fin_cost	Cost of final MW procured in the hour-ahead market ($ha_fin_mw * ha_price$)
fin_mw	Net final MW procured ($da_fin_mw + ha_fin_mw$)
fin_cost	Net cost of final MW procured ($da_fin_cost + ha_fin_cost$)
gains	Gains from the A/S buyback strategy (formula)
losses	Losses from the A/S buyback strategy (formula)

Circular Schedules,
A/k/a "Death Star"

BC_REGION_ZONE

<u>Field Name</u>	<u>Description</u>
BRANCH_GRP	Branch Group
REGION_2	External region branch group connects to
ZONE_ID	Internal ISO congestion zone branch group injects into

BC TO TP

<u>Field Name</u>	<u>Description</u>
BRANCH_GRP	Branch Group of which Tie Point is a part of
TIE_POINT	Tie Point

BC_TP_ZN_ICZ_REGION

<u>Field Name</u>	<u>Description</u>
BRANCH_GRP	Branch Group
ZONE	Internal ISO congestion zone branch group injects into
CZ	External Congestion zone branch group connects to
REGION	External region branch group connects to
TIE_POINT	Tie Point

CAL ISO 4-HAV Sch

<u>Field Name</u>	<u>Description</u>
OPR_DT	Operation date.
OPR_HR	Operation hour.
SC_ID	Scheduling coordinator identification.
IE_TYPE	'I' = import, 'E' = export.
BRANCH_GRP	Branch group identification.
TIE_POINT	Tie point.
INTERCHG_ID	Interchange identification.
R_REC_TYPE	Record type ('R' = post hour-ahead).
RT_FIN_MW2	Final schedule in MW.

CONG_PRC

<u>Field Name</u>	<u>Description</u>
OPR_DT	Operation date.
OPR_HR	Operation hour.
MKT_TYPE	Market type ('D' = day-ahead and 'H' = hour-ahead).
BRANCH_GRP	Branch Group
TIE_POINT	Tie Point
CNGS_PRC	Congestion Price
FINAL_FLOW_MW	Final Scheduled Flow on the Branch Group after the run of the congestion management software

CONTRACTS IN USAGES ETC

<u>Field Name</u>	<u>Description</u>
OPR_DT	Operation date.
OPR_HR	Operation hour.
MKT_TYPE	Market type ('D' = day-ahead and 'H' = hour-ahead).
SCH_CLASS	'P' = Preferred Schedule; 'R' = Revised Preferred Schedule
SC_ID	Scheduling coordinator identification.
USAGE_ID	Usage identification of contract rights usage
USAGE_TYPE	E' = Existing Contract Right
CONTRACT_REF_CHAIN	List of valid contract references associated with Usage ID
CONTRACT_REF	Contract Reference Number for Capacity MW
CONTRACT_TYPE	'Y' = schedule was adjusted during the congestion management process.
PRIORITY	Scheduling Priority
BRANCH_GRP	Branch Group upon which contract rights reside
FROM_CNCS_ZONE	Source Congestion Zone
TO_CNCS_ZONE	Sink Congestion Zone
CAPACITY_MW	Contract Capacity MW for the given contract reference number
ADJ_MW	Adjusted MW for Capacity reservation
FIN_MW	Final MW for Capacity Reservation
VALID_STATUS	Validity Status
USER_COMMENTS	Comment field.
REC_NO	Record number.
STLMT_DATE	Settlement date.
STLMT_FLG	Settlement flag.
UPD_DATE	Updated date.
UPD_USER	Updated by user.
REC_STAT	
ORIG_MW	

INTERCHANGE SCH

Field Name	Description
SC_ID	Scheduling coordinator identification.
OPR_DT	Operation date.
OPR_HR	Operation hour.
MKT_TYPE	Market type ('D' = day-ahead and 'H' = hour-ahead).
IE_TYPE	'I' = Import, 'E' = Export.
TIE_POINT	Tie point.
INTERCHG_ID	Interchange identification.
ENGY_TYPE	Energy type ('FIRM' = Firm, 'NFRM' = Non-firm, 'WHEEL' = Wheeling, 'DYN' = Dynamic, 'CSPN' = Spinning Reserve Capacity, 'CNSPN' = Non-spinning Reserve Capacity, 'CRPLC' = Replacement Reserve Capacity).
EXT_CNTRL_ID	External control identification.
CONTRACT_REF	Contract reference number.
CONTRACT_TYPE	Contract type.
PRIOR_TYPE	OT (Unused)
SCH_CLASS	Schedule Class: "P" = Preferred Schedule; "R" = Revised Preferred Schedule
WSCC_TAG	WSCC tag.
SCHED_ID	Miscellaneous information
POST_ADJ_FLG	Unused
LOSS_CMP_FLG	Unused
CNGS_MGT_FLG	'Y' = congestion management was required in the area of this schedule.
CNGS_MGT_ADJ	'Y' = schedule was adjusted during the congestion management process.
HRLY_MW	Initial preferred schedule.
ADJ_MW	Interim schedule after first run of congestion management.
FIN_MW	Final schedule after last run of congestion management.
NO_OF_SEG	Number of bid segments submitted.
REC_STAT	
MW1	Adjustment capacity from bid segment #1.
MW2	Adjustment capacity from bid segment #2.
MW3	Adjustment capacity from bid segment #3.
MW4	Adjustment capacity from bid segment #4.
MW5	Adjustment capacity from bid segment #5.
MW6	Adjustment capacity from bid segment #6.
MW7	Adjustment capacity from bid segment #7.
MW8	Adjustment capacity from bid segment #8.
MW9	Adjustment capacity from bid segment #9.

INTERCHANGE SCH

Field Name	Description
MW10	Adjustment capacity from bid segment #10.
MW11	Adjustment capacity from bid segment #11.
PR1	Bid price for adjustment bid segment #1.
PR2	Bid price for adjustment bid segment #2.
PR3	Bid price for adjustment bid segment #3.
PR4	Bid price for adjustment bid segment #4.
PR5	Bid price for adjustment bid segment #5.
PR6	Bid price for adjustment bid segment #6.
PR7	Bid price for adjustment bid segment #7.
PR8	Bid price for adjustment bid segment #8.
PR9	Bid price for adjustment bid segment #9.
PR10	Bid price for adjustment bid segment #10.
PR11	Bid price for adjustment bid segment #11.
CAP_RES_PRC	For CSPN, CNSPN, CRPLC, the hourly capacity reservation price
RAMP_RATE	Unit Ramp Rate
MIN_TO_SYNC	Minutes to Synchronize following notification
USER_COMMENTS	Comment field.
REC_NO	Unused
STLMT_DATE	Settlement Date
STLMT_FLG	Processed in Settlement System
UPD_DATE	Updated Date
UPD_USER	Update User ID
CONTINGENCY_FLG	For CSPN, CNSPN, contingency flag ('Y' = keep for reserve capacity).

SC_ID/MST/AFF

<u>Field Name</u>	<u>Description</u>
SC_ID	Scheduling coordinator identification.
MST_AFF	Master Affiliate identification
MST_AFF_NAME	Master Affiliate name

SOURCE SINK INTERCHG ETC

Field Name	Description
OPR_DT	Operation date.
OPR_HR	Operation hour.
MKT_TYPE	Market type ('D' = day-ahead and 'H' = hour-ahead).
SCH_CLASS	'P' = Preferred Schedule; 'R' = Revised Preferred Schedule
SC_ID	Scheduling coordinator identification.
TIE_POINT	Tie Point of Interchange
INTERCHG_ID	Scheduling Interchange identification
USAGE_ID	Usage identification of contract rights usage
CONTRACT_REF_CHAIN	List of valid contract references associated with Usage ID
ENGY_TYPE	Energy Type of Interchange Schedule; FIRM = Firm Schedule, NFRM = Nonfirm schedule, WHEEL = Wheeling schedule, DYN = Dynamic schedule
PRIORITY	Scheduling Priority
FROM_CNCS_ZONE	Source Congestion Zone
TO_CNCS_ZONE	Sink Congestion Zone
HRLY_MW	Initial Reservation Schedule at start of congestion management run
ADJ_MW	Adjustments to Initial reservation schedule
FIN_MW	Final ETC Reservation schedule
VALID_STATUS	Validity Status
USER_COMMENTS	Comment field.
REC_NO	Record number.
STLMT_DATE	Settlement date.
STLMT_FLG	Settlement flag.
UPD_DATE	Updated date.
UPD_USER	Updated by user.
REC_STAT	
ORIG_MW	

Circular Schedules / Death Star

Field Name	Description
SC_ID	Scheduling coordinator identification.
OPR_DT	Operation date.
OPR_HR	Operation hour.
tie_point_imp	Tie point - import.
tie_point_exp	Interchange identification - import.
interchg_id_imp	Tie point - export.
interchg_id_exp	Interchange identification - export.
MKT_TYPE	Market type ('D' = day-ahead and 'H' = hour-ahead).
engy_type_imp	Energy type ('FIRM' = Firm, 'NFRM' = Non-firm, 'WHEEL' = Wheeling, 'DYN' = Dynamic).
engy_type_exp	Energy type ('FIRM' = Firm, 'NFRM' = Non-firm, 'WHEEL' = Wheeling, 'DYN' = Dynamic).
EXT_CNTRL_ID	External control identification.
CONTRACT_TYPE	Contract type.
SCHED_ID	Miscellaneous information
branch_grp_imp	Branch group of import schedule.
branch_grp_exp	Branch group of export schedule.
cngs_prc_imp	Congestion price on branch group of import schedule.
cngs_prc_exp	Congestion price on branch group of export schedule.
hrly_mw_imp	Initial preferred schedule - import.
adj_mw_imp	Interim schedule after first run of congestion management - import.
fin_mw_imp	Final schedule after last run of congestion management - import.
fin_mw_da_imp	If mkt_type is not equal to 'D' then the Final schedule after the second day-ahead run of congestion management - import. Otherwise, blank.
hrly_mw_exp	Initial preferred schedule - export.
adj_mw_exp	Interim schedule after first run of congestion management - export.
fin_mw_exp	Final schedule after last run of congestion management - export.
fin_mw_da_exp	If mkt_type is not equal to 'D' then the Final schedule after the second day-ahead run of congestion management - export. Otherwise, blank.
crn_chain_imp	Contract Reference Number chain, if applicable - import
crn_chain_exp	Contract Reference Number chain, if applicable - export
etc_mw_imp	Existing Transmission Contract capacity reservation - import.
etc_mw_exp	Existing Transmission Contract capacity reservation - export.
etc_mw_da_imp	Existing Transmission Contract capacity reservation during the DA market - import.
etc_mw_da_exp	Existing Transmission Contract capacity reservation during the DA market - export.
from_place_imp	Region imported from.
to_place_imp	Zone imported to.

Circular Schedules / Death Star

Field Name	Description
from_place_exp	Zone exported from.
to_place_exp	Region exported to.
pivot_region	Comon region / zone.
final_flow_mw_tp	Not used.
final_flow_mw_bg	Not used.
mw1_imp	Adjustment capacity from bid segment #1 - import.
mw2_imp	Adjustment capacity from bid segment #2 - import.
mw3_imp	Adjustment capacity from bid segment #3 - import.
mw4_imp	Adjustment capacity from bid segment #4 - import.
mw5_imp	Adjustment capacity from bid segment #5 - import.
mw6_imp	Adjustment capacity from bid segment #6 - import.
mw7_imp	Adjustment capacity from bid segment #7 - import.
mw8_imp	Adjustment capacity from bid segment #8 - import.
mw9_imp	Adjustment capacity from bid segment #9 - import.
mw10_imp	Adjustment capacity from bid segment #10 - import.
mw11_imp	Adjustment capacity from bid segment #11 - import.
pr1_imp	Bid price for adjustment bid segment #1 - import.
pr2_imp	Bid price for adjustment bid segment #2 - import.
pr3_imp	Bid price for adjustment bid segment #3 - import.
pr4_imp	Bid price for adjustment bid segment #4 - import.
pr5_imp	Bid price for adjustment bid segment #5 - import.
pr6_imp	Bid price for adjustment bid segment #6 - import.
pr7_imp	Bid price for adjustment bid segment #7 - import.
pr8_imp	Bid price for adjustment bid segment #8 - import.
pr9_imp	Bid price for adjustment bid segment #9 - import.
pr10_imp	Bid price for adjustment bid segment #10 - import.
pr11_imp	Bid price for adjustment bid segment #11 - import.
mw1_exp	Adjustment capacity from bid segment #1 - export.
mw2_exp	Adjustment capacity from bid segment #2 - export.
mw3_exp	Adjustment capacity from bid segment #3 - export.
mw4_exp	Adjustment capacity from bid segment #4 - export.
mw5_exp	Adjustment capacity from bid segment #5 - export.
mw6_exp	Adjustment capacity from bid segment #6 - export.
mw7_exp	Adjustment capacity from bid segment #7 - export.
mw8_exp	Adjustment capacity from bid segment #8 - export.

Circular Schedules / Death Star

<u>Field Name</u>	<u>Description</u>
mw9_exp	Adjustment capacity from bid segment #9 - export.
mw10_exp	Adjustment capacity from bid segment #10 - export.
mw11_exp	Adjustment capacity from bid segment #11 - export.
pr1_exp	Bid price for adjustment bid segment #1 - export.
pr2_exp	Bid price for adjustment bid segment #2 - export.
pr3_exp	Bid price for adjustment bid segment #3 - export.
pr4_exp	Bid price for adjustment bid segment #4 - export.
pr5_exp	Bid price for adjustment bid segment #5 - export.
pr6_exp	Bid price for adjustment bid segment #6 - export.
pr7_exp	Bid price for adjustment bid segment #7 - export.
pr8_exp	Bid price for adjustment bid segment #8 - export.
pr9_exp	Bid price for adjustment bid segment #9 - export.
pr10_exp	Bid price for adjustment bid segment #10 - export.
pr11_exp	Bid price for adjustment bid segment #11 - export.
P15_PRC	Congestion price on Path 15.
P15_DIR	Direction of congestion on Path 15.
P26_PRC	Congestion price on Path 26.
P26_DIR	Direction of congestion on Path 26.
final_flow_mw_bg_imp	Final schedule on the entire branch group of the import schedule.
final_flow_mw_bg_exp	Final schedule on the entire branch group of the export schedule.
game	Scheduled direction of flow (from zone to zone).
TP_Gains_imp	Gains from counterflow revenue at the tie point. Calculated as congestion price at the branch group times the scheduled flow across the tie point (day-ahead market) or change from the day-ahead schedule (hour-ahead market). Positive indicates gain (from counter-flow revenues) and negative indicates cost (from congestion charges). Import direction
TP_Gains_exp	Gains from counterflow revenue at the tie point. Calculated as congestion price at the branch group times the scheduled flow across the tie point (day-ahead market) or change from the day-ahead schedule (hour-ahead market). Positive indicates gain (from counter-flow revenues) and negative indicates cost (from congestion charges). Export direction
P15_Gains	Gains from counterflow revenue on Path 15. Calculated as congestion price on the path times the scheduled flow across the path (day-ahead market) or change from the day-ahead schedule (hour-ahead market). It is assumed that all the capacity in the circulating schedule will cross Path 15. Positive indicates gain (from counter-flow revenues) and negative indicates cost (from congestion charges).

Circular Schedules / Death Star

<u>Field Name</u>	<u>Description</u>
P26_Gains	Gains from counterflow revenue on Path 26. Calculated as congestion price on the path times the scheduled flow across the path (day-ahead market) or change from the day-ahead schedule (hour-ahead market). It is assumed that all the capacity in the circulating schedule will cross Path 26. Positive indicates gain (from counter-flow revenues) and negative indicates cost (from congestion charges).
Total_Gains_All_ETC	Total gains from counterflow revenue = TP_Gains_imp + P15_Gains + P26_Gains + TP_Gains_exp. Assumes that if one or more legs in a transaction utilize ETC capacity, the entire schedule utilized ETC capacity, and consequently zeroes out congestion charges for the entire transaction.
Data_Set	Indicates whether there were duplicate pairings for the import leg of the schedule pair, export leg of the schedule pair, both legs of the schedule pair, or neither leg of the schedule pair.
Keep_Flag	=1 indicates that schedule pair was used in tabulation of summary results. =0 indicates there were duplicate pairings for one or more of the schedules in the pair and another pairing was used in the tabulation of summary results.
NOB_Flag	=1 indicates that one leg of the circular schedule was scheduled on the Nevada-Oregon Border (NOB) DC intertie.

Counterflow Gains

Field Name	Description
OPR_DT	Date
OPR_HR	Hour
SC_ID	Schedule co-ordinator ID
REC_TYPE	Type of scheduling records existing in system used in analysis (D=Day ahead, H=Hour Ahead, R=Real time)
IE_TYPE	Type of schedule Cancelled (I= Import, E=Export)
BRANCH_GRP	Branch group of cancelled schedule
TIE_POINT	Tie point of cancelled schedule
INTERCHG_ID	Interchange ID of cancelled schedule
ENGY_TYPE	Energy Type
DA_CNGS_MGT_FLG	Flag whether schedule is subject to Congestion Management in DA
DA_CNGS_MGT_ADJ	Flag whether schedule was subject by Congestion Management in DA
DA_HRLY_MW	Initial Schedule (Day Ahead Schedule)
DA_ADJ_MW	Amount of schedule adjustment in DA
DA_FIN_MW	Final Schedule (Day Ahead Schedule)
DA_CNGS_PRC	Congestion Price (Day Ahead)
DA_BG_FIN_MW	Final Branch Group MW usage in DA
DA_CFlow	DA counterflow direction
HA_CNGS_MGT_FLG	Flag whether schedule is subject to Congestion Management in HA
HA_CNGS_MGT_ADJ	Flag whether schedule was subject by Congestion Management in HA
HA_HRLY_MW	Initial Schedule (Hour Ahead Schedule)
HA_ADJ_MW	Amount of schedule adjustment in HA
HA_FIN_MW	Final Schedule (Hour Ahead Schedule)
HA_CNGS_PRC	Congestion Price (Hour Ahead)
HA_BG_FIN_MW	Final Branch Group MW usage in HA
HA_CFlow	HA counterflow direction
RT_CNGS_MGT_FLG	Unused
RT_CNGS_MGT_ADJ	Unused
RT_HRLY_MW	Initial Schedule (Real time checkout)
RT_ADJ_MW	Unused
RT_FIN_MW	Final Schedule (Real time checkout)
Zero_Type	Zero Tie type
sc_id2	Modified SC id
MST_AFF_NAME	Name of entity

Counterflow Gains

<u>Field Name</u>	<u>Description</u>
Game_Type	D=0 H>R: DA schedule is zero, with a deduction from HA to real-time; D=H>R: No reduction from DA to HA, with reduction from HA to real-time
Ill_Gotten_Gains	counterflow revenues earned from schedule cut in real time
Game_Category	Zero TP: Scheduling on an open intertie; Main Gain: Reducing a counterflow schedule between the Hour-Ahead and Real-time
opr_yr	year
opr_yr_mo	year and month

Cut Counter-flow Schedules

Counterflow Gains

Field Name	Description
OPR_DT	Date
OPR_HR	Hour
SC_ID	Schedule co-ordinator ID
REC_TYPE	Type of scheduling records existing in system used in analysis (D=Day ahead, H=Hour Ahead, R=Real time)
IE_TYPE	Type of schedule Cancelled (I= Import, E=Export)
BRANCH_GRP	Branch group of cancelled schedule
TIE_POINT	Tie point of cancelled schedule
INTERCHG_ID	Interchange ID of cancelled schedule
ENGY_TYPE	Energy Type
DA_CNCS_MGT_FLG	Flag whether schedule is subject to Congestion Management in DA
DA_CNCS_MGT_ADJ	Flag whether schedule was subject by Congestion Management in DA
DA_HRLY_MW	Initial Schedule (Day Ahead Schedule)
DA_ADJ_MW	Amount of schedule adjustment in DA
DA_FIN_MW	Final Schedule (Day Ahead Schedule)
DA_CNCS_PRC	Congestion Price (Day Ahead)
DA_BG_FIN_MW	Final Branch Group MW usage in DA
DA_CFlow	DA counterflow direction
HA_CNCS_MGT_FLG	Flag whether schedule is subject to Congestion Management in HA
HA_CNCS_MGT_ADJ	Flag whether schedule was subject by Congestion Management in HA
HA_HRLY_MW	Initial Schedule (Hour Ahead Schedule)
HA_ADJ_MW	Amount of schedule adjustment in HA
HA_FIN_MW	Final Schedule (Hour Ahead Schedule)
HA_CNCS_PRC	Congestion Price (Hour Ahead)
HA_BG_FIN_MW	Final Branch Group MW usage in HA
HA_CFlow	HA counterflow direction
RT_CNCS_MGT_FLG	Unused
RT_CNCS_MGT_ADJ	Unused
RT_HRLY_MW	Initial Schedule (Real time checkout)
RT_ADJ_MW	Unused
RT_FIN_MW	Final Schedule (Real time checkout)
sc_id2	Modified SC id
MST_AFF_NAME	Name of entity
Sched_Type	D=0 H>R: DA schedule is zero, with a deduction from HA to real-time; D=H>R: No reduction from DA to HA, with reduction from HA to real-time

Counterflow Gains

<u>Field Name</u>	<u>Description</u>
Gains	counterflow revenues earned from schedule cut in real time
opr_yr	year
opr_yr_mo	year and month
SLIC Comments	Comments (if any) from SLIC log
Curtail Status	1=ISO Cut, 2=SC Cut, 3=unknown
SLIC LOG present?	1=SLIC log found and reviewed
Period	1=pre-refund, 2= refund period
Other explanations	Other explanations
Drop	1=screened from summary results

Megawatt Laundering,
A/k/a "Ricochet"

BC_TP

Field Name

BRANCH_GRP

TIE_POINT

Description

Branch Group of which Tie Point is a part of

Tie Point

CA ISO 4 Gen Set

Field Name	Description
OPR_DT	Operation date.
OPR_HR	Operation hour.
UNIT_ID	Unit identification.
SC_ID	Scheduling coordinator identification.
DA_MW	Final schedule after the day-ahead congestion markets are run.
HA_MW	Final schedule after the hour-ahead congestion markets are run.
D_RU_B	Day-ahead Regulation Up capacity bid.
D_RU_P	Price of day-ahead Regulation Up capacity bid.
D_RU_F	Day-ahead Regulation Up capacity procured.
D_RD_B	Day-ahead Regulation Down capacity bid.
D_RD_P	Price of day-ahead Regulation Down capacity bid.
D_RD_F	Day-ahead Regulation Down capacity procured.
D_SP_B	Day-ahead Spinning Reserve capacity bid.
D_SP_P	Price of day-ahead Spinning Reserve capacity bid.
D_SP_F	Day-ahead Spinning Reserve capacity procured.
D_NS_B	Day-ahead Non-spinning Reserve capacity bid.
D_NS_P	Price of day-ahead Non-spinning Reserve capacity bid.
D_NS_F	Day-ahead Non-spinning Reserve capacity procured.
D_RP_B	Day-ahead Replacement Reserve capacity bid.
D_RP_P	Price of day-ahead Replacement Reserve capacity bid.
D_RP_F	Day-ahead Replacement Reserve capacity procured.
H_RU_B	Hour-ahead Regulation Up capacity bid.
H_RU_P	Price of Hour-ahead Regulation Up capacity bid.
H_RU_F	Hour-ahead Regulation Up capacity procured.
H_RD_B	Hour-ahead Regulation Down capacity bid.
H_RD_P	Price of Hour-ahead Regulation Down capacity bid.
H_RD_F	Hour-ahead Regulation Down capacity procured.
H_SP_B	Hour-ahead Spinning Reserve capacity bid.
H_SP_P	Price of Hour-ahead Spinning Reserve capacity bid.
H_SP_F	Hour-ahead Spinning Reserve capacity procured.
H_NS_B	Hour-ahead Non-spinning Reserve capacity bid.
H_NS_P	Price of Hour-ahead Non-spinning Reserve capacity bid.
H_NS_F	Hour-ahead Non-spinning Reserve capacity procured.
H_RP_B	Hour-ahead Replacement Reserve capacity bid.
H_RP_P	Price of Hour-ahead Replacement Reserve capacity bid.

GA - ISO 1 Gen Set

<u>Field Name</u>	<u>Description</u>
H_RP_F	Hour-ahead Replacement Reserve capacity procured.
SCH_CHG	Approximation of real-time schedule change for RMR units.
SE_INC_B	Capacity bid as incremental Supplemental Energy.
SE_DEC_B	Capacity bid as decremental Supplemental Energy.
BP_SP	Energy dispatched from Spinning Reserve capacity procured.
BP_NS	Energy dispatched from Non-spinning Reserve capacity procured.
BP_RP	Energy dispatched from Replacement Reserve capacity procured.
BP_SE	Energy dispatched from Supplemental Energy bid.
M_GEN	Gross metered generation.

Field Name	Description
OPR_DT	Operation date.
OPR_HR	Operation hour.
SC_ID	Scheduling coordinator identification.
TIE_POINT	Tie point.
INTERCHG_ID	Interchange identification.
I_DA_MW	Final import schedule after the day-ahead congestion management is run.
E_DA_MW	Final export schedule after the day-ahead congestion management is run.
I_HA_MW	Final import schedule after the hour-ahead congestion management is run.
E_HA_MW	Final export schedule after the hour-ahead congestion management is run.
I_HAM_MW	Final import schedule after adjustments to the final the hour-ahead import schedule is set.
E_HAM_MW	Final export schedule after adjustments to the final the hour-ahead export schedule is set.
D_SP_B	Day-ahead Spinning Reserve capacity bid.
D_SP_P	Price of day-ahead Spinning Reserve capacity bid.
D_SP_F	Day-ahead Spinning Reserve capacity procured.
D_NS_B	Day-ahead Non-spinning Reserve capacity bid.
D_NS_P	Price of day-ahead Non-spinning Reserve capacity bid.
D_NS_F	Day-ahead Non-spinning Reserve capacity procured.
D_RP_B	Day-ahead Replacement Reserve capacity bid.
D_RP_P	Price of day-ahead Replacement Reserve capacity bid.
D_RP_F	Day-ahead Replacement Reserve capacity procured.
H_SP_B	Hour-ahead Spinning Reserve capacity bid.
H_SP_P	Price of Hour-ahead Spinning Reserve capacity bid.
H_SP_F	Hour-ahead Spinning Reserve capacity procured.
H_NS_B	Hour-ahead Non-spinning Reserve capacity bid.
H_NS_P	Price of Hour-ahead Non-spinning Reserve capacity bid.
H_NS_F	Hour-ahead Non-spinning Reserve capacity procured.
H_RP_B	Hour-ahead Replacement Reserve capacity bid.
H_RP_P	Price of Hour-ahead Replacement Reserve capacity bid.
H_RP_F	Hour-ahead Replacement Reserve capacity procured.
SE_INC_B	Capacity bid as incremental Supplemental Energy.
SE_DEC_B	Capacity bid as decremental Supplemental Energy.
BP_SP	Energy dispatched from Spinning Reserve capacity procured.
BP_NS	Energy dispatched from Non-spinning Reserve capacity procured.
BP_RP	Energy dispatched from Replacement Reserve capacity procured.
BP_SE	Energy dispatched from Supplemental Energy bid.

CAE SC SUPP INTERCHANGE

<u>Field Name</u>	<u>Description</u>
SC_ID	Scheduling coordinator identification.
OPR_DT	Operation date.
OPR_HR	Operation hour.
MKT_TYPE	Market type ('D' = day-ahead and 'H' = hour-ahead).
TRADING_SC	Source Scheduling Coordinator
PNT_OF_INTRC	Point (Zone) of Interchange
CONTRACT_REF	Contract Reference Number
CNGS_MGT_ADJ	'Y' = schedule was adjusted during the congestion management process.
SCH_CLASS	'P' = Preferred Schedule; 'R' = Revised Preferred Schedule 'EN' = Energy; 'NS' = Non-spin; 'SP' = Spin; 'RU'=Regulation Up; 'RD' = Regulation Down; 'ON' =
SCHED_TYPE	Obligation Non-spin
HRLY_MW	Initial preferred schedule.
ADJ_MW	Interim schedule after first run of congestion management.
FIN_MW	Final schedule after last run of congestion management.
CONTRACT_MW	Contract MW for the given contract reference number
REC_STAT	
USER_COMMENTS	Comment field.
REC_NO	Record number.
STLMT_DATE	Settlement date.
STLMT_FLG	Settlement flag.
UPD_DATE	Updated date.
UPD_USER	Updated by user.

CAL ISO SUPP INTER SC TRADES

Field Name	Description
SC_ID	Scheduling coordinator identification.
OPR_DT	Operation date.
OPR_HR	Operation hour.
MKT_TYPE	Market type ('D' = day-ahead and 'H' = hour-ahead).
TRADING_SC	Source Scheduling Coordinator
PNT_OF_INTRC	Point (Zone) of Interchange
SCHED_TYPE	'EN' = Energy; 'NS' = Non-spin; 'SP' = Spin; 'RU'=Regulation Up; 'RD' = Regulation Down
TYPE_OF_INTRC	'F'=Fixed trade; 'G'=Variable trade - Generation; 'L'=Variable trade - Load
DIRECTION	'S'=Send; 'R'=Receive
SCH_CLASS	'P' = Preferred Schedule; 'R' = Revised Preferred Schedule
CONTRACT_REF	Contract Reference Number
CNGS_MGT_ADJ	'Y' = schedule was adjusted during the congestion management process.
CNGS_MGT_FLG	'Y' = congestion management was required in the area of this schedule.
CNGS_ZONE	Zone identification.
HRLY_MW	Initial preferred schedule.
ADJ_MW	Interim schedule after first run of congestion management.
ADJ_NET_MW	
FIN_MW	Final schedule after last run of congestion management.
FIN_NET_MW	
CONTRACT_MW	Contract MW for the given contract reference number
TRANSFER_MW	Hourly preferred transfer MW value specified for the returned resource (variable trades) that include either a UNIT_ID or a LOAD_ID
TRANSFER_MW_MAX	The maximum hourly transfer MW value needed for variable trades that include either a UNIT_ID or a LOAD_ID
NO_OF_SEG	Number of bid segments submitted.
NO_OF_RET_PRY_SEG	
MW1	Adjustment capacity from bid segment #1.
MW2	Adjustment capacity from bid segment #2.
MW3	Adjustment capacity from bid segment #3.
MW4	Adjustment capacity from bid segment #4.
MW5	Adjustment capacity from bid segment #5.
MW6	Adjustment capacity from bid segment #6.
MW7	Adjustment capacity from bid segment #7.
MW8	Adjustment capacity from bid segment #8.
MW9	Adjustment capacity from bid segment #9.

GALISO SUPP INTER SC TRADES

<u>Field Name</u>	<u>Description</u>
MW10	Adjustment capacity from bid segment #10.
MW11	Adjustment capacity from bid segment #11.
PR1	Bid price for adjustment bid segment #1.
PR2	Bid price for adjustment bid segment #2.
PR3	Bid price for adjustment bid segment #3.
PR4	Bid price for adjustment bid segment #4.
PR5	Bid price for adjustment bid segment #5.
PR6	Bid price for adjustment bid segment #6.
PR7	Bid price for adjustment bid segment #7.
PR8	Bid price for adjustment bid segment #8.
PR9	Bid price for adjustment bid segment #9.
PR10	Bid price for adjustment bid segment #10.
PR11	Bid price for adjustment bid segment #11.
RET_MW1	
RET_MW2	
RET_MW3	
RET_MW4	
RET_MW5	
RET_MW6	
RET_MW7	
RET_MW8	
RET_MW9	
RET_MW10	
RET_PR1	
RET_PR2	
RET_PR3	
RET_PR4	
RET_PR5	
RET_PR6	
RET_PR7	
RET_PR8	
RET_PR9	
RET_PR10	
UPD_DATE	Updated date.
UPD_USER	Updated by user.

CAL ISO SUPP INTER SC TRADES

<u>Field Name</u>	<u>Description</u>
STLMT_DATE	Settlement date.
STLMT_FLG	Settlement flag.
REC_NO	Record number.
USER_COMMENTS	Comment field.
REC_STAT	

GEN_UNIT

Field Name	Description
UNIT_ID	Unique Resource ID
MST_AFF	Master Affiliate ID of the Generation unit
MST_AFF_NAME	Master Affiliate of the Generation unit
OWNER	Owner
ZONE_ID	Zone within which the generation unit is located
UTYPE	Generation Type: HY= Hydro, TH=Thermal, GEO=Geothermal, OTHER=Other type
GROUP_ID	
PRIOR_TYPE	Indicates whether output is classified as Reliability Must-Run, Regulatory Must-Run, or Must-Take
UDC	Associated Utility Distribution Co
PSEUDO_UNIT	Field indicating whether a generation resource is a "pseudo generation unit" used for scheduling power and self-provided ancillary services for governmental entities with existing interconnection agreements and contracts with IOUs
P_MAX	Dependable Generation Capacity of a Generation Resource. Pseudo Units have a value of 999 assigned to Pmax; filter them out.
MAX_MW	Nameplace capacity
MIN_MW	Minimum Generating Capacity
MIN_AGC	AGC Capability
VOC	Variable Operating and Maintenance Cost
F_O_R	Forced Outage Rate
NOX	Level of NOx emissions
ZONE_DT1	Starting Date
ZONE_DT2	Ending Date
UNIT_CATEGORY	Major Unit: PGA generating facilities which primarily provide electricity; Muni Unit: generation owned by federal, state and municipal agencies; QF: PURPA "qualifying facilities", including industrial cogen, small hydro, and renewable generation
MW1	Top of Segment 1 of Heat Rate Curve
MW2	Top of Segment 2 of Heat Rate Curve
MW3	Top of Segment 3 of Heat Rate Curve
MW4	Top of Segment 4 of Heat Rate Curve
MW5	Top of Segment 5 of Heat Rate Curve
MW6	Top of Segment 6 of Heat Rate Curve
MW7	Top of Segment 7 of Heat Rate Curve
MW8	Top of Segment 8 of Heat Rate Curve
MW9	Top of Segment 9 of Heat Rate Curve

GEN UNIT

<u>Field Name</u>	<u>Description</u>
MW10	Top of Segment 10 of Heat Rate Curve
MW11	Top of Segment 11 of Heat Rate Curve
HR1	Heat Rate of Segment 1 of Heat Rate Curve
HR2	Heat Rate of Segment 2 of Heat Rate Curve
HR3	Heat Rate of Segment 3 of Heat Rate Curve
HR4	Heat Rate of Segment 4 of Heat Rate Curve
HR5	Heat Rate of Segment 5 of Heat Rate Curve
HR6	Heat Rate of Segment 6 of Heat Rate Curve
HR7	Heat Rate of Segment 7 of Heat Rate Curve
HR8	Heat Rate of Segment 8 of Heat Rate Curve
HR9	Heat Rate of Segment 9 of Heat Rate Curve
HR10	Heat Rate of Segment 10 of Heat Rate Curve
HR11	Heat Rate of Segment 11 of Heat Rate Curve
MONO_INC_HR1	Heat Rate of Segment 1 of Monotonically Increasing HR Curve
MONO_INC_HR2	Heat Rate of Segment 2 of Monotonically Increasing HR Curve
MONO_INC_HR3	Heat Rate of Segment 3 of Monotonically Increasing HR Curve
MONO_INC_HR4	Heat Rate of Segment 4 of Monotonically Increasing HR Curve
MONO_INC_HR5	Heat Rate of Segment 5 of Monotonically Increasing HR Curve
MONO_INC_HR6	Heat Rate of Segment 6 of Monotonically Increasing HR Curve
MONO_INC_HR7	Heat Rate of Segment 7 of Monotonically Increasing HR Curve
MONO_INC_HR8	Heat Rate of Segment 8 of Monotonically Increasing HR Curve
MONO_INC_HR9	Heat Rate of Segment 9 of Monotonically Increasing HR Curve
MONO_INC_HR10	Heat Rate of Segment 10 of Monotonically Increasing HR Curve
MONO_INC_HR11	Heat Rate of Segment 11 of Monotonically Increasing HR Curve

IMP UNIT

<u>Field Name</u>	<u>Description</u>
DIM_TIE_POINT	Counter
TIE_POINT	Tie Point
BRANCH_GRP	Branch Group
ZONE_ID	Internal ISO congestion zone branch group injects into
FROM_ZONE	External Congestion zone branch group connects to
FROM_REGION	External region branch group connects to
ZONE_DT1	Start Date
ZONE_DT2	End Date

ISO 9001

<u>Field Name</u>	<u>Description</u>
OPR_DT	Operation date.
OPR_HR	Operation hour.
TIE_POINT	Tie point.
INTERCHG_ID	Interchange identification.
UNIT_ID	Unit identification.
SC_ID	Scheduling coordinator identification.
MST_AFF	Master business affiliate identification.
PRICE	Price for OOM / OOS transaction.
MWH	Energy from OOM / OOS transaction.
COST	Cost (PRICE * MWH). Note that this value can be misleading for circulation or exchanges.
ZONE	Zone identification.
SYSTEM	System of source energy (internal or external to the ISO control area)
REASON	Reason for purchasing out-of-market or out-of-sequence.
MARKET	OOM / OOS code (MAR, SEQ,)
MISC_INFO	Comment field.
RT_PRICE	Real-time hourly ex-post MCP.
INSTR_TYPE	OSSE: Out of Sequence Imbalance Energy Supplemental; OSSP: Out of Sequence Imbalance Energy Spin; OSNS: Out of Sequence Imbalance Energy Non-Spin; OSRR: Out of Sequence Imbalance Energy Replacement Reserve; OSRCNG: Out of Sequence Inter-Zonal Congestion;
REASON_FLAG	Indicator if a record was corrected
REASON_CORRECT	Comment field for correction
ION_EXPLANATION	
FROM_TIME	Start time for energy from OOM / OOS transaction.
TO_TIME	End time for energy from OOM / OOS transaction.
PATH	
ZONE_ID	Congestion Zone

ISO PRICE CAP

<u>Field Name</u>	<u>Description</u>
OPR_DT	Operation date.
OPR_HR	Operation hour.
ISO_PRICE_CAP	ISO Price Cap

MS BC TO REGION

<u>Field Name</u>	<u>Description</u>
BRANCH_GRP	Branch Group
REGION	External region branch group connects to

PX CONST PRICE

<u>Field Name</u>	<u>Description</u>
OPR_DT	Operation date.
OPR_HR	Operation hour.
ZONE_ID	Congestion Zone
PRC_PX_C	Constrained PX Clearing Price

BY MST_AFF

<u>Field Name</u>	<u>Description</u>
PARTICIPANT	Participant
MST_AFF2	Master Affiliate Identification
Participant_Long_Name	Name of Participant

PX_TRANS

<u>Field Name</u>	<u>Description</u>
OPR_DT	Operation date.
OPR_HR	Operation hour.
MKT_TYPE	Market type ('D' = day-ahead and 'H' = hour-ahead).
PARTICIPANT	Participant
DEMAND_SUPPLY	"D"=Demand, "S"=Supply
RESOURCE_NAME	Resource Name
RESOURCE_TYPE	Resource Type: Import, Export
SCHED_MW	Scheduled MW
zone_id	Congestion Zone
GLOBAL_RESOURCE_ID	Resource ID, e.g. interchange ID
E_ID	
PX_MCP	PX Market Clearing Price
MW	MW
month	Month

SC_ID MST_AFF

<u>Field Name</u>	<u>Description</u>
SC_ID	Scheduling coordinator identification.
MST_AFF	Master Affiliate identification
MST_AFF_NAME	Master Affiliate name

BEEP STACK ME

<u>Field Name</u>	<u>Description</u>
OPR_DT	Operation date.
OPR_HR	Operation hour.
TIE_POINT	Tie point.
INTERCHG_ID	Interchange identification.
SC_ID	Scheduling coordinator identification.
ENERGY_TYPE	Energy type (supp, spin, non-spin, replacement).
BID_MW	Capacity bid into BEEP Stack.
BID_PRICE	Bid price.
OUT_MW	Dispatched capacity.

CERS COM DATA

<u>Field Name</u>	<u>Description</u>
OPR_DT	Operation date.
OPR_HR	Operation hour.
TIE_POINT	Tie point.
INTERCHG_ID	Interchange identification.
UNIT_ID	Generating unit identification.
SC_ID	Schedule coordinator identification.
mst_aff	Master business affiliate identification.
cers_bought_from	CERS trading partner.
price	Transaction price.
mwh	Transaction energy.
cost	Transaction cost.
zone	Congestion zone identification.
system	System (internal / external).
reason	Reason for transaction.
market	MAR => OOM.
misc_info	

PX_UNC_PRC

<u>Field Name</u>	<u>Description</u>
OPR_DT	Operation date.
OPR_HR	Operation hour.
PX_UNC_PRC	PX unconstrained DA energy price.

ISO_PRC

<u>Field Name</u>	<u>Description</u>
OPR_DT	Operation date.
OPR_HR	Operation hour.
OPR_MI	Operation minute.
ZONE_ID	Congestion zone identification.
ISO_INC_PRC	ISO real-time incremental price.
ISO_DEC_PRC	ISO real-time decremental price.

ISO_PPC_2

<u>Field Name</u>	<u>Description</u>
OPR_DT	Operation date.
OPR_HR	Operation hour.
PROD_TYPE	Indicates incremental or decremental energy.
ZONE_ID	Congestion zone identification.
PRICE	ISO real-time price (simulated hourly weighted average incremental or decremental price).

MW Laundering / Beep

<u>Field Name</u>	<u>Description</u>
OPR_DT	Operation date
OPR_HR	Operation hour
mst_aff	Master affiliate
PX_Imp_MW	Import MW directly to PX (DA & HA)
PX_Imp_Cost	Cost of import MW directly to PX (DA & HA)
PX_Exp_MW	Export MW directly from PX (DA & HA)
PX_Exp_Cost	Cost of export MW directly from PX (DA & HA)
DA_FROM_PX	DA MW purchased from PX (in control area)
DA_TO_PX	DA MW sold to PX (in control area)
DA_FROM_OTHER	DA MW inter-sc trade from other SC (in control area)
DA_TO_OTHER	DA MW inter_sc trade to other SC (in control area)
HA_FROM_PX	HA MW purchased from PX (in control area)
HA_TO_PX	HA MW sold to PX (in control area)
HA_FROM_OTHER	HA MW inter-sc trade from other SC (in control area)
HA_TO_OTHER	HA MW inter_sc trade to other SC (in control area)
HA_GEN_MW	Final HA schedule for generation in control area
AS_GEN_ENGY_BID	Energy bid by units in control area through A/S capacity awarded
SUP_GEN_ENGY_BID	Supplemental energy bid by units in control area
AS_GEN_ENGY_DISP	Energy dispatched through energy bids by units in control area from A/S capacity awarded
SE_GEN_ENGY_DISP	Supplemental energy dispatched through supplemental energy bid by units in control area
I_HA_MW	Final HA schedule for imports from outside control area
E_HA_MW	Final HA schedule for exports from outside control area
AS_IMP_ENGY_BID	Energy bid by resources outside the control area through A/S capacity awarded
SUP_IMP_ENGY_BID	Supplemental energy bid by resources outside the control area
AS_IMP_ENGY_DISP	Energy dispatched through energy bids by resources outside the control area from A/S capacity awarded
SE_IMP_ENGY_DISP	Supplemental energy dispatched through supplemental energy bid by resources outside the control area
BEEP_MW_LE_CAP	Beep MW dispatched at bid price <= price cap (imports only)
BEEP_MW_GT_CAP	Beep MW dispatched at bid price > price cap (imports only)
BEEP_COST_GT_CAP	Cost of Beep MW dispatched at bid price > price cap (imports only)
BEEP_PRC_GT_CAP	Average price of Beep MW dispatched at bid price > price cap (imports only)
oom_iso_gen_mwh	Net OOM purchases by ISO from generators within control area
oom_iso_gen_prc	Average price of net OOM purchases by ISO from generators within control area
oom_iso_imp_mwh	Import OOM purchases by ISO from outside control area

<u>Field Name</u>	<u>Description</u>
oom_iso_imp_prc	Average price of import OOM purchases by ISO from outside control area
oom_iso_imp_gtcap_mwh	Import OOM purchases by ISO from outside control area where OOM price > price cap
oom_iso_imp_gtcap_prc	Average price of import OOM purchases by ISO from outside control area where OOM price > price cap
oom_iso_exp_mwh	Export OOM sales / transactions by ISO from outside control area
oom_iso_exp_prc	Average price of export OOM sales / transactions by ISO from outside control area
oom_cers_gen_mwh	Net OOM purchases by CERS from generators within control area
oom_cers_gen_prc	Average price of net OOM purchases by CERS from generators within control area
oom_cers_imp_mwh	Import OOM purchases by CERS from outside control area
oom_cers_imp_prc	Average price of import OOM purchases by CERS from outside control area
oom_cers_imp_gtcap_mwh	Import OOM purchases by CERS from outside control area where OOM price > price cap
oom_cers_imp_gtcap_prc	Average price of import OOM purchases by CERS from outside control area where OOM price > price cap
oom_cers_exp_mwh	Export OOM sales / transactions by CERS from outside control area
oom_cers_exp_prc	Average price of export OOM sales / transactions by CERS from outside control area
PX_CP	Simple average of PX constrained market clearing price
iso_inc_prc	Simple average of ISO incremental market clearing price
PRICE_CAP	ISO imbalance energy price cap
MIDC_PRC	Spot energy price at Mid-columbia hub
COB_PRC	Spot energy price at California-Oregon Border hub
PV_PRC	Spot energy price at Palo Verde Border hub
AVG_HUB_PRC	Simple average of three regional hub prices

Scheduling on a Zero-rated Path,
A/k/a "Wheel Out"

Counterflow Gains

<u>Field Name</u>	<u>Description</u>
OPR_DT	Date
OPR_HR	Hour
SC_ID	Schedule co-ordinator ID
REC_TYPE	Type of scheduling records existing in system used in analysis (D=Day ahead, H=Hour Ahead, R=Real time)
IE_TYPE	Type of schedule Cancelled (I= Import, E=Export)
BRANCH_GRP	Branch group of cancelled schedule
TIE_POINT	Tie point of cancelled schedule
INTERCHG_ID	Interchange ID of cancelled schedule
ENGY_TYPE	Energy Type
DA_CNGS_MGT_FLG	Flag whether schedule is subject to Congestion Management in DA
DA_CNGS_MGT_ADJ	Flag whether schedule was subject by Congestion Management in DA
DA_HRLY_MW	Initial Schedule (Day Ahead Schedule)
DA_ADJ_MW	Amount of schedule adjustment in DA
DA_FIN_MW	Final Schedule (Day Ahead Schedule)
DA_CNGS_PRC	Congestion Price (Day Ahead)
DA_BG_FIN_MW	Final Branch Group MW usage in DA
DA_CFlow	DA counterflow direction
HA_CNGS_MGT_FLG	Flag whether schedule is subject to Congestion Management in HA
HA_CNGS_MGT_ADJ	Flag whether schedule was subject by Congestion Management in HA
HA_HRLY_MW	Initial Schedule (Hour Ahead Schedule)
HA_ADJ_MW	Amount of schedule adjustment in HA
HA_FIN_MW	Final Schedule (Hour Ahead Schedule)
HA_CNGS_PRC	Congestion Price (Hour Ahead)
HA_BG_FIN_MW	Final Branch Group MW usage in HA
HA_CFlow	HA counterflow direction
RT_CNGS_MGT_FLG	Unused
RT_CNGS_MGT_ADJ	Unused
RT_HRLY_MW	Initial Schedule (Real time checkout)
RT_ADJ_MW	Unused
RT_FIN_MW	Final Schedule (Real time checkout)
Zero_Type	
sc_id2	Modified SC id
MST_AFF_NAME	Name of entity

Counterflow Falls

<u>Field Name</u>	<u>Description</u>
Sched_Type	D=0 H>R: DA schedule is zero, with a deduction from HA to real-time; D=H>R: No reduction from DA to HA, with reduction from HA to real-time
Gains	counterflow revenues earned from schedule cut in real time
opr_yr	year
opr_yr_mo	year and month
SLIC Comments	Comments (if any) from SLIC log
Screened	Screened from summary results if no change in bidding/scheduling detected.

Overscheduling of Load,
A/k/a "Fat Boy"

EG_CZ_ZONE_REGION

<u>Field Name</u>	<u>Description</u>
BRANCH_GRP	Branch Group
ZONE	Internal ISO congestion zone branch group injects into
CZ	External Congestion zone branch group connects to
REGION	External region branch group connects to

RCMP_CZ_ZONE_REGION

Field Name	Description
BRANCH_GRP	Branch Group
ZONE	Internal ISO congestion zone branch group injects into
CZ	External Congestion zone branch group connects to
REGION	External region branch group connects to
TIE_POINT	Tie Point

EXP INFO

<u>Field Name</u>	<u>Description</u>
OPR_DT	Operation date.
OPR_HR	Operation hour.
CNGS_ZONE	Internal Congestion Zone
MW	Acknowledged MW
PRICE	Hourly Ex-Post Energy Price

GENERATION SCH

<u>Field Name</u>	<u>Description</u>
SC_ID	Scheduling coordinator identification.
OPR_DT	Operation date.
OPR_HR	Operation hour.
MKT_TYPE	Market type ('D' = day-ahead and 'H' = hour-ahead).
UNIT_ID	Unit identification.
SCH_CLASS	'P' = Preferred Schedule; 'R' = Revised Preferred Schedule
POST_ADJ_FLG	Unused
RAMP_RATE	Unit Ramp Rate
NO_OF_SEG	Number of bid segments submitted.
CNGS_MGT_FLG	'Y' = congestion management was required in the area of this schedule.
CNGS_MGT_ADJ	'Y' = schedule was adjusted during the congestion management process.
CONTRACT_REF	Contract reference number.
MW1	Adjustment capacity from bid segment #1.
MW2	Adjustment capacity from bid segment #2.
MW3	Adjustment capacity from bid segment #3.
MW4	Adjustment capacity from bid segment #4.
MW5	Adjustment capacity from bid segment #5.
MW6	Adjustment capacity from bid segment #6.
MW7	Adjustment capacity from bid segment #7.
MW8	Adjustment capacity from bid segment #8.
MW9	Adjustment capacity from bid segment #9.
MW10	Adjustment capacity from bid segment #10.
MW11	Adjustment capacity from bid segment #11.
PR1	Bid price for adjustment bid segment #1.
PR2	Bid price for adjustment bid segment #2.
PR3	Bid price for adjustment bid segment #3.
PR4	Bid price for adjustment bid segment #4.
PR5	Bid price for adjustment bid segment #5.
PR6	Bid price for adjustment bid segment #6.
PR7	Bid price for adjustment bid segment #7.
PR8	Bid price for adjustment bid segment #8.
PR9	Bid price for adjustment bid segment #9.
PR10	Bid price for adjustment bid segment #10.
PR11	Bid price for adjustment bid segment #11.
HRLY_MW	Initial preferred schedule.

GENERATION SCH

<u>Field Name</u>	<u>Description</u>
ADJ_MW	Interim schedule after first run of congestion management.
FIN_MW	Final schedule after last run of congestion management.
ADJ_NET_MW	Net Adjusted Scheduled
FIN_NET_MW	Final Net Schedule
HRLY_GROSS_MW	Hourly Gross Schedule
USER_COMMENTS	Comment field.

INTERCHANGE SCH

Field Name	Description
SC_ID	Scheduling coordinator identification.
OPR_DT	Operation date.
OPR_HR	Operation hour.
MKT_TYPE	Market type ('D' = day-ahead and 'H' = hour-ahead).
IE_TYPE	'I' = Import, 'E' = Export.
TIE_POINT	Tie point.
INTERCHG_ID	Interchange identification.
ENGY_TYPE	Energy type ('FIRM' = Firm, 'NFRM' = Non-firm, 'WHEEL' = Wheeling, 'DYN' = Dynamic, 'CSPN' = Spinning Reserve Capacity, 'CNSPN' = Non-spinning Reserve Capacity, 'CRPLC' = Replacement Reserve Capacity).
EXT_CNTRL_ID	External control identification.
CONTRACT_REF	Contract reference number.
CONTRACT_TYPE	Contract type.
PRIOR_TYPE	OT (Unused)
SCH_CLASS	Schedule Class: "P" = Preferred Schedule; "R" = Revised Preferred Schedule
WSCC_TAG	WSCC tag.
SCHED_ID	Miscellaneous information
POST_ADJ_FLG	Unused
LOSS_CMP_FLG	Unused
CNGS_MGT_FLG	'Y' = congestion management was required in the area of this schedule.
CNGS_MGT_ADJ	'Y' = schedule was adjusted during the congestion management process.
HRLY_MW	Initial preferred schedule.
ADJ_MW	Interim schedule after first run of congestion management.
FIN_MW	Final schedule after last run of congestion management.
NO_OF_SEG	Number of bid segments submitted.
REC_STAT	
MW1	Adjustment capacity from bid segment #1.
MW2	Adjustment capacity from bid segment #2.
MW3	Adjustment capacity from bid segment #3.
MW4	Adjustment capacity from bid segment #4.
MW5	Adjustment capacity from bid segment #5.
MW6	Adjustment capacity from bid segment #6.
MW7	Adjustment capacity from bid segment #7.
MW8	Adjustment capacity from bid segment #8.
MW9	Adjustment capacity from bid segment #9.

INTERCHANGE SCH

Field Name	Description
MW10	Adjustment capacity from bid segment #10.
MW11	Adjustment capacity from bid segment #11.
PR1	Bid price for adjustment bid segment #1.
PR2	Bid price for adjustment bid segment #2.
PR3	Bid price for adjustment bid segment #3.
PR4	Bid price for adjustment bid segment #4.
PR5	Bid price for adjustment bid segment #5.
PR6	Bid price for adjustment bid segment #6.
PR7	Bid price for adjustment bid segment #7.
PR8	Bid price for adjustment bid segment #8.
PR9	Bid price for adjustment bid segment #9.
PR10	Bid price for adjustment bid segment #10.
PR11	Bid price for adjustment bid segment #11.
CAP_RES_PRC	For CSPN, CNSPN, CRPLC, the hourly capacity reservation price
RAMP_RATE	Unit Ramp Rate
MIN_TO_SYNC	Minutes to Synchronize following notification
USER_COMMENTS	Comment field.
REC_NO	Unused
STLMT_DATE	Settlement Date
STLMT_FLG	Processed in Settlement System
UPD_DATE	Updated Date
UPD_USER	Update User ID
CONTINGENCY_FLG	For CSPN, CNSPN, contingency flag ('Y' = keep for reserve capacity).

LOAD EXCLUSION ID

Field Name

Description

LOAD_ID

Specific Load IDs excluded from tabulation because of special unit characteristics, e.g. dispatchable/curtailable load resources; in order to properly account for these resources, BEEP dispatches would also need to be factored in. Rather than unnecessarily complicate work, the decision was made to exclude these IDs.

LOAD_ID_ZONE

<u>Field Name</u>	<u>Description</u>
LOAD_ID	Load ID
CNGS_ZONE_RAW	Congestion Zone the unit is located within. * NOTE: for Units in ZP-26, there will be duplicate records in this table, one for ZP-26 and one for SP-15, due to the fact that ZP-26 was carved out of the SP-15 zone on 1 February 2000. In order to use this data, you'll need to extract those duplicates and, if before 1 February 2000, replace ZP-26 with SP-15.

LOAD SCHED

<u>Field Name</u>	<u>Description</u>
SC_ID	Scheduling coordinator identification.
OPR_DT	Operation date.
OPR_HR	Operation hour.
MKT_TYPE	Market type ('D' = day-ahead and 'H' = hour-ahead).
LOAD_ID	Load identification.
SCH_CLASS	'P' = Preferred Schedule; 'R' = Revised Preferred Schedule
BID_FLG	'Y' = Schedule is for bid nomination
CONTRACT_REF	Contract reference number.
CNGS_MGT_FLG	'Y' = congestion management was required in the area of this schedule.
POST_ADJ_FLG	Unused
CNGS_MGT_ADJ	'Y' = schedule was adjusted during the congestion management process.
GRID_CONTR_REF	Unused
GRID_CONTR_MW	Unused
NO_OF_SEG	Number of bid segments submitted.
MW1	Adjustment capacity from bid segment #1.
MW2	Adjustment capacity from bid segment #2.
MW3	Adjustment capacity from bid segment #3.
MW4	Adjustment capacity from bid segment #4.
MW5	Adjustment capacity from bid segment #5.
MW6	Adjustment capacity from bid segment #6.
MW7	Adjustment capacity from bid segment #7.
MW8	Adjustment capacity from bid segment #8.
MW9	Adjustment capacity from bid segment #9.
MW10	Adjustment capacity from bid segment #10.
MW11	Adjustment capacity from bid segment #11.
PR1	Bid price for adjustment bid segment #1.
PR2	Bid price for adjustment bid segment #2.
PR3	Bid price for adjustment bid segment #3.
PR4	Bid price for adjustment bid segment #4.
PR5	Bid price for adjustment bid segment #5.
PR6	Bid price for adjustment bid segment #6.
PR7	Bid price for adjustment bid segment #7.
PR8	Bid price for adjustment bid segment #8.
PR9	Bid price for adjustment bid segment #9.
PR10	Bid price for adjustment bid segment #10.

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<u>Field Name</u>	<u>Description</u>
PR11	Bid price for adjustment bid segment #11.
HRLY_MW	Initial preferred schedule.
ADJ_MW	Interim schedule after first run of congestion management.
FIN_MW	Final schedule after last run of congestion management.
ADJ_NET_MW	Net Adjusted Scheduled
FIN_NET_MW	Final Net Schedule
HRLY_GROSS_MW	Hourly Gross Schedule
USER_COMMENTS	Comment field.

RT EXP MKT INFO

<u>Field Name</u>	<u>Description</u>
OPR_DT	Operation date.
OPR_HR	Operation hour.
RT_INTERVAL	Sub-hour interval
CNGS_ZONE	Internal Congestion Zone
ZN_INC_PRC	Zonal 10-minute Incremental Imbalance Energy Price
ZN_DEC_PRC	Zonal 10-minute Decremental Imbalance Energy Price
INC_MWH	Acknowledged Zonal 10-minute Incremental Imbalance Energy Quantity
DEC_MWH	Acknowledged Zonal 10-minute Decremental Imbalance Energy Quantity

SS 10MIN MEASUREMENTS

<u>Field Name</u>	<u>Description</u>
SC_ID	Scheduling coordinator identification.
TRADE_INT	Trade date.
TRADE_HR	Trade hour
SUBHOUR_INT	Sub hour interval
LCTN_ID	Location identification, e.g. Load identification.
UNALLOC_QTY	Metered Quantity

SS MEASUREMENTS

<u>Field Name</u>	<u>Description</u>
SC_ID	Scheduling coordinator identification.
TRADE_INT	Trade date.
TRADE_HR	Trade hour
LCTN_ID	Location identification, e.g. Load identification.
UNALLOC_QTY	Metered Quantity

TIE_GMM

Field Name

TIE_POINT
OPR_DT
OPR_HR
TIE_GMM

Description

Tie Point
Operation date.
Operation hour.
Calculated Forecasted Generation Meter Multiplier on the intertie

UDC GEN IDS

Field Name

UDC_ID

UNIT_ID

Description

Utility distribution company identification

Unit Identification

UDC_LOAD_IDS

<u>Field Name</u>	<u>Description</u>
UDC_ID	Utility distribution company identification
LOAD_ID	Load Point identification

UNIT_GMM

<u>Field Name</u>	<u>Description</u>
UNIT_ID	Unit Identification
OPR_DT	Operation date.
OPR_HR	Operation hour.
UNIT_GMM	Calculated Forecasted Generation Meter Multiplier for the generation unit

LOAD_SC_SYSTEM

Field Name	Description
OPR_DT	Operation date.
OPR_HR	Operation hour.
SC_ID	Scheduling coordinator identification.
LOAD_SCH_MW_D_P	Sum of Load Schedules in the Day-Ahead Preferred Market
LOAD_SCH_MW_D_R	Sum of Load Schedules in the Day-Ahead Revised Preferred Market
LOAD_SCH_MW_H_P	Sum of Load Schedules in the Hour-Ahead Preferred Market
M_LOAD	Sum of Metered Load
H_M_LOAD_DELTA	LOAD_SCH_MW_H_P - M_LOAD
INC_MWH	Zonal Acknowledged Incremental Energy
DEC_MWH	Zonal Acknowledged Decremental Energy
INC_COST	Total cost of Zonal Acknowledged Incremental Energy
DEC_COST	Total cost of Zonal Acknowledged Decremental Energy
LOSS	Sum of Transmission losses
EST_UNINSTR_STLMT	Estimated Uninstructed energy Settlement Amount, as described in the Methodology document.
MONTH	Month.
YEAR	Year.
OVERSCH_THRSH_LVL	Overscheduling Threshold level, as described in the Methodology document
LOAD_DEV	$H_M_LOAD_DELTA/M_LOAD$; if $M_LOAD = 0$, then $H_M_LOAD_DELTA/0.01$.
OVERSCH_FLG	If $H_M_LOAD_DELTA > 0$, then 1; else 0.
OVERTHRSH_FLG	If $H_M_LOAD_DELTA > OVERSCH_THRSH_LVL$, then 1; else 0.
CASE	If Pre-Refund Period: 1, if Refund Period: 2

Two (2) CD-ROMs
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