

	A	B
1		
2	Appendix C	
3	California ISO	
4	2007 Capital Functionalization	
5		
6	Designated Recipient:	
7	Nature of Data: Functionalization of Proposed 2007 Capital Expenditures	
8	Dated: December 1, 2006	
9	Date of Release: December 8, 2006	
10		
11		
12	Public version of this document will not contain the costs of individual projects due to concerns about confidentiality of commercially sensitive data.	
13		
14		
15	Sheet Index	Description
16		
17	2007 functionalization	Shows the functional assignment of capital expenditures for 2006 to the GMC service categories using the individual functionalizations
18	2007 non MRTU descriptions	Descriptions of non-MRTU capital projects for 2006 and application/system to which the project can be associated
19	2007 non MRTU allocations	Functional assignment of non-MRTU capital project costs to GMC service categories. Assignment based on type of application to which project is associated.
20	2005 MRTU list	Descriptions of MRTU capital projects for 2006 and application/system to which the project can be associated
21	2007 MRTU allocation	Functional assignment of MRTU capital project costs to GMC service categories. Assignment based on type of application to which project is associated.
22	2004 System list	Functional assignment of existing systems to GMC service categories based on an assessment done for the 2004 GMC rate filing. These assignments can also be found in the Tariff.
23		
24		
25		

**California Independent System Operator
Allocation of 2007 Capital Projects**

Functionalization of 2007 Capital Projects to GMC Categories

Public version of this document will not contain the costs of individual projects due to concerns about confidentiality.

	Cost	CRS	ETS	FS	CONG	MU	SMCR	Total
Non MRTU Totals	\$ 7,500,000	\$ 4,068,065	\$ 916,031	\$ 382,479	\$ 308,491	\$ 674,354	\$ 1,150,580	\$ 7,500,000
MRTU Totals	\$ 38,000,000	\$ 2,555,545	\$ -	\$ 8,327,793	\$ 3,309,091	\$ 11,675,593	\$ 12,131,977	\$ 38,000,000
Grand Total	\$ 45,500,000	\$ 6,623,610	\$ 916,031	\$ 8,710,273	\$ 3,617,582	\$ 12,349,947	\$ 13,282,557	\$ 45,500,000
Percent of total		14.56%	2.01%	19.14%	7.95%	27.14%	29.19%	100.00%

Non-MRTU Capital Projects

Project	Cost	Associated with System	CRS	ETS	FS	CONG	MU	SMCR	Total
Computer Direct Purchases - Hardware and Software and Office Equipment		Office Automation - desktop/laptop (OA)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Alhambra Infrastructure Upgrade		Physical Facilities Software Application/Furniture/Leasehold Improvements	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Oracle Ebusiness Suite Enhancements		Oracle Corporate Financials	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2007 Facilities Leasehold Improvements/Furniture Purchase/Realignment Moves		Physical Facilities Software Application/Furniture/Leasehold Improvements	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Implement 2 new Network Application Tools - Voltage Stability & Dynamic Stability - 2 year Forecast		Energy Management System (EMS)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

**California Independent System Operator
Allocation of 2007 Capital Projects**

Functionalization of 2007 Capital Projects to GMC Categories

Upgrade EMS Hardware from True 64 to HP UX and EMS Enhancements		Energy Management System (EMS)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Mandated Market Changes Including SaMC(Various)		Capital Expenditures for Systems not Specified	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Implement Single Outage Management Application - 3 year Project		Outage Scheduler (OS)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Tools to Support MRTU Systems and Processes		MD 02 Capital	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
NERC Required Change to Secure ICCP		Security-ISS (CUDA)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
EMS Mapboard Upgrade		Energy Management System (EMS)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Non MRTU Totals	\$ 7,500,000		\$ 4,068,065	\$ 916,031	\$ 382,479	\$ 308,491	\$ 674,354	\$ 1,150,580	\$ 7,500,000
Total	\$ 7,500,000		\$ 4,068,065	\$ 916,031	\$ 382,479	\$ 308,491	\$ 674,354	\$ 1,150,580	\$ 7,500,000
			54.24%	12.21%	5.10%	4.11%	8.99%	15.34%	100.00%

**California Independent System Operator
Allocation of 2007 Capital Projects**

Functionalization of 2007 Capital Projects to GMC Categories

MRTU Related Capital Projects

Project	Cost	Associated with System	CRS	ETS	FS	CONG	MU	SMCR	Total
Integrated Forward Markets/LMP		Integrated Forward Market (IFM)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Scheduling Infrastructure Business Rules (SIBR)		Scheduling Infrastructure Business Rules (SIBR)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Congestion Revenue Rights - (CRR)		Congestion Revenue Rights (CRR)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Settlements - (SaMC)		Balance of Business Systems (BBS)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Master File - (MFRD)		Masterfile	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Market Monitoring Tools - (DMA)		Dept. of Market Analysis Tools (SAS/MARS)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Market Transaction System - (MTS)		Market Transaction System (MTS)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Legacy Systems		MD 02 Capital	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Integration Systems/ Testing		MD 02 Capital	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Rollout/Training		MD 02 Capital	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Project Management		MD 02 Capital	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contingency		MD 02 Capital	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
General MRTU capital		MD 02 Capital	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
MRTU Totals	\$ 38,000,000		\$ 2,555,545	\$ -	\$ 8,327,793	\$ 3,309,091	\$ 11,675,593	\$ 12,131,977	\$ 38,000,000
			6.73%	0.00%	21.92%	8.71%	30.73%	31.93%	100.00%

Notes:

MRTU totals are an estimate of the remaining spending on MRTU projects in 2007 based on current expenditure rates through 2006. The amount shown will be funded through the 2004 bond issue and bonds to be issued in 2007. Bond-funded capital expenditures affect the revenue requirement through debt service requirements.

**California Independent System Operator
2007 Capital Projects**

Project	Description	Cost
Computer Direct Purchases - Hardware and Software and Office Equipment	<p>This proposed program for FY2007 will to allow the ISO to determine the best financial decision on its acquisitions for new and/or replacement equipment. Currently each acquisition is evaluated to lease or buy based on direction from Finance as the best benefit for the ISO. These funds are required to purchase:</p> <ul style="list-style-type: none"> - Replacement of select group of servers (±70) in excess of 3 years old: - New and replacement desktops and laptops equipment (200) and monitors (300): - General software license purchases: - Purchase of required Office Equipment, I.e. Copiers, printers <p>The proposed funding provides for the following IT hardware acquisition scenarios:</p> <ol style="list-style-type: none"> 1) For non-project hardware and software purchases for all of FY2007 2) To support server/system consolidations, 3) To support expansions and upgrades of existing systems 4) Refresh owned hardware, 3 years or older <p>The proposed funding provides for the following IT software acquisition scenarios:</p> <ul style="list-style-type: none"> - Funding for required Third-Party software applications not covered under individual projects - Procurement of licensing required for expansion for growth (additional licenses) for applications currently used, such <p>Note: Future needs are projected for applications such as: Microsoft, Oracle, Veritas, Vitria, Tibco, TripWire, Talley, and Tivoli.</p>	
Alhambra Infrastructure Upgrade	<p>This is phase 2 of the ISO Critical Infrastructure Upgrade Project. In 2002, the Board approved \$2.5 million for phase 1 of the project which upgraded the infrastructure in Folsom. This project will provide funds for phase 2 to upgrade Alhambra's electrical system. This includes a new redundant generator, UPS module, Automatic Static Transfer Switches, Transient Voltage Surge Suppression, add a redundant back up chiller.</p>	
Oracle Ebusiness Suite Enhancements	<p>To implement new functionality after upgrading to the current release level. This includes Project Mgmt, Procurement, Budgeting, Learning Management, and additional HR modules.</p>	
2007 Facilities Leasehold Improvements/Furniture Purchase/Realignment Moves	<p>Provide for leasehold improvement projects and furniture requirements, as needed, to support ISO staff residing in our Folsom and Alhambra locations. The projects include 1) Ergonomic chair purchases, 2) Workstation enhancements, 3) Filing Cabinets, and 4) misc. installations for small projects, misc. data center electrical installations ,Boiler for 101 and 151 buildings, facility monitoring software. Provide for Tenant Improvement dollars relating to Employee of Choice that may be required in the event we experience a short fall or improvement that the building owners do not deem a "capital improvement" to term. 5] Costs for moves of employees to accommodate realignment structure.</p>	
Implement 2 new Network Application Tools - Voltage Stability & Dynamic Stability - 2 year Forecast	<p>The Voltage Stability & Dynamic Stability Applications are critical tools for reliably operating the grid. This will be a two year project.</p>	
Upgrade EMS Hardware from True 64 to HP UX and EMS Enhancements	<p>The Hardware and Operating System that our EMS system is on is a "retired" platform from HP. They will continue support until 2010 however between EMS Application software development and dwindling support it makes sense to strategically make the change to the new platform (HP UX) much sooner. This will be a large project and will require contract (ABB and HP) and ISO EMS and Infrastructure staff. This is a 2 year project.</p>	
Mandated Market Changes Including SaMC(Various)	<p>Based upon the historical patterns of FERC mandates, this blanket project is utilized for budgeting proposes to cover a reasonable expectation of costs associated with the implementation of required changes. These funds would primarily be used to modify market operations core software as well as the post-processing tools used by Market Quality. These funds would also be available for SaMC changes</p>	
Implement Single Outage Management Application - 3 year Project	<p>*Initiative created by ACN team based upon analysis of Ops application structure; Outage components are separated among multiple applications and this initiative was added to achieve high performance via a single Outage application that can closely integrate with EMS and Market applications. This integrated outage management capability would be part of the EMS and Market applications, not integrated with the EMS and Market applications. This would be a multi-year project.</p>	
Tools to Support MRTU Systems and Processes	<p>These tools are needed for Market Services to support the implementation of MRTU. This item would include transitioning existing tools or creating new tools for MRTU. This may include the transition of the MAPP tool into MRTU. This also includes Actuate report development for MQS deemed out-of-scope for MQS.</p>	
NERC Required Change to Secure ICCP	<p>NERC / WECC and other like entities have dictated that All Balance Entities (Control Areas) implement a secure ICCP infrastructure. Current use of this protocol is not PKI or SSL enabled. Our ABB vendor has provided a solution and is available now.</p>	
EMS Mapboard Upgrade	<p>Our current Maul Mapboard software is out of date and not supported. We are looking for an opportunity in 2006 to bring in projector screen technologies to augment the mapboard outdated technologies.</p>	
		\$ 7,500,000

**California Independent System Operator
2007 Capital Projects**

Project	Associated with System	CRS	ETS	FS	CONG	MU	SMCR	Total
Computer Direct Purchases - Hardware and Software and Office Equipment	Office Automation - desktop/laptop (OA)	44.06%	21.47%	3.51%	3.93%	10.21%	16.81%	100.00%
Alhambra Infrastructure Upgrade	Physical Facilities Software Application/Furniture/Leasehold Improvements	44.06%	21.47%	3.51%	3.93%	10.21%	16.81%	100.00%
Oracle Ebusiness Suite Enhancements	Oracle Corporate Financials	44.06%	21.47%	3.51%	3.93%	10.21%	16.81%	100.00%
2007 Facilities Leasehold Improvements/Furniture Purchase/Realignment Moves	Physical Facilities Software Application/Furniture/Leasehold Improvements	44.06%	21.47%	3.51%	3.93%	10.21%	16.81%	100.00%
Implement 2 new Network Application Tools - Voltage Stability & Dynamic Stability - 2 year Forecast	Energy Management System (EMS)	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Upgrade EMS Hardware from True 64 to HP UX and EMS Enhancements	Energy Management System (EMS)	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Mandated Market Changes Including SaMC(Various)	Capital Expenditures for Systems not Specified	32.20%	7.40%	15.00%	5.50%	10.60%	29.30%	100.00%
Implement Single Outage Management Application - 3 year Project	Outage Scheduler (OS)	50.00%	0.00%	10.00%	20.00%	20.00%	0.00%	100.00%
Tools to Support MRTU Systems and Processes	MD 02 Capital	6.95%	0.00%	13.86%	10.91%	28.38%	39.90%	100.00%
NERC Required Change to Secure ICCP	Security-ISS (CUDA)	23.46%	0.18%	21.78%	2.68%	6.86%	45.04%	100.00%
EMS Mapboard Upgrade	Energy Management System (EMS)	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
Total	\$ 7,500,000							

**California Independent System Operator
2007 MRTU Capital Projects**

Project	Description
Integrated Forward Markets/LMP	IFM: The market system that runs a day-ahead, hour-ahead and in real-time simultaneously commits generators, manages congestion, clears the energy market and procures Ancillary Services (reserve margins), to minimize total bid cost. RTN: The real-time dispatching project that introduces the full network model and constraints into the real-time dispatching tools. FNM: An accurate computerized representation of the electrical system used to recognize congestion by analyzing the day-ahead schedules submitted to the ISO. Collectively these systems derive Locational Marginal Prices in the forward and real-time markets.
Scheduling Infrastructure Business Rules (SIBR)	The SIBR application will validate Scheduling Coordinators' (SC) bids and offers, and process bids and offers after validation for use by the IFM/RTN and other systems.
Congestion Revenue Rights - (CRR)	This project implements a congestion cost hedging tool that gives CRR holders the right to collect day-ahead congestion costs between two nodes in a locational marginal pricing-based system. The intent is to free up more transmission capacity, and still provide a cost hedge to the entities that might otherwise hold that capacity for their own use rather than release it to the marketplace. CRRs (a) are released subject to a simultaneous feasibility test (SFT); (b) are defined from an energy source node to an energy sink node, rather than for a specific transmission path; and (c) may entail an obligation to pay congestion costs when congestion is in the opposite direction of the right.
Settlements - (SaMC)	The Settlements System and Market Clearing system provides an integrated automated solution to manage the ISO settlement, billing, invoice, credit, and market clearing tasks.
Master File - (MFRD)	The Master File is the ISO data bank used to store resource information from each Scheduling Coordinator, Transmission Owner, Generation Owner and Control Area that does business with the ISO. Types of information stored include generator and transmission equipment operating parameters.
Market Monitoring Tools - (DMA)	Project to extract data from various ISO systems for the Department of Market Analysis (DMA) monitoring of market activities including "what if" scenarios.
Market Transaction System - (MTS)	PTR is an application that manages all post-operational market data and is the primary data archive for MRTU systems and the data source for various forms of analysis and reporting.
Legacy Systems	Adaptation of retained operational systems to ensure compatibility with the MRTU design.
Integration Systems/ Testing	System Integration: This project ensures that all the projects under the MRTU umbrella communicate using standard technologies and methodologies and work together as a whole. Enterprise Architecture: Identifies opportunities to improve alignment of ISO technical design with long-term corporate strategies and goals.
Rollout/Training	Rollout: Includes the following sub-projects: a) Knowledge Transfer to ensure that knowledge necessary for ongoing operations is transferred from vendors and retained by the ISO; b) Market Simulation allows Market Participants a period of time to test the new software under different test case scenarios prior to going live; c) LMP Trials will produce trial locational marginal prices for the benefit of interested parties; and d) Cutover is the specific act of connecting the new software/hardware and disconnecting the existing software/hardware. Training: Crosses all projects with the objective to provide sufficient training to assure that pertinent ISO employees and Market Participants understand and are capable of using the new systems.
Project Management	Project Management: The Program Management Office (PMO) is responsible for the overall program coordination and oversight to deliver the solution on time and within budget. The PMO is responsible for quality and completeness reviews and oversight of the issues, risks and change control processes for the program. In addition, the PMO is responsible for communication outside the program and for overall Technical Leadership. Test Management: Responsible for delivering best practices to a coordinated overall testing process. This includes tracking of individual project testing, coordination of various test environments and assuring the proper sequential staging of test scenarios.
Contingency	
General MRTU capital	
Total	

**California Independent System Operator
2007 MRTU Capital Projects**

Project	Cost	Associated with System	CRS	ETS	FS	CONG	MU	SMCR	Total	CRS	ETS	FS	CONG	MU	SMCR	Total
Integrated Forward Markets/LMP	\$ -	Integrated Forward Market (IFM)	10.00%	0.00%	35.00%	0.00%	55.00%	0.00%	100.00%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Scheduling Infrastructure Business Rules (SIBR)	\$ -	Scheduling Infrastructure Business Rules (SIBR)	0.00%	0.00%	93.92%	0.00%	6.06%	0.00%	100.00%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Congestion Revenue Rights - (CRR)	\$ -	Congestion Revenue Rights (CRR)	0.00%	0.00%	0.00%	80.00%	20.00%	0.00%	100.00%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Settlements - (SaMC)	\$ -	Balance of Business Systems (BBS)	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Master File - (MFRD)	\$ -	Masterfile	20.00%	0.00%	20.00%	0.00%	55.00%	5.00%	100.00%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Market Monitoring Tools - (DMA)	\$ -	Dept. of Market Analysis Tools (SAS/MARS)	15.32%	28.33%	0.00%	19.90%	31.38%	7.07%	100.00%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Market Transaction System - (MTS)	\$ -	Market Transaction System (MTS)	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	100.00%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Legacy Systems	\$ -	MD 02 Capital	6.95%	0.00%	13.96%	10.91%	28.38%	39.90%	100.00%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Integration Systems/ Testing	\$ -	MD 02 Capital	6.95%	0.00%	13.96%	10.91%	28.38%	39.90%	100.00%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Rollout/Training	\$ -	MD 02 Capital	6.95%	0.00%	13.96%	10.91%	28.38%	39.90%	100.00%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Project Management	\$ -	MD 02 Capital	6.95%	0.00%	13.96%	10.91%	28.38%	39.90%	100.00%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Contingency	\$ -	MD 02 Capital	6.95%	0.00%	13.96%	10.91%	28.38%	39.90%	100.00%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
General MRTU capital	\$ -	MD 02 Capital	6.95%	0.00%	13.96%	10.91%	28.38%	39.90%	100.00%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ 38,000,000									\$ 2,655,545	\$ -	\$ 6,327,793	\$ 3,309,091	\$ 11,675,593	\$ 12,131,977	\$ 38,000,000

	A	B	C	D	E	F	G	H	I	J
1	California Independent System Operator 2004 GMC Cost Allocation Listing of Systems and Functionalization									
2										
3										
4										
5	System	Description	Method	CRS	ETS	FS	CONG	MU	SMCR	Total
6	ACC Upgrades (Communication between ISO & IOUs)	Original Cost of Startup and Trust to pay for the upgrade of the IOU's Communications systems between the ISO and the IOU. For EMS and Real time information	Direct	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
7	Ancillary Services Management (ASM) Component of SA	Ancillary Service Management is the method of procuring A/S through the market, which are scheduled and provided to the RT desks. There are regular discussions with MPs through CS as to the operation of ASM. Allocation based on system traffic information.	Direct	15.00%	0.00%	40.00%	0.00%	45.00%	0.00%	100.00%
8	Application Development Tools	Various third party software applications used for internal application development and maintenance of ISO systems.	System directs	23.46%	0.18%	21.78%	2.68%	6.86%	45.04%	100.00%
9	Automated Dispatch System (ADS)	System developed for clear indisputable dispatch instructions from the ISO to SC's and /or resources. Will send electronic notification, receive acknowledgement and log the transaction. Allocation determined that it provides Grid ops with advance information on incs and decs needed so can load follow and so 50%; relates to markets and scheduling at 25/20%; requires working with SCs and affects settlements so 5% CS; automatically logs accepted and rejected bids	Direct	50.00%	0.00%	25.00%	0.00%	20.00%	5.00%	100.00%
10	Automated Load Forecast System (ALFS)	Automated Load Forecast System is used for DA load forecasting. It is used by Grid Ops for reserve procurement in the forward market and in getting ready for the needs during the next day. Thus 70% of its costs are assigned to CRS. Since it applies to the forward market it affects MU and, to a lesser degree, scheduling, at 20% and 10% respectively.	Direct	70.00%	0.00%	10.00%	0.00%	20.00%	0.00%	100.00%
11	Automatic Mitigation Procedure (AMP)	A procedure for mitigating market power at both the system and local levels by mitigating the prices bid into the ISO's Energy and Ancillary Services Markets. The AMP limits bid prices to the extent that they (a) vary significantly (beyond specified thresholds) from historic bidding behavior; and (b) significantly increase (beyond specified thresholds) the Market Clearing Price. Part of the SA application.	Direct	85.00%	0.00%	0.00%	0.00%	15.00%	0.00%	100.00%
12	Backup systems (Legato/Quantum)	Hardware and Software to provide ability to Back up ISO systems, providing the ability to recover data for all ISO system in case of a system failure. Backups are done everyday and retained forever, as well as being stored off site. Impacts on all operating systems, allocate based on total costs of operational systems	System directs	23.46%	0.18%	21.78%	2.68%	6.86%	45.04%	100.00%
13	Balance of Business Systems (BBS)	Original name for the Settlements and interfaces to the Market Financial system. Application that generates the daily settlement statements and creates the information for the consolidated invoicing and calculates information for the GMC invoice. 100% SMCR	Direct	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
14	Balancing Energy Ex Post Price (BEEP) Component of SA	Balancing Energy Ex-Post Pricing ranks balancing energy bids and is run by generation dispatchers. It is a RT tool but it processes bids received by MU and affects scheduling and congestion. Allocation evaluation based on system traffic information	Direct	50.00%	0.00%	20.00%	10.00%	20.00%	0.00%	100.00%
15	Bill's Interchange Schedule (BITS)	Bill's Interchange Schedule is a bridging produce that takes the final HA schedule and makes it available for the RT operators to view, helping with RT schedule management. This program allows Real-time Schedulers to track and calculate the dynamic Interchange values between the ISO control area and neighboring control areas. The net Interchange values represent the amount of energy that California may import or export across a specific Interie for a given hour. It also provides the meter values for settlements. Thus 85% of its costs are assigned to CRS, 15% to MU (since it applies to the HA market)..	Direct	85.00%	0.00%	0.00%	0.00%	15.00%	0.00%	100.00%
16	CaseWise (process modeling tool)	Third party software for Business Process Modeling and publishing, also allows for Fact Modeling to help define Business requirements of a business unit. Process modeling is being required for the full company. Considered an Enterprise application.	FTE	44.06%	21.47%	3.51%	3.93%	10.21%	16.81%	100.00%
17	CHASE	C.H.A.S.E. - Change management, Help desk, Asset management, Service Level Agreements, Employee Life Cycle - This a highly customized system using Remedy out of the box applications. Enterprise system to manage listed items. All employees have access.	FTE	44.06%	21.47%	3.51%	3.93%	10.21%	16.81%	100.00%

	A	B	C	D	E	F	G	H	I	J
	California Independent System Operator 2004 GMC Cost Allocation Listing of Systems and Functionalization									
2										
3										
4										
5	System	Description	Method	CRS	ETS	FS	CONG	MU	SMCR	Total
18	Common Information Model (CIM)	Developed for use with the current EMS system. Standard based on XML language. Defines electrical data , electrical network model. Used for communicating data between systems.	Direct	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
19	Compliance (Blaze)	Compliance applications produces automated programs to process Penalties and Ancillary Services adjustment to schedules based on a well defined set of rules. Compliance applications use a rule technology (Blaze) for the execution of business logic. Results are forwarded to settlement where prices are applied.	Dept direct	19.17%	16.27%	9.50%	0.00%	32.83%	22.23%	100.00%
20	Congestion Management (CONG) Component of SA	Congestion Management is a forward market product but the RT desk uses its results. It is basically a congestion management tool, although it processes input from MU and requires explanations to CAISO customers on a regular basis. Its costs are assigned base on system traffic information.	Direct	10.00%	0.00%	0.00%	65.00%	25.00%	0.00%	100.00%
21	Congestion Reform-DSOW	Design phase due to FERC Order, for congestion in the forward & real-time markets, RMR reform, FTR, LARS, New Generator policy. Affects congestion and congestion management in RT by Grid Ops; so 50-50 split.	Direct	50.00%	0.00%	0.00%	50.00%	0.00%	0.00%	100.00%
22	Congestion Revenue Rights (CRR)	A congestion cost hedging tool that gives holders the right to collect day-ahead congestion costs between two nodes in an LMP-based system. In contrast to today's Firm Transmission Rights (FTRs), CRRsa) are released subject to a simultaneous feasibility test (SFT); b) are defined from a source node to a sink node, rather than for a specific transmission path; and c) may entail an obligation to pay congestion costs when congestion is in the opposite direction of the right.	Direct	0.00%	0.00%	0.00%	80.00%	20.00%	0.00%	100.00%
23	DataWarehouse	The Data Warehouse uses a classic architecture composed of Operational Data Stores (ODSs), Data Marts (DMs), an On-Line Analytical Processing (OLAP) repository built on a Multidimensional Database Management System, batch load processes, a Metadata Repository (MDR) that manages the load process, and a set of best-of-breed reporting tools. The Data Warehouse provides the ability to analyze, report, query, and source non-real-time information to end users and second-tier applications with minimal impact to the critical operational systems. Used mainly by Compliance and Department of Market Analysis applications at this time.	Dept direct	24.46%	18.27%	6.40%	8.74%	24.30%	17.82%	100.00%
24	Dept. of Market Analysis Tools (SAS/MARS)	Maintains key market data for ex post analysis. The data allows increased monitoring and analysis of transactions and scheduling, exports/import patterns by individual market participants, and regional energy markets. This data is critical to market analysis and is comprised of primary data from ISO departments as well as unique custom data that is designed, generated, and maintained by DMA staff. DMA uses several reporting tools to complete their work. They are Market Analysis Reporting System (MARS) and Statistical Analysis System (SAS), Essbase Data Mining Tool, and Plexos.	Dept direct	15.32%	26.33%	0.00%	19.90%	31.38%	7.07%	100.00%
25	Dispute Tracking System (Remedy)	Online Settlement Dispute Program for SC to dispute Settlement statement, and for Client Relations to track, manage and record and communicate resolution of these items.	Direct	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
26	Documentum	Enterprise document management system (EDMS). Documentum was selected by the CAISO in 1999 to serve as the corporate EDMS. In addition to the base product, the CAISO uses AutoRender Pro to automate the generation of Adobe Acrobat renditions, DocInput for storing scanned hardcopies, and DocLoader for loading multiple files in a single transaction. These tools will continue to be used as the CAISO's information and record retention policies are implemented.	FTE	44.06%	21.47%	3.51%	3.93%	10.21%	16.81%	100.00%
27	Electronic Tagging (Etag)	Electronic Tagging (E-tag) is the NERC Policy 3 mandated communication protocol for the creation, distribution and approval of interchange transaction requests.	Direct	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
28	Energy Management System (EMS)	Energy Management System (EMS) is a collection of software and Hardware that monitor, evaluate and control the power systems lines, loads and generators within the ISO Control Area.	Direct	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%

	A	B	C	D	E	F	G	H	I	J
	California Independent System Operator 2004 GMC Cost Allocation Listing of Systems and Functionalization									
2										
3										
4										
5	System	Description	Method	CRS	ETS	FS	CONG	MU	SMCR	Total
29	Engineering Analysis Tools	Custom developed tools for ISO Engineering group analysis as required to complete various function at the ISO.	Direct	60.00%	40.00%	0.00%	0.00%	0.00%	0.00%	100.00%
30	Evaluation of Market Separation	Report that quantifies the benefit of Market Separation rule the enforces allocation of transmission capacity. Must modify congestion code, and recalculate congestion changes for 1999. Market separation affects procure of A/S and congestion split 50-50 Cong and MU	Direct	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	100.00%
31	Existing Transmission Contracts Calculator (ETCC)	Existing Transmission Contracts (ETC's) are not subject to congestion management and can be scheduled later than other transmission. Therefore by use of the Existing Transmission Contracts Calculator program the ISO can forecast individual transmission line capacities based on the scheduling, outages and computations of existing transmission contracts (ETC). The ETCC results are utilized for the pre-scheduling of transmission, the determination of a total transmission capacity, the amount of FTR's for Day-Ahead/Hour-Ahead markets, and the establishment of scheduling rights for Real-Time Scheduling. This application has a major effect on the operations of the RT desk, on congestion management, and requires a lot of interaction with individual customers. Its costs are assigned 25% to CRS, 20% to scheduling, 15% to congestion, 20% to MU, and 20% to CS, to reflect the interaction requirements.	Direct	25.00%	0.00%	20.00%	15.00%	20.00%	20.00%	100.00%
32	FERC Study Software	FERC requested Study on ISO Markets	Direct	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	100.00%
33	Firm Transmission Right (FTR) and Secondary Registration System (SRS)	Firm Transmission Rights (FTR) is an Auction system used to manage the sale of Transmission rights for future use or as an Investment. Secondary Registration System (SRS) for FTR is used to track ownership and FTR allocations. Participants register ownership of individual FTR's and MW associated with them. This information is then sent to SI to determine Valid usage of FTR's and Actual Capacity of the Tie lines/Branch Groups. Both systems are involved with firm transmission rights and, as such, affect mostly congestion, 60%, however this information is used in SI to determine Valid usage during scheduling 15% assigned, 15%to MU, and interface to Settlements allocate 10% CS.	Direct	0.00%	0.00%	15.00%	60.00%	15.00%	10.00%	100.00%
34	Global Resource Reliability Management Application (GRRMA)	Global Reliability Resource Management Application is the ISO's Reliability Must Run (RMR) scheduling tool. It allows the user to schedule Day Ahead, Hour Ahead, and Real Time local reliability energy instructions. Additionally, the dispatcher can call on a contracted RMR unit to provide Ancillary Services in the event that market has not provided the necessary percentage required. Application used to address RMR operations, which are control area operations. It does not do dispatch calculations or unit commitment but provides information on RMR. GO and MO have estimated that 75% of GRRMA's costs should be assigned to CRS, 15% to ETS (because of the scalability of the data file to the number of RMR units, 10% to MU because it affects the market, and 0% to SMCR there are regular interactions with SCs and generators on RMR activity but no direct interface to Settlements.	Direct	75.00%	15.00%	0.00%	0.00%	10.00%	0.00%	100.00%
35	Grid Operations Training Simulator (GOTS)	Grid Operations Training Simulator is used for training RT operators. Its costs are assigned to CRS and E&TS on a 56/44 basis, the current allocation of the Operations Training group.	Direct	56.00%	44.00%	0.00%	0.00%	0.00%	0.00%	100.00%
36	Hour-Ahead Data AnalysisTool, Day-Ahead Data AnalysisTool,	Developed Tool for Day/Hour-ahead desk to make informed decision on A/S purchases in a timely manner. To eliminate manual work around. Tool also aids in the data entry to SA, to help eliminate errors. ---	Direct	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%
37	Human Resources	Human Resources Software applications the tracks employees and benefits and has a payroll module, for our in-house payroll system.	FTE	44.06%	21.47%	3.51%	3.93%	10.21%	16.81%	100.00%
38	IBM Contract	Service Contract to supply people for desk side and set-up support for all ISO PC's, Help desk support, Operational system monitoring.Level one support for Connected Entities (CE) for AT&T connections, and LAN monitoring.	Dept direct	37.26%	14.44%	9.54%	3.52%	9.10%	26.13%	100.00%

	A	B	C	D	E	F	G	H	I	J
	California Independent System Operator 2004 GMC Cost Allocation Listing of Systems and Functionalization									
2										
3										
4										
5	System	Description	Method	CRS	ETS	FS	CONG	MU	SMCR	Total
39	Integrated Forward Market (IFM)	The ISO's Day-Ahead and Hour-Ahead Market that simultaneously performs resource commitment, congestion management, energy market clearing and A/S procurement to minimize total bid cost. This new MD02 system, for the new forward market we will provide RUC, Day Ahead Schedules & validation. RUC, CRS 10%, DA schedules & Validation 35%, Forward Market 55%	Direct	10.00%	0.00%	35.00%	0.00%	55.00%	0.00%	100.00%
40	Internal Development	Cost for ISO employees that work on Capital Projects during the year. GAAP required reclassification.	System directs	23.46%	0.18%	21.78%	2.68%	6.86%	45.04%	100.00%
41	Interzonal Congestion Management reform - Real Time	FERC request, report to quantify the Intra / Inter-Zonal cost across zones. Also RMR costs in real time and forward markets & how cost relates to zonal definition. Affects congestion and congestion management in RT by Grid Ops, so 50/50 split	Direct	50.00%	0.00%	0.00%	50.00%	0.00%	0.00%	100.00%
42	Land and Building Costs	This is the cost of purchasing land and preliminary design cost for the property located on Iron Point Road.	FTE	44.06%	21.47%	3.51%	3.93%	10.21%	16.81%	100.00%
43	Local Area Network (LAN)	Local Area Network is the physical communications cabling and network equipment that carry digital data communications between ISO user computers and Enterprise Servers and out to the Internet. Previously managed by MCI, now being done internally.	FTE	44.06%	21.47%	3.51%	3.93%	10.21%	16.81%	100.00%
44	Locational Marginal Pricing (LMPM)	The market price for energy at a specific location on the transmission grid ("node") that represents the cost of serving one additional MWh of load at that node. The nodal LMP includes the cost of system energy, congestion and transmission losses. Same as "Nodal Price."	Direct	10.00%	0.00%	35.00%	0.00%	55.00%	0.00%	100.00%
45	Market Transaction System (MTS)	New MD02 system, MTS is an application that manages all post-operational market data prior to being settled.	Direct	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	100.00%
46	Masterfile	MD02 system. An ISO data bank used to store information on each Scheduling Coordinator, Transmission Owner, Generation Owner and Control Area that does business with the ISO. Also, the specific file within that database associated with a particular entity.	Direct	20.00%	0.00%	20.00%	0.00%	55.00%	5.00%	100.00%
47	MD 02 Capital	Represents the rolled up allocations from the new applications that are being created for MD02. Actual funding dollars can not be given out at this time as these items have not been contracted.	Direct	6.95%	0.00%	13.86%	10.91%	28.38%	39.90%	100.00%
48	Meter Data Acquisition System (MDAS)	MDAS is the collective name for all the Original metering systems MV-90 and MV-STAR. MV-90 is a licensed proprietary system from ITRON-UTS that allows for the collection, validation, editing, storage and transfer of meter data from a wide range of meters and recording devices that the ISO reads. This system gathers non-SC provided meter data, packages it into Settlement Quality Meter Data (SQMD) and sends the data to OMAR. MV-STAR functions have been replaced by the OMAR application.	Direct	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
49	Miscellaneous (2004 related capital)	Represents the amount determined to cover maintenance costs for software and hardware for items approved during 2004 Capital period.	System directs	23.46%	0.18%	21.78%	2.68%	6.86%	45.04%	100.00%

	A	B	C	D	E	F	G	H	I	J
	California Independent System Operator 2004 GMC Cost Allocation Listing of Systems and Functionalization									
2										
3										
4										
5	System	Description	Method	CRS	ETS	FS	CONG	MU	SMCR	Total
50	Monitoring (Tivoli)	Monitoring software system, that is used to monitor and report the health of all applications at the ISO. Use system direct allocation.	System directs	23.46%	0.18%	21.78%	2.68%	6.86%	45.04%	100.00%
51	New Resource Interconnection (NRI)	The NRI application was developed to allow for tracking of Generation, QF conversion, and Transmission interconnection projects from original initiation to completion or termination of ISO required activities. This application also enables the ISO to monitor and track Generator Interconnection application activities of the Developer and Participating Transmission Owners as required by FERC Order implementing Tariff Amendment No. 39.	Direct	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
52	New System Equipment (replacement of owned equipment)	Capital purchase to replace already owned equipment. This is for non desktop equipment, so allocated on system direct, costs.	System directs	23.46%	0.18%	21.78%	2.68%	6.86%	45.04%	100.00%
53	NT/web servers	Servers the are running the applications that allow the ISO to communicate with the Internet.	FTE	44.06%	21.47%	3.51%	3.93%	10.21%	16.81%	100.00%
54	NT-servers	Refers to Servers that are using the Network Technology (NT) platform and using Windows 2000 operating system. These servers run third party applications for Email, Microsoft Office, and other company wide applications, non operational applications.	FTE	44.06%	21.47%	3.51%	3.93%	10.21%	16.81%	100.00%
55	Oracle Enterprise Manager (OEM)	Utility used by our Data Base Administrator (DBA) to monitor and manage all the ISO Oracle Databases	Direct	26.67%	0.19%	17.54%	5.43%	9.03%	41.14%	100.00%
56	Office Automation - desktop/laptop (OA)	Non operational applications, and equipment for all desktop systems. Includes Outlook, Microsoft Office, etc. Hardware and Software Maintenance for these systems.	FTE	44.06%	21.47%	3.51%	3.93%	10.21%	16.81%	100.00%
57	Office equipment (scanner, printer, copier, fax, Communication Equip.)	Capital costs for the purchase of non computer hardware.	FTE	44.06%	21.47%	3.51%	3.93%	10.21%	16.81%	100.00%
58	Open Access Same Time Information System (OASIS)	Open Access Same-Time Information System was created to ensure that any interested parties might have access to ISO market and transmission information through standardized electronic means on a non-discriminatory basis. The OASIS website, provides open access via a database which is automatically synchronized with the content of the online SI database. The user interface of OASIS conforms to the OASIS standard of query/response interaction and provides advance downloading functionality in CSV and XML formats. As such, it provides a customer service. However, pieces of it are used by Grid Ops, particularly outage information, load forecasting, and ATC. It reflects the results of the state of the market and is used to make decisions about scheduling. Thus the assignment is 10% CRS, 25% scheduling, 10% congestion, 35% MU, and 20% CS.	Direct	10.00%	0.00%	25.00%	10.00%	35.00%	20.00%	100.00%
59	Operational Meter Analysis and Reporting (OMAR)	This Oracle-based database serves as the Settlement Quality Meter Data (SQMD) repository for the electrical usage data for the state of California. Data is accepted from the MV90 system and the SC's. Daily pushes and extracts of the SQMD are performed for Settlements, Compliance, Market Analysis, and the Data Warehouse. Master File and Schedule data are imported nightly. The system uses this data to flag data anomalies, identify occurrences of missing meter data, graph and view system data, and perform a preliminary calculation of potential UFE. OMAR-online is a web-based method of submitting and viewing SQMD also to check on the status of their meter data file submissions, over the Internet that using software digital certificate security and encryption.	Direct	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%

	A	B	C	D	E	F	G	H	I	J
	California Independent System Operator 2004 GMC Cost Allocation Listing of Systems and Functionalization									
2										
3										
4										
5	System	Description	Method	CRS	ETS	FS	CONG	MU	SMCR	Total
60	Oracle Corporate Financials	ISO Corporate Accounting System, includes the following modules for General Ledger, Account Payable, Account Receivable, Purchasing, Project Accounting, Fixed Assets, Budget, and Cash Management.	FTE	44.06%	21.47%	3.51%	3.93%	10.21%	16.81%	100.00%
61	Oracle Licenses	Oracle Licenses that are needed for most of our applications/ database infrastructure. Used by most of the Operational applications.	Direct	26.67%	0.19%	17.54%	5.43%	9.03%	41.14%	100.00%
62	Oracle Market Financials BBS	Oracle Accounting applications, only using the General Ledger, Accounts Payable, Accounts Receivable modules for invoicing and payment processing for the Market Settlements process. Highly customized.	Direct	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
63	Out of Sequence Market Operation Settlements Information System (OOS)	Out of Sequence Market Operation Settlements Information System is the system for logging out-of-market (OOM) and out of sequence (OOS) for the BEEP dispatcher activity for settlement purposes, so 80% of its costs are attributable to CS. Its use is a function of the activities of RT operators, who are forced to go outside the market, so 5% of its costs are assigned to CRS and 5% to ETS, reflecting the variability of the use of OOM resources. It does affect scheduling, which is assigned 90% of its costs.	Direct	5.00%	5.00%	0.00%	0.00%	90.00%	0.00%	100.00%
64	Outage Scheduler (OS)	Outage Scheduler. It records information on available generation so that when the market is run, available generation is known. It makes sure that energy is not dispatched that is not available and also provides input to assure appropriate congestion management. MU uses it to reject bids for A/S and Energy that cannot be delivered. Its costs are assigned 50% to CRS, 10% to scheduling, and 20% each to congestion and MU.	Direct	50.00%	0.00%	10.00%	20.00%	20.00%	0.00%	100.00%
65	Participating Intermittent Resource Project (PIRP)	This project created an application and modified existing applications to accommodate Scheduling Coordinator with wind base Intermittent Resources, to submit Energy Schedules contemporaneously with other types of resources. As a result of Amendment 42 of the ISO Tariff. SC will receive near real-time, state of the art wind generation forecasts, they will match their Hour-Ahead Energy Schedules to these forecasts in order to attain preferred schedules which are excluded from the assessment of hourly uninstructed deviations penalties on a daily basis. Instead the deviation penalty will be on a monthly basis.	Calculated Direct	0.00%	0.00%	93.92%	0.00%	6.08%	0.00%	100.00%
66	Physical Facilities Software Application/Furniture/Leasehold Improvements	All locations, leasehold improvement, furniture and software to manage physical facilities.	FTE	44.06%	21.47%	3.51%	3.93%	10.21%	16.81%	100.00%
67	Process Information System (PI)	Process Information System is an historical part of EMS that records what generation units actually provide. Also maintains operation data, transmission, and AGC data from EMS system. Information is used by Compliance to determine penalties that information is passed to Settlements for billing. CRS 80%, 10% MU, 10% CS	Direct	80.00%	0.00%	0.00%	0.00%	10.00%	10.00%	100.00%
68	Rational Buyer	Internally developed application that works with SA's ASM, to optimize the selection of A/S to procure the lowest price for services.	Direct	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
69	Real Time Energy Dispatch System (REDS)	Internally developed tool to handle manual dispatching information if system isn't functioning, to be able to create data after the fact for Expected Energy and Market Clearing price. Also allows the Market Quality good reports for reviewing information in case of disputes. Also allows us to audit and validate information generated from the BEEP part of SA.	Direct	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
70	Real Time Nodal Market	MD02 application. Real-time dispatching project that introduces the full network model and constraints into the real-time dispatching tools. This project will ensure that Locational Marginal Prices will be produced in real-time.	Direct	35.00%	0.00%	10.00%	0.00%	55.00%	0.00%	100.00%

	A	B	C	D	E	F	G	H	I	J
	California Independent System Operator 2004 GMC Cost Allocation Listing of Systems and Functionalization									
2										
3										
4										
5	System	Description	Method	CRS	ETS	FS	CONG	MU	SMCR	Total
71	Reliability Management System (RMS)	Reliability Management System: WECC mandated performance criteria reporting system.	Direct	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
72	Remedy (related to Transmission Registry, New Resource Interconnection and Resource Registry)	Remedy Corporation application called Action Request system (ARS) is an application development environment. This has been used by the ISO to build customized application for various uses at the ISO. Allocation done based on Licenses and what systems they are being used in.	Direct	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
73	Remote Intelligent Gateway (RIG) & Data Processing Gateway (DPG)	Remote Intelligent Gateway (RIG), is equipment that is located at Generator sites that gather information about the generator and transmit to the ISO and to the generator from the ISO when we send a signals of MW set points for AGC control from the ISO EMS either direct or through the ISO Master RIG. The DPG is a device is a one way communication device for the ISO to receive informatin about generation. Originally RIG's where referred to as GCP's (Generator Communication Project) Costs related matters are assigned 100% to CRS because they involve interaction by RT personnel and AGC of generators.	Direct	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
74	Resource Register (RR)	The Resource Registry is a custom built Remedy application developed and maintained by the Enterprise Applications Group at the ISO. The purpose of the Resource Registry is to provide a data repository for the following information: Participating Generator Agreements/Participating Load Agreements; Reliability Must Run (RMR) Test Data; AGC Pre-Test Data; Ancillary Services (AS) Certification data; A View of Business Associate Master File (MF) data	Direct	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
75	RMR Application Validation Engine (RAVE)	RMR Application Validation Tool customized third party tool, that allows the RMR analysts to elimiate maual work around, run validation in batch at night to save time an provide a database to store all RMR invoices. This tool also provides SC credit validation, which is the past-published values that were used to validate the owner supplied RMR invoice values of SC Credit.	Direct	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
76	Scheduling & Logging for ISO California (SLIC)	While SLIC (Scheduling & Logging for ISO California) was traditionally used for logging, it has been upgraded to allow generation SCs to enter outage information, including derates, which are used by the RT desk for operations. Outage information collected in SLIC is utilized by numerous ISO systems including SI, GRRMA, ETCC and EMS. All events that impact the electricity grid are logged into SLIC to provide full reporting and disclosure consistent with our tariff. Its information will affect scheduling and MU. Customers will use it as well. Its costs are assigned 65% to CRS, 15% to scheduling, 5% to congestion, and 15% to MU.	Direct	65.00%	0.00%	15.00%	5.00%	15.00%	0.00%	100.00%
77	Scheduling Architecture (SA)	Scheduling Application is composed of BEEP, CONG, ASM, and miscellaneous small systems. Allocation is weighted average, based on traffic for the 3 modules listed.	Calculated Direct	23.96%	0.00%	19.84%	25.87%	30.33%	0.00%	100.00%
78	Scheduling Infrastructure (SI)	Scheduling Infrastructure provides the means by which Market Participants submit & retrieve schedules & bid data. SI provides data interfaces with SC's EMS, SA and Settlements for daily statements. Base of allocation is on a system traffic analysis.	Calculated Direct	0.00%	0.00%	93.92%	0.00%	6.08%	0.00%	100.00%
79	Scheduling Infrastructure Business Rules (SIBR)	MD02 system. The SIBR application will validate SC bids and offers as well as perform processing of bids and offers post validation. The SIBR application will publish validated bids and offers data for consumption by other CAISO applications within a stipulated time period after the market closes.	Calculated Direct	0.00%	0.00%	93.92%	0.00%	6.08%	0.00%	100.00%
80	Security Constrained Economic Dispatch (SCED)	MD02 system. SCED will minimize the real-time cost of Imbalance Energy, determined from Energy bids submitted by participating resources, subject to transmission, nomogram and resource capability constraints, while accounting for transmission losses. The constraints will initially be enforced zonally.	Direct	40.00%	0.00%	0.00%	0.00%	60.00%	0.00%	100.00%

	A	B	C	D	E	F	G	H	I	J
	California Independent System Operator 2004 GMC Cost Allocation Listing of Systems and Functionalization									
2										
3										
4										
5	System	Description	Method	CRS	ETS	FS	CONG	MU	SMCR	Total
81	Security- External/Physical	ISO Corporate security equipment, for all Folsom and Alhambra locations. Includes camera's card readers, hand readers, and monitoring equipment.	FTE	44.06%	21.47%	3.51%	3.93%	10.21%	16.81%	100.00%
82	Security-ISS (CUDA)	Information/Cyber Security - Enterprise-wide information/cyber security program that provides the security infrastructure, procedures, and policies for the CAISO IT infrastructure. This includes the Public Key Infrastructure (PKI); Enterprise Security Manager (ESM); and intrusion detection to ensure Confidentiality, Integrity, and Availability of CAISO systems.	System directs	23.46%	0.18%	21.78%	2.68%	6.86%	45.04%	100.00%
83	Settlements and Market Clearing	The Settlements System and Market Clearing System (SaMC) provides an integrated automated solution to manage manages the CAISO settlement, billing, invoice, credit, and market clearing tasks. Replacement for current Settlement and Market Financial systems, part of MD02. Current system is unable to handle the new requirement of MD02	Direct	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
84	Sign Board (Symon Board maint.)	Provides OASIS information and activity to ISO personnel, via a reader board displayed in various locations in ISO buildings	FTE	44.06%	21.47%	3.51%	3.93%	10.21%	16.81%	100.00%
85	Startup Costs through 3/31/98, Working Capital-3 months	All costs for startup of the ISO, salaries and expense from June 1997 to July 1, 1998, when 1st payment for GMC received.	FTE	44.06%	21.47%	3.51%	3.93%	10.21%	16.81%	100.00%
86	Storage (EMC symmetrix)	Dedicated Hardware that provides consolidated disk sotrage for multiple ISO database and applications. Three EMC products are currently used to provide storage, the Symmetrix, Clarion, Celerra. Allocation based on amount of storage currently being used by applications.	Calculated Direct	18.67%	9.55%	13.71%	4.21%	11.77%	42.09%	100.00%
87	System Equipment Buyouts (lease buyouts)	Purchase of expiring equipment leases for hardware that still has several years of usage left. Allocated based on the system that it is supporting.	Calculated Direct	43.27%	1.02%	7.34%	1.79%	11.03%	35.56%	100.00%
88	Telephone/PBX	Third party costs for regular telephone, cell phone, pager costs. Telecommunication system which allows internal and external voice communications.	FTE	44.06%	21.47%	3.51%	3.93%	10.21%	16.81%	100.00%
89	Training Systems	Hardware and software for stand alone system to train ISO employees on new applications or changes to existing applications before deploying to production.	System directs	23.46%	0.18%	21.78%	2.68%	6.86%	45.04%	100.00%
90	Transmission Constrained Unit Commitment (TCUC) Must Offer Obligation	TCUC is the application that is used to comply with the FERC June 19th & 25th Orders. This tool is used in the economic evaluation and decision-making process in which the ISO grants and denies Must Offer Waiver requests.	Direct	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
91	Transmission Map Plotting & Display	Transmission Map Plotting & Display - Our Transmission Map Plotting and Display system is used to create a set of detailed transmission maps for use by the Transmission Dispatchers, Operations Engineers and Transmission Planners. The primary use is in real-time operations to access the locations of reported fires and how close the fires are to the transmission lines. Obviously to do this function we need accurate geographic information about the transmission facilities and the location of the fires. The second use to mark damages to the lines caused by earthquakes, airplanes, storms, etc. The Operations Engineers and Planners also use the maps as a part of their grid planning and analysis work. They need to know where the lines are located and possible routes for new lines and for the location of new generating facilities that need to be hooked up to the grid. CRS 50%, ETS 50%	Direct	50.00%	50.00%	0.00%	0.00%	0.00%	0.00%	100.00%

	A	B	C	D	E	F	G	H	I	J
	California Independent System Operator 2004 GMC Cost Allocation Listing of Systems and Functionalization									
2										
3										
4										
5	System	Description	Method	CRS	ETS	FS	CONG	MU	SMCR	Total
92	Trustee Costs, Interest-Capitalized, User Groups	Start up costs for non-ISO employees from Dec. 1996 - July, 1998	Calculated Direct	53.60%	0.55%	10.62%	15.74%	17.48%	2.00%	100.00%
93	Utilities - System I.e. Print drivers	Part of EMC storage usage for various system utilities.	System directs	23.46%	0.18%	21.78%	2.68%	6.86%	45.04%	100.00%
94	Vitria (Middleware)	Third party software applications that allows different system to pass data between them without having to do application specific customizations. (also referred to as Enterprise Application Integration -EAI bus)	System directs	23.46%	0.18%	21.78%	2.68%	6.86%	45.04%	100.00%
95	Wide Area Network (WAN)	The ISO Communication secure network. Previously supplied by MCI, being replaced by an AT&T network. This is the physical communication lines and equipment that carry digital data and voice communication between CAISO Data Centers and between the CAISO and Connected Entities (all Market participants that participate in the market through connections to the ISO such as Generators, Scheduling Corordinators, and Revenue Meters connects).	Calculated Direct	40.80%	2.14%	18.68%	1.31%	7.60%	29.48%	100.00%
96	Capital Expenditures for Systems not Specified			32.20%	7.40%	15.00%	5.50%	10.60%	29.30%	100.00%