

ANALYTICAL SUPPORT FOR CALIFORNIA ISO  
GRID MANAGEMENT CHARGE FOR 2001  
(USING 2001 PROPOSED BUDGET)

FILED AS PART OF DECEMBER 2000  
FERC INFORMATIONAL FILING

CALIFORNIA ISO

# ANALYTICAL SUPPORT FOR CALIFORNIA ISO 2001 GRID MANAGEMENT CHARGE

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# OVERVIEW OF COST ALLOCATION

The California ISO ("ISO") has developed a cost allocation matrix that allocates the ISO's 2001 Operating Budget to three functional categories. The three Cost Categories are as follows: and a description of them follows in the next section, "Functional Category Descriptions."

1. Control Area Operations
2. Inter-Zonal Scheduling
3. Market Operations

The cost allocation matrix, included as Appendix A to this document, lists all ISO costs that are elements of the Grid Management Charge ("GMC"), including operating costs and debt service. The overall revenue requirement for 2001 of \$225,307,000, consists of the following (in thousands):

Operating & Maintenance Budget	\$171,798
Finance Budget (debt service)	63,141
Less: Expense Recovery Budget	(2,402)
Less: Revenue Credit collected in 2000	<u>(7,230)</u>
Total Revenue Requirement	\$225,307

Operating costs include a listing of the costs associated with each of the ISO's "cost centers," which are groupings used by our accounting system to record costs on a department basis. The responsible managers and directors of each cost center reviewed their costs and provided ratios that directly allocate their costs to the three functional categories listed above. A description of the tasks and responsibilities of each cost center, the results of their allocations, and any commentary related to these allocations is provided below in the section entitled "Allocation Description Detail." In general, most operating costs were allocated based on these ratios provided by the appropriate ISO staff. Certain costs related to department overhead, overall corporate overhead, or services that benefit multiple departments and functions. These costs were allocated based on the results of the direct allocations. The cost allocation matrix and the descriptive text, which is included for each cost center, explains the methodology used for allocating all operating costs.

Debt service costs also are allocated to the functional categories. The debt service costs related to the ISO's May 2000 bond issuance of \$293 million and planned 2001 issuance of \$37.7 million are recovered through the GMC in an amount sufficient to cover principal, interest, and operating reserve payments, which for 2001 total \$63.1 million. The 2000 borrowing provided \$36.1 million for 2000 capital expenditures, and refinanced a 1998 bond issuance of \$301.4 million, which provided funding for initial infrastructure costs, future capital expenditures, working capital, and other items. The costs related to these items are allocated to the three functional categories using various methods, including a direct cost assignment for the infrastructure and capital expenditure costs, and applying the results of the allocation ratio, developed with respect to certain operating costs, to other categories, such as working capital costs.

The cost allocation matrix summarizes these results and produces ratios that show the percentage of total ISO costs associated with the provision of each of the three

functional classifications of services offered by the ISO. The ratios developed are as follows:

1.	Control Area Operations	48.132%
2.	Inter-Zonal Scheduling	8.667%
3.	Market Operations	43.201%

These ratios are then applied to the ISO's overall Revenue Requirement for 2001, resulting in a revenue requirement for each of the three functional categories as follows (in thousands).

1.	Control Area Operations	\$108,446
2.	Inter-Zonal Scheduling	19,527
3.	Market Operations	<u>97,334</u>
	Total	\$225,307

After determining the revenue requirement associated with each of the three functional categories, the volumes for billing determinants associated with each category is calculated. The billing determinants for each category are as follows:

1.	Control Area Operations	Control Area Gross Load and exports
2.	Inter-Zonal Scheduling	Net scheduled Inter-Zonal flows per path, excluding Existing Transmission Contracts
3.	Market Operations	Purchases and sales of Ancillary Services and Real Time Energy whether instructed or uninstructed

The estimated volumes of the billing determinant for each functional category for 2001 are as follows (in thousands of MWhs):

1.	Control Area Operations	267,289
2.	Inter-Zonal Scheduling	87,536
3.	Market Operations	102,394

Finally, a unit charge per MWh is developed to recover the costs for the three functional categories by dividing the revenue requirement for each of the three categories by the associated billing determinant volumes. The unit charges for 2001 are as follows (in \$ per MWh):

1.	Control Area Operations	\$0.406
2.	Inter-Zonal Scheduling	\$0.223
3.	Market Operations	\$0.951

# FUNCTIONAL CATEGORY DESCRIPTION

A description of the three categories of services performed by the ISO is as follows:

1. **Control Area Operations (Grid Reliability):** This category is responsible for managing the Control Area and the ISO Controlled Grid to "keep the lights on," *i.e.*, ensure safe, reliable operation of the transmission grid and dispatch of bulk power supplies, including:
  - performing operational studies;
  - system security analyses;
  - transmission maintenance standards;
  - system planning to ensure overall reliability;
  - integration with other Control Areas;
  - emergency management;
  - outage coordination;
  - transmission planning; and
  - scheduling generation, imports, exports, and wheeling in the Day-Ahead and Hour-Ahead of actual operations.
  
2. **Inter-Zonal Scheduling (previously called Congestion Services):** This category is responsible for dealing with Congestion, which exists when power flowing on a transmission path exceeds the transmission path capacity. Congestion management is conducted by the ISO during the scheduling process and results in the economic rationing of transmission service in order to prevent congestion.
  
3. **Market Operations:** This category is responsible for providing open and non-discriminatory access for market making activities for participants through Ancillary Services auctions, provision of energy balancing services and market surveillance. This category is also responsible for providing metering, billing and settlements activities ultimately to balance the billing of and payments for energy, capacity, and transmission service in and out of the systems through the Scheduling Coordinators ("SCs").

## ALLOCATION DESCRIPTIVE DETAIL

A description of the methods used to allocate specific operating and debt service costs to the three functional categories follows.

<b>Cost Center</b>		<b>Allocation Method</b>
1111	Chief Executive Officer (CEO)	Allocated based on total headcount
1211	Human Resources	Allocated based on total headcount
1221	Corporate Services	Allocated based on total headcount
1231	Facilities and Security	Allocated based on total headcount
1311	Chief Financial Officer (CFO) - General	Allocated based Dept Direct costs
1321	Accounting	Allocated based on Direct Operating costs
1331	Treasury and Financial Planning	Allocated based on Direct Operating costs
1341	Settlements and Billing	Direct Assignment
1342	Application Support	Direct Assignment
1343	Preliminary Settlements	Direct Assignment
1344	Final Settlements	Direct Assignment
1411	Information Technology (IT) General	Allocated based on Dept Direct costs
1421	Application Services – Scheduling Infrastructure, Scheduling Applications and Balance of Business Systems (SI/SA/BBS)	Allocated based on Direct Operating costs
1422	Application Development and Support Center	Allocated based on Direct Operating costs
1423	Project Office	Direct Assignment
1424	IT Assets, Contracts and Change Management	Direct Assignment
1431	Computing Services	Allocated based on Dept Direct costs
1432	Computing and Telecommunication Services - General	Allocated based on Dept Direct costs
1441	Telecommunication Services	Allocated based on specific headcount
1451	Information Security	Allocated based on Dept Direct costs
1461	Operational Data Support	Direct Assignment
1462	Field Data Acquisition	Direct Assignment
1463	Operations Systems General	Allocated based on Dept Direct costs
1465	System Engineering and Administration	Direct Assignment
1466	Data Quality Group	Direct Assignment
1467	Operational Applications	Direct Assignment
1471	Information Architectures and Technology	Allocated based on Dept Direct costs
1511	Operations - Indirects	Allocated based on Dept Direct costs
1512	Managing Director– Engineering and Support	Allocated based on Dept Direct costs
1513	Managing Director. – Operations	Allocated based on Dept Direct costs
1521	Planning	Direct Assignment

1542	Outage Coordination	Direct Assignment
1543	Operations Engineering	Direct Assignment
1544	Operations Scheduling	Direct Assignment
1545	Operations Dispatch	Direct Assignment
1546	Security Coordination	Direct Assignment
1547	Director – Engineering and Maintenance	Allocation based on Dept Direct costs
1548	Operations Training and Maintenance	Allocated based on Dept Direct costs
1549	Manager of Training	Allocated based on Dept Direct costs
1551	Market Operations	Direct Assignment
1552	Manager of Markets	Direct Assignment
1553	Application Development	Direct Assignment
1554	Operations Research and Development	Direct Assignment
1555	Operations Support Group	Direct Assignment
1556	Market Planning	Direct Assignment
1557	Market Support and Development	Direct Assignment
1558	Transmission Facilities	Direct Assignment
1559	Operations Application Support	Allocated based on Dept Direct costs
1611	General Counsel	Allocated based on Direct Operating costs
1631	Legal and Regulatory	Allocated based on Direct Operating costs
1641	Market Surveillance	Direct Assignment
1711	Client Services – Indirect	Allocated based on Dept Direct costs
1731	Contracts and Compliance	Direct Assignment
1741	Client Relations	Direct Assignment
1811	Strategic Development and Communications – General	Allocated based on Direct Operating costs
1821	Communications	Allocated based on Direct Operating costs
1651	Board of Governors	Allocated based on Direct Operating costs
	Debt Service	See detailed explanation

Notes:

The allocation percentages and descriptions of responsibilities that follow are based on responses from a questionnaire distributed to Directors and Managers of the ISO. These individuals were provided with descriptions of the three functional service categories described in the previous section of this report and asked to allocate their departmental costs as appropriate, to provide any available supporting assumptions and general descriptions of departmental responsibilities.

Direct Operating costs include the costs of all cost centers in Operations, IT (except for Application Services and Application Development and Support Center), Finance (except for Accounting and Treasury and Financial Planning), Client Relations and Market Surveillance.

**CEO/Human Resources**  
**CEO**  
**Cost Center 1111**

Cost Allocation Methodology and Percentages:

The costs related to the CEO cost center are allocated to the three ISO functional categories based on the results of the allocation of the headcount of all other ISO departments including Finance, IT, Operations, Legal, Client Services and Strategic Development and Communications.

Description:

The CEO oversees and directs all operations of the ISO and reports to the Board of Governors.

**CEO/Human Resources**  
**Human Resources**  
**Cost Center 1211**

Cost Allocation Methodology and Percentages:

The costs related to the Human Resources cost center are allocated to the three ISO functional categories based on the results of the allocation of the headcount of all other ISO departments.

Description:

The Human Resources Department is responsible for health and welfare benefits design and administration, compensation design, payroll, employee relations, training, recruiting, employment contracts, and employee records management.

**CEO/Human Resources**  
**Corporate Services**  
**Cost Center 1221**

Cost Allocation Methodology and Percentages:

The costs related to the Corporate Services cost center are allocated to the three ISO functional categories based on the results of the allocation of the headcount of all other ISO departments.

Description:

The Corporate Services group is responsible for the following functions:

- Security – Responsible for providing physical protection of ISO personnel and property. This includes workplace violence prevention, investigations of criminal acts, executive protection, risk management, and threat assessment.
- Safety - Responsible for overseeing risk assessment and management, workers compensation administration, ergonomic program management, and other related safety programs. Ultimately responsible for ensuring that the ISO is in compliance with all applicable local, state, and federal safety laws and regulations.



- Administration - Responsible for coordinating corporate support functions including, mail services, reception desk, office supplies, office automation equipment, conference room set-up, and management. Also responsible for ensuring consistent policies and procedures are in place for corporate administrative staff.

## **CEO/Human Resources Facilities Cost Center 1231**

### Cost Allocation Methodology and Percentages:

The costs related to the Facilities cost center are allocated to the three ISO functional categories based on the results of the allocation of the headcount of all other ISO departments.

### Description:

The Facilities Department is responsible for the physical building environment of the California ISO. Its role is to provide and maintain a safe, comfortable, and efficient workplace that fosters teamwork and collaboration in a highly reliable building infrastructure. This role can be broken down into several areas:

- Facilities Planning. This involves the allocation of space to accommodate staff and staff changes along with the redesign, modifications, and furnishing of that space.
- Critical Systems. This involves providing and ensuring high-reliability infrastructure to accommodate Information technology equipment and operating systems housed in the computer rooms and Dispatch control center.
- Building Maintenance. This involves the maintenance of the general office areas and computer facilities with respect to heating/ventilation/air conditioning, building electrical distribution, structural systems, etc.
- Housekeeping. This involves janitorial upkeep of the building interiors as well as the appearance of the grounds and other exterior elements.
- Property Leases. This involves administration of all existing property lease agreements including payments, landlord-tenant issues, and negotiation of changes.
- New Facility Development. This involves the planning, development, and transition into all newly acquired ISO properties, leased or owned.
- Administrative. This involves tracking, reporting, and benchmarking all ISO Facilities activities and costs.

## **Finance**

### **CFO General**

### **Cost Center 1311**

#### Cost Allocation Methodology and Percentages:

The costs related to the CFO General cost center are allocated based on the results of Billing and Settlements (1341), Application Services (1342), Preliminary Settlements (1343), and Final Settlements (1344).

#### Description:

The Chief Financial Officer oversees directly the activities of the Settlements and Billing departments as well as the Treasurer and Director of Financial Planning and Controller.

## **Finance**

### **Accounting**

### **Cost Center 1321**

#### Cost Allocation Methodology and Percentages:

The costs related to the Accounting cost center are allocated to the three ISO functional categories based on the results of the allocation of Direct Operating Costs.

#### Description:

The Accounting group is responsible for the following:

- Financial reporting
- Corporate accounts payable and receivable
- Payroll
- Audits-Financial; Operational; Controls (SAS 70); Software and Other [?]
- Internal controls
- Market Settlement
- Tax Compliance & Reporting
- Procurement
- Fixed Assets

## **Finance**

### **Financial Planning and Treasury**

### **Cost Center 1331**

#### Cost Allocation Methodology and Percentages:

The costs related to the Financial Planning and Treasury cost center are allocated to the three ISO functional categories based on the results of the allocation of Direct Operating Costs.

#### Description:

The Financial Planning and Treasury group is responsible for the following:

- Treasury and Cash Management;
- Risk Management;
- Debt administration;
- Budgeting/Financial Planning;

- Benchmarking; and
- Rates/Unbundling.

**Finance**  
**Settlements and Billing**  
**Cost Center 1341**

Cost Allocation Methodology and Percentages:

1. Control Area Operations	0%
2. Inter-Zonal Scheduling	0%
3. Market Operations	<u>100%</u>
Total	100%

Description:

Settlement and Billing functions are performed for all transactions in the Control Area. Information regarding these transactions is forwarded, on a regular basis to the ISO. Scheduling information for Day-Ahead and Hour-Ahead is validated prior to Real Time operations to insure compliance with ISO tariff and protocols. Subsequent to the Settlement Period, operating and billing data is compiled by the Settlements and Field Data Acquisition departments in order to produce, in accordance with the ISO's payment calendar, both a preliminary and a final settlement statement for each Market Participant. Examples of major billing and price components necessary for determining final billing are as follows: market clearing prices, bid prices, ex-post prices, and metered information from generators, loads, and inter-tie points. These financial transactions involve billions of dollars each year. Preliminary Statements and Final Settlements are transmitted daily in accordance with the ISO calendar to each Market Participant. The monthly Grid Management Charges are summarized on Preliminary and last Final Statement for the trade month. Monthly Preliminary Invoices, which summarize all charges on the month's Preliminary Statements, and Monthly Final Invoices, which summarize the difference between the summed Preliminary Statements and the summed Final Statements, are sent to each Market Participant in order to collect and pay for use of ISO market and Control Area needs.

**Finance**  
**Applications Support**  
**Cost Center 1342**

Cost Allocation Methodology and Percentages:

1. Control Area Operations	0%
2. Inter-Zonal Scheduling	0%
3. Market Operations	<u>100%</u>
Total	100%

Description:

Under the general direction of the Director of Settlements and Billing, the Applications Support group has the overall accountability and responsibility for the correct implementation, daily operation, availability and effectiveness of the ISO's Settlement, Billing and Credit, and Electronic Data Interchange ("EDI") Systems. The group's primary functions include:

- Perform daily settlement processing. This includes executing and monitoring the daily settlement runs, generating Settlement Statements.
- Provide end user support for the Settlement Analysts.
- Diagnose settlement errors, determine sources of problems, and make corrections as necessary.
- Assume overall accountability in maximizing and improving system availability.
- Proactively pursue system improvements to promote an efficient and effective computing environment that will meet the Division's business needs.
- Provide technical support on issues related to Settlement.
- Identify any software enhancements that are required to support the Division's business needs and determine whether these enhancements should be performed in-house or through an external vendor.
- For in-house software projects, the group is responsible for the definition, design, coding, testing, and deployment of the new software.
- For software enhancements performed by external vendor, the group will manage the project throughout the entire implementation cycle. The group will prepare the requirements specification, work with the vendor throughout the design phase, approve the detail system design and test plan, perform acceptance tests, and ultimately deploy the software to the production environment.

**Finance**  
**Preliminary Settlements**  
**Cost Center 1343**

Cost Allocation Methodology and Percentages:

1. Control Area Operations	0%
2. Inter-Zonal Scheduling	0%
3. Market Operations	<u>100%</u>
Total	100%

Description:

The Preliminary Settlements group is responsible for the accuracy and timeliness of Preliminary Settlement Statements, the correct implementation of the necessary manual work-around to the existing Settlements software, and issuing the Preliminary Invoice to Market Participants. The group coordinates with the Operations group to obtain information necessary for production of correct Settlement Statements, and investigates the Settlement impact of proposed operating conditions and client suggestions. The group works with Application Support group and software vendors to design, test, and enhance Settlement software. The group is responsible for maintaining and operating a dedicated billing system for Market Participants, ensuring timely and accurate bills and payment processing and managing the authorized credit limit for ISO customers. The group maintains the Master File and is responsible for Settlements' specific review of the tariff and making recommendations for changing the tariff and protocols. The group supports the Grid Management Charge Unbundling Team and Firm Transmission Rights Team.

**Finance**  
**Final Settlements**  
**Cost Center 1344**

Cost Allocation Methodology and Percentages:

1. Control Area Operations	0%
2. Inter-Zonal Scheduling	0%
3. Market Operations	<u>100%</u>
Total	100%

Description:

Responsible for the accuracy and timeliness of Final Settlement Statements and correct implementation of the necessary manual work-around to the existing Settlements software and issuing the Final Invoice to Market Participants. The group supports Client Relations group in resolving Market Participant issues and correct implementation of the approved disputed items. The group is responsible for maintaining and operating a dedicated billing system for Market Participants, ensuring timely and accurate bills and payment processing. The group coordinates with Operations to obtain information necessary for production of correct Settlement Statements and supports the Transmission Access Charge Team and the Settlement Improvement Team.

**Information Technology**  
**Information Technology - General**  
**Cost Center 1411**

Cost Allocation Methodology and Percentages:

The costs related to the IT General cost center are allocated to the three ISO functional categories based on the results of the cost allocation for the following groups ("Direct Department Costs") that report to the Chief Information Officer.

1423	Project Office
1424	IT Assets, Contracts, and Change Management
1441	Telecommunication Services
1461	Operational Data Support
1462	Field Data Acquisition
1465	System Engineering and Administration
1466	Data Quality
1467	Operational Applications

Description:

The Chief Information Officer assumes responsibility for all ISO information technology infrastructure, strategies, and key business processes.

## **Information Technology Application Services Cost Center 1421**

### Cost Allocation Methodology and Percentages:

The costs related to the Application Services cost center are allocated to the three ISO functional categories based on the results of the allocation of Direct Operating Costs.

### Description:

The ISO organization works as a cooperative whole in identifying and effectively and efficiently applying information technology to meet business requirements. This requires a close alignment of business and IT goals and objectives. Project and Application Services manages the IT business relationship with the customers (internal and external) and vendors, to provide information technology based products and services that are cost effective, add value to the business, and contribute to meeting the business objectives of the ISO.

Specific goals include project management support, including corporate-wide project management methodologies and education, project planning and reporting; application development and support for corporate business systems; internet and intranet management; software, system and change management configuration controls and processes; and technology asset management including contract negotiation and management support, procurement, warranty and license administration.

## **Information Technology Application Development and Support Center Cost Center 1422**

### Cost Allocation Methodology and Percentages:

The costs related to the Application Development and Support Center cost center are allocated to the three ISO functional categories based on the results of the allocation of Direct Operating costs.

### Description:

The Application Development and Support group has primary responsibility for the development and support of all ISO production application systems. This includes, but is not limited to: corporate financial, human resource, and payroll systems; enterprise systems such as document and issue management; internet and intranet based systems; business function automation; and enterprise data warehouse development and support. An additional function is the development and support of ancillary systems that support both Grid and Market operation.

The Application and Support group engages in all aspects of the full systems development life cycle, including business analysis, requirements definition, functional and technical design, development, implementation, and ongoing support and maintenance of applications in support of both Corporate-wide and business unit specific initiatives.

**Information Technology  
Project Office  
Cost Center 1423**

Cost Allocation Methodology and Percentages:

1	Control Area Operations	40%
2	Inter-Zonal Scheduling	50%
3	Market Operations	<u>10%</u>
	Total	100%

Description:

The Project Office is responsible for managing all aspects of the project lifecycle for small to large sized projects. Primary activities include corporate-wide project management methodology processes and education, planning and project status reporting, and providing Project Managers to assist business units with project management and coordination efforts.

The efforts of this group provide the expertise and support that allow for effective utilization of resources and to facilitate successful implementation of corporate and business unit project initiatives.

**Information Technology  
IT Assets, Contracts and Change Management  
Cost Center 1424**

Cost Allocation Methodology and Percentages:

1.	Control Area Operations	50%
2.	Inter-Zonal Scheduling	5%
3.	Market Operations	<u>45%</u>
	Total	100%

Description:

The IT Assets, Contracts, and Change Management ("ACCM") group is responsible for enterprise programs and processes related to managing technology assets. Technology assets include hardware, software, and other IT-related services through their lifecycle, from procurement, through provision of tracking and maintenance services related to the asset, and, at the end of lifecycle, through the disposition and refresh process.

ACCM manages and coordinates the process for technology related contracts, from bidding the requirement, constructing the contract document, negotiating the price and terms, and administering the resulting agreement from beginning to expiration. In addition, ACCM oversees IT budget development and administration, hardware warranty and maintenance contract management, software licensing, maintenance contract management, lease administration, asset management, and technology lifecycle process.

Finally, ACCM is responsible for the Change and Configuration Management processes and promotes corporate-wide compliance with Change Management. The ACCM group also provides Configuration Management support by providing the framework for each business unit to control the deployment of modifications to their existing system software and maintaining the UNIX and NT custom software release repositories.

## **Information Technology End User Support Services Cost Center 1431**

### Cost Allocation Methodology and Percentages:

The costs related to End User Support Services are allocated to the three ISO functional categories based on the results of the allocation for Direct Department costs.

### Description:

IT End User Support Services provides corporate wide computing infrastructure support including the following:

- Platform Support – NT Computing hardware, operating system, and layered product configuration, installation, testing, and maintenance, along with regular system administration duties to ensure the reliability and effective performance of the computer platforms.
- System Management – Regular monitoring of computing infrastructure hardware and software, along with database and application processes to ensure seven day a week and 24-hour a day availability of platforms and business systems. This function includes the escalation, notification, and documentation of system failures. In addition, system engineers analyze system activity and performance to provide capacity management, including the recommendation for short- and long-term computing infrastructure enhancements. System Management also provides Tivoli (system monitoring software) and NetView design, development, implementation and support of the production and development environments.
- Help Desk and Desk Side Support – Installation, maintenance, and support of the office automation infrastructure, including support to internal users in the use of office automation tools. In addition, the Help Desk provides central call logging and issue management for office automation, internal communication infrastructure, and facility related problems and issues.



## **Information Technology Computing and Telecommunication Services - General Cost Center 1432**

### Cost Allocation Methodology and Percentages:

The costs related to Computing and Telecommunication Services - General are allocated to the three ISO functional categories based on the results of the allocation for Direct Department costs.

### Description:

This is the general cost center for the Director of Technology Infrastructure Services. End User Support Services (cost center 1431), Telecommunication Services (cost center 1441) and Information Security (cost center 1451) report to this Director. This cost center provides for the cost of general support including such items as the administrative assistant and the general director level expenses.

## **Information Technology Telecommunications Services Cost Center 1441**

### Cost Allocation Methodology and Percentages:

The method used to allocate costs related to Telecommunications Services relies mainly on the headcount of Full Time Employees ("FTEs") associated with the three ISO services. See the attached cost allocation matrix (Appendix A).

### Description:

Telecommunications is responsible for providing reliable data and voice communications infrastructure for the ISO, the California Power Exchange ("Cal PX") and all Market Participants. The group manages a contract with MCI for the Energy Communication Network ("ECN") which includes a high speed and high availability fiber optic statewide network connecting the Folsom and Alhambra ISO sites, the Area Control Centers, regional security coordinators, and all Market Participants. The network is utilized to control the transmission systems, generators, and Ancillary Service providers. It provides the "marketplace" for the direct Market Participants. In addition, it integrates all power revenue metering points and supports the consolidation of metering data.

Telecommunications provides corporate support for ongoing network development, including expertise for resolving complex connection and computer issues. Additional responsibilities include design engineering for both voice and data communications, remote communications access, redundant voice communications including cell phones, paging, and vendor management, and oversight for the MCI and other service provider contracts.

### Allocation Methodology:

The MCI Contract costs account for approximately \$33.3 million, a majority of the costs in the Telecommunications group. The ISO does not have, and has been unable to obtain from MCI, the information necessary to perform a detailed Direct Assignment of the costs of the MCI contract to the three ISO functional categories. Making such an allocation would require knowledge from MCI about the data needs of each of the three

ISO service categories and reliance on various aspects of the network services provided by the MCI contract. As an alternative, the ISO has estimated the costs of the major components of the MCI services.

The MCI charges are viewed as falling under two broad categories: charges that are assessed for services utilized by all ISO employees, and those that are assessed for utilization by employees in specific groups such as Operations, Finance, Client Services, and Market Surveillance. The first category includes the Voice Premises and Shared Network Services costs, totaling approximately \$4 million per year. These MCI costs were allocated to the three ISO service categories based on the total ISO headcount related to each cost category.

The second category, totaling approximately \$29.3 million, was allocated, where possible, based on usage factors. The following steps were used for the allocation.

First, about \$2 million, or 22% of the Bandwidth and Wide Area Network (“WAN”) infrastructure costs (that is, data backbone) were allocated directly to the Market Function, as this capacity is set aside for connected entities.

For the remaining \$27.3 million, the major functional groups in the ISO that were utilizing the Bandwidth and WAN, Usage (that is, access charges, Internet, redundancy), and Data Premises cost categories were determined. These functional groups were identified as Operations, IT, Finance, Client Services, and Market Surveillance. For each functional group in these departments, the employee headcount was allocated to the three ISO service categories; and the remaining MCI Costs were then allocated to each service category based on the corresponding headcount.

The ISO assumed that a large number of FTEs present in the Client Services and Finance groups were involved in mostly manual, non-MCI usage related activity. Therefore, adjustments were made to prevent an inappropriately high level of MCI costs from being allocated to the Market Operations service category by excluding all FTEs associated with manual work for Client Service functions like Contracts and Compliance and Client Relations. Similarly, the FTEs in Finance for Applications Support were excluded. Thus, for Finance, MCI costs were allocated based only on FTEs for Billings and Settlement, Preliminary Settlements and Final Settlements.

The results of the allocation procedure for MCI Costs are provided in the table below.

<u>Category</u>	<b>2001 Budget Amount (\$000)</b>	<b>Control Area Operations</b>	<b>Inter-zonal Scheduling</b>	<b>Market Operations</b>
Total MCI Costs:	\$33,319			
Direct Assignment	\$2,000	0%	0%	100%
Total Headcount Allocation	\$4,000	52%	8%	40%
Specific Headcount Allocation	\$27,319	55%	8%	37%
Allocation Ratio	100.00%	51.34%	7.52%	41.14%

## **Information Technology Information Security Cost Center 1451**

### Cost Allocation Methodology and Percentages:

The costs related to Information Security are allocated to the three ISO functional categories based on the results of the allocation for Direct Department costs.

### Description:

Accurate and confidential information is critical for safe, reliable grid operations and efficient markets through secure e-commerce. Information Security (“ISS”) is assigned the crucial responsibility of securing and safeguarding this information, whether in repository in the ISO computer systems or in transit via networks and communication systems. Activities that support this continuous process are information security policies, procedures, and standards development for both internal users and market participants. ISS is also responsible for the education, awareness and compliance of these policies, procedures and standards. As well, ISS provides security design, engineering and implementation of security infrastructure for existing and new applications, communication systems, and e-commerce solutions. Other activities ISS provides are the monitoring and auditing of security logs, administration of remote access platforms and digital certificates, encryption technologies, and responding and investigating security incidents. ISS also supports business continuity planning and testing for the ISO and external parties.

## **Information Technology Operational Data Support Cost Center 1461**

### Cost Allocation Methodology and Percentages:

1.	Control Area Operations	97%
2.	Inter-Zonal Scheduling	2%
3.	Market Operations	<u>1%</u>
	Total	100%

### Description:

Operational Data Support is responsible for the following:

- Support of the Energy management System (“EMS”) to maintain, troubleshoot problems with, and enhance applications requires the greatest amount of time in relation to Control Area activities. Functionality of the EMS corresponds mostly to Control Area functions that include Supervisory Control and Data Acquisition (“SCADA”), Automatic Generation Control (“AGC”), data archival, data processing for transmission monitoring, and generation monitoring and control. Activities related to this function are:
  - Data collection, archival, and retrieval;
  - AGC functional support;
  - System builds;
  - Database builds;

- Database support;
  - Operating reserve calculations – define and change as required;
  - Maintain SPL calculation application and add calculations as required; and
  - ICCP functionality
- The Scheduling Infrastructure (“SI”) system processes market-driven schedules from qualified Scheduling Coordinators and transfers the final schedules to the EMS. These schedules are then used to operate the electric system along with spot market schedules. The EMS processes the schedules for use by AGC, Resource Scheduler (“RS”) and Resource Monitor (“RM”). The group maintains RS and the RM applications, assures the correct transfer of schedules from SI, and verifies the processing of schedules for AGC functions.
  - Congestion is initially rectified by the SI system when schedules are processed from the Cal PX. After the schedules are transferred to the EMS, power flows are monitored and an alarm is produced when congestion problems exist on the transmission grid. Alarm limits are entered and maintained in order to allow Operations staff to take measures to mitigate any problems.
  - Energy accounting (in MWh) associated with the control area tie points and Dynamic Schedules are processed by the EMS and made available to the metering section for the purpose of providing data validation of the polled meter data.

**Information Technology**  
**Field Data Acquisition**  
**Cost Center 1462**

Cost Allocation Methodology and Percentages:

1.	Control Area Operations	10%
2.	Inter-Zonal Scheduling	0%
3.	Market Operations	<u>90%</u>
	Total	100%

Description

The responsibilities of the Field Data Acquisition group are as follows:

- Supporting the Remote Intelligent Gateway (“RIG”) interface system in the daily operation of power generation, scheduling, and control of the ISO Controlled Grid. The AGC system simultaneously controls Generating Unit output to match resources to Load and maintain frequency. Generating Units offering Regulation services must be capable of being controlled by the ISO EMS. RIG interface units meet the ISO standards for transporting AGC signals. The ISO has the ability to send either set point or raise/lower signals. Additionally, the RIG has multiple ports to allow control to be switched between the Generator and the ISO.
- Verification and processing of raw meter data into Settlement Ready data, which the ISO uses for generating preliminary and final financial settlement statements for the Market Participants, Market Surveillance and reports.

- Providing Settlement Ready metering data for the ISO billing system, including:
  - Auditing the ISO meter inspection process and providing engineering judgment related to proposed and existing metering systems.
  - Operating and maintaining Meter Data Acquisition Systems (“MDAS”) that directly acquire metering data from ISO metered entities and receive metering data from SCs.
  - Auditing metering data collection, storage and processing systems of the SCs.
  - Maintaining the metering standards and specifications for approved meters and metering systems.
  - Coordinating and approving proposed metering system-engineering designs.

**Information Technology  
Operational Systems - General  
Cost Center 1463**

Cost Allocation Methodology and Percentages:

The costs related to Information Security are allocated to the three ISO functional categories based on the results of the allocation for Direct Department costs.

Description:

The Operations Systems group supports Operational Data Support (1461), Field Data Acquisition (1462), System Engineering and Administration (1465), Data Quality (1466), and Operational Applications (1467).

**Information Technology  
System Engineering and Administration  
Cost Center 1465**

Cost Allocation Methodology and Percentages:

1	Control Area Operations	34%
2	Inter-Zonal Scheduling	0%
3	Market Operations	<u>66%</u>
	Total	100%

Description:

The System Engineering and Administration section is responsible for installing, configuring and ensuring 24 hours-a-day and seven days-a-week availability of the company's SQL-based database as well as of all UNIX and Windows NT platforms. In addition this section provides application software support and fallback and fail-over operations for certain subsystems (Market Operations systems). Furthermore, the section provides company-wide infrastructure services such as data backup and restoration, storage management, and data replication.

The section is comprised of sub-teams of system and database engineers assigned to specific subsystems in all ISO areas in order to provide guaranteed levels of service. The team members provide a rotation-based on-call support.

Finally, this section is responsible for the identifying and introducing new technologies as well as engineering a flexible and scalable computer-based infrastructure that can support the ISO's dynamic and fast-growing information technology needs.

**Information Technology**  
**Data Quality**  
**Cost Center 1466**

Cost Allocation Methodology and Percentages:

1	Control Area Operations	40%
2	Inter-Zonal Scheduling	0%
3	Market Operations	<u>60%</u>
	Total	100%

Description:

The responsibilities of the Data Quality group are as follows:

- Data Quality is responsible for identifying data quality issues with the Real Time data used by operations. This involves the validation of appropriate network models and corresponding Real Time telemeter data using existing tools (e.g. Real Time State Estimator) to identify data quality problems.
- Data Quality is responsible for assuring that settlements receive Settlement Quality Meter Data to be used in Preliminary and Final Settlements. This includes day-to-day evaluation of data being submitted by the SCs, as well as assuring that the ISO Metering Protocol Tariff requirements are implemented. Certain Tariff requirements, such as the SC-Self Audit, are defined and implemented by Data Quality.

**Information Technology**  
**Operational Applications**  
**Cost Center 1467**

Cost Allocation Methodology and Percentages:

1	Control Area Operations	100%
2	Inter-Zonal Scheduling	0%
3	Market Operations	<u>0%</u>
	Total	100%

Description:

The Operational Applications area is responsible for the development of new or existing applications or systems, and to support new applications and functionality of other systems interconnected to various Operations Systems platforms. This will also include modifications to existing systems in support of new requirements. Supported projects will be researched and procured to provide enhancements, benefits, or new functionality to the end users of Grid Operations (cost center 1545), Operations Engineering (cost center 1543) and the Operations Systems (cost center 1461) departments support personnel.

The Operational Applications area will apply experience with electric utility operations, utility based systems and inter-related fields to direct the definition of end user needs and provide solutions.

## **Information Technology Information Architectures and Technology Cost Center 1471**

### Cost Allocation Methodology and Percentages:

The costs related to Information Architectures and Technology cost center are allocated to the three ISO functional categories based on the results of the Direct Department costs.

### Description:

The Information Architectures and Technology group defines the approaches to capture efficiently and represent both business and software system information; determines and specifies high-level approaches and modeling guidelines; identifies opportunities for the sharing and reuse of information; works with data architects and applications architects; leads the construction of information models; defines a common terminology based on core business concepts; defines and maintains the ISO's application development architecture and technology infrastructure architecture; manages the short- and long-range capacity planning of the ISO's networks, equipment, and distributed computing hardware; and provides direction and guidance to vendors of services.

## **Operations Operations - General Cost Center 1511**

### Cost Allocation Methodology and Percentages:

The costs related to the Operations General cost center are allocated to the three ISO functional categories based on the results of the cost allocation of the Direct Department costs.

### Description:

The Chief Operations Officer works with the Governing Board to develop and manage the ISO; assumes responsibility for ensuring that transmission standards and reliability are maintained at high levels; works closely with the PX in accomplishing ISO objectives; oversees or influences directly the development and implementation of numerous processes, procedures and technologies necessary to enable the deployment of the ISO organization; and assumes responsibility for the development of operations and engineering capabilities necessary to promote the timely implementation of the ISO activities consistent with applicable California Public Utility Commission ("CPUC") decisions and FERC orders.

**Operations  
Managing Director – Engineering and Support  
Cost Center 1512**

Cost Allocation Methodology and Percentages:

The costs related to the Managing Director – Engineering and Support cost center are allocated to the three ISO functional categories based on the results of the cost allocation of the Direct Department costs.

Description:

The Managing Director of Engineering and Support is responsible for providing leadership and executive management direction on matters relating to Operations Support, Operations Training, Operations Engineering, Outage Coordination, Transmission Maintenance, and Operations Research and Development, including liaison and support of ISO's outreach to external stakeholders.

**Operations  
Managing Director - Operations  
Cost Center 1513**

Cost Allocation Methodology and Percentages:

The costs related to the Managing Director - Operations cost center are allocated to the three ISO functional categories based on the results of the allocation of the Direct Department costs.

Description:

The Managing Director of Engineering and Support is responsible for providing leadership and executive management direction on matters relating to Market Operations, Grid Operations, Real Time Reliability of the ISO control area, and outreach to external stakeholders.

**Operations  
Grid Planning  
Cost Center 1521**

Cost Allocation Methodology and Percentages:

1	Control Area Operations	100%
2	Inter-Zonal Scheduling	0%
3	Market Operations	0%
	Total	100%

Description:

The ISO Grid Planning Department is charged with reviewing the Participating Transmission Owners (“PTOs”) Bulk Power Program (a five-year Program is filed with the ISO every year) and reviewing the studies the PTOs perform for connecting new generators or load to the ISO Controlled Grid. The ISO recommendations (if any) are



either implemented by the PTOs or the problem is resolved via dispute resolution processes.

Additionally, Grid Planning conducts studies to determine Reliability Must-Run (“RMR”) contract requirements, dual fuel generator requirements and provides support to Operating Engineering. Grid Planning has been involved in the preparation of the new ISO Reliability criteria, and is working toward common facility ratings (when feasible).

Additionally, Grid Planning leads or supports several Regional and National technical/engineering groups including the Western Systems Coordinating Council (“WSCC”), the Western Interconnection Coordination Forum and the North American Electric Reliability Council (“NERC”).

## **Operations Outage Coordination Cost Center 1542**

### Cost Allocation Methodology and Percentages:

1.	Control Area Operations	88%
2.	Inter-Zonal Scheduling	12%
3.	Market Operations	<u>0%</u>
	Total	100%

### Description:

Outage Coordination performs activities related to the following:

- Ensuring accurate path ratings and integrated outages to ensure minimum reliability standards are adhered to. The coordinators work closely with Operating Engineers to help accomplish this.
- Path ratings and allocation percentages are finalized by the Outage Coordinators, then passed on to the inter-tie scheduling group. Additionally, these allocations are passed on to Existing Contracts holders and posted on the Internet as part of the Control Area responsibilities.
- When transfer paths are derated, congestion can occur. Although this process of mitigating congestion is similar to “scheduling” above, it differs in that by allocating the reduced percentages to the scheduling group, congestion is preempted by reducing schedules on a scheduled basis, which allows for better management of congestion.

**Operations  
Operations Engineering  
Cost Center 1543**

Cost Allocation Methodology and Percentages:

1.	Control Area Operations	85%
2.	Inter-Zonal Scheduling	3%
3.	Market Operations	<u>12%</u>
	Total	100%

Description:

The Operations Engineering group is responsible for the following activities:

- Performing power flow, transient stability, and post-transient stability analysis to evaluate scheduled outages to support the Outage Coordination Office;
- Evaluating system operations, including protection systems, load/resource sufficiency, etc.;
- Developing day-ahead RMR pre-schedules;
- Developing ISO operating procedures;
- Developing seasonal operating nomograms defining transmission path transfer limits;
- Providing training for operating procedures and contracts;
- Participating in WSCC committees and workgroups related to interconnected power system operations;
- Providing support for Existing Contract and Scheduling issues;
- Providing engineering support for ISO contracts issues (e.g., RMR contract, Participating Generator Agreement (“PGA”), etc.)
- Providing engineering support for ISO projects (e.g., Automated Dispatch System (“ADS”), Generator Communication Project (“GCP”), etc.)
- Investigating disturbances and preparing disturbance reports;
- Supporting EMS application and screen development.

**Operations  
Scheduling  
Cost Center 1544**

Cost Allocation Methodology and Percentages:

1.	Control Area Operations	75%
2.	Inter-Zonal Scheduling	10%
3.	Market Operations	<u>15%</u>
	Total	100%

Description:

Operations Scheduling is the primary interface between the ISO and its 11 adjacent Control Areas as a part of the WSCC interconnection. Metered and scheduled interchange is coordinated on a pre-schedule, Real Time, and after-the-fact basis with

the neighboring Control Areas. Direct and distinct functions also are performed to enable the ISO markets, congestion, and settlements process. All of these functions require accommodations to assure that Existing Contracts are honored.

All interchange transactions must be coordinated with adjacent and external Control Areas within the limits of the ISO jurisdictional transmission system. This includes implementing and monitoring all interchange schedules into and out of the ISO Control Area regardless if they are scheduled on Existing Transmission Contract (“ETC”) or New Firm Uses (“NFU”) transmission. Interchange scheduled on behalf of all SCs must be reconciled to meet WSCC and NERC criteria.

**Operations**  
**Grid Operations/Dispatch**  
**Cost Center 1545**

Cost Allocation Methodology and Percentages:

1	Control Area Operations	80%
2	Inter-Zonal Scheduling	5%
3	Market Operations	<u>15%</u>
	Total	100%

Description:

The Grid Operations group is responsible for the following:

- Overseeing and performing all Real Time Operations of the ISO Electrical Grid and Control Area, including managing all aspects of the California Control Area;
- Ensuring reliable and safe operation of the ISO Controlled Grid;
- Ensuring reliable operation includes any authority needed to maintain control of the Grid, including authority over all PTO's and Utility Distribution Companies (“UDC's”) in regards to system reliability and system emergencies, the ability to order must run generating units on-line, and manual Load shedding as needed;
- Coordinating Load and system restoration after any contingency or major system disturbance in cooperation with the WSCC Security Coordinator;
- Declaring, when appropriate, a Statewide System Emergency as detailed in the Dispatch Protocol, suspending market operations, and setting Administrative prices for Ancillary Services needed to resolve the emergency;
- Ensuring compliance with all WSCC, NERC criteria, and ISO protocols and procedures;
- Working with the WSCC Security Coordinator to ensure compliance with all policies and operating procedures applicable to the Western Interconnection;
- Controlling applicable generation to meet inter-tie obligations, contributing to frequency control, and meeting any emergency responses, and WSCC and NERC criteria to support the transmission system and operation of the energy market in the most reliable manner;
- Maintaining documentation for generation operations;
- Procuring additional Ancillary Services as necessary;
- Managing operation of eligible Regulatory Must-Take, Must-Run, and RMR generation;

- Dispatching interruptible loads to maintain required reserve levels during system emergencies; and
- Coordinating generation resources to meet system load requirements and satisfy contractual obligations, and responding to system frequency deviations and voltage issues.

**Operations  
Security Coordination  
Cost Center 1546**

Cost Allocation Methodology and Percentages:

1	Control Area Operations	100%
2	Inter-Zonal Scheduling	0%
3	Market Operations	<u>0%</u>
	Total	100%

Description of Activities:

Security Coordination provides leadership and supervision for the California Power Area Security Coordinators.

**Operations  
Engineering and Maintenance  
Cost Center 1547**

Cost Allocation Methodology and Percentages:

The costs related to the Director of Engineering and Maintenance cost center are allocated to the three ISO functional categories based on the results of the allocation of the Direct Department costs.

Description of Activities:

The Director of Engineering and Maintenance is responsible for power system engineering support for the grid operations, market operations, scheduling and outage coordination functions; outage coordination within and around the ISO control area; and transmission maintenance standards and practices. Outage Coordination (1542) and Operations Engineering (1543) both report to the Director.

**Operations  
Operations Support and Training (OSAT) - General  
Cost Center 1548**

Cost Allocation Methodology and Percentages:

The costs related to the OSAT Department are allocated to the three GMC functional categories based on the results of the allocation of the Direct Department costs.

Description:

The Director of OSAT is responsible for: overseeing preparation and administration of training across all operations groups, other groups in the ISO, and Market Participants;

providing support for ISO efforts to interface with and incorporate markets and deregulation from an operations perspective as they develop inside and outside the ISO; updating, creating and maintaining all ISO Operating Procedures; implementing Emergency Response programs and procedures within the ISO and in coordination with state and federal external agencies; developing and maintaining EMS Displays as required and requested by Control Room personnel; providing presentation development and support for the Operations organization; and providing budget development and support for the Operations Division.

OSAT provides training and support to all groups within the Operations Division, to other departments within the ISO, and to Market Participants, to ensure and enhance system reliability as well as to facilitate and expand workably competitive markets. The primary role of OSAT is to provide support to all departments within the Operations Division, including the development of training programs, dispatch support and development of tools for operations (special projects).

**Operations  
Operations Training  
Cost Center 1549**

Cost Allocation Methodology and Percentages:

1	Control Area Operations	80%
2	Inter-Zonal Scheduling	10%
3	Market Operations	<u>10%</u>
	Total	100%

Description:

The Operations Training group is responsible to create and administer appropriate training material for grid operations, market operations, scheduling, other ISO groups, and Market Participants; procure and implement necessary hardware and software to accomplish this training; direct the activities of the dispatch support personnel to support the various operational needs including procedures, reports, EMS needs, tools development and other support activities as needed. Specific roles and responsibilities include:

- Directing the activities of the trainees to assure appropriate material and processes are created to accomplish training for operations, other ISO groups, and Market Participants;
- Managing dispatch support functions to assure procedures, tools and other support needs are met for all operations groups, other ISO departments, and external entities;
- Preparing and managing the training budget;
- Representing the ISO in WSCC, NERC and other forums as required; and
- Identifying and managing changes in tariffs, protocols and market design that would improve market operations.

# Operations

## Market Operations

### Cost Center 1551, 1552 and 1553

#### Cost Allocation Methodology and Percentages:

1.	Control Area Operations	20%
2.	Inter-Zonal Scheduling	30%
3.	Market Operations	<u>50%</u>
	Total	100%

#### Description:

The Market Operations group consists of Market Operations (1551), Manager of Markets (1552), and Manager of Applications (1553). The group is responsible for conducting Day-Ahead, Hour-Ahead and Real Time Markets, including:

- Managing inter- and intra-zonal congestion and making changes (via Adjustment Bids);
- Re-dispatching schedules to resolve congestion at the lowest possible cost to customers;
- Managing the Ancillary Service and imbalance energy markets; and calculating the market clearing prices for spinning, non-spinning, replacement and regulation;
- Ensuring that the SCs posting of requirements regarding congestion, losses and Ancillary Services, etc., is reliable;
- Ensuring continuous interface between the ISO and the SCs that will allow SCs to make best use of transmission resources;
- Providing technical expertise on the design of the California market related to the bidding, scheduling, and settlement systems;
- Reviewing market design and prices on a daily basis;
- Providing engineering analysis to support SCs, settlements, and daily operations;
- Providing technical analysis, input, and review of vendor supplied design documents for compliance with ISO-defined requirements;
- Ensuring thorough testing of vendor supplied applications by creating test objectives, conditions, and scripts to be used for module;
- Designing and performing integration testing;
- Documenting and managing vendor-supplied scheduling application software changes in accordance with release management procedures;
- Conducting SC training and SC certification testing;
- Performing software life cycle activities in support of in-house scheduling software requirements necessary for market reliability and accuracy as detailed in the FERC filing and ISO protocols;
- Administering all interface applications between the SI database and all other subsystems;
- Providing system administration support for test and development environments; and
- Providing an advisory role to ISO Market Surveillance group on market power issues.

## **Operations Operations Research and Development Cost Center 1554**

### Cost Allocation Methodology and Percentages:

1.	Control Area Operations	80%
2.	Inter-Zonal Scheduling	10%
3.	Market Operations	<u>10%</u>
	Total	100%

### Description:

Operations Research and Development provides reports to FERC, NERC and WSCC on Control Area Operations. It provides support to all groups within the Operations Division, to other departments within the ISO, and to Market Participants, to ensure and enhance system reliability as well as to facilitate and expand workably competitive markets. The primary role of Special Project Engineering is to provide Operations personnel with the best technology, tools and advanced applications that solve operating problems, improve grid reliability and facilitate the accurate and timely reporting to various regional reliability organizations and government agencies.

Specific roles and responsibilities include:

- Reporting of Operating Data to FERC, NERC and WSCC (RMS Reporting);
- Management of Special Projects that support Operations;
- Transmission Information Display System (Mapping Project);
- Board Presentation Process Project;
- Research and Development – Analysis and Installation of tools to improve grid reliability;
- Participating in NERC and WSCC committees and task forces relating to Operations and Scheduling;
- Field-testing proposed NERC and WSCC Compliance Templates;
- Developing concepts for operational control of Distributed Generation resources;
- Developing and directing R&D programs such as the three-year CERTS program; and
- Developing Board Documents and Tariff language for proposed changes in ISO Operations and Markets.

## **Operations Operations Support Cost Center 1555**

### Cost Allocation Methodology and Percentages:

1.	Control Area Operations	80%
2.	Inter-Zonal Scheduling	10%
3.	Market Operations	<u>10%</u>
	Total	100%

Description:

The Operations Support Group is responsible for supporting the various market and grid operations needs of the ISO Real Time operations control room floor. Included in these support functions are emergency preparedness and response coordination, interconnected control area, UDC and PTO agreement support, Ancillary Services testing, creation and maintenance of procedures for Grid, Market and Scheduling Operations, reporting, EMS tools and display development, applications tools development and other support activities as needed. Specific roles and responsibilities include:

- Management of Operations support functions to assure procedures, tools and other support needs are met for all operations groups, other ISO departments and external entities;
- Preparing and managing the Operations Support Cost Center budget;
- Representing the ISO in WSCC, NERC and other forums as required;
- Identifying and managing changes in the tariff, protocols, and market design that would improve market and grid operations; and
- Managing projects related to the creation or enhancement of ISO operations, functions, processes, or procedures.

**Operations  
Market Planning  
Cost Center 1556**

Cost Allocation Methodology and Percentages:

1.	Control Area Operations	0%
2,	Inter-Zonal Scheduling	50%
4.	Market Operations	<u>50%</u>
	Total	100%

Description:

Market Planning oversees the planning and managing of all projects related to ISO markets including, but not limited to:

- Scheduling Applications (“SA”), SI, Balance of Business Systems (“BBS”), and Secondary Registry System (SRS);
- Ensuring smooth implementation of SA, SI, BBS and SRS projects while maintaining budget, schedules, functionality and compliance;
- Actively participating in and providing input in the design of future Market Design tools;
- Ensuring design and implementation details, which are coordinated with SCs, Vendors, ISO Market Participants and ISO Operations, Legal, and Finance departments; and
- Ensuring ISO and Market Operations participation and representation in North American electric deregulation arenas through, among other things, making presentations, providing proposals, attending member meetings, replying in a timely manner to Request for Proposals.



**Operations  
Market Support and Development  
Cost Center 1557**

Cost Allocation Methodology and Percentages:

1.	Control Area Operations	40%
2.	Inter-Zonal Scheduling	10%
3.	Market Operations	<u>50%</u>
	Total	100%

Description:

The Market Development and Support group has the overall responsibility of the SI application and all other Market Application (*i.e.* RMR scheduling, operator interface, existing contract application, and interface transaction scheduling) and Database development, support and security, for support of Day-Ahead, Hour-Ahead and the Real Time Energy Markets. Also is responsible for overseeing and administering all interface applications between the SI operational databases and all other subsystems (*e.g.*, EMS, SA, BBS, BITS, etc.). Provides system administration support for test and development environments. This position ensures facilitation of Markets through reliable Market applications and databases. All applications and interfaces must be designed and operated to increase the transparency and the efficiency of the Markets. Working with SCs is critical to the success of the ISO in providing needed interfaces to facilitate Markets.

**Operations  
Engineering and Maintenance Group  
Transmission Maintenance  
Cost Center 1558**

Cost Allocation Methodology and Percentages:

1.	Control Area Operations	94%
2.	Inter-Zonal Scheduling	0%
3.	Market Operations	<u>6%</u>
	Total	100%

Description:

Transmission Maintenance manages the creation, implementation, and enforcement of ISO Maintenance Standards; provides for high quality, safe, and reliable service; and manages the creation and implementation of this ISO application for Scheduling Logging ISO California ("SLIC").

**Operations  
Operations Application Support  
Cost Center 1559**

Cost Allocation Methodology and Percentages:

1.	Control Area Operations	100%
2.	Inter-Zonal Scheduling	0%
3.	Market Operations	<u>0%</u>
	Total	100%

Description:

OSAT Operations Applications Support's primary role is to provide support to dispatch operations and to support the development of new tools for operations.

**General Counsel  
General Counsel - General  
Cost Center 1611**

Cost Allocation Methodology and Percentages:

The costs related to the General Counsel cost center are allocated to the three ISO functional categories based on the results of the cost allocation for Direct Operating costs.

Description:

The General Counsel manages all legal, regulatory, and market analysis activities of the ISO, and serves as the Corporation's Secretary.

**General Counsel  
Legal and Regulatory  
Cost Center 1631**

Cost Allocation Methodology and Percentages:

The costs related to the Legal and Regulatory cost center are allocated to the three ISO functional categories based on the results of the cost allocation for Direct Operating costs.

Description:

Legal and Regulatory is responsible for the preparation all FERC filings and for monitoring and participating in all ISO-related FERC proceedings. Such responsibilities include preparation of amendments to the ISO Tariff, the Transmission Control Agreement ("TCA") (including provisions related to Existing Contracts), all filings and proceedings related to our *Pro Forma* Agreements, including the RMR agreements, and all generic FERC rulemakings and other proceedings. The Legal and Regulatory department also is charged with monitoring and participating in proceedings and other matters involving relevant state agencies such as the California Energy Commission, the California Electricity Oversight Board ("CEOB") and the CPUC. The Legal and Regulatory group is responsible for shaping and monitoring electric restructuring

initiatives and legislative proposals, on both the state and federal level. The Legal and Regulatory group also formulates and helps implement the ISO's regulatory policies and positions. The Legal group is responsible for the production and negotiation of all general corporate legal documents and matters, including all vendor contracts, confidentiality agreements, employment matters and dispute resolution (related to Tariff matters). The Legal group is also responsible for negotiating and drafting all pertinent financial/legal documents and for the maintenance of all corporate minutes and bylaws. The Legal and Regulatory group interfaces frequently with all the ISO departments.

**General Counsel  
Market Surveillance  
Cost Center 1641**

Cost Allocation Methodology and Percentages:

1.	Control Area Operations	20%
2.	Inter-Zonal Scheduling	10%
3.	Market Operations	<u>70%</u>
	Total	100%

Description:

The Department of Market Analysis (“DMA”) is the organization within the ISO that keeps a close watch on the efficiency and effectiveness of the Ancillary Service, congestion management and Real Time spot markets. In 1998 and 1999, the DMA’s function was expanded beyond the market monitoring function originally envisioned for the department. The department currently provides economic analysis to support decisions in a wide range of ISO decision-making processes. Specific functions of the DMA include:

- Monitoring the market and reporting on market performance, including:
  - Prices in PX and ISO markets
  - Prices in related markets (natural gas, emissions, surrounding areas, etc.)
  - Level of imports and exports
- Ancillary Service Bid Efficiency
- Congestion
- Competitiveness of the Market;
- Identifying and investigating potential gaming and market power abuses;
- Identifying and reviewing deliberate or inadvertent violations of market rules or contracts that affect the efficiency of the market;
- Performing special studies of the impacts of current and potential ISO protocols on market efficiency and performance;
- Reviewing ISO rules and protocols from a market performance perspective, and recommending specific changes in market rules and protocols;
- Working with other areas of the ISO to implement these changes affecting market performance;
- Supporting the Market Surveillance Committee (“MSC”) by completing special analysis to support reporting and recommendations of the MSC to ISO management;
- Coordinating monitoring activities with the Cal PX Compliance Unit; and
- Reporting to FERC, CPUC, CEGB and other agencies

**Client Services**  
**Client Services - General**  
**Cost Center 1711**

Cost Allocation Methodology and Percentages:

The costs related to the Client Services General cost center are allocated to the three ISO functional categories based on the results of the cost allocation of Direct Department costs.

Description:

The VP of Client Services sets policy, plans, directs, and coordinates through subordinate directors the activities of the Client Relations and Contracts and Compliance functions of the ISO.

**Client Services**  
**Contracts and Compliance**  
**Cost Center 1731**

Cost Allocation Methodology and Percentages:

1.	Control Area Operations	35%
2.	Inter-Zonal Scheduling	10%
3.	Market Functions	<u>55%</u>
	Total	100%

Description:

The Contracts and Compliance Section is tasked with:

- Developing and negotiating contracts with Market Participants;
- Developing and implementing the penalties and sanctions for the ISO Tariff, including the Protocols, and the ISO Agreements; and
- Assisting other Departments and Sections regarding contracts, compliance, FERC matters, and other projects.

**CONTRACTS WORK RESPONSIBILITIES**

Development of Agreements with New Clients and Existing Clients:

- Develop new agreements; execute *pro forma* agreements as needed to expand participation in the ISO, Interconnected Control Area Operating Agreements (“ICAOAs”) with other Control Area operators that have not yet executed the ICAOA, and others; and
- Assist in enhancing client understanding of ISO agreement terms.

Contract Activities Based on Regulatory Directives:

- Amend agreements as needed and file with FERC;
- Revise and maintain the standard *pro forma* agreements; and
- If FERC sets the agreement for hearing, negotiate the settlement of all interventions. If settlement cannot be reached, participate in litigation proceedings.

#### Special Agreements:

- Determine if changes are needed to special agreements, such as the TCA;
- Develop Short-term RMR agreements;
- Assist in crafting amendments to the RMR agreement and obtain executed agreements resulting thereof; and
- Develop Black Start, Voltage Support, and Emergency Assistance Agreements

#### Administration of Contracts:

- Contract administration;
- Obligations and deadlines tracking, and records management system;
- Administer RMR agreements, including assisting Settlements in the monthly invoicing process; and
- Review operating procedures and operating instructions for consistency with the ISO agreements and ISO Tariff.

#### Special Projects:

- Administering the ADR requirements.
- Participate in Qualifying Facilities ("QF") litigation regarding the proposed QF-PGA.

### *COMPLIANCE WORK RESPONSIBILITIES*

#### Compliance Program:

- Develop and implement penalties for SCs, Participating Generators and other Market Participants for events of non-compliance with the ISO Tariff, protocols, and agreements.

#### Special Projects:

- Develop and maintain a generator registry, and monitor metering staff exemption requests;
- Determine compliance requirements for AB 1890, NERC, WSCC, WSCC Minimum Operating Reliability Criteria ("MORC"), WSCC RMS and Local Reliability Criteria and implement compliance requirements as necessary;
- Coordinate with other ISO staff to implement Ancillary Services certification and develop procedures for monitoring compliance with ISO Tariff requirements for certification; and
- Monitor failure to meet testing requirements for Ancillary Services and assessment of penalties.

### *OTHER PROJECTS WORK REQUIREMENTS*

#### Support of Other Departments:

These include the Legal and Regulatory Department, other Client Service Sections, Operations, Market Surveillance and IT.

#### Special Projects:

- Support or lead teams on Existing Contracts issues;
- Maintain a library of all FERC orders impacting agreements and compliance;
- FERC proceedings not initiated by Contracts and Compliance;
- FERC complaints;
- CPUC proceedings;
- ISO Tariff amendment summary;

- Agreement tracking system;
- AGC requirements for generators;
- Voltage Support Agreements; and
- Transmission Access Charge settlement proceeding.

**Client Services**  
**Client Relations**  
**Cost Center 1741**

Cost Allocation Methodology and Percentages:

1.	Control Area Operations	15%
2.	Inter-Zonal Scheduling	5%
3.	Market Functions	<u>80%</u>
	Total	100%

Description of Activities:

The Client Relations group is the primary business interface between the ISO and its clients (*i.e.*, SCs, transmission owners, Participating Generators, municipalities, and adjacent control areas). To implement this responsibility in daily operations, Client Relations:

- Establishes, builds, and maintains strong working relationships with the clients of California ISO;
- Assumes overall responsibility for training and certifying SCs;
- Resolves Client business and operational issues requiring close coordination among the various departments within to the ISO;
- Communicates clients' issues to the ISO and ISO issues to clients;
- Works with other functional departments within the ISO to ensure client satisfaction;
- Resolves clients' disputes on billing and settlement statements; and
- Ensures sound credit practices and facilitates superior client services.

**Strategic Development and Communications**  
**Strategic Development and Communications - General**  
**Cost Center 1811**

Cost Allocation Methodology and Percentages:

The costs related to the Strategic Development and Communications - General cost center are allocated to the three ISO functional categories based on the results of the Direct Operating cost allocation.

Description:

The Strategic Development and Communications - General group oversees the activities of the Communications and Board of Governors groups.

## **Strategic Development and Communications Communications Cost Center 1821**

### Cost Allocation Methodology and Percentages:

The costs related to the Communications cost center are allocated to the three ISO functional categories based on the results of the Direct Operating Cost allocation.

### Description:

The Communications group is responsible for the Corporate Communications and Governmental Relations functions of the ISO, including internal and external communications, media relations, and the relationship with legislators, Board of Governors, stakeholders, and governmental regulators, including:

- Preparation and distribution of corporate internal information, news releases media relations, and lobbying activities;
- Planning and execution of corporate special events;
- Review and analysis of the expenditures, operations, and workflow of the unit to maximize operational efficiency of the organization;
- Coordination of the development of business plans, processes, and procedures to manage internal communications, government, and media relations; and
- Coordination of the external communications and governmental relations plans with managers and executives at various levels of the organization and the Cal PX.

## **Strategic Development and Communications Board of Governors Cost Center 1651**

### Cost Allocation Methodology and Percentages:

The costs related to the Board of Governors cost center are allocated to the three ISO functional categories based on the results of the allocation of the Direct Operating cost allocation.

## Debt Service

Total Debt Service costs for 2001 are \$63.14 million, representing principal and interest payments related to the May 2000 bond issuance of \$293 million, and a planned 2001 issuance of \$37.7 million. The proceeds of the 2000 offering provided \$36.1 million of new funds for capital expenditures, and funds to refinance the 1998 bond issuance of \$301.4 million, which provided for funds for the ISO's startup, infrastructure, and capital expenditures. A 2001 issuance is planned for the budgeted 2001 capital of \$37.7 million.

The debt service costs are allocated to the three functional categories based on the type of spending the funds were used for:

- I. Infrastructure (Direct Assignment)
- II. Infrastructure (Allocated Items)
- III. Startup (Allocated Items)
- IV. Other Software and Enhancements (Direct Assignment)
- V. 2000 Capital (Direct and Allocated Items)
- VI. Budgeted 2001 Capital (Direct and Allocated Items)

The debt service costs related to the planned 2001 bond issuance have been allocated to the three functional categories based on the results of the allocation of total bond spending to date. In the future, these costs will be allocated to the appropriate category, as funds are spent.

### ***I. Infrastructure (Direct Assignment):***

Description	Cost (in thousands)	Allocation Method <b>CAO</b> = Control Area Operations <b>IZS</b> = Inter-zonal Scheduling <b>MO</b> = Market Operations
<i>EMS</i> - Performs real time monitoring, control and analyses of the ISO-coordinated power system.	\$16,470	Directly Assigned CAO = 100%
<i>Scheduling Infrastructure (SI)</i> : See description below.	\$27,102	CAO = 39% IZS = 20% MO = 41%
<i>Scheduling Applications (SA)</i> : See description below.	\$31,681	CAO = 35% IZS = 25% MO = 40%
<i>Balance of Business Systems (BBS)</i> : See description below.	\$48,173	MO = 100%
<i>MDAS</i> - MDAS is used to collect metering data from all generators and others connected directly to the transmission lines, tie points and zonal interface points. Refers to the metering standards, data servers, interface equipment, databases and software that allow the ISO to collect that data.	\$8,166	Directly Assigned CAO = 10% MO = 90%
RMR Generation Software	\$56	Directly Assigned CAO = 100%
Market Analysis Software	\$238	Directly Assigned MO = 100%



Vehicles	\$96	Directly Assigned CAO = 10% MO = 90%
FERC Study Software	\$11	Directly Assigned CAO = 25% IZS = 25% MO = 50%
Generator Communications Project Software	\$975	Directly Assigned CAO = 100%
Secondary Registration System ("SRS") Software for Firm Transmission Rights ("FTR")	\$1,049	Directly Assigned IZS = 100%
ETC Software	\$891	Directly Assigned IZS = 100%
FTR Auction Software	\$17	Directly Assigned IZS = 100%
Area Control Center ("ACC") Upgrades and Generator Control: Redundant ICCP nodes, software (AGC modifications and ICCP) and labor to allow the ISO EMS system to communicate with these IOU control centers on a temporary basis.	\$1,162	Directly Assigned CAO = 100%
<b>Total Infrastructure</b>	<b>\$136,087</b>	

The allocation of the SI/SA/BBS costs was based on a detailed assessment of the contract for this system. Individual contract milestones, with associated costs payable to the vendor for completion thereof, were assessed and classified into one or more of the five functional categories. A brief description of those systems follows:

- SI provides the information management services needed by the scheduling system. It includes the hardware, software and databases that allow the ISO to collect, validate, store, transfer, archive and audit the energy and ancillary services schedules nominated or accepted by the ISO from SC's.
- SA is the applications used by the ISO's scheduling personnel to assess the state of the transmission system, to evaluate the Preferred Schedules submitted by SCs and to establish committed operating schedules. These applications include congestion and transmission management software necessary to assist in congestion management and to determine the transmission price associated with the use of congested inter-zonal transmission paths.
- BBS refers to the computer and other systems to support the following business processes: 1) Settlements to calculate payments owed between the ISO and SCs for imbalances, congestion and ancillary services; 2) Billing and Credit to support accounting, invoicing, payment and collection of these payments; 3) General accounting systems and administrative functions associated with daily ISO operations.

The allocation methodology used to allocate these costs to the ISO Service Categories involved a detailed review of the contract milestones, and costs associated with those milestones. The costs related to each milestone were assigned to the appropriate ISO Service Category. ISO Operations staff performed this assignment process, with the assistance of the ISO finance staff.

## **II. Infrastructure (Allocated Items)**

The following infrastructure items are generally used by all ISO functions, and are allocated based on the results of the total operating cost allocation, total headcount or specific Department results.

Description	Cost (in thousands)	Allocation Method
Issue Management System - Remedy	\$692	Operating costs
Security System – Cryptographic Universal Design Architecture (“CUDA”)	\$6,993	Operating costs
Corporate accounting system - Oracle	\$2,993	Operating costs
Electronic Document Management System (“EDMS”)	\$1,715	Operating costs
HR System - Imperativ	\$136	Operating costs
HR System - ABRA	\$38	Operating costs
System Monitoring and Management Software - Tivoli	\$200	Operating costs
Data Warehouse	\$1,279	Operating costs
Network Software	\$630	Operating costs
Facilities	\$10,566	Total Headcount
Furniture	\$5,391	Total Headcount
Facilities – Office Equipment	\$1,330	Total Headcount
Transmission Information Display System (“TIDS”) Software	\$139	Operating costs
Other software and enhancements	\$3,482	Operating costs
Communication Infrastructure: Contract with MCI to provide voice and data communications that allow the ISO to communicate with market participants, control and monitor the power grid, and transport metering data.	\$27,040	Results of Telecommunications Dept Operating cost Allocation
Computing Management Infrastructure: Contractually provided computing environment including office automation hardware and software, Help Desk support, and system management tools.	\$6,816	Results of IT Direct Operating cost Allocation
<b>Total Infrastructure</b>	<b>\$69,440</b>	

## **III. Startup (Allocated Items)**

The following infrastructure items are used by all ISO functions, and are allocated based on either the results of the operating cost allocation, or total infrastructure costs developed by the ISO Restructuring Trust (“Trust”).

Description	Cost (in thousands)	Allocation Method
Trust Administration and Regulatory Expenses: Trustee and staff costs, legal counsel, accounting support, meetings and audit expenses for ISO Restructuring Trust.	\$5,692	Results of Trust infrastructure
Interest and Fees through March 31, 1998: Interest paid on development capital.	\$1,261	Results of Trust infrastructure

User Groups: Temporary ISO staff to work with vendors on system development from an end-user perspective before permanent ISO staff was available.	\$957	Operating costs
Startup Costs through March 31, 1998	\$52,897	Operating costs
Working Capital three months from April to June 1998: Costs of consultants who performed project management and system integration functions for the development of subsystems and infrastructure necessary to operate the ISO	\$21,692	Operating costs
<b>Total Startup</b>	<b>\$82,499</b>	

#### **IV. Other Software and Enhancements (Direct Assignment)**

The remainder of the 1998 Bond funds have been allocated based on direct assignment.

Description	Cost (in thousands)	Allocation Method <b>CAO</b> = Control Area Operations <b>IZS</b> = Inter-zonal Scheduling <b>MO</b> = Market Operations
EMS/MDAS and Participating Load Program	\$1,684	Directly Assigned CAO = 72% IZS = 1% MO = 27%
SA/SI/BBS	\$11,690	Directly Assigned CAO = 36% IZS = 6% MO = 58%
<b>Other Software and Enhancements</b>	<b>\$13,374</b>	

#### **V. 2000 Capital (Direct and Allocated Items)**

The 2000 Bond funds have been allocated based on direct assignment, total headcount or the results of the operating cost allocation.

Description	Cost (in thousands)	Allocation Method <b>CAO</b> = Control Area Operations <b>IZS</b> = Inter-zonal Scheduling <b>MO</b> = Market Operations
Site for new facility	\$7,695	Total Headcount
New building development	\$1,805	Total Headcount
SA/SI/BBS	\$535	Directly Assigned CAO = 36% IZS = 6% MO = 56%
Other systems	\$5,275	Operating costs

Facilities	\$1,256	Total Headcount
Vehicles	\$48	Directly Assigned CAO = 100%
Other software and enhancements	\$19,486	Direct allocation and Operating costs
<b>Total 2000 Capital</b>	<b>\$36,100</b>	

**V. Budgeted 2001 Capital (Direct and Allocated Items)**

The 2001 Budgeted Capital funds have been allocated based on either direct assignment or the results of the operating cost allocation.

Description	Cost (in thousands)	Allocation Method <b>CAO</b> = Control Area Operations <b>IZS</b> = Inter-zonal Scheduling <b>MO</b> = Market Operations
EMS replacement system	\$10,000	Directly Assigned CAO = 100%
Comprehensive Market Reform	\$20,000	Directly Assigned CAO = 7% IZS = 47% MO = 46%
Other software and enhancements	\$7,774	Direct allocation and Operating costs
<b>Total Budgeted 2001 Capital</b>	<b>\$37,774</b>	