

ANALYTICAL SUPPORT FOR CALIFORNIA ISO  
GRID MANAGEMENT CHARGE  
FOR 1999

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CALIFORNIA ISO

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# OVERVIEW OF COST ALLOCATION

## Overview of Cost Allocation Methodology

The California ISO ("ISO") has developed a cost allocation matrix which allocates the ISO's 1999 operating and maintenance costs to the three functional categories that were developed by the ISO's Unbundling Project Team:

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

The cost allocation matrix lists all ISO costs that are elements of the Grid Management Charge ("GMC"), including operating costs and debt service.

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-by-department basis. The responsible managers and directors of each cost center reviewed their costs and provided, as an input to this analysis, ratios that directly assign their costs to the three functional categories listed above. A description of the tasks and responsibilities of each cost center, the results of their assignments, and any commentary related to these assignments is provided below. In general, most operating costs were assigned 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, were allocated based on the results of direct allocations. The cost allocation matrix and the descriptive text that is included for each cost center discuss the methodology used for allocating all operating costs.

Debt service costs are allocated to the functional categories by first listing the components of the \$301.4 million May 1998 bond issuance. The debt service costs are recovered through the GMC in an amount sufficient to cover principal, interest, and operating reserve payments. Principal and interest payments totaled \$43.14 million in 1999. The initial borrowing provided funding for items such as initial infrastructure costs, future capital expenditures, and working capital. The costs related to these items are allocated to the three cost categories using various methods, including a direct cost assignment for the infrastructure and capital expenditure costs, and a cost assignment based on the results of the operating costs for other categories, such as working capital costs.

## 1999 Budgeted Cost Categories

The cost allocation matrix calculates ratios which show the percentage of total ISO costs associated with the provision of each of the three categories of services offered by the ISO:

- |    |                         |        |
|----|-------------------------|--------|
| 1. | Control Area Operations | 46.37% |
| 2. | Inter-Zonal Scheduling  | 6.81%  |
| 3. | Market Operations       | 46.82% |

These ratios are then applied to the ISO's 1999 budgeted operating expenses. Other revenues and debt service resulting in revenue requirements for each of the cost categories for 1999 (in thousands) are:

1.	Control Area Operations	\$73,621
2.	Inter-Zonal Scheduling	10,807
3.	Market Operations	<u>74,306</u>
	Total	\$158,734

After the determination of the revenue requirement associated with each of the three cost categories, the billing determinant volume used to recover the costs in each category is determined. The volumes using actual 1999 data are as follows (in GWhs):

1.	Control Area Operations	235,437
2.	Inter-Zonal Scheduling	66,388
3.	Market Operations	101,069

Next, 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 (in \$ per MWh), resulting in the following rates:

1.	Control Area Operations	\$0.3127
2.	Inter-Zonal Scheduling	\$0.1628
3.	Market Operations	\$0.7352

#### 1999 Actual Results

Applying the rates listed above to the actual volumes results in the following revenues for 1999 (in thousands):

1.	Control Area Operations	\$76,763
2.	Inter-Zonal Scheduling	10,807
3.	Market Operations	<u>74,306</u>
	Total	\$161,876

Applying the allocation formula to the ISO's actual operating expenses, other revenues and debt service results in the following total actual costs for each category in 1999 (in thousands):

1.	Control Area Operations	\$70,955
2.	Inter-Zonal Scheduling	11,606
3.	Market Operations	<u>74,709</u>
	Total	\$157,270

The resulting Contribution (reduction) of Operating reserves for each cost category for 1999 (in thousands):

1.	Control Area Operations	\$5,808
2.	Inter-Zonal Scheduling	(799)
3.	Market Operations	<u>(403)</u>
	Total	\$4,606

# FUNCTIONAL CATEGORY DESCRIPTIONS

A description of the three categories of services performed by the ISO follows.

1. **Control Area Operations (Grid Reliability):** This category is responsible for Managing the control area and 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 operation studies;
  - performing system security analyses;
  - maintaining 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.
  
2. **Inter-Zonal Scheduling:** 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 to participants through ancillary services auctions, energy balancing services and market surveillance; providing metering, billing and settlements activities. This category is responsible 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 cost categories follows.

<b>Cost Center</b>		<b>Allocation Method</b>
1111/1211	Human Resources/ Chief Executive Officer	Allocated on % Total Headcount
1221	Administrative Services	Allocated on % Total Headcount
1231	Facilities and Security	Allocated on % Total Headcount
1300	Finance and Accounting Department	Allocated on Resulting % of Total Operations, Client Services, and Information Technology ("IT") Costs
1341	Billing and Settlements	Allocated on results of 1722, 1724 and 1725
1342	Applications Support	Direct Allocation
1343	Preliminary Settlements	Direct Allocation
1344	Final Settlements	Direct Allocation
1411	Information Technology (IT) General	Allocated on % Total IT Division Direct Costs
1421	Application Services – Scheduling Infrastructure, Scheduling Applications and Balance of Business Systems (SI/SA/BBS)	Functional Use Estimate
1431	Computing Services	Functional Use Estimate
1441	Telecommunication Services	See detailed allocation information
1451	Information Security	Allocated on % Total IT Division Direct Costs
1461	Operating System Support – Energy Management Services (EMS)	Direct Allocation
1462	Metering and Meter Data Acquisition System (MDAS)	Direct Allocation
1463	Operations Systems	Direct Allocation
1464	Generation Control Project	Direct Allocation
1471	Strategic Planning	Allocated on % Total IT Division Direct Costs
1511	Operations - General	Allocated on % Direct Cost
1521	Planning	Direct Allocation
1541	Operations and Engineering General	Allocated on % Direct Costs of Operations
1542	Outage Coordination	Direct Allocation

1543	Operations Engineering	Direct Allocation
1544	Operations Scheduling	Direct Allocation
1545	Operations Dispatch	Direct Allocation
1546	Security Coordination	Direct Allocation
1547	Director of Engineering and Maintenance	Allocated on results of 1542 and 1543
1548	Operations Training and Maintenance	Allocated on % Direct Headcount
1549	Manager of Training	Allocated on % Direct Headcount
1551	Market Operations	Direct Allocation by Personnel and Budgeted Items
1552	Manager of Markets	Direct Allocation by Personnel
1553	Applications Development	Direct Allocation by Personnel
1554	Operations Research and Development	Allocated on % Direct Headcount
1555	Operations Support Group	Allocated on % Direct Headcount
1611	General Counsel ("GC")	Allocated on % Legal Before GC
1631	Legal and Regulatory	Allocated on Resulting % of Total Operations, Client Services, and IT Costs
1641	Market Surveillance	Functional Use Estimate
1651	Board of Governors	Allocated on % Total Cost
1711	Client Services-General	Allocated on % Directs
1731	Contracts and Compliance	Direct Allocation
1741	Client Relations	Direct Allocation
1811	Strategic Development and Communications	Allocated on Resulting % of Total Operations, Client Services, and IT Costs
1821	Communications	Allocated on Resulting % of Total Operations, Client Services, and IT Costs
Debt Service	Debt Service	See detailed allocation information

Notes:

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

The allocation percentages were developed based on 1999 budgeted information. In this unbundling filing, the percentages have been applied to 1999 actual cost information.

## **CEO/Human Resources CEO and Human Resources Cost Center 1111/1211**

### Cost Allocation Methodology and Percentages:

The costs related to the Chief Executive Officer (“CEO”) and Human Resources group are allocated to the three ISO functional categories based on the results the allocation of costs by headcount of all other ISO departments including Operations, Information Technology (“IT”), Client Services, Legal, Finance, and Strategic Development and Communications.

### Description

The Human Resources Department is responsible for health and welfare benefits administration, payroll, employee relations, recruiting, and training.

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

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

### Cost Allocation Methodology and Percentages:

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

### Description

The Corporate Services group is responsible for three functions:

1. Security - This group is 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.
2. Safety – This group is 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.
3. Administration – This group is responsible for coordinating corporate support functions including mail services, reception desk, procurement administration, 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 Group Cost Center 1231**

### Cost Allocation Methodology and Percentages:

The costs related to the Facilities group are allocated to the three ISO functional categories based on the results of the direct cost allocation for the Operations, IT, and Client Services groups as a whole.

### Description

The Facilities group maintains and provides for the necessary physical infrastructure of the California ISO. This includes, but is not limited to:  
all property lease agreements - payments, negotiations, etc.;  
all physical upgrades, maintenance and modification to building structures housing both control centers including all raised floor computer room areas and Dispatch;  
planning, design and maintenance support to accommodate ISO personnel in all administrative office areas;  
planning and oversight of acquisition, build-out and transition into all newly acquired rental or leased properties for the ISO;  
all maintenance, furnishings, modifications and upgrades of heating, ventilation, air conditioning (“HVAC”), and mechanical systems as well as electrical distribution for all control center operations, computer rooms, and administrative areas for all leased or rented ISO facilities.

## **Finance Finance and Accounting Cost Center 1300-1331**

### Cost Allocation Methodology and Percentages:

The costs related to the Finance group are allocated to the three ISO functional categories based on the results of the direct cost allocation for the Operations, IT, and Client Services groups as a whole.

### Description

The Finance and Accounting group is responsible for the following:

- Financial reporting
- Corporate accounts payable and receivable
- Payroll
- Treasury and Cash Management
- Risk Management
- Debt administration
- Budgeting and Financial Planning
- Benchmarking
- Audits both Financial and Operational
- Internal controls
- Rates and Unbundling
- Market close

## **Finance**

### **Billing and Settlements**

#### **Cost Center 1341 (formerly 1721)**

##### Cost Allocation Methodology and Percentages:

The costs related to the Billing and Settlements Directorate are allocated to the three ISO functional categories based on the results of the allocation for the cost centers that report to Billing and Settlements, which are:

- 1342 (formerly 1722) Application Services
- 1343 (formerly 1724) Preliminary Settlements
- 1344 (formerly 1725) Final Settlements

##### Description

Billing and Settlement 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 tariffs and protocols. Subsequent to the settlement period, operating and billing data is compiled by the Settlements and Metering department in order to publish, in accordance with the ISO's payment calendar, a preliminary 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 Bills are transmitted daily in accordance with the ISO calendar to each Market Participant. Final Billing Statements and monthly Grid Management Charges are summarized on monthly invoices sent to each Market Participant in order to collect and pay for use of the ISO market and control area needs.

## **Finance**

### **Applications Support**

### **Cost Center 1342 (formerly 1722)**

#### 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, 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:

- Performing daily settlement processing. This includes executing and monitoring the daily settlement runs, generating Settlement Statements and issuing invoices to the Market Participants.
- Providing end-user support for the Settlement Analysts.
- Diagnosing Settlement errors, determining sources of problems and making corrections as necessary.
- Assuming overall accountability in maximizing and improving system availability.
- Proactively pursuing system improvements to promote an efficient and effective computing environment that will meet the department's business needs.
- Providing technical support on issues related to Settlement.
- Identifying any software enhancements that are required to support the Division's business needs and determining whether these enhancements should be performed in-house or through an external vendor.
- For in-house software projects, the group is responsible for the defining, designing, coding, testing, and deploying of the new software.
- For software enhancements performed by external vendor, the group is responsible for managing the project throughout the entire implementation cycle. Preparing the requirements specification, working with the vendor throughout the design phase, approving the detail system design and test plan, performing acceptance tests, and ultimately deploying the software to the production environment.

**Finance**  
**Preliminary Settlements**  
**Cost Center 1343 (formerly 1724)**

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, and for the correct implementation of the necessary manual work-arounds to the existing Settlements software. It coordinates with Operations to obtain information necessary for production of correct Settlement Statements, investigates the Settlement impact of proposed operating conditions and client suggestions. It works with the Application Support group and software vendors to design, test, and enhance Settlement software. The Department manages the authorized credit limit for ISO customers. The Department is responsible for Settlements specific review of the ISO Tariff and making recommendations for changing the ISO Tariff and protocols and also supports the Settlement Improvement Team, and the Grid Management Charge Unbundling Team.

**Finance**  
**Final Settlements**  
**Cost Center 1344 (formerly 1725)**

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 Final Settlements group is responsible for the accuracy and timeliness of Final Settlement Statements and the correct implementation of the necessary manual work-arounds to the existing Settlements software. It supports the Client Relations group in resolving Market Participant issues and the correct implementation of the approved disputed items. It also maintains the Master File. The Department is responsible for maintaining and operating a dedicated billing system for Market Participants and ensuring timely and accurate bills and payment processing. The Department also coordinates with Operations to obtain information necessary for production of correct Settlement Statements and supports the Transmission Access Charge Team and the Firm Transmission Rights Team.

**Information Technology**  
**IT 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 groups that report to the Chief Information Officer:

- 1421 Application Services
- 1431 Computing Services
- 1441 Telecommunications
- 1451 Information Security
- 1461 Operating System Support - EMS
- 1462 Metering and MDAS
- 1463 Operating Systems – General
- 1464 Generation Communication Project
- 1471 IT Strategic Planning

Description

This cost center contains the costs associated with the activities of the Chief Information Officer, who oversees and directs the activities of the groups listed above.

# Information Technology

## Application Services

### Cost Center 1421

#### Cost Allocation Methodology and Percentages:

1.	Control Area Operations	25%
2.	Inter-Zonal Scheduling	5%
3.	Market Operations	<u>70%</u>
	Total	100%

#### Description

The ISO organization works as a cooperative whole in identifying and effectively and efficiently applying information technology to 1) meet business requirements and 2) create new business opportunities. This requires a close alignment of business and IT strategies and investments. The Application Services group manages the IT business relationship with the customers (internal and external) to provide information technology based products, services, and strategies that are cost effective; add value to the business; and contribute to meeting the business objectives of the company in the marketplace. Specific tasks include:

- Provide processes, procedures, tools, and services to support enterprise-wide application of information technology and information delivery.
  - ⇒ Information Management, including Data Warehousing and Electronic Document Management
  - ⇒ Web Administration – Intranet and Internet
  - ⇒ Data base Administration
  - ⇒ Project Management, Business Analyst, and Programming (Human Resources, Finance) support to Business Units
  - ⇒ Year 2000 Program including Project Management and System Inventory, Assessment, and Testing
- Ensure reliability of business functions through implementation of programs and policies to preserve computer application and data integrity including:
  - ⇒ Change Management
  - ⇒ Software Release Management
  - ⇒ Integration System Testing
  - ⇒ Scheduling Coordinator Testing
  - ⇒ Backup/Recovery Procedures
- Actively facilitate communication and understanding of system integration issues by leadership/sponsorship of:
  - ⇒ Technical Change Board
  - ⇒ Technical Standards Work Group
  - ⇒ Development of Enterprise Business Model

# Information Technology

## Computing Services

### Cost Center 1431

#### Cost Allocation Methodology:

1. Control Area Operations	33%
2. Inter-Zonal Scheduling	5%
3. Market Operations	<u>62%</u>
Total	100%

#### Description

The IT Computing Services group provides corporation wide computing infrastructure support including:

*Platform Support* – Computing hardware, operating system and layered product configuration, installation, testing, and maintenance, along with regular system administrative 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 7 days a week, 24 hours 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.

*Disaster Recovery Support* – Corporation wide backup and recovery support for computing platforms and corporate electronic data, including the management and administration of regular system backups and applicable recovery processes.

*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.

*Remedy (Issue Management System)* - Configuration, installation, training, support, and administration of the system.

*Asset Management* – Central procurement for computing infrastructure components, including lease management. In addition, Computing Services is accountable for the inventory of all computing hardware, software and documentation.

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

### Cost Allocation Methodology and Percentages:

The method used to allocate costs related to Telecommunications relies mainly on the count of Full Time Employees ("FTEs") associated with the three ISO services. See the attached Analysis.

### Description

The Telecommunications Department is responsible for providing reliable data and voice communications infrastructure for the ISO, 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 "market place" for the direct Market Participants. In addition, it integrates all power revenue metering points and supports the consolidation of metering data.

The Telecommunications Department 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 of the MCI and other service provider contracts.

### Allocation Methodology

The MCI Contract costs comprise over 90% 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 allocation of the costs of the MCI contract to 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.

Under our allocation methodology, we view the MCI charges 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 users in specific groups such as Operations, 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, and major category of MCI Contract costs, totaling approximately \$29.26 million, was allocated (where possible) based on usage factors. The following steps were used for the allocation.

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

For the remaining \$27.26 million, we then determined what major functional groups in the ISO were utilizing the Bandwidth and WAN, Usage and Data Premises cost categories. These functional groups were identified as Operations, Client Services and Market Surveillance. For each functional group in these departments, the employee headcount was allocated to the three ISO service categories. The MCI Costs were then allocated to each service category based on the corresponding headcount.

We assumed that a large number of FTEs present in the Client Services group were involved in mostly manual, non-MCI usage-related activity. We therefore made adjustments to prevent an inappropriately high level of MCI costs from being allocated to the Market Operations functional cost category by excluding all FTEs associated with manual work for Client Service functions like Contracts and Compliance and Client Relations. Similarly, the FTEs in Client Services for Applications Support were excluded. In addition, the FTEs for Metering and MDAS were reduced by half, to account for the semi-manual nature of this function. Thus, for Client Services, MCI costs were allocated based only on FTEs for Billing and Settlement, Application Support, Preliminary Settlements, Final Settlements, and Metering and MDAS (50% FTEs).

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

<b>Category</b>	<b>1999 Amt.(\$000)</b>	<b>Control Area Operations</b>	<b>Inter-zonal Scheduling</b>	<b>Market Operations</b>
Total MCI Costs:	\$33,258			
Direct Allocation	\$2,000	0%	0%	100%
Total Headcount Allocation	\$4,000	57%	6%	36%
Specific Headcount Allocation	\$27,258	58%	7%	35%
Allocation Ratio	100%	55%	7%	39%

## **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 other IT Groups as a whole:

### Description

The Information Security Services (“ISS”) Department 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 also is responsible for the education, awareness, and compliance of these policies, procedures and standards. ISS also provides security design, engineering, and implementation of security infrastructure for existing and new applications, communication systems, and e-commerce solutions. Other activities the ISS performs are the monitoring and auditing of security logs, administration of remote access platforms and digital certificates, encryption technologies, and responding to and investigating security incidents. ISS also supports business continuity planning and testing for the ISO and external parties.

# Information Technology

## Operating System Support - EMS

### Cost Center 1461

#### Cost Allocation Methodology and Percentages:

1. Control Area Operations	98%
2. Inter-Zonal Scheduling	2%
3. Market Operations	<u>0%</u>
Total	100%

#### Description

##### *Control Area Operations:*

Support of the Energy Management System (“EMS”) to maintain, troubleshoot problems, 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 archiving, and data processing for transmission, and generation monitoring. Activities related to this functionality are:

1. Data collection, archiving, and retrieval;
2. Maintenance of SPL calculation application and addition of calculations as required;
3. AGC functional support;
4. Operating reserve calculations – define and change as required;
5. System builds;
6. Database builds;
7. Database support; and
8. Inter Control Center Protocol (“ICCP”) functionality; this typically requires the greatest percentage of EMS staff time.

The Scheduling Infrastructure (“SI”) system processes market-driven schedules from the Cal PX and transfers the final schedules to the EMS. These schedules, together with spot market schedules, are then used to operate the electric system. The EMS then processes the schedules for use by AGC. The activity required to maintain the scheduling application (Interchange Scheduler or “IS”), assures correct transfer of schedules from SI, and therefore checking the processing of schedules for AGC functions is usually minimal. This typically requires approximately 2% of EMS staff time.

##### *Inter-zonal Scheduling:*

This problem is rectified initially 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. These activities usually require approximately 2% of EMS staff time.

## **Information Technology Metering and MDAS Cost Center 1462 (formerly 1723)**

### Cost Allocation Methodology and Percentages:

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

### Description

Metering and the Meter Data Acquisition System ("MDAS") are responsible for providing Settlement Ready metering data for the ISO billing system. This includes:

- Auditing the ISO meter inspection process and providing engineering judgement related to proposed and existing metering systems.
- Operating and maintaining the MDAS, which directly acquires metering data from ISO metered entities and receives metering data from SCs.
- Auditing metering data collection, storage, and processing systems of the SC's.
- Maintaining the metering standards and specifications for approved meters and metering systems.
- Coordinating and approving proposed metering system-engineering designs.
- Verifying and processing raw meter data into Settlement Ready data, which the ISO uses for generating preliminary and final financial settlement statements for the Market Participants.

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

### 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 Operations Systems group has the overall responsibility for the efficient operation of computer-based services, based on the EMS and SCADA control systems.

## **Information Technology Generation Communication Project Cost Center 1464**

### Cost Allocation Methodology and Percentages:

1.	Control Area Operations	96%
2.	Inter-Zonal Scheduling	4%
3.	Market Operations	<u>0%</u>
	Total	100%

### Description

All functions and responsibilities related to this project are now incorporated into the Operational Data Support and Field Data Acquisition teams.

## **Information Technology IT Strategic Planning Cost Center 1471**

### Cost Allocation Methodology and Percentages:

The costs related to the IT Strategic Planning cost center (later renamed Information Architectures and Technology) are allocated to the three ISO functional categories based on the results of the allocation for other IT Groups as a whole.

### Description

The IT Strategic Planning group defines approaches efficiently to capture 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 for the Operations group as a whole.

### Description

This cost center contains the costs associated with the activities of the Chief Operation Officer (VP Operations), who oversees and directs the activities of the Operations group.

## **Operations Grid Planning Cost Center 1521**

### 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 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 a new generator 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 performs studies to determine Reliability Must-Run ("RMR") contract requirements and 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 (where 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 ("WICF") and the North American Electric Reliability Council ("NERC").

## **Operations Operations and Engineering General Cost Center 1541**

### Cost Allocation Methodology and Percentages:

The costs related to the Operations and Engineering General cost center are allocated to the three ISO functional categories based on the results of the allocation for the Operations group as a whole.

### Description

The cost center contains the budgeted costs for the VP of Operations, who oversees all Operations functions. The costs in this area consist primarily of fees for consultants for the performance of a variety of Operations related consulting projects.

# 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:

### *Control area operations:*

The majority of the outage coordinator's time is spent in this area. The coordinators work closely with Operating Engineers to help provide accurate path ratings and integrated outages to ensure adherence to minimum reliability standards.

### *Scheduling:*

The outage coordinators finalize path ratings and allocation percentages 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.

### *Congestion:*

When transfer paths are derated, congestion can occur. Although this process of mitigating congestion is similar to "scheduling" described 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 Transmission Contract (“ETC”) 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; and
- Supporting EMS application and screen development.



## **Operations Scheduling Cost Center 1544**

### Cost Allocation Methodology and Percentages:

1. Control Area Operations	82%
2. Inter-Zonal Scheduling	11%
3. Market Operations	<u>7%</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 also performed to facilitate the ISO markets, congestion, and settlements processes. All of these functions require accommodations to assure that ETCs are honored.

All interchange transactions must be coordinated with adjacent and external control areas within the limits of the 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 ETC or New Firm Use ("NFU") transmission. Interchange scheduled on behalf of all SCs must be reconciled to meet WSCC and NERC criteria.

# Operations

## Grid Operations and Dispatch

### Cost Center 1545

#### Cost Allocation Methodology and Percentages:

1. Control Area Operations	75%
2. Inter-Zonal Scheduling	5%
3. Market Operations	<u>20%</u>
Total	100%

#### Description

The Grid Operations group is responsible for:

- Overseeing and performing all Real Time Operations of the ISO Electrical Grid and Control Area.
- Ensuring reliable and safe operation of the California ISO Electrical Grid.
- Reliable operation, including the exercise of any authority needed to maintain control of the Grid, including authority over all PTO's and Utility Distribution Companies ("UDC's") with regards to system reliability and system emergencies, the ability to order must run generating units on-line, and manual load shedding as needed.
- Coordination of load and system restoration after a major system disturbance in cooperation with the WSCC Security Coordinator.
- Declaring a 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 and 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, 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 curtailable demand.
- Coordinating generation resources to meet system load requirements and satisfy contractual obligations.

**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:

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 Engineering and Maintenance group are allocated to the three ISO functional categories based on the results of the cost allocation for cost centers 1542 and 1543.

Description

The Director of Engineering and Maintenance is responsible for overseeing Outage coordination (cost center 1542), Operations Engineering (cost center 1543), the satellite operations manager, and transmission maintenance.

## **Operations Operations Support and Training (“OSAT”) Cost Center 1548, 1549 and 1554**

### Cost Allocation Methodology and Percentages:

The costs related to the OSAT group is allocated to the three ISO functional categories based on the results of the cost allocation for the Operations group.

### Description

The OSAT group provides training and support to all groups within the Operations Department, 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). OSAT consists of three cost centers:

- 1548 Operations Training and Maintenance,
- 1549 Manager of Training, and
- 1554 Operations Research and Development

Specific roles and responsibilities include:

- Development and delivery of training programs for all areas of Operations and for Market Participants
- Management and Updating ISO Operating Procedures
- Reporting of Operating Data to WSCC and NERC (Reliability Management Service or “RMS” Reporting)
- Development of Board Documents and Tariff language for proposed changes in ISO Operations and Markets
- Emergency Operations Planning and Procedures
- Management of Special Projects that support Operations
- Transmission Information Display System (Mapping Project)
- Board Presentation Process Project
- Research and Development - Installation of tools to improve grid reliability
- Participate in NERC and WSCC committees and task forces relating to Operations and Scheduling

## **Operations**

### **Market Operations**

### **Cost Center 1551, 1552 and 1553**

#### Cost Allocation Methodology and Percentages:

1. Control Area Operations	20%
2. Inter-Zonal Scheduling	20%
3. Market Operations	<u>60%</u>
Total	100%

#### Description

The Market Operations Group is made up of 30 ISO employees. The group consists of three cost centers:

Market Operations	1551
Manager of Markets	1552
Manager of Applications	1553

Seven employees directly report to the Director of Market Operations, including the Manager of Markets and the Manager of Application Development, two Senior Market Design Engineers and three Application and Database Engineers. Seven employees report to the Manager of Applications: two Senior Market Design Engineers, two Market Support Engineers and three Application and Database Engineers. Fifteen employees report to the Manager of Markets: three Day-Ahead Grid Resource Coordinators, five Hour-Ahead Grid Resource Coordinators, five Real Time Grid Resource Coordinators and three Relief Grid Resource Coordinators.

The Market Operations group, as a whole, 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 SC's 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. Document and manage 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 ISO Tariffs and protocols.
- Administering all interface applications between the SI database and all other subsystems.
- Providing system administration support for test and development environments.
- Providing an advisory role to ISO Market Surveillance group on market power issues.

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

### Cost Allocation Methodology and Percentages:

The costs related to the Operations Support group are allocated to the three ISO functional categories based on the results of the cost allocation for the Operations group.

### 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:

Manage operations support functions to assure procedures, tools and other support needs are met for all operations groups, other ISO departments and external entities.

Prepare and manage the Operations Support Cost Center budget.

Represent the ISO in WSCC, NERC and other forums as required.

Identify and manage changes in tariffs, protocols, and market design that would improve market and grid operations.

Manage projects related to the creation or enhancement of ISO operations, functions, processes, or procedures.

## **General Counsel**

### **General Counsel - General**

### **Cost Center 1611**

#### Cost Allocation Methodology and Percentages:

The costs related to the General Counsel are allocated to the three ISO functional categories based on the results of the cost allocation for groups that report to the General Counsel:

- 1631 Legal and Regulatory
- 1641 Market Surveillance

#### Description

The General Counsel oversees the activities of the Legal and Regulatory group, Market Surveillance, and Communications.

## **General Counsel**

### **Legal and Regulatory**

### **Cost Center 1631**

#### Cost Allocation Methodology and Percentages:

The costs related to the legal and Regulatory group are allocated to the three ISO functional categories based on the results of the cost allocation for the Operations, IT, and Client Services groups as a whole.

#### Description

The Legal and Regulatory group is responsible for the preparation of all filings with the Federal Energy Regulatory Commission ("FERC") and for monitoring and participating in all ISO related FERC proceedings. These 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 the ISO's *pro forma* Agreements, including the RMR agreements, as well as 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 and California Public Utilities Commission. The Legal and Regulatory group is responsible for shaping and monitoring electric restructuring initiatives and legislative proposals on both the state and federal levels. The Legal and Regulatory group also formulates and helps implement the ISO's regulatory policies and positions. The Legal and Regulatory 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 and Regulatory group is also responsible for negotiating and drafting all pertinent financial/legal documents and maintenance of all corporate minutes and bylaws. The Legal and Regulatory group interfaces frequently with Market Operations, Planning, the Contracts and Compliance department, Client Services, and the Billing and Settlements department, to provide legal advice and regulatory guidance.

# **General Counsel Market Surveillance Cost Center 1641**

## Cost Allocation Methodology and Percentages:

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

## Description

The Market Surveillance Unit 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, the Market Surveillance Unit's function was expanded beyond the market monitoring function originally envisioned for the unit. The unit currently provides economic analysis to support decisions in a wide range of ISO decision-making processes. Specific functions of the Market Surveillance Units include:

1. Monitoring the market and developing indicators of market performance, including:
  - Prices;
  - Ancillary Service Bid Efficiency;
  - Congestion; and
  - Competitiveness of the Market.
2. Identifying and reviewing deliberate or inadvertent violations of market rules or contracts that affect the efficiency of the market.
3. Identifying and investigating potential gaming and market power abuses.
4. Performing special studies of the impacts of current and potential ISO protocols on market efficiency and performance.
5. Reviewing ISO rules and protocols from a market performance perspective, and recommending specific changes in market rules and protocols.
6. Working with other areas of the ISO to implement changes affecting market performance.
7. Supporting the Market Surveillance Committee ("MSC"), by completing special analysis to support reporting and recommendations of the MSC to ISO management.
8. Coordinating Monitoring Activities with the Cal PX Compliance Unit.
9. Reporting to FERC and other agencies.



**General Counsel  
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 headcount of all other CAISO departments, including Operations, IT, Client Services, Finance, and Strategic Development and Communications.

**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 for groups that report to this one:

- 1731 Contracts and Compliance
- 1741 Client Relations

Description

The VP of Client Relations oversees and directs the activities of the above groups.

# 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 Operations	<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.

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 revisions as needed for: expanding participation in the ISO, Interconnected Control Area Operating Agreements (“ICAOA’s) with other control area operators that have not yet executed an ICAOA, and others.

- 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.

If FERC sets an agreement for hearing, negotiate settlement of all interventions. If settlement can not be reached, then participate in litigation proceedings.

##### Special Agreements:

Develop for qualifying facilities (“QFs”) a Participating Generator Agreement (“PGA”) and Meter Service Agreement (“MSA”) to facilitate their unique operating requirements.

Determine whether changes are needed to special agreements, such as the TCA.

- Develop short-term RMR agreements.
- Assist in RMR settlements and obtain executed RMR agreements.

Develop Black Start Agreements, Voltage Support Agreements, and Emergency Assistance Agreements.

##### Administration of Contracts:

- Contract administration.

Obligations and deadlines tracking, and records management system.

- RMR agreement administration.

Review of operating procedures and operating instructions for consistency with the ISO agreements and the ISO Tariff.

##### Special Projects:

- Administering the Alternative Dispute Resolution (“ADR”) requirements.

### **COMPLIANCE WORK RESPONSIBILITIES**

#### Compliance Program:

Develop and implement penalties on Scheduling Coordinators, 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 AB1890, NERC, WSCC, WSCC Minimum Operating Reliability Criteria (“MORC”), WSCC RMS and Local Reliability Criteria and implement as necessary.

Coordinate with other ISO staff to implement Ancillary Services certification and develop procedures for monitoring compliance with ISO Tariff requirements for certification.

Monitor failure to meet testing requirements for Ancillary Services and assessment of penalties.

### **OTHER PROJECTS WORK REQUIREMENTS**

#### Support of Other Departments:

Including Legal and Regulatory Department, Other Client Service Sections, Operations, Market Surveillance and IT.

#### Special Projects:

Support or lead teams on Existing Contracts, policy regarding changing plant names, Registry for Firm Transmission Rights, library of all FERC orders impacting agreements and compliance, ISO Tariff amendment summary, agreement tracking system, Data Quality and Integrity Work Group (“DQIWG”), Y2K compliance, AGC requirements for generators, Voltage Support Agreements, and Transmission Access Charge.

**Client Services  
Client Relations  
Cost Center 1741**

Cost Allocation Methodology and Percentages:

1. Control Area Operations	13%
2. Inter-Zonal Scheduling	2%
3. Market Operations	<u>85%</u>
Total	100%

Description of Activities

Key tasks of Client Relations are as follows:

- Certification of SCs.
- Training of SCs.
- Day-to-day resolution of settlement disputes, often involving extensive research in settlements and operations.
- Answer inquiries from any Market Participants on settlements, operations, billing, etc.
- Monitor financial security of SCs.
- Participate in and lead client forums regarding market redesign, the market issues forum, and client meetings (communications).
- Serving as a business interface between the ISO and clients.
- Leadership in settlement-related good faith negotiations.
- Coordination of ETCs relative to settlements, etc.
- Support internal project teams in market redesign, market issues, stakeholder inputs, etc.

## **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 cost allocation for the Operations, IT, Client Services, and Finance Direct Cost groups as a whole.

##### Description

Strategic Development and Communications - General oversees the activities of the Communications and Board of Governors Groups.

## **Strategic Development and Communications**

### **Communications**

#### **Cost Center 1821 (formerly 1621)**

##### Cost Allocation Methodology and Percentages:

The costs related to the Communications group are allocated to the three ISO functional categories based on the results of the direct cost allocation for the Operations, IT, and Client Services groups as a whole.

##### Description

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

Preparation and distribution of corporate internal information, news releases, promoting good media relations, and lobbying activities.

Planning and executing corporate special events.

Review and analysis of the expenditures, operations, and workflow of the unit to maximize operational efficiency of the organization.

Coordinate the development of business plans, processes, and procedures to manage internal communications, government, and media relations.

Coordinate the external communications and governmental relations plans with managers and executives at various levels of the organization and the Cal PX.

## Debt Service

### Cost Allocation Methodology and Percentages:

Total Debt Service costs for 1999 were \$43.14 million representing principal and interest payments related to the May 1998 bond issuance of \$301.4 million. The proceeds of this offering were for the following four broad categories:

- Infrastructure (Direct Allocation)
- Infrastructure (Based on Total Operating Costs)
- Startup (Based on Total Operating Costs)
- Other-2000 Items

The allocation of the SI, Scheduling Applications (“SA”), and Balance of Business Systems (“BBS”) costs were 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 the SA/SI/BBS 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 are 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.

**Infrastructure (Direct Allocation):**

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>SI</i> : See description above.	\$27,102	CAO = 39% IZS = 20% MO = 41%
<i>SA</i> : See description above.	\$31,681	CAO = 35% IZS = 25% MO = 40%
<i>BBS</i> : See description above.	\$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%
GCP 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%

**Infrastructure (Based on Total Operating Costs)**

The following infrastructure items are used by all CAISO functions, and accordingly, are allocated based on the results of the total operating cost allocations.

Description	Cost (in thousands)
Issue Management System - Remedy	\$692
Security System – Cryptographic Universal Design Architecture (“CUDA”)	\$6,993
Corporate accounting system - Oracle	\$2,993
Electronic Document Management System (“EDMS”)	\$1,715
HR System - Imperativ	\$136
HR System - ABRA	\$38
System Monitoring and Management Software - Tivoli	\$200
Data Warehouse	\$1,279
Network Software	\$630
Facilities	\$10,566
Furniture	\$5,391
Facilities – Office Equipment	\$1,330
Transmission Information Display System (“TIDS”) Software	\$139
Various other software and enhancement projects	\$3,482



**Startup (Based on Total Operating Costs or Direct Allocation)**

The following infrastructure items are used by all CAISO functions, and accordingly, are generally allocated based on the results of the operating cost allocations. As noted below, however, certain other methods are used.

Description	Cost (in thousands)	Allocation Method
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 Telecom Department 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 overall operating cost allocation
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	100% assigned to Control Area Operations
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 the infrastructure costs developed by the ISO Restructuring Trust
Interest and Fees through March 31, 1998: Interest paid on development capital.	\$1,261	Results of the infrastructure costs developed by the ISO Restructuring Trust
User Groups: Temporary ISO staff to work with vendors on system development from an end-user perspective before permanent ISO staff was available.	\$957	Results of the overall operating cost Allocation
Startup Costs through March 31, 1998	\$49,934	Results of the overall operating cost allocation
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	Results of the overall operating cost allocation

***Other-2000 Items***

Bond funds unexpended by December 31, 1999, have been allocated based on an analysis of spending for year 2000 capital projects.

Description	Cost (in thousands)	Allocation Method
Unexpended Proceeds of 1998 Bond Issuance	\$16,337	Assignment of costs based on year 2000 projects