

# 2024

## BUDGET AND GRID MANAGEMENT CHARGE RATES

Prepared by the Financial Planning and Procurement Department  
California Independent System Operator Corporation



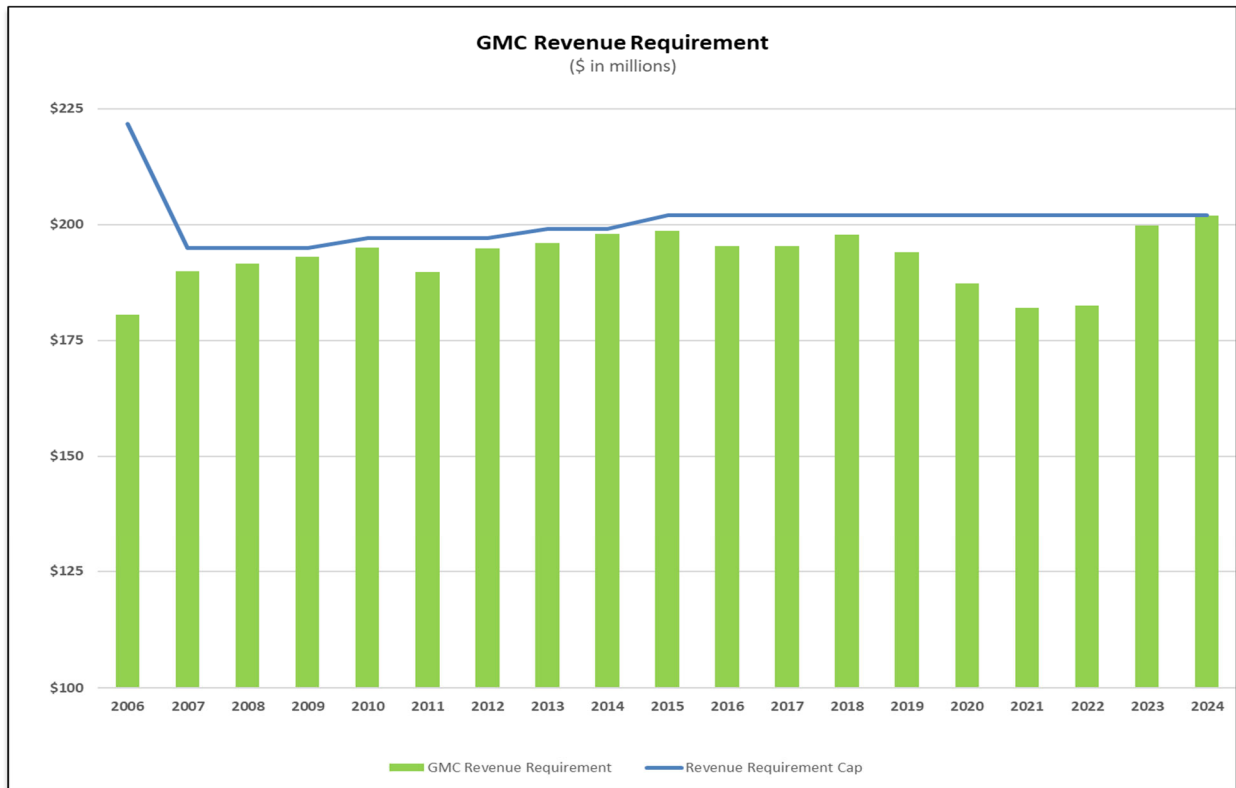
October 2023  
Draft

# Table of Contents

<b>I. 2024 GMC Revenue Requirement Summary</b>	<b>3</b>
2023 Cost-of-Service Study and 2024 GMC Update	4
Components of 2024 GMC Revenue Requirement	5
<b>II. Budget Package and Development Overview</b>	<b>7</b>
Budget Guidance	7
Aligning with the ISO's Strategic Plan	8
<b>III. O&amp;M Budget - Process View</b>	<b>9</b>
Plan and Manage Business	10
Support Business Services	10
Manage Human Capabilities	10
Develop Markets and Infrastructure	10
Operate Markets and Grid	10
Support Customers and Stakeholders	10
<b>IV. O&amp;M Budget - Resource View</b>	<b>11</b>
Salaries and Benefits	12
Telecommunications and Maintenance	17
Consultants and Contract Staff	18
Other Contracts and Professional Fees	19
Training, Travel and Other Expenses	20
Reconciliation of 2024 O&M Budget	21
<b>V. O&amp;M Budget – Functional View</b>	<b>22</b>
Corporate Services	22
Operational Services	26
<b>VI. Debt Service</b>	<b>29</b>
<b>VII. Cash-Funded Capital and Capital / Project Budget</b>	<b>30</b>
<b>VIII. Other Costs and Revenue</b>	<b>35</b>
<b>IX. Operating Cost Reserve Adjustment</b>	<b>37</b>
<b>X. Grid Management Charge and Other Calculations</b>	<b>38</b>
Components of GMC and Billing Determinants	39
Rate Calculation	39
Summary of Rates	41

# I. 2024 GMC Revenue Requirement Summary

The Grid Management Charge (GMC) revenue requirement is the means in which the ISO recovers its net operating costs. The proposed 2024 GMC revenue requirement is \$201.9 million; this represents a \$2.2 million increase over the 2023 GMC revenue requirement. The increase is primarily driven by the operations and maintenance (O&M) budget component of the revenue requirement. The 2024 O&M budget is 7% higher than 2023 primarily due to higher labor costs driven by inflationary pressures and funding for 13 new positions intended to address strain points within the organization. The ISO will offset some of the operating cost increase through continued growth in the other revenue categories, a smaller collection of capital, and a sizeable return of funds through the operating reserve credit.



Fiscal discipline remains a priority for the ISO, as evidenced by its history of stable growth of the GMC revenue requirement. Over the years, the ISO has absorbed several major initiatives over the recent years with no material impact to the GMC revenue requirement. The initiatives include launching the market redesign and technology upgrade (MRTU), constructing its secure primary and secondary locations, implementing the energy management system (EMS), as well as launching the Western Energy Imbalance Market (WEIM) and reliability coordinator services (also known as RC West). The recent years' declining trend in the net revenue requirement was a function of other offsetting revenue

growing at a pace faster than expense inflation. The 2024 net revenue requirement continues the same growth trend as the 2023 revenue requirement in which expenses exceed offsetting revenue projections, resulting in a 1% increase in the GMC revenue requirement.

## 2023 Cost-of-Service Study and 2024 GMC Update

The ISO completed its scheduled triennial Cost-of-Service Study in 2023<sup>1</sup> in accordance with its tariff. The study used activity-based costing to analyze cost and time data from 2022 to determine how much time and effort staff uses to support varying cost categories and supplemental services. The updated cost percentage allocations and fees, as a result of the Cost-of-Service Study, will be used to develop the 2024 through 2026 GMC revenue requirement and resulting charges. The updated cost category percentages are used to allocate the revenue requirement to the market services, system operations, and congestion revenue rights (CRR) services funding requirements as part of the rate calculation process. The study results are also used to update the WEIM cost category percentages and the RC funding percentage. In addition, as part of the Cost-of-Service Study, the ISO analyzed its cost to support supplemental services.

The Cost-of-Service study results indicate no shift of resources (time or dollars) in the Market Services, System Operations, or the CRR Services cost categories percentages were necessary.

The study's results indicated a slight shift of WEIM related resources was necessary. The study shows that 1.5% of the Market Services' resources shifted from the Day-Ahead Market functions to the Real-Time Market functions. While 8% of the System Operations' resources shifted from the Real-Time Dispatch functions to the Balancing Authority functions as a result of the revenue offsetting System Operations Real-Time Dispatch costs as well as a shift of resources to support Summer Readiness and Transmission Planning efforts.

The study results indicate there is a reduction in the RC funding percentage to 8% due to an increase in resources supporting efforts in the other cost categories.

The study results indicate resources to support TOR efforts have increased due to higher support costs and lower volumes. The TOR Charge will increase from \$0.18 per MWh to \$0.325 per MWh in 2024. As a reminder, the revenue collected from the TOR Charge offsets the System Operations Real-Time Dispatch costs, which lowers the System

---

<sup>1</sup> The 2023 Cost-of-Service Study and accompanying documentation is available on the ISO website at <https://stakeholdercenter.caiso.com/RecurringStakeholderProcesses/cost-of-service-study-2023>

Operations Real-Time Dispatch Charge. No other changes were made to the supplemental fee amounts.

## Components of 2024 GMC Revenue Requirement

A summary of the 2024 GMC revenue requirement compared to 2023 follows.

GMC Revenue Requirement (\$ in millions)	2024 Budget	2023 Budget	Change \$	Change %
Operations & Maintenance Budget	\$255.7	\$238.4	\$17.3	7%
Debt Service (including 25% reserve)	14.7	14.7	0.0	0%
Cash Funded Capital	8.0	21.0	(13.0)	-62%
Other Costs and Revenues	(63.6)	(57.6)	(6.0)	10%
Operating Cost Reserve Adjustment	(12.9)	(16.8)	3.9	-23%
<b>Total GMC Revenue Requirement</b>	<b>\$201.9</b>	<b>\$199.7</b>	<b>\$2.2</b>	<b>1%</b>
Transmission Volume Estimate in TWh	242.5	234.2	8.3	4%
<b>Pro-forma bundled cost per MWh</b>	<b>\$0.8326</b>	<b>\$0.8527</b>	<b>(\$0.0201)</b>	<b>-2%</b>

The GMC revenue requirement will see a \$2.2 million, or 1%, increase over 2023.

The O&M budget is the largest component of the GMC revenue requirement; therefore, managing it is critical to keeping a stable revenue requirement. The \$17.3 million projected increase in the O&M budget is primarily due to budgeted merit and other compensation increases, additional positions, additional subscription services, higher telecommunications and maintenance expenses, higher consultant and temporary staff expenses as well as higher travel needs and insurance premiums. The budgeted positions will increase by 13 to 759.

Debt service costs are the principal and interest payments related to the Series 2021 bonds, and the collection of a 25% debt service reserve. The Series 2021 bonds refinanced the Series 2013 bonds which the ISO issued to build a new headquarters facility in Folsom, California and funded other capital expenditures. The debt service requirement remains at \$14.7 million in 2024.

Collecting cash-funded capital as a component of the GMC revenue requirement avoids the additional costs associated with debt financing, including issuance costs, interest expense,

and debt service reserves. The cash-funded capital component of the 2024 GMC revenue requirement is \$8 million and the capital / project budget is \$25 million. The ISO will leverage its capital reserve to fund the \$17 million delta between the cash funded capital request and the capital / project budget request. The ISO has slowly built its capital reserve fund since 2010 as a means to help stabilize the GMC revenue requirement by contributing unencumbered cash-funded capital dollars to it.

Other costs and revenues are net revenues received from sources other than the GMC and reduce the overall GMC revenue requirement. These other revenues include items such as RC funding requirement, WEIM administrative charges, Nodal Pricing Model fee, interest earnings, intermittent resource forecasting fees, generator interconnection project fees, and other supplemental services revenue. The 2024 other cost and revenues component is \$63.6 million, an increase of \$6M primarily due to higher projected interest earnings driven by favorable interest rates.

The operating cost reserve adjustment is a resulting credit or debit from the prior full year's operations; for 2024, the adjustment is a credit due to favorable operations in 2022. In addition, in any year that the ISO operating reserve account exceeds 15% of the prospective year's O&M budget, the excess reduces the GMC revenue requirement for the following year. This adjustment also includes the 25% debt service reserve collected in 2024 and the difference between the budgeted and actual revenues and expenses from 2022. The 2024 operating cost reserve adjustment component is a \$12.9 million credit.

The ISO's outlook indicates that in 2024, transmission volumes are expected to reach 242.5 TWh, marking a 4% increase compared to the projected volumes for 2023. These projections are based on a two-year average of actual measured demand volumes and year-to-date 2023 volumes. When the GMC revenue requirement is divided by the projected volumes, the resulting pro-forma bundled cost per megawatt-hour (MWh) is \$0.8326, which represents a 2% decrease from the 2023 pro-forma bundled rate of \$0.8527. This reduction in the pro-forma bundled rate for 2024, despite a higher GMC revenue requirement, can be attributed to the expected growth in electrification of the grid, leading to additional projected volumes.

The pro-forma bundled cost per MWh does not represent a single charge that the ISO uses, but is intended rather to represent a combination of charges a market participant could expect to pay if they utilized all of our grid management services, including: market

services, system operations, and congestion revenue rights services. See Section X at the end of this document for the actual calculation of the rates.

## II. Budget Package and Development Overview

This budget package consists of the following items:

- O&M budget (Sections III thru V)
- Debt service costs (Section VI)
- Cash-funded capital and capital / project funding (Section VII)
- Other costs and revenues (Section VIII)
- Operating cost reserve adjustment (Section IX)
- Grid management charge components (Section X).

The O&M budget, the primary focus of this report, is the largest of these components and consists of the costs incurred for annual operations. The O&M budget is presented in three separate views as noted below:

- By process — e.g., support customers and stakeholders (Section III)
- By resource — e.g., salaries and benefits (Section IV)
- By function — e.g., operational services (Section V).

### Budget Guidance

The ISO's budget is collaboratively developed using feedback from its stakeholders and leadership team. The ISO held its initial 2024 stakeholder meeting in August 2023 to allow for stakeholder input prior to developing the 2024 budget; notes from the stakeholder meeting is available on the ISO website<sup>2</sup>. During the period of August through October, the ISO leadership team weighed in on the development of the budget for the following year. The Board of Governors is scheduled to approve the draft final version of the 2024 GMC revenue requirement during the December 2023 board meeting.

---

<sup>2</sup> The 2024 Budget and Grid Management Charge documentation and stakeholder feedback is available on the ISO website at <https://stakeholdercenter.caiso.com/RecurringStakeholderProcesses/Budget-grid-management-charge-process-2024>.

Following its firm commitment to fiscal responsibility, the ISO utilizes the Zero-Based Budgeting (ZBB) methodology to develop its O&M budget. ZBB confronts conventional thinking and resource allocations by challenging every line item and assumption. Budget requests under the ZBB method require justification, which helps us avoid over-budgeting, double counting, and automatic budget increases. The result is a well-justified and balanced budget, which is strategically aligned with the ISO's focus going into the year.

The combined efforts contributed to the 2024 GMC revenue requirement to come in at \$201.9 million, just shy of meeting the FERC approved \$202 million cap. The budget funds operations and initiatives that are set forth in the ISO Strategic Plan as described below.

### Aligning with the ISO's Strategic Plan

The ISO remains committed to supporting growth and change while carefully managing its operating costs. Over the past several years, the ISO has enhanced the grid to become more flexible and adaptable, as very low and zero-carbon resources are added to the system to meet state clean air and water goals.

The budget aligns with the ISO's Strategic Plan, which is a guide to meet organizational and operational goals. The plan contains the following objectives:

1. Reliably and efficiently integrate new resources by proactively upgrading operational capabilities,
2. Strengthen resource adequacy and meet California's SB100 goals through long-term transmission planning and effective coordination with state agencies,
3. Build on the foundation of the Western Energy Imbalance Market to further expand Western market opportunities,
4. Provide highly responsive and inclusive stakeholder engagement and customer service, and
5. Create a flexible and adaptive work environment that retains and attracts a highly skilled and engaged workforce.

The Strategic Plan provides employees and managers our common goals while the budget explains how the ISO funds and allocates its resources to support its business plans. The budget is built upon a balanced mix of staffing, skills and financial resources.

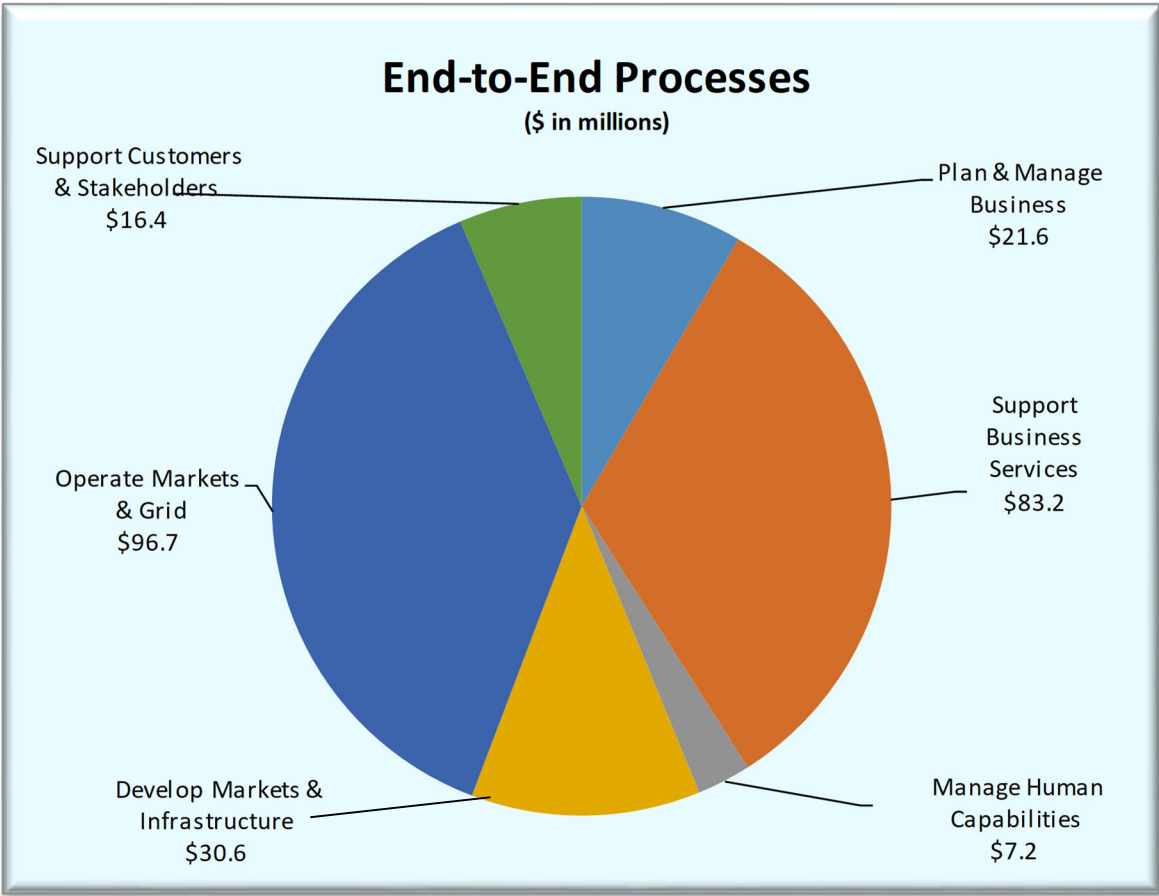


Aligning the strategic planning process with budget planning provides greater transparency into the ISO’s resources and business and operation costs. The ISO remains steadfast in its efforts to manage costs and utilize corporate resources in a smart and prudent manner.

### III. O&M Budget - Process View

The ISO uses an activity-based costing system to provide greater transparency and granularity in how the budget supports corporate efforts. In support of this system, all employees record time worked each week to activities that roll-up to the six primary processes described below.

Aggregating the time reported by employees results in percentages for each of the processes that represent the percentage of total resources spent on that process. Using the hours from the first nine months of 2023, the resulting percentages are then applied to the 2024 O&M budget. The results represent the costs for the six processes as shown below.



## Plan and Manage Business

The **plan and manage business** process amounts to 8% of the O&M budget, and consists primarily of the activities related to strategic planning, governance, financial planning and project management.

## Support Business Services

The **support business services** process amounts to 33% of the O&M budget, and is comprised primarily of the activities related to information technology, financial, legal and compliance support services.

## Manage Human Capabilities

The **manage human capabilities** process amounts to 3% of the O&M budget, and consists of five primary end-to-end processes that combine to ensure the ISO attracts and retains the skills and talent necessary to achieve business objectives. The processes are compensation, benefits, recruitment, training and development, and employee relations.

## Develop Markets and Infrastructure

The **develop markets and infrastructure** process group amounts to 12% of the O&M budget, and includes two separate processes that support the creation of value-added enhancements to the market design, as well as to proactively plan and facilitate grid upgrades. Activities in these processes include the review and analysis of the efficiency and quality of market results, identifying needed market design improvements, and transmission and generation interconnection planning.

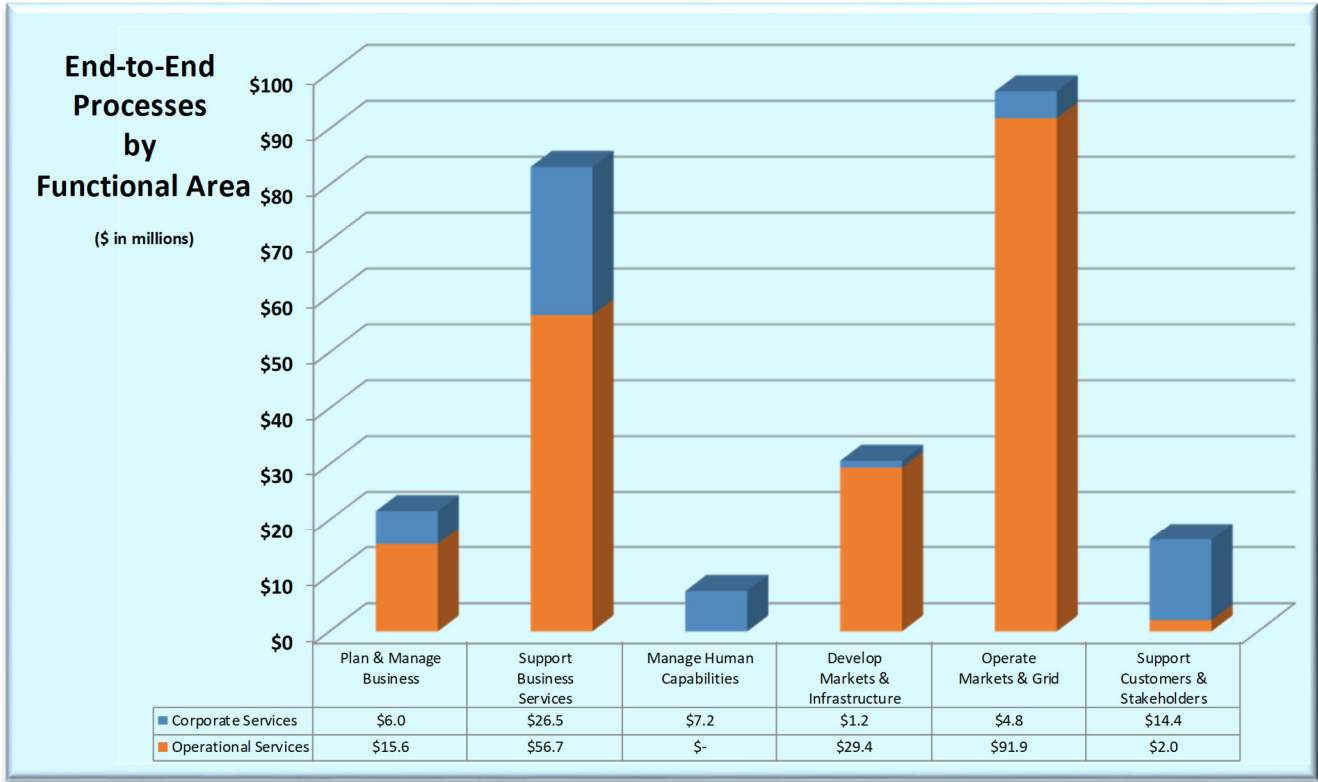
## Operate Markets and Grid

The **operate markets and grid** process group amounts to 38% of the O&M budget, and includes three separate processes: 1) manage market and reliability data and modeling; 2) manage markets and grid; and 3) manage operations support and settlements.

## Support Customers and Stakeholders

The **support customers and stakeholders** process amounts to 6% of the O&M budget, and consists primarily of the activities related to client and account management, stakeholder processes, government and regional affairs, and communications.

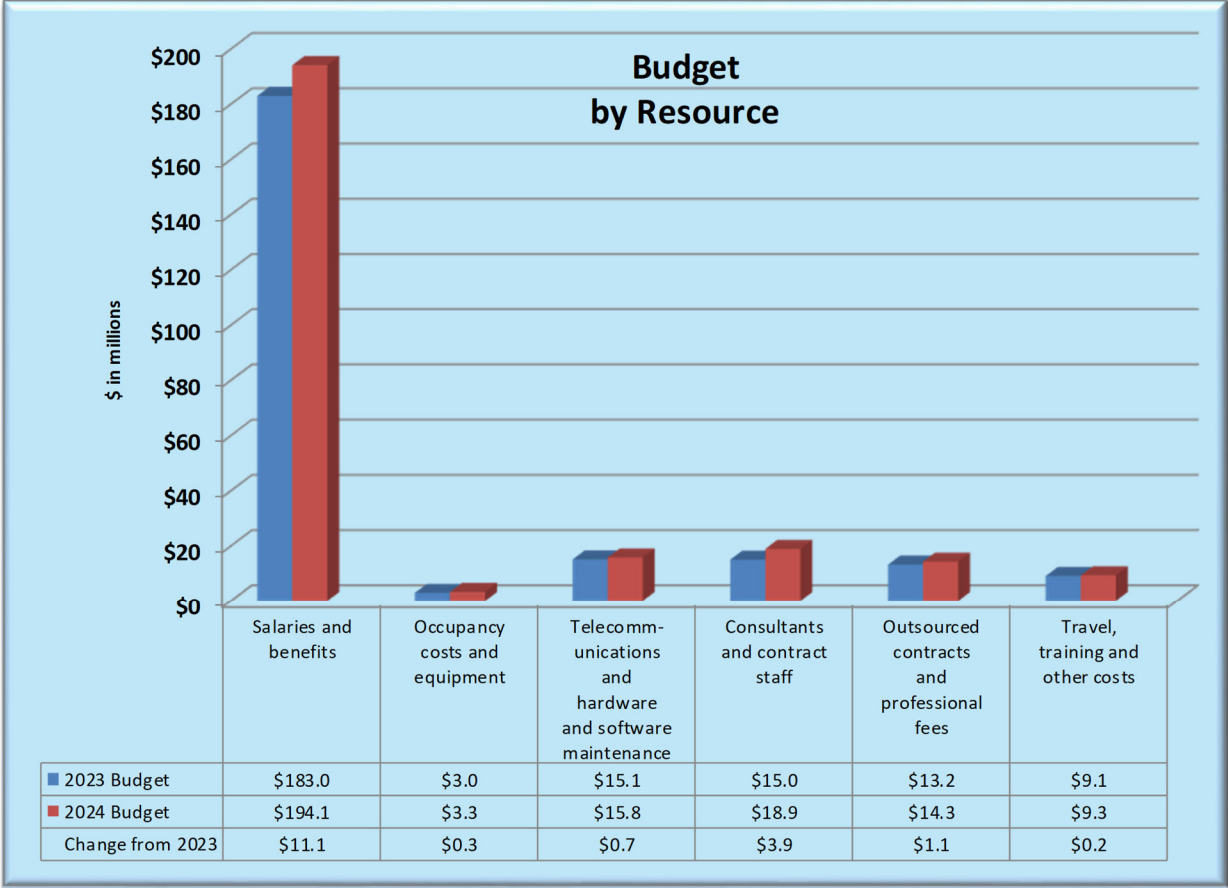
A look at the allocation of process costs by function follows.



## IV. O&M Budget - Resource View

This section views the O&M budget in the traditional resource categories in which expenses are classified. The 2023 budget reflects reclassifications in order for it to be comparable to the 2024 budget presentation.

The chart below shows the major resource components.



### Salaries and Benefits

The ISO depends on its highly educated and experienced employees to operate the grid and support market functions, which makes staff a critically important resource. To that end, the salaries and benefits category comprises 76% of the 2024 and 77% of the 2023 budgets.

The staffing plan concentrates on attracting and retaining the best and brightest individuals in the industry. At times, the ISO revises the organizational structure to help keep pace with changing resource needs. The ISO also makes periodic organizational changes to align resources to focus on the important matters identified in the company’s Strategic Plan, and better reflect end-to-end business processes.

The budgeted staffing level for 2024 is 759 employees, which is an increase of 13 positions over the 2023 budgeted staffing level. The 2024 staffing level increase addresses the needs

for additional assistance communicated by ISO Management in multiple divisions (as illustrated in the projected staffing levels chart below).

A summary of the budgeted positions for 2024 and 2023 is as follows.

<b>Staffing Levels</b>	<b>2024 Budget</b>	<b>2023 Budget</b>	<b>Change</b>
<b>Corporate Services</b>			
Chief Executive Officer	33	27	6
Finance	21	21	-
Human Resources	18	17	1
General Counsel	38	38	-
External Affairs	23	23	-
Stakeholder Engagement and Customer Experience	29	29	-
<b>Sub-Total</b>	<b>162</b>	<b>155</b>	<b>7</b>
<b>Operational Services</b>			
Chief Operating Officer	38	37	1
Infrastructure and Operations Planning	120	119	1
Power Systems and Market Technology	204	200	4
System Operations	176	176	-
Market Design and Analysis	59	59	-
<b>Sub-Total</b>	<b>597</b>	<b>591</b>	<b>6</b>
<b>Gross Positions</b>	<b>759</b>	<b>746</b>	<b>13</b>
Less Project Office Staff Included in Capital	(10)	(5)	-
<b>Net Positions</b>	<b>749</b>	<b>741</b>	<b>8</b>

The 2024 budget includes a 4% vacancy factor discount in the salary budget to account for vacancies throughout the year. This discount rate helps in realistic workforce planning and financial forecasting by considering the time it takes to hire and onboard new employees, as well as potential turnover or vacancies. It ensures that the budget accommodates the costs associated with recruitment, training, and productivity loss during the transition periods, ultimately aiding in more accurate personnel budgeting and resource allocation.

## Staffing Related to Capital

As in past years, the O&M budget does not include the costs of full-time equivalent (FTE) staff dedicated to capital projects, which are included in the capital budget. The 2024 capitalizable expense related to the FTE is equivalent to ten full-time staff in the Chief Operating Officer (COO) division's Project Management Office. The cost of other staff engaged in capital projects is budgeted in their respective cost centers; however, the financial statements that are prepared in accordance with generally accepted accounting principles include the capitalization of this labor.

## Compensation Structure

The compensation budget includes funding for employee base salaries, payroll taxes, and healthcare benefits; as well as other compensation elements, such as overtime, performance compensation, relocation reimbursement and tuition reimbursement. The budget also includes funds for salary adjustments for merit, equity and market adjustments. These costs have been budgeted for each position.

In setting the annual merit, equity and market adjustments budget, the Human Resources division participates in salary surveys administered by qualified third-party vendors. These vendors confidentially gather information related to competitive market pay rates. The ISO's ability to attract and retain talent with the necessary skills and knowledge directly links to our ability to maintain competitive pay practices.

The total compensation packages provided to employees include performance compensation with payouts in the subsequent year based on individual and corporate performance.

A summary of the compensation components is as follows.

<b>Compensation Components With Benefits Burden (\$ in millions)</b>	<b>2024 Budget</b>	<b>2023 Budget</b>	<b>Change</b>
Base Compensation	\$155.4	\$148.9	\$6.5
Overtime (includes structured overtime for grid operators)	\$13.2	\$10.8	\$2.4
Performance Compensation	\$23.5	\$21.3	\$2.2
Other	\$2.0	\$2.0	\$0.0
<b>Total Personnel Expense</b>	<b>\$194.1</b>	<b>\$183.0</b>	<b>\$11.1</b>

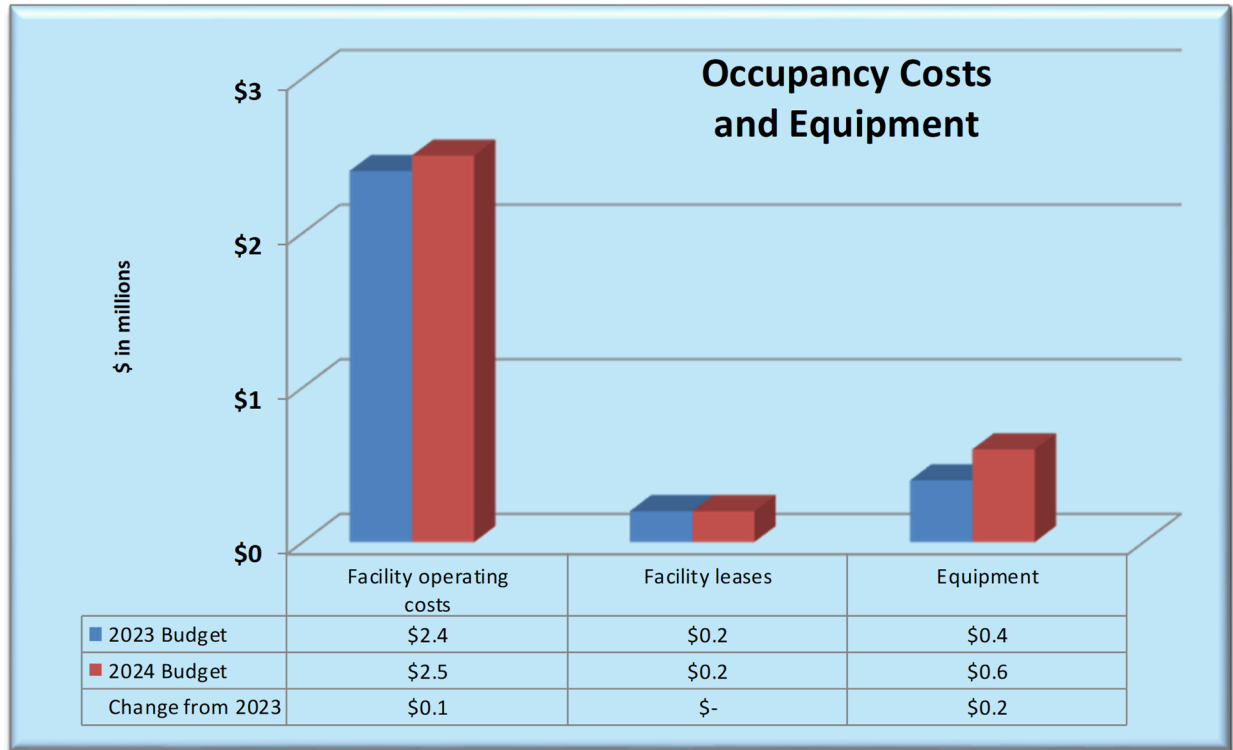
The 2024 employee benefits burden will reduce from 32% to 30% of salary costs as summarized in the table below. There are a few drivers helping the ISO to achieve a lower overall benefit burden rate. These drivers include improved claims history, improved cost controls achieved thru the self-funded insurance program, manageable premium increases offered through some benefit providers, and leveraging the self-funded healthcare reserve to help offset some premium costs. The ISO will continue to manage contracts, prudently, to ensure these benefits are available to eligible employees with the costs primarily depending on employee population levels and participation.

The benefits burden is broken down as follows.

Benefits	Components	Rate
Health, Welfare, and Other Plans	Medical, dental and vision insurances. Also includes employee assistance program, life insurance, accidental death insurance, long-term disability insurance, and worker's compensation.	10.0%
Payroll Taxes	Social security, medicare, unemployment insurance, employment training and disability insurance.	7.0%
Retirement Benefit Plans	Retirement savings benefit plan (401(k)) and executive retirement plans.	13.0%

## Occupancy and Equipment

Occupancy and equipment costs will increase by \$0.3 million to \$3.3 million for 2024. These costs represent 1% of the 2024 and 2023 budgets.



This resource category consists of the various ongoing costs to operate the facilities and related equipment.

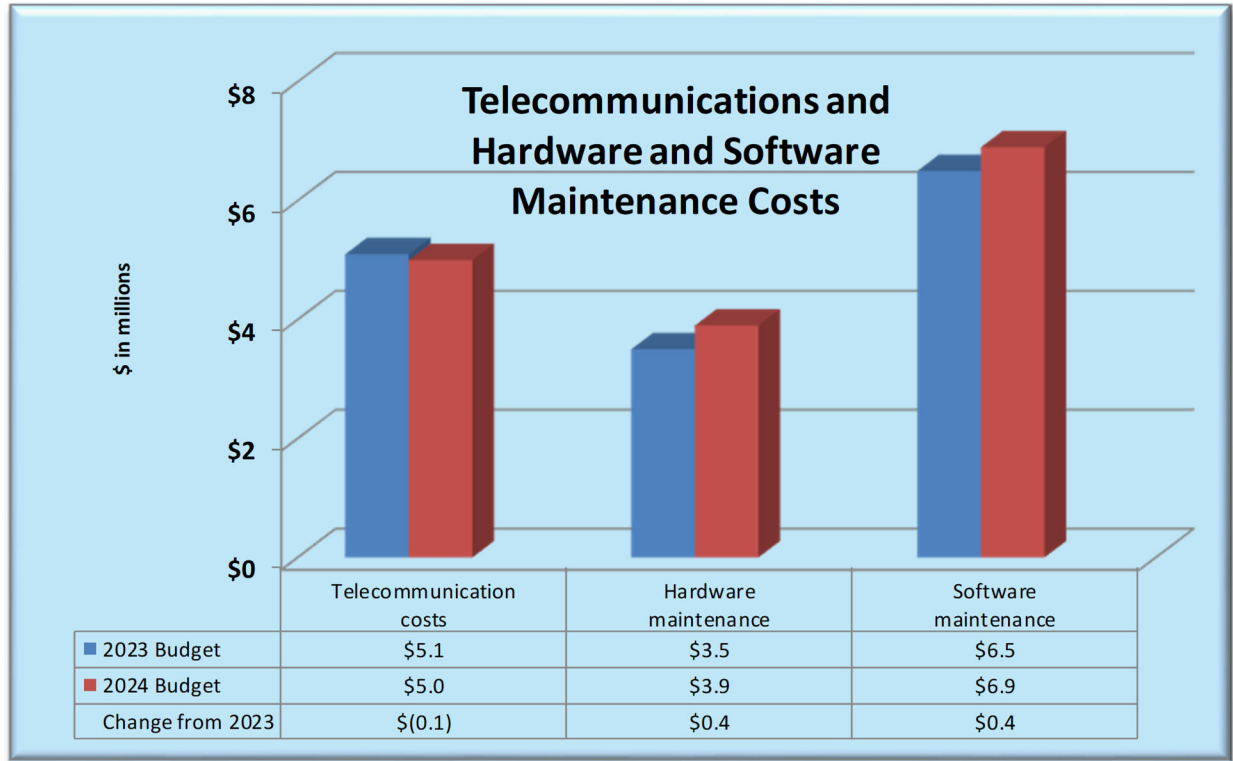
The nominal increase in facility operating costs is due to increased utility rates and office equipment needs.

The \$0.2 million increase in equipment is due to a planned mobile device refresh.



## Telecommunications and Maintenance

Telecommunications and maintenance costs will increase by \$0.7 million to \$15.8 million for 2024. These costs represent 6% of the 2024 and 2023 budgets.



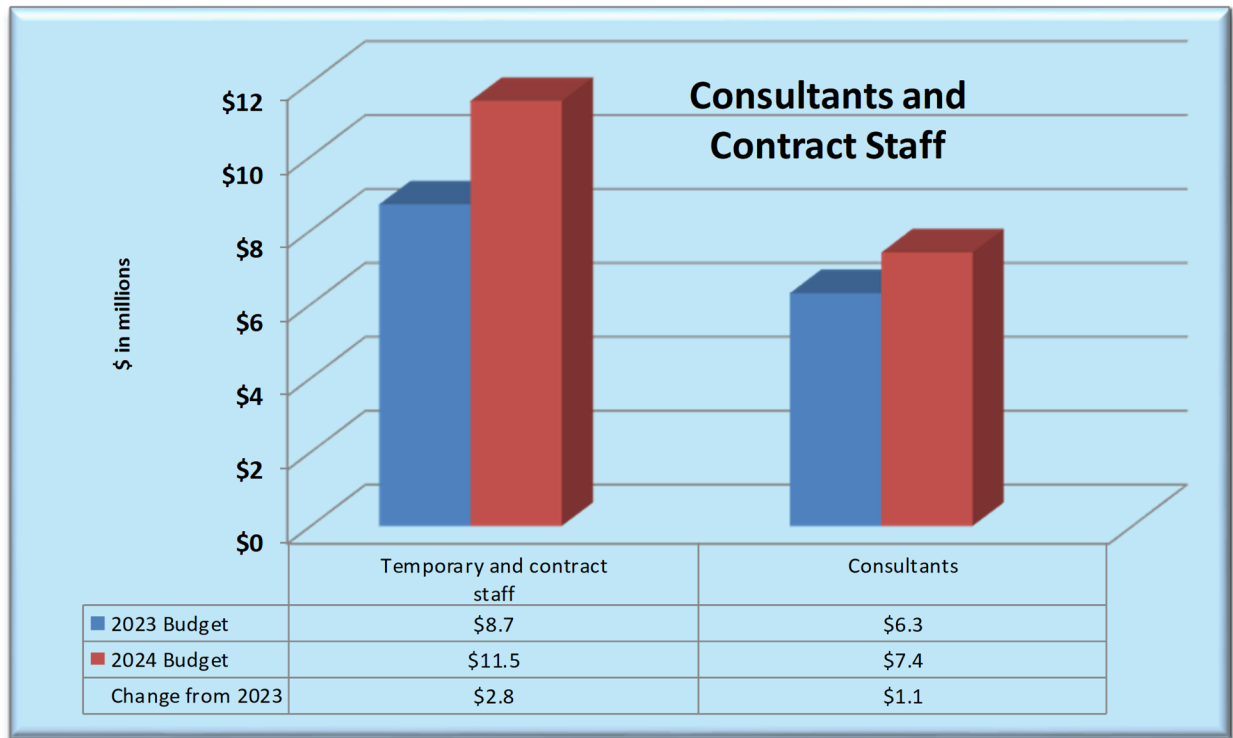
Telecommunication costs, which include wired and wireless services, will decrease nominally for 2024. This is primarily due to negotiated savings.

Hardware maintenance costs will increase \$0.4 million for 2024. The increase is primarily due to support for an increased number of servers.

Software maintenance costs, which are primarily licensing fees, will increase \$0.4 million for 2024. The increase is due to additional data center licensing growth.

## Consultants and Contract Staff

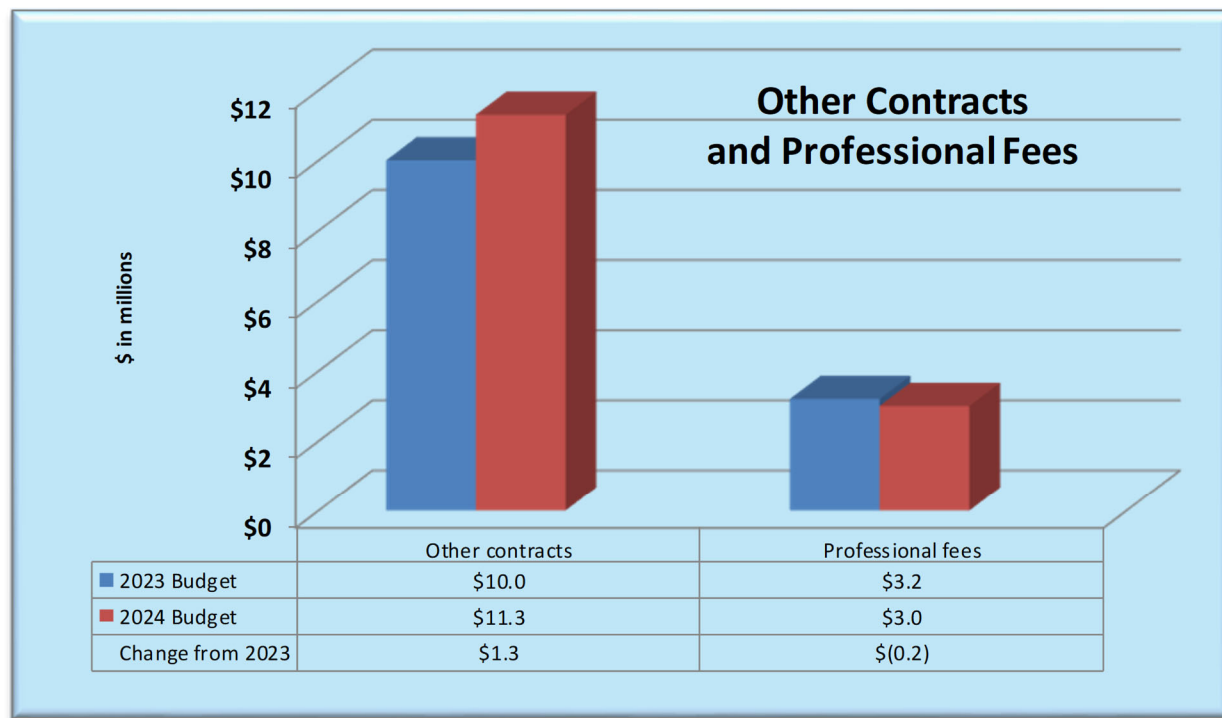
Consulting and contract staff costs will increase by \$3.9 million to \$18.9 million for 2024. The consulting and contract staff budgets represent 7% of the 2024 and 6% of the 2023 budgets.



The ISO regularly evaluates how to meet its responsibilities while remaining cost-effective and providing the highest service quality whether through hiring full-time employees or using outside resources (e.g., contractors, consultants or temporary staff). At times, the ISO may bring contractor work in-house when it is of an ongoing nature and lowers the overall cost with the same or better service quality. Examples of efforts requiring budget in 2024 include resource adequacy studies, process assessments, interconnection integration, training, day-ahead-market studies, technology and operations applications ongoing efforts, and the need for subject matter experts in various fields such as renewable integration and energy markets.

## Other Contracts and Professional Fees

Other contracts and professional fees will increase by \$1.1 million to \$14.3 million for 2024. The budget category represents 6% of the 2024 and 2023 budgets.



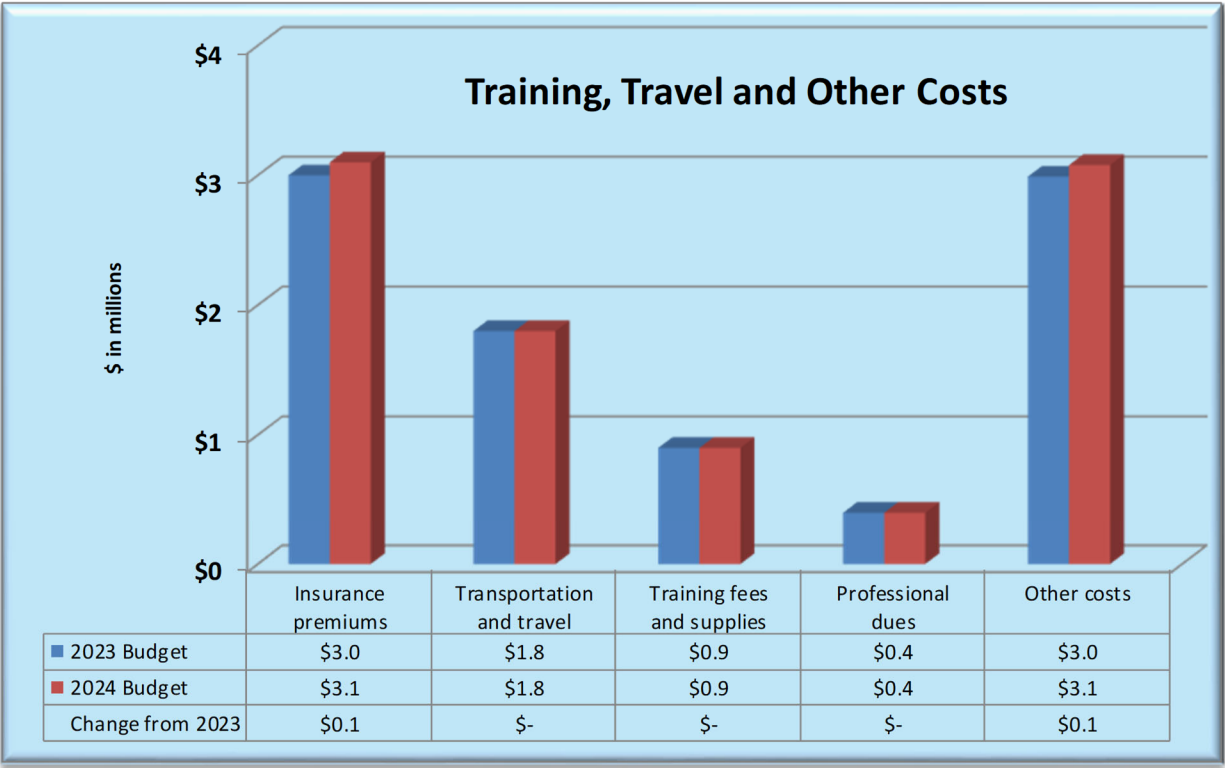
Other contracts, which represent contracts with third-party vendors for services, will increase by \$1.3 million in 2024. Two primary drivers being: additional tools to support enhanced information security, and forecasting data subscriptions. Additionally, the transition to subscription-based licenses and increased license counts for these applications continues.

A large component of the other contracts resource category is our forecasting costs. Intermittent resources pay a forecasting fee to the ISO of \$0.10 per megawatt hour of generation. These fees, collected from the variable resources, are included in the other costs and revenues component of the GMC revenue requirement to offset the related forecasting costs. Such fees are projected to bring in \$6.5 million in revenue in 2024.

Professional fees, which are largely outside legal and audit costs, will decrease by \$0.2 million for 2024. The decrease is primarily due to reduced need for outside legal services.

# Training, Travel and Other Expenses

Training, travel and other costs will increase \$0.2 million to \$9.3 million for 2024. These budgets represent 4% of the 2024 and 2023 budgets.



Insurance premiums, which include all of the corporate liability and property policies, will increase nominally for 2024.

Transportation and travel remains unchanged for 2024.

Training fees and supplies and professional dues remain unchanged for 2024.

Other costs (primarily bank fees, conference fees, office supplies, Board, and stakeholder meeting costs) when combined, will increase nominally for 2024.

## Reconciliation of 2024 O&M Budget

The O&M budget will increase by \$17.3 million, or 7%, to \$255.7 million in 2024 compared to \$238.4 million in 2023.

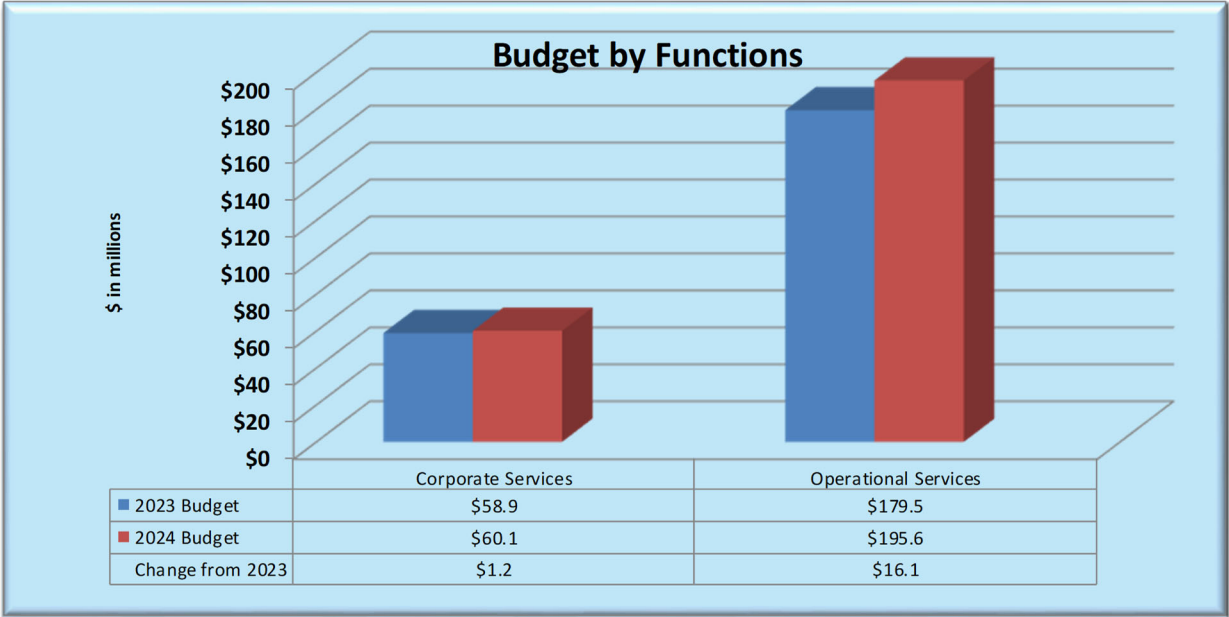
A reconciliation of the change follows (\$ in millions).

<b>2023 O&amp;M Budget</b>	<b>\$238.4</b>
<b>Increases in the Budget</b>	
Merit, headcount, and other compensation increases	8.7
Increase in temporary staff	2.8
Increase in overtime	2.4
Increase in other contracts and services	1.3
Increase in consultants	1.1
Increase in telecommunication & hardware/software maintenance	0.7
Increase in equipment	0.2
Increase in facility operating expenses	0.1
Increase in insurance	0.1
Increase in other costs	0.1
<b>Total Increases</b>	<b>17.5</b>
<b>Decreases in the Budget</b>	
Reduction in professional fees	(0.2)
<b>Total Decreases</b>	<b>(0.2)</b>
<b>Net Change in Budget</b>	<b>17.3</b>
<b>2024 O&amp;M Budget</b>	<b>\$255.7</b>

# V. O&M Budget – Functional View

The ISO divisions represent two high-level functions in the organization – Corporate Services and Operational Services. This section will present the O&M budget broken into the functions. The 2023 budget reflects classifications in order for it to be comparable to the 2024 budget presentation.

The budget by functions follows.



The divisions contributing to the Operational functions account for a combined 76% of the 2024 O&M budget. Whereas the divisions contributing to the Corporate Services functions account for a combined 24% of the 2024 O&M budget. In all divisions, with the exception of the technology related groups, the typical driver of year-over-year changes are labor related costs. While labor costs are also a main driver in the technology related groups, many of the other resource categories can have an impact on their budget as well (e.g., hardware and software maintenance costs). A detailed description of the divisions grouped by the functions follows.

## Corporate Services

The divisions that contribute to the **Corporate Services** functions include the office of the Chief Executive Officer, the Finance division, the Human Resources division, the General Counsel division, the External Affairs division, and the Stakeholder Engagement and Customer Experience division. In addition, the Department of Market Monitoring (DMM) and the Enterprise Program Management Office (EPMO) are part of this function.

The office of the **Chief Executive Officer** (CEO) division collaborates with the executive leadership team in developing the ISO's strategic goals and organizational priorities. The division also leads in the crafting and articulation of the ISO's mission, vision, and values, and serves as a convener and catalyst in carrying out a host of institutional initiatives. The CEO is the primary contact to the Board of Governors, Western Energy Imbalance Market Governing Body, key elected officials, stakeholders, and the general public, while also representing the ISO with a variety of regional and national energy related organizations.

The **Department of Market Monitoring** (DMM) proactively undertakes sophisticated analysis to enhance market efficiencies and mitigate market power. This effort is especially important as the ISO implements new market features and services to support renewable resource development. The department actively monitors the wholesale energy markets to prevent non-competitive behavior and ensure participants follow the rules. The DMM also reviews market results to confirm the activity produces effective and efficient outcomes. The department continues to review and provide feedback on the effectiveness of the 15-minute/5-minute markets and the Western Energy Imbalance Market (WEIM). The DMM offers timely input on major market design initiatives, as well as products and requirements to ensure sufficient flexible capacity is available to integrate increasing amounts of variable renewable energy. The DMM Oversight Committee and the Board of Governors separately review and approve the DMM budget (which is included in the CEO division).

The **Finance** division is comprised of various financial functions including treasury, credit, accounting, financial planning and procurement. Finance professionals in the division perform typical corporate finance processes such as balance sheet optimization, credit and collateral management, clearing of the ISO market, general accounting, financial reporting, financial planning, budgeting, rate design, and procurement of goods and services for the corporation.

The **Human Resources** division directs programs and people strategies to deliver a unique employee experience that is integrated within our corporate strategic objectives and goals. These efforts include creating and maintaining an intentional culture; attracting, retaining and cultivating technical experts and leaders; implementing robust learning and development opportunities; and creating an environment where diverse perspectives help improve the ISO's performance.

The **General Counsel** division is comprised of four departments, which collectively provide legal and regulatory advice to the Company; promote a culture of compliance with pertinent laws, regulations and corporate policies; and provide auditing and advisory services. In addition, the General Counsel division includes the Corporate Secretary function, which supports the Board of Governors, Board committees, and the Western Energy Imbalance Market Governing Body, and facilitates and coordinates meetings and all corporate governance matters.

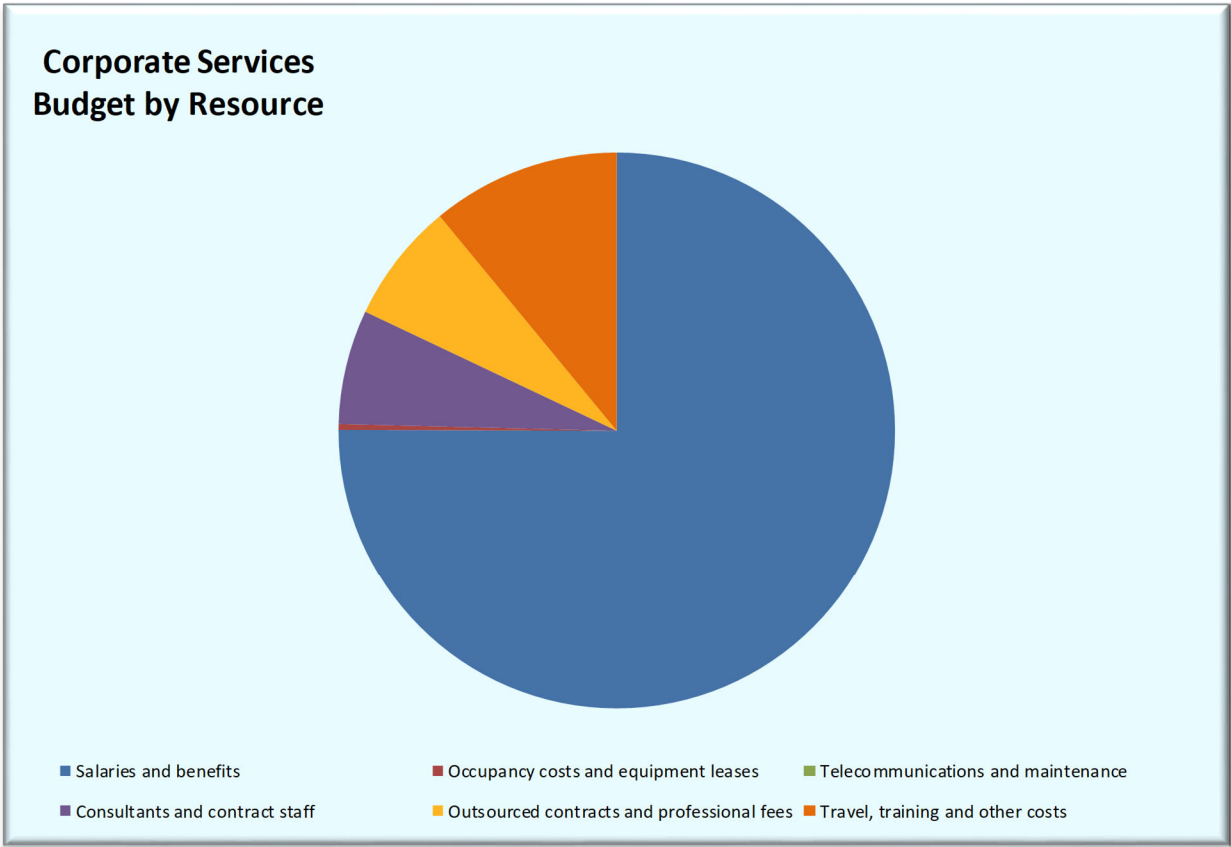
The **External Affairs** division is comprised of external facing business groups including state, regional, federal affairs as well as communications and public relations. It interacts with elected state officials, regional entities, regulators, and industry organizations in the West, federal lawmakers, and international delegations to enhance their understanding of grid operations and other services provided by the ISO. The division supports the WEIM governance structure and committees, monitors western state and federal regulations, legislation, initiatives and activities. In doing so, it promotes the benefits of regional coordination throughout the Western Interconnection. Additionally, the communications and public relations department oversees media relations, and uses printed, digital, online, and video materials to communicate to external and internal audiences. This group maintains the ISO's internal and external websites, and develops all communication materials, to promote transparent and accessible information.

The **Stakeholder Engagement and Customer Experience** division is the primary business contact between the ISO, its customers, and industry stakeholders. The division provides customer bid-to-bill support, new participant onboarding, training, and customer readiness support. It also oversees the stakeholder process ensuring robust stakeholder engagement in the development of policy initiatives.



## Summary of Budget

Labor costs represent the largest budget driver for each division. Highlights of the key non-labor budget components within the Corporate Services divisions are as follows.



The primary non-labor cost drivers in each division are:

- **CEO** division: corporate memberships, association fees, consulting, and enterprise program management support
- **Finance** division: insurance premiums, financial audit, and bank fees
- **Human Resources** division: corporate training, recruitment, and payroll services
- **General Counsel** division: outside legal and board expenses
- **External Affairs** division: corporate subscriptions, travel, and legislative and public relations support
- **Stakeholder Engagement and Customer Experience** division: stakeholder meetings and customer training

## Operational Services

The divisions that contribute to the **Operational Services** functions include the office of the Chief Operating Officer division, the Infrastructure and Operations Planning division, the Power Systems Market Technology division, the System Operations division, and the Market Design and Analysis division. The functions also include the Enterprise Systems and Campus Operations department and the Project Management Office department.

The over-arching **Chief Operating Officer (COO)** division is a compilation of the office of the Chief Operating Officer (including the Enterprise Support and Campus Operations and Project Management Office departments), Infrastructure and Operations Planning, Power System and Market Technology, System Operations and Market Design and Analysis divisions. The combination of these divisions and departments under the COO's leadership enables greater integration and coordination across these functions to support the ISO's efforts to meet organizational goals.

The **Infrastructure and Operations Planning** division is responsible for long-term and operational grid planning activities to support the growth in renewable resources and maintaining and strengthening grid reliability. These activities include conducting the annual assessment of summer conditions. The division leads the generation interconnection application and contracting process, performs studies for resources seeking to interconnect to the grid, and manages all regulated contracts on behalf of the organization. The division promotes timely and efficient infrastructure development and service-focused maintenance program oversight. It is responsible for complying with NERC standards and WECC regional criteria for the planning coordinator functional entity and the operational planning requirements for the Reliability Coordinator functional entity.

The **Power System and Market Technology** division consists of the Power System Technology Development, Power System Technology Operations, and IT Infrastructure, Architecture and Information Security departments. The Power System Technology Development department develops and implements market and reliability software applications to manage and operate the high-voltage electricity grid and wholesale energy market. The Power System Technology Operations department provides technology support for reliability systems, market systems, enterprise model management system, interchange scheduling and tagging systems, and forecasting systems. This group also provides monitoring and first level support to all of the ISO's bid-to-bill critical systems. The IT Infrastructure, Architecture and Information Security department protects the ISO's physical and cyber assets, designs new and emerging technology architecture guidelines

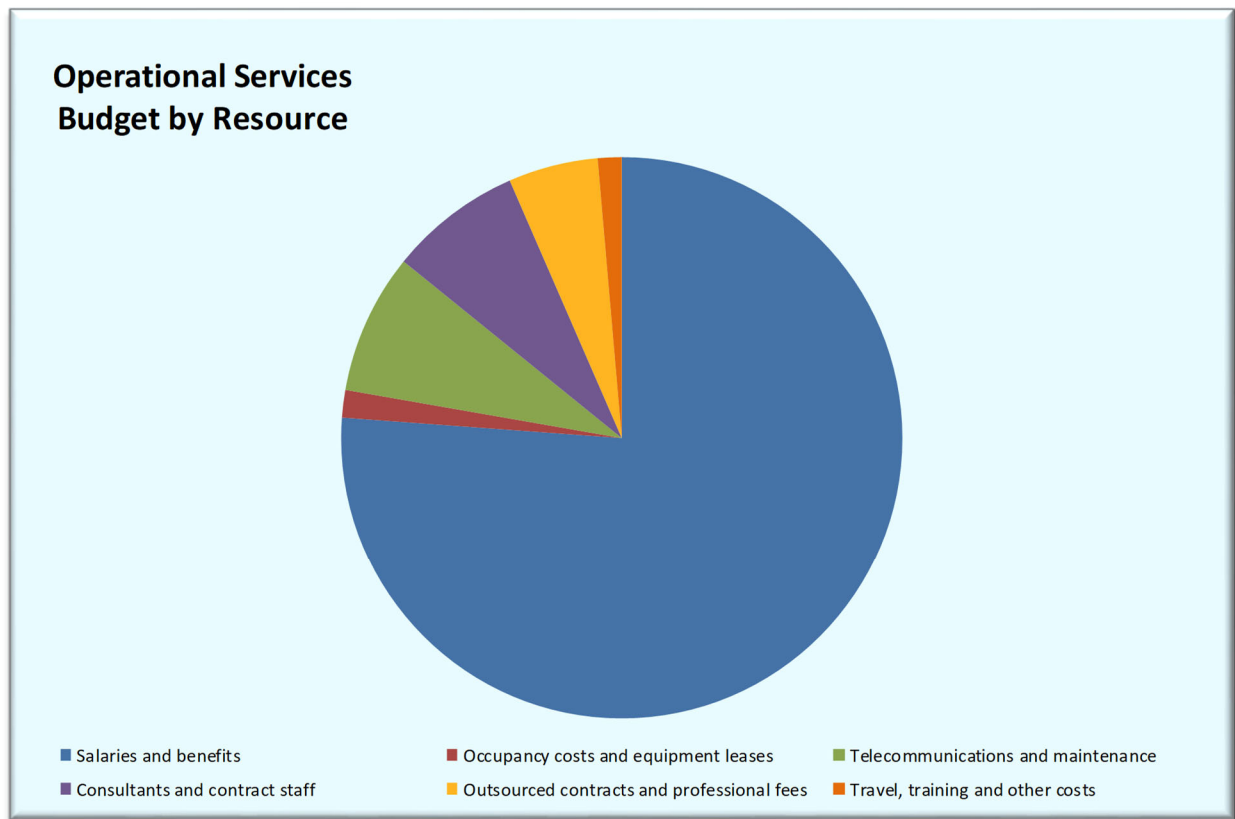
for IT, engineers new integration technical solutions following architecture roadmap, manages IT infrastructure hardware, software, database, storage, and IT network and communications.

The **System Operations** division prepares for and manages the reliable operation of the high voltage electric system as well as managing after-the-fact settlement. The Operational Readiness department prepares for the reliable operation by coordinating the integration of all new resources and transmission facilities into the network model used by the System Operators as well as providing training to them. The System Operators oversee the day-to-day operations of the grid in compliance with federal and regional reliability standards; prevent or mitigate system emergencies in the day-ahead or real-time operations; and coordinate with adjacent reliability coordinators. After the operating date, the Market Services department produces daily settlement statements; provides data validations; resolves settlements; performs reporting price corrections; and provides compliance analysis.

The **Market Design and Analysis** division is composed of three departments: Market Policy Development, Market Analysis and Forecasting, and Market Strategy and Governance. The division is responsible for developing market policy; tracking and reporting on market performance; pricing analysis and validation; validation of market inputs and market enhancements; short-term load, wind, and solar forecasting; evaluating the benefits of the Western EIM; commitment costs and cost adder calculation and adders; and managing relationships with and participating in regulatory matters with the California Public Utilities Commission, the California Energy Commission, and the California Air Resources Board.

## Summary of Budget

Labor costs represent the largest budget driver for each division. Highlights of the key non-labor budget components within the Operational Services divisions are as follows.



The primary non-labor cost drivers in each division are:

- **COO** division: project management support, facility operating and maintenance expense, and campus security
- **Infrastructure and Operations Planning** division: transmission planning and contracts support
- **Power Systems and Market Technology** division: hardware, software, and application maintenance support, telecommunication expense, and forecasting data subscriptions
- **System Operations** division: operations training programs and energy system data support
- **Market Design and Analysis** division: market surveillance committee expense, policy and meteorological support, and energy data subscriptions

# VI. Debt Service

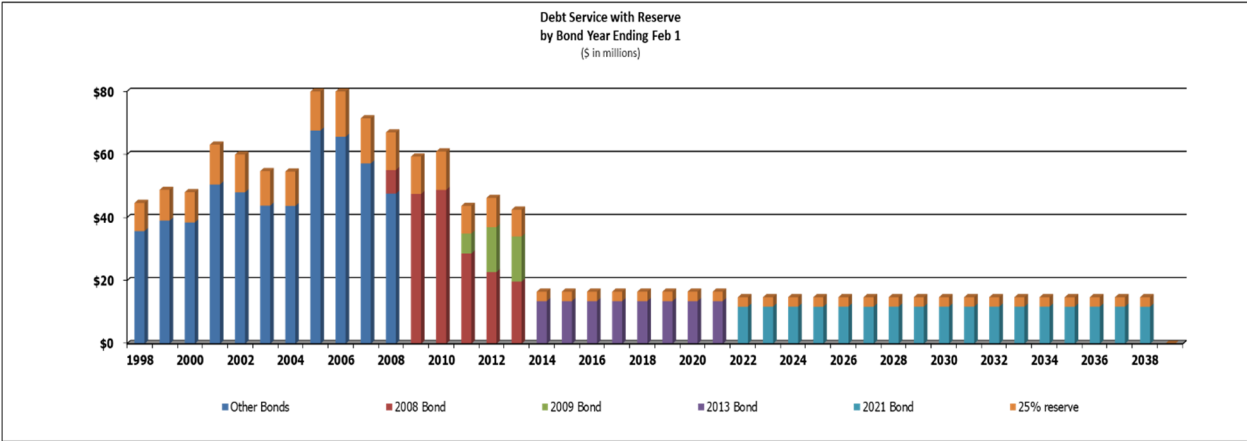
The debt service amount included in the 2024 GMC revenue requirement remains at \$14.7 million. The amount includes the principal and interest payments due on the Series 2021 bonds and the 25% debt service reserve. The total equals the sum of the semi-annual interest payment due in August of the budget year, the principal and semi-annual interest payment due in February of the ensuing year, and the 25% debt service reserve amount required by the tariff and bond documents.

A summary of the debt service components is as follows.

Debt Service (\$ in millions)	2024 Budget	2023 Budget	Change
Principal payments	\$8.8	\$8.7	\$0.1
Interest payments	2.9	3.0	(0.1)
<b>Subtotal</b>	<b>11.7</b>	<b>11.7</b>	<b>0.0</b>
25% debt service reserve	3.0	3.0	0.0
<b>Total Debt Service</b>	<b>\$14.7</b>	<b>\$14.7</b>	<b>\$0.0</b>

The Series 2021 bonds were issued in January 2021 to refinance the 2013 bonds. The refinancing of the 2013 bonds will save the ISO approximately \$30 million in principal and interest over the life of the bonds. The 2013 bonds were issued to finance the ISO’s headquarters facility in Folsom, California and to fund other capital expenditures. Below is the future amortization schedule for the 2021 bonds. Note: The bonds are callable on February 1, 2031.

The graph below provides a summary of the historical and future debt service.



## VII. Cash-Funded Capital and Capital / Project Budget

The GMC revenue requirement's cash-funded capital component has been critical to the ISO's goal of maintaining a stable GMC revenue requirement. Historically, capital projects had largely been funded by debt financing. In 2010, the ISO converted debt service savings in the GMC revenue requirement to the cash-funded capital component. Using these collections as a way to finance capital projects removed the inefficiencies and costs associated with debt financing.

The 2024 cash-funded capital component of the GMC revenue requirement is \$8 million and the capital / project budget is \$25 million to fund projects such as those detailed on the following pages. The ISO will leverage its capital reserve to fund the \$17 million delta between the cash-funded capital request and the project budget request. The ISO has slowly built its capital reserve fund since 2010 as a means to help stabilize the GMC revenue requirement by contributing unencumbered cash-funded capital dollars to it. The Board of Governors' approval of the 2024 GMC revenue requirement will extend to the capital/project budget as well; the budget is managed separately from the GMC revenue requirement.

In 2023, the ISO transitioned to a Portfolio Project Management (PPM) model for organizing initiatives into Strategic Portfolios, which are programs and projects mapped to the 2022-2026 Strategic Plan as follows:

- Portfolio 1: Reliability and Efficient Operations
- Portfolio 2: Technology Foundation Improvements
- Portfolio 3: Transmission Planning- Infrastructure
- Portfolio 4: Market and Resource Adequacy
- Portfolio 5: Stakeholder Engagement and Customer Service
- Portfolio 6: People and Culture (generally O&M in nature)
- Portfolio 7: Facilities and Other projects

Each of the Strategic Portfolios are assigned to an ISO Officer, designated as the Portfolio Sponsor, who is responsible for authorizing and prioritizing portfolio work, leadership, oversight and decision-making for portfolios.

The Corporate Finance Committee (CFC), formerly known as Corporate Management Committee (CMC), authorizes the capital / project funding allocation at the Portfolio level for the sponsor to manage and fund projects based on Portfolio priorities. The CFC includes the Chief Executive Officer, VP - Chief Financial Officer and Treasurer, and VP - General Counsel and Chief Compliance Officer. The Board of Governors will approve any projects with a requested start date in 2024 in which the accompanying budgets exceed the \$25 million budget.

Future annual capital / project budgets are estimated to be approximately \$22 million to 25 million per year; the budgets will be funded through the cash-funded capital component of the GMC revenue requirement and / or the capital reserves. As done in prior years, any unencumbered cash-funded capital amounts will be added to the capital reserves for future projects, which enables the ISO to continue to build a stable revenue requirement for an extended period.

## Capital / Project Budget Development Process

The 2024 capital / project budget development process runs from July 2023 through November 2023. The EP MO collaborates with portfolio sponsors and internal business units to update the enterprise priority project list throughout the year. The projects included on the list are assigned to a portfolio based on alignment with the corporate strategic plan, the information technology roadmap, and the market initiatives roadmap. Additionally, on an ongoing basis, portfolio sponsors, program management, and project management reviews the progress of active projects, identifies issues and risks, and proposes changes to the project list as necessary.

Portfolio roadmaps and supporting programs and projects support the annual budgeting process to align the strategic projects scheduled for the following year. ISO leaders prioritize the projects to help determine the most important items, which results in an initial enterprise priority list. Projects are evaluated based on strategic objectives, success criteria, and key business drivers as listed below. The ISO website contains additional project and release information<sup>3</sup>.

---

<sup>3</sup> The latest ISO release planning and project information is available on the ISO website at <http://www.caiso.com/informed/Pages/ReleasePlanning/Default.aspx>

For the 2024 project prioritization, the ISO has transitioned the scoring criteria to align with the 2022-2026 Strategic Plan<sup>4</sup> replacing the previous strategic criteria with the new strategic and tactical objectives below:

- Reliably and efficiently, integrate new resources by proactively upgrading operational capabilities.
- Strengthen resource adequacy and meet California’s SB100 goals through long-term transmission planning and effective coordination with state agencies.
- Build on the foundation of the Western Energy Imbalance Market to expand Western market opportunities.
- Provide highly responsive and inclusive stakeholder engagement and customer service.
- Create a flexible and adaptive work environment that retains and attracts a highly skilled and engaged workforce

The project requests’ business and financial case reviews include the following considerations:

- Does the project require development by market participants?
- Does the project deliver cost savings?
- How much are the project implementation costs?
- Does the project reduce operations and maintenance costs?
- Does the project reduce compliance risks?
- Does the project mitigate any corporate risk?
- Does the project support corporate commitments, goals, and divisional initiatives?

## Proposed Project List

The following list provides an indication of the projects proposed for initiation during 2024 within the \$25 million project budget. This list includes seven areas that align with the portfolio classifications listed above.

---

<sup>4</sup> The 2022-2026 Strategic Plan is available on the ISO website at <http://www.caiso.com/Documents/2022-2026-Strategic-Plan.pdf>



The 2024 priorities may change depending on developments during the remainder of 2023 and into 2024. The actual projects completed during 2024 will vary, including the potential addition of projects currently not on the following list, the deferral of projects on this list to future years, or the elimination of projects deemed to be unnecessary.

Project costs are categorized as follows: small projects are under \$500,000, medium projects are from \$500,000 up to \$1 million, and large projects are over \$1 million.

<b>Proposed Projects</b>	<b>Amount</b>
<b>Reliability and Efficient Operations</b>	
FERC 881 – Ambient adjusted ratings	Large
Operations foundation improvements 2024	Large
Forecasting baseline improvements phase 1	Medium
FERC 2222 – distributed energy resources	Small
<b>Total Reliability and Efficient Operations</b>	<b>\$8,000,000</b>
<b>Technology Foundation Improvements</b>	
Foundational critical infrastructure hardware and software refresh 2024	Large
Energy management system (EMS) upgrade	Large
End of life technology & vulnerability remediation program	Large
CAISO internal application reliability enhancements	Large
Technology foundational improvements for production 2024	Large
WebSDK user interface improvements	Medium
CAISO internal development process and tool improvements	Medium
Market software performance and robustness	Small
<b>Total Technology Foundation Improvements</b>	<b>\$16,500,000</b>
<b>Transmission Planning Infrastructure</b>	
Resource interconnection management system (RIMS) and interconnection process improvements	Large
FERC 2023: generator interconnection reform	Medium
Transmission service and market scheduling priorities – phase 2	Medium
Transmission exchange agreement	Small
<b>Total Transmission Planning Infrastructure</b>	<b>\$3,100,000</b>
<b>Market and Resource Adequacy</b>	
Day ahead market (DAM) enhancements	Large
Extended day ahead market (EDAM)	Large
CAISO balancing authority area (BAA ) extended day ahead market (EDAM) participation	Medium

<b>Proposed Projects</b>	<b>Amount</b>
Resource sufficiency evaluation enhancements phase track 3	Small
Extended day ahead market (EDAM) onboarding	Small
<b>Total Market and Resource Adequacy</b>	<b>\$10,600,000</b>
<b>Stakeholder Engagement and Customer Service</b>	
CAISO website replacement	Small
<b>Total Stakeholder Engagement and Customer Service</b>	<b>\$150,000</b>
<b>Facilities and Other Projects</b>	
Expanded operations training center	Large
Facilities replacement reserve	Large
Enterprise program office internal labor	Large
Campus operations annual funding	Small
Initialization funding for capital projects	Small
<b>Total Facilities and Other Projects</b>	<b>\$5,525,000</b>
<b>Total Proposed Projects</b>	<b>\$43,875,000</b>

## VIII. Other Costs and Revenue

Other costs and revenue will increase by \$6 million to \$63.6 million primarily due to higher projected interest earnings driven by favorable interest rates. This component, representing net revenues received outside of the GMC, lowers the overall GMC revenue requirement. By diversifying its revenue streams, the ISO is able to maintain disciplined growth in its revenue requirement (and ultimately favorable rates) while still developing well-rounded O&M and capital budgets that serves its needs.

The details of this component are as follows.

<b>Other Costs and Revenue (\$ in millions)</b>	<b>2024 Budget</b>	<b>2023 Budget</b>	<b>Change</b>
Reliability Coordinator Funding Requirement	\$17.6	\$19.7	(\$2.1)
Western Energy Imbalance Market Administrative Charges	15.6	15.3	0.3
Nodal Pricing Model Fee	9.2	8.4	0.8
Interest Earnings	9.0	4.0	5.0
Intermittent Resource (wind and solar) Forecasting Fees	6.5	5.5	1.0
Generation Interconnection Project Fees	3.0	2.0	1.0
HANA Administrative and Setup Fees	1.1	1.1	-
Scheduling Coordinator Application and Other Fees	0.9	0.9	-
California-Oregon Intertie Path Operator Fees	0.7	0.7	-
<b>Total Other Costs and Revenue</b>	<b>\$63.6</b>	<b>\$57.6</b>	<b>\$6.0</b>

The 2024 RC funding requirement, calculated at \$17.6 million, represents the amount of revenue the ISO requires to offset the costs it will incur to provide RC services. The RC funding requirement is calculated as a percentage, known as the RC funding percentage, of the revenue requirement. The RC funding percentage is one of the cost category percentages analyzed in the triennial Cost-of-Service Study. The results of the 2023 Cost-of-Service Study indicated a slight reduction to the RC funding percentage was necessary; the funding percentage was reduced from 9% to 8%.

The 2024 RC funding requirement, as a component of the total revenue requirement, is shown below.

<b>Revenue Requirement (\$ in millions)</b>	<b>RC %</b>	<b>2024 Budget</b>
Operations and Maintenance Budget		\$ 255.7
Debt Service (including 25% reserve)		14.7
Cash Funded Capital		8.0
Other Costs and Revenues		(46.0)
Operating Cost Reserve Adjustment		(12.9)
Revenue Requirement (prior to RC Funding Requirement)		219.5
<b>RC Funding Requirement for January - December 2024</b>	<b>8%</b>	<b>(17.6)</b>
<b>Total Revenue Requirement</b>		<b>\$ 201.9</b>

WEIM administrative charges are projected to increase to \$15.6 million in 2024 primarily driven by full participation of the WEIM entities that joined in 2023. As of September 2023, the WEIM currently has twenty-two participating members in eleven western states and produced over \$4.2 billion dollars in gross benefits since its launch in November 2014<sup>5</sup>.

The Nodal Pricing Model fee is set to increase from \$8.4 million to \$9.2 million, with the increase being in line with inflation and other factors influencing costs since the initial fee was established.

Forecasting fees are projected to increase to \$6.5 million driven by WEIM entities.

Anticipated generator interconnection projects in 2024 are expected to lead to a rise in Generator interconnection Project fees, with a projected revenue increase to \$3 million.

All other components of this category are projected to see little to no change in 2024.

<sup>5</sup> <http://www.caiso.com/Documents/Key-Statistics-Sep-2023.pdf>

## IX. Operating Cost Reserve Adjustment

The operating cost reserve adjustment for 2024 will be a \$12.9 million credit. This amount will reduce the GMC revenue requirement. This component typically includes the following adjustments:

- An adjustment related to a change in O&M budget to ensure that the 15% reserve margin is maintained per the tariff.
- The return of the 25% debt service reserve collection from the prior year.
- The true-up of budget-to-actual revenues and expenses from the preceding audited year.<sup>6</sup>

A summary of the adjustment is below.

<b>Operating Cost Reserve Adjustment (\$ in millions)</b>	<b>2024 Budget</b>	<b>2023 Budget</b>	<b>Change</b>
Change in the 15% reserve for O&M budget	(\$2.6)	(\$4.2)	\$1.6
25% debt service collection from prior year	2.9	2.9	0.0
True-up of budget to actual revenues and	12.6	18.1	(5.5)
<b>Total Operating Cost Reserve Credit / (Debit)</b>	<b>\$12.9</b>	<b>\$16.8</b>	<b>(\$3.9)</b>

The calculation of the 15% reserve adjustment is below.

<b>Change in 15% Operating Reserve (\$ in millions)</b>	<b>2024 Budget</b>	<b>2023 Budget</b>	<b>Change</b>
O&M budget	\$255.7	\$238.4	\$17.0
Operating Reserve percentage	15%		
<b>Total Operating Reserve</b>	<b>\$38.4</b>	<b>\$35.8</b>	<b>\$2.6</b>

<sup>6</sup> See Appendix A, Calculation of Operating Cost Reserve Adjustment, for detailed calculation information.

## X. Grid Management Charge and Other Calculations

The ISO recovers its GMC revenue requirement through unbundled grid management charges (GMC). Each unbundled service has a corresponding rate, which is paid by service users. Rates are calculated by dividing each service cost by its forecasted billing determinant volume. The result is a rate per unit of use. The current design, implemented in 2012, provides for three volumetric charges and five associated fees and charges. The cost categories consist of market services, system operations, and congestion revenue rights (CRR). The design was updated in 2015, 2018, 2021, and 2024 as a result of Cost-of-Service studies.

The ISO completed its most recent Cost-of-Service Study in 2023; the study used activity-based costing to analyze cost and time data from 2022. The new percentage allocations and fee changes as a result of the study will be effective January 1, 2024 and will remain in effect through the development of the 2026 GMC revenue requirement and resulting charges.

## Components of GMC and Billing Determinants

The three service categories, five associated fees and charges, and their billing determinants are as follows:

Type	Bill Determinant	Charge Code
<b>Grid Management Charges</b>		
Market Service Charge	Awards in MWh or MW of supply and demand excluding Transmission Ownership Rights (TORs)	4560
Systems Operations Charge	Metered flows in MWh of supply and demand in the ISO balancing authority with the following two exceptions, TORs and qualifying exempt supply contracts	4561
CRR Service Charge	MWh of congestion	4562
<b>Miscellaneous Fixed Fees</b>		
Bid Segment Fee	Number of bid segments in the ISO market for supply or demand	4515
Inter-SC Trades Fee	Number of trades by scheduling coordinator (SC)	4512
SCID Fee	Monthly charge if statement produced for an SC	4575
TOR Charge	Minimum of metered supply or demand in MWh on TORs	4563
CRR Auction Bid Fee	Number of accepted bids in CRR auctions	4516

## Rate Calculation

There are eight steps to calculate rates, as noted below:

1. Estimate billing determinant volumes for fees and charges;
2. Multiply volumes by rates to derive revenues for individual fees and charges;
3. Allocate over or under collection of GMC revenue to the three service categories;
4. Allocate remaining GMC revenue requirement into three service categories;
5. Deduct fee and charge revenue from associated service category costs;
6. Estimate billing determinant volumes for three service categories;
7. Deduct exempt supply volumes from system operations charge<sup>7</sup>; and
8. Divide residual GMC revenue requirement from step 4 by adjusted billing determinant volumes from steps 6 and 7 to derive individual service category rates<sup>8</sup>.

<sup>7</sup> The 2021 GMC revenue requirement was the last revenue requirement in which supply volumes were exempt as part of the 2012 GMC redesign provisional arrangement.

<sup>8</sup> See Appendix B, Actual and Estimated Volumes, for detailed information.

## Calculation of Service Category Rates

Component	Market Services	System Operations	CRR Services	Total
<b>Allocation of Revenue Requirement (\$ in thousands)</b>				
<b>Total Revenue Requirement</b>				<b>\$201,851</b>
Adjust for (over) / under collection of 2020 rates	(\$1,867)	(\$1,322)	\$170	(3,019)
Remaining to allocate				204,870
Percentages	49%	49%	2%	100%
% allocation of costs	100,386	100,386	4,097	204,870
<b>Combined costs</b>	<b>98,519</b>	<b>99,064</b>	<b>4,267</b>	<b>201,850</b>
<b>Deduct Fee Revenue</b>				
Bid Segment Fees	649	-	-	649
Inter-SC Trade Fees	3,132	-	-	3,132
SCID Fees	9,639	-	-	9,639
TOR Fees	-	613	-	613
CRR Auction Bid Fees	-	-	1,492	1,492
<b>Total Fees</b>	<b>13,420</b>	<b>613</b>	<b>1,492</b>	<b>15,525</b>
<b>Calculation of Recoverable Costs</b>				
<b>Costs Less Fees</b>	<b>\$85,099</b>	<b>\$98,451</b>	<b>\$2,775</b>	<b>\$186,325</b>
<b>Projected MWh Volumes</b>				
<b>MWh Volumes</b>	<b>602,581,465</b>	<b>456,060,808</b>	<b>401,542,436</b>	
<b>Resulting Rates / MWh</b>	<b>\$0.1412</b>	<b>\$0.2159</b>	<b>\$0.0069</b>	

## Calculation of Fee Revenue

Fee	Rate	Estimated Volumes	Estimated Revenue (\$ in thousands)
Bid Segment Fees	\$0.0050	129,801,883	\$649
Inter-SC Trade Fees	1.00	3,132,309	3,132
SCID Fees (monthly)	1,500	536	9,639
TOR Fees	0.3250	1,886,370	613
CRR Auction Bid	1.00	1,491,981	1,492
<b>Total</b>			<b>\$15,525</b>



## Summary of Rates

### Comparison of GMC Revenue Requirements by Service Category

(\$ in millions)

Charge Code	Service Category or Fee	2024 Budget	2023 Budget	\$ Variance
4560	Market Service Charge	\$85.2	\$85.2	\$0.0
4561	Systems Operations	98.5	97.4	1.1
4562	CRR Services Charge	2.8	2.8	-
4515	Bid Segment Fees	0.6	0.5	0.1
4512	Inter-SC Trades Fees	3.1	2.9	0.2
4575	SCID Fees	9.6	8.9	0.7
4563	TOR Charges	0.6	0.6	-
4516	CRR Auction Bid Fees	1.5	1.4	0.1
<b>Total</b>		<b>\$201.9</b>	<b>\$199.7</b>	<b>\$2.2</b>

### Comparison of Grid Management Charge Rates

(\$ per unit)

Charge Code	Service Category	2024 Rate	2023 Rate	\$ Variance	Comments
4560	Market Service Charge	\$0.1412	\$0.1320	\$0.0092	Rate increased compared to the 2023 rate (eff. 5/1/23) due to higher GMC Revenue Requirement to collect for the Market Services cost category offset by higher projected volumes.
4561	Systems Operations Charge	\$0.2159	\$0.2070	\$0.0089	Rate increased compared to the 2023 rate (eff. 5/1/23) due to the higher GMC Revenue Requirement to collect for the System Operations cost category offset slightly by higher projected volumes.
4562	CRR Services Charge	\$0.0069	\$0.0071	(\$0.0002)	Rate decreased compared to the 2023 (eff. 1/1/23) rate due to the lower amount of GMC Revenue Requirement to collect for the CRR Services cost category and higher projected volumes.

## Comparison of WEIM Administrative Rates

(\$ per unit)

Grid Management Charge	WEIM Portion	2024			2023			\$ Variance
		GMC Service Charge Rate	% of GMC Service Charge	WEIM Administrative Rates	GMC Service Charge Rate	% of GMC Service Charge	WEIM Administrative Rates	
Market Services	Real Time Market	\$0.1412	64.5%	\$ 0.0911	\$0.1320	63.0%	\$ 0.0832	\$ 0.0079
System Operations	Real Time Dispatch	\$0.2159	42.0%	\$ 0.0907	\$0.2070	50.0%	\$ 0.1035	\$(0.0128)

## Reliability Coordinator Service Rates

(\$ per unit)

Reliability Coordinator Service Rate	
RC Funding Requirement (\$ in millions)*	\$ 17.6
Projected Volumes in TWh	647.4
Projected RC Service Rate per MWh	\$ 0.0271

\*Funding Requirement adjusted for minimum charges

## Summary of Charges, Fees, and Supplemental Rates

(\$ per unit)

Charge Code	Summary of Charges, Fees, and Rates	2024 Rate	2023 Rate	Change \$	Billing Unit
<b>Grid Management Charges</b>					
4560	Market Service Charge	\$0.1412	\$0.1320	\$0.0092	per MWh
4561	Systems Operations Charge	\$0.2159	\$0.2070	\$0.0089	per MWh
4562	CRR Services Charge	\$0.0069	\$0.0071	(\$0.0002)	per MWh
<b>Miscellaneous Fixed Fees</b>					
701	EIR Forecast Fee	\$0.1000	\$0.1000	\$0.0000	per MWh
4512	Inter-SC Trade Fees	\$1.00	\$1.00	\$0	per # of trades
4515	Bid Segment Fees	\$0.0050	\$0.0050	\$0.0000	per # of bid segments
4516	CRR Auction Bid Fees	\$1.00	\$1.00	\$0.0000	per # of nominations and
4563	TOR Fees	\$0.3250	\$0.1800	\$0.1450	per MWh
4575	SCID Fees (monthly)	\$1,500	\$1,500	\$0	per # of SCID
<b>Supplemental Services Rates</b>					
4564	WEIM Market Service	\$0.0911	\$0.0832	\$0.0079	per MWh
4564	WEIM System Operations	\$0.0907	\$0.1035	(\$0.0128)	per MWh
5701	RC Service Rate	\$0.0271	\$0.0278	(\$0.0007)	per MWh

**Calculation of Operating Cost Reserve Adjustment**

(\$ in thousands)

There are four factors that affect the calculation of the reserve adjustment:

- Prior year's 25% debt service reserve
- 2022 true-up
- 2023 estimates
- Change in the 15% operating cost reserve

<b>Summary of Operating Cost Reserve Adjustment</b>	<b>If no changes to last years plan (a)</b>	<b>Budget to Actual (b)</b>	<b>Difference</b>
Prior year's 25% debt service reserve collected	\$ 2,937	\$ 2,937	\$ -
2022 true-up	-	12,590	12,590
2023 estimates	-	-	-
Change in the 15% operating cost reserve	(2,592)	(2,592)	-
<b>2024 Reserve credit / (debit) from 2022 operations</b>	<b>\$ 345</b>	<b>\$ 12,935</b>	<b>\$ 12,590</b>
(a) Plan assumes prior year expenses and revenues were equal to budgeted amounts.			
(b) Revised reflects the true -up of prior year activities.			

### Calculation of Operating Cost Reserve Adjustment

(\$ in thousands)

2022 True Up			
Description	Budget	Actual	Difference
<b><u>Revenue</u></b>			
GMC revenue	\$ 182,498	\$ 185,735	\$ 3,237
Other income	53,725	58,810	5,085
Realized gain / (loss) on investments	-	16	16
<b>Total revenue</b>	<b>236,223</b>	<b>244,561</b>	<b>8,338</b>
<b><u>Expenses</u></b>			
Expenses	(210,660)	(204,284)	6,376
Debt service: principal	(8,735)	(8,770)	(35)
Debt service: interest	(3,013)	(3,015)	(2)
Debt service: reserve	(3,381)	(2,937)	444
Cash funded capital	(30,000)	(30,000)	-
Capital funded by WEIM fees adjustment	-	(812)	(812)
Self-funded healthcare adjustment	-	(1,719)	(1,719)
<b>Total expenses</b>	<b>(255,789)</b>	<b>(251,537)</b>	<b>4,252</b>
<b><u>Impact to Operating Reserve</u></b>			
<b>Net change in prior year true-up</b>	<b>\$ (19,566)</b>	<b>\$ (6,975)</b>	<b>\$ 12,590</b>

### Calculation of Operating Cost Reserve Adjustment

(\$ in thousands)

2023 Estimates			
Description	Budget	Estimate	Difference
<b><u>Revenue</u></b>			
GMC revenue	\$ 199,760	\$ 199,760	\$ -
Other income	57,571	57,571	-
<b>Total revenue</b>	<b>257,331</b>	<b>257,331</b>	-
<b><u>Expenses</u></b>			
Operations and maintenance	(238,394)	(238,394)	-
Debt service: principal	(8,735)	(8,735)	-
Debt service: interest	(3,013)	(3,013)	-
Debt service: reserve	(2,937)	(2,937)	-
Cash funded capital	(30,000)	(30,000)	-
<b>Total expenses</b>	<b>(283,080)</b>	<b>(283,080)</b>	-
<b><u>Impact to Operating Reserve</u></b>			
<b>Net change current year estimates</b>	<b>\$ (25,748)</b>	<b>\$ (25,748)</b>	<b>\$ -</b>

Change in 15% Operating Cost Reserve			
Description	2023 Budget	2024 Budget	Change
Change in operations and maintenance budget from prior year	\$ 238,394	\$ 255,670	\$ 17,276
Change in the 15% operating cost reserve	\$ 35,759	\$ 38,351	\$ 2,592

Note: Actual data may vary between reporting cycles due to recalculation of settlement statements.

Charge Type:	Market Services	System Operations	CRR Services	Inter-SC Trades	Bid Segment Fees	CRR Auction Bid Fees	TOR Fees	SCID Fees
Charge Code:	4560	4561	4562	4512	4515	4516	4563	4575
Unit:	MWh & MW	MWh	MWh	# of trades	# of bid segments	# of nominations & bids	Minimum of TOR supply & demand	# of SCID's

2020 Actual Units								
Jan-20	40,933,378	34,402,330	34,139,627	203,592	7,127,726	57,321	262,412	347
Feb-20	38,685,078	31,809,527	33,113,372	195,080	6,681,572	59,891	235,599	347
Mar-20	40,113,405	32,594,098	37,559,372	212,542	6,949,844	66,811	304,044	345
Apr-20	37,940,921	30,524,174	36,615,491	223,346	7,079,984	71,004	345,011	351
May-20	42,271,509	35,119,354	37,206,301	230,566	7,597,150	77,359	429,488	357
Jun-20	45,361,088	37,715,533	41,018,642	231,626	7,850,368	82,039	462,104	359
Jul-20	51,759,066	43,529,167	40,238,159	247,282	8,171,918	77,179	447,461	357
Aug-20	55,638,493	47,332,623	39,573,606	247,266	7,316,208	75,999	402,445	366
Sep-20	50,029,518	41,228,774	38,026,171	231,544	6,780,340	77,539	373,665	370
Oct-20	45,384,515	37,674,534	35,299,599	222,458	6,790,348	94,395	326,854	371
Nov-20	39,607,521	32,801,091	34,666,938	205,740	6,129,128	130,494	294,657	374
Dec-20	42,442,963	34,901,644	36,999,923	216,904	6,469,474	268,252	300,036	372
<b>Total</b>	<b>530,167,455</b>	<b>439,632,848</b>	<b>444,457,201</b>	<b>2,667,946</b>	<b>84,944,060</b>	<b>1,138,283</b>	<b>4,183,775</b>	<b>4,316</b>

2021 Actual Units								
Jan-21	40,683,119	33,324,995	32,434,483	195,948	6,337,954	49,543	225,657	366
Feb-21	37,694,595	30,261,625	31,255,696	176,966	5,726,748	53,265	133,083	373
Mar-21	41,417,368	33,030,434	34,972,938	205,174	6,451,154	57,982	251,268	379
Apr-21	40,389,925	32,351,286	30,368,998	210,594	6,767,498	62,480	274,007	386
May-21	44,311,206	35,710,212	33,192,788	222,608	7,129,804	64,850	293,095	396
Jun-21	50,299,930	40,988,015	35,475,533	231,136	7,359,174	79,020	314,030	405
Jul-21	56,904,114	47,093,068	40,326,188	256,576	8,270,814	83,260	329,995	407
Aug-21	55,388,398	45,334,071	38,788,823	255,252	8,379,034	85,595	301,635	407
Sep-21	49,049,497	40,433,852	37,536,323	254,512	8,243,900	91,439	271,228	415
Oct-21	43,831,572	34,835,987	35,010,269	228,916	7,929,808	102,693	200,109	422
Nov-21	41,213,270	33,272,561	35,970,433	212,172	7,643,672	168,022	191,019	418
Dec-21	45,838,245	36,661,235	35,394,804	229,328	8,235,210	288,419	178,589	439
<b>Total</b>	<b>547,021,239</b>	<b>443,297,341</b>	<b>420,727,275</b>	<b>2,679,182</b>	<b>88,474,770</b>	<b>1,186,568</b>	<b>2,963,716</b>	<b>4,813</b>



# California ISO

## Actual and Estimated Volumes

Note: Actual data may vary between reporting cycles due to recalculation of settlement statements.

Charge Type:	Market Services	System Operations	CRR Services	Inter-SC Trades	Bid Segment Fees	CRR Auction Bid Fees	TOR Fees	SCID Fees
Charge Code:	4560	4561	4562	4512	4515	4516	4563	4575
Unit:	MWh & MW	MWh	MWh	# of trades	# of bid segments	# of nominations & bids	Minimum of TOR supply & demand	# of SCID's

2022 Actual units from January thru October; estimated units for November thru December.								
Jan-22	42,910,819	34,476,394	32,292,393	233,084	8,123,004	68,071	249,195	436
Feb-22	39,060,739	30,797,692	30,098,944	211,518	7,599,274	67,623	188,193	433
Mar-22	44,223,595	33,244,635	30,522,651	231,782	8,315,406	75,529	322,597	441
Apr-22	43,319,573	32,583,905	32,152,956	231,940	8,069,870	91,585	321,152	449
May-22	46,501,452	35,890,201	33,003,960	247,484	8,960,048	106,921	354,394	451
Jun-22	53,135,446	42,003,081	34,365,691	250,564	9,188,122	111,267	376,200	461
Jul-22	57,045,324	46,311,896	37,648,453	266,240	9,813,560	109,016	399,999	469
Aug-22	59,608,191	48,174,907	35,996,793	265,844	10,086,086	109,168	368,525	472
Sep-22	55,914,386	44,480,173	34,423,704	249,636	9,034,558	117,680	273,101	477
Oct-22	47,486,409	36,768,739	31,017,962	253,142	9,644,858	126,753	241,575	474
Nov-22	43,493,465	34,118,879	33,200,099	232,911	8,666,544	197,539	221,580	474
Dec-22	46,949,917	36,804,782	33,979,389	251,730	9,165,256	386,856	207,147	474
<b>Total</b>	<b>579,649,315</b>	<b>455,655,283</b>	<b>398,702,994</b>	<b>2,925,875</b>	<b>106,666,586</b>	<b>1,568,008</b>	<b>3,523,659</b>	<b>5,511</b>

2023 Actual units from January thru September; estimated units for October thru December.								
Jan-23	46,730,357	36,128,283	30,260,751	235,120	9,015,348	67,147	82,221	479
Feb-23	42,605,650	32,027,160	29,359,827	224,402	8,418,886	63,338	40,784	487
Mar-23	48,304,187	35,361,298	31,869,411	257,116	9,505,652	78,760	99,225	486
Apr-23	47,971,880	34,819,226	32,161,618	251,678	9,361,818	84,930	117,326	510
May-23	47,142,915	35,772,296	33,641,482	256,382	9,776,260	85,333	191,861	512
Jun-23	47,781,788	36,908,159	34,251,762	257,940	9,989,580	90,722	280,107	514
Jul-23	62,209,205	50,021,131	38,223,638	289,472	10,597,240	104,716	288,809	520
Aug-23	61,759,113	52,941,895	37,894,472	290,826	10,444,104	102,969	258,172	520
Sep-23	51,697,336	40,353,912	35,258,706	279,304	9,832,108	105,500	165,915	518
Oct-23	45,658,990	35,802,363	31,017,962	253,142	8,787,333	114,723	241,575	508
Nov-23	42,353,367	33,695,720	33,200,099	232,911	8,155,108	182,780	221,580	508
Dec-23	46,394,081	36,733,008	33,979,389	251,730	8,700,233	337,637	207,147	508
<b>Total</b>	<b>590,608,868</b>	<b>460,564,451</b>	<b>401,119,116</b>	<b>3,080,023</b>	<b>106,666,586</b>	<b>1,418,556</b>	<b>2,194,722</b>	<b>6,070</b>



# California ISO

## Actual and Estimated Volumes

Note: Actual data may vary between reporting cycles due to recalculation of settlement statements.

Charge Type:	Market Services	System Operations	CRR Services	Inter-SC Trades	Bid Segment Fees	CRR Auction Bid Fees	TOR Fees	SCID Fees
Charge Code:	4560	4561	4562	4512	4515	4516	4563	4575
Unit:	MWh & MW	MWh	MWh	# of trades	# of bid segments	# of nominations & bids	Minimum of TOR supply & demand	# of SCID's

2024 Estimated Units								
Jan-24	46,730,357	35,297,843	30,260,751	235,120	9,916,883	67,609	82,221	528
Feb-24	42,605,650	31,378,782	29,359,827	224,402	9,260,775	65,481	40,784	528
Mar-24	48,304,187	34,305,675	31,869,411	257,116	10,456,217	77,145	99,225	528
Apr-24	47,971,880	33,690,306	32,161,618	251,678	10,298,000	88,258	117,326	533
May-24	47,142,915	35,825,382	33,641,482	256,382	10,753,886	96,127	191,861	533
Jun-24	47,782,335	39,456,645	34,251,762	257,940	10,988,538	100,995	280,107	533
Jul-24	62,209,298	48,131,545	38,223,638	289,472	11,656,964	106,866	288,809	538
Aug-24	61,759,113	50,817,183	37,894,472	290,826	11,488,514	106,069	258,172	538
Sep-24	53,860,437	43,460,574	35,040,166	279,817	10,763,387	113,734	184,888	538
Oct-24	48,991,140	37,028,181	31,220,708	270,906	11,726,206	124,662	123,608	543
Nov-24	45,444,276	31,741,808	33,417,108	249,255	10,882,537	195,794	113,377	543
Dec-24	49,779,877	34,926,884	34,201,493	269,395	11,609,976	349,241	105,992	543
<b>Total</b>	<b>602,581,465</b>	<b>456,060,808</b>	<b>401,542,436</b>	<b>3,132,309</b>	<b>129,801,883</b>	<b>1,491,981</b>	<b>1,886,370</b>	<b>6,426</b>
Change from 2020 Actual	13.7%	3.7%	-9.7%	17.4%	52.8%	31.1%	-54.9%	48.9%
Change from 2021 Actual	10.2%	2.9%	-4.6%	16.9%	46.7%	25.7%	-36.4%	33.5%
Change from 2022 Actual	4.0%	0.1%	0.7%	7.1%	21.7%	-4.8%	-46.5%	16.6%
Change from 2023 Actual + Estimate	2.0%	-1.0%	0.1%	1.7%	21.7%	5.2%	-14.0%	5.9%

[The latest GMC rates as well as a history of the rates is available on the Grid Management Charge page on the CAISO public site.](#)