September 29, 2023

The Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: California Independent System Operator Corporation
Docket No. ER 23-____-000
2023 Grid Management Charge – Cost-of-Service Study Update

Request for Waiver of Notice Period

Dear Secretary Bose:

The California Independent System Operator Corporation (CAISO) submits this tariff amendment to revise its Grid Management Charge (GMC).[1] This amendment represents the tariff revisions to implement results from the CAISO's latest Cost-of-Service study and to accommodate participation in the CAISO's Extended Day-Ahead Market (EDAM) initiative.[2] The instant proposed revisions are:

A. Bifurcating the System Operations Charge

B. Creating a temporary rate structure to increase early EDAM participation

C. Establishing a revenue requirement cap of $245 million for 2025 and $250 million for 2026

D. Updating other tariff-defined inputs and fees, including the Reliability Coordinator (RC) funding percentage and Transmission Ownership Rights (TOR) services rate

[1] The CAISO submits this filing pursuant to Section 205 of the Federal Power Act, 16 U.S.C. § 824d and 18 C.F.R. § 35.15. Capitalized terms not otherwise defined herein have the meanings set forth in the CAISO tariff, and references to specific sections, articles, and appendices are references to sections, articles, and appendices in the current CAISO tariff as revised or proposed in this filing, unless otherwise indicated.

[2] The CAISO filed tariff revisions to implement its EDAM initiative on August 22, 2023 in Docket No. ER23-2686.

E. Removing outdated tariff language concerning long-term power supply contracts

The CAISO discusses each revision in Section II, below.

As discussed below, the CAISO thoroughly vetted the 2023 Cost-of-Service study and the proposed tariff modifications with stakeholders pursuant to a robust and transparent stakeholder process, and there was broad-based support for the proposal. The tariff amendments provide stability and rate certainty, while ensuring an open and transparent evaluation of the GMC fees and charges on a regular basis through a regular Cost-of-Service study. This process, in conjunction with the CAISO's annual budget development process, promotes transparency and gives stakeholders the opportunity to participate in every aspect of the CAISO's budget, revenue requirement development, and GMC rate design.

The CAISO respectfully requests the Commission approve as just and reasonable all of the proposed tariff revisions, except in Section 33, effective January 1, 2024. Because the changes establish the CAISO's annual financial rates, a January 1 effective date enables proper accounting.

For the tariff revisions proposed to Section 33, the CAISO respectfully requests an effective date of May 2, 2025. The CAISO respectfully requests waiver of the Commission's 120-day notice requirement to permit this effective date. Good cause exists to grant the requested waiver. The underlying tariff provisions themselves are currently pending before the Commission in ER23-2686, with a proposed effective date of May 1, 2025. Because the CAISO cannot revise the pending tariff revisions before they are in place, the CAISO proposes an effective date one day after they would go into effect.

I. Background

A. GMC Overview

The GMC is the vehicle through which the CAISO recovers its annual revenue requirement from the entities that use CAISO services. Funding the annual revenue requirement ensures the CAISO recovers its administrative, operating, and capital costs. The CAISO developed the current GMC rate design based on a 2010 Cost-of-Service study that the CAISO conducted for the purposes of establishing the GMC for 2012.[3] The CAISO vetted the Cost-of-Service study and GMC rate design through a robust stakeholder process, and the Commission approved the existing GMC rate design, effective January 1, 2012.[4] In 2014, the CAISO filed an updated Cost-of-Service study based on the methodology reflected in the 2010 Cost-of-Service study as

[3] That Cost-of-Service study was based on 2010 data.

[4] *Cal. Indep. Sys. Operator Corp*., 136 FERC ¶ 61,236 (2011).

well as minor modifications to the GMC process. The Commission approved the Cost-of-Service study and the minor GMC modifications effective January 1, 2015.[5] In 2017, the CAISO filed an updated Cost-of-Service study and associated tariff modifications. The Commission approved the filing effective January 1, 2018.[6] In 2020, the CAISO filed its most recent Cost-of-Service study and accompanying tariff revisions. The Commission approved the filing effective January 1, 2021.[7]

The GMC comprises three cost categories, four administrative fees, and a fixed charge for transmission ownership rights (TOR) holders.[8] This rate design, which the CAISO first proposed in the 2011 GMC filing, substantially simplified the existing GMC structure and more closely aligned the cost allocation categories with the CAISO's nodal markets.[9] At the time of the 2011 GMC filing, the GMC had seven service categories with seventeen related charge codes. With the 2011 filing, the CAISO preserved the formula rate with a fixed revenue requirement cap but reduced the number of service categories from seven to three:

(1) The market services category consists of costs related to implementing and operating the markets and is charged based on each scheduling coordinator's gross absolute value of awarded megawatt hours of energy and megawatts per hour of ancillary services in the day-ahead and real-time markets;

(2) The system operations category consists of costs associated with reliably operating the grid by balancing supply and demand and is charged based on each scheduling coordinator's gross absolute value of real-time energy flows for generation, load, imports and exports; and

(3) The congestion revenue rights (CRRs) category consists of costs related to the CRR function and is charged based on each scheduling coordinator's total megawatt CRR holdings applicable to each hour.

The CAISO currently allocates the overall revenue requirement to these categories based on percentages developed in the 2020 Cost-of-Service study: 49% to market

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5 *Cal. Indep. Sys. Operator Corp.*, 149 FERC ¶ 61,232 (2014). .

6 *Cal. Indep. Sys. Operator Corp*., Nov. 21, 2017 FERC Order, http://www.caiso.com/Documents/Nov21_2017_LetterOrderAcceptingTariffAmendment-2017GridManagementCharge-Cost_ServiceStudyUpdate_ER18-91.pdf.

7 *Cal. Indep. Sys. Operator Corp.*, Dec. 10, 2020 FERC Order, https://www.caiso.com/Documents/Dec10-2020-OrderAcceptingGridManagementCharge-CostofServiceUpdate-ER21-112.pdf.

8 The four administrative charges are the Bid Segment Fee, the CRR Transaction Fee, the Inter-Scheduling Coordinator Trade Transaction Fee and the Scheduling Coordinator ID Charge.

9 The history of the CAISO's GMC was described in the testimony of Mr. Michael Epstein, which accompanied the 2011 GMC filing. The CAISO is attaching that testimony for reference as Attachment D.

services, 49% to system operations and 2% to CRR services. The CAISO tariff requires the CAISO to conduct an updated Cost-of-Service study every three years to "recalculate the three service charge percentages and the rates for the fees and charges that constitute the Grid Management Charge as set forth in Section 11.22."[10] The CAISO also uses the study results to update the Energy Imbalance Market (EIM) cost category percentages and the RC funding percentage. Finally, the CAISO uses the study to set the charges, fees, and rates for supplemental services such as the TOR services.

The 2011 revised GMC rate design also included two new transaction fees: the bid segment fee per bid segment; and the CRR auction bid fee per trade. In addition, the revised rate design retained the existing inter-scheduling coordinator fee per trade and the scheduling coordinator ID fee per month of market activity. These transaction and administrative fees are similar to fees assessed by other ISOs and RTOs. The CAISO also deducts the administrative fees from the respective service categories' revenue requirement allocations as described in the CAISO tariff.[11]

The 2011 revised rate design carried forward the TOR exemption from the monthly GMC calculation of the system operations charges. As explained in greater detail below, this exemption reflects TOR holders' more limited use of the CAISO grid, and is a fixed charge per megawatt-hour of flow, assessed on the minimum of the customer's supply or demand megawatt-hours.

In 2014, the CAISO implemented the EIM in which other balancing authority areas can participate in the CAISO's real-time energy market. As part of the stakeholder process for the EIM, the CAISO, in conjunction with its stakeholders, developed the EIM Administrative Charge, which is derived from the real-time portion of GMC cost categories. In 2015, the CAISO amended its EIM Administrative Charge to better align with the GMC. The 2015 amendment established the EIM Administrative Charge as it currently exists, which bases the EIM Administrative Charge on the real-time activities associated with market services and system operations categories of the GMC.[12] The CAISO does not propose any changes to the structure of the EIM Administrative Charge in this filing, but the new System Operations Charge bifurcation will cause corresponding modifications to the EIM Administrative Charge rates as shown in Table 1 below.

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[10] CAISO Tariff Appendix F, Schedule 1, Part A.

[11] The CAISO credits the bid segment fee, inter-scheduling coordinator trade transaction fee and the scheduling coordinator ID charge against the market services category, the CRR auction bid fee against the CRR service category, and the TOR fee against the system operation category.

[12] *Cal. Indep. Sys. Operator Corp.,* 153 FERC ¶ 61,087 at P 60.

Table 1: Summary of EIM Cost Category Percentage Changes[13]

Cost Category	EIM Real-Time Activity	Previous Study Effective 2021 thru 2023 GMC	2023 Study Effective 2024 thru 2025 GMC	2023 Study Effective 2026 GMC
Market Services	Real-Time Market	63.0%	64.5%	64.5%
System Operations	Real-Time Dispatch	50.0%	42.0%	
System Operations Real-Time Dispatch	Real-Time Dispatch			100.0%

Similar to the EIM Administrative Charge, the CAISO recently proposed creating an EDAM Administrative Charge for the real-time market and the day-ahead market services that the extended day-ahead market offers.[14] Once a transmission provider begins participating in the extended day-ahead market, it will no longer pay the EIM Administrative Charge, it will only pay the EDAM Administrative Charge. Although EDAM transmission providers will participate in the day-ahead and real-time markets, they will receive a different set of services from CAISO transmission owners and market participants: As proposed, the EDAM would not include virtual bidding initially, nor other market functions the CAISO employs for its balancing area. The CAISO proposed a separate EDAM Administrative Charge from GMC and the EIM Administrative Charge to account for the unique set of services EDAM transmission providers will receive from the CAISO.

Finally, the CAISO began offering RC services to balancing authority areas within the Western Interconnection in 2019. As part of the stakeholder process to implement RC services, the CAISO developed the RC services charge to recover the cost of providing RC services. The CAISO leveraged its existing rate design model and activity-based costing system to determine the amount it would charge for RC service. Using this approach, the CAISO developed an annual RC funding requirement. The funding requirement is the product of the CAISO's overall annual revenue requirement multiplied by the percentage of costs attributable to providing RC services (the "RC percentage") as determined as part of the triennial Cost-of-Service study.

The CAISO does not propose to change the percentages associated with the GMC cost categories in 2024 and 2025. The CAISO only proposes minor changes to the EIM cost category percentages, RC funding percentage, and TOR services rate. As described below, the CAISO proposes to change the GMC cost category percentages beginning in 2026 to account for EDAM operation and the bifurcation of the Systems

[13] As described in the subsection below, the CAISO made minor changes to the Real-Time Market percentage allocations after the release of the draft final version of the 2023 Cost-of-Service study. Table 1 reflects the correct percentage allocations..

[14] *Cal. Indep. Sys. Operator Corp.*, Tariff Amendment at pp. 106 *et seq.*, Docket No. ER23-2686-000 (Aug. 22, 2023); proposed section 33.11.6 of the CAISO tariff. The tariff revisions in this filing to the EDAM Administrative Charge do not constitute an amendment to the CAISO's tariff revisions in ER23-2686. They are separate and severable, iterative tariff revisions the Commission should consider independently.

Operations Charge.[15]

B. The 2023 Cost-of-Service Study

The 2023 Cost-of-Service study analyzes the 2024-2026 revenue requirements under two scenarios. The first scenario incorporates pre-EDAM conditions for the 2024 revenue requirement. The second scenario incorporates EDAM conditions for the 2025-2026 revenue requirements. As of late August 2023 (after the release of the draft final version of the 2023 Cost-of-Service study), the EDAM was evaluated for a 2026 inaugural operational year. This change required the CAISO to reevaluate the Cost-of-Service study results and proposed changes. The impacts to the study's analysis, given the new kickoff date, were minimal:

- Aligning the System Operations bifurcation effective date to January 1, 2026, rather than effective January 1, 2025 as originally proposed.
- Changing the Real-Time percentage allocations to be effective for the full three years rather than split rates over the 3-year period.
    - The Real-Time Market percentage will be 64.5% (average of the 64% and 65% originally published).
    - The Real-Time Dispatch percentage will be 42%.
- Changing the TOR Charge amount to be effective for the full three years rather than split rates over the 3-year period.
    - The rate will be $0.325/MWh (average of the $0.32 and $0.33 amounts originally published).

The proposed changes included in this transmittal letter reflect these changes; whereas the body of the study, as well as supporting tables shown below, support the results shared in the draft and draft final versions of the 2023 Cost-of-Service study.

The 2023 Cost-of-Service study uses the same Commission-approved activity-based costing (ABC) modeling and cost allocation methodology the CAISO used in the 2011, 2014, 2017, and 2020 Cost-of-Service studies. In the July 12, 2023 stakeholder meeting, the CAISO described the Cost-of-Service study methodology, including an explanation of ABC and the levels of employee activities used in the study.[16] Activity-based costing is a time tracking methodology by which CAISO employees keep track of the time they spend on various activities.

Activity-based costing enables the CAISO to analyze the cost to provide services using budget, processes, and time data. The analysis provides a comprehensive understanding of how much time and resources contribute to each of the service cost categories. This method guides the CAISO to allocate the right portion of its annual

[15] Proposed Part A of Appendix F to the CAISO tariff.

[16] Attachment C at 8-14.

revenue requirement to the GMC and other rates and charges. The GMC rate structure contains three cost categories: market services, system operations, and CRR services. The market services category is designed to recover costs CAISO incurs for running the markets. The system operations category is designed to recover costs CAISO incurs for reliably operating the grid in real time. The CRR services category recovers costs CAISO incurs for running the CRR markets. The CAISO uses the Cost-of-Service study to determine the share of the CAISO's direct and indirect costs attributable to these three cost categories. The CAISO applies the percentages calculated as part of the Cost-of-Service study to the annual GMC revenue requirement to determine the amounts in the cost categories upon which rates are set.

The 2023 Cost-of-Service study also includes a sub-category, reliability coordinator, to calculate the RC funding percentage. The RC funding percentage represents the direct and indirect time and expense necessary for the CAISO to perform its RC services and functions. The CAISO derives the RC funding percentage similarly to the GMC cost category percentages in that it multiplies the RC funding percentage against the revenue requirement to determine the RC funding requirement. This approach allows the RC funding requirement to leverage against the stability of CAISO's annual revenue requirement, thus benefiting both the RC customers and the existing GMC customers.

Currently, the ABC analysis disaggregates CAISO functions into nine core processes (level 1 activities). Each of the core activities is further broken down into major processes (level 2 activities) which are then mapped back to the level one activity. There are 112 level 2 activities included in the 2023 Cost-of-Service study, as shown in Table 2 below.[17] CAISO continually reviews and develops its processes to reflect its current state of operations and process flows.

[17] *Id.* at 10.

Table 2: Level 1 ABC Activities

ABC Process Code	Level 1 ABC Activity	Number of Level 2 Activity Tasks
Direct Operating Costs		
80001	Develop Infrastructure	9
80002	Develop Markets	6
80004	Manage Market & Reliability Data & Modeling	17
80005	Manage Market & Grid	11
80007	Manage Operations Support & Settlements	11
80008	Plan & Manage Business	11
80009	Support Business Services	32
80010	Support Customers & Stakeholders	6
	Total	**103**
Indirect Operating Costs		
80003	Manage Human Capabilities	9
9	**Total**	**112**

1. Allocating Activity Costs and Indirect Costs to Cost Categories

The CAISO conducted the 2023 Cost-of-Service study similarly to how it conducted the 2011, 2014, 2017, and 2020 studies. As explained in the 2023 Cost-of-Service study and 2024-2026 GMC update document, CAISO level 1 and 2 activities fall generally into two overall categories: direct employee activities, which can be mapped to the four service categories, and indirect or support activities, which support CAISO business services but are not attributable to any specific cost category (*e.g.*, managing human resources).

First, the CAISO divided the nine level 1 processes into either direct employee activities or indirect/support activities. The Cost-of-Service study assigns all support activities to a category of indirect costs. Second, using information provided by the business process owners, the CAISO mapped the level 2 functions associated with the direct level 1 activities to one of the four service categories (*i.e.*, market services, system operations, CRR services, and reliability coordinator services) based on the extent to which the activity supported the function the category represented. Because it is infeasible to perform such mapping with a high degree of precision, the CAISO mapped the direct activities using the 12 standard percentage allocations presented in Table 3 below.

Table 3: Mapping of ABC Direct Operating Activities to Cost Categories

Standard Cost Category Percentage Allocations				
Option	**1**	**2**	**3**	**4**
1	100%			
2	95%	5%		
3	80%	20%		
4	80%	15%	5%	
5	80%	10%	5%	5%
6	60%	40%		
7	60%	35%	5%	
8	60%	30%	5%	5%
9	50%	50%		
10	50%	40%	10%	
11	45%	45%	5%	5%
12	40%	40%	20%	

For example, the CAISO mapped the Manage Transmission and Resource Implementation function (identified as task 205) 100% under the system operations cost category because it pertains to managing the building and maintaining of the grid. Thus, related costs support system operations entirely. If the activity was not attributable to any specific cost category—like stakeholder training or dispute resolution—the CAISO identified it as 100% indirect cost: the same category the Cost-of-Service study assigns to support activities. The CAISO used this same mapping approach in prior Cost-of-Service studies.[18] The CAISO then used the same approach to allocate three additional items to the three direct cost categories and the indirect cost category: (1) debt service[19] and cash-funded capital; (2) non-payroll support items; and (3) other income[20] and operating reserve credit.[21] After calculating the percentage allocations to the three direct cost categories, the CAISO aggregated the indirect cost category and allocated those costs proportionally to the direct cost categories. CAISO stakeholders and rate customers have supported these cost allocations since their inception.

[18] The percentage allocations to the service categories were used dating back to the 2010 Cost-of-Service study and based on input from business units across the CAISO.

[19] The CAISO tariff uses the term “financing costs.”

[20] The Cost-of-Service study also refers to this as miscellaneous income. Under the CAISO tariff, it is “other costs and revenues.”

[21] The CAISO tariff uses the term “operating cost reserve adjustment.”

2. Assigning Revenue Requirements Costs to Service Categories

Consistent with the process the CAISO followed in its three prior Cost-of-Service studies, after the CAISO completed this mapping, the CAISO applied the resulting service category allocation matrix of level 2 activities and non-payroll costs to the 2022 revenue requirement budget to determine the costs associated with the four service categories. This process produced the proposed revised GMC cost allocation percentages.

The components of the 2022 revenue requirement are operations and maintenance (O&M) costs, debt service on the 2021 bonds, cash-funded capital, other costs and revenues, and operating cost reserve adjustment. To assign the revenue requirement to the service categories, the CAISO first split operations and maintenance costs—the largest budget item—into non-payroll support costs and activity-related costs (both direct and support). The CAISO mapped non-payroll support to the service categories and the indirect cost category based on the extent to which the activity supported the function that the category represented.

Assigning direct activity-related operating and maintenance costs to the service categories required the CAISO to collect 2022 employee time and the percentage breakdown of each CAISO cost center by level 1 and 2 direct operating activities. This was a multi-step process that began with the CAISO determining the percentage of the hours each cost center devoted to each level 2 activity, multiplying the percentage by the 2022 budgeted direct activity costs for that cost center, and then summing the costs for all cost centers for that level 2 activity. The CAISO then assigned those costs to cost categories based on the previously determined level 2 activity allocation.[22] The CAISO similarly calculated the hours and costs for each cost center related to operating and maintenance support costs. Because these support activities were not related to any particular direct activities, the CAISO assigned all of them as indirect costs.[23]

The 2021 bonds refinanced bonds that had funded building the CAISO's corporate headquarters in Folsom. For debt service on the 2021 bonds, the CAISO allocated 100% of the costs to the indirect category.[24] The CAISO similarly assigned other revenues (from fees and interest) and operating reserve credit to a direct activity if applicable or to the indirect category.[25]

In the final step, the CAISO aggregated the amount in each of the three direct cost activities and then determined the ratio among the three. The CAISO allocated the indirect costs among the three according to this ratio to obtain the following overall

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22 Attachment C at 22-41.

23 *Id.* at 15.

24 *Id*. at 16.

25 *Id.* at 16-17.

updated percentages, shown in Tables 4 and 5 below.[26] The Reliability Coordinator costs, which represent 8% of revenue requirement prior to the RC Funding Requirement adjustment, were offset by the RC Funding Requirement. The remaining balance represents the GMC revenue requirement to be collected through the GMC rates and fees.

Table 4: Allocation of Revenue Requirement to Cost Categories (2024 GMC)

Modified Revenue Requirement		GMC				
Component	Budget	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect
	budget allocations (amounts in thousands)					
Direct Costs	$ 212,322	$ 68,394	$ 68,375	$ 3,382	$ 10,191	$ 61,980
Indirect Costs	$ 7,057	$ -	$ -	$ -	$ -	$ 7,057
Non-ABC Costs	$ 39,043	$ 2,063	$ 644	$ 50	$ 1,645	$ 34,641
Total O&M	**$ 258,422**	**$ 70,457**	**$ 69,019**	**$ 3,432**	**$ 11,836**	**$ 103,678**
Debt Service	$ 14,685	$ -	$ -	$ -	$ -	$ 14,685
Cash Funded Capital	$ 15,000	$ -	$ -	$ -	$ -	$ 15,000
Total Debt Service and Capital	**$ 29,685**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 29,685**
Other Costs and Revenues (without RC Funding Requirement)	$ (36,062)	$ (8,600)	$ (7,835)	$ -	$ (1,345)	$ (18,282)
Operating Cost Reserve Adjustment	$ (13,493)	$ -	$ -	$ -	$ -	$ (13,493)
Total Other Revenue and Operating Costs Reserve Adj	**$ (49,555)**	**$ (8,600)**	**$ (7,835)**	**$ -**	**$ (1,345)**	**$ (31,775)**
Revenue Requirement Sub-Total Before Indirect Allocations	**$ 238,552**	**$ 61,857**	**$ 61,184**	**$ 3,432**	**$ 10,491**	**$ 101,588**
Direct Costs %		45%	45%	2%	8%	
Indirect Costs Allocated Based on Direct Cost %		45,715	45,715	2,032	8,127	(101,588)
Revenue Requirement Sub-Total Before RC Funding Requirement Adjustment	**$ 238,552**	**$ 107,572**	**$ 106,899**	**$ 5,464**	**$ 18,618**	**$ -**
RC Funding Percentage		45%	45%	2%	8%	
Reliability Coordinator Funding Requirement	$ (18,618)	$ -	$ -	$ -	$ (18,618)	$ -
GMC Revenue Requirement	**$ 219,934**	**$ 107,572**	**$ 106,899**	**$ 5,464**	**$ -**	**$ -**
Cost Category Percentages for GMC Rates		49%	49%	2%		

26 *Id*. at 44, 82.

Table 5: Allocation of Revenue Requirement to Cost Categories (2025-2026 GMC)

Modified Revenue Requirement: Bifurcated Systems Operations Rate and EDAM Transitional Ramp-In

Component	Budget	GMC					
		Market Services	NEW System Operations-Real-Time Dispatch	NEW System Operations-Balance Authority Area Services	CRR Services	Reliability Coordinator	Indirect
		budget allocations (amounts in thousands)					
Direct Costs	$ 212,322	$ 68,394	$ 30,498	$ 37,877	$ 3,382	$ 10,191	$ 61,980
Indirect Costs	$ 7,057	$ -	$ -	$ -	$ -	$ -	$ 7,057
Non-ABC Costs	$ 39,043	$ 2,063	$ 611	$ 33	$ 50	$ 1,645	$ 34,641
Total O&M	**$ 258,422**	**$ 70,457**	**$ 31,109**	**$ 37,910**	**$ 3,432**	**$ 11,836**	**$ 103,678**
Debt Service	$ 14,686	$ -	$ -	$ -	$ -	$ -	$ 14,686
Cash Funded Capital	$ 15,000	$ -	$ -	$ -	$ -	$ -	$ 15,000
Total Debt Service and Capital	**$ 29,686**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 29,686**
Other Costs and Revenues (without RC Funding Requirement)	$ (20,062)	$ (4,400)	$ (825)	$ (2,810)	$ -	$ (1,345)	$ (10,682)
Operating Cost Reserve Adjustment	$ (5,468)	$ -	$ -	$ -	$ -	$ -	$ (5,468)
Total Other Revenue and Operating Costs Reserve Adj	**$ (25,530)**	**$ (4,400)**	**$ (825)**	**$ (2,810)**	**$ -**	**$ (1,345)**	**$ (16,150)**
Revenue Requirement Sub-Total Before Indirect Allocations	**$ 262,578**	**$ 66,057**	**$ 30,284**	**$ 35,100**	**$ 3,432**	**$ 10,491**	**$ 117,214**
Direct Costs %		45%	21%	24%	2%	8%	
Indirect Costs Allocated Based on Direct Cost %	-	52,746	24,615	28,131	2,344	9,377	(117,214)
Revenue Requirement Sub-Total Before RC Funding Requirement Adjustment	**$ 262,578**	**$ 118,803**	**$ 54,899**	**$ 63,231**	**$ 5,776**	**$ 19,868**	**$ -**
RC Funding Percentage		45%	21%	24%	2%	8%	
Reliability Coordinator Funding Requirement	$ (19,868)	$ -	$ -	$ -	$ -	$ (19,868)	$ -
GMC Revenue Requirement	**$ 242,710**	**$ 118,803**	**$ 54,899**	**$ 63,231**	**$ 5,776**	**$ -**	**$ -**
Cost Category Percentages for GMC Rates		49%	23%	26%	2%		

Although not necessary to determine the cost category percentages, the rates are needed to determine the EIM fee percentages. To achieve this, the CAISO calculated the projected revenues from the GMC fees, deducted them from the relevant service categories, and then divided the remaining amount by estimated volumes of billing determinants for each cost category to determine estimated GMC rates for stakeholder information purposes, as shown in Tables 6 and 7 below.[27] These steps are consistent with the steps the CAISO undertook in its previous Cost-of-Service studies.

[27] *Id.* at 45, 84.

Table 6: 2022 GMC Rates Using Revised Cost Category Percentages (2024 GMC)

Modified Revenue Requirement		GMC		
Component	Budget	Market Services	System Operations	CRR Services
	budget allocations (amounts in thousands)			
GMC Revenue Requirement	**$ 219,934**	**$ 107,572**	**$ 106,899**	**$ 5,464**
Cost Category Percentages for GMC Rates		49%	49%	2%
Less Fees				
Bid Segment Fees	$ (537)	$ (537)	$ -	$ -
Inter-SC Trade Fees	$ (2,668)	$ (2,668)	$ -	$ -
SCID Charge	$ (7,902)	$ (7,902)	$ -	$ -
TOR Charge	$ (1,006)	$ -	$ (1,006)	$ -
CRR Auction Bid Fees	$ (1,055)	$ -	$ -	$ (1,055)
Total Fees	**$ (13,168)**	**$ (11,107)**	**$ (1,006)**	**$ (1,055)**
Remaining Revenue Requirement to Collect	**$ 206,766**	**$ 96,465**	**$ 105,893**	**$ 4,409**
Estimated Volumes				
Estimated Volumes		533,233	440,760	420,133
		-		-
Total Estimated Volumes (GWh)		**533,233**	**440,760**	**420,133**
2022 Rates/MWh Using Revised Percentages		**$ 0.1809**	**$ 0.2403**	**$ 0.0105**

Table 7: 2022 GMC Rates Using Revised Cost Category Percentages (2025-2026 GMC)

Modified Revenue Requirement: Bifurcated Systems Operations Rate and EDAM Transitional Ramp-In						
		GMC				
Component	Budget	Market Services	NEW System Operations-Real-Time Dispatch	NEW System Operations-Balance Authority Area Services	CRR Services
	budget allocations (amounts in thousands)				
GMC Revenue Requirement	**$ 242,710**	**$ 118,803**	**$ 54,899**	**$ 63,231**	**$ 5,776**
Cost Category Percentages for GMC Rates		49%	23%	26%	2%
Less Fees					
Bid Segment Fees	$ (537)	$ (537)	$ -	$ -	$ -
Inter-SC Trade Fees	$ (2,668)	$ (2,668)	$ -	$ -	$ -
SCID Fees	$ (7,902)	$ (7,902)	$ -	$ -	$ -
TOR Fees	$ (1,037)	$ -	$ (1,037)	$ -	$ -
CRR Auction Bid Fees	$ (1,055)	$ -	$ -	$ -	$ (1,055)
Total Fees	**$ (13,199)**	**$ (11,107)**	**$ (1,037)**	**$ -**	**$ (1,055)**
Remaining Revenue Requirement to Collect	**$ 229,511**	**$ 107,696**	**$ 53,862**	**$ 63,231**	**$ 4,721**
Estimated Volumes					
Estimated Volumes		533,233	440,760	440,760	420,133
Estimated EDAM Volumes (PacifiCorp year 1 ramp-in volumes only) + System Operations Real-Time		126,977	141,626		-
Total Estimated Volumes (GWh)		**660,210**	**582,386**	**440,760**	**420,133**
2022 Rates Using Revised Percentages		**$ 0.1631**	**$ 0.0925**	**$ 0.1435**	**$ 0.0112**

The following table reflects the results of the Cost-of-Service study.

Table 8: Summary of GMC Cost Category Percentage and Cost Changes[28]

Cost Category Percentages and Costs *($$ in thousands)*	2019 Revenue Requirement for 2021 thru 2023		Modified 2022 Revenue Requirement for 2024		Modified 2022 Revenue Requirement for 2025 thru 2026	
	$$	%	$$	%	$$	%
Market Services	$ 86,800	49%	$ 107,572	49%	$ 118,803	49%
System Operations	$ 88,061	49%	$ 106,899	49%		
New: Real-Time Dispatch					$ 54,899	23%
New: Balance Authority Area Services					$ 63,231	26%
CRR Services	$ 3,965	2%	$ 5,464	2%	$ 5,776	2%
Total	**$ 178,826**	**100%**	**$ 219,934**	**100%**	**$ 242,710**	**100%**

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

II. Proposed Tariff Revisions

A. System Operations Charges

EIM entities pay a fee for the real-time activity costs allocated to the GMC's two main cost categories: Market Services and System Operations. The CAISO's System Operations category represents costs split between Real-Time Dispatch resources and Balancing Authority Services resources. To determine the appropriate percentage of GMC that EIM entities should pay for System Operations, the CAISO calculates the portion of the System Operations Charge allocated to Real-Time Dispatch resources (as part of the EIM Administrative Charge). To simplify its charge calculation process and increase the granularity of its calculations, the CAISO proposes to bifurcate its System Operations Charge into two new charges: (1) System Operations Real-Time Dispatch Charge; and (2) System Operations Balancing Authority Area Services Charge.[29] In

[28] Attachment C at 85.

[29] Proposed subsection of Section 11.22.2.5; proposed section 29.11; proposed section 29.30; proposed section 33.11.6 (as proposed in ER23-2686), proposed definitions for "System Operations Balancing Authority Area Services Charge" and "System Operations Real-Time Dispatch Charge," Appendix A to the CAISO tariff; proposed parts A and C of Appendix F to the CAISO tariff.

For clarity, the CAISO also has revised references to the defined "Systems Operations Charge," to the general "systems operations charges" to refer to any or all of the charges as applicable. The CAISO also has simplified the definition of "Grid Management Charge" to be more lexical and simply reference the appropriate tariff provisions instead of paraphrasing them. Including the new charges also resulted in tariff revisions to change the numbering and references for the CRR Services Charge now in Section 11.22.2.5.5.

effect, the CAISO will eliminate the System Operations Charge January 1, 2026 and replace it with the two new charges. The new System Operations Real-Time Dispatch Charge will supersede the EIM System Operations Charge.[30] The 2026 date corresponds with the planned implementation of the extended day-ahead market. The CAISO has proposed the bifurcation in the instant filing because of the three-year Cost-of-Service study schedule and resulting tariff amendment. Having the tariff revisions effective in advance also enables the CAISO to make the necessary software changes, and provides transparency and advance notice to stakeholders.

The Systems Operations Real-Time Dispatch Charge will represent the costs to support real-time dispatch services the CAISO offers to its Balancing Authority Area (BAA), EIM, and EDAM customers. It will apply to metered flows in MWh of supply and demand. The calculation for how much to collect of the System Operations Real-Time Dispatch portion of the annual GMC Revenue Requirement will be based on the latest Cost-of-Service study results. The GMC Revenue Requirement will be multiplied by the latest study's System Operations Real-Time Dispatch cost category percentage to determine the cost to collect. To determine the price per MWh, the cost will be divided by the projected total generation, import, load and export (gross meter) MWh volumes; total volumes include the CAISO BAA, EIM, and EDAM participants.[31]

The System Operations Balancing Authority Area Services Charge will represent the costs to support services within the CAISO BAA such as transmission planning, summer readiness, and planning coordinator. The calculation for how much to collect of the System Operations Balancing Authority Area portion of the annual GMC Revenue Requirement will be based on the latest Cost-of-Service study results. The CAISO has proposed revisions to its Appendix F GMC allocation percentages to account for the bifurcation beginning in 2026. The GMC Revenue Requirement will be multiplied by the latest study's System Operations Balancing Authority Area cost category percentage to determine the cost to collect. To determine the price per MWh, the cost will be divided by the projected total generation, import, load, and export (gross meter) MWh volumes.[32]

The Commission should approve these tariff revisions as just and reasonable. Stakeholders broadly supported the bifurcation, which will allocate costs commensurate with benefits more accurately. These revisions will help ensure the CAISO correctly assesses its costs to existing and new customers as the CAISO's unique services proliferate.

Finally, the CAISO clarified the billing determinants for the Market Services Charge and CRR Services Charge in Part A of Appendix F, which were previously not express in those provisions.

30 Proposed Schedule 1, Part A of Appendix F to the CAISO tariff.

31 Attachment C at 47.

32 *Id*.

B. Temporary EDAM Administrative Charge Transitional Load Ramp-In

The CAISO proposes to implement a temporary, transitional rate structure to incentivize transmission providers to join the EDAM as soon as possible while reducing the administrative charge to current load serving entities. This rate structure will initially discount and then annually ramp-up the EDAM administrative charge assessed to load during the first four years EDAM is online. External entity participation in the CAISO's day-ahead market is entirely voluntary. Incentivizing early participation will increase the volumes in the market on which the CAISO assesses GMC, lowering rates for all ratepayers and market participants, and will provide greater initial benefits for participants.[33] In particular, as shown below in Table 9, implementing the transitional rate structure will produce lower GMC rates for existing ratepayers. Increased early participation in EDAM will also help offset the costs of operating EDAM initially. The greater the participation, the greater the benefits will be for all involved.[34] In other words, incentivizing early EDAM participation will help ensure all ratepayers immediately benefit from the EDAM and have lower—not higher—administrative charges as a result.[35]

Because the transitional rate structure begins with the onset of EDAM and sunsets after four years, participating EDAM entities would only benefit to the extent they join EDAM early.[36] The first year EDAM is available for participation, the CAISO will assess five percent of the MWh of each EDAM scheduling coordinator's demand to apply the EDAM Administrative Charge. This will increase to 25 percent in the second year, 50 percent in

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[33] At the outset of the Western Energy Imbalance Market (EIM), there was only one external participating balancing authority, and it took several years to achieve more robust balancing area participation and achieve the level of annual benefits demonstrated over the past several years. *See* https://www.westerneim.com/Pages/About/default.aspx (showing the progression of balancing authority participation from 2014 until 2023). Given this experience, the CAISO seeks to increase participation in the early stages of EDAM by offering a discounted GMC rate, which will promote accelerated expansion as compared to the EIM and provide broader benefits and cost sharing in the early years of EDAM reflected in the later years of the EIM. In the transmission rate context, the Commission has recognized that the sole purpose of discounting is to increase throughput. *Cargill Power Marketing, et al. v Midwest Indep. Sys. Operator, Inc.,* 113 FERC ¶ 61,233 at P 14 (2005).

[34] The CAISO will recover individual EDAM entity onboarding costs pursuant to an EDAM Implementation Agreement. *See* proposed CAISO Tariff, Appendix B.31, pending in Docket No. ER23-2686. However, these costs are limited to the actual costs of onboarding a transmission provider into the EDAM; not developing the EDAM and operating it.

[35] CAISO ratepayers would benefit from providing the initial discount through a reduced rate and by effectively mitigating the risk that the CAISO would have no early EDAM participants, leaving CAISO ratepayers with even higher costs for providing the EDAM, as shown in the table, below.

[36] Proposed Section 33.11.6.1. The CAISO notes that proposed section 33.11.6.1 is severable from the rest of the tariff revisions proposed in the instant filing. *NRG Power Marketing, LLC v. FERC*, 862 F.3d 108 (D.C. Cir. 2017). Likewise, the justness and reasonableness of Section 33.11.6, as proposed in ER23-2686, does not depend on the tariff revisions proposed in the instant filing.

the third year, 75 percent in the fourth year, and 100 percent in the fifth year and thereafter. The ramp-in will only apply to those charges paid by load-serving entities for demand; not suppliers for energy. This will avoid providing any suppliers with a competitive advantage in the market. Each incremental ramp-in percentage will apply to the calendar year, January to December, such that the CAISO would assess the incremental ramp-in percentage to a transmission provider joining after January to the remaining part of the calendar year only. Likewise, a transmission provider joining in year three would only receive that year's ramp-in percentage and the fourth year's ramp-in percentage. This reflects that the ramp-in schedule is based on when EDAM becomes available; not when any EDAM entity joins. A ramp-up of charges over a five-year period incentivizes earlier participation, which will increase the benefits during the initial years of EDAM compared to the benefits accruing from more limited participation. It also recognizes that as participation in EDAM and the benefits increase, and as experience with a day-ahead market grows, less incentive should be needed to encourage external entities to participate. The CAISO's inclusion of these transitional percentages in the tariff ensures greater transparency, consistency, and express Commission approval than effectuating discounted rates through negotiated individual agreements, which others seem to have done.[37]

Because the Balancing Authority of Northern California ("BANC") and PacifiCorp ("PAC") have expressed their intentions to join the EDAM, the CAISO has created projections of the potential administrative charges to the aggregated CAISO, BANC, and PAC scheduling coordinators during the first five years EDAM is available. The CAISO created projections for three scenarios:

- A Base Scenario showing the administrative charges without EDAM participation, and PAC and BANC remain in the EIM
- Scenario 1a showing the administrative charges if PAC and BANC join the EDAM as soon as it is available, but *without* the incentive rate proposed here
- Scenario 1b showing the administrative charges if PAC and BANC join the EDAM as soon as it is available, and *with* the incentive rate structure proposed here.

[37] *See Midwest Indep.t Sys. Operator, Inc.,* 104 FERC ¶ 61,012 at P 26 (2003).

Table 9: Revenue Contributions Scenario Comparison

Projected Market Services (DA and RT) and System Operations (RTD) Revenue Contributions

($ in millions)

** Prorated Year 1 WEIM Charges and EDAM charges to account for spring WEIM offboarding and EDAM onboarding.*

Scenario	Year 1 Charges	Year 2 Charges	Year 3 Charges	Year 4 Charges	Year 5 Charges
Base: No EDAM Participation					
CAISO (assuming no PAC and BANC WEIM Revenue offsets)	$ 160.9	$ 166.1	$ 171.5	$ 177.0	$ 182.7
PacifiCorp (existing WEIM and NPM Charges)	$ 13.0	$ 13.0	$ 13.0	$ 13.0	$ 13.0
BANC (existing WEIM)	$ 0.6	$ 0.6	$ 0.6	$ 0.6	$ 0.6
Revenue Contributions	$ 174.5	$ 179.7	$ 185.1	$ 190.6	$ 196.3
Scenario 1a: Only CAISO, PAC, and Other Entity (Yrs 1-5) w/o Load Volume Ramp-In					
CAISO's portion of the charges	$ 130.1	$ 123.4	$ 127.1	$ 130.9	$ 134.8
PacifiCorp's portion of the charges*	$ 37.2	$ 46.7	$ 48.1	$ 49.5	$ 51.0
BANC's portion of the charges*	$ 7.2	$ 9.6	$ 9.9	$ 10.2	$ 10.5
Revenue Contributions	$ 174.5	$ 179.7	$ 185.1	$ 190.6	$ 196.3
Scenario 1b: Only CAISO, PAC, and Other Entity (Yrs 1-5) w/Load Volume Ramp-In					
EDAM Load Volume Ramp-In	5%	25%	50%	75%	100%
CAISO's portion of the charges	$ 141.9	$ 135.3	$ 134.6	$ 134.4	$ 134.8
PacifiCorp's portion of the charges*	$ 27.6	$ 37.0	$ 42.0	$ 46.6	$ 51.0
BANC's portion of the charges*	$ 5.0	$ 7.4	$ 8.5	$ 9.6	$ 10.5
Revenue Contributions	$ 174.5	$ 179.7	$ 185.1	$ 190.6	$ 196.3
Reduction in CAISO charges from Base	$ 19.0	$ 30.8	$ 36.9	$ 42.6	$ 47.9
PacifiCorp's and BANC's Scenario 1b discount compared to what they would be charged for full supply and load (Scenario 1a) from year 1.	27%	21%	13%	6%	0%

The table demonstrates that early participation in EDAM increases market volumes such that CAISO ratepayers would receive $19 million in savings in year one, $30.8 million in year two, $36.9 million in year three, and $42.6 million in savings in year four. The broader cost allocation from early EDAM participation results in the CAISO's costs decreasing each year. This is a distinct and meaningful benefit CAISO ratepayers will receive through the EDAM ramp-in rate.

The Commission should approve this rate structure as just and reasonable. The ramp-in rate is available to any transmission owner that joins EDAM in its initial years. These years will be critical for the CAISO, which must incur the costs to develop and operate the EDAM regardless of the number of early participants. The success of the EDAM itself will also be at its most vulnerable, which is why the Commission should approve incentivizing early and broad participation.

C. Updated Rates and Charges

For the updated EIM Administrative Charge, the sections below describe the steps the CAISO took to derive the updated costs from the Cost-of-Service study and determine the appropriate level of each of these charges.

1. EIM Administrative Charge

All market participants, EIM or otherwise, pay the same rate for the real-time market and real-time dispatch activities. To update the EIM Administrative Charge, the

CAISO used the 2023 Cost-of-Service study to identify and aggregate the real-time activity costs allocated to the market services and system operations categories. The CAISO then allocated indirect costs to the categories in proportion to the direct costs, in a process similar to that described above for allocating the overall Cost-of-Service study. Next, the CAISO applied the 2022 real-time revenue requirement cost proportions to the respective rates for market services and system operations, as shown in Tables 10 -13 below.[38]

Table 10: Mapping Revenue Requirement to EIM Related Cost Categories (2024 GMC)

Modified GMC Revenue Requirement			Market Services Split			System Operations Split		
Component	Budget	Market Services	Real-Time Market	Day-Ahead Market	System Operations	Real-Time Dispatch	BA Services
Non-ABC O&M Support Costs	$ 39,043	$ 2,063	$ 1,941	$ 122	$ 644	$ 610	$ 34
Direct ABC O&M Costs	$ 212,322	$ 68,394	$ 43,240	$ 25,154	$ 68,375	$ 30,498	$ 37,877
Debt Service	$ 14,685	$ -	$ -	$ -	$ -	$ -	$ -
Cash Funded Capital	$ 15,000	$ -	$ -	$ -	$ -	$ -	$ -
Other Costs and Revenues	$ (54,680)	$ (8,600)	$ (6,500)	$ (2,100)	$ (7,835)	$ (5,025)	$ (2,810)
Operating Costs Reserve Adjustment	$ (13,493)	$ -	$ -	$ -	$ -	$ -	$ -
Subtotal	**$ 212,877**	**$ 61,857**	**$ 38,681**	**$ 23,176**	**$ 61,184**	**$ 26,083**	**$ 35,101**
Indirect Costs	$ 7,057	$ 45,715	$ 28,587	$ 17,128	$ 45,715	$ 19,488	$ 26,227
GMC Revenue Requirement Before Fees	**$ 219,934**	**$ 107,572**	**$ 67,268**	**$ 40,304**	**$ 106,899**	**$ 45,571**	**$ 61,328**
Less Fees	$ (13,168)	$ (11,107)	$ (4,220)	$ (6,888)	$ (1,006)	$ (1,006)	$ -
Remaining Revenue Requirement to Collect	**$ 206,766**	**$ 96,465**	**$ 63,049**	**$ 33,416**	**$ 105,893**	**$ 44,565**	**$ 61,328**
			65%	**35%**		**42%**	**58%**

38 Attachment C at 67, 88.

Table 11: Mapping Revenue Requirement to EIM Related Cost Categories (2025-2026 GMC)

Modified GMC Revenue Requirement		Market Services Split				
Component	Budget	Market Services	Real-Time Market	Day-Ahead Market	System Operations Real-Time Dispatch	System Operations BAA Services
Non-ABC O&M Support Costs	$ 39,043	$ 2,063	$ 1,941	$ 122	$ 611	$ 33
Direct ABC O&M Costs	$ 212,322	$ 68,394	$ 43,240	$ 25,154	$ 30,498	$ 37,877
Debt Service	$ 14,686	$ -	$ -	$ -	$ -	$ -
Cash Funded Capital	$ 15,000	$ -	$ -	$ -	$ -	$ -
Other Costs and Revenues	$ (39,930)	$ (4,400)	$ (4,400)	$ -	$ (825)	$ (2,810)
Operating Costs Reserve Adjustment	$ (5,468)	$ -	$ -	$ -	$ -	$ -
Subtotal	**$ 235,653**	**$ 66,057**	**$ 40,781**	**$ 25,276**	**$ 30,284**	**$ 35,100**
Indirect Costs	$ 7,057	$ 52,746	$ 32,563	$ 20,183	$ 24,615	$ 28,131
GMC Revenue Requirement Before Fees	**$ 242,710**	**$ 118,803**	**$ 73,344**	**$ 45,459**	**$ 54,899**	**$ 63,231**
Less Fees	$ (13,199)	$ (11,107)	$ (4,220)	$ (6,888)	$ (1,037)	$ -
Remaining Revenue Requirement to Collect	**$ 229,511**	**$ 107,696**	**$ 69,125**	**$ 38,571**	**$ 53,862**	**$ 63,231**
			64%	**36%**		

Table 12: Summary of EIM Percentages (2024 GMC)

Cost Category	Category Net Costs	Pro Forma Rate	EIM Real-Time Activity	EIM Percentage of Costs	EIM Cost of Real-Time Activities	EIM Pro Forma Rate
	($ in thousands)	*($ / MWh)*			*($ in thousands)*	*($ / MWh)*
Market Services	$ 96,465	$ 0.1809	Real-Time Market	65%	$ 63,049	$ 0.1182
System Operations	$ 105,893	$ 0.2403	Real-Time Dispatch	42%	$ 44,565	$ 0.1011

Table 13: Summary of EIM Percentages (2025-2026 GMC)

Cost Category	Category Net Costs	Pro Forma Rate	EIM Real-Time Activity	EIM Percentage of Costs	EIM Cost of Real-Time Activities	EIM Pro Forma Rate
	($ in thousands)	*($ / MWh)*			*($ in thousands)*	*($ / MWh)*
Market Services	$ 107,696	$ 0.1631	Real-Time Market	64%	$ 69,125	$ 0.1047
System Operations-Real-Time Dispatch	$ 53,862	$ 0.0925	Real-Time Dispatch	100%	$ 53,863	$ 0.0925

The Commission approved the process for developing the EIM Administrative Charge as part of the CAISO's EIM Year One Enhancements initiative.[39] The updates to the EIM Administrative Charge described above are consistent with the process developed in that proceeding, and the CAISO does not propose to modify how it develops the EIM Administrative Charge except to bifurcate the System Operations Charge, for the reasons described in Section II.A. This will help properly allocate costs to EIM and EDAM participants beginning in January 1, 2026.[40]

2. RC Funding Percentage

In November 2018, the Commission approved the rates, terms, and conditions for the CAISO RC services. In the first phase, the CAISO became the RC of record for 16 entities as of July 1, 2019. The November 1, 2019 cutover marked the second phase of a transition of power grid oversight responsibility. The CAISO is now the RC for 42 entities in the Western Interconnection, responsible for 87 percent of the load in the western United States.

Most of the processes and tasks necessary to support the RC services were already identified in CAISO's ABC process and task codes; however, they were not directly identified as RC services functions. To address this gap, beginning with the 2020 Cost-of-Service study, the CAISO mapped the tasks identified as contributing to RC services to a new cost category, reliability coordinator, by means of percentage allocation. This approach allows the CAISO to leverage against the stability of its annual revenue requirement to develop an annual RC funding requirement, thus benefiting both the RC customers and the existing GMC customers. By mapping the tasks to the RC cost category, the CAISO is able to calculate the RC funding percentage. The RC funding percentage represents the direct and indirect time and expense necessary for the CAISO to perform its RC services and functions. The CAISO uses the RC funding percentage similarly to that of the GMC cost category percentages, namely, the RC funding percentage is multiplied against the revenue requirement to determine the RC funding requirement. The RC funding requirement is then divided by the reported MWh to determine the RC rate/MWh.

Based on the 2023 Cost-of-Service study results, the CAISO proposes to reduce the RC funding percentage slightly from 9% to 8%.[41] This reduction is due to an increase in resources supporting efforts in other cost categories.

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[39] *Cal. Indep. Sys. Operator Corp.,* 153 FERC ¶ 61,087 at P 60. ("We find that CAISO's proposed revisions to the calculation of the EIM administrative charge will ensure that CAISO market participants and EIM market participants are charged the same rate for similar real-time services.")

[40] Proposed Section 29.11 of the CAISO tariff.

[41] Attachment C at 48-49.

3. TOR Charge

In the 2023 Cost-of-Service study, the CAISO analyzed the costs and fees for other supplemental services. The study results indicate that CAISO resources to support Transmission Ownership Rights (TOR) efforts have increased due to higher support costs and lower volumes. The CAISO does not propose any changes to other supplemental fee amounts.

TORs represent transmission capacity on facilities that are located within the CAISO BAA that are either wholly or partially owned by an entity that is not a participating transmission owner. The following four services are required for TORs:

1. Real Time Operations: provides support on an emergency basis for flows on TOR, in a manner similar to standby service.
2. Scheduling: provides check-outs with neighboring BAAs to schedule flows across boundaries.
3. Outage Management: provides for the scheduling and coordination of outages across the BA.
4. Settlements: utilizes its settlements system and processes to charge TOR fees.

In the 2023 Cost-of-Service study, the CAISO identified the specific level 2 activities utilized by TORs and determined that a total of $51.2 million in direct and indirect costs should be allocated to TOR-related services. The CAISO then multiplied the costs of the TORs as a percentage of gross volume to determine the TOR costs to collect for service. The CAISO then divided the product by the applicable TOR MWh, resulting in a TOR Charge increase from $0.18 per MWh to $0.325 per MWh.

Based on the results of the 2023 Cost-of-Service study, the CAISO proposes to increase the TOR Charge from $0.18 per MWh to $0.325 per MWh effective January 1, 2024.[42] The revenue collected from the TOR Charge will offset costs recovered through the System Operations (real-time dispatch) Charge.

D. Ongoing Cost-of-Service Studies and Revenue Requirement Cap

Although the CAISO employs a formula rate, it also has a firm cap on its revenue requirement for transparency and consistency year to year. Despite inflation and substantial demand growth for the CAISO's services, the CAISO has not increased this cap since 2015. The CAISO now proposes to increase its revenue requirement cap to $245 million in 2025 and $250 million in 2026.[43] The CAISO provided detailed information about the forecasted revenue requirement at the July 12, 2023, stakeholder

[42] Proposed Section 11.22.4 of the CAISO tariff.

[43] Proposed Section 11.22.2.5 of the CAISO tariff.

meeting, and included the same information in the draft final proposal.[44] The CAISO explained that several factors are driving this change, including inflation, EDAM accounting, and structural changes to charge collection.

The CAISO last increased the GMC Revenue Requirement cap in 2015 to $202 million. Since that time, other revenue categories have offset the growth in expenses to keep the net revenue requirement beneath the cap. However, the projected revenue requirement will substantially exceed the $202 million cap in 2025 and 2026. The table below displays a summary of the actual revenue requirement the last three years and the projected revenue requirement for the three-year period of 2024 through 2026.

Table 15: 2024-2026 Forecasted

	Actual			Forecast		
GMC Revenue Requirement ($ in millions)	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**
Operations and Maintenance Budget	$ 200.8	$ 210.7	$ 238.4	$ 251.9	$ 258.4	$ 265.2
Debt Service and Cash Funded Capital	$ 44.9	$ 44.7	$ 35.7	$ 20.7	$ 29.7	$ 29.7
Other Revenues and Adjustments	$ (63.7)	$ (72.8)	$ (74.4)	$ (70.7)	$ (46.5)	$ (46.8)
Total GMC Revenue Requirement	**$ 182.0**	**$ 182.6**	**$ 199.7**	**$ 201.9**	**$ 241.6**	**$ 248.1**
Estimated Measured Demand in TWh	237.3	233.5	234.2	242.5	340.5	346.1
Pro-Forma Bundled Cost per MWh	$0.7670	$0.7820	$0.8527	$0.8326	$0.7095	$0.7168

The forecasted increase in the revenue requirement in 2025 includes some normal cost inflation in operating costs. However, the increase is primarily due to how the CAISO will treat the incoming EDAM revenues and structure the revenue requirement. This change will decrease offsetting revenues and adjustments for several reasons. First, the CAISO assumes PacifiCorp joins EDAM and ceases payment on the Nodal Pricing Model service and the EIM service, as those services will be included in EDAM.[45] The CAISO will not treat EDAM revenues as "Other Revenue" (a supplemental revenue offset to the GMC Revenue Requirement) because this service will align in both scope and magnitude to the CAISO's core service offerings. Second, as part of this tariff amendment, the CAISO proposes to bifurcate the Systems Operations charge code into two separate charges: one for Real-Time Dispatch services and one for Balancing Authority Area services. EIM and EDAM customers will only pay the Real-Time Dispatch Charge, collected as part of the GMC and not classified as "Other Revenue." The CAISO also assumes cost savings experienced

[44] Attachment C at 78-80.

[45] PacifiCorp announced its plan to join EDAM last year: https://www.pacificorp.com/about/newsroom/news-releases/EDAM-innovative-efforts.html.

during the pandemic years will dissipate, resulting in a more normal offset from the annual true-up or actual revenue and expenses. Finally, the CAISO plans to increase its headcount five to ten percent between 2024 and 2025, resulting in increased costs regardless of economic conditions. The CAISO has not significantly increased headcount in over ten years despite the expansion of its markets and services, and increased staffing will help the CAISO continue to administer its tariff and maintain a high level of service to its market participants.

The result of the aforementioned changes forecasts a GMC Revenue Requirement of $241.6 million in 2025 and $248.1 million in 2026.[46]

In summary, the CAISO is proposing no change in the revenue requirement cap for 2024, an increase to the cap in 2025 to $245 million, and in 2026 to $250 million.

In order to avoid repeated unnecessary GMC filings, the CAISO does not propose a sunset date for the revenue requirement cap. The CAISO will continue its long-held practice of seeking to modify the GMC through a Section 205 filing only when there are necessary increases in the revenue requirement or changes in the rate design identified in the triennial Cost-of-Service study.

E. Clarifications

The CAISO also proposes to remove Schedule 1, Part E of Appendix F to the CAISO tariff. This tariff provision exempts certain long-term power supply contracts from system operations charges. Because there are no longer Generating Units with contracts that qualify for this exemption, the tariff provision is unnecessary, and removing it promotes transparency.

The CAISO also proposes to revise the last paragraph of section 11.22.2.5 of the CAISO tariff. These revisions will help describe how the CAISO assesses GMC more accurately than the current language. This clarification does not result from any past or proposed change in practice.[47] It simply uses more accurate and consistent verbiage to

[46] Attachment C at 79. Despite the increase in the net revenue requirement, the estimated cost per MWh metric declines from the low 80-cent range to the low 70-cent range. This is due to the launch of EDAM and the associated increase in the estimated measured demand volume numbers. Those numbers will improve with each new addition to EDAM.

[47] For example, the current language uses the passive voice without an actor and opaquely says that "charges shall be levied." It also states these charge occur "monthly in arrears" when they are simply included in the scheduling coordinators' settlement statements per the CAISO's settlement schedule (inherently in arrears). Finally, the prior language stated that the CAISO assessed GMC based on the billing determinants in Appendix F. The CAISO has clarified that it assesses based on the energy, demand, and ancillary service volumes, which is a more transparent description. The CAISO also included a reference to the Business Practice Manual because the current Business Practice Manuals describe assessing every charge code in detail. This reference is merely meant to assist readers; the CAISO does not intend to move any tariff provision to the Business Practice Manual.

describe how the CAISO assesses GMC to scheduling coordinators based on the rates described in Appendix F.[48]

VI. Effective Date and Request for Waivers

The CAISO respectfully requests an effective date of January 1, 2024 for all tariff revisions outside of Section 33. Because the proposed GMC is a formula rate, the CAISO requests a waiver of section 35.13 of the Commission regulations,[49] including waivers of the requirements to submit full Period I and Period II data and work papers and Cost-of-Service statements in sections 35.13(c), 35.13(d)(1), (2), and (5), and 35.13(h).[50] These waivers are justified because the GMC is based on a revenue requirement vetted through the budget process with stakeholders and trued up to actual costs. The CAISO has also provided details about the Cost-of-Service analysis that is the basis for the minor revisions to the service category cost allocations and the supplemental fees that are the subject of this tariff amendment. The Commission has previously granted waivers of the requirements to provide such data in a number of cases involving transmission formula rates.[51]

For the tariff revisions proposed to Section 33, the CAISO respectfully requests an effective date of May 2, 2025. The CAISO respectfully requests waiver of the Commission's 120-day notice requirement to permit this effective date. Good cause exists to grant the requested waiver. The underlying tariff provisions themselves are currently pending before the Commission in ER23-2686, with a proposed effective date of May 1, 2025.[52] Because the CAISO cannot revise the pending tariff revisions before they are in place, the CAISO proposes an effective date one day after they would initially appear in the CAISO tariff.

VII. Communications

In accordance with Rule 203(b) of the Commission's Rules of Practice and Procedure,[53] communications regarding this filing should be addressed to the following individuals, whose names should be put on the official service list established by the

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48 The CAISO also proposes minor verbiage corrections in Section 29 and Appendix F, such as "will" instead of "shall" and "cost-of-service" instead of "Cost-of-Service," *inter alia*.

49 18 C.F.R. § 35.13.

50 18 C.F.R. §§ 35.13(c), 35.13(d)(1), 35.13(d)(2), 35.13(d)(5), and 35.13(h).

51 *See, e.g., PPL Elec. Utils. Corp.,* 125 FERC ¶ 61,121, at PP 40-41 (2008); *Pub. Serv. Elec. & Gas Co.,* 124 FERC ¶ 61,303, at PP 23-24 (2008); *Okla. Gas & Elec. Co.,* 122 FERC ¶ 61,071 (2008) at PP 6, 41; *Commonwealth Edison Co.,* 119 FERC ¶ 61,238, at P 94 (2007).

52 The tariff changes pending in ER23-2686 that have a requested effective date of May 1, 2025 were submitted using the Type of Filing 150 – Report code to permit notification of the actual effective date within 5 business days of implementation, and it will be incumbent on the CAISO to monitor progress towards this requested effective date and to notify the Commission in the event any significant adjustment is warranted.

53 18 C.F.R. § 385.203(b).

Commission with respect to this submittal:

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VIII. Service

The CAISO has served copies of this transmittal letter, and all attachments, on the California Public Utilities Commission, the California Energy Commission, and all parties with effective Scheduling Coordinator Service Agreements under the CAISO Tariff. In addition, the CAISO is posting this transmittal letter and all attachments on the CAISO website.

IX. Attachments

The following attachments, in addition to this transmittal letter, support the instant filing:

Attachment A	Clean CAISO tariff incorporating the proposed tariff changes; and
Attachment B	Marked red-lined document showing the revisions containing the proposed tariff changes.
Attachment C	2023 Cost-of-Service Study and 2024-2026 GMC Update paper;
Attachment D	Testimony of Mr. Michael Epstein, filed with the 2011 GMC Update;
Attachment E	CAISO responses to stakeholder comments;
Attachment F	Presentation materials from the July 12, 2023 stakeholder meeting;
Attachment G	Memorandum to CAISO Board of Governors

X. Conclusion

For the foregoing reasons, the Commission should accept the proposed tariff changes contained in the instant filing. Please contact the undersigned if you have any questions regarding this matter.

Respectfully submitted,

/s/ Marissa A. Nava
Roger E. Collanton
General Counsel
William H. Weaver
Assistant General Counsel
Marissa A. Nava
Counsel

Counsel for the California Independent System Operator Corporation

Attachment A – Clean Tariff

2023 Grid Management Charge – Cost-of-Service Study Update

California Independent System Operator Corporation

September 29, 2023

Appendix A

Definitions

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- CRR Services Charge

The Grid Management Charge component described in Section 11.22.2.5.5.

- Grid Management Charge (GMC)

The CAISO charge on all Scheduling Coordinators that provides for the recovery of the CAISO's costs listed in Section 11.22.2 through the service charges described in Section 11.22.2.5 calculated in accordance with the formula rate set forth in Appendix F, Schedule 1, Part A.

- System Operations Balancing Authority Area Services Charge

A component of the Grid Management Charge that represents the costs to support services within the CAISO Balancing Authority Area.

- System Operations Charge

The Grid Management Charge component described in Section 11.22.2.5.2.

- System Operations Real-Time Dispatch Charge

A component of the Grid Management Charge that represents the costs to support real-time dispatch services to the CAISO Balancing Authority Area customers, EIM, and EDAM.

*****

Section 11

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11.22.2.5 Allocation of the GMC Among Scheduling Coordinators

The costs will be allocated to the service charges that comprise the Grid Management Charge according to the formula in Appendix F, Schedule 1, Part A. The costs recovered through the Grid Management Charge shall not exceed $202 million for 2024, $245 million for 2025, and $250 million for 2026 and thereafter unless the CAISO submits a tariff amendment increasing this amount pursuant to Section 205 of the FPA and FERC accepts such amendment. The service charges, as described in more detail in Appendix F, Schedule 1, Part A, are as follows:

(a) Market Services Charge;

(b) System Operations Charge (for 2024 and 2025);

(c) System Operations Real-Time Dispatch Charge (for 2026 and thereafter);

(d) System Operations Balancing Authority Area Services Charge (for 2026 and thereafter); and

(e) CRR Services Charge.

As described in the Business Practice Manual, the CAISO assesses these charges separately on all Scheduling Coordinators based on their demand, energy, or ancillary services, as applicable, consistent with the formulae set out in Appendix F, Schedule 1, Part A.

11.22.2.5.1 Market Services Charge

Subject to Section 11.22.4, the Market Services Charge for each Scheduling Coordinator is calculated according to the formula in Appendix F, Schedule 1, Part A.

11.22.2.5.2 System Operations Charge

Subject to Section 11.22.4, the System Operations Charge for each Scheduling Coordinator is calculated according to the formula in Appendix F, Schedule 1, Part A. This charge will expire December 31, 2025, and the charges described in 11.22.2.5.3 and 11.22.2.5.4 will apply thereafter.

11.22.2.5.3 System Operations Real-Time Dispatch Charge

Beginning in 2026, the CAISO will calculate the System Operations Real-Time Dispatch Charge for each Scheduling Coordinator according to the formula in Appendix F, Schedule 1, Part A, subject to Section 11.22.4.

11.22.2.5.4 System Operations Balancing Authority Area Services Charge

Beginning in 2026, the CAISO will calculate the System Operations Balancing Authority Area Services Charge for each Scheduling Coordinator according to the formula in Appendix F, Schedule 1, Part A, subject to Section 11.22.4.

11.22.2.5.5 CRR Services Charge

The CRR Services Charge for each Scheduling Coordinator is calculated according to the formula in Appendix F, Schedule 1, Part A.

*****

11.22.4 TOR Charge

The CAISO will exempt TORs from the Market Services Charge and the system operations charges that are calculated through the formula set forth in Appendix F, Schedule 1, Part A. The TOR Charge will be $0.325/MWh, assessed on the minimum of a Scheduling Coordinator's TOR supply or TOR demand per Settlement Interval. The TOR Charge is subject to adjustment as described in Appendix F, Schedule 1, Part A. The CAISO will credit amounts recovered through the TOR Charge against the revenue requirement for the system operations' real-time dispatch charges.

*****

Section 29

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29.11 Settlements and Billing for EIM Market Participants.

(i) **EIM Administrative Charge.**

(1) **In General.** The CAISO will charge EIM Market Participants an EIM Administrative Charge consisting of the real-time portion of the Market Services Charge and the system operations charges described in Section 11.22.2.

(2) **Market Services Charge.** The Market Services Charge shall be the product of the Market Services Charge for each Scheduling Coordinator as calculated according to the formula in Appendix F,

Schedule 1, Part A, the real-time market percentage as calculated in the cost-of-service study according to Appendix F, Schedule 1, Part A, and the sum of Gross FMM Instructed Imbalance Energy (excluding FMM Manual Dispatch Energy) and Gross RTD Instructed Imbalance Energy (excluding RTD Manual Dispatch Energy Standard Ramping Deviation, Ramping Energy Deviation, Residual Imbalance Energy, and Operational Adjustments).

(3) **System Operations Charge.** In 2024 and 2025, the System Operations Charge will be the product of the System Operations Charge for each Scheduling Coordinator, as calculated according to the formula in Appendix F, Schedule 1, Part A, the real-time dispatch percentage as calculated in the cost-of-service study conducted according to Appendix F, Schedule 1, Part A, and the absolute difference between metered energy and the EIM Base Schedules.

(4) **System Operations Real-Time Dispatch Charge.** Beginning in 2026, the System Operations Real-Time Dispatch Charge will be the product of the System Operations Real-Time Dispatch Charge for each Scheduling Coordinator, as calculated according to the formula in Appendix F, Schedule 1, Part A, and the absolute difference between metered energy and the EIM Base Schedules.

(5) **Minimum EIM Administrative Charge.** The CAISO will calculate the minimum EIM Administrative Charge as the product of the sum

of the real-time activities associated with Market Services Charge and the real-time activities associated with system operations, as well as –

(A) five percent of the total gross absolute value of Supply of all EIM Market Participants; plus

(B) five percent of the total gross absolute value of Demand of all EIM Market Participants.

(6) **Withdrawing EIM Entity.** If the EIM Entity notifies the CAISO of its intent to terminate participation in the Energy Imbalance Market and requests suspension of the Energy Imbalance Market in its Balancing Authority Area under Section 29.4(b)(4), the CAISO will charge the EIM Entity the minimum EIM Administrative Charge calculated under Section 29.11(i)(4) during the notice period.

(7) **Application of Revenues.** The CAISO will apply revenues received from the EIM Administrative Charge against the costs to be recovered through the Grid Management Charge as described in Appendix F, Schedule 1, Part A.

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29.30 Bid and Self-Schedule Submission for CAISO Markets.

(a) **In General.** The provisions of Section 30 that are applicable to the Real-Time Market, as supplemented by Section 29.30, shall apply to EIM Market Participants.

(b) **Start-Up and Minimum Load.** For the determination of Proxy Start-Up

Costs and Proxy Minimum Load Costs, the CAISO will utilize the Market Services Charge and system operations charges described in Section 11.22.2 reflected in the EIM Administrative Charge.

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29.39 EIM Market Power Mitigation.

(d) **Default Energy Bids.** The CAISO shall use the methods and standards set forth in Section 39.7 to determine Default Energy Bids for EIM Participating Resources, except that the CAISO will use the Market Services Charge and system operations charges described in Section 11.22.2 reflected in the EIM Administrative Charge.

*****

Section 33

33.11.6 Administrative Charge

The CAISO will charge each EDAM Market Participant an EDAM Administrative Charge, which consists of the System Operations Real-Time Dispatch Charge and the Market Services Charge, both volumetric charges. The CAISO will no longer collect the EIM Administrative Charge from an EDAM Market Participant. The Systems Operations Real-Time Dispatch Charge and the Market Services Charge are described in Appendix F, Schedule 1, Part A.

33.11.6.1 Temporary EDAM Administrative Charge Transitional Load Ramp-in

The EDAM Administrative Charge assessed to Scheduling Coordinators' demand-related charge codes will be assessed on an incremental percentage at the outset of

EDAM. Each incremental percentage will apply to the calendar year, January to December, such that the CAISO would assess the incremental percentage to an EDAM Entity joining after January to the remaining part of the calendar year only. The first year EDAM is available for participation, the CAISO will assess five (5) percent of the MWh of each EDAM Scheduling Coordinator's metered demand to apply the EDAM Administrative Charge. In the second year, the CAISO will assess twenty-five (25) percent. In the third year, the CAISO will assess fifty (50) percent. In the fourth year and thereafter, the CAISO will assess seventy-five (75) percent. In the fifth year and thereafter, the CAISO will assess one-hundred (100) percent. The foregoing does not apply to EDAM Scheduling Coordinators' MWh of Energy or Supply: The CAISO will assess one-hundred (100) percent of the MWh of each EDAM Scheduling Coordinator's Energy to apply the EDAM Administrative Charge at the outset of EDAM and thereafter.

33.30.5 Start-Up and Minimum Load

For the determination of Proxy Start-Up Costs and Proxy Minimum Load Costs, the CAISO will utilize the Market Services Charge and System Operations Real-Time Dispatch Charge reflected in the EDAM Administrative Charge.

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Appendix F

Rate Schedules

Schedule 1

Grid Management Charge

Part A – Calculation of Grid Management Charge (GMC)

The GMC consists of the following separate service charges for 2024 and 2025: (1) the Market Services Charge; (2) the System Operations Charge; and (3) the CRR Services Charge. The GMC revenue requirement, determined in accordance with Part C of this Schedule 1, will be allocated to the service charges specified in Part A of this Schedule 1 as follows: forty-nine (49) percent to Market Services; forty-nine (49) percent to System Operations; and two (2) percent to CRR Services. Beginning in 2026, the GMC will consist of the following separate service charges: (1) the Market Services Charge; (2) the System Operations Real-Time Dispatch Charge; (3) the System Operations Balancing Authority Area Services Charge; and (4) the CRR Services Charge. The GMC revenue requirement, determined in accordance with Part C of this Schedule 1, will be allocated to the service charges specified in Part A of this Schedule 1 as follows: forty-nine (49) percent to Market Services; twenty-three (23) percent to System Operations Real-Time Dispatch Charge; twenty-six (26) percent to System Operations Balancing Authority Area Services Charge; and two (2) percent to CRR Services.

Every three (3) years, the CAISO will conduct an updated cost-of-service study, in consultation with stakeholders and using costs from the previous year. In conducting each cost-of-service study, the CAISO will recalculate the service charge percentages and the rates for the fees and charges that constitute the Grid Management Charge as set forth in Section 11.22. In addition, the cost-of-service study results will be used to update the RC Funding Percentage used to calculate the annual RC Funding Requirement, as well as the real-time percentages of the Market Services Charge. If, based on the cost-of-service study results, the service category revenue requirement allocation percentages or the level of fees and charges have changed, the CAISO will submit tariff amendments to reflect such changes pursuant to Section 205 of the FPA.

1. The rate for the Market Services Charge will be calculated by dividing the annual GMC revenue requirement allocated to this service category net the projected Bid Segment Fees, Inter-SC Trade Transaction Fees, and the SCID Charge by the forecast annual gross absolute value of MW per hour of Ancillary Services capacity awarded in the Day-Ahead and Real-Time Markets, MWh of Energy cleared in the Day-Ahead market, Virtual Demand Award, Virtual Supply Award, and FMM Instructed Imbalance Energy and RTD Instructed Imbalance Energy, less the forecast annual gross absolute value of such Energy as may be excluded for a load following MSS pursuant to an MSS agreement, Standard Ramping Energy, Regulation Energy, Ramping Energy Deviation, Residual

Imbalance Energy, Exceptional Dispatch Energy and Operational Adjustments for the Day-Ahead and Real-Time.

2. The rate for the System Operations Charge will be calculated by dividing the annual GMC revenue requirement allocated to this service category, net the projected TOR Charges by forecast annual gross absolute value of MWh of real-time energy flows on the CAISO Controlled Grid, net of amounts excluded pursuant to Part E of this Schedule.
3. Beginning in 2026, the rate for the System Operations Real-Time Dispatch Charge will be calculated by dividing the annual GMC revenue requirement allocated to this service category net the proportional projected TOR Charges by forecast annual gross absolute value of MWh of real-time energy flows of CAISO, EIM, and EDAM Market Participants.
4. Beginning in 2026, the rate for the System Operations Balancing Authority Area Services Charge will be calculated by dividing the annual GMC revenue requirement allocated to this service category by forecast annual gross absolute value of MWh of real-time energy flows on the CAISO Controlled Grid.
5. The rate for the CRR Services Charge will be calculated by dividing the annual GMC revenue requirement allocated to this service category, net the projected CRR Auction Bid Fees, by the forecast annual sum of awarded MW of CRRs per hour.

The rates for the foregoing charges will be adjusted automatically each year, effective January 1 for the following twelve (12) months, in the manner set forth in Part D of this Schedule.

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Part C – Costs Recovered through the GMC

As provided in Section 11.22.2 of the CAISO Tariff, the GMC includes the following costs, as projected in the CAISO's budget for the year to which the GMC applies:

- CAISO Operating Costs;
- CAISO Financing Costs, including debt service on CAISO capital expenditures;
- CAISO Other Costs and Revenues, including penalties, interest earnings and other revenues;
- CAISO Operating Cost Reserve adjustment; and

- CAISO Cash Funded Capital and Project Costs

Such costs, for the CAISO as a whole, are allocated to the service charges that comprise the GMC: (1) market services, (2) system operations, and (3) CRR services, according to the factors listed in Part A of this Schedule 1, and

adjusted annually for:

- any surplus revenues from the previous year as deposited in the CAISO Operating Reserve Account, or deficiency of revenues, as recorded in a memorandum account;

divided by:

- forecasted annual billing determinant volumes;

adjusted quarterly for:

- a change in the volume estimate used to calculate the individual GMC components, if, on an annual basis, the change is two (2) percent or $1 million, whichever is greater, from the estimated revenue collections provided in the annual informational filing.

The GMC revenue requirement formula is as follows:

GMC revenue requirement =

CAISO Operating Costs + CAISO Financing Costs + CAISO Other Costs and Revenues + CAISO Operating Cost Reserve adjustment + CAISO Cash Funded Capital and Project Costs,

[The “USoA” reference below is the FERC Uniform System of Accounts, and is intended to include subsequent re-numbering or re-designation of the same accounts or subaccounts.]

Where,

(1) CAISO Operating Costs include:

(a) Transmission expenses (USoA 560-574);

(b) Regional market expenses (USoA 575.1-575.8);

(c) Maintenance accounts (USoA 576-576.5)

(d) Customer accounting expenses (USoA 901-905);

(e) Customer service and informational expenses (USoA 906-910);

(f) Sales expenses (USoA 911-917);

(g) Administrative & general expenses (USoA 920-935);

(h) Taxes other than income taxes that relate to CAISO operating income (USoA 408.1); and

(i) Miscellaneous, non-operating expenses, penalties and other deductions (USoA 426 subaccounts).

(2) CAISO Financing Costs include:

(a) For any fiscal year, scheduled principal and interest payments, sinking fund payments related to balloon maturities, repayment of commercial paper notes, net payments required pursuant to a payment obligation, or payments due on any CAISO notes. This amount includes the current year accrued principal and interest payments due in the first one hundred twenty (120) days of the following year.

(b) The debt service coverage requirement, which is a percentage of the senior lien debt service, i.e., all debt service that has a first lien on CAISO net operating revenues. The coverage requirement is twenty-five (25) percent, unless otherwise specified by the rate covenants of the official statements for each CAISO bond offering.

(3) CAISO Other Costs and Revenues include:

(a) Interest earnings (USoA 419) on funds not restricted by bond or note proceeds specifically designated for capital projects or

capitalized interest. Unrealized gains or losses shall be excluded and realized gains and losses shall be included. If it has been determined that a permanent impairment in an investment has occurred, it shall be included.

(b) Miscellaneous revenues, which includes fees and fines assessed and collected by the CAISO (USoA 421, 456, 457.1 and 457.2 subaccounts).

(c) Other interest expenses (USoA 431) not provided for elsewhere.

(4) CAISO Operating Cost Reserve adjustment is the sum of:

(a) The actual excess or shortfall in collections of the prior year's rates compared to the budgeted amounts;

(b) The actual excess or shortfall in CAISO Operating Costs, CAISO Other Costs and Revenues and CAISO Financing Costs for the prior year compared to the budgeted amounts except any excess in the prior year budgeted amount for self-insured healthcare costs compared to actual self-insured healthcare costs;

(c) The estimate of current year collections and costs compared to budgeted amounts for the current year; and

(d) The change in CAISO Operating Cost Reserve consistent with the level of the CAISO Operating Cost Reserve requirement.

(5) CAISO Cash-Funded Capital and Project Costs include funding from current year revenue for approved capital and projects.

A separate revenue requirement shall be established for each component of the GMC by developing the revenue requirement for the CAISO as a whole and then assigning

such costs to the service categories using the allocation factors provided in Appendix F, Schedule 1, Part A.

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[Not used]

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Schedule 7

Reliability Coordinator Services Charge

The Reliability Coordinator Services Charge shall be based on the RC Funding Requirement. The RC Funding Requirement will consist of the annual costs associated with the CAISO's provision of Reliability Coordinator Services, including the annual costs associated with maintaining shared reliability coordinator tools such as the Western Interchange Tool and the Enhanced Curtailment Calculator. The CAISO will determine the RC Funding Requirement based on the percentage of its overall revenue requirement attributable to the cost of providing RC Services. This percentage, known as the RC Funding Percentage, will initially be determined by assessing the costs associated with providing RC Services, using data from the CAISO's 2016 cost-of-service study modified to reflect the assessed RC Services costs, and based on the expected number of customers that will have committed to take RC Services by the RC Services Dates provided in Section 19.2(b)(6). This percentage will be updated in conjunction with the triennial cost-of-service study conducted by the CAISO as described in Schedule 1, Part A of this Appendix F. The RC Funding Requirement will be calculated, on an annual basis, as the product of this percentage multiplied by the annual revenue requirement for the same year.

The RC Funding Requirement will be developed utilizing the procedures associated with the development of the GMC revenue requirement, as set forth in Schedule 1, Part D of this Appendix F. Entities taking RC Services from the CAISO will have the opportunity to participate in that annual budget process. The RC Funding Percentage will be 8%, which will thereafter be used to calculate the annual RC Funding Requirement. The annual RC Funding Requirement will be assessed to applicable RC Customers, including Scheduling Coordinators that serve load in the CAISO Balancing Authority Area, in proportion to the Net Energy for Load or Net Generation for the period during which this rate is in effect.

The RC Funding Requirement will be treated as a component of the revenue in the

CAISO Other Costs and Revenues category, for purposes of calculating the costs recovered through the GMC, as set forth in Schedule 1, Part C of this Appendix F.

The annual RC rate per MWh is calculated by taking the annual RC Funding Requirement less the known minimum RC Services Charge for the applicable year divided by the sum of 1) the annual Net Energy for Load MWh for all Balancing Authorities with load and Transmission Operators and 2) the annual Net Generation MWh for all generators connected to generation-only Balancing Authorities and Transmission Operators that the CAISO anticipates will take RC Services for the applicable year. The rates for the RC Services Charge shall be adjusted each year, effective January 1.

The annual RC Services Charge for each RC Customer will be calculated as follows**:**

- For RC Customers that that are, or are located in, generation-only Balancing Authorities, multiplying the annual RC Services Charge rate by the total Net Generation in MWh as determined in accordance with Section 19.6. The RC Services Charge for such RC Customers that are Balancing Authorities shall be calculated by removing any total Net Generation associated with Transmission Operators within such Balancing Authorities that have elected to receive direct billing of RC Services from the CAISO.

- For RC Customers that are, or are located in, Balancing Authority Areas with load, multiplying the annual RC Services Charge rate by the total Net Energy for Load in MWh as determined in accordance with Section 19.6 of the CAISO Tariff. The RC Services Charge for such RC Customers that are Balancing Authorities shall be calculated by removing any total Net Energy for Load associated with transmission operators within such Balancing Authorities that have elected to receive direct billing of RC Services from the CAISO.

- For RC Customers that are located in the CAISO's Balancing Authority Area and Scheduling Coordinators that serve load in the CAISO Balancing Authority Area, multiplying the annual RC Services Charge rate by the RC Customer's share of the total NERC/WECC Metered Demand in MWh for the CAISO Balancing Authority Area determined in accordance with Section 11.20.9.

- There will be a minimum annual RC Services Charge of $5,000. This charge will be applied to RC Customers that either have no Net Energy for Load or Net Generation for a particular period as set forth in Section 19.6 of the CAISO Tariff, as well as RC Customers whose annual RC Services Charge, as calculated in accordance with this Schedule 7, would otherwise be less than $5,000.

- For RC Customers that take RC Services for less than a full year in either the

initial or final year of participation, the annual RC Services Charge will be pro-rated according to the period that the RC Customer takes service during such year, rounded up to the nearest month.

Any excess or shortfall in the RC Services Charge collected as compared to the RC Funding Requirement for a particular year will be credited or debited, as applicable, to the CAISO Operating Reserve Account.

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Attachment B – Marked Tariff

2023 Grid Management Charge – Cost-of-Service Study Update

California Independent System Operator Corporation

September 29, 2023

Appendix A

Definitions

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- CRR Services Charge

The Grid Management Charge component described in Section 11.22.2.5.~~5~~3.

- Grid Management Charge (GMC)

The CAISO ~~monthly~~ charge on all Scheduling Coordinators that provides for the recovery of the CAISO's costs listed in Section 11.22.2 through the service charges described in Section 11.22.2.5 calculated in accordance with the formula rate set forth in Appendix F, Schedule 1, Part A. ~~The charges that comprise the Grid Management Charge consist of: 1) the Market Services Charge, 2) the System Operations Charge, 3) the CRR Services Charge, 4) the TOR Charge, 5) the Bid Segment Fee, 6) the CRR Transaction Fee, 7) the Inter-Scheduling Coordinator Trade Transaction Fee and 8) the Scheduling Coordinator ID Charge.~~

- System Operations Balancing Authority Area Services Charge

A component of the Grid Management Charge that represents the costs to support services within the CAISO Balancing Authority Area.

- System Operations Charge

The Grid Management Charge component described in Section 11.22.2.5.2.

- System Operations Real-Time Dispatch Charge

A component of the Grid Management Charge that represents the costs to support real-time dispatch services to the CAISO Balancing Authority Area customers, EIM, and EDAM.

*****

Section 11

*****

11.22.2.5 Allocation of the GMC Among Scheduling Coordinators

The costs will be allocated to the service charges that comprise the Grid Management Charge according to the formula in Appendix F, Schedule 1, Part A. The costs recovered through the Grid Management Charge shall not exceed $202 million for 2024, $245 million for 2025, and $250 million for 2026 and thereafter unless the CAISO submits a tariff amendment increasing this amount pursuant to Section 205 of the FPA and FERC accepts such amendment. The service charges, as described in more detail in Appendix F, Schedule 1, Part A, are as follows:

(a) Market Services Charge;

(b) System Operations Charge (for 2024 and 2025); ~~and~~

(c) System Operations Real-Time Dispatch Charge (for 2026 and thereafter);

(d) System Operations Balancing Authority Area Services Charge (for 2026 and thereafter); and

(ec) CRR Services Charge.

As described in the Business Practice Manual, Tthe CAISO assesses these charges shall be levied separately monthly in arrears on all Scheduling Coordinators based on their demand, energy, or ancillary services, as applicable, consistent billing determinants specified below for each charge in accordance with the formulae set out in Appendix F, Schedule 1, Part A.

11.22.2.5.1 Market Services Charge

Subject to Section 11.22.4, the Market Services Charge for each Scheduling Coordinator is calculated according to the formula in Appendix F, Schedule 1, Part A.

11.22.2.5.2 System Operations Charge

Subject to Section 11.22.4 and the exemption for certain long term contracts set forth in Appendix F, Schedule 1, Part E, the System Operations Charge for each Scheduling Coordinator is calculated according to the formula in Appendix F, Schedule 1, Part A. This charge will expire December 31, 2025, and the charges described in 11.22.2.5.3 and 11.22.2.5.4 will apply thereafter.

11.22.2.5.3 System Operations Real-Time Dispatch Charge

Beginning in 2026, the CAISO will calculate the System Operations Real-Time Dispatch Charge for each Scheduling Coordinator according to the formula in Appendix F, Schedule 1, Part A, subject to Section 11.22.4.

11.22.2.5.4 System Operations Balancing Authority Area Services Charge

Beginning in 2026, the CAISO will calculate the System Operations Balancing Authority Area Services Charge for each Scheduling Coordinator according to the formula in Appendix F, Schedule 1, Part A, subject to Section 11.22.4.

11.22.2.5.~~5~~3 CRR Services Charge

The CRR Services Charge for each Scheduling Coordinator is calculated according to the formula in Appendix F, Schedule 1, Part A.

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11.22.4 TOR Charge~~s~~

The CAISO will exempt TORs from the Market Services Charge and the ~~System Operations Charge~~system operations charges that are calculated through the formula set forth in Appendix F, Schedule 1, Part A. The TOR Charge will be $0.325~~18~~/MWh, assessed on the minimum of a Scheduling Coordinator's TOR supply or TOR demand per Settlement Interval. The TOR Charge is subject to adjustment as described in Appendix F, Schedule 1, Part A. The CAISO will credit amounts recovered through the TOR Charge~~s~~ against the revenue requirement for ~~System Operations Charge~~the system operations' real-time dispatch charges ~~as described in Appendix F, Schedule 1, Part A~~.

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Section 29

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29.11 Settlements and Billing for EIM Market Participants.

(i) **EIM Administrative Charge.**

(1) **In General.** The CAISO will charge EIM Market Participants an EIM Administrative Charge consisting of the real-time portion~~s~~ of the Market Services Charge and the ~~System Operations Charge~~system operations charges described in Section~~s~~ 11.22.2.

(2) **Market Services Charge.** The Market Services Charge shall be the product of the Market Services Charge for each Scheduling Coordinator as calculated according to the formula in Appendix F, Schedule 1, Part A, the real-time market percentage as calculated in the ~~cost of service~~cost-of-service study according to Appendix F, Schedule 1, Part A, and the sum of Gross FMM Instructed Imbalance Energy (excluding FMM Manual Dispatch Energy) and Gross RTD Instructed Imbalance Energy (excluding RTD Manual Dispatch Energy Standard Ramping Deviation, Ramping Energy Deviation, Residual Imbalance Energy, and Operational Adjustments).

(3) **System Operations Charge.** In 2024 and 2025, ~~T~~the System Operations Charge ~~shall~~ will be the product of the System Operations Charge for each Scheduling Coordinator, as calculated according to the formula in Appendix F, Schedule 1, Part A, the

real-time ~~market~~ dispatch percentage as calculated in the ~~cost of service~~cost-of-service study conducted according to Appendix F, Schedule 1, Part A, and the absolute difference between metered energy and the EIM Base Schedules.

(4) **System Operations Real-Time Dispatch Charge.** Beginning in 2026, the System Operations Real-Time Dispatch Charge will be the product of the System Operations Real-Time Dispatch Charge for each Scheduling Coordinator, as calculated according to the formula in Appendix F, Schedule 1, Part A, and the absolute difference between metered energy and the EIM Base Schedules.

(4~~5~~) **Minimum EIM Administrative Charge.** The CAISO will calculate the minimum EIM Administrative Charge as the product of the sum of the real-time activities associated with M~~m~~arket S~~s~~ervices C~~c~~harge and the real-time activities ~~chart~~ associated with system operations, as well as –

(A) five percent of the total gross absolute value of Supply of all EIM Market Participants; plus

(B) five percent of the total gross absolute value of Demand of all EIM Market Participants.

(~~5~~6) **Withdrawing EIM Entity.** If the EIM Entity notifies the CAISO of its intent to terminate participation in the Energy Imbalance Market and requests suspension of the Energy Imbalance Market in its Balancing Authority Area under Section 29.4(b)(4), the CAISO will

charge the EIM Entity the minimum EIM Administrative Charge calculated under Section 29.11(i)(4) during the notice period.

(~~6~~7) **Application of Revenues.** The CAISO will apply revenues received from the EIM Administrative Charge against the costs to be recovered through the Grid Management Charge as described in Appendix F, Schedule 1, Part A.

*****

29.30 Bid and Self-Schedule Submission for CAISO Markets.

(a) **In General.** The provisions of Section 30 that are applicable to the Real-Time Market, as supplemented by Section 29.30, shall apply to EIM Market Participants.

(b) **Start-Up and Minimum Load.** For the determination of Proxy Start-Up Costs and Proxy Minimum Load Costs, the CAISO will utilize the Market Services Charge and ~~System Operations Charge~~system operations charges described in Section 11.22.2 reflected in the EIM Administrative Charge.

*****

29.39 EIM Market Power Mitigation.

(d) **Default Energy Bids.** The CAISO shall use the methods and standards set forth in Section 39.7 to determine Default Energy Bids for EIM Participating Resources, except that the CAISO will use the Market Services Charge and ~~System Operations Charge~~system operations charges described in Section 11.22.2 reflected in the EIM Administrative

Charge.

*****

Section 33

33.11.6 Administrative Charge

The CAISO will charge each EDAM Market Participant an EDAM Administrative Charge, which consists of the ~~EDAM~~ System Operations Real-Time Dispatch Charge and the ~~Day-Ahead and Real-Time portions of the~~ Market Services Charge, both volumetric charges. The CAISO will no longer collect the EIM Administrative Charge from an EDAM Market Participant. The Systems Operations Real-Time Dispatch Charge and the ~~The~~ Market Services Charge are~~is~~ described in Appendix F, Schedule 1, Part A. ~~The EDAM System Operations Charge will be the product of the Systems Operations Charge, as calculated according to the formula in Appendix F, Schedule 1, Part A, real-time market percentage, as calculated in the cost of service study conducted according to Appendix F, Schedule 1, Part A, applied to metered values in MWh of Supply and Demand represented by the Scheduling Coordinator for the EDAM Market Participant.~~

33.11.6.1 Temporary EDAM Administrative Charge Transitional Load Ramp-in

The EDAM Administrative Charge assessed to Scheduling Coordinators' demand-related charge codes will be assessed on an incremental percentage at the outset of EDAM. Each incremental percentage will apply to the calendar year, January to December, such that the CAISO would assess the incremental percentage to an EDAM

Entity joining after January to the remaining part of the calendar year only. The first year EDAM is available for participation, the CAISO will assess five (5) percent of the MWh of each EDAM Scheduling Coordinator's metered demand to apply the EDAM Administrative Charge. In the second year, the CAISO will assess twenty-five (25) percent. In the third year, the CAISO will assess fifty (50) percent. In the fourth year and thereafter, the CAISO will assess seventy-five (75) percent. In the fifth year and thereafter, the CAISO will assess one-hundred (100) percent. The foregoing does not apply to EDAM Scheduling Coordinators' MWh of Energy or Supply: The CAISO will assess one-hundred (100) percent of the MWh of each EDAM Scheduling Coordinator's Energy to apply the EDAM Administrative Charge at the outset of EDAM and thereafter.

33.30.5 Start-Up and Minimum Load

For the determination of Proxy Start-Up Costs and Proxy Minimum Load Costs, the CAISO will utilize the Market Services Charge and System Operations Real-Time Dispatch Charge reflected in the EDAM Administrative Charge.

*****

Appendix F

Rate Schedules

Schedule 1

Grid Management Charge

Part A – ~~Monthly~~ Calculation of Grid Management Charge (GMC)

The GMC consists of the following separate service charges for 2024 and 2025: (1) the Market Services Charge; (2) the System Operations Charge; and (3) the CRR Services Charge. The GMC revenue requirement, determined in accordance with Part C of this Schedule 1, will~~shall~~ be allocated to the service charges specified in Part A of this Schedule 1 as follows: forty-nine (49) percent to Market Services; forty-nine (49) percent to System Operations; and two (2) percent to CRR Services. Beginning in 2026, the GMC will consist of the following separate service charges: (1) the Market Services Charge; (2) the System Operations Real-Time Dispatch Charge; (3) the System Operations Balancing Authority Area Services Charge; and (4) the CRR Services Charge. The GMC revenue requirement, determined in accordance with Part C of this Schedule 1, will be allocated to the service charges specified in Part A of this Schedule 1 as follows: forty-nine (49) percent to Market Services; twenty-three (23) percent to System Operations Real-Time Dispatch Charge; twenty-six (26) percent to System Operations Balancing Authority Area Services Charge; and two (2) percent to CRR Services.

~~Starting in 2017 and e~~Every three (3) years ~~thereafter~~, the CAISO will conduct an updated ~~cost of service~~cost-of-service study, in consultation with stakeholders and using costs from the previous year. In conducting each ~~cost of service~~cost-of-service study, the CAISO will recalculate the ~~three~~ service charge percentages and the rates for the fees and charges that constitute the Grid Management Charge as set forth in Section 11.22. In addition, the ~~cost of service~~cost-of-service study results will be used to update the RC Funding Percentage used to calculate the annual RC Funding Requirement, as well as the real-~~-~~time percentages of the Market Services Charge ~~and System Operations service charges used to calculate the EIM Administrative Charges~~. If, based on the ~~cost of service~~cost-of-service study results, the service category revenue requirement allocation percentages or the level of fees and charges have changed, the CAISO will submit tariff amendments to reflect such changes pursuant to Section 205 of the FPA.

1. The rate for the Market Services Charge will be calculated by dividing the annual GMC revenue requirement allocated to this service category net the projected Bid Segment Fees, Inter-SC Trade Transaction Fees, and the SCID Charge by the forecast annual gross absolute value of MW per hour of Ancillary Services capacity awarded in the Day-Ahead and Real-Time Markets, MWh of Energy cleared in the Day-Ahead market, Virtual Demand Award, Virtual Supply Award, and FMM Instructed Imbalance

Energy and RTD Instructed Imbalance Energy, less the forecast annual gross absolute value of such Energy as may be excluded for a load following MSS pursuant to an MSS agreement, Standard Ramping Energy, Regulation Energy, Ramping Energy Deviation, Residual Imbalance Energy, Exceptional Dispatch Energy and Operational Adjustments for the Day-Ahead and Real-Time.

2. The rate for the System Operations Charge will be calculated by dividing the annual GMC revenue requirement allocated to this service category, net the projected TOR Charges by forecast annual gross absolute value of MWh of real-time energy flows on the CAISO Controlled Grid, net of amounts excluded pursuant to Part E of this Schedule.

3. Beginning in 2026, the rate for the System Operations Real-Time Dispatch Charge will be calculated by dividing the annual GMC revenue requirement allocated to this service category net the proportional projected TOR Charges by forecast annual gross absolute value of MWh of real-time energy flows of CAISO, EIM, and EDAM Market Participants.

4. Beginning in 2026, the rate for the System Operations Balancing Authority Area Services Charge will be calculated by dividing the annual GMC revenue requirement allocated to this service category by forecast annual gross absolute value of MWh of real-time energy flows on the CAISO Controlled Grid.

5~~3~~. The rate for the CRR Services Charge will be calculated by dividing the annual GMC revenue requirement allocated to this service category, net the projected CRR Auction Bid Fees, by the forecast annual sum of awarded MW of CRRs per hour.

The rates for the foregoing charges will~~shall~~ be adjusted automatically each year, effective January 1 for the following twelve (12) months, in the manner set forth in Part D of this Schedule.

*****

Part C – Costs Recovered through the GMC

As provided in Section 11.22.2 of the CAISO Tariff, the GMC includes the following costs, as projected in the CAISO's budget for the year to which the GMC applies:

- CAISO Operating Costs;
- CAISO Financing Costs, including debt service on CAISO capital expenditures;
- CAISO Other Costs and Revenues, including penalties, interest earnings

and other revenues;

- CAISO Operating Cost Reserve adjustment; and
- CAISO Cash Funded Capital and Project Costs

Such costs, for the CAISO as a whole, are allocated to the service charges that comprise the GMC: (1) m~~M~~arket s~~S~~ervices, (2) s~~S~~ystem o~~O~~perations, and (3) CRR s~~S~~ervices, according to the factors listed in Part A of this Schedule 1, and

adjusted annually for:

- any surplus revenues from the previous year as deposited in the CAISO Operating Reserve Account, or deficiency of revenues, as recorded in a memorandum account;

divided by:

- forecasted annual billing determinant volumes;

adjusted quarterly for:

- a change in the volume estimate used to calculate the individual GMC components, if, on an annual basis, the change is two (2) percent or $1 million, whichever is greater, from the estimated revenue collections provided in the annual informational filing.

The GMC revenue requirement formula is as follows:

GMC revenue requirement =

CAISO Operating Costs + CAISO Financing Costs + CAISO Other Costs and Revenues + CAISO Operating Cost Reserve adjustment + CAISO Cash Funded Capital and Project Costs,

[The “USoA” reference below is the FERC Uniform System of Accounts, and is intended to include subsequent re-numbering or re-designation of the same accounts or subaccounts.]

Where,

(1) CAISO Operating Costs include:

(a) Transmission expenses (USoA 560-574);

(b) Regional market expenses (USoA 575.1-575.8);

(c) Maintenance accounts (USoA 576-576.5)

(d) Customer accounting expenses (USoA 901-905);

(e) Customer service and informational expenses (USoA 906-910);

(f) Sales expenses (USoA 911-917);

(g) Administrative & general expenses (USoA 920-935);

(h) Taxes other than income taxes that relate to CAISO operating income (USoA 408.1); and

(i) Miscellaneous, non-operating expenses, penalties and other deductions (USoA 426 subaccounts).

(2) CAISO Financing Costs include:

(a) For any fiscal year, scheduled principal and interest payments, sinking fund payments related to balloon maturities, repayment of commercial paper notes, net payments required pursuant to a payment obligation, or payments due on any CAISO notes. This amount includes the current year accrued principal and interest payments due in the first one hundred twenty (120) days of the following year.

(b) The debt service coverage requirement, which is a percentage of the senior lien debt service, i.e., all debt service that has a first lien on CAISO net operating revenues. The coverage requirement is twenty-five (25) percent, unless otherwise specified by the rate covenants of the official statements for each CAISO bond offering.

(3) CAISO Other Costs and Revenues include:

(a) Interest earnings (USoA 419) on funds not restricted by bond or note proceeds specifically designated for capital projects or capitalized interest. Unrealized gains or losses shall be excluded and realized gains and losses shall be included. If it has been determined that a permanent impairment in an investment has occurred, it shall be included.

(b) Miscellaneous revenues, which includes fees and fines assessed and collected by the CAISO (USoA 421, 456, 457.1 and 457.2 subaccounts).

(c) Other interest expenses (USoA 431) not provided for elsewhere.

(4) CAISO Operating Cost Reserve adjustment is the sum of:

(a) The actual excess or shortfall in collections of the prior year's rates compared to the budgeted amounts;

(b) The actual excess or shortfall in CAISO Operating Costs, CAISO Other Costs and Revenues and CAISO Financing Costs for the prior year compared to the budgeted amounts except any excess in the prior year budgeted amount for self-insured healthcare costs compared to actual self-insured healthcare costs;

(c) The estimate of current year collections and costs compared to budgeted amounts for the current year; and

(d) The change in CAISO Operating Cost Reserve consistent with the level of the CAISO Operating Cost Reserve requirement.

(5) CAISO Cash-Funded Capital and Project Costs include funding from

current year revenue for approved capital and projects.

A separate revenue requirement shall be established for each component of the GMC by developing the revenue requirement for the CAISO as a whole and then assigning such costs to the service categories using the allocation factors provided in Appendix F, Schedule 1, Part A.

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[Not used] ~~Part E – System Operations Charge Exemption for Certain Long-Term Power Supply Contracts~~

~~(1) The real time MWh Energy flows from Generating Units with certain existing power supply contracts will be exempt from the System Operations Charge until the first opportunity to renegotiate the contract or the contract expires. To be eligible for this exemption, the generating unit and the power supply contract must meet the following criteria:~~

~~(a) The generator owner must be the Scheduling Coordinator for the generating unit;~~

~~(b) The power supply contract may not be with another Scheduling Coordinator that has the same parent company as the generator owner;~~

~~(c) The power supply contract may not be with the same Scheduling Coordinator ID Code as the Generating Unit;~~

~~(d) The power supply contract precludes the supplier from recovering additional GMC costs incurred as a result of the GMC rate design that became effective on January 1, 2012:~~

~~(e) The power supply contract must have been executed prior to January 1, 2011;~~

~~(f) The duration of the power supply contract must be such that it is three (3) years or more until the termination of the contract or the first opportunity to renegotiate the terms and conditions of the contract.~~

~~(2) To establish eligibility for exemption from the Systems Operation charge, the generator owner must submit the following information in accordance with the procedures set forth on the ISO website:~~

~~(a) Power supply contract timeline, including the execution date and either termination date or the earliest date upon which the contract may be renegotiated;~~

~~(b) Resource ID;~~

~~(c) SCID; and,~~

~~(d) Effected MW.~~

~~(3) An officer of the generation owner company must provide a signed affidavit attesting to the information that demonstrates the power supply contract eligibility for the exemption.~~

*****

Schedule 7

Reliability Coordinator Services Charge

The Reliability Coordinator Services Charge shall be based on the RC Funding Requirement. The RC Funding Requirement will consist of the annual costs associated with the CAISO's provision of Reliability Coordinator Services, including the annual costs associated with maintaining shared reliability coordinator tools such as the Western Interchange Tool and the Enhanced Curtailment Calculator. The CAISO will determine the RC Funding Requirement based on the percentage of its overall revenue requirement attributable to the cost of providing RC Services. This percentage, known as the RC Funding Percentage, will initially be determined by assessing the costs

associated with providing RC Services, using data from the CAISO's 2016 ~~cost of service~~cost-of-service study modified to reflect the assessed RC Services costs, and based on the expected number of customers that will have committed to take RC Services by the RC Services Dates provided in Section 19.2(b)(6). This percentage will be updated in conjunction with the triennial ~~cost of service~~cost-of-service study conducted by the CAISO as described in Schedule 1, Part A of this Appendix F. The RC Funding Requirement will be calculated, on an annual basis, as the product of this percentage multiplied by the annual revenue requirement for the same year.

The RC Funding Requirement will be developed utilizing the procedures associated with the development of the GMC revenue requirement, as set forth in Schedule 1, Part D of this Appendix F. Entities taking RC Services from the CAISO will have the opportunity to participate in that annual budget process. The RC Funding Percentage will be 8~~9~~%, which will thereafter be used to calculate the annual RC Funding Requirement. The annual RC Funding Requirement will be assessed to applicable RC Customers, including Scheduling Coordinators that serve load in the CAISO Balancing Authority Area, in proportion to the Net Energy for Load or Net Generation for the period during which this rate is in effect.

The RC Funding Requirement will be treated as a component of the revenue in the CAISO Other Costs and Revenues category, for purposes of calculating the costs recovered through the GMC, as set forth in Schedule 1, Part C of this Appendix F.

The annual RC rate per MWh is calculated by taking the annual RC Funding Requirement less the known minimum RC Services Charge for the applicable year divided by the sum of 1) the annual Net Energy for Load MWh for all Balancing Authorities with load and Transmission Operators and 2) the annual Net Generation MWh for all generators connected to generation-only Balancing Authorities and Transmission Operators that the CAISO anticipates will take RC Services for the applicable year. The rates for the RC Services Charge shall be adjusted each year, effective January 1.

The annual RC Services Charge for each RC Customer will be calculated as follows**:**

- For RC Customers that that are, or are located in, generation-only Balancing Authorities, multiplying the annual RC Services Charge rate by the total Net Generation in MWh as determined in accordance with Section 19.6. The RC Services Charge for such RC Customers that are Balancing Authorities shall be calculated by removing any total Net Generation associated with Transmission Operators within such Balancing Authorities that have elected to receive direct billing of RC Services from the CAISO.

- For RC Customers that are, or are located in, Balancing Authority Areas with load, multiplying the annual RC Services Charge rate by the total Net Energy for Load in MWh as determined in accordance with Section 19.6 of the CAISO Tariff. The RC Services Charge for such RC Customers that are

Balancing Authorities shall be calculated by removing any total Net Energy for Load associated with transmission operators within such Balancing Authorities that have elected to receive direct billing of RC Services from the CAISO.

- For RC Customers that are located in the CAISO's Balancing Authority Area and Scheduling Coordinators that serve load in the CAISO Balancing Authority Area, multiplying the annual RC Services Charge rate by the RC Customer's share of the total NERC/WECC Metered Demand in MWh for the CAISO Balancing Authority Area determined in accordance with Section 11.20.9.

- There will be a minimum annual RC Services Charge of $5,000. This charge will be applied to RC Customers that either have no Net Energy for Load or Net Generation for a particular period as set forth in Section 19.6 of the CAISO Tariff, as well as RC Customers whose annual RC Services Charge, as calculated in accordance with this Schedule 7, would otherwise be less than $5,000.

- For RC Customers that take RC Services for less than a full year in either the initial or final year of participation, the annual RC Services Charge will be pro-rated according to the period that the RC Customer takes service during such year, rounded up to the nearest month.

Any excess or shortfall in the RC Services Charge collected as compared to the RC Funding Requirement for a particular year will be credited or debited, as applicable, to the CAISO Operating Reserve Account.

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Attachment C – 2023 Cost-of-Service Study and 2024-2026 GMC Update paper

2023 Grid Management Charge – Cost-of-Service Study Update

California Independent System Operator Corporation

September 29, 2023

California ISO

2023 Cost-of-Service Study and 2024 through 2026 Grid Management Charges and Supplement Service Fees Update

September 2023

Draft Final

Table of Contents

Executive Summary

The CAISO completed its triennial Cost-of-Service study (2023 Cost-of-Service study) in accordance with its Tariff (Appendix F, Schedule 1). The study analyzes cost and time data to determine how much time and resources staff uses to support the services that the CAISO offers. The study's results are used to update the Grid Management Charge (GMC) Revenue Requirement percentage allocations to the Market Services, System Operations, and Congestion Revenue Rights Services (CRR Services) cost categories. The study results are also used to update the Western Energy Imbalance Market (WEIM) cost category percentages and the Reliability Coordinator (RC) funding percentage. Finally, the study is used to analyze the costs to support supplemental services such as, the Transmission Ownership Rights (TOR) services, and set the charges, fees, and rates for these supplemental services accordingly.

The 2023 Cost-of-Service study analyzes the 2024 through 2026 revenue requirements under two scenarios. The first scenario assumes pre-Extended Day Ahead Market (EDAM) and impacts the analysis of the 2024 revenue requirement. While the second scenario assumes EDAM and impacts the analysis of the 2025 and 2026 revenue requirements. The results of the study indicate no change in the percentage allocations to the GMC cost categories, minor changes to the WEIM cost category percentages and RC funding percentage, and only a change in the TOR services rate in the supplemental fees.

Additionally, as part of the 2023 Cost-of-Service study, the CAISO is proposing to bifurcate its System Operations Charges to a System Operations Real-Time Dispatch Charge and a System Operations Balance Authority Area Services Charge effective in 2026. As the bifurcation of the System Operations Charge is already part of the WEIM Administrative Charge calculations, this proposal will simplify the process by removing a step in the charge calculation process and provide for greater detail in the calculations. In addition, the new Systems Operations Real-Time Dispatch Charge will supersede the WEIM System Operations Charge and the recently proposed EDAM Systems Operations Charge. This change will have no financial impact on customers as it simply changes how CAISO collects for these costs.

Another component of the 2023 Cost-of-Service study is the proposal of an EDAM transitional load ramp-in period that will provide for incremental costs for WEIM entities extending participation to the EDAM. The model includes a load volume based ramp-in of charges that will be offered only during the initial four years of the

EDAM; ramp-in will only apply to load, and not supply based, volumes to avoid providing any suppliers with a competitive advantage in the market. The ramp-in will gradually increase year over year starting with charges no less than the WEIM load-based charges. This ramp-in approach aligns benefits with costs, accounting for transmission and load served by the CAISO balancing authority area and the EDAM entity areas. The ramp-in approach will support introduction and growth of the EDAM, which will reduce GMC rates for all existing CAISO market participants due to the additional supply and demand volumes participating in the market starting the first year.

Finally, the GMC Revenue Requirement cap has remained unchanged since 2015 at $202 million. The CAISO is proposing no change in the revenue requirement cap for 2024, an increase to $245 million in 2025, and an increase to $250 million in 2026. The increases in the cap amount are primarily needed to accommodate the accounting treatment of the incoming EDAM revenues and GMC Revenue Requirement structure changes.

Most of the changes proposed in this paper will not require approval from the Board of Governors, and thus do not require a decisional classification. The tariff provides that the results of each triennial Cost-of-Service study will be used to recalculate percentage allocations to each service cost category and the other rates and fees that comprise the GMC, and to "submit tariff changes to reflect such changes." (See Tariff Appendix F, Schedule 1.) This applies to the TOR charge and the RC funding percentage. (See Tariff Section 11.22.4 and Appendix F, Schedule 7.) Accordingly, and consistent with how the CAISO presented the changes from the 2020 Cost-of-Service study[1], these changes and the results of the study generally will be presented to the CAISO Board of Governors and WEIM Governing Body on an informational basis, without plans to request a vote.

This initiative does include three groups of tariff changes that go beyond the allocation of the GMC among its service cost categories and fees, and these will require a vote of approval.

- Bifurcating the System Operations Charge, by eliminating it effective January 1, 2026 and replacing it with two new charges: System Operations Real-Time Dispatch Charge and a System Operations Balance Authority Area Services Charge.

[1] See the September 2020 memorandum to the ISO Board of Governors, available here, which proposes percentage changes to the allocation within service categories but does not propose a vote on these changes; according to the September 2020 memorandum to the WEIM Governing Body, available here, which does not require action by the Governing Body.

- Establishing the EDAM transitional ramp-in of load volumes during the first four years of EDAM operations.
- Revision of the GMC Revenue Requirement cap effective 1/1/2025.

CAISO staff believes that these three changes fall within the joint authority of the ISO Board of Governors and the WEIM Governing Body. The two bodies have joint authority over any proposal to change or establish any CAISO tariff rule(s) applicable to the WEIM Entity balancing authority areas, the WEIM Entities, or other market participants within the WEIM Entity balancing authority areas, in their capacity as participants in WEIM. This scope excludes from joint authority, without limitation, any proposals to change or establish tariff rule(s) applicable only to the CAISO balancing authority area or to the CAISO-controlled grid.

Charter for WEIM Governance § 2.2.1. All of the tariff rule changes that require Board approval would be "applicable to EIM Entity balancing authority areas, EIM Entities, or other market participants within EIM Entity balancing authority areas, in their capacity as participants in EIM." None of these proposed tariff rules would be applicable "only to the CAISO balancing authority area or to the CAISO-controlled grid." Accordingly, the matters that require a vote of approval fall entirely within the scope of joint authority.

This proposed classification reflects the current state of this initiative. Stakeholders are encouraged to submit a response to this proposed classification in their written comments, particularly if they have concerns or questions.

A summary of the changes in the 2023 Cost-of-Service study is illustrated in the following Table 1.

Table 1 — Summary of Changes

Item	2024	2025	2026
Grid Management Charges			
GMC Cost Category Percentages	No Change		**Changes**
Market Services	49%		
System Operations	49%		Charge Retired
NEW: System Operations Real-Time Dispatch			23%
New: System Operations Balancing Authority Area Services			26%
CRR Services	2%		
Western Energy Imbalance Market			
WEIM Percentage Allocations	**Changes**		
Real-Time Market	from 63% to 64.5%		
Real-Time Dispatch	from 50% to 42%		Charge Retired
Reliability Coordinator West			
	Change		
Reliability Coordinator Funding Percentage	from 9% to 8%		
Supplemental Fees			
Other Revenue (offsets to the GMC Revenue Requirement)	No Change		
Miscellaneous Fees (collected as charges below the line)	**Change**		
TOR Charge/MWh	from $0.18 to $0.325		
Extended Day-Ahead Market			
EDAM Systems Operations			**Changes** WEIM Real-Time Dispatch and EDAM System Operations charges will be replaced by the NEW System Operations Real-Time Dispatch charge.
EDAM Transitional Ramp-In Model			EDAM Transitional Ramp-In (Initial EDAM Years 1 through 4)
GMC Revenue Requirement			
	No Change	**Changes**	
GMC Revenue Requirement Cap	$202M	$245M	$250M
Other			
Tariff Appendix F - Rate Schedules, Schedule 1 - Grid Management Charge, Part E – System Operations Charge Exemption for Certain Long-Term Power Supply Contracts	**Change** Remove language as there are no longer power supply contracts that qualify, so the provisions are anachronistic.		

GMC Cost Category Percentages

The 2023 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.

WEIM Cost Category Percentages

The study results indicate a slight shift of WEIM related resources. The study shows that 2% of the Market Services' resources shifted from the Day-Ahead Market functions to the Real-Time Market functions. The percentage shifts back by 1% in 2025 as a result of the reduction in Nodal Pricing Model and WEIM Administrative fees in 2025. 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.

Reliability Coordinator Funding Percentage

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.

Supplemental Fees

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 $0.32 per MWh in 2024 and to $0.33 per MWh in 2025. The revenue collected from the TOR Charge offsets the System Operations Real-Time Dispatch costs, which lowers the System Operations Real-Time Dispatch Charge. The CAISO does not propose changes to other supplemental fee amounts.

Changes from the Draft Proposal

The content of this draft final proposal is primarily same as the draft proposal. All percentage allocations and fee changes that resulted from the updated Cost-of-Service study remain the same. The draft final proposal does provide for additional information on the proposed EDAM transitional load ramp-in model as provided in response to stakeholder comments[2]. In addition, the CAISO proposes to eliminate the tariff language in Appendix F - Rate Schedules, Schedule 1 - Grid Management Charge, Part E – System Operations Charge Exemption for

[2]Visit the CAISO website for additional information regarding the comments, available here.

Certain Long-Term Power Supply Contracts as there are no longer any active power supply contracts that are eligible for the exemption.

Changes from the Draft Final Proposal

The 2023 Cost-of-Service study analyzed the 2024 through 2026 revenue requirements under two scenarios. The first scenario assumes the pre-EDAM and impacts the analysis of the 2024 revenue requirement. The second scenario assumes the EDAM and impacts the analysis of the 2025 and 2026 revenue requirements.

As of late August 2023 (after the release of the draft final version of the 2023 Cost-of-Service study), the EDAM is being evaluated for a 2026 inaugural operational year. This change required the ISO to reevaluate the Cost-of-Service study results and proposed changes. The impacts to the study's analysis, given the new kickoff date, were minimal and the ISO proposes to address them as follows:

- Align the System Operations bifurcation effective date to January 1, 2026.
- Change the Real-Time percentage allocations to be effective for the full three years rather than split rates over the 3-year period.
    - The Real-Time Market percentage will be 64.5% (average of the 64% and 65% originally published).
    - The Real-Time Dispatch percentage will be 42%.
- Change the Transmission Ownership Rights Charge amount to be effective for the full three years rather than split rates over the 3-year period.
    - The rate will be $0.325/MWh (average of the $0.32 and $0.33 amounts originally published).

Table 1 – Summary of Changes shown above reflects these changes; whereas the body of this study supports the results shared in the draft and draft final versions of the 2023 Cost-of-Service study.

Application of Activity Based Costing

The CAISO used activity based costing (ABC) for the first Cost-of-Service study to restructure the GMC rate design in 2011, which was vetted through a comprehensive stakeholder process. The design was approved by the CAISO Board of Governors and the Federal Energy Regulatory Commission (FERC) in 2011 and became effective on January 1, 2012.

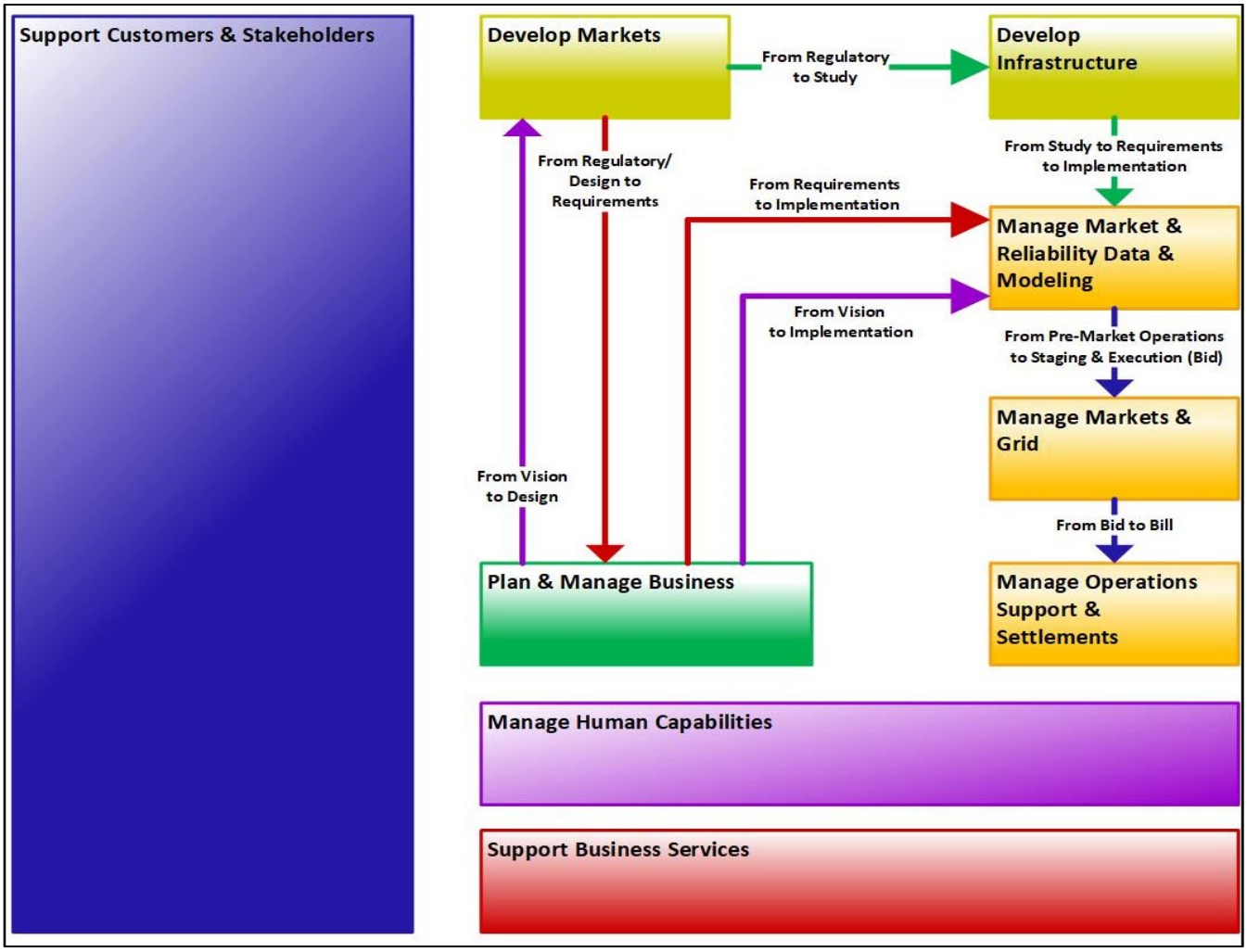
Activity based costing allows the CAISO to analyze the cost to provide services using budget, business processes, and time data. For the 2023 Cost-of-Service study the CAISO used the 2022 GMC Revenue Requirement and 2022 timecard data. The analysis provides a comprehensive understanding of how much effort (time and resources) are contributing to each of the service cost categories. This method guides the CAISO to allocate the right portion of its annual revenue requirement to the GMC and other rates.

The GMC rate structure contains three cost categories: Market Services, System Operations and CRR Services. The Market Services category is designed to recover costs the CAISO incurs for running the markets. The System Operations category is designed to recover costs the CAISO incurs for reliably operating the grid in real-time. The CRR Services category recovers costs the CAISO incurs for running the CRR markets. The CAISO uses the Cost-of-Service study to determine the share of the CAISO's direct and indirect costs attributable to these three cost categories. The CAISO applies the percentages calculated as part of the Cost-of-Service study to the annual GMC Revenue Requirement to determine the amount in the cost categories upon which rates are set.

Within the Market Services and System Operations cost categories, activity based costing also allows for the further delineation of resources to determine the appropriate percentage of GMC that WEIM entities pay. Market Services is bifurcated between Real-Time Market resources and Day-Ahead Market resources, while the System Operations is split between Real-Time Dispatch resources and Balancing Authority Area Services resources. WEIM entities pay the percentage of GMC associated with Real-Time Market and Real-Time Dispatch resources.

The Cost-of-Service study also includes the Reliability Coordinator cost sub-category to calculate the RC funding percentage. The RC funding percentage represents the direct and indirect time and expense necessary for the CAISO to perform its RC services and functions. The RC funding percentage is used similarly to the GMC cost category percentages as the RC funding percentage is multiplied against the revenue requirement to determine the RC Funding Requirement. This approach allows the RC Funding Requirement to leverage against the stability of CAISO's annual revenue requirement thus benefiting both RC customers and existing GMC customers.

Table 2 — Mapping of CAISO Core Business Processes



Currently, the ABC analysis has disaggregated CAISO functions into nine core processes (level 1 activities). Each of the core activities were further broken down into major processes (level 2 activities) which were then mapped back to the level one activity. There are 112 level 2 activities included in the 2023 Cost-of-Service study.

The CAISO continually reviews and develops its processes to reflect its current state of operations and process flows. The level 2 processes discussed in this study were mapped and defined as of April 2023. The level 1 activities were categorized into two types: (1) direct operating costs — those that can be directly mapped to a market, grid service, customer, or reliability service; and (2) support or indirect costs — those that support the direct activity.

Table 3 — Level 1 ABC Activities

ABC Process Code	Level 1 ABC Activity	Number of Level 2 Activity Tasks
Direct Operating Costs		
80001	Develop Infrastructure	9
80002	Develop Markets	6
80004	Manage Market & Reliability Data & Modeling	17
80005	Manage Market & Grid	11
80007	Manage Operations Support & Settlements	11
80008	Plan & Manage Business	11
80009	Support Business Services	32
80010	Support Customers & Stakeholders	6
	Total	**103**
Indirect Operating Costs		
80003	Manage Human Capabilities	9
9	**Total**	**112**

MAPPING OF ABC DIRECT OPERATING ACTIVITIES

Direct operating activities were defined, linked to specific processes, and measured using the standard percentage allocations presented below.

Table 4 — Standard Percentage Allocations

Standard Cost Category Percentage Allocations				
Scenario	**Option 1**	**Option 2**	**Option 3**	**Option 4**
1	100%			
2	95%	5%		
3	80%	20%		
4	80%	15%	5%	
5	80%	10%	5%	5%
6	60%	40%		
7	60%	35%	5%	
8	60%	30%	5%	5%
9	50%	50%		
10	50%	40%	10%	
11	45%	45%	5%	5%
12	40%	40%	20%	

Table 5 — Mapping of ABC Direct Operating Activities to Cost Categories

ABC Direct Operating Activities		GMC					
Code	ABC Level 2 Activities	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect	Comments
		cost category % allocation					
80001	**Develop Infrastructure (DI)**						
201	Develop and Monitor Regulatory Contract Procedures	95%			5%		Efforts primarily support market services functions; as well as RC services functions on a smaller scale.
202	Manage Generator Interconnection Agreements		100%				Efforts related to managing the building and maintaining of the grid thus the costs are entirely to support system operations.
203	Manage Generator Interconnection Process		100%				Efforts related to managing the building and maintaining of the grid thus the costs are entirely to support system operations.
204	Manage Long Term Transmission Planning		100%				Efforts related to managing the building and maintaining of the grid thus the costs are entirely to support system operations.
205	Manage New Transmission Resources		95%		5%		Efforts primarily support system operations functions; as well as RC services functions on a smaller scale.
206	Manage Transmission Maintenance Standards		100%				Efforts related to managing the building and maintaining of the grid thus the costs are entirely to support system operations.
207	Manage Load Resource Data		100%				Efforts related to managing the building and maintaining of the grid thus the costs are entirely to support system operations.
208	Seasonal Assessment		100%				Efforts related to managing the building and maintaining of the grid thus the costs are entirely to support system operations.
209	Manage Queue Management		100%				Efforts related to managing the building and maintaining of the grid thus the costs are entirely to support system operations.
80002	**Develop Markets (DM)**						
226	Manage Regulatory Filings					100%	Attributes are not distinguishable to any specific category.
229	Develop State / Federal Regulatory Policy	40%	60%				Efforts predominately support system operations functions; as well as those of market services on a smaller scale.
230	BPM Change Management	80%	10%	5%	5%		Efforts predominately support market services functions; as well as those of system operations, CRR services, and RC services on a smaller scale.
231	Develop Infrastructure Policy	40%	60%				Efforts predominately support system operations functions; as well as those of market services on a smaller scale.
232	Perform Market Analysis	80%	15%	5%			Efforts predominately support market services functions; as well as those of system operations and RC services on a smaller scale.
234	Manage Regulatory Contract Negotiations	95%			5%		Efforts primarily support system operations functions and RC service functions on a smaller scale.
80004	**Manage Market & Reliability Data & Modeling (MMR)**						
301	Manage Full Network Model Maintenance	45%	45%	5%	5%		Efforts primarily support market services and system operations functions equally, as well as those of RC services and CRR services on a smaller scale.
302	Plan & Develop Operations Simulator Training		95%		5%		Efforts primarily support system operations functions; as well as RC services functions on a smaller scale.
304	EMAA Telemetry	50%	50%				Efforts support market services and system operations functions equally.
307	Manage Congestion Revenue Rights			100%			Efforts support CRR services functions entirely.
308	Manage Credit & Collateral	40%	40%	20%			Efforts primarily support market services and system operations functions equally, as well as those of CRR services on a smaller scale.
309	Resource Management	50%	50%				Efforts support market services and system operations functions equally.
310	Manage Reliability Requirements		100%				Efforts relate to actual system operations functions thus the costs are entirely to support system operations.
311	Manage Operations Planning		95%		5%		Efforts primarily support system operations functions; as well as RC services functions on a smaller scale.
312	Manage WECC Studies		100%				Efforts relate to actual system operations functions thus the costs are entirely to support system operations.
314	Manage & Facilitate Procedure Maintenance		95%		5%		Efforts primarily support system operations functions; as well as RC services functions on a smaller scale.
316	Plan & Develop Operations Training		95%		5%		Efforts primarily support system operations functions; as well as RC services functions on a smaller scale.
317	Execute & Track Operations Training		95%		5%		Efforts primarily support system operations functions; as well as RC services functions on a smaller scale.
320	Provide Stakeholder Training	60%	30%	5%	5%		Efforts support all category functions; primarily those of market services and system operations.
321	Schedule Coordinator Management	45%	45%	5%	5%		Efforts primarily support market services and system operations functions equally; as well as those of RC services and CRR services on a smaller scale.
322	Register, Modify and Terminate PDR Resource	100%					Efforts are entirely to support the market results and function.
323	Calculate & Monitor Energy Costs & Indices	60%	35%		5%		Efforts primarily support market services and system operations functions; as well as RC services on a smaller scale.
331	Operational Requirements	60%	40%				Efforts support weekly validation of Flex Requirement and daily Regulation Requirement, data validation and analysis, reporting, Tariff control process development, testing and customer support.

ABC Direct Operating Activities		GMC					
Code	ABC Level 2 Activities	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect	Comments
		cost category % allocation					
80005	**Manage Market & Grid (MMG)**						
352	Manage Day-Ahead Market Support	95%			5%		Efforts primarily support market service functions; as well as RC services functions on a smaller scale.
353	Operations Real-Time Support	80%	15%		5%		Efforts predominately support market service functions; as well as those of system operations and RC services functions on a smaller scale.
355	Outage Model & Management	5%	60%		35%		Efforts predominately support system operations functions; as well as those of RC services and market services on a smaller scale.
360	Real-Time Operations	20%	80%				Efforts predominately support system operations functions; as well as market services functions on a smaller scale.
362	Manage Operations Engineering Support	15%	80%		5%		Efforts predominately support system operations functions; as well as those of market services and RC services functions on a smaller scale.
367	Manage Operations Compliance & Event Analysis		50%		50%		Efforts support system operations and RC services functions equally.
368	Manage Day-Ahead and Market Operations	100%					Efforts support market services functions entirely.
370	Manage Real-Time Reliability Coordination				100%		Efforts support RC services functions entirely.
371	Load Forecast	40%	50%		10%		Efforts support Day-Ahead and Real-Time operational forecast, vendor management, data validation, IT troubleshooting, and customer/market support.
372	Renewable Forecast	50%	50%				Efforts support Eligible Intermittent Resource (EIR) onboarding/registration, configuration, modeling, data validation, Day-Ahead and Real Time operational forecast, vendor management, data validation and IT troubleshooting.
373	Weather Forecast	40%	50%		10%		Efforts support renewables, provide recommendation, data quality and validation, variability assessment, temperature forecast, and summer/winter assessment.
80007	**Manage Operations Support & Settlements (MOS)**						
401	Perform Market Validation	80%	20%				Efforts predominately support market services functions; as well as those of system operations functions on a smaller scale.
402	Manage Dispute Analysis & Resolution	100%					Efforts are entirely to support the market services results and functions.
403	Manage Market Quality System	50%	40%	10%			Efforts predominately support market services functions; as well as those of system operations and CRR services on a smaller scale.
406	Manage Rules of Conduct					100%	Attributes are not distinguishable to any specific category.
409	Meter Data Acquisition and Processing	100%					Efforts support market services functions entirely.
411	Manage Market Clearing	45%	45%	5%	5%		Efforts primarily support market services and system operations functions equally, as well as those of RC services and CRR services on a smaller scale.
412	Manage Market Billing & Settlements	45%	45%	5%	5%		Efforts primarily support market services and system operations functions equally, as well as those of RC services and CRR services on a smaller scale.
414	Manage Settlements Quarterly Release Cycle	45%	45%	5%	5%		Efforts primarily support market services and system operations functions equally, as well as those of RC services and CRR services on a smaller scale.
417	Perform Market Report	80%	20%				Efforts predominately support market services functions; as well as those of system operations functions on a smaller scale.
418	Manage Good Faith Negotiation Requests	100%					Efforts support market services functions entirely.
419	Manage Price Corrections	50%	40%	10%			Efforts predominately support market services functions; as well as those of system operations and CRR services on a smaller scale.
80008	**Plan & Manage Business (PMB)**						
451	Manage Financial Planning					100%	Attributes are not distinguishable to any specific category.
452	Manage Application, Environment & Infrastructure					100%	Attributes are not distinguishable to any specific category.
453	Manage Resource Allocation					100%	Attributes are not distinguishable to any specific category.
454	Project Portfolio Management					100%	Attributes are not distinguishable to any specific category.
455	Manage Technology Collaboration (Internal)	100%					Efforts support market services functions entirely.
457	Manage Annual Functional Release Lifecycle					100%	Attributes are not distinguishable to any specific category.
459	Enterprise Risk Management					100%	Attributes are not distinguishable to any specific category.
461	Perform Board Processes					100%	Attributes are not distinguishable to any specific category.
462	Manage Technology Collaboration (External)	100%					Efforts support market services functions entirely.
466	Manage Corporate Goal Alignment and Reporting					100%	Attributes are not distinguishable to any specific category.
469	Manage Project & Effort Lifecycles					100%	Attributes are not distinguishable to any specific category.

ABC Direct Operating Activities							
		GMC					
Code	ABC Level 2 Activities	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect	Comments
		cost category % allocation					
80009	**Support Business Services (SBS)**						
501	Manage Monthly Financial Cycle					100%	Attributes are not distinguishable to any specific category.
502	Invest Corporate Funds					100%	Attributes are not distinguishable to any specific category.
503	Manage Financial Reporting					100%	Attributes are not distinguishable to any specific category.
504	IT Application, System, & Non-Production Support	80%	15%		5%		Efforts predominately support market services functions; as well as those of system operations and RC services on a smaller scale.
505	IT Asset Management					100%	Attributes are not distinguishable to any specific category.
508	IT Configuration, Change & Release Management					100%	Attributes are not distinguishable to any specific category.
510	IT Event Management					100%	Attributes are not distinguishable to any specific category.
511	IT Incident Management	60%	30%	5%	5%		Efforts predominately support market services functions; as well as those of system operations, CRR services, and RC services on a smaller scale.
512	IT Information Security Management					100%	Attributes are not distinguishable to any specific category.
513	IT Problem & Risk Lifecycle Management	60%	30%	5%	5%		Efforts predominately support market services functions; as well as those of system operations, CRR services, and RC services on a smaller scale.
519	Provision and Manage Access					100%	Attributes are not distinguishable to any specific category.
520	Manage Facilities, Physical Security, & Safety					100%	Attributes are not distinguishable to any specific category.
521	Facilities Incident Management					100%	Attributes are not distinguishable to any specific category.
522	Corporate Incident Response & Disaster Recovery					100%	Attributes are not distinguishable to any specific category.
523	Manage Business Continuity Plan					100%	Attributes are not distinguishable to any specific category.
528	Procurement & Vendor Management					100%	Attributes are not distinguishable to any specific category.
529	Provide Legal Advice					100%	Attributes are not distinguishable to any specific category.
533	Manage Evidence Review / Audit					100%	Attributes are not distinguishable to any specific category.
535	Tariff Controls Monitoring					100%	Attributes are not distinguishable to any specific category.
536	Manage Internal Audit					100%	Attributes are not distinguishable to any specific category.
537	Monitor Markets	80%		20%			Efforts predominately support market services functions and CRR services functions on a smaller scale.
538	Manage Tariff Rules Violations					100%	Attributes are not distinguishable to any specific category.
543	Market Design					100%	Attributes are not distinguishable to any specific category.
544	Maintain DMM Database					100%	Attributes are not distinguishable to any specific category.
545	Manage Business Process & Continuous Improvement					100%	Attributes are not distinguishable to any specific category.
546	Records Management					100%	Attributes are not distinguishable to any specific category.
548	Manage Compliance Standards Development and Implementation					100%	Attributes are not distinguishable to any specific category.
549	Manage Compliance Investigations					100%	Attributes are not distinguishable to any specific category.
550	Manage NERC Compliance					100%	Attributes are not distinguishable to any specific category.
552	IT Reports & Documentation					100%	Attributes are not distinguishable to any specific category.
553	Manage Vulnerability Remediation					100%	Attributes are not distinguishable to any specific category.
555	Manage Root Cause Analysis					100%	Attributes are not distinguishable to any specific category.
80010	**Support Customers & Stakeholders (SCS)**						
539	Representing the ISO					100%	Attributes are not distinguishable to any specific category.
601	Manage Client Inquiries	80%	10%	5%	5%		Efforts predominately support market services functions; as well as those of system operations, CRR services, and RC services on a smaller scale.
602	Account Management	80%	10%	5%	5%		Efforts predominately support market services functions; as well as those of system operations, CRR services, and RC services on a smaller scale.
603	Manage Stakeholder Processes	80%	10%	5%	5%		Efforts predominately support market services functions; as well as those of system operations, CRR services, and RC services on a smaller scale.
609	Manage External Affairs					100%	Attributes are not distinguishable to any specific category.
610	Manage Communications & Public Relations					100%	Attributes are not distinguishable to any specific category.

MAPPING OF NON-ABC SUPPORT COSTS

For the next step, the CAISO pulled significant non-payroll ABC costs out of the operations and maintenance budget and allocated to buckets based on specific charge codes or to indirect costs.

Table 6 — Mapping of Non-ABC Support Costs to Cost Categories

Non-ABC Support Costs	GMC					
Component	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect	Comments
	cost category % allocation					
Non-ABC Support Costs						
Corporate Services						
Bank Fees					100%	Attributes are not distinguishable to any specific category.
HR Support					100%	Attributes are not distinguishable to any specific category.
Insurance					100%	Attributes are not distinguishable to any specific category.
WEIM Market Expert	100%					Cost supports Market Services (Real-Time Market).
SSAE 16 Audit	45%	45%	5%	5%		Use Process 80007, Task 412 allocations.
Operations Audit	22%	59%	0%	18%		Use Process 80005 total allocations.
Outside Legal					100%	Attributes are not distinguishable to any specific category.
Operational Services						
Hardware and Software Maintenance and Equipment					100%	Attributes are not distinguishable to any specific category.
Occupancy					100%	Attributes are not distinguishable to any specific category.
Telecommunications					100%	Attributes are not distinguishable to any specific category.
Intermittent Resource Forecasting Costs	80%	15%		5%		Use Process 80005, Task 353 allocations.
Market Surveillance Committee	80%	15%	5%			Use Process 80002, Task 232 allocations.
Reliability Coordinator Tools				100%		Use Process 80005, Task 370 allocations.

MAPPING OF ABC INDIRECT ACTIVITIES

ABC support activities were allocated to indirect costs.

Table 7 — Mapping of ABC Indirect Activities to Cost Categories

ABC Indirect Costs	GMC					
Component	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect	Comments
	cost category % allocation					
ABC Indirect Costs						
80003: Manage Human Capabilities (MHC)					100%	Attributes are not distinguishable to any specific category.

MAPPING OF DEBT SERVICE AND CASH FUNDED CAPITAL

Debt service is the aggregation of principle, interest, and a 25% debt service reserve on the 2021 bonds. The 2021 bonds refinanced bonds primarily associated with the financing of the CAISO's corporate headquarters in Folsom. The debt service was allocated 100 percent to indirect costs.

The revenue requirement also includes cash funded capital. The funds raised through the GMC contribute to maintaining a long-term capital reserve fund, which varies from the capital project budget for that year. The number of, and cost for, capital projects varies significantly from year to year. The annual budget identifies the approved capital spending limits but not the projects themselves. A proposed listing is provided to an internal management committee; which meets throughout the year to review and approve funding for specific projects. Because of the uncertainty of the actual projects coming on line, 100% of the cash funded capital was allocated to indirect costs.

Table 8 — Mapping of Debt Service and Capital to Cost Categories

Debt Service Bonds and Cash Funded Capital						
	GMC					
Component	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect	Comments
	cost category % allocation					
Debt Service Bonds					100%	Bonds used for Folsom location building and land. Attributes are not distinguishable to any specific category.
Cash Funded Capital					100%	Amounts and projects vary yearly thus attributes are not distinguishable to any specific category.

MAPPING OF OTHER REVENUE AND OPERATING COST RESERVE ADJUSTMENT

The remaining revenue requirement components, other revenue and operating cost reserve adjustment, were then analyzed and allocated to buckets based on specific charge codes or to indirect costs.

Table 9 — Mapping of Other Revenue to Cost Categories

Other Costs and Revenue	GMC					
Component	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect	Comments
	cost category % allocation					
Other Costs and Revenue						
Energy Imbalance Market Administration Charges					100%	Attributes are not distinguishable to any specific category.
Nodal Pricing Model Fee	50%	50%				Fee offsets Market Services' (Real-Time and Day-Ahead) costs and System Operations' (Real-Time) costs.
Intermittent Resource Forecasting Fees	80%	15%		5%		Use Process 80005, Task 353 allocations.
Interest Earnings					100%	Attributes are not distinguishable to any specific category.
Generator Interconnection Project Fees and Application Fees		100%				Use Process 80001, Task 203 allocations.
HANA Administrative Fees*				100%		Use Process 80005, Task 370 allocations.
California-Oregon Intertie (COI) Path Operator Fees		100%				Fees offset System Operations' costs.
Metered Sub-Station Penalties					100%	Attributes are not distinguishable to any specific category.
SC Application Fees					100%	Attributes are not distinguishable to any specific category.
Planning Coordinator Fees		100%				Use Process 80001, Task 204 allocations.
CRR Application Fees					100%	
Reliability Coordinator Funding Requirement				100%		Use Process 80005, Task 370 allocations.

Table 10 — Mapping of Operating Cost Reserve Adjustment to Cost Categories

Operating Cost Reserve Adjustment	GMC					
Component	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect	Comments
	cost category % allocation					
Operating Cost Reserve Adjustment						
Change in 15% Operating Cost Reserve					100%	
25% Debt Service Reserve for Bonds					100%	
2020 Revenue Budget to Actual Delta					100%	
2020 Expense Budget to Actual Delta					100%	Attributes are not distinguishable to any specific category.

MAPPING OF INDIRECT COSTS

Indirect costs were aggregated and then allocated proportionally to direct costs. After this mapping is completed it can be applied to the CAISO revenue requirement to derive the related Cost-of-Service.

Determining the costs of the 2022 GMC Revenue Requirement

The 2022 GMC Revenue Requirement data and employee hours are the most recent information available to determine the cost category percentage updates for the 2024 GMC tariff filing. The CAISO applied the allocation matrix of level 2 activities to the 2022 revenue requirement to determine the costs associated with the cost categories. To best represent projected revenue requirement needs in the next three-year cycle, modifications were made to the Operations and Maintenance budget to account for new positions added in 2023 and to account for projected inflationary growth in the budget going into 2026. Modifications were also made to the Other Costs and Revenue category to reflect the reduction in the Nodal Pricing Model fee and WEIM Administrative Charges after EDAM goes live in 2025; as well as the changes to the RC Funding Requirement as a result of modifications made in the revenue requirement. The Nodal Pricing Model (a gateway service to EDAM) is a service paid for by PacifiCorp and will no longer be collected once PacifiCorp joins EDAM in 2025. The WEIM Administrative Charges will decrease once WEIM participants become participants in EDAM, as transitioned WEIM participants will no longer pay WEIM Administrative Charges. The WEIM Administrative Charge will also decrease once the bifurcation of the System Operations Charge is implemented in 2025, as the System Operations Real-Time Dispatch Charge (previously identified as the WEIM System Operations Charge) will be collected as part of the GMC rather than as an supplemental revenue offset to the GMC Revenue Requirement. Additionally, modifications were made to the Operating Cost Reserve Adjustment category to represent a realistic adjustment under normal operations; the reserve adjustment credit of $19.1 million included in the 2022 GMC Revenue Requirement was a result of budget surpluses driven by impacts of the pandemic that are not expected in future years.

Given the modifications made to the 2022 GMC Revenue Requirement to best represent the CAISO revenue requirement needs for the coming three-year cycle, the 2023 Cost-of-Service study analyzes the 2024 through 2026 revenue requirements under two scenarios. The first scenario assumes pre-Extended Day Ahead Market (EDAM) and impacts the analysis of the 2024 revenue requirement. The second scenario assumes EDAM and impacts the analysis of the 2025 and 2026 revenue requirements. The study will reference the first scenario's supporting calculations, for 2024, in the body of the paper. The second scenario's supporting calculations, for 2025 and 2026, will be included in Appendix A.

Table 11 — 2022 Modified GMC Revenue Requirement Components

Modified GMC Revenue Requirement ($ in thousands)	Scenario 1	Scenario 2
Components	Modified Budget for 2024 Operations	Modified Budget for 2025 + 2026 Operations
Operations and Maintenance	$ 258,422	$ 258,422
Debt Service	$ 14,685	$ 14,686
Cash Funded Capital	$ 15,000	$ 15,000
Other Costs and Revenues	$ (54,680)	$ (39,930)
Operating Costs Reserve Adjustment	$ (13,493)	$ (5,468)
Total	**$ 219,934**	**$ 242,710**

Completing the analysis required the following steps:

1. Breaking out non-ABC operations and maintenance (O&M) support costs and applying cost category percentages to these costs;
2. Allocating the ABC direct and indirect O&M costs into two components: level 2 activities and support costs. This process involved:
    a. Allocating cost centers to level 1 ABC activities
    b. Applying cost category percentages to level 1 support costs
    c. Obtaining time estimates for level 2 activities for those level 1 activities that are direct operating costs
    d. Allocating costs to level 2 activities
    e. Applying cost category percentages;
3. Allocating remaining revenue requirement components to cost categories and applying cost category percentages to these costs;
4. Aggregating costs and allocating indirect costs to cost categories based on percentage of direct costs, allocating fees to the cost category buckets and determining resulting cost category percentages; and

5. Dividing resulting costs by estimated volumes to determine 2022 rates using revised cost category percentages.

Step 1: Breaking Out Non-ABC Support Costs

There are two types of O&M costs; those that are activity related such as costs attributed to personnel (ABC Activity Costs) and non-ABC costs such as facilities costs (Non-ABC Activity Costs).

Table 12 — Allocation of Costs to ABC Activities and Non-ABC Activities

Operations and Maintenance Budget ($ in thousands)			
Division	**ABC Activity Costs**	**Non-ABC Activity Costs**	**Total**
Corporate Services	$ 55,869	$ 9,414	$ 65,283
Operational Services	$ 163,510	$ 29,629	$ 193,139
Total	**$ 219,379**	**$ 39,043**	**$ 258,422**

The significant non-ABC support costs were removed from the divisions and allocated separately. These budgeted costs were allocated using the percentages shown in *Table 6 — Mapping of Non-ABC Support Costs to Cost Categories.*

Table 13 — Allocation of Non-ABC Support Costs to Cost Categories

Non-ABC Support Costs	GMC						GMC				
Component	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect	Budget	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect
	cost category % allocation					*budget allocations (amounts in thousands)*					
Non-ABC Support Costs											
Corporate Services											
Bank Fees					100%	$ 435	$ -	$ -	$ -	$ -	$ 435
HR Support					100%	$ 2,954	$ -	$ -	$ -	$ -	$ 2,954
Insurance					100%	$ 2,871	$ -	$ -	$ -	$ -	$ 2,871
WEIM Market Expert	100%					$ 248	$ 248	$ -	$ -	$ -	$ -
SSAE 16 Audit	45%	45%	5%	5%		$ 641	$ 289	$ 288	$ 32	$ 32	$ -
Operations Audit	22%	59%	0%	18%		$ 126	$ 28	$ 75	$ -	$ 23	$ -
Outside Legal					100%	$ 2,139	$ -	$ -	$ -	$ -	$ 2,139
Corporate Services Total						**$ 9,414**	**$ 565**	**$ 363**	**$ 32**	**$ 55**	**$ 8,399**
Operational Services											$ -
Hardware and Software Maintenance and Equipment					100%	$ 15,889	$ -	$ -	$ -	$ -	$ 15,889
Occupancy					100%	$ 5,806	$ -	$ -	$ -	$ -	$ 5,806
Telecommunications					100%	$ 4,547	$ -	$ -	$ -	$ -	$ 4,547
Intermittent Resource Forecasting Costs	80%	15%		5%		$ 1,519	$ 1,215	$ 228	$ -	$ 76	$ -
Market Surveillance Committee	80%	15%	5%			$ 354	$ 283	$ 53	$ 18	$ -	$ -
Reliability Coordinator Tools				100%		$ 1,514	$ -	$ -	$ -	$ 1,514	$ -
Operational Services Total						**$ 29,629**	**$ 1,498**	**$ 281**	**$ 18**	**1,590**	**$ 26,242**
Total Non-ABC Support Costs						**$ 39,043**	**$ 2,063**	**$ 644**	**$ 50**	**1,645**	**$ 34,641**

Step 2: Allocation of O&M Costs

For activity related O&M costs, the current ABC structure was utilized to allocate costs between the cost categories. CAISO activities were broken out into nine level 1 ABC activities as shown in *Table 3 — Level 1 ABC Activities*. For the direct operating level 1 activities, the associated level 2 activities were mapped to one of the three cost categories as shown in *Table 5 — Mapping of ABC Direct Operating Activities to Cost Categories.* The level 1 support activities were allocated to ABC support costs.

The O&M budget covers expenses for 11 divisions and 124 cost centers. The CAISO divisions represent two high-level functions in the organization – Corporate Services and Operational Services. This section will present the O&M budget broken into those functions.

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. The functions also include the Enterprise Program Management Office and the Market Monitoring department.

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 department.

The reported 2022 time card data was collected and the percentage breakdown of each cost center by the level one and level 2 direct activities was determined. The percentage was applied to the activity budget for the cost center to allocate the cost center activity budget by dollars to the level one and level 2 direct operating activities.

ABC DIRECT OPERATING ACTIVITIES

Table 14 — Allocation of Function Hours to Direct Operating Activities

		Allocation of Hours By Function		
ABC Process Code	Level 1 ABC Activity	Corporate Services	Operational Services	Total
Direct Operating Costs				
80001	Develop Infrastructure	4%	96%	100%
80002	Develop Markets	5%	95%	100%
80004	Manage Market & Reliability Data & Modeling	12%	88%	100%
80005	Manage Market & Grid	0%	100%	100%
80007	Manage Operations Support & Settlements	3%	97%	100%
80008	Plan & Manage Business	24%	76%	100%
80009	Support Business Services	28%	72%	100%
80010	Support Customers & Stakeholders	88%	12%	100%
	Total	**19%**	**81%**	**100%**

The hours were then aggregated by level 2 activity.

Table 15 — Allocation of Function Hours to Level 2 Activities

ABC Direct Operating Activities		Allocation of Hours By Function		
Code	ABC Level 2 Activities	Corporate Services	Operational Services	Total
80001	**Develop Infrastructure (DI)**			
201	Develop and Monitor Regulatory Contract Procedures	0%	100%	100%
202	Manage Generator Interconnection Agreements	0%	100%	100%
203	Manage Generator Interconnection Process	14%	86%	100%
204	Manage Long Term Transmission Planning	0%	100%	100%
205	Manage New Transmission Resources	0%	100%	100%
206	Manage Transmission Maintenance Standards	0%	100%	100%
207	Manage Load Resource Data	0%	100%	100%
208	Seasonal Assessment	0%	100%	100%
209	Manage Queue Management	0%	100%	100%
	Total DI	**4%**	**96%**	**100%**
80002	**Develop Markets (DM)**			
226	Manage Regulatory Filings	100%	0%	100%
229	Develop State / Federal Regulatory Policy	0%	100%	100%
230	BPM Change Management	100%	0%	100%
231	Develop Infrastructure Policy	0%	100%	100%
232	Perform Market Analysis	0%	100%	100%
234	Manage Regulatory Contract Negotiations	0%	100%	100%
	Total DM	**5%**	**95%**	**100%**

ABC Direct Operating Activities		Allocation of Hours By Function		
Code	ABC Level 2 Activities	Corporate Services	Operational Services	Total
80004	**Manage Market & Reliability Data & Modeling (MMR)**			
301	Manage Full Network Model Maintenance	0%	100%	100%
302	Plan & Develop Operations Simulator Training	0%	100%	100%
304	EMAA Telemetry	0%	100%	100%
307	Manage Congestion Revenue Rights	0%	100%	100%
308	Manage Credit & Collateral	100%	0%	100%
309	Resource Management	0%	100%	100%
310	Manage Reliability Requirements	0%	100%	100%
311	Manage Operations Planning	0%	100%	100%
312	Manage WECC Studies	0%	100%	100%
314	Manage & Facilitate Procedure Maintenance	0%	100%	100%
316	Plan & Develop Operations Training	0%	100%	100%
317	Execute & Track Operations Training	0%	100%	100%
320	Provide Stakeholder Training	98%	2%	100%
321	Schedule Coordinator Management	100%	0%	100%
322	Register, Modify and Terminate PDR Resource	0%	100%	100%
323	Calculate & Monitor Energy Costs & Indices	7%	93%	100%
331	Operational Requirements	0%	100%	100%
	Total MMR	**12%**	**88%**	**100%**

ABC Direct Operating Activities		Allocation of Hours By Function		
Code	ABC Level 2 Activities	Corporate Services	Operational Services	Total
80005	**Manage Market & Grid (MMG)**			
352	Manage Day-Ahead Market Support	0%	100%	100%
353	Operations Real-Time Support	0%	100%	100%
355	Outage Model & Management	0%	100%	100%
360	Real-Time Operations	1%	99%	100%
362	Manage Operations Engineering Support	0%	100%	100%
367	Manage Operations Compliance & Event Analysis	0%	100%	100%
368	Manage Day-Ahead and Market Operations	0%	100%	100%
370	Manage Real-Time Reliability Coordination	0%	100%	100%
371	Load Forecast	0%	100%	100%
372	Renewable Forecast	0%	100%	100%
373	Weather Forecast	0%	100%	100%
	Total MMG	**0%**	**100%**	**100%**

ABC Direct Operating Activities		Allocation of Hours By Function		
Code	ABC Level 2 Activities	Corporate Services	Operational Services	Total
80007	**Manage Operations Support & Settlements (MOS)**			
401	Perform Market Validation	0%	100%	100%
402	Manage Dispute Analysis & Resolution	0%	100%	100%
403	Manage Market Quality System	0%	100%	100%
406	Manage Rules of Conduct	0%	100%	100%
409	Meter Data Acquisition and Processing	0%	100%	100%
411	Manage Market Clearing	97%	3%	100%
412	Manage Market Billing & Settlements	0%	100%	100%
414	Manage Settlements Quarterly Release Cycle	1%	99%	100%
417	Perform Market Report	0%	100%	100%
418	Manage Good Faith Negotiation Requests	100%	0%	100%
419	Manage Price Corrections	0%	100%	100%
	Total MOS	**3%**	**97%**	**100%**
80008	**Plan & Manage Business (PMB)**			
451	Manage Financial Planning	99%	1%	100%
452	Manage Application, Environment & Infrastructure	0%	100%	100%
453	Manage Resource Allocation	21%	79%	100%
454	Project Portfolio Management	18%	82%	100%
455	Manage Technology Collaboration (Internal)	0%	100%	100%
457	Manage Annual Functional Release Lifecycle	0%	100%	100%
459	Enterprise Risk Management	95%	5%	100%
461	Perform Board Processes	96%	4%	100%
462	Manage Technology Collaboration (External)	0%	100%	100%
466	Manage Corporate Goal Alignment and Reporting	91%	9%	100%
469	Manage Project & Effort Lifecycles	34%	66%	100%
	Total PMB	**24%**	**76%**	**100%**

ABC Direct Operating Activities		Allocation of Hours By Function		
Code	ABC Level 2 Activities	Corporate Services	Operational Services	Total
80009	**Support Business Services (SBS)**			
501	Manage Monthly Financial Cycle	100%	0%	100%
502	Invest Corporate Funds	100%	0%	100%
503	Manage Financial Reporting	100%	0%	100%
504	IT Application, System, & Non-Production Support	0%	100%	100%
505	IT Asset Management	0%	100%	100%
508	IT Configuration, Change & Release Management	2%	98%	100%
510	IT Event Management	0%	100%	100%
511	IT Incident Management	0%	100%	100%
512	IT Information Security Management	0%	100%	100%
513	IT Problem & Risk Lifecycle Management	0%	100%	100%
519	Provision and Manage Access	0%	100%	100%
520	Manage Facilities, Physical Security, & Safety	0%	100%	100%
521	Facilities Incident Management	0%	100%	100%
522	Corporate Incident Response & Disaster Recovery	16%	84%	100%
523	Manage Business Continuity Plan	3%	97%	100%
528	Procurement & Vendor Management	99%	1%	100%
529	Provide Legal Advice	100%	0%	100%
533	Manage Evidence Review / Audit	0%	100%	100%
535	Tariff Controls Monitoring	100%	0%	100%
536	Manage Internal Audit	91%	9%	100%
537	Monitor Markets	100%	0%	100%
538	Manage Tariff Rules Violations	100%	0%	100%
543	Market Design	95%	5%	100%
544	Maintain DMM Database	100%	0%	100%
545	Manage Business Process & Continuous Improvement	66%	34%	100%
546	Records Management	93%	7%	100%
548	Manage Compliance Standards Development and Implementation	18%	82%	100%
549	Manage Compliance Investigations	56%	44%	100%
550	Manage NERC Compliance	50%	50%	100%
552	IT Reports & Documentation	0%	100%	100%
555	Manage Root Cause Analysis	0%	100%	100%
	Total SBS	**28%**	**72%**	**100%**

ABC Direct Operating Activities		Allocation of Hours By Function		
Code	ABC Level 2 Activities	Corporate Services	Operational Services	Total
80010	**Support Customers & Stakeholders (SCS)**			
539	Representing the ISO	0%	100%	100%
601	Manage Client Inquiries	97%	3%	100%
602	Account Management	100%	0%	100%
603	Manage Stakeholder Processes	97%	3%	100%
609	Manage External Affairs	72%	28%	100%
610	Manage Communications & Public Relations	100%	0%	100%
	Total SCS	**88%**	**12%**	**100%**

DIRECT OPERATING ACTIVITIES

The direct operating activities costs were factored into the allocation matrix shown in *Table 5 — Mapping of ABC Direct Operating Activities to Cost Categories* — to get the costs to the cost categories.

Table 16 — Allocation of Function Costs to Direct Operating Activities

		Allocation of Costs By Function ($ in thousands)		
ABC Process Code	Level 1 ABC Activity	Corporate Services	Operational Services	Total
Direct Operating Costs				
80001	Develop Infrastructure	$ 567	$ 13,459	$ 14,026
80002	Develop Markets	$ 975	$ 17,752	$ 18,727
80004	Manage Market & Reliability Data & Modeling	$ 3,421	$ 17,587	$ 21,008
80005	Manage Market & Grid	$ 50	$ 42,239	$ 42,289
80007	Manage Operations Support & Settlements	$ 208	$ 9,676	$ 9,884
80008	Plan & Manage Business	$ 9,021	$ 20,868	$ 29,889
80009	Support Business Services	$ 20,015	$ 37,872	$ 57,887
80010	Support Customers & Stakeholders	$ 14,648	$ 3,964	$ 18,612
	Total	**$ 48,905**	**$ 163,417**	**$ 212,322**

The costs were then aggregated by level 2 activity.

Table 17 — Allocation of Function Costs to Level 2 Activity

ABC Direct Operating Activities		Allocation of Costs By Function		
Code	ABC Level 2 Activities	Corporate Services	Operational Services	Total
		budget allocations (amounts in thousands)		
80001	**Develop Infrastructure (DI)**			
201	Develop and Monitor Regulatory Contract Procedures	$ -	$ 1,237	$ 1,237
202	Manage Generator Interconnection Agreements	$ -	$ 419	$ 419
203	Manage Generator Interconnection Process	$ 567	$ 3,623	$ 4,190
204	Manage Long Term Transmission Planning	$ -	$ 5,985	$ 5,985
205	Manage New Transmission Resources	$ -	$ 693	$ 693
206	Manage Transmission Maintenance Standards	$ -	$ 328	$ 328
207	Manage Load Resource Data	$ -	$ 308	$ 308
208	Seasonal Assessment	$ -	$ 261	$ 261
209	Manage Queue Management	$ -	$ 605	$ 605
	Total DI	**$ 567**	**$ 13,459**	**$ 14,026**
80002	**Develop Markets (DM)**			
226	Manage Regulatory Filings	$ 941	$ -	$ 941
229	Develop State / Federal Regulatory Policy	$ -	$ 275	$ 275
230	BPM Change Management	$ 34	$ -	$ 34
231	Develop Infrastructure Policy	$ -	$ 13,227	$ 13,227
232	Perform Market Analysis	$ -	$ 3,766	$ 3,766
234	Manage Regulatory Contract Negotiations	$ -	$ 484	$ 484
	Total DM	**$ 975**	**$ 17,752**	**$ 18,727**

ABC Direct Operating Activities		Allocation of Costs By Function		
Code	ABC Level 2 Activities	Corporate Services	Operational Services	Total
		budget allocations (amounts in thousands)		
80004	**Manage Market & Reliability Data & Modeling (MMR)**			
301	Manage Full Network Model Maintenance	$ -	$ 5,498	$ 5,498
302	Plan & Develop Operations Simulator Training	$ -	$ 385	$ 385
304	EMAA Telemetry	$ -	$ 1,022	$ 1,022
307	Manage Congestion Revenue Rights	$ -	$ 665	$ 665
308	Manage Credit & Collateral	$ 1,459	$ -	$ 1,459
309	Resource Management	$ -	$ 1,667	$ 1,667
310	Manage Reliability Requirements	$ -	$ 1,098	$ 1,098
311	Manage Operations Planning	$ -	$ 1,786	$ 1,786
312	Manage WECC Studies	$ -	$ 130	$ 130
314	Manage & Facilitate Procedure Maintenance	$ -	$ 238	$ 238
316	Plan & Develop Operations Training	$ -	$ 2,793	$ 2,793
317	Execute & Track Operations Training	$ -	$ 1,254	$ 1,254
320	Provide Stakeholder Training	$ 1,471	$ 24	$ 1,495
321	Schedule Coordinator Management	$ 358	$ -	$ 358
322	Register, Modify and Terminate PDR Resource	$ -	$ 56	$ 56
323	Calculate & Monitor Energy Costs & Indices	$ 133	$ 778	$ 911
331	Operational Requirements	$ -	$ 193	$ 193
	Total MMR	**$ 3,421**	**$ 17,587**	**$ 21,008**

ABC Direct Operating Activities		Allocation of Costs By Function		
Code	ABC Level 2 Activities	Corporate Services	Operational Services	Total
		budget allocations (amounts in thousands)		
80005	**Manage Market & Grid (MMG)**			
352	Manage Day-Ahead Market Support	$ -	$ 369	$ 369
353	Operations Real-Time Support	$ -	$ 847	$ 847
355	Outage Model & Management	$ -	$ 3,817	$ 3,817
360	Real-Time Operations	$ 50	$ 21,795	$ 21,845
362	Manage Operations Engineering Support	$ -	$ 5,201	$ 5,201
367	Manage Operations Compliance & Event Analysis	$ -	$ 643	$ 643
368	Manage Day-Ahead and Market Operations	$ -	$ 2,029	$ 2,029
370	Manage Real-Time Reliability Coordination	$ -	$ 5,350	$ 5,350
371	Load Forecast	$ -	$ 1,466	$ 1,466
372	Renewable Forecast	$ -	$ 563	$ 563
373	Weather Forecast	$ -	$ 159	$ 159
	Total MMG	**$ 50**	**$ 42,239**	**$ 42,289**

ABC Direct Operating Activities		Allocation of Costs By Function		
Code	ABC Level 2 Activities	Corporate Services	Operational Services	Total
		budget allocations (amounts in thousands)		
80007	**Manage Operations Support & Settlements (MOS)**			
401	Perform Market Validation	$ -	$ 283	$ 283
402	Manage Dispute Analysis & Resolution	$ -	$ 1,437	$ 1,437
403	Manage Market Quality System	$ -	$ 617	$ 617
406	Manage Rules of Conduct	$ -	$ 48	$ 48
409	Meter Data Acquisition and Processing	$ -	$ 287	$ 287
411	Manage Market Clearing	$ 162	$ 5	$ 167
412	Manage Market Billing & Settlements	$ -	$ 2,205	$ 2,205
414	Manage Settlements Quarterly Release Cycle	$ 29	$ 2,639	$ 2,668
417	Perform Market Report	$ -	$ 560	$ 560
418	Manage Good Faith Negotiation Requests	$ 17	$ -	$ 17
419	Manage Price Corrections	$ -	$ 1,595	$ 1,595
	Total MOS	**$ 208**	**$ 9,676**	**$ 9,884**
80008	**Plan & Manage Business (PMB)**			
451	Manage Financial Planning	$ 1,121	$ 5	$ 1,126
452	Manage Application, Environment & Infrastructure	$ -	$ 2,252	$ 2,252
453	Manage Resource Allocation	$ 36	$ 77	$ 113
454	Project Portfolio Management	$ 1,009	$ 2,713	$ 3,722
455	Manage Technology Collaboration (Internal)	$ 4	$ 9,559	$ 9,563
457	Manage Annual Functional Release Lifecycle	$ -	$ 173	$ 173
459	Enterprise Risk Management	$ 149	$ 6	$ 155
461	Perform Board Processes	$ 1,728	$ 268	$ 1,996
462	Manage Technology Collaboration (External)	$ -	$ 427	$ 427
466	Manage Corporate Goal Alignment and Reporting	$ 1,096	$ 40	$ 1,136
469	Manage Project & Effort Lifecycles	$ 3,878	$ 5,348	$ 9,226
	Total PMB	**$ 9,021**	**$ 20,868**	**$ 29,889**

ABC Direct Operating Activities		Allocation of Costs By Function		
Code	ABC Level 2 Activities	Corporate Services	Operational Services	Total
		budget allocations (amounts in thousands)		
80009	**Support Business Services (SBS)**			
501	Manage Monthly Financial Cycle	$ 749	$ -	$ 749
502	Invest Corporate Funds	$ 450	$ -	$ 450
503	Manage Financial Reporting	$ 553	$ -	$ 553
504	IT Application, System, & Non-Production Support	$ -	$ 18,437	$ 18,437
505	IT Asset Management	$ -	$ 787	$ 787
508	IT Configuration, Change & Release Management	$ 20	$ 1,356	$ 1,376
510	IT Event Management	$ -	$ 934	$ 934
511	IT Incident Management	$ 9	$ 5,812	$ 5,821
512	IT Information Security Management	$ 20	$ 1,337	$ 1,357
513	IT Problem & Risk Lifecycle Management	$ -	$ 633	$ 633
519	Provision and Manage Access	$ -	$ 197	$ 197
520	Manage Facilities, Physical Security, & Safety	$ -	$ 2,775	$ 2,775
521	Facilities Incident Management	$ -	$ 5	$ 5
522	Corporate Incident Response & Disaster Recovery	$ 35	$ 163	$ 198
523	Manage Business Continuity Plan	$ 49	$ 1,313	$ 1,362
528	Procurement & Vendor Management	$ 847	$ 8	$ 855
529	Provide Legal Advice	$ 6,973	$ -	$ 6,973
533	Manage Evidence Review / Audit	$ -	$ 425	$ 425
535	Tariff Controls Monitoring	$ 1,120	$ 3	$ 1,123
536	Manage Internal Audit	$ 2,029	$ 180	$ 2,209
537	Monitor Markets	$ 3,635	$ -	$ 3,635
538	Manage Tariff Rules Violations	$ 168	$ -	$ 168
543	Market Design	$ 495	$ 45	$ 540
544	Maintain DMM Database	$ 663	$ -	$ 663
545	Manage Business Process & Continuous Improvement	$ 459	$ 156	$ 615
546	Records Management	$ 470	$ 20	$ 490
548	Manage Compliance Standards Development and Implementation	$ 8	$ 49	$ 57
549	Manage Compliance Investigations	$ 139	$ 194	$ 333
550	Manage NERC Compliance	$ 1,123	$ 2,488	$ 3,611
552	IT Reports & Documentation	$ -	$ 55	$ 55
553	Manage Vulnerability Remediation	$ -	$ -	$ -
555	Manage Root Cause Analysis	$ 1	$ 500	$ 501
	Total SBS	**$ 20,015**	**$ 37,872**	**$ 57,887**

ABC Direct Operating Activities		Allocation of Costs By Function		
Code	ABC Level 2 Activities	Corporate Services	Operational Services	Total
		budget allocations (amounts in thousands)		
80010	**Support Customers & Stakeholders (SCS)**			
539	Representing the ISO	$ -	$ 2,448	$ 2,448
601	Manage Client Inquiries	$ 3,675	$ 82	$ 3,757
602	Account Management	$ 885	$ -	$ 885
603	Manage Stakeholder Processes	$ 2,202	$ 37	$ 2,239
609	Manage External Affairs	$ 5,294	$ 1,397	$ 6,691
610	Manage Communications & Public Relations	$ 2,592	$ -	$ 2,592
	Total SCS	**$ 14,648**	**$ 3,964**	**$ 18,612**
	Total Direct O&M	**$ 48,905**	**$ 163,417**	**$ 212,322**

For direct operating activities the costs were aggregated at level 2 and allocated to the cost category identified in *Table 5 — Mapping of ABC Direct Operating Activities to Cost Categories.*

Table 18 — Allocation of ABC Direct Operating Activity Costs to Cost Categories

ABC Direct Operating Activities		GMC						GMC					
Code	ABC Level 2 Activities	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect	Budget	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect
		cost category % allocation					*budget allocations (amounts in thousands)*					
80001	**Develop Infrastructure (DI)**											
201	Develop and Monitor Regulatory Contract Procedures	95%			5%		$ 1,237	$ 1,175	$ -	$ -	$ 62	$ -
202	Manage Generator Interconnection Agreements		100%				$ 419	$ -	$ 419	$ -	$ -	$ -
203	Manage Generator Interconnection Process		100%				$ 4,190	$ -	$ 4,190	$ -	$ -	$ -
204	Manage Long Term Transmission Planning		100%				$ 5,985	$ -	$ 5,985	$ -	$ -	$ -
205	Manage New Transmission Resources		95%		5%		$ 693	$ -	$ 658	$ -	$ 35	$ -
206	Manage Transmission Maintenance Standards		100%				$ 328	$ -	$ 328	$ -	$ -	$ -
207	Manage Load Resource Data		100%				$ 308	$ -	$ 308	$ -	$ -	$ -
208	Seasonal Assessment		100%				$ 261	$ -	$ 261	$ -	$ -	$ -
209	Manage Queue Management		100%				$ 605	$ -	$ 605	$ -	$ -	$ -
	Total DI						**$ 14,026**	**$ 1,175**	**$ 12,754**	**$ -**	**$ 97**	**$ -**
							-					
80002	**Develop Markets (DM)**											
226	Manage Regulatory Filings					100%	$ 941	$ -	$ -	$ -	$ -	$ 941
229	Develop State / Federal Regulatory Policy	40%	60%				$ 275	$ 110	$ 165	$ -	$ -	$ -
230	BPM Change Management	80%	10%	5%	5%		$ 34	$ 27	$ 3	$ 2	$ 2	$ -
231	Develop Infrastructure Policy	40%	60%				$ 13,227	$ 5,291	$ 7,936	$ -	$ -	$ -
232	Perform Market Analysis	80%	15%	5%			$ 3,766	$ 3,013	$ 565	$ 188	$ -	$ -
234	Manage Regulatory Contract Negotiations	95%			5%		$ 484	$ 460	$ -	$ -	$ 24	$ -
	Total DM						**$ 18,727**	**$ 8,901**	**$ 8,669**	**$ 190**	**$ 26**	**$ 941**

ABC Direct Operating Activities		GMC						GMC					
Code	ABC Level 2 Activities	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect	Budget	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect
		cost category % allocation					*budget allocations (amounts in thousands)*					
80004	**Manage Market & Reliability Data & Modeling (MMR)**											
301	Manage Full Network Model Maintenance	45%	45%	5%	5%		$ 5,498	$ 2,474	$ 2,474	$ 275	$ 275	$ -
302	Plan & Develop Operations Simulator Training		95%		5%		$ 385	$ -	$ 366	$ -	$ 19	$ -
304	EMAA Telemetry	50%	50%				$ 1,022	$ 511	$ 511	$ -	$ -	$ -
307	Manage Congestion Revenue Rights			100%			$ 665	$ -	$ -	$ 665	$ -	$ -
308	Manage Credit & Collateral	40%	40%	20%			$ 1,459	$ 583	$ 584	$ 292	$ -	$ -
309	Resource Management	50%	50%				$ 1,667	$ 833	$ 834	$ -	$ -	$ -
310	Manage Reliability Requirements		100%				$ 1,098	$ -	$ 1,098	$ -	$ -	$ -
311	Manage Operations Planning		95%		5%		$ 1,786	$ -	$ 1,697	$ -	$ 89	$ -
312	Manage WECC Studies		100%				$ 130	$ -	$ 130	$ -	$ -	$ -
314	Manage & Facilitate Procedure Maintenance		95%		5%		$ 238	$ -	$ 226	$ -	$ 12	$ -
316	Plan & Develop Operations Training		95%		5%		$ 2,793	$ -	$ 2,653	$ -	$ 140	$ -
317	Execute & Track Operations Training		95%		5%		$ 1,254	$ -	$ 1,191	$ -	$ 63	$ -
320	Provide Stakeholder Training	60%	30%	5%	5%		$ 1,495	$ 896	$ 449	$ 75	$ 75	$ -
321	Schedule Coordinator Management	45%	45%	5%	5%		$ 358	$ 161	$ 161	$ 18	$ 18	$ -
322	Register, Modify and Terminate PDR Resource	100%					$ 56	$ 56	$ -	$ -	$ -	$ -
323	Calculate & Monitor Energy Costs & Indices	60%	35%		5%		$ 911	$ 546	$ 319	$ -	$ 46	$ -
331	Operational Requirements	60%	40%				$ 193	$ 116	$ 77	$ -	$ -	$ -
	Total MMR						**$ 21,008**	**$ 6,176**	**$ 12,770**	**$ 1,325**	**$ 737**	**$ -**

ABC Direct Operating Activities		GMC						GMC					
Code	ABC Level 2 Activities	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect	Budget	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect
		cost category % allocation					*budget allocations (amounts in thousands)*					
80005	**Manage Market & Grid (MMG)**											
352	Manage Day-Ahead Market Support	95%			5%		$ 369	$ 351	$ -	$ -	$ 18	$ -
353	Operations Real-Time Support	80%	15%		5%		$ 847	$ 678	$ 127	$ -	$ 42	$ -
355	Outage Model & Management	5%	60%		35%		$ 3,817	$ 191	$ 2,290	$ -	$ 1,336	$ -
360	Real-Time Operations	20%	80%				$ 21,845	$ 4,369	$ 17,476	$ -	$ -	$ -
362	Manage Operations Engineering Support	15%	80%		5%		$ 5,201	$ 780	$ 4,161	$ -	$ 260	$ -
367	Manage Operations Compliance & Event Analysis		50%		50%		$ 643	$ -	$ 321	$ -	$ 322	$ -
368	Manage Day-Ahead and Market Operations	100%					$ 2,029	$ 2,029	$ -	$ -	$ -	$ -
370	Manage Real-Time Reliability Coordination				100%		$ 5,350	$ -	$ -	$ -	$ 5,350	$ -
371	Load Forecast	40%	50%		10%		$ 1,466	$ 586	$ 733	$ -	$ 147	$ -
372	Renewable Forecast	50%	50%				$ 563	$ 281	$ 282	$ -	$ -	$ -
373	Weather Forecast	40%	50%		10%		$ 159	$ 64	$ 79	$ -	$ 16	$ -
	Total MMG						**$ 42,289**	**$ 9,329**	**$ 25,469**	**$ -**	**$ 7,491**	**$ -**
	MMG %s						**100%**	**22%**	**59%**	**0%**	**18%**	**0%**

ABC Direct Operating Activities														
		GMC						GMC						
Code	ABC Level 2 Activities	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect	Budget	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect
		cost category % allocation					*budget allocations (amounts in thousands)*					
80007	**Manage Operations Support & Settlements (MOS)**											
401	Perform Market Validation	80%	20%				$ 283	$ 226	$ 57	$ -	$ -	$ -
402	Manage Dispute Analysis & Resolution	100%					$ 1,437	$ 1,437	$ -	$ -	$ -	$ -
403	Manage Market Quality System	50%	40%	10%			$ 617	$ 308	$ 247	$ 62	$ -	$ -
406	Manage Rules of Conduct					100%	$ 48	$ -	$ -	$ -	$ -	$ 48
409	Meter Data Acquisition and Processing	100%					$ 287	$ 287	$ -	$ -	$ -	$ -
411	Manage Market Clearing	45%	45%	5%	5%		$ 167	$ 76	$ 75	$ 8	$ 8	$ -
412	Manage Market Billing & Settlements	45%	45%	5%	5%		$ 2,205	$ 993	$ 992	$ 110	$ 110	$ -
414	Manage Settlements Quarterly Release Cycle	45%	45%	5%	5%		$ 2,668	$ 1,201	$ 1,201	$ 133	$ 133	$ -
417	Perform Market Report	80%	20%				$ 560	$ 448	$ 112	$ -	$ -	$ -
418	Manage Good Faith Negotiation Requests	100%					$ 17	$ 17	$ -	$ -	$ -	$ -
419	Manage Price Corrections	50%	40%	10%			$ 1,595	$ 797	$ 638	$ 160	$ -	$ -
	Total MOS						**$ 9,884**	**$ 5,790**	**$ 3,322**	**$ 473**	**$ 251**	**$ 48**
							-					
80008	**Plan & Manage Business (PMB)**											
451	Manage Financial Planning					100%	$ 1,126	$ -	$ -	$ -	$ -	$ 1,126
452	Manage Application, Environment & Infrastructure					100%	$ 2,252	$ -	$ -	$ -	$ -	$ 2,252
453	Manage Resource Allocation					100%	$ 113	$ -	$ -	$ -	$ -	$ 113
454	Project Portfolio Management					100%	$ 3,722	$ -	$ -	$ -	$ -	$ 3,722
455	Manage Technology Collaboration (Internal)	100%					$ 9,563	$ 9,563	$ -	$ -	$ -	$ -
457	Manage Annual Functional Release Lifecycle					100%	$ 173	$ -	$ -	$ -	$ -	$ 173
459	Enterprise Risk Management					100%	$ 155	$ -	$ -	$ -	$ -	$ 155
461	Perform Board Processes					100%	$ 1,996	$ -	$ -	$ -	$ -	$ 1,996
462	Manage Technology Collaboration (External)	100%					$ 427	$ 427	$ -	$ -	$ -	$ -
466	Manage Corporate Goal Alignment and Reporting					100%	$ 1,136	$ -	$ -	$ -	$ -	$ 1,136
469	Manage Project & Effort Lifecycles					100%	$ 9,226	$ -	$ -	$ -	$ -	$ 9,226
	Total PMB						**$ 29,889**	**$ 9,990**	**$ -**	**$ -**	**$ -**	**$ 19,899**

ABC Direct Operating Activities		GMC						GMC					
Code	ABC Level 2 Activities	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect	Budget	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect
		cost category % allocation					*budget allocations (amounts in thousands)*					
80009	**Support Business Services (SBS)**											
501	Manage Monthly Financial Cycle					100%	$ 749	$ -	$ -	$ -	$ -	$ 749
502	Invest Corporate Funds					100%	$ 450	$ -	$ -	$ -	$ -	$ 450
503	Manage Financial Reporting					100%	$ 553	$ -	$ -	$ -	$ -	$ 553
504	IT Application, System, & Non-Production Support	80%	15%		5%		$ 18,437	$ 14,749	$ 2,766	$ -	$ 922	$ -
505	IT Asset Management					100%	$ 787	$ -	$ -	$ -	$ -	$ 787
508	IT Configuration, Change & Release Management					100%	$ 1,376	$ -	$ -	$ -	$ -	$ 1,376
510	IT Event Management					100%	$ 934	$ -	$ -	$ -	$ -	$ 934
511	IT Incident Management	60%	30%	5%	5%		$ 5,821	$ 3,493	$ 1,746	$ 291	$ 291	$ -
512	IT Information Security Management					100%	$ 1,357	$ -	$ -	$ -	$ -	$ 1,357
513	IT Problem & Risk Lifecycle Management	60%	30%	5%	5%		$ 633	$ 379	$ 190	$ 32	$ 32	$ -
519	Provision and Manage Access					100%	$ 197	$ -	$ -	$ -	$ -	$ 197
520	Manage Facilities, Physical Security, & Safety					100%	$ 2,775	$ -	$ -	$ -	$ -	$ 2,775
521	Facilities Incident Management					100%	$ 5	$ -	$ -	$ -	$ -	$ 5
522	Corporate Incident Response & Disaster Recovery					100%	$ 198	$ -	$ -	$ -	$ -	$ 198
523	Manage Business Continuity Plan					100%	$ 1,362	$ -	$ -	$ -	$ -	$ 1,362
528	Procurement & Vendor Management					100%	$ 855	$ -	$ -	$ -	$ -	$ 855
529	Provide Legal Advice					100%	$ 6,973	$ -	$ -	$ -	$ -	$ 6,973
533	Manage Evidence Review / Audit					100%	$ 425	$ -	$ -	$ -	$ -	$ 425
535	Tariff Controls Monitoring					100%	$ 1,123	$ -	$ -	$ -	$ -	$ 1,123
536	Manage Internal Audit					100%	$ 2,209	$ -	$ -	$ -	$ -	$ 2,209
537	Monitor Markets	80%		20%			$ 3,635	$ 2,908	$ -	$ 727	$ -	$ -
538	Manage Tariff Rules Violations					100%	$ 168	$ -	$ -	$ -	$ -	$ 168
543	Market Design					100%	$ 540	$ -	$ -	$ -	$ -	$ 540
544	Maintain DMM Database					100%	$ 663	$ -	$ -	$ -	$ -	$ 663
545	Manage Business Process & Continuous Improvement					100%	$ 615	$ -	$ -	$ -	$ -	$ 615
546	Records Management					100%	$ 490	$ -	$ -	$ -	$ -	$ 490
548	Manage Compliance Standards Development and Implementation					100%	$ 57	$ -	$ -	$ -	$ -	$ 57
549	Manage Compliance Investigations					100%	$ 333	$ -	$ -	$ -	$ -	$ 333
550	Manage NERC Compliance					100%	$ 3,611	$ -	$ -	$ -	$ -	$ 3,611
552	IT Reports & Documentation					100%	$ 55	$ -	$ -	$ -	$ -	$ 55
553	Manage Vulnerability Remediation					100%	$ -	$ -	$ -	$ -	$ -	$ -
555	Manage Root Cause Analysis					100%	$ 501	$ -	$ -	$ -	$ -	$ 501
	Total SBS						**$ 57,887**	**$ 21,529**	**$ 4,702**	**$ 1,050**	**$ 1,245**	**$ 29,361**

ABC Direct Operating Activities														
		GMC						GMC						
Code	ABC Level 2 Activities	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect	Budget	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect
		cost category % allocation					*budget allocations (amounts in thousands)*					
80010	**Support Customers & Stakeholders (SCS)**											
539	Representing the ISO					100%	$ 2,448	$ -	$ -	$ -	$ -	$ 2,448
601	Manage Client Inquiries	80%	10%	5%	5%		$ 3,757	$ 3,005	$ 376	$ 188	$ 188	$ -
602	Account Management	80%	10%	5%	5%		$ 885	$ 708	$ 89	$ 44	$ 44	$ -
603	Manage Stakeholder Processes	80%	10%	5%	5%		$ 2,239	$ 1,791	$ 224	$ 112	$ 112	$ -
609	Manage External Affairs					100%	$ 6,691	$ -	$ -	$ -	$ -	$ 6,691
610	Manage Communications & Public Relations					100%	$ 2,592	$ -	$ -	$ -	$ -	$ 2,592
	Total SCS						**$ 18,612**	**$ 5,504**	**$ 689**	**$ 344**	**$ 344**	**$ 11,731**
							-					
	Total Direct O&M						**$ 212,322**	**$ 68,394**	**$ 68,375**	**$ 3,382**	**$ 10,191**	**$ 61,980**
	Direct O&M %						**100%**	**32%**	**32%**	**2%**	**5%**	**29%**

ABC INDIRECT ACTIVITIES

The same process yielded the following percentages for the indirect activities.

Table 19 — Allocation of Function Hours to Indirect Operating Activities

		Allocation of Hours By Function		
ABC Process Code	Level 1 ABC Activity	Corporate Services	Operational Services	Total
Indirect Operating Costs				
80003	Manage Human Capabilities	98%	2%	100%

These costs were inputs into the allocation matrix shown in *Table 7 — Mapping of ABC Indirect Activities to Cost Categories* — to get the costs to the cost categories.

Table 20 — Allocation of Function Costs to Indirect Operating Activities

		Allocation of Costs By Function ($ in thousands)		
ABC Process Code	Level 1 ABC Activity	Corporate Services	Operational Services	Total
Indirect Operating Costs				
80003	Manage Human Capabilities	$ 6,964	$ 93	$ 7,057

For indirect activities, the costs were aggregated and allocated as shown in *Table 7 — Mapping of ABC Indirect Activities to Cost Categories.*

Table 21 — Allocation of ABC Indirect Activity Costs to Cost Categories

Indirect ABC Costs	GMC						GMC				
Component	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect	Budget	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect
	cost category % allocation					*budget allocations (amounts in thousands)*					
ABC Indirect Costs											
80003: Manage Human Capabilities (MHC)					100%	$ 7,057	$ -	$ -	$ -	$ -	$ 7,057
Total ABC Indirect Costs						**$ 7,057**	**$ -**	**$ -**	**$ -**		**$ 7,057**

Step 3: Allocating Remaining Revenue Requirement Components to Cost Categories

DEBT SERVICE AND CASH FUNDED CAPITAL

The allocation of costs is based on the percentage allocation in *Table 8 — Mapping of Debt Service and Capital to Cost Categories.*

Table 22 — Allocation of Debt Service and Cash Funded Capital to Cost Categories

Debt Service Bonds and Cash Funded Capital	GMC						GMC					
Component	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect	Budget	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect
	cost category % allocation					*budget allocations (amounts in thousands)*					
Debt Service Bonds					100%	$ 14,685	$ -	$ -	$ -	$ -	$ 14,685
Cash Funded Capital					100%	$ 15,000	$ -	$ -	$ -	$ -	$ 15,000

OTHER REVENUE

The components of other revenue were reviewed and all revenues allocated pursuant to *Table 9 — Mapping of Other Revenue to Cost Categories.*

Table 23 — Allocation of Other Revenue to Cost Categories

Other Costs and Revenue	GMC						GMC				
Component	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect	Budget	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect
	cost category % allocation					*budget allocations (amounts in thousands)*					
Other Costs and Revenue											
Energy Imbalance Market Administration Charges					100%	$ 14,100	$ -	$ -	$ -	$ -	$ 14,100
Nodal Pricing Model Fee	50%	50%				$ 8,400	$ 4,200	$ 4,200	$ -	$ -	$ -
Intermittent Resource Forecasting Fees	80%	15%		5%		$ 5,500	$ 4,400	$ 825	$ -	$ 275	$ -
Interest Earnings					100%	$ 3,392	$ -	$ -	$ -	$ -	$ 3,392
Generator Interconnection Project Fees and Application Fees		100%				$ 2,000	$ -	$ 2,000	$ -	$ -	$ -
HANA Administrative Fees*				100%		$ 1,070	$ -	$ -	$ -	$ 1,070	$ -
California-Oregon Intertie (COI) Path Operator Fees		100%				$ 700	$ -	$ 700	$ -	$ -	$ -
Metered Sub-Station Penalties					100%	$ 440	$ -	$ -	$ -	$ -	$ 440
SC Application Fees					100%	$ 290	$ -	$ -	$ -	$ -	$ 290
Planning Coordinator Fees		100%				$ 110	$ -	$ 110	$ -	$ -	$ -
CRR Application Fees					100%	$ 60	$ -	$ -	$ -	$ -	$ 60
Sub-Total (without RC Funding Requirement)						$ 36,062	$ 8,600	$ 7,835	$ -	$ 1,345	$ 18,282
Reliability Coordinator Funding Requirement				100%		$ 18,618	$ -	$ -	$ -	$ 18,618	$ -
Total Other Costs and Revenue						**$ 54,680**	**$ 8,600**	**$ 7,835**	**$ -**	**$ 19,963**	**$ 18,282**

OPERATING COST RESERVE ADJUSMENT

The components of the operating cost reserve adjustment were reviewed and allocated pursuant to *Table 10 — Mapping of Operating Cost Reserve Adjustment to Cost Categories.*

Table 24 — Allocation of Operating Cost Reserve Adjustment to Cost Categories

Operating Costs Reserve Adjustment	GMC						GMC				
Component	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect	Budget	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect
	cost category % allocation					*budget allocations (amounts in thousands)*					
Operating Cost Reserve Adjustment											
Change in 15% Operating Cost Reserve					100%	$ (2,035)	$ -	$ -	$ -	$ -	$ (2,035)
25% Debt Service Reserve for Bonds					100%	$ 3,345	$ -	$ -	$ -	$ -	$ 3,345
Revenue Budget to Actual Delta					100%	$ 8,338	$ -	$ -	$ -	$ -	$ 8,338
Expense Budget to Actual Delta					100%	$ 3,845	$ -	$ -	$ -	$ -	$ 3,845
Total Operating Cost Reserve Adjustment						**$ 13,493**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 13,493**

Step 4: Aggregating Revenue Requirement into Cost Categories

The individual revenue requirements were aggregated and indirect costs allocated based on total direct costs.

The Reliability Coordinator costs, which represent 8% of revenue requirement prior to the RC Funding Requirement adjustment, were offset by the RC Funding Requirement. The remaining balance represents the GMC revenue requirement to be collected through the GMC rates and fees.

Table 25 — Allocation of Revenue Requirement to Cost Categories

Modified Revenue Requirement		GMC				
Component	Budget	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect
	budget allocations (amounts in thousands)					
Direct Costs	$ 212,322	$ 68,394	$ 68,375	$ 3,382	$ 10,191	$ 61,980
Indirect Costs	$ 7,057	$ -	$ -	$ -	$ -	$ 7,057
Non-ABC Costs	$ 39,043	$ 2,063	$ 644	$ 50	$ 1,645	$ 34,641
Total O&M	**$ 258,422**	**$ 70,457**	**$ 69,019**	**$ 3,432**	**$ 11,836**	**$ 103,678**
Debt Service	$ 14,685	$ -	$ -	$ -	$ -	$ 14,685
Cash Funded Capital	$ 15,000	$ -	$ -	$ -	$ -	$ 15,000
Total Debt Service and Capital	**$ 29,685**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 29,685**
Other Costs and Revenues (without RC Funding Requirement)	$ (36,062)	$ (8,600)	$ (7,835)	$ -	$ (1,345)	$ (18,282)
Operating Cost Reserve Adjustment	$ (13,493)	$ -	$ -	$ -	$ -	$ (13,493)
Total Other Revenue and Operating Costs Reserve Adj	**$ (49,555)**	**$ (8,600)**	**$ (7,835)**	**$ -**	**$ (1,345)**	**$ (31,775)**
Revenue Requirement Sub-Total Before Indirect Allocations	**$ 238,552**	**$ 61,857**	**$ 61,184**	**$ 3,432**	**$ 10,491**	**$ 101,588**
Direct Costs %		45%	45%	2%	8%	
Indirect Costs Allocated Based on Direct Cost %		45,715	45,715	2,032	8,127	(101,588)
Revenue Requirement Sub-Total Before RC Funding Requirement Adjustment	**$ 238,552**	**$ 107,572**	**$ 106,899**	**$ 5,464**	**$ 18,618**	**$ -**
RC Funding Percentage		45%	45%	2%	8%	
Reliability Coordinator Funding Requirement	$ (18,618)	$ -	$ -	$ -	$ (18,618)	$ -
GMC Revenue Requirement	**$ 219,934**	**$ 107,572**	**$ 106,899**	**$ 5,464**	**$ -**	**$ -**
Cost Category Percentages for GMC Rates		49%	49%	2%		

Step 5: Calculation of 2022 Rates Using New Cost Category Percentages

Although not necessary to determine the cost category percentages, the rates are needed to determine the WEIM fee. The GMC rates were determined by first estimating fees as shown in the following table.

Table 26 — Estimation of Fee Revenue and Mapping of Fees to Cost Categories

Modified Revenue Requirement						
Fee	Estimated 2022 Volumes	Rate	Budget	Market Services	System Operations	CRRs
			(amounts in thousands)			
Bid Segment Fees	107,379,067	$ 0.0050	$ 537	$ 537		
Inter-SC Trade Fees	2,668,297	$ 1.0000	$ 2,668	$ 2,668		
SCID Fees	439	$ 1,500.0000	$ 7,902	$ 7,902		
TOR Charge	3,142,334	$ 0.3200	$ 1,006		$ 1,006	
CRR Auction Bid Fees	1,054,603	$ 1.0000	$ 1,055			$ 1,055
Total			**$ 13,168**	**$ 11,107**	**$ 1,006**	**$ 1,055**

The estimated fees were then deducted from the revenue requirement resulting in the remaining revenue requirement to be collected. The remaining amount to be collected is divided by the estimated volumes of billing determinants for each cost category to determine the respective rates.

Table 27 — 2022 GMC Rates Using Revised Cost Category Percentages

Modified Revenue Requirement				
		GMC		
Component	Budget	Market Services	System Operations	CRR Services
	budget allocations (amounts in thousands)			
GMC Revenue Requirement	**$ 219,934**	**$ 107,572**	**$ 106,899**	**$ 5,464**
Cost Category Percentages for GMC Rates		49%	49%	2%
Less Fees				
Bid Segment Fees	$ (537)	$ (537)	$ -	$ -
Inter-SC Trade Fees	$ (2,668)	$ (2,668)	$ -	$ -
SCID Charge	$ (7,902)	$ (7,902)	$ -	$ -
TOR Charge	$ (1,006)	$ -	$ (1,006)	$ -
CRR Auction Bid Fees	$ (1,055)	$ -	$ -	$ (1,055)
Total Fees	**$ (13,168)**	**$ (11,107)**	**$ (1,006)**	**$ (1,055)**
Remaining Revenue Requirement to Collect	**$ 206,766**	**$ 96,465**	**$ 105,893**	**$ 4,409**
Estimated Volumes				
Estimated Volumes		533,233	440,760	420,133
		-		-
Total Estimated Volumes (GWh)		**533,233**	**440,760**	**420,133**
2022 Rates/MWh Using Revised Percentages		**$ 0.1809**	**$ 0.2403**	**$ 0.0105**

Summary of GMC Cost Category Percentage Changes

The following table shows the results of the current Cost-of-Service analysis compared to the previous analysis, which indicates there is no percentage shift of resources (time or dollars) in the Market Services, System Operations, or the CRR Services cost categories percentages.

Table 28 — Summary of GMC Cost Category Percentages and Costs

Cost Category Percentages and Costs *($$ in thousands)*	2019		2022 Modified for 2024	
	$$	%	$$	%
Market Services	$ 86,800	49%	$ 107,572	49%
System Operations	$ 88,061	49%	$ 106,899	49%
CRR Services	$ 3,965	2%	$ 5,464	2%
Total	**$ 178,826**	**100%**	**$ 219,934**	**100%**

The following table shows the results of the breakout of costs by direct and indirect compared to th4e previous analysis.

Table 29 — Summary of Direct and Indirect Costs

Direct Costs vs. Indirect Costs History *($$ in thousands)*	2019		2022 Modified for 2024	
	$$	%	$$	%
Direct Costs	$ 89,555	50%	$ 126,473	58%
Indirect Costs	$ 89,271	50%	$ 93,461	42%
Total	**$ 178,826**	**100%**	**$ 219,934**	**100%**

Bifurcation of the System Operations Charge

The CAISO is proposing to bifurcate its System Operations Charge to a System Operations Real-Time Dispatch Charge and a System Operations Balance Authority Area Services Charge effective January 1, 2026. As the bifurcation of the System Operations Charge is already part of the WEIM Administrative Charge calculations, this proposal will simplify the process by removing a step in the charge calculation process and provide for greater

granularity in the calculations. In addition, the new Systems Operations Real-Time Dispatch Charge will supersede the WEIM System Operations Charge and the recently proposed EDAM Systems Operations Charge.

The Systems Operations Real-Time Dispatch Charge will represent the costs to support real-time dispatch services that the CAISO offers to its BAA customers as well as to its WEIM and EDAM customers; and it applies to metered flows in MWh of supply and demand. The calculation for how much to collect of the System Operations Real-Time Dispatch portion of the annual GMC Revenue Requirement will be based on the latest Cost-of-Service study results. The GMC Revenue Requirement will be multiplied by the latest study's System Operations Real-Time Dispatch cost category percentage to determine the cost to collect. To determine the price per MWh, the cost will be divided by the projected total generation, import, load and export (gross meter) MWh volumes; total volumes include the CAISO BAA, WEIM, and EDAM participants.

The System Operations Balancing Authority Area Services Charge will represent the costs to support services within the CAISO BAA such as transmission planning, summer readiness, and planning coordinator. The calculation for how much to collect of the System Operations Balancing Authority Area portion of the annual GMC Revenue Requirement will be based on the latest Cost-of-Service study results. The GMC Revenue Requirement will be multiplied by the latest study's System Operations Balancing Authority Area cost category percentage to determine the cost to collect. To determine the price per MWh, the cost will be divided by the projected total generation, import, load and export (gross meter) MWh volumes.

Reliability Coordinator Services

In November 2018, FERC approved the rates, terms, and conditions for the CAISO Reliability Coordinator services with operations beginning in 2019. Most of the process and tasks necessary to support the RC services were already identified in the CAISO's ABC process and task codes; however, they were not directly identified as a RC Services function. To address this gap, beginning with the 2020 Cost-of-Service study, CAISO mapped the tasks identified as contributing to RC services to a new cost category, Reliability Coordinator, by means of percentage allocation. This approach allows the CAISO to leverage against the stability of its annual revenue requirement to develop an annual RC Funding Requirement thus benefiting both RC and existing GMC customers.

By mapping the tasks to the RC cost category, the CAISO is able to calculate the RC funding percentage. This represents the direct and indirect time and expense necessary for the CAISO to perform its RC services and functions. The RC funding percentage is used similarly to the GMC cost category percentages, as the RC funding percentage is multiplied against the revenue requirement to determine the RC Funding Requirement. The RC Funding Requirement is then divided by the reported MWh to determine the RC rate/MWh.

Table 30 –– Allocation of Revenue Requirement to RC Cost Category

Modified Revenue Requirement						
		GMC				
Component	Budget	Market Services	System Operations	CRR Services	Reliability Coordinator	Indirect
		budget allocations (amounts in thousands)				
Direct Costs	$ 212,322	$ 68,394	$ 68,375	$ 3,382	$ 10,191	$ 61,980
Indirect Costs	$ 7,057	$ -	$ -	$ -	$ -	$ 7,057
Non-ABC Costs	$ 39,043	$ 2,063	$ 644	$ 50	$ 1,645	$ 34,641
Total O&M	**$ 258,422**	**$ 70,457**	**$ 69,019**	**$ 3,432**	**$ 11,836**	**$ 103,678**
O&M Direct %		46%	45%	2%	8%	
Debt Service	$ 14,685	$ -	$ -	$ -	$ -	$ 14,685
Cash Funded Capital	$ 15,000	$ -	$ -	$ -	$ -	$ 15,000
Total Debt Service and Capital	**$ 29,685**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 29,685**
Other Costs and Revenues (without RC Funding Requirement)	$ (36,062)	$ (8,600)	$ (7,835)	$ -	$ (1,345)	$ (18,282)
Operating Cost Reserve Adjustment	$ (13,493)	$ -	$ -	$ -	$ -	$ (13,493)
Total Other Revenue and Operating Costs Reserve Adj	**$ (49,555)**	**$ (8,600)**	**$ (7,835)**	**$ -**	**$ (1,345)**	**$ (31,775)**
Revenue Requirement Sub-Total Before Indirect Allocations	**$ 238,552**	**$ 61,857**	**$ 61,184**	**$ 3,432**	**$ 10,491**	**$ 101,588**
Direct Costs %		45%	45%	2%	8%	
Indirect Costs Allocated Based on Direct Cost %		45,715	45,715	2,032	8,127	(101,588)
Revenue Requirement Sub-Total Before RC Funding Requirement Adjustment	**$ 238,552**	**$ 107,572**	**$ 106,899**	**$ 5,464**	**$ 18,618**	**$ -**
RC Funding Percentage		45%	45%	2%	8%	
Reliability Coordinator Funding Requirement	$ (18,618)	$ -	$ -	$ -	$ (18,618)	$ -
GMC Revenue Requirement	**$ 219,934**	**$ 107,572**	**$ 106,899**	**$ 5,464**	**$ -**	**$ -**
Cost Category Percentages for GMC Rates		49%	49%	2%		

The mapping of RC services is included in the aforementioned sections' tables. The culmination of the mapping resulted in a RC funding percentage of 8%, a slight reduction as a result of an increase in resources supporting efforts in the other cost categories.

Table 31 – Summary of RC Funding Percentage Changes

Cost Category	2019 Study Effective 2021 GMC	2022 Study Effective 2024 GMC	Change from Prior
Reliability Coordinator Services	9%	8%	-1%

Western Energy Imbalance Market

The WEIM provides entities with the opportunity to leverage the CAISO's existing real-time market platform to facilitate five-minute economic dispatch. The WEIM provides reliability and economic benefits to existing market participants and new WEIM entities by utilizing the CAISO's 15-minute market and real-time dispatch. The WEIM relies on the CAISO's existing real-time portion of the Market Services activities and System Operations activities.

Conceptually, WEIM participants will pay the same rate as existing customers but only for the real-time market and real-time dispatch activities specifically related to WEIM. To determine the updated WEIM fee, using the 2023 Cost-of-Service study, the CAISO identified and aggregated the real-time activity costs allocated to the two main cost categories – Market Services and System Operations. The CAISO then allocated indirect costs to the categories based on the proportion to direct costs. The respective real-time cost proportions were then applied to the respective rates for Market Services and System Operations.

The costs include the WEIM share of all components of the revenue requirement, as WEIM participants will pay the same rate as existing customers for the real-time activities they are using.

Application of ABC to WEIM Rate Structure

As noted earlier, the ABC analysis disaggregated the CAISO's primary business functions into nine core processes (level 1 activities). Each core activity was then divided into major processes (level 2 activities) which were mapped to the corresponding level 1 activity. The first step was to allocate the two cost category activities to the corresponding real-time components. The Market Services component relates to either the Real-Time Market

or the Day-Ahead Market. The System Operations component relates to either Real-Time Dispatch or Balancing Authority (BA) Services.

Mapping of Cost Categories to WEIM Activities

Market Services' Real-Time Market and System Operations' Real-Time Dispatch activities are mapped to the WEIM rate structure. These activities are defined, linked to specific processes, and measured using the standard percentage allocations presented in *Table 5 – Mapping of ABC Direct Operating Activities to Cost Categories*. If the activity was identified as indirect or the attribute was not distinguishable to any specific category, it was not included in the initial steps of the allocation process but rather allocated at the end of the process based on percentages of direct allocable costs.

MARKET SERVICES

The following mapping only addresses those level 2 activities that are mapped to Market Services, which were then in turn mapped to either the Real-Time Market or the Day-Ahead Market. The direct ABC level 2 activities mapped to market services are taken from *Table 5 – Mapping of ABC Direct Operating Activities to Cost Categories*.

Table 32 — Standard Market Services Split Percentage Allocations

Market Services Split		
Real-Time Market	Day-Ahead Market	Comments
(% of cost to allocate to category)		
100%		Efforts support Real-Time Market functions.
	100%	Efforts support Day-Ahead Market functions.
50%	50%	Efforts support Real-Time Market and Day-Ahead Market functions equally.
80%	20%	Efforts predominately support Real-Time Market functions.
20%	80%	Efforts predominately support Day-Ahead Market functions.

Table 33 — Mapping of Market Services ABC Direct Operating Activities

ABC Direct Operating Activities			Market Services Split		
Code	ABC Level 2 Activities	GMC Market Services	Real-Time Market	Day-Ahead Market	Comments
		cost category % allocation	*category % allocation*		
80001	**Develop Infrastructure (DI)**				
201	Develop and Monitor Regulatory Contract Procedures	95%	50%	50%	Efforts support Real-Time market and Day-Ahead market functions equally.
80002	**Develop Markets (DM)**				
229	Develop State / Federal Regulatory Policy	40%	50%	50%	Efforts support Real-Time market and Day-Ahead market functions equally.
230	BPM Change Management	80%	50%	50%	Efforts support Real-Time market and Day-Ahead market functions equally.
231	Develop Infrastructure Policy	40%	50%	50%	Efforts support Real-Time market and Day-Ahead market functions equally.
232	Perform Market Analysis	80%	80%	20%	Efforts predominately support Real-Time market functions.
234	Manage Regulatory Contract Negotiations	95%	50%	50%	Efforts support Real-Time market and Day-Ahead market functions equally.
80004	**Manage Market & Reliability Data & Modeling (MMR)**				
301	Manage Full Network Model Maintenance	45%	50%	50%	Efforts support Real-Time market and Day-Ahead market functions equally.
304	EMAA Telemetry	50%	100%		Efforts support Real-Time market functions.
308	Manage Credit & Collateral	40%	50%	50%	Efforts support Real-Time market and Day-Ahead market functions equally.
309	Resource Management	50%	80%	20%	Efforts predominately support Real-Time market functions.
320	Provide Stakeholder Training	60%	50%	50%	Efforts support Real-Time market and Day-Ahead market functions equally.
321	Schedule Coordinator Management	45%	80%	20%	Efforts predominately support Real-Time market functions.
322	Register, Modify and Terminate PDR Resource	100%	50%	50%	Efforts support Real-Time market and Day-Ahead market functions equally.
323	Calculate & Monitor Energy Costs & Indices	60%	80%	20%	Efforts predominately support Real-Time market functions.
331	Operational Requirements	60%	50%	50%	Efforts support weekly validation of Flex Requirement and daily Regulation Requirement, data validation and analysis, reporting, Tariff control process development, testing and customer support.

ABC Direct Operating Activities		GMC	Market Services Split		
Code	ABC Level 2 Activities	Market Services	Real-Time Market	Day-Ahead Market	Comments
		cost category % allocation	*category % allocation*		
80005	**Manage Market & Grid (MMG)**				
352	Manage Day-Ahead Market Support	95%		100%	Efforts support Day-Ahead market functions.
353	Operations Real-Time Support	80%	100%		Efforts support Real-Time market functions.
355	Outage Model & Management	5%	50%	50%	Efforts support Real-Time market and Day-Ahead market functions equally.
360	Real-Time Operations	20%	100%		Efforts support Real-Time market functions.
362	Manage Operations Engineering Support	15%	50%	50%	Efforts support Real-Time market and Day-Ahead market functions equally.
368	Manage Day-Ahead and Market Operations	100%	50%	50%	Efforts support Real-Time market and Day-Ahead market functions equally.
371	Load Forecast	40%	50%	50%	Efforts support Day-Ahead and Real-Time operational forecast, vendor management, data validation, IT troubleshooting, and customer/market support.
372	Renewable Forecast	50%	50%	50%	Efforts support Eligible Intermittent Resource (EIR) onboarding/registration, configuration, modeling, data validation, Day-Ahead and Real Time operational forecast, vendor management, data validation and IT troubleshooting.
373	Weather Forecast	40%	50%	50%	Efforts support renewables, provide recommendation, data quality and validation, variability assessment, temperature forecast, and summer/winter assessment.
80007	**Manage Operations Support & Settlements (MOS)**				
401	Perform Market Validation	80%	80%	20%	Efforts predominately support Real-Time market functions.
402	Manage Dispute Analysis & Resolution	100%	80%	20%	Efforts predominately support Real-Time market functions.
403	Manage Market Quality System	50%	80%	20%	Efforts predominately support Real-Time market functions.
406	Manage Rules of Conduct				
409	Meter Data Acquisition and Processing	100%	50%	50%	Efforts support Real-Time market and Day-Ahead market functions equally.
411	Manage Market Clearing	45%	50%	50%	Efforts support Real-Time market and Day-Ahead market functions equally.
412	Manage Market Billing & Settlements	45%	80%	20%	Efforts predominately support Real-Time market functions.
414	Manage Settlements Quarterly Release Cycle	45%	80%	20%	Efforts predominately support Real-Time market functions.
417	Perform Market Report	80%	80%	20%	Efforts predominately support Real-Time market functions.
418	Manage Good Faith Negotiation Requests	100%	50%	50%	Efforts support Real-Time market and Day-Ahead market functions equally.
419	Manage Price Corrections	50%	80%	20%	Efforts predominately support Real-Time market functions.

ABC Direct Operating Activities		GMC	Market Services Split		
Code	ABC Level 2 Activities	Market Services	Real-Time Market	Day-Ahead Market	Comments
		cost category % allocation	*category % allocation*		
80008	**Plan & Manage Business (PMB)**				
455	Manage Technology Collaboration (Internal)	100%	80%	20%	Efforts predominately support Real-Time market functions.
462	Manage Technology Collaboration (External)	100%	50%	50%	Efforts support Real-Time market and Day-Ahead market functions equally.
80009	**Support Business Services (SBS)**				
504	IT Application, System, & Non-Production Support	80%	50%	50%	Efforts support Real-Time market and Day-Ahead market functions equally.
511	IT Incident Management	60%	50%	50%	Efforts support Real-Time market and Day-Ahead market functions equally.
513	IT Problem & Risk Lifecycle Management	60%	50%	50%	Efforts support Real-Time market and Day-Ahead market functions equally.
537	Monitor Markets	80%	50%	50%	Efforts support Real-Time market and Day-Ahead market functions equally.
80010	**Support Customers & Stakeholders (SCS)**				
601	Manage Client Inquiries	80%	80%	20%	Efforts predominately support Real-Time market functions.
602	Account Management	80%	80%	20%	Efforts predominately support Real-Time market functions.
603	Manage Stakeholder Processes	80%	20%	80%	Efforts predominately support Day-Ahead market functions.

The market services related non-ABC support costs were mapped from *Table 6 – Mapping of Non-ABC Support Costs to Cost Categories.*

Table 34 — Mapping of Market Services Non-ABC Support Costs

Non-ABC Support Costs	GMC	Market Services Split		
Component	Market Services	Real-Time Market	Day-Ahead Market	Comments
	cost category % allocation	*% of budget allocation*		
Non-ABC Support Costs				
Corporate Services				
WEIM Market Expert	100%	100%		Cost supports Market Services (Real-Time Market).
SSAE 16 Audit	45%	80%	20%	Use Process 80007, Task 412 allocations.
Operations Audit	22%	75%	25%	Use Process 80005 total allocations.
Operational Services				
Intermittent Resource Forecasting Costs	80%	100%		Use Process 80005, Task 353 allocations.
Market Surveillance Committee	80%	80%	20%	Use Process 80002, Task 232 allocations.

Then other revenue mapped to market services from *Table 9 – Mapping of Other Revenue to Cost Categories* were mapped to real-time market and / or day ahead market.

Table 35 — Mapping of Market Services Other Revenue

Other Costs and Revenue	GMC	Market Services Split		
Component	Market Services	Real-Time Market	Day-Ahead Market	Comments
	cost category % allocation	*% of budget allocation*		
Other Costs and Revenue				
Energy Imbalance Market Administration Charges				Attributes are not distinguishable to any specific category.
Nodal Pricing Model Fee	50%	50%	50%	Fee offsets Market Services' (Real-Time and Day-Ahead)
Intermittent Resource Forecasting Fees	80%	100%		Use Process 80005, Task 353 allocations.

Market services fees from *Table 26 – Estimation of Fee Revenue and Mapping of Fees to Cost Categories* are mapped as follows.

Table 36 — Mapping of Market Services Fees

Modified Revenue Requirement		Market Services Split	
Fee	Market Services	Real-Time Market	Day-Ahead Market
	cost category % alloction	*(% of cost to allocate to category)*	
Bid Segment Fees	100%	50%	50%
Inter-SC Trade Fees	100%		100%
SCID Fees	100%	50%	50%

SYSTEM OPERATIONS

The following mapping only addresses those level 2 activities that are mapped to System Operations, which were then in turn mapped to either the Real-Time Dispatch or Balancing Authority Services. The direct ABC level 2 activities mapped to system operations is taken from *Table 5 – Mapping of ABC Direct Operating Activities to Cost Categories*.

Table 37 — Standard System Operations Split Percentage Allocations

System Operations Split		
Real-Time Dispatch	Balancing Authority Services	Comments
(% of cost to allocate to category)		
100%		Efforts support Real-Time Dispatch functions.
	100%	Efforts support Balancing Authority Services functions.
50%	50%	Efforts support Real-Time Dispatch and Balancing Authority Services functions equally.
80%	20%	Efforts predominately support Real-Time Dispatch functions.
20%	80%	Efforts predominately support Balancing Authority Services functions.

Table 38 — Mapping of System Operations ABC Direct Operating Activities

ABC Direct Operating Activities		GMC	System Operations Split		
Code	ABC Level 2 Activities	System Operations	Real-Time Dispatch	BA Services	Comments
		cost category % allocation	*category % allocation*		
80001	**Develop Infrastructure (DI)**				
202	Manage Generator Interconnection Agreements	100%		100%	Efforts support balancing authority functions.
203	Manage Generator Interconnection Process	100%		100%	Efforts support balancing authority functions.
204	Manage Long Term Transmission Planning	100%		100%	Efforts support balancing authority functions.
205	Manage New Transmission Resources	95%		100%	Efforts support balancing authority functions.
206	Manage Transmission Maintenance Standards	100%		100%	Efforts support balancing authority functions.
207	Manage Load Resource Data	100%		100%	Efforts support balancing authority functions.
208	Seasonal Assessment	100%		100%	Efforts support balancing authority functions.
209	Manage Queue Management	100%		100%	Efforts support balancing authority functions.
80002	**Develop Markets (DM)**				
229	Develop State / Federal Regulatory Policy	60%		100%	Efforts support balancing authority functions.
230	BPM Change Management	10%	100%		Efforts support Real-Time dispatch functions.
231	Develop Infrastructure Policy	60%		100%	Efforts support balancing authority functions.
232	Perform Market Analysis	15%	100%		Efforts support Real-Time dispatch functions.
80004	**Manage Market & Reliability Data & Modeling (MMR)**				
301	Manage Full Network Model Maintenance	45%	100%		Efforts support Real-Time dispatch functions as the grid operates in Real-Time.
302	Plan & Develop Operations Simulator Training	95%	100%		Efforts support Real-Time dispatch functions as the grid operates in Real-Time.
304	EMAA Telemetry	50%	20%	80%	Efforts predominately support balancing authority functions.
308	Manage Credit & Collateral	40%	50%	50%	Efforts support Real-Time dispatch and balancing authority functions equally.
309	Resource Management	50%	50%	50%	Efforts support Real-Time dispatch and balancing authority functions equally.
310	Manage Reliability Requirements	100%		100%	Efforts support balancing authority functions.
311	Manage Operations Planning	95%	20%	80%	Efforts predominately support balancing authority functions.
312	Manage WECC Studies	100%	20%	80%	Efforts predominately support balancing authority functions.
314	Manage & Facilitate Procedure Maintenance	95%	20%	80%	Efforts predominately support balancing authority functions.
316	Plan & Develop Operations Training	95%	100%		Efforts support Real-Time dispatch functions.
317	Execute & Track Operations Training	95%	100%		Efforts support Real-Time dispatch functions.
320	Provide Stakeholder Training	30%	50%	50%	Efforts support Real-Time dispatch and balancing authority functions equally.
321	Schedule Coordinator Management	45%	20%	80%	Efforts predominately support balancing authority functions.
323	Calculate & Monitor Energy Costs & Indices	35%	100%		Efforts support Real-Time dispatch functions.
331	Operational Requirements	40%	50%	50%	Efforts support weekly validation of Flex Requirement and daily Regulation Requirement, data validation and analysis, reporting, Tariff control process development, testing and customer support.

ABC Direct Operating Activities		GMC	System Operations Split		
Code	ABC Level 2 Activities	System Operations	Real-Time Dispatch	BA Services	Comments
		cost category % allocation	*category % allocation*		
80005	**Manage Market & Grid (MMG)**				
353	Operations Real-Time Support	15%	100%		Efforts support Real-Time dispatch functions.
355	Outage Model & Management	60%	20%	80%	Efforts predominately support balancing authority functions.
360	Real-Time Operations	80%	50%	50%	Efforts support Real-Time dispatch and balancing authority functions equally.
362	Manage Operations Engineering Support	80%	100%		Efforts support Real-Time dispatch functions.
367	Manage Operations Compliance & Event Analysis	50%		100%	Efforts support balancing authority functions.
371	Load Forecast	50%	50%	50%	Efforts support Day-Ahead and Real-Time operational forecast, vendor management, data validation, IT troubleshooting, and customer/market support.
372	Renewable Forecast	50%	80%	20%	Efforts support Eligible Intermittent Resource (EIR) onboarding/registration, configuration, modeling, data validation, Day-Ahead and Real Time operational forecast, vendor management, data validation and IT troubleshooting.
373	Weather Forecast	50%	50%	50%	Efforts support renewables, provide recommendation, data quality and validation, variability assessment, temperature forecast, and summer/winter assessment.
80007	**Manage Operations Support & Settlements (MOS)**				
401	Perform Market Validation	20%	100%		Efforts support Real-Time dispatch functions.
403	Manage Market Quality System	40%	100%		Efforts support Real-Time dispatch functions.
411	Manage Market Clearing	45%	50%	50%	Efforts support Real-Time dispatch and balancing authority functions equally.
412	Manage Market Billing & Settlements	45%	100%		Efforts support Real-Time dispatch functions.
414	Manage Settlements Quarterly Release Cycle	45%	100%		Efforts support Real-Time dispatch functions.
417	Perform Market Report	20%	100%		Efforts support Real-Time dispatch functions.
419	Manage Price Corrections	40%	100%		Efforts support Real-Time dispatch functions.
80009	**Support Business Services (SBS)**				
504	IT Application, System, & Non-Production Support	15%	50%	50%	Efforts support Real-Time dispatch and balancing authority functions equally.
511	IT Incident Management	30%	100%		Efforts support Real-Time dispatch functions.
513	IT Problem & Risk Lifecycle Management	30%	100%		Efforts support Real-Time dispatch functions.
80010	**Support Customers & Stakeholders (SCS)**				
601	Manage Client Inquiries	10%	100%		Efforts support Real-Time dispatch functions.
602	Account Management	10%	100%		Efforts support Real-Time dispatch functions.
603	Manage Stakeholder Processes	10%	100%		Efforts support Real-Time dispatch functions.

The system operations related to non-ABC support costs were mapped from *Table 6 – Mapping of Non-ABC Support Costs to Cost Categories.*

Table 39 — Mapping of System Operations Non-ABC Support Costs

Non-ABC Support Costs	GMC	System Operations Split		
Component	System Operations	Real-Time Dispatch	BA Services	Comments
	cost category % allocation	*% of budget allocation*		
Non-ABC Support Costs				
Corporate Services				
SSAE 16 Audit	45%	100%		Use Process 80007, Task 412 allocations.
Operations Audit	59%	55%	45%	Use Process 80005 total allocations.
Operational Services				
Intermittent Resource Forecasting Costs	15%	100%		Use Process 80005, Task 353 allocations.
Market Surveillance Committee	15%	100%		Use Process 80002, Task 232 allocations.

Then other revenue mapped to system operations from *Table 9 – Mapping of Other Revenue to Cost Categories* were allocated to Real-Time Dispatch and / or Balancing Authority services.

Table 40 — Mapping of System Operations Other Revenue

Other Costs and Revenue	GMC	System Operations Split		
Component	System Operations	Real-Time Dispatch	BA Services	Comments
	cost category % allocation	*% of budget allocation*		
Other Costs and Revenue				
Nodal Pricing Model Fee	50%	100%		Fee offsets Market Services' (Real-Time and Day-Ahead)
Intermittent Resource Forecasting Fees	15%	100%		Use Process 80005, Task 353 allocations.
Generator Interconnection Project Fees and Application Fees	100%		100%	Use Process 80001, Task 203 allocations.
California-Oregon Intertie (COI) Path Operator Fees	100%		100%	Fees offset System Operations costs.
Planning Coordinator Fees	100%		100%	Use Process 80001, Task 204 allocations.

System Operations fees from *Table 26 – Estimation of Fee Revenue and Mapping of Fees to Cost Categories* were mapped as follows.

Table 41 — Mapping of System Operations Fees

Modified Revenue Requirement		System Operations Split		
Fee	System Operations	Real-Time Dispatch	Balancing Authority Services	Comments
	cost category % allocation	*(% of cost to allocate to category)*		
TOR Charge	100%	100%		Real-Time function.
Total				

Costing the Cost Categories to WEIM Activities

The amounts from the 2023 Cost-of-Service study were applied to the Market Services and System Operations categories to derive the direct real-time activity costs.

Table 42 — Components of the 2022 Modified GMC Revenue Requirement

Modified GMC Revenue Requirement				
Component	Budget	Market Services	System Operations	CRR Services
Non-ABC O&M Support Costs	$ 39,043	$ 2,063	$ 644	$ 50
Direct ABC O&M Costs	$ 212,322	$ 68,394	$ 68,375	$ 3,382
Debt Service	$ 14,685	$ -	$ -	$ -
Cash Funded Capital	$ 15,000	$ -	$ -	$ -
Other Costs and Revenues	$ (54,680)	$ (8,600)	$ (7,835)	$ -
Operating Costs Reserve Adjustment	$ (13,493)	$ -	$ -	$ -
Subtotal	**$ 212,877**	**$ 61,857**	**$ 61,184**	**$ 3,432**
Indirect Costs	$ 7,057	$ 45,715	$ 45,715	$ 2,032
GMC Revenue Requirement Before Fees	**$ 219,934**	**$ 107,572**	**$ 106,899**	**$ 5,464**
Less Fees	$ (13,168)	$ (11,107)	$ (1,006)	$ (1,055)
Remaining Revenue Requirement to Collect	**$ 206,766**	**$ 96,465**	**$ 105,893**	**$ 4,409**

Completing the analysis required the following steps:

1. Applying WEIM activity percentages to non-ABC O&M support costs;
2. Applying WEIM activity percentages to ABC direct O&M costs;
3. Applying WEIM activity percentages to other revenue;
4. Aggregating costs and allocate indirect costs to WEIM activities based on percentage of direct costs and allocation of fees to WEIM activities to determine the resulting WEIM activity amounts and percentages; and
5. Applying the WEIM activity percentage to the applicable cost category (Market Services and / or System Operations) to determine the WEIM component.

Step 1: Applying WEIM Activity Percentages to Non-ABC O&M Support Costs

The non-ABC support costs from *Table 13 – Allocation of Non-ABC Support to Cost Categories* were allocated using the percentages shown in *Table 6 - Mapping of Non-ABC Support Costs* above.

Table 43 — Allocation of Market Services Non-ABC Support Costs

Non-ABC Support Costs	GMC	Market Services Split		Market Services Split		
Component	Market Services	Real-Time Market	Day-Ahead Market	Category Budget	Real-Time Market	Day-Ahead Market
	cost category % allocation	*% of budget allocation*		*budget allocations (amounts in thousands)*		
Non-ABC Support Costs						
Corporate Services						
WEIM Market Expert	100%	100%		$ 248	$ 248	$ -
SSAE 16 Audit	45%	80%	20%	$ 289	$ 231	$ 58
Operations Audit	22%	75%	25%	$ 28	$ 21	$ 7
Corporate Services Total				**$ 565**	**$ 500**	**$ 65**
Operational Services						
Intermittent Resource Forecasting Costs	80%	100%		$ 1,215	$ 1,215	$ -
Market Surveillance Committee	80%	80%	20%	$ 283	$ 226	$ 57
Operational Services Total				**$ 1,498**	**$ 1,441**	**$ 57**
Total Non-ABC Support Costs				**$ 2,063**	**$ 1,941**	**$ 122**

Table 44 — Allocation of System Operations Non-ABC Support Costs

Non-ABC Support Costs	GMC	System Operations Split		System Operations Split		
Component	System Operations	Real-Time Dispatch	BA Services	Category Budget	Real-Time Dispatch	BA Services
	cost category % allocation	*% of budget allocation*		*budget allocations (amounts in thousands)*		
Non-ABC Support Costs						
Corporate Services						
SSAE 16 Audit	45%	100%		$ 288	$ 288	$ -
Operations Audit	59%	55%	45%	$ 75	$ 41	$ 34
Corporate Services Total				**$ 363**	**$ 329**	**$ 34**
Operational Services						
Intermittent Resource Forecasting Costs	15%	100%		$ 228	$ 228	$ -
Market Surveillance Committee	15%	100%		$ 53	$ 53	$ -
Operational Services Total				**$ 281**	**$ 281**	**$ -**
Total Non-ABC Support Costs				**$ 644**	**$ 610**	**$ 34**

Step 2: Applying WEIM Activity Percentages to ABC Direct O&M Costs

The ABC direct O&M costs from *Table 18 – Allocation of ABC Direct Operating Activities to Cost Categories* - were allocated using the percentages shown in *Table 5 - Mapping of ABC Direct Operating Activities* above.

Table 45 — Allocation of Market Services ABC Direct Operating Costs

ABC Direct Operating Activities		GMC	Market Services Split		Market Services Split		
Code	ABC Level 2 Activities	Market Services	Real-Time Market	Day-Ahead Market	Category Budget	Real-Time Market	Day-Ahead Market
		cost category % allocation	*category % allocation*		*budget allocations (amounts in thousands)*		
80001	**Develop Infrastructure (DI)**						
201	Develop and Monitor Regulatory Contract Procedures	95%	50%	50%	$ 1,175	$ 588	$ 587
	Total DI				**$ 1,175**	**$ 588**	**$ 587**
80002	**Develop Markets (DM)**						
229	Develop State / Federal Regulatory Policy	40%	50%	50%	$ 110	$ 55	$ 55
230	BPM Change Management	80%	50%	50%	$ 27	$ 14	$ 13
231	Develop Infrastructure Policy	40%	50%	50%	$ 5,291	$ 2,646	$ 2,645
232	Perform Market Analysis	80%	80%	20%	$ 3,013	$ 2,410	$ 603
234	Manage Regulatory Contract Negotiations	95%	50%	50%	$ 460	$ 230	$ 230
	Total DM				**$ 8,901**	**$ 5,355**	**$ 3,546**
80004	**Manage Market & Reliability Data & Modeling (MMR)**						
301	Manage Full Network Model Maintenance	45%	50%	50%	$ 2,474	$ 1,237	$ 1,237
304	EMAA Telemetry	50%	100%		$ 511	$ 511	$ -
308	Manage Credit & Collateral	40%	50%	50%	$ 583	$ 292	$ 291
309	Resource Management	50%	80%	20%	$ 833	$ 666	$ 167
320	Provide Stakeholder Training	60%	50%	50%	$ 896	$ 448	$ 448
321	Schedule Coordinator Management	45%	80%	20%	$ 161	$ 129	$ 32
322	Register, Modify and Terminate PDR Resource	100%	50%	50%	$ 56	$ 28	$ 28
323	Calculate & Monitor Energy Costs & Indices	60%	80%	20%	$ 546	$ 437	$ 109
331	Operational Requirements	60%	50%	50%	$ 116	$ 58	$ 58
	Total MMR				**$ 6,176**	**$ 3,806**	**$ 2,370**

ABC Direct Operating Activities		GMC	Market Services Split		Market Services Split		
Code	ABC Level 2 Activities	Market Services	Real-Time Market	Day-Ahead Market	Category Budget	Real-Time Market	Day-Ahead Market
		cost category % allocation	*category % allocation*		*budget allocations (amounts in thousands)*		
80005	**Manage Market & Grid (MMG)**						
352	Manage Day-Ahead Market Support	95%		100%	$ 351	$ -	$ 351
353	Operations Real-Time Support	80%	100%		$ 678	$ 678	$ -
355	Outage Model & Management	5%	50%	50%	$ 191	$ 96	$ 95
360	Real-Time Operations	20%	100%		$ 4,369	$ 4,369	$ -
362	Manage Operations Engineering Support	15%	50%	50%	$ 780	$ 390	$ 390
368	Manage Day-Ahead and Market Operations	100%	50%	50%	$ 2,029	$ 1,015	$ 1,014
371	Load Forecast	40%	50%	50%	$ 586	$ 293	$ 293
372	Renewable Forecast	50%	50%	50%	$ 281	$ 141	$ 140
373	Weather Forecast	40%	50%	50%	$ 64	$ 32	$ 32
	Total MMG				**$ 9,329**	**$ 7,014**	**$ 2,315**
	MMG %s				**100%**	**75%**	**25%**
80007	**Manage Operations Support & Settlements (MOS)**						
401	Perform Market Validation	80%	80%	20%	$ 226	$ 181	$ 45
402	Manage Dispute Analysis & Resolution	100%	80%	20%	$ 1,437	$ 1,150	$ 287
403	Manage Market Quality System	50%	80%	20%	$ 308	$ 246	$ 62
409	Meter Data Acquisition and Processing	100%	50%	50%	$ 287	$ 144	$ 143
411	Manage Market Clearing	45%	50%	50%	$ 76	$ 38	$ 38
412	Manage Market Billing & Settlements	45%	80%	20%	$ 993	$ 794	$ 199
414	Manage Settlements Quarterly Release Cycle	45%	80%	20%	$ 1,201	$ 961	$ 240
417	Perform Market Report	80%	80%	20%	$ 448	$ 358	$ 90
418	Manage Good Faith Negotiation Requests	100%	50%	50%	$ 17	$ 9	$ 8
419	Manage Price Corrections	50%	80%	20%	$ 797	$ 638	$ 159
	Total MOS				**$ 5,790**	**$ 4,519**	**$ 1,271**

ABC Direct Operating Activities		GMC	Market Services Split		Market Services Split		
Code	ABC Level 2 Activities	Market Services	Real-Time Market	Day-Ahead Market	Category Budget	Real-Time Market	Day-Ahead Market
		cost category % allocation	*category % allocation*		*budget allocations (amounts in thousands)*		
80008	**Plan & Manage Business (PMB)**						
455	Manage Technology Collaboration (Internal)	100%	80%	20%	$ 9,563	$ 7,650	$ 1,913
462	Manage Technology Collaboration (External)	100%	50%	50%	$ 427	$ 214	$ 213
80009	**Support Business Services (SBS)**						
504	IT Application, System, & Non-Production Support	80%	50%	50%	$ 14,749	$ 7,375	$ 7,374
511	IT Incident Management	60%	50%	50%	$ 3,493	$ 1,747	$ 1,746
513	IT Problem & Risk Lifecycle Management	60%	50%	50%	$ 379	$ 190	$ 189
537	Monitor Markets	80%	50%	50%	$ 2,908	$ 1,454	$ 1,454
80010	**Support Customers & Stakeholders (SCS)**						
601	Manage Client Inquiries	80%	80%	20%	$ 3,005	$ 2,404	$ 601
602	Account Management	80%	80%	20%	$ 708	$ 566	$ 142
603	Manage Stakeholder Processes	80%	20%	80%	$ 1,791	$ 358	$ 1,433
609	Manage External Affairs				$ -	$ -	$ -
610	Manage Communications & Public Relations				$ -	$ -	$ -
	Total SCS				**$ 5,504**	**$ 3,328**	**$ 2,176**
	Total Direct O&M				**$ 68,394**	**$ 43,240**	**$ 25,154**
	Direct O&M %				**100%**	**63%**	**37%**

Table 46 — Allocation of System Operations ABC Direct Operating Costs

ABC Direct Operating Activities		GMC	System Operations Split		System Operations Split		
Code	ABC Level 2 Activities	System Operations	Real-Time Dispatch	BA Services	Category Budget	Real-Time Dispatch	BA Services
		cost category % allocation	*category % allocation*		*budget allocations (amounts in thousands)*		
80001	**Develop Infrastructure (DI)**						
202	Manage Generator Interconnection Agreements	100%		100%	$ 419	$ -	$ 419
203	Manage Generator Interconnection Process	100%		100%	$ 4,190	$ -	$ 4,190
204	Manage Long Term Transmission Planning	100%		100%	$ 5,985	$ -	$ 5,985
205	Manage New Transmission Resources	95%		100%	$ 658	$ -	$ 658
206	Manage Transmission Maintenance Standards	100%		100%	$ 328	$ -	$ 328
207	Manage Load Resource Data	100%		100%	$ 308	$ -	$ 308
208	Seasonal Assessment	100%		100%	$ 261	$ -	$ 261
209	Manage Queue Management	100%		100%	$ 605	$ -	$ 605
	Total DI				**$ 12,754**	**$ -**	**$ 12,754**
80002	**Develop Markets (DM)**						
229	Develop State / Federal Regulatory Policy	60%		100%	$ 165	$ -	$ 165
230	BPM Change Management	10%	100%		$ 3	$ 3	$ -
231	Develop Infrastructure Policy	60%		100%	$ 7,936	$ -	$ 7,936
232	Perform Market Analysis	15%	100%		$ 565	$ 565	$ -
	Total DM				**$ 8,669**	**$ 568**	**$ 8,101**
80004	**Manage Market & Reliability Data & Modeling (MMR)**						
301	Manage Full Network Model Maintenance	45%	100%		$ 2,474	$ 2,474	$ -
302	Plan & Develop Operations Simulator Training	95%	100%		$ 366	$ 366	$ -
304	EMAA Telemetry	50%	20%	80%	$ 511	$ 102	$ 409
308	Manage Credit & Collateral	40%	50%	50%	$ 584	$ 292	$ 292
309	Resource Management	50%	50%	50%	$ 834	$ 417	$ 417
310	Manage Reliability Requirements	100%		100%	$ 1,098	$ -	$ 1,098
311	Manage Operations Planning	95%	20%	80%	$ 1,697	$ 339	$ 1,358
312	Manage WECC Studies	100%	20%	80%	$ 130	$ 26	$ 104
314	Manage & Facilitate Procedure Maintenance	95%	20%	80%	$ 226	$ 45	$ 181
316	Plan & Develop Operations Training	95%	100%		$ 2,653	$ 2,653	$ -
317	Execute & Track Operations Training	95%	100%		$ 1,191	$ 1,191	$ -
320	Provide Stakeholder Training	30%	50%	50%	$ 449	$ 225	$ 224
321	Schedule Coordinator Management	45%	20%	80%	$ 161	$ 32	$ 129
323	Calculate & Monitor Energy Costs & Indices	35%	100%		$ 319	$ 319	$ -
331	Operational Requirements	40%	50%	50%	$ 77	$ 39	$ 38
	Total MMR				**$ 12,770**	**$ 8,520**	**$ 4,250**

ABC Direct Operating Activities		GMC	System Operations Split		System Operations Split		
Code	ABC Level 2 Activities	System Operations	Real-Time Dispatch	BA Services	Category Budget	Real-Time Dispatch	BA Services
		cost category % allocation	*category % allocation*		*budget allocations (amounts in thousands)*		
80005	**Manage Market & Grid (MMG)**						
353	Operations Real-Time Support	15%	100%		$ 127	$ 127	$ -
355	Outage Model & Management	60%	20%	80%	$ 2,290	$ 458	$ 1,832
360	Real-Time Operations	80%	50%	50%	$ 17,476	$ 8,738	$ 8,738
362	Manage Operations Engineering Support	80%	100%		$ 4,161	$ 4,161	$ -
367	Manage Operations Compliance & Event Analysis	50%		100%	$ 321	$ -	$ 321
371	Load Forecast	50%	50%	50%	$ 733	$ 367	$ 366
372	Renewable Forecast	50%	80%	20%	$ 282	$ 226	$ 56
373	Weather Forecast	50%	50%	50%	$ 79	$ 40	$ 39
80007	**Manage Operations Support & Settlements (MOS)**						
401	Perform Market Validation	20%	100%		$ 57	$ 57	$ -
403	Manage Market Quality System	40%	100%		$ 247	$ 247	$ -
411	Manage Market Clearing	45%	50%	50%	$ 75	$ 38	$ 37
412	Manage Market Billing & Settlements	45%	100%		$ 992	$ 992	$ -
414	Manage Settlements Quarterly Release Cycle	45%	100%		$ 1,201	$ 1,201	$ -
417	Perform Market Report	20%	100%		$ 112	$ 112	$ -
419	Manage Price Corrections	40%	100%		$ 638	$ 638	$ -
80009	**Support Business Services (SBS)**						
504	IT Application, System, & Non-Production Support	15%	50%	50%	$ 2,766	$ 1,383	$ 1,383
511	IT Incident Management	30%	100%		$ 1,746	$ 1,746	$ -
513	IT Problem & Risk Lifecycle Management	30%	100%		$ 190	$ 190	$ -
80010	**Support Customers & Stakeholders (SCS)**						
601	Manage Client Inquiries	10%	100%		$ 376	$ 376	$ -
602	Account Management	10%	100%		$ 89	$ 89	$ -
603	Manage Stakeholder Processes	10%	100%		$ 224	$ 224	$ -
	Total SCS				**$ 689**	**$ 689**	**$ -**
	Total Direct O&M				**$ 68,375**	**$ 30,498**	**$ 37,877**
	Direct O&M %				**100%**	**45%**	**55%**

Step 3: Allocating the Remaining Revenue Requirement Components

The other revenue from *Table 23 – Allocation of Other Revenue to Cost Categories* - were allocated using the percentages shown in the *Table 9 – Mapping of Other Revenue* above.

Table 47 — Allocation of Market Services Other Revenue

Other Costs and Revenue	GMC	Market Services Split		Market Services Split		
Component	Market Services	Real-Time Market	Day-Ahead Market	Category Budget	Real-Time Market	Day-Ahead Market
	cost category % allocation	*% of budget allocation*		*budget allocations (amounts in thousands)*		
Other Costs and Revenue						
Nodal Pricing Model Fee	50%	50%	50%	$ 4,200	$ 2,100	$ 2,100
Intermittent Resource Forecasting Fees	80%	100%		$ 4,400	$ 4,400	$ -
Total Other Costs and Revenue				**$ 8,600**	**$ 6,500**	**$ 2,100**

Table 48 — Allocation of System Operations Other Revenue

Other Costs and Revenue	GMC	System Operations Split		System Operations Split		
Component	System Operations	Real-Time Dispatch	BA Services	Category Budget	Real-Time Dispatch	BA Services
	cost category % allocation	*% of budget allocation*		*budget allocations (amounts in thousands)*		
Other Costs and Revenue						
Nodal Pricing Model Fee	50%	100%		$ 4,200	$ 4,200	$ -
Intermittent Resource Forecasting Fees	15%	100%		$ 825	$ 825	$ -
Generator Interconnection Project Fees and Application Fees	100%		100%	$ 2,000	$ -	$ 2,000
California-Oregon Intertie (COI) Path Operator Fees	100%		100%	$ 700	$ -	$ 700
Planning Coordinator Fees	100%		100%	$ 110	$ -	$ 110
Total Other Costs and Revenue				**$ 7,835**	**$ 5,025**	**$ 2,810**

Step 4: Aggregating Revenue Requirement into Cost Categories and Allocating Fees

The indirect costs were allocated to the cost categories based on the cost category's total direct costs as illustrated below. As a final step, the fees collected as part of the GMC were deducted from the cost categories portion to collect.

Table 49 — Mapping Revenue Requirement to Cost Categories

Modified GMC Revenue Requirement			Market Services Split				System Operations Split			
Component	Budget		Market Services	Real-Time Market	Day-Ahead Market		System Operations	Real-Time Dispatch	BA Services	
Non-ABC O&M Support Costs	$	39,043	$ 2,063	$ 1,941	$ 122		$ 644	$ 610	$ 34	
Direct ABC O&M Costs	$	212,322	$ 68,394	$ 43,240	$ 25,154		$ 68,375	$ 30,498	$ 37,877	
Debt Service	$	14,685	$ -	$ -	$ -		$ -	$ -	$ -	
Cash Funded Capital	$	15,000	$ -	$ -	$ -		$ -	$ -	$ -	
Other Costs and Revenues	$	(54,680)	$ (8,600)	$ (6,500)	$ (2,100)		$ (7,835)	$ (5,025)	$ (2,810)	
Operating Costs Reserve Adjustment	$	(13,493)	$ -	$ -	$ -		$ -	$ -	$ -	
Subtotal	**$**	**212,877**	**$ 61,857**	**$ 38,681**	**$ 23,176**		**$ 61,184**	**$ 26,083**	**$ 35,101**	
Indirect Costs	$	7,057	$ 45,715	$ 28,587	$ 17,128		$ 45,715	$ 19,488	$ 26,227	
GMC Revenue Requirement Before Fees	**$**	**219,934**	**$ 107,572**	**$ 67,268**	**$ 40,304**		**$ 106,899**	**$ 45,571**	**$ 61,328**	
Less Fees	$	(13,168)	$ (11,107)	$ (4,220)	$ (6,888)		$ (1,006)	$ (1,006)	$ -	
Remaining Revenue Requirement to Collect	**$**	**206,766**	**$ 96,465**	**$ 63,049**	**$ 33,416**		**$ 105,893**	**$ 44,565**	**$ 61,328**	
				65%	**35%**			**42%**	**58%**	

Step 5: Calculation of the WEIM Components of the 2022 Cost Category Rates

The percentages from Table 45 were applied to the cost categories' real-time component's rate from *Table 27 – 2022 GMC Rates Using Revised Cost Category Percentages.*

Table 50 — Calculation of the WEIM Components

Cost Category	Category Net Costs	Pro Forma Rate	EIM Real-Time Activity	EIM Percentage of Costs	EIM Cost of Real-Time Activities	EIM Pro Forma Rate
	($ in thousands)	*($ / MWh)*			*($ in thousands)*	*($ / MWh)*
Market Services	$ 96,465	$ 0.1809	Real-Time Market	65%	$ 63,049	$ 0.1182
System Operations	$ 105,893	$ 0.2403	Real-Time Dispatch	42%	$ 44,565	$ 0.1011

Summary of WEIM Cost Category Percentage Changes

A comparison of the WEIM cost category percentages from the 2020 and 2023 Cost-of-Service studies is highlighted below. The study results indicate a shift of WEIM related resources. The study shows that 2% 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 Nodal Pricing Model revenue offsetting System Operations Real-Time Dispatch costs.

Table 51 — Summary of WEIM Cost Category Percentage Changes

Cost Category	Sub-Category	2019 Study Effective 2021 GMC	2022 Study Effective 2024 GMC	Change from Prior
Market Services	Real-Time Market	63%	65%	2%
	Day-Ahead Market	37%	35%	-2%
System Operations	Real-Time Dispatch	50%	42%	-8%
	Balancing Authority	50%	58%	8%

Supplemental Services

As another focus of the 2023 Cost-of-Service study, the CAISO analyzed the efforts that support other supplemental services. This effort required input from the various groups that support the services, such as from the Contracts, Contract and Model Implementation, Market Services, Operations Planning, Credit, and Customer Service groups.

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 $0.32 per MWh in 2024 and to $0.33 per MWh in 2025 (see Appendix A, Schedule 4 for the 2025 calculation). CAISO does not propose any changes to other supplemental fee amounts.

The revenue collected from the fees offset the costs recovered through either the GMC revenue requirement or the GMC rates.

Table 52 — Supplemental Fees

Fee	Billing Units	Current Fee	Updated Fee eff. 1/1/2024	Updated Fee eff. 1/1/2025
Bid Segment Fee	per bid segment	$ 0.0050	No Change	No Change
Inter SC Trade Fee	per Inter SC Trade	$ 1.0000	No Change	No Change
Scheduling Coordinator ID Fee	per month	$ 1,500	No Change	No Change
TOR Charge	minimum of supply or demand TOR MWh	$ 0.1800	$ 0.3200	$ 0.3300
CRR Bid Fee	number of nominations and bids	$ 1.00	No Change	No Change
Intermittent Resource Forecasting Fee	per MWh	$ 0.1000	No Change	No Change
Scheduling Coordinator Application Fee	per application	$ 7,500	No Change	No Change
CRR Application Fee	per application	$ 5,000	No Change	No Change
HANA Administrative Fee	annual fee	$ 45,000	No Change	No Change
HANA Setup Fee	one time fee	$ 35,000	No Change	No Change

Transmission Ownership Rights

Transmission Ownership Rights (TOR) represent transmission capacity on facilities that are located within the CAISO balancing authority area that are either wholly or partially owned by an entity that is not a participating transmission owner.

The following four services are required for TOR:

1. Real-Time Operations: The CAISO provides support on an emergency basis for flows on TOR, in a manner similar to standby service.
2. Scheduling: The CAISO provides check-outs with neighboring balancing authorities to schedule flows across boundaries.
3. Outage Management: The CAISO provides for the scheduling and coordination of outages across the BA.
4. Settlements: The CAISO utilizes its settlements system and processes to charge TOR fees.

Application of ABC to TOR Charge Structure

TORs utilize the ABC level 2 activities identified in the table below. These activities are all related to system operations as there is no TOR participation in the market and thus market services costs are not applicable.

Table 53 — ABC Direct Operating Activities for TORs

Transmission Ownership Rights (TOR) Charge		
ABC Code	**Task Code**	**ABC Level 2 Activity**
80004	301	Manage Full Network Model (FNM) Maintenance
80004	311	Manage Operations Planning
80004	312	Manage WECC Studies
80005	355	Manage Outages
80005	360	Real-Time Operations
80005	362	Manage Operations Engineering Support
80007	411	Manage Market Clearing
80007	412	Manage Market Billing & Settlements

Mapping and Costing of Cost Categories to TOR Activities

Using the process described below, a total of $51.2 million in direct and indirect costs were allocated to TORs. The CAISO reached this conclusion by identifying the costs for the specific level 2 activities from the 2022 Cost-of-Service update. The indirect dollars were then allocated based on the direct percentage. A table summarizing the cost of TORs is as follows

Table 54 — Calculation of TOR Related Costs

Transmission Ownership Rights (TOR) Charge				
ABC Code	**Task Code**	**ABC Level 2 Activity**		**Amount ($ in thousands)**
80004	301	Manage Full Network Model (FNM) Maintenance	$	2,474
80004	311	Manage Operations Planning	$	1,697
80004	312	Manage WECC Studies	$	130
80005	355	Manage Outages	$	2,290
80005	360	Real-Time Operations	$	17,476
80005	362	Manage Operations Engineering Support	$	4,161
80007	411	Manage Market Clearing	$	75
80007	412	Manage Market Billing & Settlements	$	992
		Applicable Direct Costs	$	29,295
		Total System Operations Direct Costs	$	61,184
		Percentage of TORs to System Operations Direct Costs		48%
		Total System Operations Indirect Costs	$	45,715
		Percentage Per Above		48%
		Applicable Indirect Costs	$	21,943
		Total TOR Related Costs	**$**	**51,238**

System Operation's indirect costs were allocated based on the percentage of direct cost as shown above. Then the ratio of TOR MWh to the total system operations (flow) MWh was calculated to determine the usage percentage.

Table 55 — TORs as a Percentage of Gross Volumes

TOR Flow	
	Volumes (in MWh)
System Operations Volume	451,126,859
Add Back Grandfathered Contracts	-
TOR Supply	3,995,153
TOR Demand	3,252,441
Total Adjusted System Operations Volume	458,374,453
Total Gross TOR Volume (Supply and Demand)	7,247,594
TOR as a Percentage of Gross Volume	2.00%

The amount to collect is then derived by multiplying the TOR related costs by the TOR percentage results. The TOR Charge is then determined by dividing the TOR costs to collect by the minimum of actual TOR supply or actual TOR demand for 2022. The revised TOR Charge is as follows.

Table 56 — Calculation of TOR Charge

TOR Fee Calculation		
		Amount
Total Applicable Direct and Indirect Costs	$	51,238,008
TOR as a Percentage of Gross Volume		2.00%
TOR Costs to Collect	$	1,024,760
TOR MWh for 2022 (min. of supply and demand)		3,252,441
TOR Charge per MWh	$	0.3200

Summary of TOR Charge Changes

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 $0.32 per MWh in 2024 and to $0.33 per MWh in 2025. The revenue collected from the TOR Charge offsets the System Operations Real-Time Dispatch costs, which lowers the System Operations Real-Time Dispatch Charge.

Table 57 — Summary of TOR Charge Changes

Transmission Ownership Rights (TOR) Charge	Prior COSS	Current COSS	Increase / (Decrease) From Prior
TOR Fee Calculation			
	Amount	**Amount**	**Amount**
Total Applicable Direct and Indirect Costs	$ 38,793,480	$ 51,238,008	$ 12,444,528
TOR as a Percentage of Gross Volume	2.00%	2.00%	0.00%
TOR Costs to Collect	$ 775,870	$ 1,024,760	$ 248,890
TOR MWh for 2022 (min. of supply and demand)	4,313,917	3,252,441	(1,061,477)
TOR Charge per MWh	$ 0.1800	$ 0.3200	$ 0.1400

Extended Day-Ahead Market

On February 1, 2023, the CAISO Board of Governors and the WEIM Governing Body approved the design of an Extended Day Ahead Market (EDAM) across the West. The EDAM builds upon the significant benefits of collaboration derived through the WEIM, and enables WEIM entities to extend participation to the day-ahead market. Currently, WEIM entities are subject to the WEIM Administrative Charge that includes the charges for the real-time market services and real-time dispatch services WEIM entities receive while participating in the energy imbalance market. Through participation in the EDAM, the CAISO will provide a broader set of market services across the day-ahead and real-time markets. In the EDAM initiative, the CAISO proposed to utilize the existing GMC rate design to establish EDAM administrative fees to ensure EDAM participants and existing CAISO customers benefit from the stability and disciplined growth of our annual GMC Revenue Requirement.[3] The

[3] Extended Day-Ahead Market Final Proposal, section II.E (December 7, 2022).

EDAM administrative fees, similar to the WEIM administrative fees, follow cost causation and other relevant ratemaking principles. In addition, EDAM participants will reimburse the CAISO for costs incurred by the CAISO to onboard the EDAM entity.

The EDAM administrative fees will consist of the existing Market Services Charge and the new System Operations Real-Time Dispatch Charge as introduced in this study, both volumetric charges. The Market Services Charge represents fees for the real-time market and the day-ahead market services that EDAM offers, and applies to awarded MWh of energy and MW of capacity. The calculation of the Market Services portion of the annual GMC Revenue Requirement amount to collect will be based on the latest Cost-of-Service study results. The GMC Revenue Requirement will be multiplied by the latest study's Market Services cost category percentage to determine the cost to collect. The cost will be divided by the projected total day-ahead, 15-minute market, real-time dispatch, and instructed imbalance energy MWh volumes to determine the annual Market Services Charge per MWh.

The Systems Operations Real-Time Dispatch Charge will represent the costs to support real-time dispatch services that the CAISO offers to its BAA customers as well as to its WEIM and EDAM customers, and it applies to metered flows in MWh of supply and demand. The calculation of the amount to collect for System Operations Real-Time Dispatch portion of the annual GMC Revenue Requirement will be based on the latest Cost-of-Service study results. The GMC Revenue Requirement will be multiplied by the latest study's System Operations Real-Time Dispatch cost category percentage to determine the cost to collect. To determine the price per MWh, the cost will be divided by the projected total generation, import, load and export (gross meter) MWh volumes; total volumes include the CAISO BAA, WEIM, and EDAM participants.

As experienced through the growth of the WEIM, as participation in the EDAM grows the increase in volumes will contribute to lower the Market Services Charge and the System Operations Real-Time Dispatch Charge for all market participants, all other factors held constant. This also contributes to lower WEIM administrative fees. All customers receiving Market Services, including the CAISO BAA, will benefit from a lower Market Services Charge when EDAM becomes operational because the Market Services charge will be calculated using the incremental day-ahead MWh volumes (load and supply) from EDAM participants, spreading the cost of CAISO operations across a wider MWh volumes.

EDAM Transitional Load Ramp-In

Broader participation in the EDAM will reduce the Market Services Charges for all CAISO market participants due to the additional supply and demand volumes participating in the market as has been the case with broadening participation in the WEIM. The lower Market Services Charge reduces the costs of participation in the market overall and is an additional benefit of broader market participation. However, at an individual EDAM entity level, extension of participation from the WEIM to the EDAM will represent an increase in administrative fees for that individual entity compared to the WEIM administrative fees the entities incurs today due to the additional day-ahead market service it will be provided. These increased administrative fees can significantly impact the cost/benefit analysis of extending participation to the EDAM for a particular entity and can be a barrier to market entry, while participation in the EDAM provides a benefit for the broader market participants by contributing to the reduction of the Market Services Charge. As the EDAM footprint gradually grows with additional participants over time, it further reduces the Market Services Charge to the benefit of all the CAISO market participants, WEIM entities, and EDAM entities.

The CAISO has considered methods for reducing the initial impact of the increased costs that WEIM entities extending participation to the EDAM will experience due to the increased administrative fees for the additional day-ahead services provided. At the same time, consideration of methods of reducing the EDAM administrative fee should nevertheless be balanced against the impact on the resulting GMC rates that the CAISO load pays comparatively today. Reducing the administrative fees during the initial period of EDAM operation is critical to supporting introduction and growth of the EDAM, which will reduce GMC rates for all market participants due to the additional supply and demand participating in the market. A reduction in the administrative fees can incent early participation in the EDAM while still providing benefits in the reduction of Market Services Charge for all market participants.

With the above challenge in mind, the CAISO is proposing a transitional ramp-in of load-based charges that will be offered during the initial four years of EDAM operations. This ramp-in would only apply to load volumes and not to supplier volume based charges to avoid providing any suppliers with a competitive advantage in the market. Under the ramp-in model, the load-based costs start with load effectively paying what is paid today under the WEIM and then the costs would increase equivalent to full load-based charges over four years. The basis of the load-based ramp-in level would be determined by the year the EDAM participant joins. For example,

the following is the ramp-in load-based charges the EDAM entity will be subject to under the ramp-in approach, by year: Year 1 (5%), Year 2 (25%), Year 3 (50%), and Year 4 (75%). The load ramp-in are fixed percentages based on the year of EDAM operations, not EDAM participation. The 5% load ramp-in is intended to collect at least what is being collected under WEIM administrative charges for load today. EDAM participants that join in year one will effectively receive load-based GMC charges at the level of their WEIM participation for their first year. An EDAM participant that joins during EDAM's third year of operation will be eligible for 50% ramp-in of its full load-based charges. And finally, an EDAM participant that joins in year 5 or later will be charged based on its full load-based charges the year it starts.

The supply-based charges will be fully recovered by EDAM participants from the start and is similar in comparison to any resource inside the CAISO. Only the load-based charges are proposed to be ramped in over the first four-years of EDAM, in part because load is not exercising all the services California load is using. For example, by design, EDAM does not initially cover ancillary services, convergence bidding nor make use of congestion revenue rights and therefore EDAM entity load will not have the same access to all these services as the California load will. Finally, EDAM has not been tried before and is incremental to the WEIM. Therefore, the model was developed as a solution that scales the load-based costs with the expected growth in the use and benefits as a function over time as other EDAM entities join and participate growing the utility of the EDAM for California and early adopters of the EDAM.

If the CAISO required all EDAM load to pay all load charges from year one then it may impede the early start-up of EDAM and doing so would ultimately deny or delay existing California entities early GMC cost reduction and operational benefits of EDAM. This model incentivizes early adoption and immediately benefits all existing CAISO customers by reducing the costs of service for all Market Services and System Operations Real-Time Dispatch customers.

The following table illustrates the transitional load ramp-in effect on revenue contributions by participants assuming PacifiCorp's participation[4] in EDAM effective year 1 of operation. The annual revenue contribution assumes the 2023 Cost-of-Service study cost category percentage allocations, a projected year 1 revenue

[4]PacifiCorp announced its plan to join EDAM 12/8/2022, https://www.pacificorp.com/about/newsroom/news-releases/EDAM-innovative-efforts.html

requirement, prorated year 1 WEIM Charges and EDAM charges to account for spring WEIM off-boarding and EDAM onboarding, and a 3% year-over-year revenue requirement for inflationary growth for years 2 through 5. The prorated WEIM charges account for 25% of projected WEIM and Nodal Pricing Model (for PacifiCorp) annual revenue and the prorated EDAM charges account for 75% of projected EDAM annual revenue.

Table 58 — Scenario Comparison with PacifiCorp

Projected Market Services (DA and RT) and System Operations (RTD) Revenue Contributions
($ in millions)

** Prorated Year 1 WEIM Charges and EDAM charges to account for spring WEIM offboarding and EDAM onboarding.*

Scenario	Year 1 Charges	Year 2 Charges	Year 3 Charges	Year 4 Charges	Year 5 Charges
Base: No EDAM Participation					
CAISO (inclusive of RC funding requirement contribution impacts)	$ 160.5	$ 165.3	$ 170.3	$ 175.4	$ 180.7
PAC (existing WEIM and NPM Charges)*	$ 12.9	$ 12.9	$ 13.3	$ 13.3	$ 13.3
Revenue Contributions	$ 173.4	$ 178.2	$ 183.6	$ 188.7	$ 194.0
Scenario 1a: Only CAISO and PAC (Yrs 1-5) w/o Load Volume Ramp-In					
CAISO's portion of the charges	$ 125.8	$ 129.5	$ 133.4	$ 137.4	$ 141.6
PAC's portion of the charges*	$ 47.7	$ 49.1	$ 50.6	$ 52.1	$ 53.7
Revenue Contributions	$ 173.4	$ 178.6	$ 184.0	$ 189.5	$ 195.2
Scenario 1b: Only CAISO and PAC (Yrs 1-5) w/Load Volume Ramp-In					
EDAM Load Volume Ramp-In	5%	25%	50%	75%	100%
CAISO's portion of the charges	$ 139.4	$ 140.0	$ 140.1	$ 140.6	$ 141.6
PAC's portion of the charges*	$ 34.0	$ 38.7	$ 43.9	$ 48.9	$ 53.7
Revenue Contributions	$ 173.4	$ 178.6	$ 184.0	$ 189.5	$ 195.2
Reduction in CAISO charges from Base	$ 21.1	$ 25.4	$ 30.2	$ 34.8	$ 39.1
PacifiCorp's Scenario 1b ramp-in compared to what they would be charged for full supply and load (Scenario 1a) from year 1.	29%	21%	13%	6%	0%

Table 58 - Scenario Comparison with PacifiCorp above provides a detailed comparison of the Market Services and System Operations Real-Time Dispatch revenue requirements comparing a base scenario of no EDAM participation with a scenario in which PacifiCorp participates in the EDAM (with (Scenario 1b) and without (Scenario 1a) the proposed load-based ramp-in). In combining the ramped-in load-based charges with the supply based charges, PacifiCorp could expect a ramp-in of Year 1 (71%), Year 2 (79%), Year 3 (87%), Year 4 (94%), and Year 5 (100%) when compared to what the total load and supply based costs would have been without proposed load-based ramp-in. This ramp-in reflects the CAISO's costs and load customers' benefits, and the fact that EDAM entities joining the Day-Ahead Market also pay new entrant fees that go directly to their specific early implementation costs.

As another example, Table 59 - Scenario Comparison with PacifiCorp and another WEIM Entity below provides a detailed comparison of the Market Services and System Operations Real-Time Dispatch revenue requirements comparing a base scenario of no EDAM participation with a scenario in which PacifiCorp and

another WEIM entity participates in the EDAM (with (Scenario 1b) and without (Scenario 1a) the proposed load-based ramp-in). In combining the ramped-in load-based charges with the supply based charges, PacifiCorp and the other entity could expect a ramp-in of Year 1 (70%), Year 2 (79%), Year 3 (85%), Year 4 (94%), and Year 5 (100%) when compared to what the total load and supply based costs would have been without proposed load-based ramp-in [the results are similar to Table 58's results]. Note that the change in the Year 1 through Year 5 revenue contributions is different due to the RC funding requirement impacts.

Table 59 — Scenario Comparison with PacifiCorp and Other Entity

Projected Market Services (DA and RT) and System Operations (RTD) Revenue Contributions

($ in millions)

** Prorated Year 1 WEIM Charges and EDAM charges to account for spring WEIM offboarding and EDAM onboarding.*

Scenario	Year 1 Charges*	Year 2 Charges	Year 3 Charges	Year 4 Charges	Year 5 Charges
Base: No EDAM Participation					
CAISO (inclusive of RC funding requirement contribution impacts)	$ 160.4	$ 165.7	$ 171.1	$ 176.6	$ 182.3
PAC (existing WEIM and NPM Charges)*	$ 12.9	$ 12.9	$ 12.9	$ 12.9	$ 12.9
Other Entity (existing WEIM)*	$ 1.4	$ 1.4	$ 1.4	$ 1.4	$ 1.4
Revenue Contributions	$ 174.7	$ 180.0	$ 185.4	$ 190.9	$ 196.6
Scenario 1a: Only CAISO, PAC, and Other Entity (Yrs 1-5) w/o Load Volume Ramp-In					
CAISO's portion of the charges	$ 114.0	$ 117.4	$ 120.9	$ 124.5	$ 128.3
PAC's portion of the charges*	$ 43.2	$ 44.6	$ 45.9	$ 47.3	$ 48.6
Other Entity's portion of the charges*	$ 17.5	$ 18.0	$ 18.6	$ 19.1	$ 19.7
Revenue Contributions	$ 174.7	$ 180.0	$ 185.4	$ 190.9	$ 196.6
Scenario 1b: Only CAISO, PAC, and Other Entity (Yrs 1-5) w/Load Volume Ramp-In					
EDAM Load Volume Ramp-In	5%	25%	50%	75%	100%
CAISO's portion of the charges	$ 132.1	$ 130.8	$ 125.7	$ 128.4	$ 128.3
PAC's portion of the charges*	$ 31.1	$ 35.5	$ 39.2	$ 44.6	$ 48.6
Other Entity's portion of the charges*	$ 11.5	$ 13.7	$ 15.4	$ 17.9	$ 19.7
Revenue Contributions	$ 174.7	$ 180.0	$ 180.3	$ 190.9	$ 196.6
Reduction in CAISO charges from Base	$ 28.3	$ 34.9	$ 45.4	$ 48.2	$ 54.0
PacifiCorp's and Other Entity's Scenario 1b discount compared to what they would be charged for full supply and load (Scenario 1a) from year 1.	30%	21%	15%	6%	0%

Under the proposed EDAM transitional load ramp-in approach described above, there is nevertheless a benefit to CAISO BAA customers and WEIM entities. Because the ramp-in reduction in EDAM administrative fees applies to only load-based charges, EDAM entities will continue to be subject to full supply based GMC charges, which helps reduce the Market Services Charge and the System Operations Real-Time Dispatch Charge. As the ramp-in period progresses from Year 1 to Year 5, and EDAM entities ramp-in toward full assessment of EDAM administrative fees, the reduction in GMC charges to the CAISO BAA and other market participants increases as well. The CAISO believes the transitional load ramp-in model is a just and reasonable model for aligning the costs with benefits of the EDAM services that will grow with increased participation. EDAM does not initially cover ancillary services, convergence bidding nor make use of congestion revenue rights and therefore EDAM entity

load will not have the same access to all these services as the California load will. Additionally, the incentive of the ramp-in model for early adoption increases the overall benefit for California entities.

Revenue Requirement Cap

The CAISO proposes to retain the same process currently included in the tariff with respect to the GMC Revenue Requirement cap so that as long as the CAISO's annual budget for each year does not exceed that year's cap, and there are no GMC rate design or billing determinant modifications proposed for the next year, the CAISO will not be required to make a Section 205 filing with FERC seeking approval for the proceeding year's revenue requirement.

The GMC Revenue Requirement cap was last increased in 2015 to $202 million and since that time, the CAISO has experienced greater growth in other offsetting revenue categories versus the growth in expenses. This has kept the net revenue requirement beneath the cap for nine years and is expected to be sufficient for the 2024 revenue requirement as well. However, beginning in 2025, primarily due to an accounting change on how the CAISO will treat the incoming EDAM revenues and structure the revenue requirement, the projected revenue requirement will substantially exceed the $202 million cap. The table below displays a summary of the actual revenue requirement the last three-years and the projected revenue requirement for the three-year period of 2024 through 2026.

Table 60 — Forecasted 2024 through 2026 GMC Revenue Requirement

	Actual			Forecast		
GMC Revenue Requirement ($ in millions)	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**
Operations and Maintenance Budget	$ 200.8	$ 210.7	$ 238.4	$ 251.9	$ 258.4	$ 265.2
Debt Service and Cash Funded Capital	$ 44.9	$ 44.7	$ 35.7	$ 20.7	$ 29.7	$ 29.7
Other Revenues and Adjustments	$ (63.7)	$ (72.8)	$ (74.4)	$ (70.7)	$ (46.5)	$ (46.8)
Total GMC Revenue Requirement	**$ 182.0**	**$ 182.6**	**$ 199.7**	**$ 201.9**	**$ 241.6**	**$ 248.1**
Estimated Measured Demand in TWh	237.3	233.5	234.2	242.5	340.5	346.1
Pro-Forma Bundled Cost per MWh	$0.7670	$0.7820	$0.8527	$0.8326	$0.7095	$0.7168

The forecasted increase in the revenue requirement in 2025 includes some normal cost inflation in operating costs, however it also includes a substantial decrease in offsetting revenues and adjustments. The decline is the result of several factors including the assumption that PacifiCorp joins the EDAM and therefore, ceases payment on the Nodal Pricing Model service and the WEIM service, as those services will be included in EDAM. EDAM revenues will not be treated as an “Other Revenue” as this service will align in both scope and magnitude to the CAISO’s core service offerings. Furthermore, as part of this initiative, the CAISO is proposing the separation of the Systems Operations charge code into two separate charges, one for BAA Services and one for Real-Time Dispatch services. WEIM and EDAM customers will only pay the Real-Time Dispatch Charge, however, this will be collected as part of normal GMC collections and not classified as an “Other Revenue”. Finally, the decline in Other Revenue and Operating Costs Reserve Adjustments assumes a more normal offset from the annual true up of actual revenue and expenses as the higher credits driven by the cost savings experienced during the pandemic years dissipates.

The result of these accounting and structure changes forecasts a GMC Revenue Requirement of $241.6 million in 2025 and $248.1 million in 2026. However, the positive impact of the launch of EDAM and the modification of the collection of the System Operations portion of the WEIM can be seen in the growth in the estimated measured demand volume numbers in the table above. Despite the increase in the net revenue requirement, the estimated cost per MWh metric declines from the low 80-cent range to the low 70-cent range. Those numbers will improve with each new addition to the EDAM.

In conclusion, the CAISO is proposing no change in the revenue requirement cap for 2024, an increase to $245 million in 2025, and an increase to $250 million in 2026. It is assumed that the CAISO would need additional cap increases beyond 2026; however, those needs will be assessed as part of the normal cycle of the triennial Cost-of-Service study.

Appendix A: Analysis of 2025 and 2026 GMC Revenue Requirement

This section of the study provides the supporting documentation for scenario two's analysis, which impacts the 2025 and 2026 GMC Revenue Requirement. The Operations and Maintenance, Debt Service, and Cash Funded Capital portions of the 2024 thru 2026 Revenue Requirements used in the analyses are similar. Therefore, the supporting documentation in Appendix A will only cover the other areas that will be different in 2025 and 2026 such as Other Costs and Revenues, Operating Costs Reserve Adjustment, the bifurcation of the Systems Operations Charge, and the resulting GMC Revenue Requirement cost category percentage allocations and charges - as well as those for RC, WEIM, and other supplemental fees. The percentage allocations for the new System Operations Real-Time Dispatch cost category and the new System Operations Balance Authority Areas Services cost category follow the same percentage allocation process as the WEIM System Operations allocation process. The table numbering mirrors the same as in the body of the study to help with the contextual understanding of the changes.

Table 11b — 2022 Modified GMC Revenue Requirement Components

Modified GMC Revenue Requirement ($ in thousands)	Scenario 1	Scenario 2
Components	**Modified Budget for 2024 Operations**	**Modified Budget for 2025 + 2026 Operations**
Operations and Maintenance	$ 258,422	$ 258,422
Debt Service	$ 14,685	$ 14,686
Cash Funded Capital	$ 15,000	$ 15,000
Other Costs and Revenues	$ (54,680)	$ (39,930)
Operating Costs Reserve Adjustment	$ (13,493)	$ (5,468)
Total	**$ 219,934**	**$ 242,710**

Schedule 1: Application of Activity Based Costing

Table 23b — Allocation of Other Revenue to Cost Categories

Other Costs and Revenue	GMC							GMC						
Component	Market Services	NEW System Operations-Real-Time	NEW System Operations-Balance	CRR Services	Reliability Coordinator	Indirect	Budget	Market Services	NEW System Operations-Real-Time	NEW System Operations-Balance	CRR Services	Reliability Coordinator	Indirect
	cost category % allocation						*budget allocations (amounts in thousands)*						
Other Costs and Revenue													
Energy Imbalance Market Administration Charges						100%	$ 6,500	$ -	$ -	$ -	$ -	$ -	$ 6,500
Nodal Pricing Model Fee							$ -	$ -	$ -	$ -	$ -	$ -	$ -
Intermittent Resource Forecasting Fees	80%	15%			5%		$ 5,500	$ 4,400	$ 825	$ -	$ -	$ 275	$ -
Interest Earnings						100%	$ 3,392	$ -	$ -	$ -	$ -	$ -	$ 3,392
Generator Interconnection Project Fees and Application Fees			100%				$ 2,000	$ -	$ -	$ 2,000	$ -	$ -	$ -
HANA Administrative Fees					100%		$ 1,070	$ -	$ -	$ -	$ -	$ 1,070	$ -
California-Oregon Intertie Path Operator Fees			100%				$ 700	$ -	$ -	$ 700	$ -	$ -	$ -
Metered Sub-Station Penalties						100%	$ 440	$ -	$ -	$ -	$ -	$ -	$ 440
SC Application Fees						100%	$ 290	$ -	$ -	$ -	$ -	$ -	$ 290
Planning Coordinator Fees			100%				$ 110	$ -	$ -	$ 110	$ -	$ -	$ -
CRR Application Fees						100%	$ 60	$ -	$ -	$ -	$ -	$ -	$ 60
Sub-Total (without RC Funding Requirement)							$ 20,062	$ 4,400	$ 825	$ 2,810	$ -	$ 1,345	$ 10,682
Reliability Coordinator Funding Requirement					100%		$ 19,868	$ -	$ -	$ -	$ -	$ 19,868	$ -
Total Other Costs and Revenue							**$ 39,930**	**$ 4,400**	**$ 825**	**$ 2,810**	**$ -**	**$ 21,213**	**$ 10,682**

Table 24b — Allocation of Operating Cost Reserve Adjustment to Cost Categories

Operating Costs Reserve Adjustment		GMC						GMC					
Component		Market Services	NEW System Operations-Real-Time Dispatch	NEW System Operations-Balance Authority Area Services	CRR Services	Reliability Coordinator	Indirect	Budget	Market Services	NEW System Operations-Real-Time Dispatch	NEW System Operations-Balance Authority Area Services	CRR Services	Reliability Coordinator	Indirect
		cost category % allocation						*budget allocations (amounts in thousands)*						
Operating Cost Reserve Adjustment														
Change in 15% Operating Cost Reserve							100%	$ (970)	$ -	$ -	$ -	$ -	$ -	$ (970)
25% Debt Service Reserve for Bonds							100%	$ 2,938	$ -	$ -	$ -	$ -	$ -	$ 2,938
2023 Revenue Budget to Actual Delta							100%	$ 1,750	$ -	$ -	$ -	$ -	$ -	$ 1,750
2023 Expense Budget to Actual Delta							100%	$ 1,750	$ -	$ -	$ -	$ -	$ -	$ 1,750
Total Operating Cost Reserve Adjustment								$ 5,468	$ -	$ -	$ -	$ -	$ -	$ 5,468

Table 25b — Allocation of Revenue Requirement to Cost Categories

Modified Revenue Requirement: Bifurcated Systems Operations Rate and EDAM Transitional Ramp-In					GMC			
Component	Budget	Market Services	NEW System Operations-Real-Time Dispatch	NEW System Operations-Balance Authority Area Services	CRR Services	Reliability Coordinator	Indirect
	budget allocations (amounts in thousands)						
Direct Costs	$ 212,322	$ 68,394	$ 30,498	$ 37,877	$ 3,382	$ 10,191	$ 61,980
Indirect Costs	$ 7,057	$ -	$ -	$ -	$ -	$ -	$ 7,057
Non-ABC Costs	$ 39,043	$ 2,063	$ 611	$ 33	$ 50	$ 1,645	$ 34,641
Total O&M	**$ 258,422**	**$ 70,457**	**$ 31,109**	**$ 37,910**	**$ 3,432**	**$ 11,836**	**$ 103,678**
Debt Service	$ 14,686	$ -	$ -	$ -	$ -	$ -	$ 14,686
Cash Funded Capital	$ 15,000	$ -	$ -	$ -	$ -	$ -	$ 15,000
Total Debt Service and Capital	**$ 29,686**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 29,686**
Other Costs and Revenues (without RC Funding Requirement)	$ (20,062)	$ (4,400)	$ (825)	$ (2,810)	$ -	$ (1,345)	$ (10,682)
Operating Cost Reserve Adjustment	$ (5,468)	$ -	$ -	$ -	$ -	$ -	$ (5,468)
Total Other Revenue and Operating Costs Reserve Adj	**$ (25,530)**	**$ (4,400)**	**$ (825)**	**$ (2,810)**	**$ -**	**$ (1,345)**	**$ (16,150)**
Revenue Requirement Sub-Total Before Indirect Allocations	**$ 262,578**	**$ 66,057**	**$ 30,284**	**$ 35,100**	**$ 3,432**	**$ 10,491**	**$ 117,214**
Direct Costs %		45%	21%	24%	2%	8%	
Indirect Costs Allocated Based on Direct Cost %	-	52,746	24,615	28,131	2,344	9,377	(117,214)
Revenue Requirement Sub-Total Before RC Funding Requirement Adjustment	**$ 262,578**	**$ 118,803**	**$ 54,899**	**$ 63,231**	**$ 5,776**	**$ 19,868**	**$ -**
RC Funding Percentage		45%	21%	24%	2%	8%	
Reliability Coordinator Funding Requirement	$ (19,868)	$ -	$ -	$ -	$ -	$ (19,868)	$ -
GMC Revenue Requirement	**$ 242,710**	**$ 118,803**	**$ 54,899**	**$ 63,231**	**$ 5,776**	**$ -**	**$ -**
Cost Category Percentages for GMC Rates		49%	23%	26%	2%		

Table 26b — Estimation of Fee Revenue and Mapping of Fees to Cost Categories

Modified Revenue Requirement								
Fee	Estimated 2022 Volumes	Rate	Budget	Market Services	NEW System Operations-Real-Time Dispatch	NEW System Operations-Balance Authority Area Services	CRRs
			(amounts in thousands)				
Bid Segment Fees	107,379,067	$ 0.0050	$ 537	$ 537			
Inter-SC Trade Fees	2,668,297	$ 1.0000	$ 2,668	$ 2,668			
SCID Fees	439	$ 1,500.0000	$ 7,902	$ 7,902			
TOR Charge	3,142,334	$ 0.3300	$ 1,037		$ 1,037		
CRR Auction Bid Fees	1,054,603	$ 1.0000	$ 1,055				$ 1,055
Total			**$ 13,199**	**$ 11,107**	**$ 1,037**	**$ -**	**$ 1,055**

Table 27b — 2022 GMC Rates Using Revised Cost Category Percentages

Modified Revenue Requirement: Bifurcated Systems Operations Rate and EDAM Transitional Ramp-In					
		GMC			
Component	Budget	Market Services	NEW System Operations-Real-Time Dispatch	NEW System Operations-Balance Authority Area Services	CRR Services
	budget allocations (amounts in thousands)				
GMC Revenue Requirement	**$ 242,710**	**$ 118,803**	**$ 54,899**	**$ 63,231**	**$ 5,776**
Cost Category Percentages for GMC Rates		49%	23%	26%	2%
Less Fees					
Bid Segment Fees	$ (537)	$ (537)	$ -	$ -	$ -
Inter-SC Trade Fees	$ (2,668)	$ (2,668)	$ -	$ -	$ -
SCID Fees	$ (7,902)	$ (7,902)	$ -	$ -	$ -
TOR Fees	$ (1,037)	$ -	$ (1,037)	$ -	$ -
CRR Auction Bid Fees	$ (1,055)	$ -	$ -	$ -	$ (1,055)
Total Fees	**$ (13,199)**	**$ (11,107)**	**$ (1,037)**	**$ -**	**$ (1,055)**
Remaining Revenue Requirement to Collect	**$ 229,511**	**$ 107,696**	**$ 53,862**	**$ 63,231**	**$ 4,721**
Estimated Volumes					
Estimated Volumes		533,233	440,760	440,760	420,133
Estimated EDAM Volumes (PacifiCorp year 1 ramp-in volumes only) + System Operations Real-Time		126,977	141,626		-
Total Estimated Volumes (GWh)		**660,210**	**582,386**	**440,760**	**420,133**
2022 Rates Using Revised Percentages		**$ 0.1631**	**$ 0.0925**	**$ 0.1435**	**$ 0.0112**

Table 28b — Summary of GMC Cost Category Percentages and Costs

Cost Category Percentages and Costs *($$ in thousands)*	2019		2022 Modified for 2024		2022 Modified for 2025-26	
	$$	%	$$	%	$$	%
Market Services	$ 86,800	49%	$ 107,572	49%	$ 118,803	49%
System Operations	$ 88,061	49%	$ 106,899	49%		
New: Real-Time Dispatch					$ 54,899	23%
New: Balance Authority Area Services					$ 63,231	26%
CRR Services	$ 3,965	2%	$ 5,464	2%	$ 5,776	2%
Total	**$ 178,826**	**100%**	**$ 219,934**	**100%**	**$ 242,710**	**100%**

Table 29b — Summary of Direct and Indirect Costs

Direct Costs vs. Indirect Costs History *($$ in thousands)*	2019		2022 Modified for 2024		2022 Modified for 2025-26	
	$$	%	$$	%	$$	%
Direct Costs	$ 89,555	50%	$ 126,473	58%	$ 134,873	56%
Indirect Costs	$ 89,271	50%	$ 93,461	42%	$ 107,837	44%
Total	**$ 178,826**	**100%**	**$ 219,934**	**100%**	**$ 242,710**	**100%**

Schedule 2: Reliability Coordinator Services

Table 30b –- Allocation of Revenue Requirement to RC Cost Category

Modified Revenue Requirement: Bifurcated Systems Operations Rate and EDAM Transitional Ramp-In		GMC					
Component	Budget	Market Services	NEW System Operations-Real-Time Dispatch	NEW System Operations-Balance Authority Area Services	CRR Services	Reliability Coordinator	Indirect
	budget allocations (amounts in thousands)						
Direct Costs	$ 212,322	$ 68,394	$ 30,498	$ 37,877	$ 3,382	$ 10,191	$ 61,980
Indirect Costs	$ 7,057	$ -	$ -	$ -	$ -	$ -	$ 7,057
Non-ABC Costs	$ 39,043	$ 2,063	$ 611	$ 33	$ 50	$ 1,645	$ 34,641
Total O&M	**$ 258,422**	**$ 70,457**	**$ 31,109**	**$ 37,910**	**$ 3,432**	**$ 11,836**	**$ 103,678**
Debt Service	$ 14,686	$ -	$ -	$ -	$ -	$ -	$ 14,686
Cash Funded Capital	$ 15,000	$ -	$ -	$ -	$ -	$ -	$ 15,000
Total Debt Service and Capital	**$ 29,686**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 29,686**
Other Costs and Revenues (without RC Funding Requirement)	$ (20,062)	$ (4,400)	$ (825)	$ (2,810)	$ -	$ (1,345)	$ (10,682)
Operating Cost Reserve Adjustment	$ (5,468)	$ -	$ -	$ -	$ -	$ -	$ (5,468)
Total Other Revenue and Operating Costs Reserve Adj	**$ (25,530)**	**$ (4,400)**	**$ (825)**	**$ (2,810)**	**$ -**	**$ (1,345)**	**$ (16,150)**
Revenue Requirement Sub-Total Before Indirect Allocations	**$ 262,578**	**$ 66,057**	**$ 30,284**	**$ 35,100**	**$ 3,432**	**$ 10,491**	**$ 117,214**
Direct Costs %		45%	21%	24%	2%	8%	
Indirect Costs Allocated Based on Direct Cost %	-	52,746	24,615	28,131	2,344	9,377	(117,214)
Revenue Requirement Sub-Total Before RC Funding Requirement Adjustment	**$ 262,578**	**$ 118,803**	**$ 54,899**	**$ 63,231**	**$ 5,776**	**$ 19,868**	**$ -**
RC Funding Percentage		45%	21%	24%	2%	8%	
Reliability Coordinator Funding Requirement	$ (19,868)	$ -	$ -	$ -	$ -	$ (19,868)	$ -
GMC Revenue Requirement	**$ 242,710**	**$ 118,803**	**$ 54,899**	**$ 63,231**	**$ 5,776**	**$ -**	**$ -**
Cost Category Percentages for GMC Rates		49%	23%	26%	2%		

Table 31b — Summary of RC Funding Percentage Changes

Cost Category	2019 Study Effective 2021 GMC RR	2022 Study Effective 2024 GMC RR	2022 Study Effective 2025-2026 GMC RR
Reliability Coordinator Services	9%	8%	8%

Schedule 3: Western Energy Imbalance Market

Table 42b — Components of the 2022 Modified GMC Revenue Requirement

Modified GMC Revenue Requirement					
Component	Budget	Market Services	System Operations Real-Time Dispatch	System Operations BAA Services	CRR Services
Non-ABC O&M Support Costs	$ 39,043	$ 2,063	$ 611	$ 33	$ 50
Direct ABC O&M Costs	$ 212,322	$ 68,394	$ 30,498	$ 37,877	$ 3,382
Debt Service	$ 14,686	$ -	$ -	$ -	$ -
Cash Funded Capital	$ 15,000	$ -	$ -	$ -	$ -
Other Costs and Revenues	$ (39,930)	$ (4,400)	$ (825)	$ (2,810)	$ -
Operating Costs Reserve Adjustment	$ (5,468)	$ -	$ -	$ -	$ -
Subtotal	**$ 235,653**	**$ 66,057**	**$ 30,284**	**$ 35,100**	**$ 3,432**
Indirect Costs	$ 7,057	$ 52,746	$ 24,615	$ 28,131	$ 2,344
GMC Revenue Requirement Before Fees	**$ 242,710**	**$ 118,803**	**$ 54,899**	**$ 63,231**	**$ 5,776**
Less Fees	$ (13,199)	$ (11,107)	$ (1,037)	$ -	$ (1,055)
Remaining Revenue Requirement to Collect	**$ 229,511**	**$ 107,696**	**$ 53,862**	**$ 63,231**	**$ 4,721**

Table 47b — Allocation of Market Services Other Revenue

Other Costs and Revenue	GMC	Market Services Split		Market Services Split		
Component	Market Services	Real-Time Market	Day-Ahead Market	Category Budget	Real-Time Market	Day-Ahead Market
	cost category % allocation	*% of budget allocation*		*budget allocations (amounts in thousands)*		
Other Costs and Revenue						
Intermittent Resource Forecasting Fees	80%	100%		$ 4,400	$ 4,400	$ -
Total Other Costs and Revenue				**$ 4,400**	**$ 4,400**	**$ -**

Table 48b — Allocation of System Operations Other Revenue

Other Costs and Revenue	GMC			GMC		
Component	NEW System Operations-Real-Time Dispatch	NEW System Operations-Balance Authority Area Services	Budget	NEW System Operations-Real-Time Dispatch	NEW System Operations-Balance Authority Area Services	Comments
	cost category % allocation		*dget allocations (amounts in thousand*			
Other Costs and Revenue						
Intermittent Resource Forecasting Fees	15%		$ 825	$ 124	$ -	Use Process 80005, Task 353 allocations.
Generator Interconnection Project Fees and Application Fees		100%	$ 2,000	$ -	$ 2,000	Use Process 80001, Task 203 allocations.
California-Oregon Intertie Path Operator Fees		100%	$ 700	$ -	$ 700	Fees offset system operations costs.
Planning Coordinator Fees		100%	$ 110	$ -	$ 110	Use Process 80001, Task 204 allocations.
Total Other Costs and Revenue			**$ 8,827**	**$ 124**	**$ 2,810**	

Table 49b — Mapping Revenue Requirement to Cost Categories

Modified GMC Revenue Requirement		Market Services Split				
Component	Budget	Market Services	Real-Time Market	Day-Ahead Market	System Operations Real-Time Dispatch	System Operations BAA Services
Non-ABC O&M Support Costs	$ 39,043	$ 2,063	$ 1,941	$ 122	$ 611	$ 33
Direct ABC O&M Costs	$ 212,322	$ 68,394	$ 43,240	$ 25,154	$ 30,498	$ 37,877
Debt Service	$ 14,686	$ -	$ -	$ -	$ -	$ -
Cash Funded Capital	$ 15,000	$ -	$ -	$ -	$ -	$ -
Other Costs and Revenues	$ (39,930)	$ (4,400)	$ (4,400)	$ -	$ (825)	$ (2,810)
Operating Costs Reserve Adjustment	$ (5,468)	$ -	$ -	$ -	$ -	$ -
Subtotal	**$ 235,653**	**$ 66,057**	**$ 40,781**	**$ 25,276**	**$ 30,284**	**$ 35,100**
Indirect Costs	$ 7,057	$ 52,746	$ 32,563	$ 20,183	$ 24,615	$ 28,131
GMC Revenue Requirement Before Fees	**$ 242,710**	**$ 118,803**	**$ 73,344**	**$ 45,459**	**$ 54,899**	**$ 63,231**
Less Fees	$ (13,199)	$ (11,107)	$ (4,220)	$ (6,888)	$ (1,037)	$ -
Remaining Revenue Requirement to Collect	**$ 229,511**	**$ 107,696**	**$ 69,125**	**$ 38,571**	**$ 53,862**	**$ 63,231**
			64%	**36%**		

Table 50b — Calculation of the WEIM Components

Cost Category	Category Net Costs	Pro Forma Rate	EIM Real-Time Activity	EIM Percentage of Costs	EIM Cost of Real-Time Activities	EIM Pro Forma Rate
	($ in thousands)	*($ / MWh)*			*($ in thousands)*	*($ / MWh)*
Market Services	$ 107,696	$ 0.1631	Real-Time Market	64%	$ 69,125	$ 0.1047
System Operations-Real-Time Dispatch	$ 53,862	$ 0.0925	Real-Time Dispatch	100%	$ 53,863	$ 0.0925

Table 51b — Summary of WEIM Cost Category Percentage Changes

Cost Category	EIM Real-Time Activity	2019 Study Effective 2021 GMC	2022 Study Effective 2024 GMC	2022 Study Effective 2025 + 2026 GMC
Market Services	Real-Time Market	63%	65%	64%
System Operations	Real-Time Dispatch	50%	42%	
System Operations-Real-Time Dispatch	Real-Time Dispatch			100%

The Market Services percentage shifts back by 1% in 2025 as a result of the reduction in Nodal Pricing Model and WEIM Administrative fees in 2025.

Schedule 4: Transmission Ownership Rights

Table 54b — Calculation of TOR Related Costs

Transmission Ownership Rights (TOR) Charge			2022 Study Effective 2025-2026 GMC RR
ABC Code	Task Code	ABC Level 2 Activity	Amount ($ in thousands)
80004	301	Manage Full Network Model (FNM) Maintenance	$ 2,474
80004	311	Manage Operations Planning	$ 1,697
80004	312	Manage WECC Studies	$ 130
80005	355	Manage Outages	$ 2,290
80005	360	Real-Time Operations	$ 17,476
80005	362	Manage Operations Engineering Support	$ 4,161
80007	411	Manage Market Clearing	$ 75
80007	412	Manage Market Billing & Settlements	$ 992
		Applicable Direct Costs	$ 29,295
		Total System Operations Direct Costs	$ 65,384
		Percentage of TORs to System Operations Direct Costs	45%
		Total System Operations Indirect Costs	$ 52,746
		Percentage Per Above	45%
		Applicable Indirect Costs	$ 23,736
		Total TOR Related Costs	**$ 53,031**

Table 56b — Calculation of TOR Charge

TOR Fee Calculation		
		Amount
Total Applicable Direct and Indirect Costs	$	53,030,835
TOR as a Percentage of Gross Volume		2.00%
TOR Costs to Collect	$	1,060,617
TOR MWh for 2022 (min. of supply and demand)		3,252,441
TOR Charge per MWh	$	0.3300

Table 57b — Summary of TOR Charge Changes

Fee	2019 Study Effective 2021 GMC	2022 Study Effective 2024 GMC	2022 Study Effective 2025-2026 GMC
TOR Charge/MWh	$ 0.1800	$ 0.3200	$ 0.3300

Attachment D – Testimony of Mr. Michael Epstein, filed with the 2011 GMC Update

2023 Grid Management Charge – Cost-of-Service Study Update

California Independent System Operator Corporation

September 29, 2023

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

California Independent System Operator Corporation	)))	ER11-____-000

DIRECT TESTIMONY OF MICHAEL K. EPSTEIN ON BEHALF OF THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION

Q. PLEASE STATE YOUR NAME, TITLE AND BUSINESS ADDRESS.

A. My name is Michael K. Epstein. I am employed as Director of Financial Planning for the California Independent System Operator Corporation (the "ISO"). My business address is 250 Outcropping Way, Folsom, CA 95630.

Q. WHAT ARE YOUR DUTIES AND RESPONSIBILITIES?

A. I am responsible for the ISO's budget preparation and management; long term planning; accounting for the FERC refund case; market cash settlements; and audit coordination for all the ISO's settlement and operations activities. As part of my duties at the ISO, I oversee the development of the ISO's grid management charge, or "GMC." The GMC is the mechanism by which the ISO collects its administrative costs from participants in the markets conducted by the ISO and from others that benefit from the ISO's services.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND.

A. I received both an MBA and a BA with a major in accounting from the University of Southern California in Los Angeles, California. Previously to my current position, I was the Controller of the ISO from 1997-2009. From 1994-1997, I was Vice President (Finance) of Siskon Gold Corporation, a publicly-traded mining company located in Grass Valley, California. From 1989-1994, I was Controller of the Grupe Company, a privately held diversified real estate company located in Stockton, California. From 1985-1989, I was Controller of Brush Creek Mining and Development Company located in Auburn, California. Prior to that, I was a

Certified Public Accountant in the practice of public accounting with both local and international accounting firms.

Q. HAVE YOU PROVIDED EXPERT TESTIMONY PREVIOUSLY?

A. Yes. I previously presented testimony in support of the ISO's GMC filing for 2001 in Docket No. ER01-313-000. I have also presented testimony as an expert witness in several real estate valuation cases, in insurance claim matters, and in a tax and securities investigation.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to explain the development of the ISO's 2012 GMC proposal. Specifically, I will discuss the background of the GMC, the cost-of-service study and stakeholder process through which the ISO developed the 2012 GMC proposal, including the ISO's use of Activity Based Costing, or "ABC," and the cost impact of the proposal on the different customer groups. I will also discuss the derivation of the rate for Transmission Owner Rights. Finally, I will explain the ISO's inclusion of a cap on the revenue requirement and a sunset date.

Ms. Deborah A. Le Vine is providing testimony that explains the process by which the GMC team associated the costs for specific ISO activities with the categories of services. She will also describe the analysis of services provided to the Transmission Ownership Rights holders that was used in determining the rate for Transmission Ownership Rights under the 2012 GMC proposal. Dr. Lorenzo Kristov's testimony will explain the rate design and the determination of

the billing determinants. Dr. Kristov will also explain the ISO's proposed grandfathering of certain power purchase agreements in order to mitigate extreme cost impacts.

Q. AS YOU TESTIFY, WILL YOU BE USING ANY SPECIALIZED TERMS?

A. Yes. Unless otherwise indicated, capitalized terms have the meanings set forth in the Master Definitions, Appendix A of the ISO Tariff.

I. HISTORY OF THE GRID MANAGEMENT CHARGE

Q. HAS THE GMC ALWAYS EMPLOYED THE SAME RATE DESIGN?

A. No. There have been three iterations of the GMC rate design: the original GMC rate design, in effect 1998 through 2000; the 2001 GMC rate design, in effect with minor modifications through 2003; and the 2004 rate design, which is in effect with certain modifications at the current time.

Q. PLEASE DESCRIBE THE ORIGINAL GMC FILING.

A. The ISO filed its original GMC on October 17, 1997. The original GMC was a single bundled formula rate designed to collect the costs of operating the ISO, including the ISO's start-up and development costs as well as ongoing operation and maintenance costs. The GMC was designed to be a monthly charge assessed to all Scheduling Coordinators.

Q. HOW DID THE GMC CHANGE IN 2001?

A. The filing of the original GMC led to negotiations and a settlement in 1998. The settlement called for a stakeholder process designed to unbundle the GMC into "buckets" reflecting the services provided. As a result of the stakeholder

process, the ISO proposed in a filing in 2000 to unbundle the GMC into three buckets: the Market Operations Charge, the Control Area Services Charge, and the Inter-Zonal Scheduling Charge. The 2001 GMC rate design was the subject of prolonged litigation. While litigation was underway, the ISO proposed an extension of the 2001 GMC rate design, with minor revisions in the nomenclature of the buckets. Pursuant to a settlement, the 2001 GMC rates design was extended through 2003, with a rate cap, subject to the outcome of the litigation. In Opinion Nos. 463, 463-A, 463-B, and 463-C, the Commission approved the 2001 GMC, with certain modifications.

Q. HOW WAS THE GMC REVISED IN 2004?

A. During the stakeholder process and litigation regarding the 2001 GMC rate design, certain parties argued for further unbundling of the GMC in order to more closely track the services that the ISO provides. Following another stakeholder process, and while litigation continued regarding the 2001 GMC, the ISO filed in 2003 a new GMC rate design, which was a formula rate with seven buckets. Specifically, the ISO proposed to unbundle the Control Area Services charge into two sub-functions, Core Reliability Services and Energy Transmission Services; and to unbundle the Market Operations and Inter-Zonal Scheduling Charges into three service categories; Forward Scheduling, Market Usage, and Congestion Management. The ISO also proposed to establish a Settlements, Metering, and Client Relations Charge, and further proposed that Energy Transmission Services be divided into Energy Transmission Services-Net Energy and Energy

Transmission Services-Uninstructed Deviations. The proceeding concluded in a settlement adopting the new design with various modifications. The settlement reduced the 2004 revenue requirement and provided revenue requirement caps for 2005 and 2006 below which the ISO would not be required to seek approval of its GMC rates.

Q. HOW WAS THE REVENUE REQUIREMENT FOR THE FORMULA RATE TO BE DETERMINED FOR 2005 AND 2006?

A. The revenue requirement was to be based on the ISO budget, as determined through the ISO's annual budget process. The rate was to be trued up to actual costs on a quarterly basis.

Q. YOU STATED THAT THIS RATE DESIGN IS CURRENTLY IN EFFECT. HOW DID THAT OCCUR?

A. From 2002 through 2009, the ISO was working on a new market design. Because of delays in implementation of the new market design, the ISO and its stakeholders agreed to extend the GMC rate design, the formula rate structure, and revenue requirement cap for 2007, 2008 and into 2009 until the effective date of the new market.

Q. WHAT WERE THE MODIFICATIONS OF THE 2004 RATE DESIGN THAT YOU MENTIONED?

A. Concurrently with extending the GMC on these three occasions, the ISO worked with its stakeholders to develop rate design modifications that would be necessary to reflect service category changes brought about by the new market

structure. The ISO proposed to retain the basic rate structure and make only those changes to the design needed to implement the new market. The modification consisted of (1) the elimination of the Congestion Management Charge; (2) modifications to the Core Reliability Services and Energy Transmission Services Charges to reflect flows on Transmission Ownership Rights; 3) changes in the billing determinants for Forward Scheduling and Market Usage Charges; and 4) an increase in the Settlements, Metering, and Client Relations Charge from $500 to $1,000. The Commission approved the proposal in 2008 and it went into effect on April 1, 2009.

Q WERE THERE ANY OTHER MODIFICATIONS?

A. Yes. Following the implementation of the new GMC, the ISO conducted a stakeholder process to address stakeholder concerns about the application of the Market Usage-Forward Energy Charge to inter-scheduling coordinator energy trades in the day-ahead market. This process culminated with the filing of a proposal to modify the billing determinants for the Market Usage-Forward Energy Charge and to extend the rest of the GMC until December 31, 2010. The Commission approved the extension of the GMC but suspended the Market Energy-Forward Usage Charge revision and set the matter for hearing and settlement procedures. Pursuant to a settlement, the revisions to the Market Usage-Forward Energy Charge went into effect on June 1, 2010. The settlement also extended the GMC rate design until December 31, 2011. In addition, as part

of the settlement, the ISO agreed to conduct a new cost-of-service study for the 2012 GMC.

Q. WHAT IS A COST-OF-SERVICE STUDY?

A. A cost-of-service study determines how the activities of each cost center or business unit should be distributed to cost categories. The results are used to assign costs to customers in a manner that reflects cost-causation.

Q. HOW DID THE ISO COMPLY WITH ITS COMMITMENT TO CONDUCT A NEW COST-OF-SERVICE STUDY FOR THE 2012 GMC?

A. The ISO determined that sufficient staff resources were available to conduct the 2012 GMC cost of service internally, but that it would require a robust internal process, employing subject matter expertise across many ISO business units, including system operations, markets and policy development, settlements, finance and others. The ISO accordingly assembled a team of internal experts to work on the project -- the “GMC team”. I served as the GMC team lead. The ISO conducted the cost-of-service study as part of the development of the proposed revised GMC design that is the subject of this proceeding. In contrast to the cost-of-service study conducted in 2007, by which we intended to update cost allocations and billing determinants without requiring substantial changes to the GMC rate design, the ISO started the cost-of-service study for the 2012 GMC at ground level and re-evaluated all aspects of the GMC structure.

II. ISO REVENUE REQUIREMENT

Q. YOU STATED THAT THE REVENUE REQUIREMENT FOR THE FORMULA RATE IS DETERMINED THROUGH THE ISO'S BUDGET PROCESS. PLEASE DESCRIBE THAT PROCESS.

A. The budget process is set forth in Appendix F, Schedule 1, Part D of the ISO Tariff. It begins with an initial meeting with stakeholders, generally in June of each calendar year, at which the ISO receives ideas to control ISO costs; ideas for projects to be considered in the capital budget development process; and, suggestions for reordering ISO priorities in the coming year. Within the following two weeks, those ideas are submitted to the ISO's officers, directors and managers as part of the budget development process.

The ISO then prepares and submits a draft budget to the ISO Governing Board on an informational basis, after which it provides stakeholders with (a) the proposed capital budget with indicative projects for the subsequent calendar year, a budget-to-actual review for capital expenditures for the previous calendar year, and a budget-to-actual review of current year capital costs; and, (b) expenditures and activities in detail for the subsequent calendar year (in the form of a draft of the budget book for the ISO Governing Board), budget-to-actual review of expenditures and activities for the previous calendar year, and a budget-to-actual review of expenditures for the current year. This presentation generally occurs at the September or early October Board meeting each calendar year.

With this schedule, stakeholders then have substantially more time than the tariff-required forty-five (45) days for review between initial budget posting and final approval of the budget by the ISO Governing Board in December. At least one month prior to the ISO Governing Board meeting on the proposed budget, generally in November, the ISO holds a stakeholder meeting or conference call to discuss the details of the ISO's budget and revenue requirement. If necessary, the ISO will host a workshop on the ISO's budget preparation process in advance of the meeting.

As described in the tariff, the ISO responds in writing to all written comments on the draft annual budget submitted by stakeholders or issues a revised draft budget indicating in detail the manner in which the stakeholders' comments have been taken into consideration.

Q. WHAT WAS THE 2011 BUDGET?

A. The 2011 budget provided for a revenue requirement of $189.8 million, which was a $5.2 million decrease from 2010. A complete copy of the 2011 budget report is included as Exhibit No. ISO-17.

Q. WHAT IS THE STATUS OF THE 2012 BUDGET?

A. The kick-off meeting for the 2012 budget was held on June 16, 2011.

II. GMC DESIGN REVISION

Q. WHY DID THE ISO DECIDE TO REVISE THE DESIGN OF THE GMC?

A. The ISO introduced a new market design with new rules on April 1, 2009. Although the ISO revised the GMC to reflect the new market design, the structure

of the new market is significantly different from the prior structure and the current GMC design does not accommodate the new market structure well. The ISO currently has 7 GMC service categories, which contain 17 charge codes and do not align well with market activities. Moreover, market enhancements frequently require the addition of a new service category and recovery methodology. The ISO concluded that absent a fundamental GMC design change, the implementation of additional market enhancements will increase the number of GMC service categories and charge codes, further contributing to the complexity of the rate structure.

Q. COULD YOU PROVIDE SOME EXAMPLES OF ISSUES THAT HAVE ARISEN WITH THE CURRENT GMC DESIGN?

A. Among other issues, because the current GMC structure could not accommodate the recovery of the costs of implementing convergence bidding in a manner related to cost-causation, the ISO had to create a new service category containing two new charge codes. Fairly allocating the Market Usage-Forward Energy charge presented similar challenges; virtually all parties agreed that the settlement related to the Market Usage-Forward Energy charge, while just and reasonable, was not ideal and needed to be revisited. Although the new market already has uplift costs to deter deviations, the current GMC design additionally charges scheduling coordinators for imbalances, which are very difficult to forecast. Finally, the Settlements, Metering, and Client Relations Charge, as structured, only collects a small fraction of the indirect costs associated with

these functional areas; the remaining costs are allocated to the other service categories.

Q. ARE THERE OTHER REASONS THAT CONTRIBUTED TO THE DECISION TO REVISE THE GMC DESIGN?

A. Yes. Other circumstances had changed significantly from those that existed at the time of the 2004 GMC settlement and those changed circumstances weighed in favor of a re-examination of the GMC design. Specifically, (1) the ISO had undergone a major corporate reorganization; (2) the ISO's debt structure had changed due to the ISO's construction of a new office building; (3) repayment of the bonds issued to fund the ISO's new market was imminent; and (4) stakeholders, who had previously participated in the 2004 GMC settlement, were now requesting greater GMC clarity, predictability and simplicity.

Q. DOES THE ISO PROPOSE TO CHANGE THE UNDERLYING FUNDAMENTAL DESIGN OF THE GMC?

A. No. The current GMC is a formula rate, whereby the ISO's revenue requirement is allocated based on a matrix of percentages allocating the activities of all the ISO cost centers to a set of GMC components, and then ultimately to GMC charge codes. These GMC charge codes are then recovered from the users of ISO services in accordance with objective billing determinants, which are calculated for each user in each billing period and reflect each user's activities and use of ISO services. The ISO's revenue requirement is determined by the annual budget developed with stakeholder input according to a process set forth

in the tariff and approved by the ISO Board. The tariff contains a revenue requirement "cap" under which the ISO may continue to recover the GMC without seeking FERC approval for changes to particular charges due to the formula rate implementation. The ISO believes that these aspects of the GMC design work well, and stakeholders have not expressed an interest in changing these aspects.

Q. ON WHAT PRINCIPLES DID THE GMC TEAM RELY IN DEVELOPING THE 2012 GMC?

A. In consultation with stakeholders, the team relied upon seven rate design principles in developing the 2012 GMC proposal:

- Cost Causation – Costs will be properly allocated to the correct GMC buckets and charged to those who benefit from or utilize those services.
- Focus on use of ISO services, not market behavior – The new GMC design should reflect its primary purpose as a vehicle for recovering the ISO's revenue requirements based on each user's use of the ISO's services, not as a tool for shaping incentives based on market or operating behavior. Incentives such as these are appropriately addressed through the design of the market structure and market rules.
- Transparency – Costs and billing determinants will be clear, visible, and understandable to all market participants.
- Predictability – Market participants will be able to determine in advance what their GMC costs will be depending on their activity.

- Forecastability – The rates should utilize billing determinants that can be easily forecasted by both the ISO and market participants. This should result in fewer rate adjustments during the year.
- Flexibility – The new GMC structure should easily accommodate future market enhancements without excessive complexity or disrupting the overall structure.
- Simplicity – Simplify the current GMC structure to reduce the amount of varying bill determinants and the number of charge codes.

Q. PLEASE DESCRIBE THE PROCESS FOR DEVELOPING THE 2012 GMC.

A. There were five activities that we performed, in consultation with stakeholders, in developing the 2012 GMC:

- Functionalization - The process by which various activities are defined and sorted into service categories (functions and sub-functions) to reflect the different services provided by the ISO.
- Cost Allocation - The process by which the costs of providing services are allocated to the service categories (functions and sub-functions).
- Classification - The determination of billing determinants based on the customer cost causation factors.
- Rate Design - The process for deriving rates that divides the revenue requirement for each service category by the billing determinants.
- Bill Impacts Analysis - An evaluation of the impacts that the rate design will have on individual customer bills.

The first two of these activities are achieved through the cost-of-service study. As I previously stated, I will be describing those two activities and the bill impact analysis. Ms. Le Vine will discuss the development of the allocation matrix used in cost allocation, and Dr. Kristov will discuss classification and rate design.

III. STAKEHOLDER PROCESS

Q. PLEASE DESCRIBE STAKEHOLDER INVOLVEMENT IN THE DEVELOPMENT OF THE 2012 GMC PROPOSAL.

A. As I have noted, stakeholder interest in greater clarity, predictability and simplicity was one of the factors that prompted the ISO's decision to revise the GMC design for 2012. The formal stakeholder process began April 21, 2010, when the ISO first discussed the process and timeline with stakeholders. On October 8, 2010, the ISO posted a discussion paper presenting methodology and initial results of the cost of service study and allocation of costs, which is presented as Exhibit No. ISO-2. The discussion paper also described the ISO proposed principles, discussed above. The ISO discussed these matters with stakeholders at a meeting on October 14 and solicited comments on the discussion paper. The comments on the discussion paper and the ISO's responses are included as Exhibit No. ISO-11.

Q. WHAT WERE THE NEXT STEPS?

A. After considering comments, on November 11, 2010, the ISO issued a straw proposal, which appears here as Exhibit No. ISO-3. The straw proposal included three charges: Market Services, System Operations, and Congestion Revenue

Rights, or "CRR," Services. The proposal also included certain set fees. The ISO discussed the straw proposal with stakeholders during a telephone and web conference on November 18 and again solicited comments. During the conference, stakeholders requested data on bill impacts, based on the proposed GMC rate design and historical data. The stakeholder comments on the straw proposal and the ISO's responses are included as Exhibit No. ISO-12.

Q. HOW DID THE ISO RESPOND TO THE REQUEST FOR BILL IMPACT DATA?

A. The GMC team used historical data to develop estimated bill impacts for the individual scheduling coordinators and for the major classes of customers. Under section 20 of the ISO Tariff, however, there are limits on the ISO's release of individual scheduling coordinator data. To ensure compliance with section 20, the ISO used only individual data that were six months old and did not identify, or permit identification of, the applicable scheduling coordinator. The ISO allowed scheduling coordinators to view their own bill impacts on a confidential basis. The ISO issued a market notice to this effect and released the data on December 2, 2010, which is included as Exhibit No. ISO-4. The ISO conducted a stakeholder meeting to discuss the data on December 13. The stakeholder comments on the bill impacts and the ISO's responses are included as Exhibit No. ISO-13. The ISO also posted additional information about the proposed billing determinants addressed in the straw proposal on December 16, 2010, which appears as Exhibit No. ISO-5.

Q. HOW DID THE ISO PROCEED AFTER THE DECEMBER 13 MEETING?

A. After considering comments on the straw proposal and on the bill impacts, the ISO posted a modified straw proposal and revised bill impact information. The modified straw proposal is Exhibit No. ISO-6. The ISO proposed the modification to ameliorate certain bill impacts. Specifically, the ISO proposed to phase in the applicability of the System Operations Charge to suppliers; to exclude Transmission Ownership Rights from the Market Services Charge and to limit the exposure of Transmission Ownership Rights to the System Operations charge, and to modify some of the fees. The ISO also proposed modification of its revenue cap proposal – from a five-year stepped cap to a three year uniform cap. The ISO held another stakeholder telephone and web conference to discuss the modification of the GMC proposal on January 20, 2011. Stakeholder comments and the ISO's responses are included as Exhibit No. ISO-14. On February 8, 2011, the ISO again conducted a stakeholder telephone and web conference, this time to discuss further modification of the straw proposal; instead of phasing in the applicability of the Systems Operation Charge to suppliers, the ISO proposed to grandfather, *i.e.*, to exempt, suppliers that had entered long term contracts in reliance on the existing GMC provisions until the first opportunity to revise the contracts. Stakeholder comments on that proposal and the ISO's responses are included as Exhibit No. ISO-15.

Q. HOW DID THE ISO PROCEED FROM THIS POINT?

A. After considering the comments on the most recent proposal, the ISO posted a draft final proposal on February 15, 2011, presented as Exhibit No. ISO-7, and hosted a stakeholder telephone and web conference regarding the proposal on February 22, 2011. Stakeholder comments on that proposal and the ISO's responses are included as Exhibit No. ISO-16. Following consideration of these comment, the ISO management finalized the 2012 GMC proposal for presentation to the ISO Board of Governors.

IV. COST-OF-SERVICE STUDY: FUNCTIONALIZATION

Q. YOU STATED EARLIER THAT THE ISO USED ACTIVITY-BASED COSTING, OR "ABC," IN THE COST-OF-SERVICE STUDY. WHAT IS ACTIVITY-BASED COSTING?

A. ABC is a costing model that identifies activities in an organization and assigns the cost of each activity to products and services produced by the organization according to the actual consumption by each. While the ISO did not begin using ABC until 2008, the identification of the information needed to make the costing model successful began in 2006 with a company-wide process mapping effort, which developed into a hierarchy of business processes. The ISO's ABC analysis disaggregated the ISO operations into ten core functions (level 1 activities). Each of the core activities were broken down into major processes (level 2 activities). Unlike earlier descriptions of ISO activities for developing cost categories, the ABC activities are linked to specific processes and are

measurable. Time reporting on level 1 activities commenced October 2009 with pilot programs on level 2 activities. The ISO intends to move to full level 2 time-reporting by the end of 2011.

Q. WHAT ACTIVITIES WERE IDENTIFIED FOR THE COST-OF-SERVICE STUDY?

A. The level 1 activities can be categorized into two types: (1) direct operating costs, *i.e.*, those that can be directly mapped to a market, grid service or customer and (2) indirect costs, *i.e.*, those that support the direct activity. Of ten level 1 activities, the GMC team categorized six as direct operating costs and four as indirect or support costs. They are described in Table 1 of Exhibit No. ISO-2. Each of the level 1 activities comprised multiple level 2 activities. The level 2 activities analyzed in the cost-of-service study were the processes that had been mapped as of May, 2010. A complete list of level 2 activities is included as Exhibit 1 to the October 8, 2010 Discussion Paper (Exhibit No. ISO-2).

Q. HOW DID THE ISO USE THE ABC ANALYSIS IN DEVELOPING THE 2012 GMC?

A. The ISO considered a number of options for aggregating activities. The first option was to map activities to the existing GMC service categories. However, the existing structure was too complex to achieve the goals of greater transparency, predictability and simplicity. Level 2 activities would need to be further broken down in order to make mapping possible. For example the ISO

does not have any activity related specifically to deviations, although there is a GMC charge related to deviations.

We then examined a second option: to map activities to customer categories. The ISO prepared a list of 31 customer categories, including utility distribution companies, merchant generation, proxy demand response, self-scheduled exports, and many more. When we mapped these categories to the level 2 activities, it soon became apparent that in a majority of cases the level 2 activity applied to all categories. This observation prompted a third option, identifying common activities across all customers.

Q. WHAT COMMON ACTIVITIES DID THE ISO IDENTIFY?

A. An examination of the ISO's map of customer activity for the new nodal market systems revealed a common sequence of activities. Energy flowed on the ISO grid based on (1) bids that customers submitted and (2) schedules that the ISO's market systems subsequently awarded. In addition, there were activities related to Congestion Revenue Rights, or "CRRs." Based on this sequence, the ISO established three categories of activities: Market Services, System Operations, and CRR Services. This structure, incidentally, is very similar to what other ISOs and RTOs with nodal markets have implemented to recover their administrative charges.

Q. WHAT WAS THE NEXT STEP IN FUNCTIONALIZATION?

A. The next, and final, step in functionalization was to produce an allocation matrix that mapped the level 2 activities to the three cost categories. The ISO mapped

direct costs as (1) all in one category or not in the category (100% or 0%), (2) split between two categories (50% / 50%), or (3) partially in one category or another (80% or 20%), or in the case of CRRs, a small portion of the activity (10%). The ISO mapped support costs as "indirect," for later allocation to the cost categories. The ISO also applied the mapping to the software underlying the debt service portion of the revenue requirement. Ms. Le Vine will testify regarding this mapping process. The allocation matrix is included as Tables 2 and 3 in Exhibit No. ISO-2.

V. COST-OF-SERVICE STUDY - COST ALLOCATION.

Q. PLEASE DESCRIBE THE COST ALLOCATION PROCESS.

A. As I noted earlier, cost allocation is the process by which the costs of providing services are allocated to the service categories (functions and sub-functions). In this case, we applied the level 2 allocation matrix to the ISO's 2010 revenue requirement to determine the costs associated with each of the three categories of activities: Market Services, System Operations, and CRR Services. We applied this process separately to operations and maintenance, or "O&M" costs, to debt service and out of pocket capital expenses, and to the operating reserve credit and miscellaneous revenue. We then aggregated the direct costs in each cost category and determined the percentage attributable to each. We used those direct cost percentages to allocate indirect costs and added the results to the totals for each cost category.

Q. HOW DID THE ISO MAP THE O&M COSTS?

A. We first reviewed the 2010 O&M budget to segregate non-ABC costs, that is, those costs that could not be associated with level 2 activities, such as facilities costs. The next step was to associate activity-related costs with specific level 2 activities. Because each of the ISO's 80 cost centers had been coding their time to level 1 activities during 2010, the ISO was able to identify each cost center that had recorded time to direct level 1 activities. We recorded all of the activity costs for cost centers with no direct activities as indirect (support) costs. We sent a questionnaire to the managers of each such cost center that had direct costs asking them to identify the percentage of time devoted to each of the level 2 activities and met with each of them to review their responses for reasonableness. We then applied the reported percentages to the cost center's 2010 budget to determine that cost center's costs associated with each level 2 activity. By aggregating the costs reported by the cost centers for each level 2 activity, we were able to calculate an ISO-wide cost for that activity.

We next used the level two allocation matrix to allocate the costs of the level 2 activity to the Market Services, System Operations, CRR Services, or Indirect (support) cost categories. Finally, by aggregating the amounts allocated to each cost category, the ISO determined the total O&M to be included in each of those categories.

We then turned to the non-ABC costs. With one exception, we allocated those costs to the indirect (support) category. We allocated professional fees for

the audit of controls around the settlement of the market (the SAS 70 audit) 45% to Market Services, 45% to Systems Operations, and 10% to CRRs. These were the same percentages used for the allocation of the level 2 activities for market settlements.

Finally, we summed the O&M cost for each category. Market Services represented $11.924 million, System Operations $46.373 million, CRRs $1.6 million, and Indirect $102.798 million. These calculations appear in Table 12 of Exhibit No. ISO-2.

Q. HOW DID THE ISO ALLOCATE DEBT SERVICE AND OUT-OF-POCKET EXPENSES TO COST CATEGORIES?

A. As I mentioned above, we had prepared a cost allocation matrix for each of the debt service and out-of-pocket capital items in the budget. We applied that matrix to the budgeted amounts and summed the results for each cost category. Market Services represented $21.3 million or 27%, System Operations $46.373 million or 48%, CRRs $1.6 million or 4%, and Indirect $102.798 million or 21%. These calculations appear in Table 9 of Exhibit No. ISO-2.

Q. HOW DID THE ISO ALLOCATE MISCELLANEOUS REVENUE AND OPERATING RESERVE CREDIT TO COSTS CATEGORIES?

A. We review the components of miscellaneous revenue and determined that the entire $8.1 million should be classified as indirect. We also reviewed the components of the operating reserve credit. With one exception, we allocated them to the indirect category. We allocated the change in debt service reserve

based on the percentages we had calculated for debt service. As a result, we allocated the operating reserve credit $3.295 million to Market Services, $5.856 million to System Operations, $0.488 million to CRRs and $25.861 million to indirect costs. This information is in Table 11 of Exhibit No. ISO-2.

Q. WHAT WAS THE TOTAL ALLOCATION TO COST CATEGORIES?

A. The percentages of direct costs were 27% Market Services, 69% System Operations, and 4% CRRs. After we allocated a total of $84.544 million of indirect costs according to these percentages, the total revenue requirement for Market Services was $52.756 million; the total revenue requirement for System Operations was $134.883 million; and the total revenue requirement for CRRs was $7.456 million. The breakdown of these amounts appears in Table 12 of Exhibit No. ISO-2.

Q. HAVE YOU CALCULATED ESTIMATED RATES BASED ON THESE DATA?

A. Yes. During the development of the GMC, we used volume data from June 1, 2009, to May 31, 2010, and equalized the 2010 revenue requirement to the actuals expenditures for that period. With that data, the rate for Market Services would have been $0.0914/MWh (energy) or MW (award); the System Operations rate would have been $0.2700/MWh; and the CRR Services rate would have been $0.0113/MWh.

VI. TRANSMISSION OWNERSHIP RIGHTS

Q. YOU MENTIONED SPECIAL RATE TREATMENT FOR TRANSMISSION OWNERSHIP RIGHTS. PLEASE EXPLAIN THAT.

A. Transmission Ownership Rights refers to the ownership rights to facilities within the ISO Balancing Area of entities that have not executed the Transmission Control Agreement, such that their facilities are not a part of the ISO Controlled Grid. The ISO has in the past recognized that it provides only limited services to the possessors of Transmission Ownership Rights, and thus has historically not charged such entities the full GMC.

Q. HOW DID THE ISO DETERMINE THE RATE FOR TRANSMISSION OWNERSHIP RIGHTS?

A. As Ms. Le Vine discusses in her testimony, as part of the cost-of-service study, the ISO determined that the only services provided to Transmission Ownership Rights are a limited number of ABC level 2 activities. These activities are all related to System Operations because there is no Transmission Ownership Rights participation in the Market Services category. The ISO calculated the direct costs of those activities and the percentage of System Operations direct costs that those activities represent. The ISO then allocated indirect costs to those activities based on the percentage of direct costs. The total direct and indirect costs for activities that served Transmission Ownership Rights was $45.197 million. Next, the ISO determined the ratio of Transmission Ownership Rights MWh to total MWh, which was 2%. Applying the 2% to the total direct and

indirect costs, the ISO determined that $0.9 million in costs were attributable to Transmission Ownership Rights. The ISO evaluated different methodologies to adjust the Transmission Ownership Rights rate in order to recover this amount. We determined that using the minimum of supply or demand would reduce the number of billable Transmission Ownership Rights MWh to 3.3 million MWh and that then using a rate of $0.27/MWh would collect revenue of $0.9 million.

VII. BILL IMPACT ANALYSIS

Q. YOU STATED THAT BILL IMPACT ANALYSIS WAS THE LAST PHASE OF DEVELOPING A REVISED GMC RATE DESIGN. WHAT BILL IMPACT ANALYSIS DID THE ISO PERFORM?

A. As I discussed in connection with the stakeholder process, the ISO performed a bill impact analysis on its initial straw proposal, both for individual scheduling coordinators and on an aggregate basis by customer type, which led to proposed modifications, for which the ISO also performed bill impact analyses. Subsequently, the ISO abandoned one of the proposed modifications – phasing in of System Operations charges to suppliers – in favor of grandfathering of certain suppliers, which is included in the final proposal and discussed in Dr. Kristov's testimony.

Q. WHAT IS THE AGGREGATED BILL IMPACT OF THE FINAL PROPOSAL?

A. The 2012 GMC rate design would have the biggest impact on holders of CRRs. Their share of the overall GMC would be $4.43 million, up from $0.33 million. The share paid by Investor-Owned Utilities would increase from $121.55 million

to $128.39 million and that paid by suppliers would increase from $17.20 million to $19.44 million. The share paid by municipal utilities would decrease to $17.59 million from $19.93 million and that paid by importers and marketers would decrease from $30.98 million to $20.93 million. Other market participants, a catch-all category, would pay $4.33 million, versus $5.11 million under the current rate design. The ISO believes these results are the result of more closely aligning the GMC rate with cost causation.

IX. REVENUE CAP AND SUNSET

Q. WHY DID THE ISO INCLUDE A RATE CAP AND SUNSET DATE?

A. Because the GMC is a formula rate, the ISO does not believe that a revenue requirement cap or sunset date is a necessary element of the rate. Nonetheless, as part of the settlement of the 2004 GMC, the ISO agreed to a revenue requirement cap. Under that settlement, the parties agreed that, until 2007, the ISO could avoid a filing under section 205 if the revenue requirement did not exceed $195 million in 2004 and 2005 and $197 million in 2006. As I discussed above, this aspect of the agreement was extended on an annual basis and is in place today. Because the rate cap remains important to a number of stakeholders, the ISO decided to include a rate cap in its current proposal.

It is, of course, difficult to forecast the ISO's revenue requirements more than three years out and to persuade stakeholders to accept such forecasts. Rather than attempt to specify future revenue requirements, the ISO decided to limit the current GMC to three years, after which the ISO can revisit the revenue

requirement and rate structure if it desires. The ISO recognizes that a sunset date is not necessary to achieve this end and that stakeholders that believe that the formula is no longer reasonable can always file a complaint. Nonetheless, the ISO believes that a sunset date provides greater comfort to those stakeholders that have concerns about potential ISO spending.

Q. WHAT REVENUE CAP DOES THE ISO PROPOSE?

A. The ISO is proposing to maintain the current revenue cap of $197 million for 2012. For 2013 and 2014, the ISO is proposing a cap of $199 million.

Q WHAT IS THE BASIS FOR THIS PROPOSED CAP?

A. The cap was determined through the stakeholder process. There was general support and no opposition to the proposal. The ISO's revenue requirement was approximately $190 million for 2010. Future revenue requirements will be affected by load growth and inflation. If one assumes a volume growth of 1% and an operations and maintenance cost increase of 1.6%, the out-of-pocket capital of $19.5 million, the ISO's revenue requirement will be $193 million in 2012, $194 million in 2013, and $196 million in 2015. If operations and maintenance costs instead increase by a still modest 3.1%, the revenue requirement for those years would be $193 million, $195 million, and $197 million, respectively. A revenue cap, to serve its purpose, should be sufficiently above those amounts to allow for contingencies, but not by so much to encourage profligate spending. The caps exceed the projected revenue

requirement by between 1% and 2%, which the ISO believes is consistent with these purposes.

Q. THANK YOU, MR. EPSTEIN. I HAVE NOTHING FURTHER.

DECLARATION OF WITNESS

I, Michael E. Epstein, declare under penalty of perjury that the statements contained in the Direct Testimony of Michael K. Epstein on behalf of the California Independent System Operator Corporation in this proceeding are true and correct to the best of my knowledge, information, and belief.

Executed on this 5th day of July, 2011.

/s/ Michael K. Epstein
Michael K. Epstein

Attachment E – CAISO Responses to Stakeholder Comments

2023 Grid Management Charge – Cost-of-Service Study Update

California Independent System Operator Corporation

September 29, 2023

Comments on 2023 COSS

Cost of service study - 2023

Comment period

Jul 08, 2023, 08:00 am - Jul 19, 2023, 05:00 pm

Submitting organizations

- California Community Choice Association
- Six Cities

California Community Choice Association

Submitted on 07/19/2023, 02:09 pm

Contact

Shawn-Dai Linderman (shawndai@cal-cca.org)

1. Please provide your organization's comments on the 2023 Cost of Service Study

CalCCA has no comments at this time.

2. Please provide your organization's comments on the 2024-2026 Grid Management Charges Update

CalCCA has no comments at this time.

3. Please provide your organization's comments on the EDAM Transitional Ramp-In Model Proposal

The California Community Choice Association (CalCCA) appreciates the opportunity to comment on the Extended Day-Ahead Market (EDAM) Transitional Ramp-In Model. CalCCA is in full support of the California Independent System Operator's (ISO) efforts to implement EDAM and looks forward to robust day-ahead market participation across a wide footprint in the West. CalCCA is also in full support of Balancing Authority Areas (BAAs) outside of the ISO choosing to join EDAM when those BAAs find the benefits of joining EDAM exceed the costs.

While the cost-benefit assessment for EDAM BAAs should include all costs, including the Grid Management Charge (GMC), the ISO proposes the EDAM Transitional Ramp-In Model in which EDAM BAAs outside of California only pay a percentage of their portion of the GMC for the first four years of EDAM. This creates an unfair allocation of GMC costs because supply and California load would pay more than they would have if EDAM load paid their full share of the costs and EDAM

BAAs outside of California will pay less. This is despite all market participants receiving benefits from participating in the day-ahead market. Development and operation of an EDAM will require significant resources from the ISO, and only requiring a portion of market participants to pay their share of the costs associated to run the market creates a cost shift to California load.

CalCCA fully supports EDAM BAAs joining EDAM when they identify a benefit to them doing so. The EDAM Transitional Ramp-In Model unnecessarily skews the costs and benefits of EDAM. The ISO should instead require all EDAM load, including California load-serving entities and EDAM BAAs, to pay their full GMC upon day one of EDAM.

ISO RESPONSE:

The CAISO thanks CalCCA for their comments.

The costs incurred by the CAISO to onboard an EDAM entity will be reimbursed by the EDAM entity.

In regards to the operational costs, the supply-based charges will be fully recovered by EDAM entities and is similar in comparison to any resource inside the CAISO. Only the load-based charges are proposed to be ramped in over the first four-years of EDAM, in part because load is not exercising all the services California load is using. For example, by design, EDAM does not initially cover ancillary services, convergence bidding nor make use of congestion revenue rights and therefore EDAM entity load will not have the same access to all these services as the California load will. Finally, EDAM has not been tried before and is incremental to the WEIM. Therefore, the model was developed as a solution that scales the load-based costs with the expected growth in the use and benefits as a function over time as other EDAM entities join and participate growing the utility of the EDAM for California and early adopters of the EDAM.

This model incentivizes early adoption and immediately benefits all existing CAISO customers by reducing the costs of service for all Market Services and System Operations Real-Time Dispatch customers.

If the CAISO required all EDAM load to pay all load charges from year one then it may impede the early start-up of EDAM and doing so would ultimately deny or delay existing California entities early GMC cost reduction and operational benefits of EDAM.

Six Cities

Submitted on 07/19/2023, 03:52 pm

Submitted on behalf of

Cities of Anaheim, Azusa, Banning, Colton, Pasadena, and Riverside, California

Contact

Margaret McNaul (mmcnaul@thompsoncoburn.com)

1. Please provide your organization's comments on the 2023 Cost of Service Study

At this time, the Six Cities do not have comments on the Cost of Service Study.

2. Please provide your organization's comments on the 2024-2026 Grid Management Charges Update

At this time, the Six Cities do not have comments on the Grid Management Charge Update.

3. Please provide your organization's comments on the EDAM Transitional Ramp-In Model Proposal

The Six Cities do not oppose the EDAM Transitional Ramp-In Model, but do have concerns about whether it provides just and reasonable rates and reflects an appropriate rate design for CAISO entities. Under the proposed approach, the CAISO will limit the application of increased costs associated with its Grid Management Charges to new EDAM participants during an initial, four-year transition period ending in 2028. Under the Transitional Ramp-In, EDAM administrative fees (including the Market Services Charges and the new System Operations Real Time Dispatch Charges) applicable to load volumes are limited to increases over currently-applicable EIM administrative charges of 5% in 2025, 25% in 2026, 50% in 2027, and 75% in 2028, with fully-applicable charges applying in 2029 and no discounting of supply volumes during the transition period. Underpinning this proposal is a desire by the CAISO to remove a perceived disincentive to membership in the EDAM resulting from exposure to increased administrative charges; the CAISO explains that increases in administrative fees may materially impact the costs/benefits of EDAM for particular entities and serve as a barrier to participation. (*See generally* 2023 Cost of Service Study and 2024 GMC Update Draft at 73.) To make early participation commitments in EDAM more attractive, the CAISO states that it does not currently intend to extend this transition period Cbeyond the end of 2028. (*Id*. at 73-74.)

While the Six Cities understand and support the CAISO's objective of encouraging early EDAM participation commitments, the Six Cities have reservations about whether it is reasonable for the CAISO footprint to effectively subsidize a transition period for EDAM participants by agreeing to relinquish a share of the reduction in Grid Management Charges that CAISO entities would otherwise have received if EDAM participants pay their full share of administrative charges. Presumably a rational cost/benefit analysis of EDAM membership would consider the potential for increased Grid Management Charges resulting from broader market participation. If the calculation of such costs/benefits is indeed sensitive to what are relatively modest impacts in administrative charges, then that would seem to reveal potentially significant issues with the costs and benefits of the overall market design, rather than a need for a temporary defrayal in these administrative costs. Moreover, with respect to PacifiCorp specifically, the Six Cities note that PacifiCorp has already recouped significant benefits from its participation in the EIM, with the CAISO reporting a cumulative total of more than $620 million in benefits to PacifiCorp since 2014. On a load-weighted basis, EIM benefits to PacifiCorp have substantially exceeded load-weighted benefits to the CAISO BAA, which has a much greater load and experienced $758 million in benefits over the same period. (*See* Western EIM Benefits, available at Benefits - Western Energy Imbalance Market (westerneim.com).) There is little reason to think that PacifiCorp's relatively high benefits from regional market participation would diminish in a material way if it joined EDAM and did not receive a CAISO-funded Grid Management Charge subsidy for its participation. Given this, the EDAM Transitional Ramp-In Model strikes the Cities as a somewhat gratuitous benefit for potential EDAM participants that is unlikely to (and really should not) drive participation decisions or materially reduce the benefits of market participation.

While the Cities question the justifications for the policy choice being proposed, the Six Cities reluctantly do not oppose the proposed Transitional Ramp-In Model. However, their lack of opposition is contingent on the CAISO's commitment not to later extend this discounting to other entities for future years, and, at this time, the Six Cities do not anticipate supporting any future

extensions of the transition period. Given the CAISO's explanation that this Ramp-In is necessary to attract early EDAM participation commitments, it would not be reasonable or appropriate to later extend or revise this treatment to attract new participants in future years.

ISO RESPONSE:

The CAISO thanks the Six Cities for their comments and their lack of opposition to the proposed transitional load ramp-in model.

The CAISO believes the transitional load ramp-in model is a just and reasonable model for aligning the costs with benefits of the EDAM services that will grow with increased participation. As mentioned previously, EDAM does not initially cover ancillary services, convergence bidding nor make use of congestion revenue rights and therefore EDAM entity load will not have the same access to all these services as the California load will. Additionally, the incentive of the ramp-in model for early adoption increases the overall benefit for California entities.

Further, the CAISO believes that since the actual benefits of EDAM have not been measured from actual operation and the ultimate benefits that do accrue are a function of the number of those participating in EDAM, that the ramp in model provides incentives for early adoptions that will best align costs with benefits while providing immediate GMC cost reduction and operational benefits to existing California customers.

As the ramping of the WEIM benefits grew as WEIM participation grew, the CAISO believes the benefits of EDAM will grow as EDAM participation grows. As such, the CAISO doesn't view the transitional load ramp-in model as a subsidy but rather a mechanism for allowing the benefits to be understood and grow as function of time and additional participation.

The CAISO is in agreement with the Six Cities in keeping the ramp-in period fixed to only the initial four years of EDAM operations and will not be extended or stretched out once filed and approved.

California Public Utilities Commission

Wednesday, July 12, 2023 12:15 PM

Contact

Kyle Navis (Kyle.Navis@cpuc.ca.gov)

Hello,

This question should probably be directed to April Gordon or Ryan Seghesio. I have a follow up question related to today's stakeholder call on the CAISO Grid Management Charge (GMC).

Specifically, I'm looking Table 58 on p. 74 of the GMC Update (reproduced below).

Table 58 - Scenario Comparison

Projected Market Services (DA and RT) and System Operations (RTD) Revenue Contributions

($ in millions)

Scenario		2025	2026	2027	2028	2029
Base: No EDAM Participation						
CAISO (inclusive of RC funding requirement contribution impacts)		$ 160.5	$ 165.3	$ 170.3	$ 175.4	$ 180.7
PAC (existing WEIM and NPM Charges)		$ 12.9	$ 12.9	$ 13.3	$ 13.3	$ 13.3
	Revenue Contributions	$ 173.4	$ 178.2	$ 183.6	$ 188.7	$ 194.0
Scenario 1a: Only CAISO and PAC (Yrs 1-5) w/o Load Volume Ramp-In						
CAISO's portion of the charges		$ 125.8	$ 129.5	$ 133.4	$ 137.4	$ 141.6
PAC's portion of the charges		$ 47.7	$ 49.1	$ 50.6	$ 52.1	$ 53.7
	Revenue Contributions	$ 173.4	$ 178.6	$ 184.0	$ 189.5	$ 195.2
Scenario 1b: Only CAISO and PAC (Yrs 1-5) w/Load Volume Ramp-In						
	EDAM Load Volume Ramp-In	5%	25%	50%	75%	100%
CAISO's portion of the charges		$ 139.4	$ 140.0	$ 140.1	$ 140.6	$ 141.6
PAC's portion of the charges		$ 34.0	$ 38.7	$ 43.9	$ 48.9	$ 53.7
	Revenue Contributions	$ 173.4	$ 178.6	$ 184.0	$ 189.5	$ 195.2
Reduction in CAISO charges from Base		$ 21.1	$ 25.4	$ 30.2	$ 34.8	$ 39.1
PacifiCorp's Scenario 1b ramp-in compared to what they would be charged for full supply and load (Scenario 1a) from year 1.		29%	21%	13%	6%	0%

Could you clarify how these amounts would change if another participant were to opt to join EDAM? We're especially interested in Scenario 1b—how would the CAISO and PAC portion of the charges change with a third participant? And would the total Revenue Contribution baseline increase or remain constant?

ISO RESPONSE:

The CAISO does not project the need to increase its Revenue Requirement (the basis of the GMC rates per MWh) due to additional EDAM participants joining. However, with additional entities joining EDAM there will be an increase in the Day-Ahead Market volumes and that will be used to calculate the Market Services rate per MWh. In other words, the additional Day-Ahead Market volumes will drive the Market Services rate per MWh lower. The decreased rate will benefit the CAISO and PacifiCorp as their percentage of the RR to recover will decrease.

Attachment F – Presentation Materials from July 12, 2023 Stakeholder Meeting

2023 Grid Management Charge – Cost-of-Service Study Update

California Independent System Operator Corporation

September 29, 2023

Briefing on 2023 Cost of Service Study and 2024-2026 GMC Update

April Gordon
Director, Financial Planning and Procurement

Stakeholder Meeting Call
July 12, 2023

Agenda

TOPIC
Cost of Service Study Overview
Summary of 2023 COSS Results
Other Changes
Planned Tariff Amendments
Key Calendar Dates and Next Steps
Stakeholder Feedback and Discussion

What is the cost of service study?

A triennial study in which activity based costing (ABC) and the revenue requirement components are used to set forth the *cost category percentages* used to calculate the annual grid management charges (GMC) as well as other rates and fees.

GMC Rate Calculation								
Annual Revenue Requirement	X	Cost of Service Study's GMC Percentages	=	Amount to Collect per GMC Cost Category	/	Estimated GMC Volumes	=	GMC Rates

What steps are involved?

Timecard Data

Maintain business processes

Collect:

- Hours
- Process + Project Codes
- Task Codes

Triennial Cost of Service Study

Map out direct and indirect costs

Calculate cost category allocation percentages

Reassess supplemental service charges, fees, and rates

Annual Revenue Requirement

Allocate annual revenue requirement into cost categories to determine GMC Rates:

- Market Services (RTM / DAM)
- System Operations (RTD / BAAS)
- CRR Services
- Reliability Coordinator Services

Mapping of Core Business Processes

ABC Process Code	Level 1 ABC Activity	Number of Level 2 Activity Tasks
Direct Operating Costs		
80001	Develop Infrastructure	9
80002	Develop Markets	6
80004	Manage Market & Reliability Data & Modeling	17
80005	Manage Market & Grid	11
80007	Manage Operations Support & Settlements	11
80008	Plan & Manage Business	11
80009	Support Business Services	32
80010	Support Customers & Stakeholders	6
	Total	**103**
Indirect Operating Costs		
80003	Manage Human Capabilities	9
9	**Total**	**112**

Summary of 2023 COSS Results

Item	GMC Revenue Requirement		
	2024	2025	2026
Grid Management Charges			
GMC Cost Category Percentages	No Change	**Changes**	
Market Services	49%		
System Operations	49%	Charge Retired	
NEW: System Operations Real-Time Dispatch		23%	
New: System Operations Balance Authority Area Services		26%	
CRR Services	2%		
Western Energy Imbalance Market			
WEIM Percentage Allocations	**Changes**		
Real-Time Market	from 63% to 65%	from 65% to 64%	
Real-Time Dispatch	from 50% to 42%	Charge Retired	
Reliability Coordinator West			
	Change		
Reliability Coordinator Funding Percentage	from 9% to 8%		
Supplemental Fees			
Other Revenue (offsets to the GMC Revenue Requirement)	**No Change**		
Miscellaneous Fees (collected as charges below the line)	**Changes**		
TOR Charge/MWh	from $0.18 to $0.32	from $0.32 to $0.33	

EDAM Transitional Load Ramp-In

- Fixed load ramp-in percentage over initial four years of EDAM operations.
- Ramp-in would only apply to load volumes to avoid providing any suppliers with a competitive advantage in the market.
- Load based costs start with load effectively paying what they pay today under WEIM and then increase equivalent to full load-based charges over four years.

All customers paying Market Services and Real-Time Dispatch charges will benefit from additional volumes starting in year 1

Volume Type	2025	2026	2027	2028	2029
Load	5%	25%	50%	75%	100%
Supply	100%	100%	100%	100%	100%

GMC Revenue Requirement Cap

- Cap increase to accommodate
  - Accounting change of offsetting revenues and adjustments
  - Normal cost inflation in operating costs

Increase in measure demand volumes due to EDAM participation leads to lower cost per MWh

GMC Revenue Requirement ($ in millions)	Actual 2021	Actual 2022	Actual 2023	Forecast 2024	Forecast 2025	Forecast 2026
Operations and Maintenance Budget	$ 200.8	$ 210.7	$ 238.4	$ 251.9	$ 258.4	$ 265.2
Debt Service and Cash Funded Capital	$ 44.9	$ 44.7	$ 35.7	$ 20.7	$ 29.7	$ 29.7
Other Revenues and Adjustments	$ (63.7)	$ (72.8)	$ (74.4)	$ (70.7)	$ (46.5)	$ (46.8)
Total GMC Revenue Requirement	**$ 182.0**	**$ 182.6**	**$ 199.7**	**$ 201.9**	**$ 241.6**	**$ 248.1**
Estimated Measured Demand in TWh	237.3	233.5	234.2	242.5	340.5	346.1
Pro-Forma Bundled Cost per MWh	**$0.7670**	**$0.7820**	**$0.8527**	**$0.8326**	**$0.7095**	**$0.7168**

Tariff Amendments

8/15/2023 Stakeholder Meeting

- Cost of service study percentage and fee updates
- Bifurcation of the System Operations Charge
- EDAM transitional ramp-in of load volumes during the period from 2025 through 2028.
- GMC Revenue Requirement cap increase effective 1/1/2025

Key Calendar Dates and Next Steps

Date*	Event
7/5/2023	Cost of Service Study (DRAFT) Posted
7/12/2023	1st Stakeholder Meeting
7/19/2023	Stakeholder comments due
8/1/2023	Cost of Service Study (DRAFT FINAL) Posted
8/15/2023	2nd Stakeholder Meeting
8/30/2023	Stakeholder comments due
9/19/2023	Present COSS update and changes to the Board of Governors and WEIM Governing Body (Decisional and Informational items)
10/5/2023	File Tariff Amendments
12/12/2023	Present 2024 GMC Revenue Requirement to the Board of Governors (Decisional item)

**Dates subject to change*

Stakeholder Feedback and Discussion

- Comments are due by end of day **July 19, 2023**. Please submit your comments using the comment template available on the process webpage (link below).
- Questions? Please email ISOStakeholderAffairs@caiso.com
- The discussion paper is available on the ISO website at https://stakeholdercenter.caiso.com/RecurringStakeholderProcesses/cost-of-service-study-2023

Thank you

Attachment G – Board of Governors Memo

2023 Grid Management Charge – Cost-of-Service Study Update

California Independent System Operator Corporation

September 29, 2023

Memorandum

To: ISO Board of Governors and Western Energy Imbalance Market Governing Body

From: Ryan Seghesio, Chief Financial Officer

Date: September 13, 2023

Re: **Decision on 2023 Cost-of-Service Study driven rate and fee changes**

This memorandum requires ISO Board of Governors and WEIM Governing Body action.

EXECUTIVE SUMMARY

The ISO completed its triennial Cost-of-Service study (2023 Cost-of-Service study) in accordance with its tariff. The study analyzes cost and time data to determine how much time and resources staff uses to support the services that the ISO offers. The study's results are used to update the Grid Management Charge (GMC) Revenue Requirement percentage allocations to the Market Services, System Operations, and Congestion Revenue Rights Services (CRR Services) cost categories. The study results are also used to update the Western Energy Imbalance Market (WEIM) cost category percentages, the Reliability Coordinator (RC) funding percentage, and other supplemental services. The study results indicated no change to the major GMC percentage allocations and some minor percentage or fee changes across some of the other services. A summary of the changes in the 2023 Cost-of-Service study is illustrated in Table 1 – Summary of 2023 Cost-of-Service Study Results and Changes below.

Additionally, as part of the 2023 Cost-of-Service study, the ISO proposes four rate design tariff changes summarized below:

- Bifurcate the System Operations Charge to a System Operations Real-Time Dispatch Charge and a System Operations Balancing Authority Area Services Charge effective in 2026.

- Implement an EDAM administrative charge transitional load ramp-in period that will provide for incremental costs for WEIM entities joining the EDAM.

- Increase the GMC Revenue Requirement cap beginning in 2025 to accommodate inflationary and operational cost increases; as well as, to accommodate the accounting treatment of EDAM revenues and GMC Revenue Requirement structure changes.

- Finally, the ISO proposes to eliminate the tariff language in Appendix F - Rate Schedules, Schedule 1 - Grid Management Charge, Part E – System Operations Charge Exemption for Certain Long-Term Power Supply Contracts effective January 1, 2024. There are no longer power supply contracts that qualify, so the provisions are anachronistic.

The cost category percentage changes and some of the fee changes are requirements of the Cost-of-Service study under the tariff and the current rate structure; as such, they do not require additional approval. However, the rate design tariff changes described in the memo do require the ISO Board of Governors and the WEIM Governing Body approval.

> ***Moved, that the ISO Board of Governors and the WEIM Governing Body approve the rate design tariff changes as outlined in the memorandum dated September 13, 2023;***
>
> ***Moved, that the ISO Board of Governors and the WEIM Governing Body authorize Management to make all necessary and appropriate filings with the Federal Energy Regulatory Commission to implement the proposal described in the memorandum, including any filings that implement the overarching initiative policy but contain discrete revisions to incorporate Commission guidance in any initial ruling on the proposed Tariff amendment.***

DISCUSSION AND ANALYSIS

Changes from the Draft Final Proposal

The 2023 Cost-of-Service study analyzed the 2024 through 2026 revenue requirements under two scenarios. The first scenario assumes the pre-EDAM and impacts the analysis of the 2024 revenue requirement. The second scenario assumes the EDAM and impacts the analysis of the 2025 and 2026 revenue requirements.

As of late August 2023 (after the release of the draft final version of the 2023 Cost-of-Service study), the EDAM is being evaluated for a 2026 inaugural operational year. This change required the ISO to reevaluate the Cost-of-Service study results and proposed changes. The impacts to the study's analysis, given the new kickoff date, were minimal and the ISO proposes to address them as follows:

- Align the System Operations bifurcation effective date to January 1, 2026.
- Change the Real-Time percentage allocations to be effective for the full three years rather than split rates over the 3-year period.

    - The Real-Time Market percentage will be 64.5% (average of the 64% and 65% originally published).
    - The Real-Time Dispatch percentage will be 42%.
- Change the Transmission Ownership Rights Charge amount to be effective for the full three years rather than split rates over the 3-year period.
    - The rate will be $0.325/MWh (average of the $0.32 and $0.33 amounts originally published).

Table 1 – Summary of 2023 Cost-of-Service Study Results and Changes includes these changes.

Table 1 – Summary of 2023 Cost-of-Service Study Results and Changes

Item	2024	2025	2026
Grid Management Charges			
GMC Cost Category Percentages	No Change		**Changes**
Market Services	49%		
System Operations	49%		Charge Retired
NEW: System Operations Real-Time Dispatch			23%
New: System Operations Balancing Authority Area Services			26%
CRR Services	2%		
Western Energy Imbalance Market			
WEIM Percentage Allocations	**Changes**		
Real-Time Market	from 63% to 64.5%		
Real-Time Dispatch	from 50% to 42%		Charge Retired
Reliability Coordinator West			
	Change		
Reliability Coordinator Funding Percentage	from 9% to 8%		
Supplemental Fees			
Other Revenue (offsets to the GMC Revenue Requirement)	No Change		
Miscellaneous Fees (collected as charges below the line)	**Change**		
TOR Charge/MWh	from $0.18 to $0.325		
Extended Day-Ahead Market			
EDAM Systems Operations			**Changes** WEIM Real-Time Dispatch and EDAM System Operations charges will be replaced by the NEW System Operations Real-Time Dispatch charge.
EDAM Transitional Ramp-In Model			EDAM Transitional Ramp-In (Initial EDAM Years 1 through 4)
GMC Revenue Requirement			
	No Change	**Changes**	
GMC Revenue Requirement Cap	$202M	$245M	$250M
Other			
Tariff Appendix F - Rate Schedules, Schedule 1 - Grid Management Charge, Part E – System Operations Charge Exemption for Certain Long-Term Power Supply Contracts	**Change** Remove language as there are no longer power supply contracts that qualify, so the provisions are anachronistic.		

Bifurcation of the System Operations Charge

The ISO proposes to bifurcate its System Operations Charges to a System Operations Real-Time Dispatch Charge and a System Operations Balancing Authority Area Services Charge effective in 2026. As the bifurcation of the System Operations Charge is already part of the WEIM Administrative Charge calculations, this proposal will simplify the process by removing a step in the charge calculation process and provide for greater detail in the calculations. In addition, the new Systems Operations Real-Time Dispatch Charge will supersede the WEIM System Operations Charge and the recently proposed EDAM Systems Operations Charge. This change will have no financial impact on customers as it simply changes how the ISO collects for these costs.

EDAM Administrative Charge Transitional Load Ramp-In

The ISO proposes an EDAM administrative charge transitional load ramp-in period that will provide for incremental costs for WEIM entities joining the EDAM. The ramp-in will be offered only during the initial four calendar years of the EDAM. In addition, the ramp-in will only apply to those charges paid by load-serving entities; not energy suppliers. This will avoid providing any suppliers with a competitive advantage in the market. The ramp-in will increase each calendar year starting with charges no less than the WEIM load-based charges. This ramp-in approach aligns costs with benefits as the EDAM benefits are quantified and participation evolves accounting for transmission and load served by the ISO balancing authority area and the EDAM entity areas. The ramp-in approach will support introduction and growth of the EDAM, which will reduce GMC rates for all existing ISO market participants due to the additional supply and demand volumes participating in the market starting the first year.

Based on BANC's recent commitment to join the EDAM in the spring of 2026, the ISO is evaluating its kickoff date of the EDAM to optimize the interest of other parties to join the EDAM. The scenarios in Table 2 – Revenue Contributions Scenarios Comparison is a conceptual projection assuming just PacifiCorp and BANC join in the spring of 2026. The comparison illustrates the transitional load ramp-in effect on revenue contributions by participants assuming PacifiCorp's and BANC's participation in the EDAM effective year 1 of operation. The annual revenue contribution assumes the 2023 Cost-of-Service study cost category percentage allocations, a projected year 1 revenue requirement, prorated year 1 WEIM Charges and EDAM charges to account for spring WEIM off-boarding and EDAM onboarding, and a 3% year-over-year revenue requirement for inflationary growth for years 2 through 5. The prorated WEIM charges account for 25% of projected WEIM and Nodal Pricing Model (for PacifiCorp) annual revenue and the prorated EDAM charges account for 75% of projected EDAM annual revenue.

Table 2 — Revenue Contributions Scenarios Comparison

Projected Market Services (DA and RT) and System Operations (RTD) Revenue Contributions

($ in millions)

** Prorated Year 1 WEIM Charges and EDAM charges to account for spring WEIM offboarding and EDAM onboarding.*

Scenario	Year 1 Charges	Year 2 Charges	Year 3 Charges	Year 4 Charges	Year 5 Charges
Base: No EDAM Participation					
CAISO (assuming no PAC and BANC WEIM Revenue offsets)	$ 160.9	$ 166.1	$ 171.5	$ 177.0	$ 182.7
PacifiCorp (existing WEIM and NPM Charges)	$ 13.0	$ 13.0	$ 13.0	$ 13.0	$ 13.0
BANC (existing WEIM)	$ 0.6	$ 0.6	$ 0.6	$ 0.6	$ 0.6
Revenue Contributions	$ 174.5	$ 179.7	$ 185.1	$ 190.6	$ 196.3
Scenario 1a: Only CAISO, PAC, and Other Entity (Yrs 1-5) w/o Load Volume Ramp-In					
CAISO's portion of the charges	$ 130.1	$ 123.4	$ 127.1	$ 130.9	$ 134.8
PacifiCorp's portion of the charges*	$ 37.2	$ 46.7	$ 48.1	$ 49.5	$ 51.0
BANC's portion of the charges*	$ 7.2	$ 9.6	$ 9.9	$ 10.2	$ 10.5
Revenue Contributions	$ 174.5	$ 179.7	$ 185.1	$ 190.6	$ 196.3
Scenario 1b: Only CAISO, PAC, and Other Entity (Yrs 1-5) w/Load Volume Ramp-In					
EDAM Load Volume Ramp-In	5%	25%	50%	75%	100%
CAISO's portion of the charges	$ 141.9	$ 135.3	$ 134.6	$ 134.4	$ 134.8
PacifiCorp's portion of the charges*	$ 27.6	$ 37.0	$ 42.0	$ 46.6	$ 51.0
BANC's portion of the charges*	$ 5.0	$ 7.4	$ 8.5	$ 9.6	$ 10.5
Revenue Contributions	$ 174.5	$ 179.7	$ 185.1	$ 190.6	$ 196.3
Reduction in CAISO charges from Base	$ 19.0	$ 30.8	$ 36.9	$ 42.6	$ 47.9
PacifiCorp's and BANC's Scenario 1b discount compared to what they would be charged for full supply and load (Scenario 1a) from year 1.	27%	21%	13%	6%	0%

The scenarios comparison provides a detailed comparison of the Market Services and System Operations Real-Time Dispatch revenue requirements comparing a base scenario of no EDAM participation with a scenario in which PacifiCorp and BANC participates in the EDAM (without (Scenario 1a) and with (Scenario 1b) the proposed load-based ramp-in). In combining the ramped-in load-based charges with the supply based charges, PacifiCorp and BANC could expect a ramp-in of Year 1 (73%), Year 2 (79%), Year 3 (87%), Year 4 (94%), and Year 5 (100%) when compared to what the total load and supply based costs would have been without proposed load-based ramp-in. This ramp-in reflects the ISO's costs and load customers' benefits, and the fact that EDAM entities joining the Day-Ahead Market also pay new entrant fees that go directly to their specific early implementation costs.

Revenue Requirement Cap

The GMC Revenue Requirement cap has remained unchanged since 2015 at $202 million. The ISO proposes no change in the Revenue Requirement cap for 2024. However, with ongoing inflationary pressures and the recent growth in new positions as well as the need to accommodate the accounting treatment of the incoming EDAM revenues and GMC Revenue Requirement structure changes, the ISO proposes to increase the GMC Revenue Requirement cap to $245 million in 2025, and an increase to $250 million in 2026.

Outdated Tariff Section Elimination

The ISO proposes to eliminate the tariff language in Appendix F - Rate Schedules, Schedule 1 - Grid Management Charge, Part E – System Operations Charge Exemption for Certain Long-Term Power Supply Contracts. The section was added as part of the 2011 GMC rate

design and the last contract eligible for exemption expired in 2021. There are no longer power supply contracts that qualify, so the provisions are anachronistic.

POSITIONS OF THE PARTIES

Numerous stakeholders attended the July and August stakeholder calls to discuss the 2023 Cost-of-Service study results and impacts to the GMC and other rates. The participants included Avista Corporation, California Community Choice Association (CalCCA), California Public Utilities Commission, PacifiCorp, Sacramento Municipal Utility District, San Diego Gas and Electric, Seattle City Light, Six Cities, and Southern California Edison amongst others. There were no objections or concerns raised regarding the study's results, the proposed bifurcation of the System Operations Charge, the proposed GMC Revenue Requirement cap increase, or the proposed elimination of the Tariff Appendix F - Rate Schedules, Schedule 1 - Grid Management Charge, Part E – System Operations Charge Exemption for Certain Long-Term Power Supply Contracts language. All of the stakeholder comments[1] received were regarding the proposed EDAM administrative charge transitional load ramp-in.

California Community Choice Association (CalCCA) expressed their full support of the EDAM and of Balancing Authority Areas joining the EDAM when they identify a benefit to them doing so. However, CalCCA believes the EDAM administrative charge transitional ramp-in model unnecessarily skews the costs and benefits of the EDAM. They further opined that the ISO should instead require all EDAM load, including California load-serving entities and EDAM BAAs, to pay their full GMC upon day one of the EDAM.

Six Cities expressed concerns about whether the model provides just and reasonable rates and reflects an appropriate rate design for ISO entities. In addition, Six Cities stated that they understand and support the ISO's objective of encouraging early EDAM participation commitments; however, they have reservations about whether it is reasonable for the ISO footprint to effectively subsidize a transition period for EDAM participants by agreeing to relinquish a share of the reduction in GMC that ISO entities would otherwise have received if EDAM participants pay their full share of administrative charges. While Six Cities questioned the justifications for the policy choice being proposed, they stated that they do not oppose the proposed Transitional Ramp-In Model. However, their lack of opposition is contingent on the ISO's commitment to not extend the ramp-in period to other entities in future years.

The ISO's response to CalCCA's and Six Cities's comments was that the ISO believes the transitional load ramp-in model is a just and reasonable model for aligning the costs with benefits of the EDAM services that will grow with increased participation. As the EDAM does not initially cover ancillary services or convergence bidding, nor make use

[1] Stakeholder comments and ISO responses are available here: http://www.caiso.com/InitiativeDocuments/ISO-Responses-to-Comments-2023-Cost-of-Service-Study-July-12-2023.pdf

of congestion revenue rights, an EDAM entity load will not have the same access to all these services as the California load will. Additionally, the incentive of the ramp-in model for early adoption increases the overall benefit for California entities. Further, the ISO believes that since the actual benefits of the EDAM have not been measured from actual operation and the ultimate benefits that do accrue are a function of the number of those participating in the EDAM, that the ramp-in model provides incentives for early adoptions that will best align costs with benefits while providing immediate GMC cost reduction and operational benefits to existing California customers. Just as the ramping of the WEIM benefits grew as WEIM participation grew, the ISO believes the benefits of the EDAM will grow as the EDAM participation grows. As such, the ISO doesn't view the transitional load ramp-in model as a subsidy, but rather as a mechanism for allowing the benefits to be understood and grow as a result of time and additional participation. The ISO is in agreement with Six Cities in keeping the ramp-in period fixed to only the initial four years of the EDAM operations and not extended or stretched out once filed and approved.

Comments received from Idaho Power Company and Los Angeles Dept. of Water, as well as a joint comment submitted on behalf of Balancing Authority of Northern California, PacifiCorp, Portland General Electric, and Seattle City Light were all in support of the EDAM administrative charge transitional load ramp-in proposal. The common theme of the comments is that the ramp-in proposal is a just and reasonable means to balance the benefits and initial financial burden of participation in EDAM. The comments also mention that the both the ISO and EDAM entities will benefit from lowered rates the increased participation in the EDAM.

CONCLUSION

Management seeks joint authority approval by the ISO Board of Governors and the WEIM Governing Body to bifurcate the System Operations Charge, by eliminating it effective January 1, 2026, and replacing it with two new charges: System Operations Real-Time Dispatch Charge and System Operations Balancing Authority Area Services Charge. Management also seeks approval to establish the EDAM administrative charge transitional ramp-in of load volumes during the first four years of the EDAM operations, revise the GMC Revenue Requirement cap beginning in 2025, and eliminate the tariff language in Appendix F - Rate Schedules, Schedule 1 - Grid Management Charge, Part E – System Operations Charge Exemption for Certain Long-Term Power Supply Contracts effective January 1, 2024. All other percentage and fee adjustments as part of the 2023 Cost-of-Service study are requirements under the tariff and current rate structure.