California Independent
System Operator Corporation

October 9, 2014

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. ER15- ___
2015 Grid Management Charge Update Proposal

Dear Secretary Bose:

The California Independent System Operator Corporation ("CAISO") hereby submits for filing tariff amendments to revise its grid management charge ("GMC").[1] This proposed amendment (the "2015 GMC Update") extends the current GMC structure with a slightly higher revenue requirement cap, slightly revises the allocation of the revenue requirement to service categories, and revises certain fees and charges. The CAISO requests that the Commission approve the proposed tariff modifications effective on January 1, 2015. The CAISO further requests that the Commission issue an order by December 16, 2014, to allow the CAISO to implement the revised charge on the effective date.

Specifically, with this filing, the CAISO proposes to extend the existing GMC and to --

- Slightly increase the revenue requirement;
- Eliminate the sunset date;
- Adjust the amount of the total revenue requirement allocated to the system operations category from 69% to 70% and the amount allocated to the congestion revenue rights (CRR) services category from 4% to 3%;

[1] This filing is submitted pursuant to Section 205 of the Federal Power Act, 16 U.S.C. § 824d and 18 C.F.R. § 35.15.

- Reduce the Transmission Ownership Rights ("TOR") charge from $0.27 per MWH to $0.24 per MWh;

- Establish a $202 million cap on the CAISO's revenue requirement; and

- Provide for the CAISO to conduct a cost of service study every three years commencing in 2017 that will inform the CAISO whether to revise the GMC pursuant to section 205 of the Federal Power Act.

As discussed below, the CAISO thoroughly vetted this GMC proposal with stakeholders pursuant to a robust and transparent stakeholder process, and the CAISO received 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 regular cost of service studies. 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, and GMC rate design.

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 that the CAISO recovers its administrative, operating and capital costs. The CAISO developed the current GMC rate design based on a cost of service study that the CAISO conducted for the purposes of establishing the GMC that became effective for 2012 ("2010 cost of service study").[2] 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 in 2011, effective January 1, 2012.[3] The tariff provisions capped the CAISO's annual revenue requirement at $197 million for 2012 and $199 million for 2013 and 2014. The current revenue requirement expires on December 31, 2014. Accordingly, in the instant filing, the CAISO seeks to implement a revised revenue requirement effective January 1, 2015, along with the other rate modifications described below.

The GMC comprises three service categories, four administrative fees and a fixed charge for transmission ownership rights holders. This rate design, which was first proposed in the 2011 GMC filing, substantially simplified the existing GMC structure and more closely aligned the cost allocation categories with the

[2] That cost of service study was based on 2010 data.

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

CAISO's nodal market.[4] At the time of the 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 the implementation and operation of the markets and is charged according to 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;
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> (2) The system operations category consists of costs associated with reliably operating the grid by balancing supply and demand and is charged according to each scheduling coordinator's gross absolute value of real-time energy flows for generation, load, imports and exports; and
>
> (3) The congestion revenue rights category, which is charged according to 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 2010 cost of service study: 27% to system operations, 69% to market service and 4% to congestion revenue rights.

The 2011 revised GMC rate design included two new transaction fees: the bid segment fee of $0.005 per bid segment; and the congestion revenue rights transaction fee of $1.00 per trade. In addition, the revised rate design retained the existing inter-scheduling coordinator fee of $1.00 per trade and the scheduling coordinator ID fee of $1,000 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.[5]

Finally, the 2011 revised rate design carried forward the transmission ownership rights exemption from the monthly GMC calculation of the market services and system operations charges. As explained in greater detail below, this exemption reflects transmission ownership rights holders' more limited use of

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[4] 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 Exhibit D.

[5] 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 congestion revenue rights transaction fee against the congestion revenue rights service category, and the transmission ownership rights fee against the system operation category.

the CAISO grid, and is a fixed charge of $0.27 per megawatt-hour of flow, assessed on the minimum of the customer's supply or demand megawatt-hours.

The CAISO does not propose to change this approved GMC structure, but rather has analyzed the costs allocated to the service categories based on an updated cost of service study, as well as the level of costs reflected in the transmission ownership rights charge.

In addition, since the 2012 GMC effective date, the Commission has approved the CAISO's implementation of an Energy Imbalance Market in which other balancing authority areas can participate in the CAISO's real-time energy market. As part of the stakeholder process for the Energy Imbalance Market, the CAISO, in conjunction with its stakeholders, developed the Energy Imbalance Market administrative charge ("EIM administrative charge"), which it derives from the GMC cost of service studies. The EIM administrative charge is $0.19 per MWh. In the Energy Imbalance Market stakeholder initiative, the CAISO agreed to update this charge as part of the 2015 GMC Update. The Commission approved the EIM administrative charge and directed the CAISO to work with stakeholders, as part of the ongoing GMC update process, to ensure that the charge accurately reflects the most current information.[6] As discussed in greater detail below, the CAISO has done this as part of the 2015 GMC Update initiative.

B. The CAISO Budget Approval Process

The CAISO tariff sets forth a very robust and transparent stakeholder process for developing the annual budget that makes up the revenue requirement for the upcoming year.[7] Except for a few minor tariff changes described below, the CAISO does not intend to modify that process.

The annual budget process begins with a stakeholder meeting, generally scheduled during the second quarter of the year. At this time, the CAISO seeks ideas from stakeholders with regard to (1) controlling costs, (2) adding capital projects for consideration in the upcoming year, and (3) reordering CAISO priorities in the upcoming year. Within two weeks of the initial meeting, the CAISO communicates the ideas submitted by stakeholders to the officers, directors and managers, and a copy of the communication is made available to stakeholders. Given the two week turn-around time from the initial stakeholder meeting, the CAISO encourages stakeholders to submit comments in writing, and also takes very detailed minutes of the stakeholder sessions.

The tariff currently provides that subsequent to the initial submission of the draft budget to the CAISO Governing Board (usually in September), the CAISO provides stakeholders with (1) proposed capital budget with indicative projects for the next calendar year, a budget-to-actual review for capital expenditures for the

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[6] *Cal. Indep. Sys. Operator Corp.,* 147 FERC ¶ 61,231 (2014) at P 189.

[7] *See* Appendix F, Schedule 1, Part D "Information Requirements."

previous calendar year, and a budget-to-actual review of current year capital costs; and, (2) expenditures and activities in detail for the next calendar year (in the form of a draft of the budget book for the CAISO 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.[8] The budget book typically contains (1) a summary of the components of the revenue requirement compared to the prior year, (2) alignment with the CAISO's strategic plan, (3) a breakdown of the CAISO's O&M budget by process, (4) a breakdown of the O&M budget broken down by resource compared to the prior year; (5) a breakdown of the O&M budget broken down by division compared to the prior year, (6) details of debt service compared to the prior year, (7) description of capital and cash funded capital compared to the prior year with a proposed listing of capital projects, (8) detail of other costs and revenues compared to the prior year, (9) detail of the operating cost reserve adjustment compared to the prior year, and (10) rate calculation for the current year. Exhibits filed with the budget book include a forecast of billing determinants for the next year and a schedule of the calculation of the operating cost reserve adjustment.[9]

The CAISO conducts a stakeholder meeting about a month later, usually in October. By providing the draft budget in September and holding a meeting in October, the CAISO provides stakeholders with at least one full governing board cycle to prepare comments on the proposed budget and present them at the next board meeting, which usually takes place in November. Before the CAISO presents the budget to the board for approval, it responds to all stakeholder comments and posts these responses on the website. The CAISO also encourages stakeholders to seek additional information about the budget. The CAISO will post all information provided to stakeholders. Under the tariff, the CAISO must give stakeholders at least 45 days to review the initial draft budget before board approval; in fact, the CAISO provides stakeholders well in excess of 45 days to review the budget and address the governing board.

Once the board approves the budget, the CAISO posts the operating and capital budget to be effective during the subsequent fiscal year, and the billing determinant volumes used to develop the rate for each component of the GMC, together with workpapers showing the calculation of such rates. The CAISO tariff stakeholder process for developing the budget has been in place for almost ten years.

II. The 2015 GMC Update Stakeholder Process

The 2015 GMC Update process began with a stakeholder meeting on April 17, 2014, at which the CAISO presented three papers that it previously had posted on April 2, 2014. These papers described (1) the overall 2015 cost of

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[8] CAISO Tariff, Appendix F, Part D.

[9] See, e.g., 2013 Final Budget and GMC Rates Book, available on the CAISO website.

service study methodology and results;[10] (2) the cost of service analysis used to establish the proposed EIM administrative charge;[11] and (3) the cost of service analysis used to update the TOR charge, as well a description of the overall 2015 GMC Update proposal.[12]

Two stakeholders submitted comments on April 25, 2014, and these were the only stakeholders to submit comments throughout the entire stakeholder process. The CAISO posted responses to the comments on May 9, 2014, and also reached out to both commenting parties to discuss individual concerns. The CAISO posted the final 2015 GMC Update on May 12, 2014, and held a stakeholder call on May 20, 2014. One of the two stakeholders submitted comments on the final proposal.[13] The CAISO Board of Governors approved the 2015 GMC Update proposal at the July 2014 meeting, and the CAISO posted two versions of draft tariff language for stakeholder review and comment on August 5 and August 22, 2014. The CAISO held a web conference on the draft tariff language on August 14, 2014.

III. The 2015 Cost of Service Study

The 2015 cost of service study uses the same Activity Based Costing modeling and cost allocation methodology that the CAISO used in the 2010 cost of service study.[14] In the April 2, 2014, cost of service overview, the CAISO described the 2010 cost of service study methodology, including an explanation of Activity Based Costing and the levels of employee activities that were in place at that time.[15] Activity Based Costing is a time tracking methodology by which CAISO employees keep track of the time they spend on various activities. Prior to implementation of Activity Based Costing, the CAISO had to undertake a series of interviews with department managers and directors in order to conduct a cost of service study. Using the Activity Based Costing analysis, the CAISO was able to disaggregate its business functions into ten level 1 core processes. Each of the core processes was then broken down into level 2 activities.

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[10] *See* Exhibit A, 2015 Cost of Service Study Grid Management Charge Update, also available on the CAISO website.

[11] See Exhibit B, EIM Cost of Service Study 2015 GMC Grid Management Charge Update, also available on the CAISO website.

[12] See Exhibit C, Summary TORs and Rate Cap – 2015 Grid Management Charge Update, also available on the CAISO website.

[13] CAISO responses to stakeholder comments, as well as detailed minutes from the stakeholder meetings, are attached hereto as Exhibit F.

[14] The nature and results of the 2010 cost of service study, as well as Activity Based costing, are explained in Exhibit D, the testimony of Mr. Michael Epstein that was included in the 2011 GMC filing.

[15] Exhibit A at 4-13; see also Exhibits 1 and 2 that provide a detailed description of the CAISO's level 1 activities and how they correlate to level 2 business processes.

Although the CAISO had identified the level 2 activities at the time the CAISO conducted the 2010 study, it had implemented only one level of the Activity Based Costing model in use for CAISO employee time and cost tracking. By the time of the 2015 study, the CAISO had completed full level 2 Activity Based Costing reporting, using activity codes and time sheet reporting. In addition, since conducting the 2010 cost of service study, the CAISO has made changes to the level 1 and level 2 processes and definitions to better reflect organizational changes and refinement of processes.

At the start of 2013, ABC encompassed nine level 1 processes aligning with the CAISO's core business functions. Level 2 reporting breaks these processes down into numerous more granular activities that align with the level 1 business functions.[16] The level 2 activities allow the CAISO to track employee time more precisely, thus enabling more precise allocation of the revenue requirement for cost recovery purposes.

1. Allocating Activity Costs and Indirect Costs to Cost Categories

The CAISO conducted the 2015 cost study similarly to the 2010 study. As explained in the cost of service paper, the CAISO level 1 and 2 activities fall generally into two overall categories: direct employee activities, which can be mapped to the three service categories, or support activities, which support CAISO business services but are not attributable to any specific cost category, such as manage human resources. First, the CAISO divided the nine level 1 processes into the two overall categories. The cost of service study assigns all support activities to a category of indirect costs.

The CAISO then mapped the level 2 functions associated with the direct level 1 activities to one of the GMC service categories based on the extent to which the activity supported the function that the category represented. Because it is not feasible to perform such mapping with a high degree of precision, the CAISO mapped the direct activities as one of the following: (1) all in one category or not in the category (100% or 0%); (2) a 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%).[17] If the activity was not attributable to any specific cost category, for example 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 the same mapping

[16] Exhibit A at 5.

[17] In one case, the CAISO departed from the approach of using only the three predetermined general allocation percentages identified above. In the 2010 cost of service study, the CAISO determine that based on real-time and day-ahead charge codes, most of the settlements and market clearing costs are associated with system operations (75%), but that 10% should be allocated to CRR services and 15% to market operations. See Exhibit A at 11.

approach in this regard as in the 2010 cost of service study.[18] The CAISO then allocated three additional items to the three direct cost categories or the indirect cost category in a similar fashion: (1) debt service[19] and cash-funded capital; (2) non-payroll support items; and (3) other income[20] and operating reserve credit.[21] Once the CAISO calculated the percentage allocations to the three direct cost categories, it aggregated the indirect cost category and allocated those costs proportionally to the direct cost categories.

2. Assigning Revenue Requirement Costs to Service Categories

Consistent with the process the CAISO followed with the 2010 cost study, once the CAISO completed this mapping, the CAISO applied the resulting service category allocation matrix of level 2 activities and non-payroll costs to the 2013 revenue requirement budget to determine the costs associated with the three categories. This process produced the revised GMC cost allocation percentages.

The components of the 2013 revenue requirement are O&M costs, debt service on 2008 bonds and 2009 bonds, cash-funded capital, other income, and operating reserve. 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 (again using the 100%, 80% / 20%, 50% / 50%, or, for CRRs, 45% / 45% / 10% breakdown).

Assigning direct activity-related operating and maintenance costs to the service categories required the CAISO to collect 2013 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 2013 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 according to 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 activity related support costs. Because these support activities

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[18] The percentage allocations to the service categories were developed in 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.”

[22] Exhibit A at 19-23.

were not related to any particular direct activities, the CAISO assigned all of them as indirect costs.[23]

For debt service on the 2008 bonds, the CAISO determined the percentage of the debt related to each software system and then mapped the software system to the specific activity using the percentage breakdown noted above (the 100%, 80% / 20%, 50% / 50%, or, for CRRs, 45% / 45% / 10% breakdown). For software systems that are not directly assignable, the CAISO allocated the costs to the indirect category. Because the 2009 bonds were for the CAISO headquarters building, the CAISO allocated the debt service cost of the 2009 bonds to the indirect category. Because cash funded capital projects are only indicative and subject to change, the CAISO included these costs in the indirect category.[24] The CAISO similarly assigned miscellaneous 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 determined the ratio among the three. It allocated the indirect costs among the three according to this ratio to obtain the following overall updated percentages:[26]

Summary of Cost Category Percentages for 2015

Category	Percentage
Market Services	27%
System Operations	70%
CRR Services	3%

As a final step, 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.[27]

IV. Updated Charges

For the updated EIM administrative and TOR charges, the CAISO published separate papers describing the steps it took to derive the updated costs from the cost of service study used to determine the appropriate level of each of these charges.

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[23] *Id.* at 23-24.

[24] *Id*. at 24-26.

[25] *Id.* at 25-26

[26] *Id*. at 29.

[27] *Id.* at 28.

A. Updating the EIM Administrative Charge

In the final draft proposal, the CAISO described the revenue requirement for each of these charges and the recurring cost of service study proposal that it developed after considering stakeholder input. Conceptually EIM participants pay the same rate as existing customers, but only for the real-time market and real-time dispatch activities that specifically related to the EIM. In other words, all market participants, EIM or otherwise, pay the same rate with respect to the real-time market and real-time dispatch activities. To update the EIM fee, the CAISO identified and aggregated the real-time activity costs allocated to the two main service categories, market services and system operations. It then allocated indirect costs to the categories in proportion to the direct costs, similarly to the process described above with respect to the overall cost of service study. Next, it applied the 2013 real-time revenue requirement costs proportions to the respective rates for market services and system operations. For the final step, the CAISO added the two rates together to derive the updated EIM administrative charge.[28]

Table 1 – Summary of EIM Rate[29]

Category	Net costs ($ in thousands)	Cost of real time activities	Percentage share of costs	Pro forma 2013 rate	EIM rate
Market Services	$47,965	$29,064	61%	$0.09	$0.06
System Operations	137,742	61,432	45%	$0.29	$0.13
CRR Services	4,079	-	-	$0.01	-
Total	**$189,786**	**$90,496**	**48%**		**$0.19**

The total EIM rate is unchanged from the existing rate. The Board of Governors approved the proposal.

B. Updating the TOR Charge

In the third paper, describing the TOR charge update and the revenue requirement proposal, the CAISO explained that in the 2010 cost of service study, there were three service-related areas applicable to the TOR charges: (1) real-time operations, because the CAISO provides support on an emergency basis, similar to standby service; (2) scheduling, because the CAISO provides check-outs with neighboring balancing authorities in order to schedule flows across boundaries; and (3) outage management, because the CAISO provides for scheduling and coordination of outages across balancing authorities.

The CAISO identified the level 2 activity based direct activities related to system operations applicable to TOR holders and then allocated indirect activities proportionately to the direct activities. It then identified the costs for the

[28] Exhibit B, at 4-24.

[29] *Id.* at 25.

direct and indirect activities, based on the allocation percentages. Once the CAISO derived the total direct and indirect costs, it calculated TOR costs as a percentage of system operations costs. The CAISO applied that percentage to system operations costs to determine the amount of costs to collect from TOR holders. Finally, the CAISO divided these costs by forecasted TOR volumes to determine the updated TOR charge of $0.24 MWH, which is a $0.03 MWH decrease from the current $0.27 MWH rate.[30]

Calculation of TOR Rate for 2015

Total direct and indirect TOR costs	$ 44,122,000
TOR percentage of total volumes	1.69%
TOR costs to collect	$ 745,660
TOR MWh for 2013	3,162,319
TOR updated rate per MWh	**$ 0.24**

V. Ongoing Cost of Service Studies and Revenue Requirement Cap

The CAISO proposes to increase its revenue requirement cap to $202 million, based on long term budget projections and historical revenue requirement trends. Specifically, the CAISO has projected a revenue requirement in the range of $200 million to $205 million over the next five to seven years. The CAISO provided detailed information about the forecasted revenue requirement at the April 17, 2014, stakeholder meeting,[31] and included the same information in the draft final proposal.[32] The CAISO explained in the draft final proposal that over the last five years, the consumer price index has increased by 2.1% annually, but the CAISO's revenue requirement increased by only an average of 0.5% annually. Between 2012 and 2014, the revenue requirement increased by 1.7% from $195 million to $198 million, but the GMC rates for that period only increased 0.08 % due to an increase in throughput volumes.[33] Additional projected increases in throughput will help to keep the GMC rates low.

The proposed $202 million revenue cap is below the $205 million cap, but as the CAISO explained to stakeholders, the CAISO believes it can extract sufficient savings to remain below the higher cap in later years.

In order to avoid repeated unnecessary GMC filings, the CAISO does not propose a sunset date as it has done in the past. Only if there are necessary

[30] Exhibit C at 6-8.

[31] Exhibit G.

[32] Exhibit E at 5-8.

[33] *Id.* at 7.

increases in the revenue requirement or changes in the rate design will the CAISO seek to modify the GMC through a Section 205 filing.[34]

As discussed above and in the next section, the CAISO proposes to retain the current budget approval process with a minor revision. This process provides stakeholders with an annual opportunity to become involved in the CAISO revenue requirement and GMC rate development for the upcoming year. The process culminates with an annual budget presentation to the Governing Board for approval, with all budget details posted to the CAISO website prior to approval.

The CAISO also proposes to update its cost of service study on a regular three year cycle, beginning with the updated analysis that the CAISO conducted in 2014 in connection with this filing for rates that will become effective in 2015. The next update will take place in 2017. If the updated cost of service study shows that there is a need to adjust the allocations to the service categories or any of the fees and administrative charges due to a shift in costs between cost centers, the CAISO will seek approval of such needed changes through a section 205 filing. Prior to any filing, the CAISO would conduct a stakeholder initiative that examines the need for any modifications. The proposed tariff language includes the CAISO's obligation to conduct a cost of service update every three years.

D. Stakeholder Comments

Only two stakeholders submitted comments during the entire 2015 GMC Update initiative. In response to the first draft proposal, these stakeholders expressed support for retaining the current rate design and updating the fees and charges based on current cost information, particularly the transmission ownership rights charge update. Both stakeholders sought additional background information about the derivation of the proposed revenue requirement increase, including details about the projected debt service decreases and the level of revenue projected to be recovered from the EIM administrative charge. The CAISO provided this information in responses to the comments and in the draft final proposal.

One of the two stakeholders suggested that the CAISO include a six-year "sunset" on the revenue requirement cap. This stakeholder argued that an "open-ended" revenue requirement duration would not provide adequate incentive for periodic review and possible adjustment. The CAISO believes that, to the contrary, fixing the revenue requirement cap with no sunset provision provides an even greater incentive for the CAISO to stay below the cap so as to avoid the need for a Section 205 filing. Because an arbitrary sunset date could require the CAISO to make a section 205 filing that is not necessary if its costs do not exceed the cap, eliminating the sunset provision also helps to reduce filing

[34] See discussion below regarding stakeholder comments.

costs which, in turn, helps keep the revenue requirement below the cap. In written responses to the stakeholder comments, the CAISO pointed out that increases to the revenue requirement over the past five years have been well below the consumer price index. The CAISO is committed to managing its budget and revenue requirement over the long term, as has been the case in the past. Also, as discussed above, the CAISO will continue to provide cost transparency to its customers and regular opportunities for customers to provide input on the CAISO's budget, costs, and rates through the annual budget review process and triennial cost of service study. Under these circumstances, a sunset date on the cost cap is unnecessary. The CAISO also notes that the CAISO can adjust the GMC rates for the service categories and administrative fees if the revenues collected for each category or fee exceed the revenue requirement assigned to it by more than 2% or $1 million, whichever is greater.[35]

One of the two stakeholders also filed comments on the draft final proposal, noting that there appeared to be no need for the CAISO to increase its revenue requirement and that the CAISO had not provided sufficient justification to increase its revenue requirement in light of the decreasing debt service costs, without an apparent need for "software or program development." In response to these comments, the CAISO explained that the very minimal increase was primarily driven by projected long term employee merit increases, as discussed at the first stakeholder meeting. Adding a small amount of "headroom" between the current 2014 budget of $198 million and the proposed $202 million revenue requirement allows the CAISO to attract and retain a skilled workforce. Moreover, given that the CAISO expects to operate under the proposed revenue cap for many years, the rate increase will not even "keep up" with inflation.

Following Board approval of the 2015 GMC Update proposal, the CAISO posted draft tariff language on August 5, 2014. The two sets of comments submitted on the draft language sought clarification on specific sections.

One of the two stakeholders questioned, for the first time, the three year cost of service update and suggested that the cost of service analysis for the EIM administrative charge should be conducted annually. The CAISO believes there is little value to be gained by conducting an annual cost of service study. The administrative costs and burden of conducting an annual study outweigh any benefits because there is very little annual change in the CAISO's allocation of resources. For example, the change in allocation between the 2015 GMC Update and the 2013 cost of service study was minimal. Furthermore, the CAISO's ability to forecast the EIM's impact on resources is fairly predictable because the EIM charge merely reflects access to an existing market. It will not create a new market every year with attendant additional costs. Thus, the CAISO did not modify the proposal to update the cost of service study every three years.

[35] CAISO tariff appendix F, Schedule 1, part B.

V. Proposed Tariff Modifications

The proposed tariff revisions incorporate the 2015 GMC Update initiative proposals, provide tariff consistency, eliminate outdated language, and clarify current provisions. The CAISO proposes changes to section 11.22, Appendix A definitions and Appendix F, Schedule 1.

In accordance with the discussion above, proposed section 11.22.2.5 contains the updated revenue requirement, and eliminates the revenue requirement cap in place for 2012, 2013 and 2014. In proposed section 11.22.2.5.2, the CAISO clarifies that the system operations charge is adjusted for both the TOR charge and the exemption for long term contracts.

The CAISO proposes to modify section 11.22.2.6 to eliminate language that duplicates language in Appendix F, Schedule 1, Part A. Because Appendix F, Schedule 1 includes the details of the GMC rate, there is no need to have the same description in the main body of the tariff section. The rate formula in Appendix F also includes a description of the cost of service study updates and potential adjustments to the service categories and fees/charges. The CAISO proposes to remove the reference to section 11.17 because that section is no longer used in the CAISO tariff.[36]

The CAISO proposes to modify sections 11.22.4-11.22.8 to clarify that each of these fees and charges will be subject to the potential cost of service adjustment. The purpose of these language changes is to capture the notion, specifically described in Appendix F, that once every three years the CAISO may propose to adjust service categories and administrative fees based on the cost of service study results. The CAISO will propose any adjustments though a Section 205 filing after a stakeholder process. The CAISO explained this during a stakeholder conference call and in written responses to stakeholder comments. The CAISO is also proposing to add language to section 11.22.4 to clarify that the CAISO credits the TOR charge back against system operations revenues. This language modification provides consistency with all of the other administrative fee descriptions, which specifically state the service category against which revenues recovered from these fees are credited.

The proposed revisions to the Appendix A definitions are clerical except for the added definition of the EIM administrative charge. Adding a definition for the EIM administrative charge provides consistency with the other CAISO fees and charges that are defined in Appendix A. The CAISO added all of the fees and charges to the GMC definition, and removes definitions for CAISO Memorandum Account and CAISO Start up and Development Costs because they are no longer used. The CAISO also removes these references from the definition of CAISO Financing Costs.

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[36] This modification was also questioned by a stakeholder.

In Part A of Appendix F, Schedule 1, the CAISO proposes to change the allocations to the service categories, as discussed above. The CAISO also proposes to add a description of the cost of service study that it will conduct every three years starting in 2017 and the adjustments that it will make to the GMC fees and charges, as well as the EIM administrative charge, if the service categories or cost levels have changed. This language differentiates between the GMC rates and the EIM administrative charge. This distinction caused some stakeholder confusion. The EIM charge, however, is based on the cost of service study, but is not a GMC rate; it is a source of miscellaneous revenue that ultimately serves to reduce the revenue requirement but is not credited back to any of the service categories. This EIM administrative charge construct was approved by the Commission as part of the EIM proposal.[37]

At the specific request of one stakeholder, the CAISO proposes to reorganize and clarify the description of costs recovered through the GMC that is set forth in Part C. The CAISO eliminates the reference to payments on 2008 bonds from the description of CAISO Financing Costs because these payments have been completed. The CAISO broadens the description of miscellaneous revenues under CAISO Other Costs and Revenues to include all of the uniform system of accounts parts and subparts, covering fees and fines assessed and collected by the CAISO.

Under Appendix F, Schedule 1, Part D, the CAISO proposes to modify the tariff such that it will make very detailed budget information about current and prior year's expenditures and capital projects available to stakeholders either at the initial budget stakeholder meeting (typically held in June) or after the initial submission of the draft budget to the Board (typically held in September). The CAISO will continue to provide the budget book to stakeholders following the Board meeting. When questioned by stakeholders, the CAISO explained that the Board needs to review the budget book in executive session before it is released to stakeholders because the Board must have the opportunity to revise the budget prior to its release. Stakeholders are able to see the budget book on the CAISO website within a week of the September Board meeting.

Finally, the CAISO proposes to revise Part D to eliminate a "statement of operating reserves" as a periodic financial report. Instead, the CAISO's periodic financial reports will include a report on the status of capital projects. The details of the operating reserve are included in the annual budget and accompanying exhibit and are not useful on a periodic basis. In contrast, the timing of approval and progress of capital projects is a very important metric and useful to stakeholders.

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[37] *Cal. Indep. Sys. Operator Corp.,* 147 FERC ¶ 61,231 at P 189 (2014).

VI. Effective Date and Request for Waivers

The CAISO requests that the Commission make the tariff revision contained in the instant filing effective January 1, 2015. The CAISO further requests an order by December 16, 2014, to allow the CAISO to implement the revised charge on the effective date.

In addition, because the proposed GMC is a formula rate, the CAISO requests a waiver of section 35.13 of the Commission regulations, including waivers of the requirements to submit full Period I and Period II data and workpapers and cost-of-service statements in sections 35.13(c), 35.13(d)(1), (2), and (5), and 35.13(h). 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 very minor revisions to the service category cost allocations and the transmission ownership rights charge that are the subject of this 2015 GMC Update initiative. The Commission has previously granted waivers of the requirements to provide such data in a number of cases involving transmission formula rates.[38]

Finally, the CAISO respectfully requests waiver of any other Commission regulations as may be necessary in order for these tariff revisions to become effective.

VII. Communications

Communications regarding this filing should be addressed to the following individuals, whose names should be put on the official service list established by the Commission with respect to this submittal:

[38] *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).

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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:

Exhibit A	2015 GMC Cost of Service update paper, with attachments 1 and 2.
Exhibit B	2015 GMC Cost of Service update describing EIM administrative charge calculation.
Exhibit C	2015 GMC Cost of Service update describing transmission ownership rights calculation.
Exhibit D	Testimony of Mr. Michael Epstein, filed with 2012 GMC Update
Exhibit E	2015 GMC Cost of Service update draft final proposal.
Exhibit F	CAISO responses to stakeholder comments.

Exhibit G	Presentation materials from the April 17, 2014 stakeholder meeting.
Exhibit H	Clean revised tariff
Exhibit I	Blacklined revised tariff

X. Conclusion

For the foregoing reasons, the Commission should accept the proposed tariff changes contained in the instant filing to become effective on January 1, 2015. Please contact the undersigned if you have any questions regarding this matter.

Respectfully submitted,

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Attachment A - 2015 GMC Cost of Service update paper, with attachments 1 and 2

2015 Grid Management Charge Update Proposal

California Independent System Operator Corporation

California ISO

2015 GMC Update
Cost of Service Study

April 2, 2014

Table of Contents

Executive Summary

The revenue requirement limit established by the ISO and developed with stakeholders during the 2012 grid management charge (GMC) stakeholder initiative and budget process will expire on December 31, 2014. According to tariff section 11.22.2.5, the ISO is required to seek Federal Energy Regulatory Commission (FERC) approval of another revenue requirement maximum for the period beginning January 1, 2015. To determine whether changes should be made to the revenue requirement cap or the GMC structure, the ISO has updated its 2012 cost of service analysis, which was based on 2010 costs, for 2015 and beyond.

By way of background, the ISO implemented activity based costing (ABC) in 2010, which was utilized for the 2012 cost of service study to restructure the GMC rate design. The new GMC design was vetted through a comprehensive stakeholder process and approved by the ISO Board of Governors (ISO Board) and FERC in 2011 to be effective on January 1, 2012. The structure contains three cost categories: market services, system operations and congestion revenue rights (CRR) services and percentages that are applied to the revenue requirement to determine the amount in the three cost categories upon which rates are set. The market services charge code is designed to recover costs the ISO incurs for running the markets. The system operations charge code is designed to recover costs the ISO incurs for reliably operating the grid in real time. The CRR charge code recovers costs the ISO incurs for running the CRR markets.

The updated 2015 cost of service analysis uses 2013 data to determine the percentages for the three cost categories, as reflected in the table below and is summarized in Exhibit 2. This cost of service analysis also updated the energy imbalance market (EIM) and transmission ownership rights (TOR) rates. The ISO has posted the EIM rate update development and the TOR rate update development in the other papers posted at the same time as this cost of service update.

Summary of Cost Category Percentages

Cost Category Percentages from Cost of Service Studies	2010 Study effective for 2012	2013 Study to effective for 2015	Change
Market Services	27%	**27%**	-
System Operations	69%	**70%**	1%
CRR Services	4%	**3%**	(1%)

The 2012 Cost of Service Study Overview and Activity Based Costing (ABC)

On September 30, 2011, FERC approved the ISO's redesigned GMC with an effective date of January 1, 2012.[1] As part of the 2012 GMC stakeholder initiative that led up to the FERC submission, the ISO conducted a cost of service study based, for the first time, on the recently implemented Activity Based Costing (ABC) model (2012 cost of service study), using 2010 ISO costs.[2] The ISO then used the 2012 cost of service study to calculate the cost allocation percentages assigned to the three cost of service "buckets": market services, system operations and CRR services, as well as the associated fees including the TOR fee.

This 2015 cost of service study uses the same ABC modeling and cost allocation methodology used to calculate the cost allocation percentages and TOR fee. However, the 2015 cost of service study updates the 2012 analysis by using 2013 data and also incorporates changes to the level 1 and 2 ABC processes that the ISO has made since the 2012 cost of service study. As discussed in more detail below, the ISO in 2011 completed its implementation of all ABC level 2 processes. At the start of 2013, ABC encompassed nine level 1 processes that align with the ISO's core business processes (see chart below). These processes were then broken down into 153 level 2 activities that align with a level 1 process and are a granular breakdown of the core business functions. See Exhibit 1 for a description of the ISO business process framework overview.

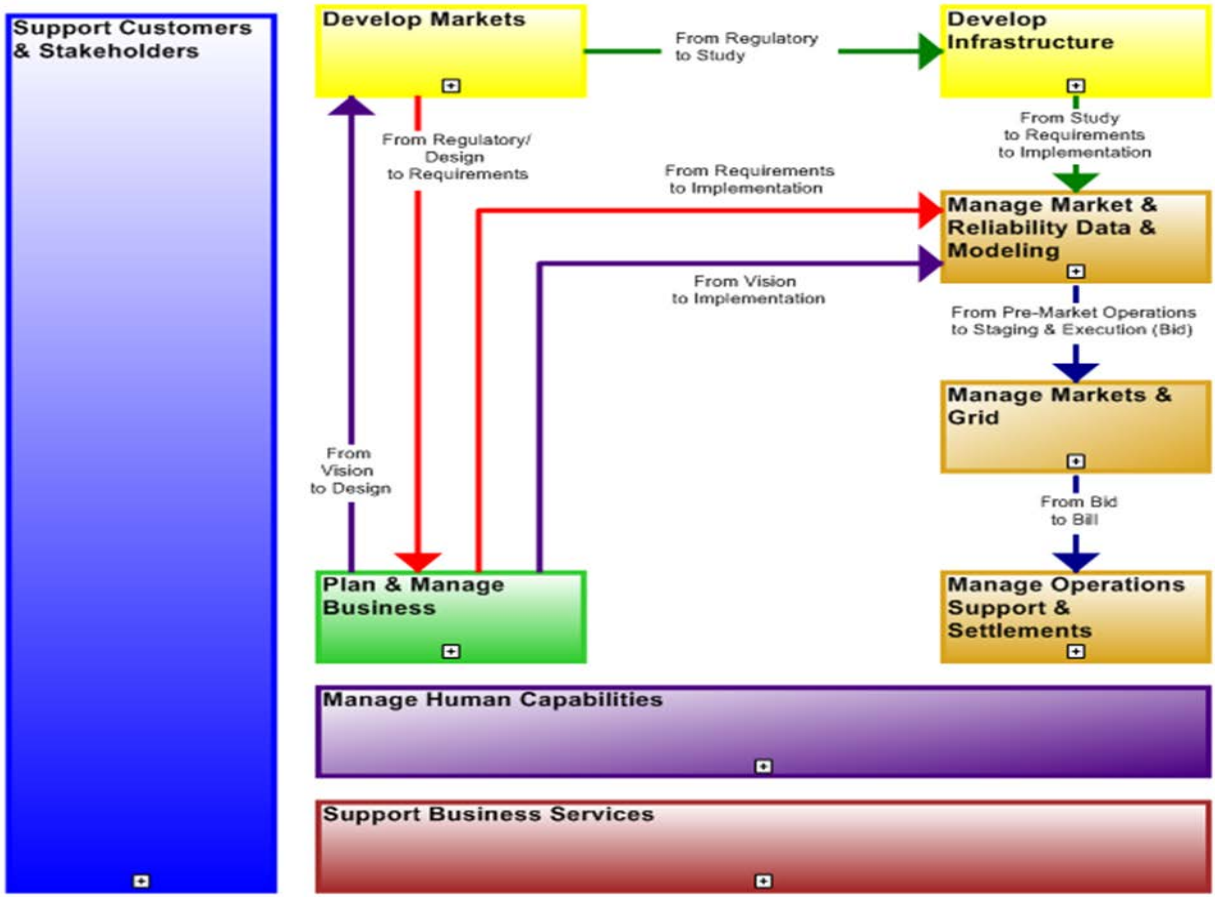
[1] See *California Independent System Operator Corp.*136 FERC ¶61,236 (2011).
[2] The 2012 cost of service study can be found at: http://www.caiso.com/Documents/2012Cost-ServiceStudyDiscussionPaperwithExhibits.pdf

Application of ABC to GMC Structure

When the ISO, in 2010, conducted the 2012 cost of service study, time reporting for ABC level 1 activities had just been implemented. Full level 2 reporting, using activity codes and time sheet reporting, commenced in 2011 and has now been completed. This process is continually being reviewed and developed, and changes in definitions and levels have occurred since the 2012 cost of service study.

Currently, the ABC analysis has disaggregated the ISO into nine core processes (level 1 activities). Each of the core activities were further broken down into major processes (level 2 activities) that were mapped to the level one activity.

Mapping of ISO Core Business Processes



The level 2 processes discussed in this study are mapped and defined as of January 1, 2013. The level 1 activities can be categorized into two types: (1) direct operating costs —

those that can be directly mapped to a market, grid service or customer; and (2) support or indirect costs — those that support the direct activity.

Table 1 — Level 1 ABC Activities

Level 1 ABC Activity	Direct or support cost	Number of Level 2 activity codes	Level 1 Charge Code
Develop Infrastructure	Direct operating cost	11	80001
Develop Markets	Direct operating cost	9	80002
Manage Market and Reliability Data and Modeling	Direct operating cost	21	80004
Manage Market and Grid	Direct operating cost	13	80005
Manage Operations Support and Settlements	Direct operating cost	19	80006
Support Customers and Stakeholders	Direct operating cost	11	80010
Plan and Manage Business	Support costs	15	80008
Support Business Services	Support costs	46	80009
Manage Human Capabilities	Support costs	8	80003

Mapping of ABC Direct Operating Activities

These activities are defined, linked to specific processes, and measurable. Using the three GMC categories, the level 2 activities were mapped as either (1) all in one category or not in the category (100% or 0%); (2) a 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%).

Table 2 — Mapping of ABC Direct Operating Activities to Cost Categories

Mapping of ABC level 2 Direct Operating Activities to Cost Categories						
ABC Level 2 Activities	**Cost Code**	**Market services**	**System Operations**	**CRR services**	**Indirect**	**Comments**
		% of cost to allocate to category				
Definitions used in allocation		100%				the costs are entirely to support the market results and function resulting in a financially binding schedule or ancillary servicer award
			100%			the costs are entirely to support system operations
				100%		the costs are entirely to support the CRR process
					100%	Attributes are not distinguishable to any specific category
		50%	50%			the costs support equally both market and system operations
		45%	45%	10%		this is a 50/50 split after a minimum allocation to CRRs
		80%	20%			the costs are predominantly market related but have some operational relationship
		20%	80%			the costs are predominantly operational flow based but have some market relationship
Develop Infrastructure (DI) (80001)						

Mapping of ABC level 2 Direct Operating Activities to Cost Categories						
ABC Level 2 Activities	**Cost Code**	**Market services**	**System Operations**	**CRR services**	**Indirect**	**Comments**
		% of cost to allocate to category				
Regulatory contract procedures	201				100%	Attributes are not distinguishable to any specific category
Manage generation interconnection project (GIP) agreements	202		100%			managing the building and maintaining of the grid thus the costs are entirely to support system operations
Manage GIP	203		100%			
Long-term transmission planning	204		100%			
New transmission resources	205		100%			
Transmission maintenance studies	206		100%			
Load resource data	207		100%			
Seasonal assessment	208		100%			
Queue management	209		100%			
Annual delivery assessment	210		100%			
Develop Markets (DM) (80002)						
Manage tariff amendments	227				100%	Attributes are not distinguishable to any specific category
Post-order rehearing comp	228				100%	
State / Federal regulatory policy	229				100%	
Business process manual change management process	230				100%	
Develop infrastructure policy	231		100%			managing the building and maintaining of the grid thus the costs are entirely to support system operations
Perform market analysis	232	100%				the costs are entirely to support the market results & function
Develop market design	233	100%				
Regulatory contract negotiations	234				100%	Attributes are not distinguishable to any specific category
Manage Market and Reliability Data and Modeling (MMR) (80004)						
Manage full network model (FNM) maintenance	301	50%	50%			the costs support equally both market and system operations
Plan and develop operations simulator training	302	20%	80%			significantly more operational procedures, thus the costs are predominantly operational flow based but have some market relationship
ISO meter certification	303		100%			measuring flows on the grid thus the costs are entirely to support system operations
Energy measure acquisition and analysis (EMMAA) telemetry	304		100%			measuring flows on the grid thus the costs are entirely to support system operations
Metering system configuration for market resources	305		100%			
Manage CRRs	307			100%		the costs are entirely to support the CRR process
Manage credit and collateral	308	45%	45%	10%		this is a 50/50 split after a minimum allocation to CRRs
Resource management	309	50%	50%			resource attributes that support both thus the costs support equally both market and system operations
Manage reliability requirements	310		100%			relates to actual system operations thus the costs are entirely to support system operations
Manage operations planning	311		100%			
Manage WECC seasonal studies	312		100%			
Participating intermittent resource projects (PIRP)	313	20%	80%			significantly more operational procedures, thus the costs are predominantly

Mapping of ABC level 2 Direct Operating Activities to Cost Categories						
ABC Level 2 Activities	**Cost Code**	**Market services**	**System Operations**	**CRR services**	**Indirect**	**Comments**
		% of cost to allocate to category				
Manage & facilitate procedure maintenance	314	20%	80%			operational flow based but have some market relationship
Procedure administration and reporting	315	20%	80%			
Plan and develop operations training	316	20%	80%			
Execute and track operations training	317	20%	80%			
California Electric Training Advisory Committee (CETAC) activities	318		100%			relates to actual system operations thus the costs are entirely to support system operations
Provide stakeholder training	320				100%	Attributes are not distinguishable to any specific category
SC management	321				100%	
Manage Markets and Grid (MMG) (80005)						
Manage day ahead (DA) market support	352	100%				the costs are entirely to support the market results & function
Operations real time (RT) support	353	50%	50%			the costs support equally both market and system operations
Outage model and management	355		100%			relates to actual system operations thus the costs are entirely to support system operations
Manage DA market	358	50%	50%			while managing market it results in system starting point for operational flows thus the costs support equally both market and system operations
Manage pre and post scheduling	359		100%			relates to actual system operations thus the costs are entirely to support system operations
Manage operations engineering support	362	20%	80%			based on support of DA and RT thus the costs are predominantly operational flow based but have some market relationship
RT market – shift supervisor – manage post DA and pre RT	363	50%	50%			the costs support equally both market and system operations
RT Operations – generation and RT renewables coordinator (GRC) desks - maintain balancing area and manage RT pre dispatch	364	20%	80%			based on support of DA and RT thus the costs are predominantly operational flow based but have some market relationship
RT Operations – transmission desk – manage transmission and electric system	365		100%			relates to actual system operations thus the costs are entirely to support system operations
RT Operations – scheduling desk – manage RT interchange scheduling	366		100%			
Manage Operations Support and Settlements (MOS) (80007)						
Manage price validation & corrections	401	50%	50%			related to proper outage allocation thus the costs support equally both market and system operations
Manage dispute analysis & resolution	402				100%	Attributes are not distinguishable to any specific category
Manage the market quality system (MQS)	403	50%	50%			portion of MQS relates to operational flows thus the costs support equally both market and system operations
Manage data requests	404				100%	Attributes are not distinguishable to any specific category
Manage regulation no pay & deviation penalty calculations	405		100%			measuring actual performance thus the costs are entirely to support system operations
Manage rules of conduct	406				100%	Attributes are not distinguishable to any specific category

Mapping of ABC level 2 Direct Operating Activities to Cost Categories						
ABC Level 2 Activities	**Cost Code**	**Market services**	**System Operations**	**CRR services**	**Indirect**	**Comments**
		% of cost to allocate to category				
Periodic meter audits	407		100%			measuring actual performance thus the costs are entirely to support system operations
ISO remote intelligence gateway (RIG) engineering	408		100%			
Manage energy measurement acquisition & analysis	409		100%			
Manage market clearing	411	45%	45%	10%		this is a 50/50 split after a minimum allocation to CRRs
Manage market billing & settlements	412	45%	45%	10%		
Manage reliability must run (RMR) settlements	413		100%			Supports reliability on the grid thus the costs are entirely to support system operations
Manage settlements release cycle	414	45%	45%	10%		this is a 50/50 split after a minimum allocation to CRRs
Manage market performance	417	50%	50%			the costs support equally both market and system operations
Manage dispute analysis and resolution	418				100%	Attributes are not distinguishable to any specific category
Perform market validation	419	50%	50%			the costs support equally both market and system operations
Support Customers and Stakeholders (SCC) (80010)						
Represent ISO externally	539				100%	Attributes are not distinguishable to any specific category
Client inquiries	601				100%	
Account management	602				100%	
Stakeholder processes	603				100%	
Develop participating transmission owners	605		100%			managing the building and maintaining of the grid thus the costs are entirely to support system operations
Service new clients	606				100%	Attributes are not distinguishable to any specific category
Government affairs	609				100%	Attributes are not distinguishable to any specific category
Communications and public relations	610				100%	

Allocation of Debt Service and Capital

Debt service is the aggregation of principle, interest, and a 25 percent debt service reserve on the 2008 and 2009 bonds. The debt service is the capital spent on projects over the last six years because the 2008 bonds rolled up the 2004, 2006 and 2007 bonds. The assets funded were broken down into operations related software, general software and fixed assets. The 2009 bonds funded the corporate headquarters so the debt service was allocated 100 percent to indirect. The revenue requirement also includes cash funded capital. The funds raised from the GMC go 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 vary significantly from year to year. The annual budget approves the spending limits for capital but not the projects themselves. A proposed listing is provided but the actual projects are subject to review

and approval by an internal management committee as needed during the year. Because of the uncertainty of the actual projects coming on line, 100 percent of the cash funded capital will be allocated to indirect.

Table 3 — Allocation of Debt Service and Capital to GMC Cost Categories

Allocation of Debt Service and Capital to GMC cost categories					
System	**Market services**	**System operations**	**CRR services**	**Indirect**	**Comments**
	% of cost to allocate to category				
2008 Bond Debt Service					
Operations Related Software					
Automated Dispatch System (ADS)		100%			RT instructions from market to system operations thus the costs are entirely to support system operations
Automated Load Forecast System (ALFS)	50%	50%			market & operations both need forecasts thus the costs support equally both market and system operations
CRR			100%		the costs are entirely to support the CRR process
DMM & compliance tools (SAS MARS)	50%	50%			the costs support equally both market and system operations
Energy Management System (EMS)		100%			the costs are entirely to support system operations
Existing Transmission Contracts Calculator (ETCC)		100%			This is a balancing authority responsibility
FNM / State estimator	50%	50%			Needed for market and system operations thus the costs support equally both market and system operations
Integrated Forward Market (IFM)	50%	50%			results support both financially binding schedules and system operations thus the costs support equally both market and system operations
MQS	50%	50%			aligns with direct operating process thus the costs support equally both market and system operations
Master file	50%	50%			
Meter Data Acquisition System (MDAS)		100%			data feed reflecting settling actual flow of systems operations performance thus the costs are entirely to support system operations
New Resource Interconnection (RIMs)	20%	80%			based on staff training for market services & system operations thus the costs are predominantly operational flow based but have some market relationship
Open Access Same Time Information System (OASIS)	50%	50%			the costs support equally both market and system operations
Operational Meter Analysis & Reporting (OMAR)		100%			same as MDAS thus the costs are entirely to support system operations
PIRP	20%	80%			based on staff training for market services & system operations thus the costs are predominantly operational flow based but have some market relationship
Portal	50%	50%			the costs support equally both market and system operations
CAISO Market Results interface (CMRI)	50%	50%			
Process Information System (PI)		100%			the costs are entirely to support system operations
RT markets	20%	80%			support & provide actual dispatches to balance system thus the costs are predominantly operational flow based but have some market relationship
HA Scheduling Protocol (HASP)	50%	50%			includes market power mitigation thus the costs support equally both market and system operations
Resource Adequacy	50%	50%			The costs support equally both market and system operations
RMR application Validation Engine (RAVE)	50%	50%			
Scheduling & Logging for ISO CA (SLIC)	50%	50%			

Allocation of Debt Service and Capital to GMC cost categories					
System	**Market services**	**System operations**	**CRR services**	**Indirect**	**Comments**
	% of cost to allocate to category				
Control Area Scheduler (CAS)		100%			This is a balancing authority responsibility
Scheduling Infrastructure Business Rules (SIBR)	50%	50%			This contains interface to operations thus the costs support equally both market and system operations
Settlements & Market Clearing (SaMC)	15%	75%	10%		Based on DA and RT charge codes which settle 12 intervals operations hour for operations versus hourly for market thus after a minimum allocation to CRRs the costs are predominantly operational flow based but have some market relationship
General Software and Fixed Assets					
Client relations & engineering analysis tools				100%	Attributes are not distinguishable to any specific category
Local Area Network (LAN), WAN & monitoring (Tivoli)				100%	
Office automation desktop laptop (OA)				100%	
Oracle Corporate Financials				100%	
Security External Physical & ISS (CUDA)				100%	
Storage (EMC symmetrix)				100%	
Land and feasibility studies				100%	
NT servers and WEB servers				100%	
New system equipment				100%	
Office equipment, physical facilities software, furniture & leasehold improvements				100%	
2009 Bond Debt Service					
Iron Point headquarters				100%	Attributes are not distinguishable to any specific category
Cash Funded Capital					
Capital Project fund				100%	Amounts and projects vary yearly thus attributes are not distinguishable to any specific category

Allocation of Non-Payroll Support Costs

For the next step, significant non-payroll costs were pulled out of the operations and maintenance budget and allocated to buckets based on specific charge codes or to indirect costs. (see Table 4 next page)

Table 4 — Allocation of Non-Payroll Support Costs to GMC Cost Categories

Allocation of Non-Payroll Support Costs to GMC Cost Categories					
System	**Market services**	**System operations**	**CRR services**	**Indirect**	**Comments**
	% of cost to allocate to category				
Technology Division					
Hardware and software maintenance and leases				100%	Attributes are not distinguishable to any specific category
Communications (AT&T)				100%	
Occupancy costs				100%	
Operations Division					
PIRP forecasting costs	20%	80%			Use 80004 activity 313
General Counsel and Administrative Services Division					
Outside legal fees, financial audits and bank fees				100%	Attributes are not distinguishable to any specific category
SSAE 16 audit	45%	45%	10%		Use 80007 activity 412
Operational assessment	TBD	TBD			To be based on total % for 80005
Insurance				100%	Attributes are not distinguishable to any specific category

Allocation of ABC Support activities

The ABC support activities were allocated to indirect.

Table 5 — Allocation of ABC Support activities to GMC Cost Categories

Allocation of ABC support activities to GMC Cost Categories						
System	**Cost Code**	**Market services**	**System operations**	**CRR services**	**Indirect**	**Comments**
	% of cost to allocate to category					
Plan and manage business	80008				100%	Attributes are not distinguishable to any specific category
Support business services	80009				100%	
Manage human capabilities	80003				100%	

Allocation of Other Income and Operating Reserve Credit

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

Table 6 — Allocation of Other Income to GMC Cost Categories

Allocation of Other Income to GMC Cost Categories					
System	**Market services**	**System operations**	**CRR services**	**Indirect**	**Comments**
	% of cost to allocate to category				
SC application fee				100%	Hardware and software maintenance and leases
MSS penalties				100%	
SC training fees				100%	
PIRP forecasting fees	20%	80%			Use 80004 activity 313
LGIP study fees		100%			Use 80001 activity 203
Interest				100%	Hardware and software maintenance and leases
COI path operator fees	TBD	TBD			To be based on total %s from 80005

Table 7 — Allocation of Operating Reserve Revenue Credit to GMC Cost Categories

Allocation of Operating Reserve Revenue Credit to GMC Cost Categories					
System	**Market services**	**System operations**	**CRR services**	**Indirect**	**Comments**
	% of cost to allocate to category				
Change in operations and maintenance budget				100%	Hardware and software maintenance and leases
25% debt service reserve on 2008 bonds	TBD	TBD	TBD	TBD	Based on %s from 2008 bonds debt service allocation
25% debt service reserve on 2009 bonds				100%	Hardware and software maintenance and leases
Revenue changes				100%	
Expense changes				100%	

Indirect Costs

Indirect costs are aggregated and then allocated proportional to direct costs. After this mapping is completed it can be applied to the ISO revenue requirement to derive the related cost of service.

Costing the 2013 Revenue Requirement

The allocation matrix of level 2 activities and software was applied to the ISO's 2013 revenue requirement (based on the budget approved by the ISO Board in December 2012) to determine the costs associated with three categories: market services, system operations and CRR services. The 2013 revenue requirement data and employee hours are the most recent information available to both determine the GMC cost category percentage updates and the updated revenue requirement for the ISO's 2015 GMC tariff filing.

Table 8 — Components of the 2013 revenue requirement:

Revenue Requirement	2013 Budget ($ in thousands)
Operating and maintenance costs	$ 162,907
Debt service 2008 bonds	24,666
Debt service 2009 bonds	17,847
Cash funded capital	24,000
Other income	(7,900)
Operating reserve	(25,492)
Total Revenue Requirement	**$ 196,028**

Completing the analysis required the following steps:

1. Breaking out non-ABC Operating and maintenance (O&M) support costs and applying cost category percentages to these costs;
2. Mapping the ABC direct and support 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. Mapping remaining revenue requirements 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 three buckets and determining resulting cost category percentages; and
5. Dividing resulting costs by estimated volumes to determine 2013 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, and non-ABC costs such as facilities costs. The O&M budget was broken down into those two categories. The significant non-ABC support costs were removed from the divisions and allocated separately.

Table 9 — Mapping Costs to ABC Activities and Non-ABC Support Costs

Mapping Costs to Direct and Support Activities and Non-ABC Support Costs		2013 Budget ($ in thousands)		
Division		**Total**	**ABC Activities**	**Non-ABC**
Chief Executive Officer	2100	$ 4,589	$ 4,589	$ -
Market and Infrastructure Development	2200	13,991	13,991	
Technology	2400	58,653	38,319	20,334
Operations	2500	42,724	42,021	703
General Counsel and Administrative Services	2600	27,070	19,234	7,836
Market Quality and Renewable Integration	2700	5,871	4,887	984
Policy and Client Services	2800	10,009	10,009	
Total		**$ 162,907**	**$ 133,050**	**$ 29,857**

These budgeted costs were allocated using the percentages shown in *Table 4 — Allocation of Non-Payroll Support Costs to GMC Cost Categories.*

Table 10 — Allocation of Non-ABC Support to Cost Categories

Allocation of Non-ABC support costs									
Non-ABC support costs	**Market Services**	**System Operations**	**CRRs**	**Indirect**	**2013 Budget**	**Market Services**	**System Operations**	**CRRs**	**Indirect**
	% of costs allocated to activity				**Cost of category $ in thousands**				
Technology Division									
Hardware and software maintenance and leases				100%	$ 8,941	$ -	$ -	$ -	$ 8,941
Communications (AT&T)				100%	5,952				5,952
Occupancy costs				100%	5,441				5,441
Operations Division									
PIRP forecasting costs	20%	80%			1,687	337	1,350		
General Counsel and Administrative Services Division									
Outside legal fees, financial audits and bank fees				100%	5,180				5,180
SSAE 16 audit	45%	45%	10%		539	243	243	53	
Operational assessment	17%	83%			200	34	166		
Insurance				100%	1,917				1,917
Total					**$ 29,857**	**$ 614**	**$ 1,759**	**$ 53**	**$ 27,431**

Step 2: Allocation of O&M Costs

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

The O&M budget is comprised of approximately 103 cost centers. As discussed above, ISO staff has been coding their time to ABC level 1 and level 2 activities since 2011. The time for 2013 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 11 — Mapping Division Hours to Direct Operating Activities

Mapping Division Hours to Direct Operating activities	Percentage of time related to direct operating activities					
	Develop infra-structure (DI)	Develop markets (DM)	Manage market and reliability and data modeling (MMR)	Manage markets and Grid (MMG)	Manage operations support and settlements (MOS)	Support customers and stake-holders (SCS)
Organization Name	**80001**	**80002**	**80004**	**80005**	**80007**	**80010**
Chief Executive Officer (CEO)						
Market and Infrastructure Development (MID)	74%	20%	2%			
Technology (Tech)			4%	3%	1%	
Operations (Ops)			21%	53%	18%	
General Counsel and Administrative Services (GCAS)		2%	4%		1%	
Market Quality and Renewable Integration (MQRI)	3%	46%	3%	6%	33%	
Policy and Client Services (PCS)			7%			87%
Total	**8%**	**4%**	**9%**	**19%**	**7%**	**6%**

The hours were aggregated by level 2 activity.

Table 12 — Mapping Division hours to level 2 activities

ABC Level 2 Activities	Cost Code	ISO Divisions							
		CEO 2100	MID 2200	Tech 2400	Ops 2500	GCAS 2600	MQRI 2700	PCS 2800	Total
Develop Infrastructure (DI) (80001)									
Regulatory contract procedures	201		100%						4%
Manage GIP agreements	202		100%						8%
Manage GIP	203		98%			2%			27%
Long-term transmission planning	204		100%						42%
New transmission resources	205		100%						3%
Transmission maintenance studies	206		100%						4%
Load resource data	207		100%						3%
Seasonal assessment	208		100%						3%
Queue management	209		100%						6%
Annual delivery assessment	210		100%						
Total			99%			1%			100%
Develop Markets (DM) (80002)									
Manage tariff amendments	227					100%			6%
Post-order rehearing comp	228		100%						1%
State / Federal regulatory policy	229		86%		14%				10%
Business process manual change management process	230		15%					85%	1%
Develop infrastructure policy	231		100%						14%
Perform market analysis	232						100%		28%
Develop market design	233						18%		38%
Regulatory contract negotiations	234		82%						2%
Total			59%		1%	6%	34%		100%
Manage Market & Reliability Data & Modeling (MMR) (80004)									
Manage FNM maintenance	301			74%	22%		4%		14%
Plan and develop operations simulator training	302			10%	90%				3%
ISO meter certification	303				100%				4%
EMMAA telemetry	304				100%				1%
Metering system configuration for market resources	305				100%				1%
Manage CRRs	307				100%				5%
Manage credit and collateral	308					100%			6%
Resource management	309				96%		4%		9%
Manage reliability requirements	310		38%		57%		5%		9%
Manage operations planning	311				96%		4%		13%
Manage WECC seasonal studies	312				100%				1%
PIRP	313				100%				
Manage & facilitate procedure maintenance	314				100%				8%
Procedure administration and reporting	315				100%				
Plan and develop operations training	316				95%		5%		7%
Execute and track operations training	317				97%		3%		13%
CETAC activities	318				100%				1%
Provide stakeholder training	320							100%	3%
SC management	321							100%	2%
Total			3%	12%	72%	6%	3%	4%	100%
Manage Markets and Grid (MMG) (80005)									

		ISO Divisions							
ABC Level 2 Activities	**Cost Code**	**CEO 2100**	**MID 2200**	**Tech 2400**	**Ops 2500**	**GCAS 2600**	**MQRI 2700**	**PCS 2800**	**Total**
Manage DA market support	352			94%	6%				
Operations RT support	353			57%	20%		23%		5%
Outage model and management	355				100%				11%
Manage DA market	358				100%				10%
Manage pre and post scheduling	359				100%				4%
Manage operations engineering support	362				100%				4%
RT market – shift supervisor – manage post DA and pre RT	363				100%				8%
RTO – GRC desks - maintain balancing area and manage RT pre dispatch	364				100%				24%
RTO – transmission desk – manage transmission and electric system	365				100%				19%
RTO – scheduling desk – manage RT interchange scheduling	366				100%				15%
Total				3%	96%		1%		100%
Manage Operations Support & Settlements (MOS) (80007)									
Manage price validation & corrections	401			20%	80%				2%
Manage dispute analysis & resolution	402			2%	98%				10%
Manage MQS	403			13%	87%				16%
Manage data requests	404				100%				2%
Manage regulation no pay & deviation penalty calculations	405				100%				
Manage rules of conduct	406				100%				2%
Periodic meter audits	407				100%				
ISO RIG engineering	408				100%				5%
Manage energy measurement acquisition & analysis	409				100%				12%
Manage market clearing	411					100%			2%
Manage market billing & settlements	412				96%	4%			17%
Manage RMR settlements	413				100%				
Manage settlements release cycle	414				100%				11%
Manage market performance	417						100%		3%
Manage dispute analysis and resolution	418							100%	
Perform market validation	419			1%	14%		85%		17%
Total				3%	78%	2%	17%		100%
Support Customers and Stakeholders (SCC) (80010)									
Represent ISO externally	539		16%	40%	1%	29%	7%	7%	3%
Client inquiries	601							100%	14%
Account management	602							100%	10%
Stakeholder processes	603							100%	7%
Develop participating transmission owners	605							100%	
Service new clients	606							100%	3%
Government affairs	609							100%	43%
Communications and public relations	610							100%	20%
Total						1%		98%	100%
Direct O&M			**19%**	**5%**	**57%**	**2%**	**6%**	**11%**	**100%**

Cost of Direct Operating Activities

These costs were inputs into the allocation matrix shown in *Table 2 — Mapping of ABC Level 2 Direct Operating Activities to Cost Categories* to get the costs to the cost categories.

Table 13 — Allocation of Division Costs to Direct Operating Activities

Mapping costs to direct and support activities & Other costs	Allocation of direct operating costs ($ in thousands)						
	Develop infra-structure (DI)	Develop markets (DM)	Manage market and reliability and data modeling (MMR)	Manage markets and Grid (MMG)	Manage operations support and settlements (MOS)	Support customers and stake-holders (SCS)	Direct operating activities
Organization Name	**80001**	**80002**	**80004**	**80005**	**80007**	**80010**	**Total**
Chief Executive Officer (CEO)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Market and Infrastructure Development (MID)	9,726	3,340	352		3	37	13,458
Technology (Tech)	26		1,305	802	215	99	2,447
Operations (Ops)	3	79	7,491	24,689	5,509	4	37,775
General Counsel and Administrative Services (GCAS)	62	355	583		153	65	1,218
Market Quality and Renewable Integration (MQRI)	176	1,997	293	286	1,229	16	3,997
Policy and Client Services (PCS)		28	452		24	8,965	9,469
Total	**$ 9,993**	**$ 5,799**	**$ 10,476**	**$ 25,777**	**$ 7,133**	**$ 9,186**	**$ 68,364**

The costs were aggregated by level 2 activity.

Table 14 — Allocation of Division Costs to Level 2 activity

		ISO Divisions							
ABC Level 2 Activities	**Cost Code**	**CEO 2100**	**MID 2200**	**Tech 2400**	**Ops 2500**	**GCAS2 2600**	**MQRI 2700**	**PCS 2800**	**Total**
Develop Infrastructure (DI) (80001)									
Regulatory contract procedures	201	$ -	$ 378	$ -	$ -	$ -	$ -	$ -	$ 378
Manage GIP agreements	202		818						818
Manage GIP	203		2,251	26	3	62			2,342
Long-term transmission planning	204		4,273						4,273
New transmission resources	205		376				176		552
Transmission maintenance studies	206		499						499
Load resource data	207		268						268
Seasonal assessment	208		223						223
Queue management	209		615						615
Annual delivery assessment	210		25						25
Total			**9,726**	**26**	**3**	**62**	**176**		**9,993**
Develop Markets (DM) (80002)									
Manage tariff amendments	227					355			355
Post-order rehearing comp	228		30						30
State / Federal regulatory policy	229		485		79				564
Business process manual change management process	230		5					28	33
Develop infrastructure policy	231		829						829
Perform market analysis	232		2				1,602		1,604
Develop market design	233		1,847				395		2,242
Regulatory contract negotiations	234		142						142
Total			**3,340**		**79**	**355**	**1,997**	**28**	**5,799**
Manage Market & Reliability Data & Modeling (MMR) (80004)									

		ISO Divisions							
ABC Level 2 Activities	**Cost Code**	**CEO 2100**	**MID 2200**	**Tech 2400**	**Ops 2500**	**GCAS2 2600**	**MQRI 2700**	**PCS 2800**	**Total**
Manage FNM maintenance	301			1,274	377		73		1,723
Plan and develop operations simulator training	302			31	269				300
ISO meter certification	303				416				416
EMMAA telemetry	304				100				100
Metering system configuration for market resources	305				70				70
Manage CRRs	307				574				574
Manage credit and collateral	308					583			583
Resource management	309				875		35		910
Manage reliability requirements	310		352		535		44		930
Manage operations planning	311				1,262		59		1,322
Manage WECC seasonal studies	312				71				71
PIRP	313				1				1
Manage & facilitate procedure maintenance	314				841				841
Procedure administration and reporting	315				11				11
Plan and develop operations training	316				679		35		714
Execute and track operations training	317				1,336		47		1,384
CETAC activities	318				73				73
Provide stakeholder training	320							286	286
SC management	321							167	167
Total			**352**	**1,305**	**7,490**	**583**	**293**	**453**	**10,476**
Manage Markets and Grid (MMG) (80005)									
Manage DA market support	352			107	8				115
Operations RT support	353			695	250		286		1,231
Outage model and management	355				2,921				2,921
Manage DA market	358				2,564				2,564
Manage pre and post scheduling	359				974				974
Manage operations engineering support	362				1,148				1,148
RT market – shift supervisor – manage post DA and pre RT	363				2,021				2,021
RTO – GRC desks - maintain balancing area and manage RT pre dispatch	364				6,093				6,093
RTO – transmission desk – manage transmission and electric system	365				4,956				4,956
RTO – scheduling desk – manage RT interchange scheduling	366				3,754				3,754
Total				802	24,689		286		25,777
Manage Operations Support & Settlements (MOS) (80007)									
Manage price validation & corrections	401			31	125				156
Manage dispute analysis & resolution	402			16	709				725
Manage MQS	403			150	992				1,142
Manage data requests	404				97				97
Manage regulation no pay & deviation penalty calculations	405				8				8
Manage rules of conduct	406				165				165
Periodic meter audits	407				4				4
ISO RIG engineering	408				332				332
Manage energy measurement acquisition & analysis	409				926				926
Manage market clearing	411					111			111
Manage market billing & settlements	412				1,160	42			1,202
Manage RMR settlements	413				10				10

ABC Level 2 Activities	Cost Code	ISO Divisions							
		CEO 2100	MID 2200	Tech 2400	Ops 2500	GCAS2 2600	MQRI 2700	PCS 2800	Total
Manage settlements release cycle	414				807				807
Manage market performance	417						208		208
Manage dispute analysis and resolution	418							24	24
Perform market validation	419		3	18	175		1,020		1,216
Total			3	215	5,510	153	1,228	24	7,133
Support Customers and Stakeholders (SCC) (80010)									
Represent ISO externally	539		36	88	3	65	16	16	224
Client inquiries	601							1,318	1,318
Account management	602							889	889
Stakeholder processes	603				1			665	666
Develop participating transmission owners	605							8	8
Service new clients	606							299	299
Government affairs	609			10				3,979	3,989
Communications and public relations	610							1,793	1,793
Total			**36**	**98**	**4**	**65**	**16**	**8,967**	**9,186**
Direct O&M			**$ 13,458**	**$ 2,447**	**$ 37,775**	**$ 1,218**	**$ 3,997**	**$ 9,469**	**$ 68,364**

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

Table 15 — Mapping ABC Direct Operating Activities to Cost Categories

ABC Direct Operating Activities										
ABC Level 2 Activities	Cost Code	Market Services	System Operations	CRR Services	Indirect	2013 Budget	Market Services	System Operations	CRR Services	Indirect
		% of costs allocated to activity				Cost of category $ in thousands				
Develop Infrastructure (DI) (80001)										
Regulatory contract procedures	201				100%	$ 378	$ -	$ -	$ -	$ 378
Manage GIP agreements	202		100%			818		818		
Manage GIP	203		100%			2,342		2,342		
Long-term transmission planning	204		100%			4,273		4,273		
New transmission resources	205		100%			552		552		
Transmission maintenance studies	206		100%			499		499		
Load resource data	207		100%			268		268		
Seasonal assessment	208		100%			223		223		
Queue management	209		100%			615		615		
Annual delivery assessment	210		100%			25		25		
Total DI						**9,993**		**9,615**		**378**
Develop Markets (DM) (80002)										
Manage tariff amendments	227				100%	355				355
Post-order rehearing comp	228				100%	30				30
State / Federal regulatory policy	229				100%	564				564
Business process manual change management process	230				100%	33				33
Develop infrastructure policy	231		100%			829		829		
Perform market analysis	232	100%				1,604	1,604			
Develop market design	233	100%				2,242	2,242			
Regulatory contract negotiations	234				100%	142				142

ABC Direct Operating Activities										
ABC Level 2 Activities	**Cost Code**	**Market Services**	**System Operations**	**CRR Services**	**Indirect**	**2013 Budget**	**Market Services**	**System Operations**	**CRR Services**	**Indirect**
		% of costs allocated to activity				**Cost of category $ in thousands**				
Total DM						**5,799**	**3,846**	**829**		**1,124**
Manage Market & Reliability Data & Modeling (MMR) (80004)										
Manage FNM maintenance	301	50%	50%			1,724	862	862		
Plan and develop operations simulator training	302	20%	80%			300	60	240		
ISO meter certification	303		100%			416		416		
EMMAA telemetry	304		100%			100		100		
Metering system configuration for market resources	305		100%			70		70		
Manage CRRs	307			100%		574			574	
Manage credit and collateral	308	45%	45%	10%		583	262	262	59	
Resource management	309	50%	50%			910	455	455		
Manage reliability requirements	310		100%			931		931		
Manage operations planning	311		100%			1,321		1,321		
Manage WECC seasonal studies	312		100%			71		71		
PIRP	313	20%	80%			1		1		
Manage & facilitate procedure maintenance	314	20%	80%			841	168	673		
Procedure administration and reporting	315	20%	80%			11	2	9		
Plan and develop operations training	316	20%	80%			714	143	571		
Execute and track operations training	317	20%	80%			1,383	277	1,106		
CETAC activities	318		100%			73		73		
Provide stakeholder training	320				100%	286				286
SC management	321				100%	167				167
Total MMR						**10,476**	**2,229**	**7,161**	**633**	**453**
Manage Markets and Grid (MMG) (80005)										
Manage DA market support	352	100%				115	115			
Operations RT support	353	50%	50%			1,231	616	615		
Outage model and management	355		100%			2,921		2,921		
Manage DA market	358	50%	50%			2,564	1,282	1,282		
Manage pre and post scheduling	359		100%			974		974		
Manage operations engineering support	362	20%	80%			1,148	230	918		
RT market – shift supervisor – manage post DA and pre RT	363	50%	50%			2,021	1,011	1,010		
RTO – GRC desks - maintain balancing area and manage RT pre dispatch	364	20%	80%			6,093	1,219	4,874		
RTO – transmission desk – manage transmission and electric system	365		100%			4,956		4,956		
RTO – scheduling desk – manage RT interchange scheduling	366		100%			3,754		3,754		
Total MMG						**25,777**	**4,473**	**21,304**	-	-
Total MMG %						**100%**	**17%**	**83%**		
Manage Operations Support & Settlements (MOS) (80007)										
Manage price validation and corrections	401	50%	50%			156	78	78		
Manage dispute analysis & resolution	402				100%	725				725
Manage MQS	403	50%	50%			1,142	571	571		
Manage data requests	404				100%	97				97
Manage regulation no pay & deviation penalty calculations	405		100%			8		8		

ABC Direct Operating Activities										
ABC Level 2 Activities	**Cost Code**	**Market Services**	**System Operations**	**CRR Services**	**Indirect**	**2013 Budget**	**Market Services**	**System Operations**	**CRR Services**	**Indirect**
		% of costs allocated to activity				**Cost of category $ in thousands**				
Manage rules of conduct	406				100%	165				165
Periodic meter audits	407		100%			4		4		
ISO RIG engineering	408		100%			332		332		
Manage energy measurement acquisition & analysis	409		100%			926		926		
Manage market clearing	411	45%	45%	10%		111	50	50	11	
Manage market billing & settlements	412	45%	45%	10%		1,202	541	541	120	
Manage RMR settlements	413		100%			10		10		
Manage settlements release cycle	414	45%	45%	10%		807	363	363	81	
Manage market performance	417	50%	50%			208	104	104		
Manage dispute analysis and resolution	418				100%	24				24
Perform market validation	419	50%	50%			1,216	608	608		
Total MOS						**7,133**	**2,315**	**3,595**	**212**	**1,011**
Support Customers and Stakeholders (SCC) (80010)										
Represent ISO externally	539				100%	224				224
Client inquiries	601				100%	1,318				1,318
Account management	602				100%	889				889
Stakeholder processes	603				100%	666				666
Develop participating transmission owners	605		100%			8		8		
Service new clients	606				100%	299				299
Government affairs	609				100%	3,989				3,989
Communications and public relations	610				100%	1,793				1,793
Total SSC						**9,297**		**8**		**9,297**
Total Direct O&M						**$ 68,364**	**$ 12,863**	**$ 42,512**	**$ 845**	**$ 12,144**
Direct O&M %						**100%**	**19%**	**62%**	**1%**	**18%**

ABC Support Activities

The same process yielded the following percentages for the three support activities.

Table 16 — Mapping Division Hours to Support Activities

Mapping support activities	Percentage of time related to support operating activities		
	Manage human capabilities (MHC)	Plan and manage business (PMB)	Support Business Services (SBS)
Organization Name	**80003**	**80008**	**80009**
Chief Executive Officer	0%	14%	86%
Market and Infrastructure Development	0%	0%	3%
Technology	0%	9%	83%
Operations	0%	1%	8%
General Counsel and Administrative Services	21%	7%	64%
Market Quality and Renewable Integration	0%	2%	7%
Policy and Client Services	0%	0%	5%
Total	**2%**	**5%**	**40%**

These costs were inputs into the allocation matrix shown in *Table 5 — Allocation of ABC Support activities to GMC Cost Categories* to get the costs to the cost categories.

Table 17 — Mapping Division Costs to Support Activities

Mapping support activities	Percentage of time related to support operating activities			
	Manage human capabilities (MHC)	Plan & manage business (PMB)	Support business services (SBS)	Support activities
Organization Name	**80003**	**80008**	**80009**	**Total**
Chief Executive Officer	$ -	$ 1,838	$ 2,751	$ 4,589
Market and Infrastructure Development			533	533
Technology		4,911	30,961	35,872
Operations	5	1,109	3,132	4,246
General Counsel and Administrative Services	4,918	1,891	11,207	18,016
16Market Quality and Renewable Integration		213	677	890
Policy and Client Services	1	11	528	540
Total	**$ 4,924**	**$ 9,973**	**$ 49,789**	**$ 64,686**

For support activities the costs were aggregated and allocated as shown in *Table 5 — Allocation of ABC Support activities to GMC Cost Categories.*

Table 18 — Mapping ABC Support Activities to Cost Categories

Allocation of ABC Support Activities									
ABC Level 1 Activities	**Market Services**	**System Operations**	**CRR Services**	**Indirect**	**2013 Budget**	**Market Services**	**System Operations**	**CRR Services**	**Indirect**
	% of costs allocated to activity				**Cost of category $ in thousands**				
Manage Human Capabilities (80003)				100%	$ 4,924				$ 4,924
Plan & Manage Business (80008)				100%	9,973				9,973
Support Business Services (80009)				100%	49,789				49,789
Total					**$ 64,686**				**$ 64,686**

Step 3 — Allocating Remaining Revenue Requirements to Cost Categories

Debt Service and Cash Funded Capital

The allocation of costs is based on the percentage allocation in *Table 3 — Allocation of Debt Service and Capital to GMC Cost Categories.* (see Table 19 below)

Table 19 — Mapping Debt Service and Cash Funded Capital to Cost Categories

Debt Service and Capital									
System	**Market Services**	**System Operations**	**CRR Services**	**Indirect**	**2013 Budget**	**Market Services**	**System Operations**	**CRR Services**	**Indirect**
	% of costs allocated to activity				**Cost of category $ in thousands**				
Operations Related Software									
ADS		100%			$ 30	$ -	$ 30	$ -	$ -
ALFS	50%	50%			79	40	39		
CRRs			100%		855			855	
DMM & compliance Tools	50%	50%			478	239	239		
EMS		100%			1,923		1,923		
ETCC		100%			5		5		
FNM / State estimator	50%	50%			182	91	91		
IFM	50%	50%			6,365	3,183	3,182		
MQS	50%	50%			1,013	506	507		
Master file	50%	50%			409	205	204		
MDAS		100%			15		15		
NRI	20%	80%			219	44	175		
OASIS	50%	50%			66	33	33		
OMAR		100%			96		96		
PIRP	20%	80%			45	9	36		
Portal	50%	50%			473	236	237		
CMRI	50%	50%			411	206	205		
PI		100%			137		137		
RT market	20%	80%			1,271	254	1,017		
HASP	505	50%			1,270	635	635		
Resource Adequacy	50%	50%			43	21	22		
RAVE	50%	50%			5	3	2		
SLIC	50%	50%			295	147	148		
CAS		100%			47		47		
SIBR	50%	50%			1,801	900	901		
SaMC	15%	75%	10%		3,407	511	2,555	341	
Total operations related software					**20,940**	**7,263**	**12,481**	**1,196**	
General Software and Fixed Assets									
Client relations & engineering analysis tools				100%	154				154
LAN, WAN & monitoring				100%	650				650
OA				100%	80				80
Oracle Corporate Financials				100%	606				606
CUDA				100%	99				99
Storage				100%	889				889
Land & feasibility studies				100%	238				238
NT servers and WEB servers				100%	232				232
New system equipment				100%	400				400
Office equip, furniture and leasehold imp				100%	378				378
Total general software and fixed assets				**100%**	**4,204**	**239**	**239**		**3,726**
Total 2008 bond debt service $					**$ 24,666**	**$ 7,263**	**$ 12,481**	**$ 1,196**	**$ 3,726**
Total 2008 bond debt service %					**100%**	**29%**	**51%**	**5%**	**15%**

Debt Service and Capital									
System	**Market Services**	**System Operations**	**CRR Services**	**Indirect**	**2013 Budget**	**Market Services**	**System Operations**	**CRR Services**	**Indirect**
	% of costs allocated to activity				**Cost of category $ in thousands**				
2009 Bond debt service									
Iron Point headquarters				100%	**$ 17,847**				**$ 17,847**
Cash Funded Capital									
Capital Project fund				100%	**$ 24,000**				**$ 24,000**

Miscellaneous Revenue

The components of other revenue were reviewed and all revenues allocated pursuant to *Table 6 — Allocation of Other Income to GMC Cost Categories.*

Table 20 — Mapping Miscellaneous Revenue to Cost Categories

Allocation of Miscellaneous Revenue									
Type	**Market Services**	**System Operations**	**CRR Services**	**Indirect**	**2013 Budget**	**Market Services**	**System Operations**	**CRR Services**	**Indirect**
	% of costs allocated to activity				**Cost of category $ in thousands**				
SC application fee				100%	$ 100	$ -	$ -		$ 100
MSS penalties				100%	250				250
SC training fees				100%	150				150
Intermittent resource forecasting fee	20%	80%			1,600	320	1,280		
LGIP study fees		100%			2,000		2,000		
Interest				100%	1,800				1,800
COI path operator fees	17%	83%			2,000	340	1,660		
Total miscellaneous revenue					**$ 7,900**	**$ 660**	**$ 4,940**		**$ 2,300**

Operating Reserve Credit

The components of the operating reserve credit were reviewed and allocated pursuant to *Table 7 — Allocation of Operating Reserve Revenue Credit to GMC Cost Categories.* (see Table 21 below)

Table 21 — Mapping Reserve Credit to Cost Categories

Allocation of Operating reserve credit									
Type	**Market Services**	**System Operations**	**CRR Services**	**Indirect**	**2013 Budget**	**Market Services**	**System Operations**	**CRR Services**	**Indirect**
	% of costs allocated to activity				**Cost of category $ in thousands**				
Decrease in 15% reserve for O&M				100%	$ 21	$ -	$ -	$ -	$ 21
25% debt service reserve 2008 bonds	29%	51%	5%	15%	5,680	1,647	2,897	284	852
25% debt service reserve 2009 bonds				100%	3,570				3,570
Revenue changes				100%	9,266				9,266
Expense changes				100%	6,955				6,955
Total					**$ 25,492**	**$ 1,647**	**$ 2,897**	**$ 284**	**$ 20,664**

Step 4 — Aggregating Revenue Requirement into Cost Categories

The individual revenue requirements were aggregated and indirect costs allocated based on the total of direct costs. See Exhibit 2 for a summary of the cost of service study.

Table 22 — Mapping Revenue Requirement to Cost Categories

Revenue Requirement ($ in thousands)	**2013 Budget**	**Market Services**	**System Operations**	**CRR Services**	**Indirect**
Direct O&M $	$ 68,364	$ 12,863	$ 42,512	$ 845	$ 12,144
Support O&M $	64,686				64,686
Non-ABC support O&M $	29,857	614	1,759	53	27,431
Total O&M	**162,907**	**13,477**	**44,271**	**898**	**104,261**
Debt Service 2008 bonds	24,666	7,263	12,481	1,196	3,726
Debt Service 2009 bonds	17,847				17,847
Debt Service 2008 bonds	24,000				24,000
Total debt service and capital	**66,513**	**7,263**	**12,481**	**1,196**	**45,573**
Other income	(7,900)	(660)	(4,940)		(2,300)
Operating reserve	(25,492)	(1,647)	(2,897)	(284)	(20,664)
Total before allocation of indirect	**196,028**	**18,433**	**48,915**	**1,810**	**126,870**
Allocate indirect based on direct cost %		27%	70%	3%	
Allocate indirect		34,255	88,809	3,806	(126,870)
Total Revenue to Collect $	**$ 196,028**	**$ 52,688**	**$ 137,724**	**$ 5,616**	
Total Cost Category percentages	**100%**	**27%**	**70%**	**3%**	

Step 5 — Calculation of 2013 Rates Using New Cost Category Percentages

Although not necessary to determine the cost category percentages, the rates are needed to determine the EIM fee are covered in a separate paper and summarized in Exhibit 2. The GMC rates are determined by first estimating fees as shown in the following table.

Table 23 — Estimation of Fee Revenue and mapping of Fees to Cost Categories

Fee	Estimated 2013 volumes	Rate	Revenue (in thousands)	Cost Category
Bid segment fees	40,659,200	$0.005 per bid	$ 203	Market Services
Inter-SC trades	2,750,910	$1.00 per trade	2,781	
SCID fees	173	$1,000 per month	2,079	
TOR charges	3,679,322	$0.27 per MWh	993	System Operations
CRR auction bid fee	186,318	$1.00 per bid	186	CRR Services
Total Fees			**$ 6,242**	

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

Table 24 — 2013 GMC Rates Using Revised Cost Category Percentages

Revenue Requirement	2013 Budget	Market Services	System Operations	CRR Services
Revenue Requirement in thousands of $	**$ 196,028**	**$ 52,688**	**$ 137,724**	**$ 5,616**
Less Fees				
Bid segment fees	(203)	(203)		
Inter-SC trade fees	(2,781)	(2,781)		
SCID fees	(2,079)	(2,079)		
TOR charges	(993)		(993)	
CRR auction bid fees	(186)			(186)
Total fees	**(6,242)**	**(5,063)**	**(993)**	**(186)**
Remaining revenue requirement to collect	**$ 189,786**	**$ 47,625**	**$ 136,731**	**$ 5,430**
Estimated volumes in thousands of MWh		514,168	474,712	566,649
Less grandfathered contracts			(7,179)	
Estimated volumes		**514,168**	**467,533**	**566,649**
2013 rates using revised percentages		**$ 0.0926**	**$ 0.2925**	**$ 0.0096**

Summary of Cost Category Percentages

The results of the cost of service analysis for the cost category percentages that will go into effect in 2015 are as reflected in the following table.

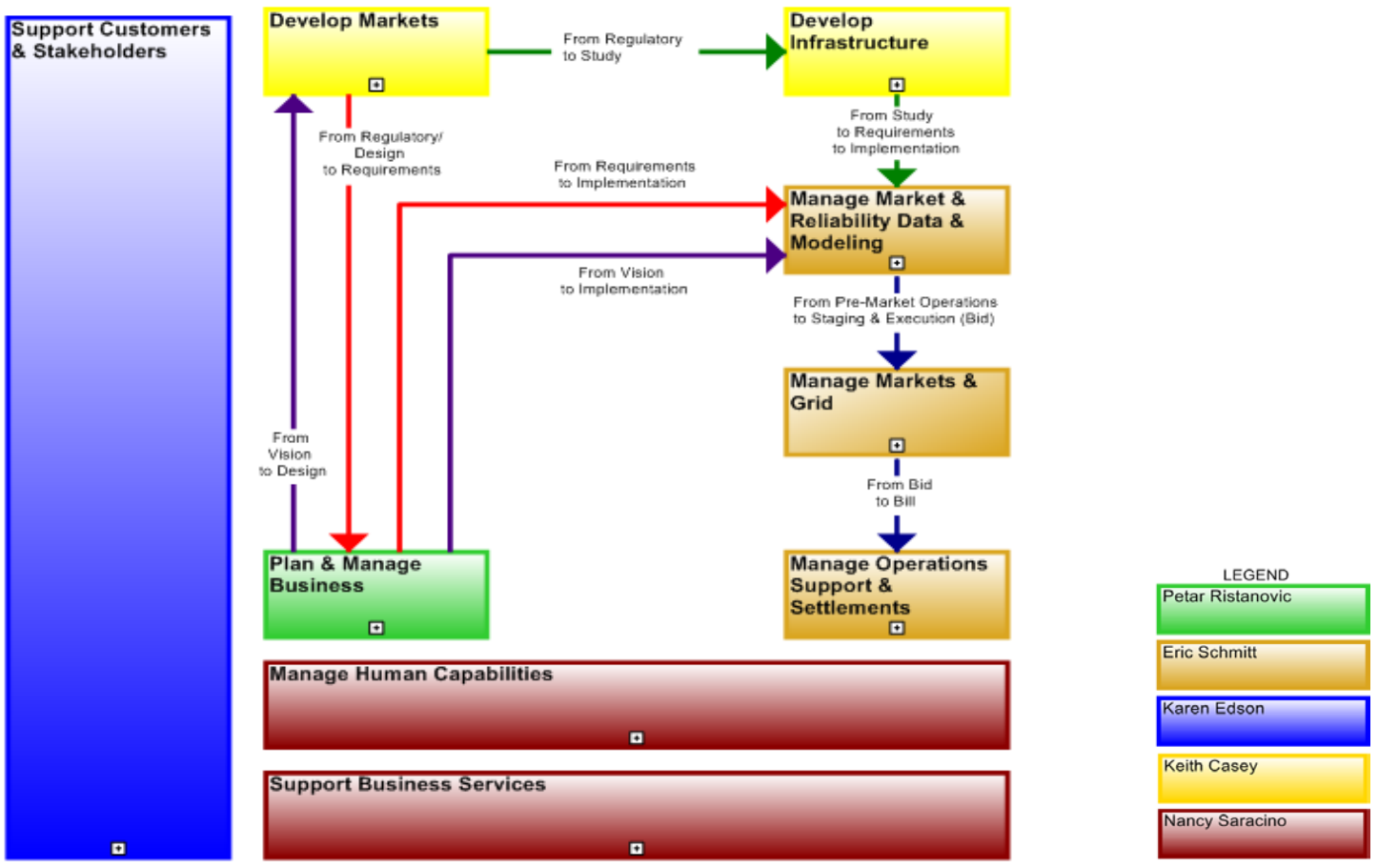
Summary of Cost Category Percentages for 2015

Category	Percentage
Market Services	27%
System Operations	70%
CRR Services	3%

CAISO Business Process Framework Overview v4.0 (9/12/2013)

- Illustrates high-level information streams between each of the Level I processes
- Shows how core processes in three supporting groups apply to all of the processes at the ISO
- Groups the Level II processes into logical groupings at executive ownership levels

Business Process Framework Overview

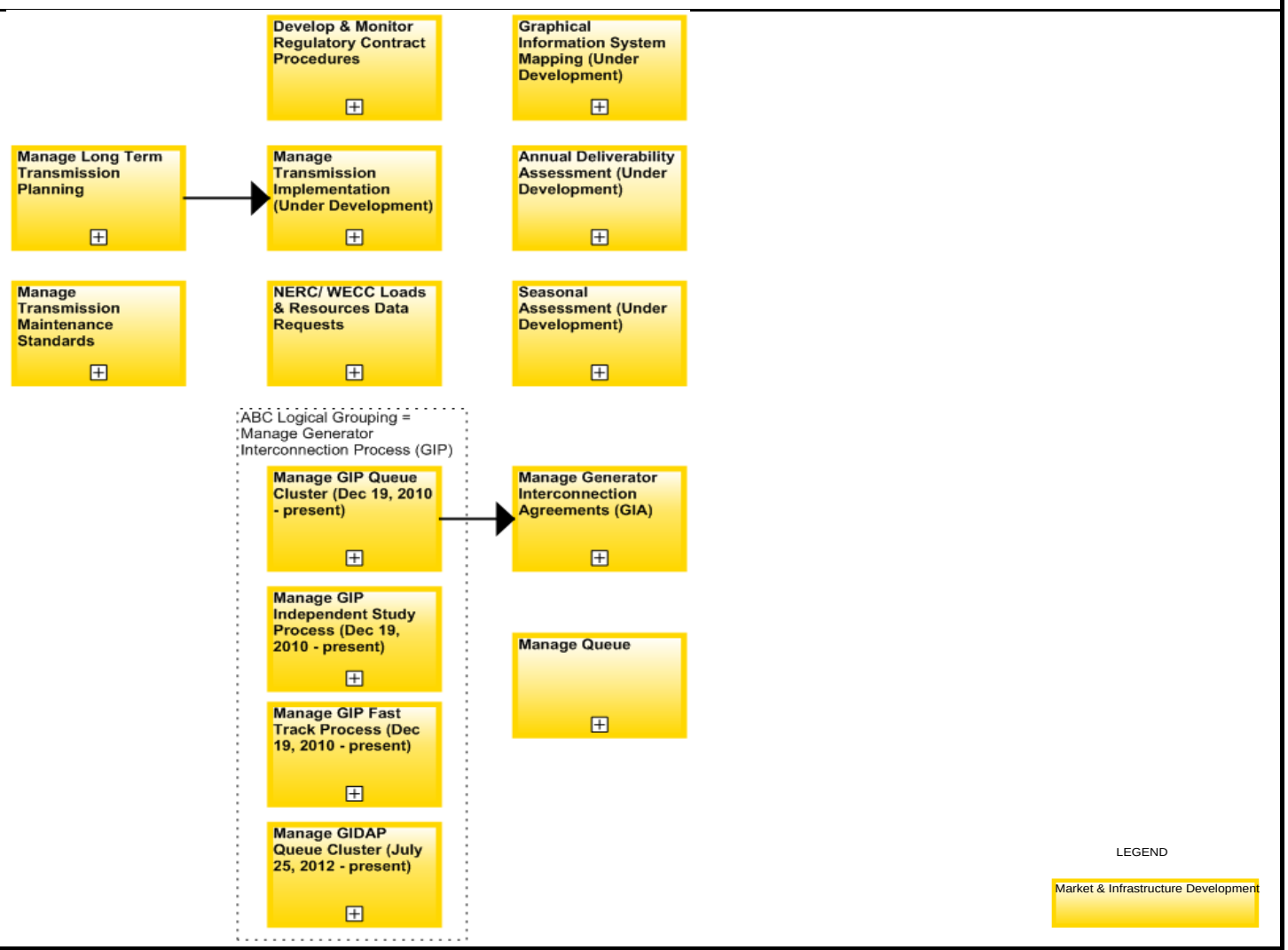


Last Updated: 07/17/13

Process Name	Process Owner	Key Activities
Develop Infrastructure (DI) (80001)	VP, Market Infrastructure & Development	Transmission Planning, Grid Assets Reviews, and Interconnections
Develop Markets (DM) (80002)	VP, Market Infrastructure & Development	Regulatory, Market, Policy, and Product Design
Manage Human Capabilities (MHC) (80003)	VP, General Counsel & Chief Administration Officer	Employee Lifecycle, Training, and Organizational Development
Manage Market & Reliability Data & Modeling (MMR) (80004)	VP, Operations	Resource Data Setup and Changes, Procedures, Training, Base Model Setup, and Congestion Revenue Rights
Manage Markets & Grid (MMG) (80005)	VP, Operations	Outages, Day Ahead Market, Interchange Scheduling, Real Time- Hour Ahead, Real Time, Generation and Transmission and Emergency Operations
Manage Operations Support & Settlements (MOS) (80007)	VP, Operations	Operations Data Analysis, Billing & Settlements, and Disputes
Plan & Manage Business (PMB) (80008)	VP, Technology	Strategic Planning, Governance, Budgeting, Project Management
Support Business Services (SBS) (80009)	VP, General Counsel & Chief Administration Officer	General, IT, Financial, Legal, Compliance, Audit and Market Monitoring Support Services
Support Customers & Stakeholders (SCS) (80010)	VP, Policy & Client Services	Client, Account and Stakeholder Processes, Government Affairs, and Communications

Develop Infrastructure (DI) (80001)

- Enables the ISO to take a proactive approach to transmission planning by facilitating the building of needed projects
- Provides an important platform for success in addressing future challenges, though an enhanced planning process
- Satisfies compliance requirements, meets other regulatory and policy goals, and participates in joint regional planning groups



Last Updated: 8/6/13

Processes	Process Owner Title	Process Descriptions
Develop & Monitor Regulatory Contract Procedures (201)	Director, Infrastructure Contracts & Management	IP&C is responsible for managing all regulatory contracting mechanisms for the CAISO. Contracts staff works with internal and external personnel to secure the necessary approvals, prepare the requested agreement, initiate and track the agreement execution process, notify internal staff as necessary for implementation, and maintains all official files.
Manage Generator Interconnection Agreements (GIA) (202) also includes GIA Downsize Amendments (211)	Director, Infrastructure Contracts & Management	Depicts the ISO oversight and implementation of the Federal Energy Regulatory Commission (FERC) approved Generator Interconnection Agreement (GIA).
Manage Generator Interconnection Process (GIP) (203)		Grouping of 4 GIP processes
Manage GIDAP Queue Cluster (July 25, 2012 - present) (203)	Manager, Interconnection Resources	This diagram depicts the Generation Interconnection and Deliverability Allocation Procedures (GIDAP). The objective of this process is to implement the requirements for both Small and Large Generating Facility Interconnections to the CAISO controlled grid and to provide a process for allocating Transmission Plan Deliverability for Interconnection requests starting with Queue Cluster 5 and for subsequent clusters.GIDAP applies also to subsequent requests submitted for the Independent Study process, or Fast track Process.
Manage GIP Fast Track Process (Dec 19, 2010 - present) (203)	Manager, Interconnection Resources	Depicts the ISO Grid Assets oversight and implementation of the FERC approved GIP for Interconnection Requests that meet the criteria for the Fast Track Process. Only provisions of the GIP that are superceeded by Independent Study Process are detailed here.
Manage GIP Independent Study Process (Dec 19, 2010 - present) (203)	Manager, Interconnection Resources	Depicts the ISO Grid Assets oversight and implementation of the FERC approved GIP for Interconnection Requests that meet the criteria for the Independent Study Process. Only provisions of the GIP that are superceeded by Independent Study Process are detailed here.
Manage GIP Queue Cluster (Dec 19, 2010 - present) (203)	Manager, Interconnection Resources	Depicts the ISO Grid Assets oversight and implementation of the Federal Energy Regulatory Commission (FERC) approved Generation Interconnection Procedures (GIP) for Queue Cluster Tariff Section 25 Appendix Y, effective date of December 19, 2010. Includes Phase I and Phase II Interconnection Studies.
Manage Long Term Transmission Planning (204)	Managers, Regional Transmission (North, South)	This process is responsible for: 1) CAISO Transmission Plan: Produce a forward-looking, coordinated transmission plan that provides for full NERC/WECC compliance obligations as well as proactive infrastructure planning initiatives, including economic transmission that facilitates a robust and efficient market 2) Support CPUC Resource Adequacy (RA) through the determination of all LCR requirements for the CAISO Controlled Grid; the determination of all import, zonal, and inter-zonal allocations that are used to define RA obligations for the LSEs 3) Generator Interconnection Study obligations 4) Renewable Integration analysis to assess operational reliability and infrastructure requirements to meet 33% requirements by 2020 5) On an annual basis, assess and validate feasibility of all Long-term CRRs 6) Perform annual congestion studies to a) Define and summarize term "significant and reoccurring" congestion b) Develop mitigation plan c) Provide the upgrade and congestion costs 7) Conduct Deliverability and Locational Capacity Studies in support of the CPUC resource adequacy requirements 9) Generation and transmission reliability assessment (i.e., Planning Reserve Margin and transmission probabilistic planning) 9) Sub-regional/Regional/National work on Planning Issues through NERC, FERC, and WECC 10) Special projects; Represent the ISO in technical groups and committees
Manage Transmission Implementation (205)	Director, Infrastructure Contracts & Management	Major tasks by all ISO departments to incorporate all various types of tranmission projects into the grid infrastructure. Additional detail provided in deptartment specific process flow diagrams. Not all tasks are performed for every type of transmission project.

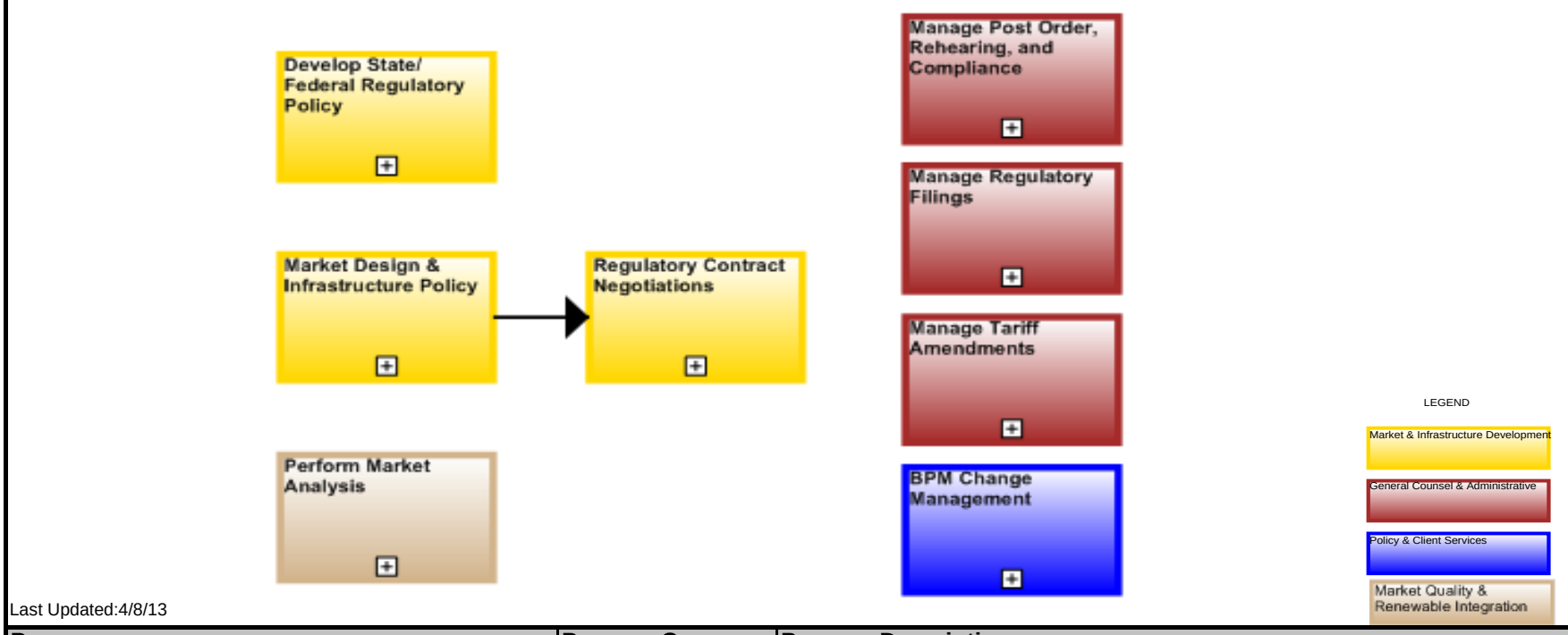
Develop Infrastructure (DI) (80001) (Continued)

- Enables the ISO to take a proactive approach to transmission planning by facilitating the building of needed projects
- Provides an important platform for success in addressing future challenges, though an enhanced planning process
- Satisfies compliance requirements, meets other regulatory and policy goals, and participates in joint regional planning groups

Processes	Process Owner	Process Descriptions
Manage Transmission Maintenance Standards (206)	Director, Grid Assets	Depicts the ISO Grid Assets oversight and review activities as coordinated with the participating transmission owners to manage the ISO Transmission Maintenance Standards (Transmission Control Agreement Appendix C), mandated by Public Utilities Code 348 and adopted by the ISO. The ISO Transmission Maintenance Standards consist of five major elements: 1) PTO Maintenance Practices - PTO provides and ISO adopts as appropriate a detailed description of the PTO's maintenance program; 2) Standardized Maintenance Reporting – summary of maintenance and inspection tasks planned and performed during the reporting period and the PTO identifies and explains differences between the planned maintenance activities and actual performed maintenance; 3) Annual Maintenance Reviews – ISO conducts field inspections to verify maintenance activities and records to support documented practices and to visually observe the condition of facilities; 4) Availability Measures – statistical analysis, using annual PTO frequency and duration of forced outage data, to quantify the availability performance of transmission circuits under the ISO's operational control. 5) Oversight and review by internal and external technical experts via the ISO Transmission Maintenance Coordination Committee (TMCC) to ensure these standards remain effective and current to the industry.
NERC/ WECC Loads & Resources Data Requests (207)	Director, Grid Assets	Depicts the process for developing templates and documentation, requesting demand response & energy efficiency data from LSEs, and compiling the actual, DR, EE, and forecasts using the WECC template.
Seasonal Assessment (208)	Director, Grid Assets	Depicts the process for seasonal assessment.
Manage Queue (209)	Director, Infrastructure Contracts & Management	Depicts the process for ongoing management of the Generator Queue (post-study). There are six tariff tracking requirements.
Annual Deliverability Assessment (Under Development) (210)	Director, Grid Assets	The process covers an annual assessment methodology for determining and allocating resource adequacy deliverability for distributed generation resources.
Graphical Information System Mapping (Under Development)	Director, Grid Assets	Depicts the process to create specific detailed transmission maps for internal and external requests.

Develop Markets (DM) (80002)

- Designs and implements value-added enhancements to the wholesale market design
- Improves the ISO's abilities to review and analyze the efficiency and quality of market results
- Creates a framework that will accommodate demand response participation in the ISO market

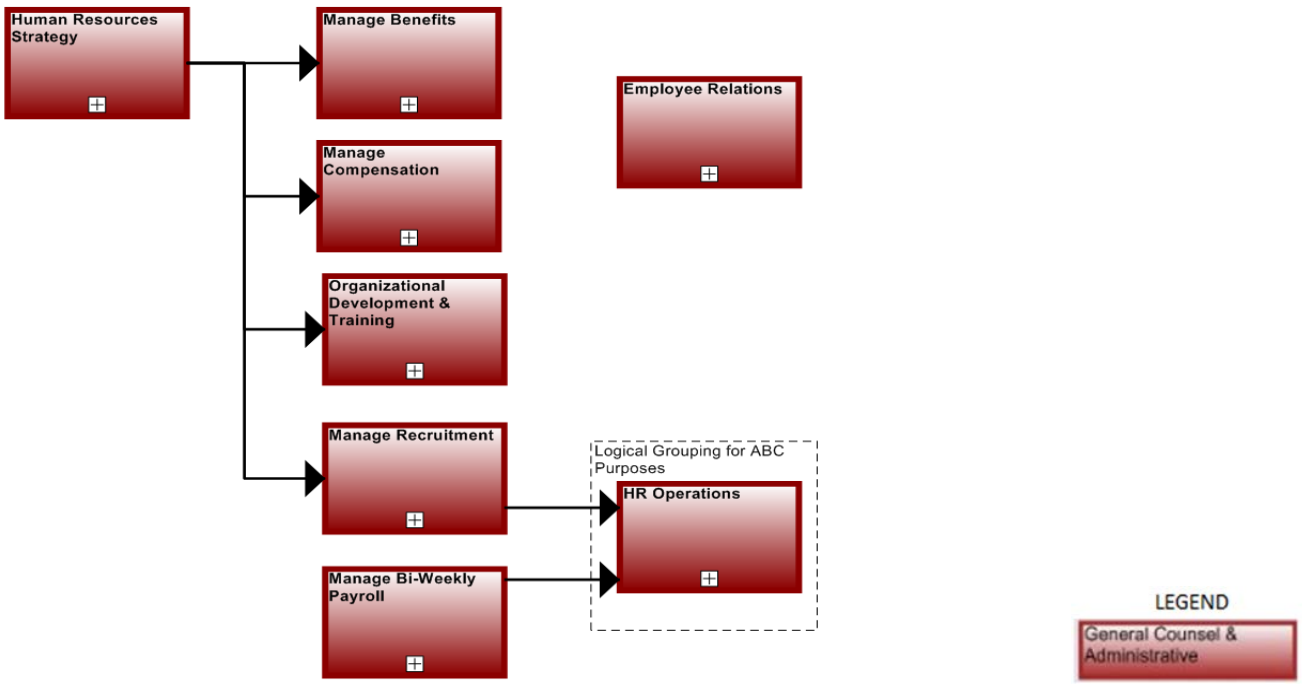


Last Updated:4/8/13

Processes	Process Owner	Process Descriptions
Manage Regulatory Filings (226)	Deputy General Counsel - Regulatory	The Draft and Review Filing sub process collects all relevant information needed from the project team to prepare an initial draft which is then reviewed by the project team and legal for quality and accuracy, completion of the evidence, strength of the case as well as whether the order sought enables the business process.
Manage Tariff Amendments (227)	Assistant General Counsel - Tariff & Compliance	Draft tariff language is published for review and comment prior to filing wih FERC in a tariff amendment filing. Market particpants have a minimum of one week to review and comment. Stakeholder meeting (usually conference call) is held to discuss written comments and to respond to questions raised on the call. If time permits, revised tariff language may be published prior to FERC filing. This process is not followed when filing tariff language on compliance with FERC directive unless compliance time frame is more than 30 days. Developing and stakeholdering tariff language is one the elements of the tariff amendment process. A member of the legal deparment will be assigned to a stakeholder initiative to provide legal advice. In addition, legal team member drafts the other documents in support of tariff amendment filing and produces drafts for internal review based on agreed upon schedule.
Manage Post Order, Rehearing, and Compliance (228)	Deputy General Counsel - Regulatory	Depicts the Legal procedures that are trigger by a FERC order. Includes seeking rehearing and/or compliance filing if necessary.
Develop State/ Federal Regulatory Policy (229)	Director, Market & Infrastructure Policy	This process is responsible for the development of corporate and regulatory policies related to the physical infrastructure of the electric power system. Staff engages with stakeholders and Federal or State regulatory agencies to produce new regulatory policy, necessary CAISO tariff provisions, and implementation of required business processes.
BPM Change Management (230)	Director, Customer Service & Stakeholder Affairs	Depicts the required activities for managing modifications and additions to Business Practice Manuals (BPMs). BPMs were created to guide ISO operations post MRTU launch and document the consistent and transparent manner in which the ISO will adhere to Tariff provisions. Revision requests for the BPMs may be submitted by stakeholders or an internal ISO department.
Infrastructure Policy (231) and Market Design (233)	Director, Market & Infrastructure Policy	This process includes the design and specification of efficient and effective wholesale electricity spot markets including the identification and development of new products and services as well as the development of solutions to existing market performance issues. This process also covers the formulation of market policies and designs which encourage infrastructure investment.
Perform Market Analysis (232)	Manager, Market Development & Analysis	This process is concerned with the identification and analysis of a market design issue, as it progresses throughout the organization potentially leading up to a Conceptual Design specification and FERC tariff filing.
Regulatory Contract Negotiations (234)	Director, Infrastructure Contracts & Management	IP&C is responsible for the negotiation, drafting, and administration of the CAISO pro-forma and special agreements with market participants and operators of other control areas. These contract negotiations accommodate the other party's request to the extent the negotiations/provisions of the contract are within the framework of the CAISO's Tariff, policies and procedures, and acceptable to FERC and other market participants.

Manage Human Capabilities (MHC) (80003)

- Comprises the objective of institutional sustainability (people, technology)
- Develops a talent pool to leverage expert technical knowledge and leadership skills
- Creates a work environment that supports and nurtures the ISO's goals

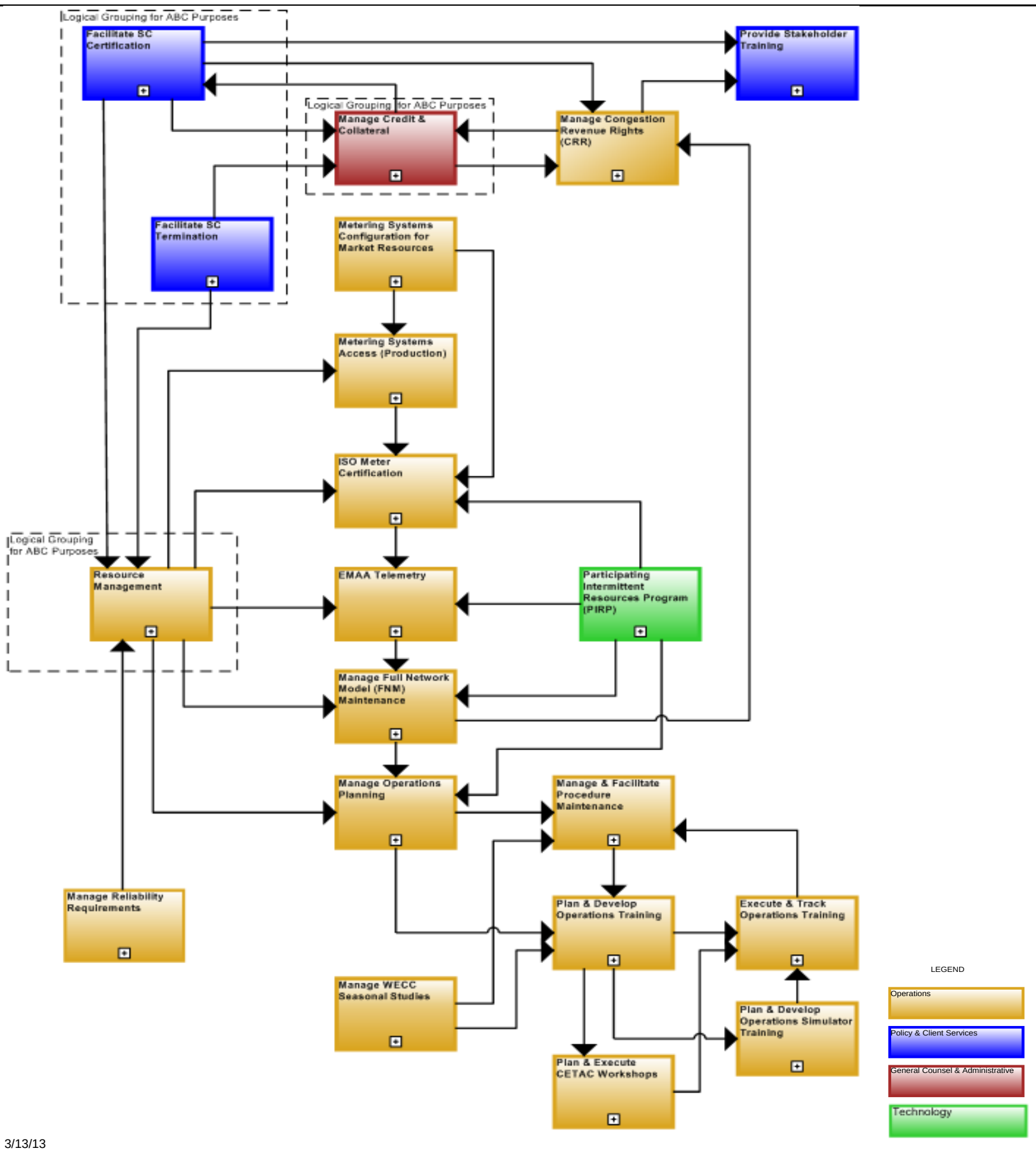


Last Updated: 7/17/13

Processes	Process Owner	Process Descriptions
Human Resources Strategy (251)	VP, Human Resources	Human Resources delivers competitive Human Resources programs and policies to ensure the organization's ability to promote quality treatment of employees and management practices that enable the CAISO to attract, retain, develop, and engage a dedicated and inspired world-class team. The Programs and Services delivered by HR include: 1) Learning & Organizational Development 2) Compensation 3) Employee Benefits 4) Review, validate and file employees' Pay-For-Performance Plans (PFPP) 5) Review STPIP for all employees and make recommendations to officers as necessary 6) Employee Health and Safety Compliance 7) Employee Relations 8) Payroll Administration 9) Employee Recruitment (job posting; job interviews; offer letters; relocation; summer internship program) 10) Employee Life-Cycle 11) Administration of HR Policies and Systems
Manage Benefits (252)	Manager, Compensation & Benefits	Depicts the activities surrounding the development and review of programs including health & welfare benefits, employee benefits, retirement, leave of absence, and workers compensation.
Manage Compensation (253)	Manager, Compensation & Benefits	Depicts the activities surrounding the development and review of programs including compensation, executive compensation, job descriptions, and annual merit/equity and incentive programs.
Manage Bi-Weekly Payroll (254)	Manager, Compensation & Benefits	Depicts the key activities from the time a timecard is submitted through ESS until a paycheck is issued to an employee.
HR Operations (255)	Manager, Human Resources Operations	Logical grouping for ABC purposes. Includes: - **Manage Immigration Process**- New Candidates with Non-immigrant Visas - Manage Immigration Process for New Candidates that have been identified through the HR- Recruiting process and have existing H1B or TN or CPT or OPT visas or are relocating from a foreign country and need a new visa - **Manage Immigration Process**- Existing Employees with Non-immigrant Visas - Process applies to existing employees who have non-immigrant visas and require H1B or CPT/OPT extensions and conversions - **Manage Immigration Process**- Existing Employee Conversions to Permanent Resident - **Manage Consultant On Boarding** - This diagram depicts the process flow for bringing on board contractor and consultant resources. The scope of the process does not include contractors brought in through CoreStaff. This process starts with the request for resources from the Business Unit and ends with the resource being cleared to bring on board.
Manage Recruitment (256)	Manager, Human Resources Operations	This process details the processes related to the sourcing, screening and hiring of employees at the ISO. Executes the strategy identified by division executives related to workforce planning. Ancillary processes include managing relocation and immigration. This hierarchy also represents the functional decomposition of manage HR administration sub-function which is part of managing human resources function.
Employee Relations (257)	Manager, Human Resources Operations	This process details ensuring the workplace environment allows for maximum productivity and satisfaction. This is achieved by: Addressing employee and/manager concerns, coaching for employees/managers, conducting investigations and providing recommendations on remediations, ensuring ISO is compliant with employment-related laws, marketing the ISO internally/externally as a best place to work.
Organizational Development & Training (258)	Sr Learning & Leadership Development Consultant	This processes depicts the required activities for fulfilling the corporate-wide Training and Development (T&D) requirements. The process involves the following: 1) Consult with manager to identify T&D opportunity or Problem 2) Perform environmental scan 3) Perform initial analysis 4) Design and develope T&D intervention 5) Deploy T&D intervention 6) Track, evaluate and make necessary adjustments to (T&D) intervention

Manage Market & Reliability Data & Modeling (MMR) (80004)

- Checks and rechecks network modeling policies and protocols to reduce non-market energy dispatches
- Assures that models reflect all grid constraints and produce timely and accurate prices results
- Improves the visibility and transparency of the ISO's business while keeping monitoring and reporting duties secure



Last Updated: 3/13/13

Processes	Process Owner	Process Descriptions
Manage Full Network Model (FNM) Maintenance (301)	Manager, Model & Contract Implementation	Depicts the required activities to maintain and update the Full Network Model (FNM) -- the computer-based model that provides technical specifics of the ISO control area transmission network. The FNM includes a combination of physical network data and commercial data needed to support the reliability goals of the ISO and ensure that network constraints are enforced and feasible operational schedules identified.
Plan & Develop Operations Simulator Training (302)	Manager, Operations Training	Depicts the activities performed by the Operation Training team to plan and develop operations simulator training.
ISO Meter Certification (303)	Manager, Model & Contract Implementation	Depicts the process of certifying new metered entities to provide meter data in the ISO's markets.
EMAA Telemetry (304)	Manager, Model & Contract Implementation	Depicts the process for configuring and testing telemetry for new or existing generators including PDR. The process describes how RIG engineers review documentation to develop point lists, finalize data point lists with generators, and submit the point lists to EMS for QAS testing. RIG engineers then verify the QAS output, perform point-to-point testing and work with MCI to setup A/S testing.
Metering Systems Configuration for Market Resources (305)	Manager, Market Services Meter Engineering & Analysis	Depicts the process of establishing meter communications with ISO MEs, performing resource mappings, configuring resources for ISO programs or special calculations, and providing access to raw meter data.
Metering Systems Access (Production) (306)	Manager, Market Services Meter Engineering & Analysis	Depicts the process for managing secured access to SQMD for both internal and external requests.

Manage Market & Reliability Data & Modeling (MMR) (80004) (Continued)

- Checks and rechecks network modeling policies and protocols to reduce non-market energy dispatches
- Assures that models reflect all grid constraints and produce timely and accurate prices results
- Improves the visibility and transparency of the ISO's business while keeping monitoring and reporting duties secure

Processes	Process Owner	Process Descriptions
Manage Congestion Revenue Rights (CRR) (307)	Manager, Market Settlement Validation & Resolution	Depicts the required activities for the allocation and auction of Congestion Revenue Rights (CRRs) to market participants as well as the trading of these rights in the secondary market. The allocation and auction processes occur both annually (prior to the start of a new calendar year) and monthly (prior to the start of a new month). Sub processes include: (1) Set up of the CRR market (2) Receive CRR allocation and auction submissions (3) Run the CRR market, and (4) Perform secondary market trading. CRRs are financial rights to receive a portion of the revenue associated with resolving congestion on the ISO system. They are defined between a source and sink location on the grid and enable holders to manage the variability of congestion costs connected to the use of locational marginal pricing. CRRs are allocated to Load Serving Entities (LSEs) and auctioned to all creditworthy participants. They are available with annual and monthly terms and can be bought and sold by holders within the Secondary Registration System available on the ISO Portal.
Manage Credit & Collateral (308)	Manager, Treasury & Credit	Logical grouping for ABC purposes. Includes: **Manage Credit -** Depicts the required activities to ensure that Market Participants comply with CAISO credit policy by ensuring that a Market Participant's Aggregate Credit Limit ("ACL"; i.e., unsecured credit plus posted financial security) exceeds their Estimated Aggregate Liability ("EAL"). Determine Liabilities The process of determining what a Market Participant's EAL is (i.e., how much the Market Participant owes the CAISO market). This process includes aggregating inputs from multiple operational system sources such as settlements and CRR and projecting the EAL over the full cash clearing cycle. Compare Limits versus Liabilities The weekly process of ensuring that a Market Participant's ACL exceeds their EAL. For Market Participant's whose EAL is 90% or more of their ACL, CAISO initiaties a request that the Market Participant post additional financial security. **Manage Collateral -** The process of setting a Market Participant's ACL by determining any unsecured credit that the Market Participant may be eligible for as well as receiving and posting other forms of financial security from the Market Participant.
Resource Management (309)	Manager, Model & Contract Implementation	Logical grouping for ABC purposes. Includes: **- Manage Entity & Resource Maintenance Updates** **- Manage New Resource Implementation -** Depicts the process followed to manage the implementation of all types of resources according to required timelines and in compliance with Tariff and Controls. This process encompasses activities performed from Customer Request to Final Certification to participate in the ISO Market. **- Manage TRTC (Transmission Rights Transmission Curtailments) Instructions -** Depicts the activities performed by the Model & Contract Implementation (MCI) team to manage TRTC instructions. The use of ETC or TOR transmission rights must be scheduled in both CAISO Market and Interchange Scheduling systems by a responsible SC. The responsible SC is determined by the RPTO or NPTO, which notifies the ISO using TRTC instructions. The responsible SC schedules ETC/TORs using market resources registered as source or sink for the ETC/TOR rights, in the CAISO Master File. Any transfer or sale of ETC rights must first be coordinated by the ETC rights holder through the RPTO. The RPTO then revises its TRTC (Transmission Reservation Transmission Contracts) instructions to the CAISO, to reflect any approved transfer, accordingly. Only the responsible SC, as registered with the CAISO, may receive any congestion charge rebate associated with the use of ETC rights. **- Manage SC-Requested Resource Testing** **- Manage Resource Performance Verification** - Depicts process for auditing resource performance and conducting unannouced compliance testing.
Manage Reliability Requirements (310)	Manager, Model & Contract Implementation	Depicts the required activities to support the Resource Adequacy program adopted by the California Public Utilities Commission (CPUC) and other local regulatory agencies in compliance with California mandates. The RA program ensures that sufficient resources are available to meet the expected peak demand and provides for reliable power delivery throughout the ISO Control Area. Annual and monthly supply plans submitted by Market Participants (MPs) and Load Serving Entities (LSEs) are reviewed in conjunction with ISO studies regarding local capacity requirements and generation deliverability studies. Analysis of this data is used to create annual and monthly Resource Adequacy Capacity Reports.
Manage Operations Planning (311)	Director, Operations Engineering Services	Provide operating procedures and tools, and training information, to address transmission and generator operational issues in the operating horizon (from 2 days to 1 year).
Manage WECC Seasonal Studies (312)	Director, Operations Engineering Services	Perform WECC Seasonal Studies 3 x per year. Develop System Operating Limits (SOL's) for Southern California Import Transmission (SCIT) and California Oregon Intertie (COI) paths, and implement them for each season.
Participating Intermittent Resources Program (PIRP) (313)	VP, Technology	This is the process required for a qualified Eligible Intermittent Resource (EIR) to become a Participating Intermittent Resource (PIR), and the subsequent annual requirements to maintain PIR status.
Manage & Facilitate Procedure Maintenance (314) and Manage proceedure admninistration,and reporting (315)	Manager, Operations Process & Procedures	Depicts the required activities for managing the development, review, and modification of ISO Operating Procedures. Operating Procedures were created to guide ISO grid operations and document the consistent and transparent manner in which the ISO will adhere to Tariff provisions. Revision requests for the Operating Procedures may be submitted by stakeholders or an internal ISO department.
Plan & Develop Operations Training (316)	Manager, Operations Training	Depicts the required activities for managing the design, development, and delivery of operations (Grid and Market) related training courses, simulator scenarios and training programs to real-time personnel, Operators-in-training (OITs), other ISO departments, and external entities in form of Grid Ops Training, Summer Workshops, and on-the-job training (OJT).
Execute & Track Operations Training (317)	Manager, Operations Training	Depicts the process for conducting required training throughout the year, including planned and ad hoc training. Also includes activities related to reporting training completion to regulatory agencies.
Plan & Execute CETAC Workshops (318)	Manager, Operations Training	The California ISO in conjunction with the California Electric Training Advisory Committee (CETAC) plans, develops and delivers Grid Operator training on an annual basis to provide a learning forum and opportunity for enhanced communications between operating entities involved with the reliable operation of the grid. Workshop courses are largely focused in areas to prepare for managing summer peak system loads. Planning and coordination activities start over 1 year in advance and the workshops are delivered over a 5 week period starting in March or April each year.

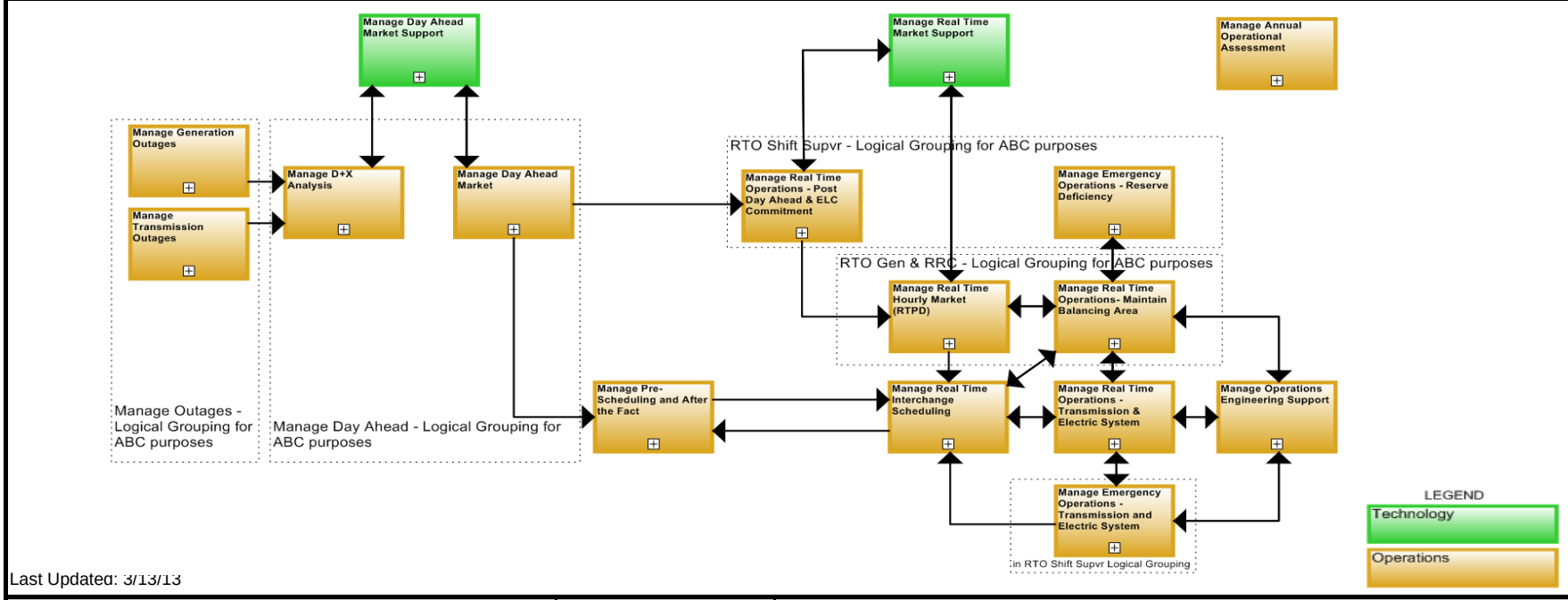
Manage Market & Reliability Data & Modeling (MMR) (80004) (Continued)

- Checks and rechecks network modeling policies and protocols to reduce non-market energy dispatches
- Assures that models reflect all grid constraints and produce timely and accurate prices results
- Improves the visibility and transparency of the ISO's business while keeping monitoring and reporting duties secure

Processes	Process Owner	Process Descriptions
Provide Stakeholder Training (320)	Manager, Customer Service	This process describes detailed steps for providing stakeholder training.
SC Management (321)		Grouping of 2 SC processes
Facilitate SC Certification (321)	Manager, Customer Service	This Process defines the Scheduling Coordinator (SC) certification process and identifies all the requirements which are needed to complete SC certification. Customer Services oversees the SC certification process and ensures that all requirements are fulfilled prior to letting the SC submit schedules in the CAISO market. CAISO managers that are responsible for the certification requirement manually sign off the SC Checklist when the requirement is fulfilled. On completion, the Client Representative submits a change management request (CMR) to initiate the SC setup in CAISO systems. The Client Representative sends an internal notification as well as creating a Market Notice introducing the new SC in the CAISO market.This process describes the steps for SC Applicants to establish Financial Security as a part of their certification process. This process describes the certification requirements for SC Applicants. These requirements include establishing Financial Security, establishing Network Interface, getting access to Application, attending Training, completing Market Proficiency Test, completing Real Time and Contact Drills, Submitting SC Emergency Plan, registering Interchange ID, submitting Network Connectivity Security Agreement, submitting Acknowledgement Forms, etc. SC Applicants becoming certified for Inter-SC trades or Non-dynamic Energy Imports into the CAISO Control Area do not have post security during the certification phase. Once they go live Finance monitor their activity and they may be asked to post collateral at that time. ·Other SC Applicants must have an Approved Credit Rating as set forth in the CAISO Tariff. ·In the absence of an Approved credit rating, an SC can estimate their security obligation using the calculator.
Facilitate SC Termination (321)	Manager, Customer Service	This process describes how to handle voluntary or involuntary termination of a Scheduling Coordinator (SC).

Manage Markets & Grid (MMG) (80005)

- Manages transmission and generation outages to ensure continuous flow of power to all customers
- Includes dutiful execution of the Day Ahead Market and Interchange Scheduling
- Ensures all local capacity requirements are met and the power is delivered in the least cost possible by avoiding congested areas
- Manages Real Time Scheduling to ensure that load is balanced to generation and that dispatch instructions are generated
- Operates the Day Ahead and Real Time energy markets
- Performs Generation and Transmission Dispatch



Last Updated: 3/13/13

Processes	Process Owner	Process Descriptions
Manage Day Ahead Market Support (352)	Manager, Market Engineering Support	Depicts the activities performed by the Power Systems Technology Operations (PSTO) team to support the Day Ahead market.
Manage Real Time Market Support (353)	Manager, Market Engineering Support	Depicts the activities performed by the Power Systems Technology Operations (PSTO) team to support the Real Time market.
Outage Model and Management (355)		Grouping of 2 outage activities
Manage Generation Outages (355)	Director, Day-Ahead Market & Real-Time Operations Support	Depicts the required activities to coordinate and manage planned and forced generation outages to best ensure system reliability while successfully meeting demand and managing system congestion.
Manage Transmission Outages (355)	Director, Day-Ahead Market & Real-Time Operations Support	Depicts the required activities to coordinate and manage planned and forced transmission outages to best ensure system reliability while successfully meeting demand and managing system congestion. This process also involves handling of the outage data (text format) in the SLIC Application which will be entered into the EMS Outage Scheduler and the Siemens Outage Scheduler through a direct input method. This outage data is essential for both the Outage schedulers to correctly solve based upon the changes in grid topology. This process also documents the manual data entry procedure until siutable automation is in place.
Manage Day Ahead Market (358)		Grouping of 2 day ahead activities
Manage D+X Analysis (358)	Director, Day-Ahead Market & Real-Time Operations Support	This diagram depicts the analysis activities which occur after the Day Ahead Market (D+1) has been run. Currently the D+2 run is run "today" for 2 days out and utilizes the appropriate outages and load forecasts for that D+2 date, but utilizes the D+1 Master File and Bid data. The D+2 run includes MPM-RRD, IFM and RUC- results are reported but not published externally. The Day Ahead operators run the D+2 processes and are supported by Market Operations and Engineering to analyze the pricing, binding constraints and other outputs. The objective for the analysis is to discover any issues or inconsistencies in the outputs which can be resolved before reaching the D+1 run.
Manage Day Ahead Market (358)	Director, Day-Ahead Market & Real-Time Operations Support	Depicts the required activities to run the Day-Ahead Market (DAM) and includes the tasks that occur in the three hour window - between the close of the DAM at 10 am and publication of results at 1 pm - in support of the next day's grid operation. The DAM commits generation, manages congestion, procures reserves and clears market bids. Sub-processes include: 1) Receive and validate bids 2) Run DAM systems of Market Power Mitigation (MPM), Reliability Requirement Determination (RRD), the Integrated Forward Market (IFM), Residual Unit Commitment (RUC) and Extreme Long-Start Commitment (ELC) 3) Publish results
Manage Pre-Scheduling and After the Fact (359)	Director, Day-Ahead Market & Real-Time Operations Support	The Manage Pre & Post Scheduling process involves validating and approving requests for interchange schedules (RFIs), resolving Net Scheduled Interchange (NSI) and Net Actual Interchange (NAI) discrepancies After the Fact (ATF). During the Prescheduling time frame, Scheduling Services ensures that the inter-tie schedules submitted prior to the operating day have valid e-Tags, have Day Ahead Market awards, conform to all market and contractual obligations and are checked out with Adjacent Balancing Authorities (ABAs) and WECC Interchange (WIT) in accordance with NERC policies. During the After the Fact time frame, Scheduling Services ensures that checkouts are performed with Adjacent Balancing Authorities and any potential NAI and/or NSI discrepancies are identified and resolved prior to the Settlements process.
Manage Operations Engineering Support (362)	Director, Operations Engineering Services	Depicts the activities surrounding engineering support of real time operations, which could include analysis as well as tool and procedure updates.
Real Time Operations - Shift Supervisor - Post Day Ahead and Pre Real Time and Manage Emerrgency Operations (363)		Grouping of 3 real time operations shift supervisor activities
Manage Real Time Operations - Post Day Ahead & ELC Commitment (363)	Director, Real-Time Operations	Depicts the required activities to prepare for running the Real-Time Market. Grid Operations performs the following: (1) Reviews and adjusts Day-Ahead schedules as needed (2) Manages the real-time bidding process and (3) Prepares for the Real-Time Market hourly intervals process. Time horizon represented by the full process is Trade Hour minus 30 minutes Trade Hour plus 240 minutes.
Manage Emergency Operations - Reserve Deficiency (363)	Director, Real-Time Operations	Details the actions taken as a response to forecasted or existing Operating Reserve deficiencies. The order of the actions taken may vary due to system conditions or other operational issues. The scope of the process includes the escalation and de-escalation through stages of Alerts, Warnings, and levels of Emergency in order to prevent further depletion of reserves or degradation to the system.
Manage Emergency Operations - Transmission & Electric System (363)	Director, Real-Time Operations	This process includes stages of emergency situations ranging from reserve shortages, to load shedding, to brown/black restoration, etc. As well as system restoration steps.

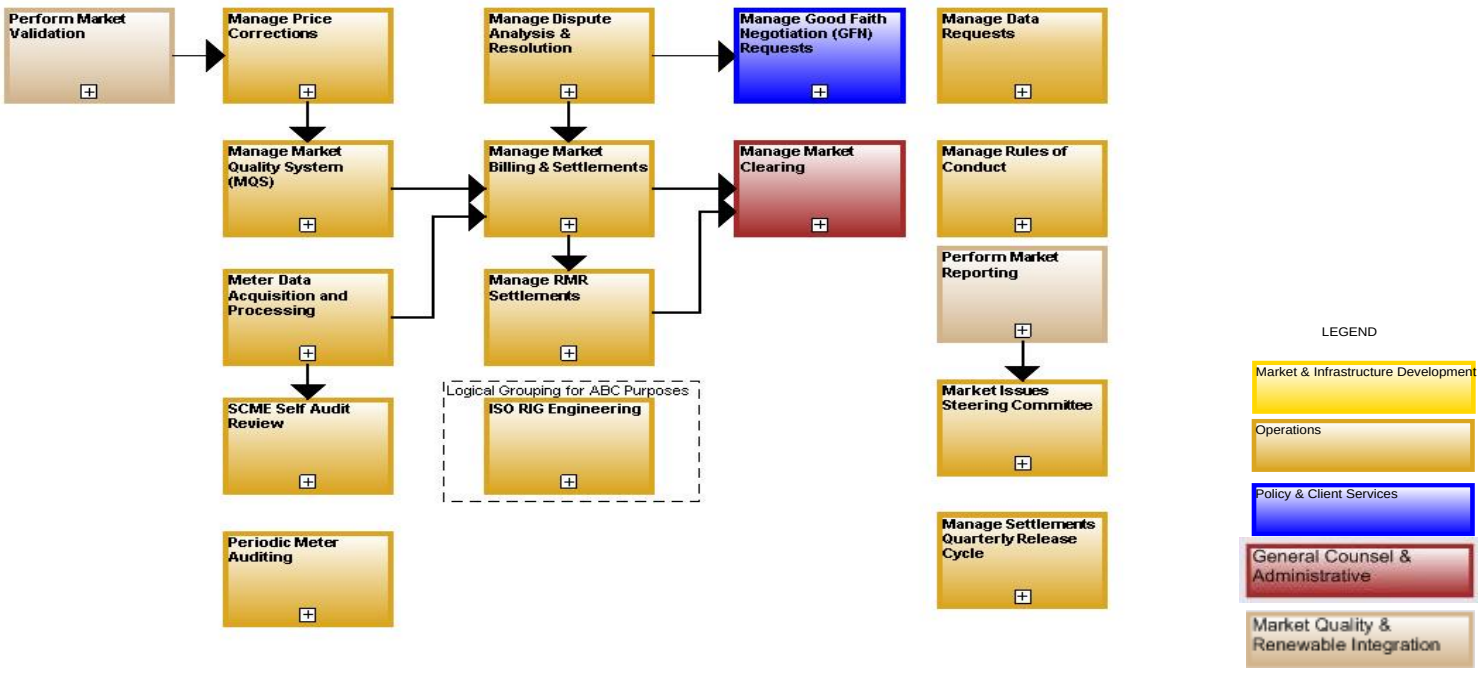
Manage Markets & Grid (MMG) (80005) (Continued)

- Manages transmission and generation outages to ensure continuous flow of power to all customers
- Includes dutiful execution of the Day Ahead Market and Interchange Scheduling
- Ensures all local capacity requirements are met and the power is delivered in the least cost possible by avoiding congested areas
- Manages Real Time Scheduling to ensure that load is balanced to generation and that dispatch instructions are generated
- Operates the Day Ahead and Real Time energy markets
- Performs Generation and Transmission Dispatch

Processes	Process Owner	Process Descriptions
Real Time Operations - Generation and Real Time Renewables Coordinator (GRRC) desks - Maintain Balancing area and manage real time pre deipatch (RPTD) (364)		Grouping of 2 real time operations GRRC desks activities
Manage Real Time Operations - Maintain Balancing Area (364)	Director, Real-Time Operations	Depicts the required activities for executing the 5 minute dispatches as well for monitoring and mitigating ACE, AGC, reserves, contingencies, exceptional dispatch, etc
Manage Real Time Hourly Market (RTPD) (364)	Director, Real-Time Operations	Depicts the required activities to run the Real-Time Market following its close and the receipt of all real-time bids. Grid Operations performs the following: (1) Run the Real-Time Market Power Mitigation (MPM) and Reliability Requirements Determination (RRD) processes (2) Manage the Hour-Ahead Scheduling Process (HASP) and (3) Run unit commitment processes - Short-Term Unit Commitment (STUC) runs hourly looking 5 hours ahead, Real-Time Unit Commitment (RTUC) runs every 15 minutes, and Real-Time Economic Dispatch (RTED) runs every five minutes for imbalance energy needs. The time horizon represented by the full process is Trade Hour minus 45 minutes to Trade Hour plus 60 minutes.
Manage Real Time Operations - Transmission & Electric System (365)	Director, Real-Time Operations	The Transmission Dispatch desk focuses largely on the reliability of the system. There are 2 desks in Folsom, one of which focuses on 500kv lines and the other 230 kv lines. There are 2 desks in Alhambra, one of which focuses on SCE 220kv lines and the other SDG&E 230kv lines. The Lead Transmission Dispatch desk manages changes which impact the market model including but not limited to biasing, TCORs, monitoring pricing and congestion. These activities are represented on a separate diagram.
Manage Real Time Interchange Scheduling (366)	Director, Real-Time Operations	The Manage Interchange Scheduling process involves Real Time Schedulers validating and approving requests for interchange schedules (RFIs), implementing approved schedules in Real Time and resolving Net Scheduled Interchange (NSI) and Net Actual Interchange (NAI) discrepancies both prior to schedule implementation in EMS as well as at the End of Day (after midnight). During the Real Time/ Intra Hour Change time frames, Real Time Schedulers update and adjustment inter-tie schedules which includes validation of e-Tags, confirmation of ISO market awards, conform to all market and contractual obligations and are checked out with Adjacent Balancing Authorities (ABAs) and WECC Interchange (WIT) in accordance with NERC policies. During the End of Day time frame, Real Time Schedulers ensure that checkouts are performed with Adjacent Balancing Authorities and any potential NAI and/or NSI discrepancies are identified.
Manage Annual Operational Assessment (367)	Director, System Operations	Per Tariff 22.1.2.2, Review of Compliance with Operations Policies and Procedures, an annual independent review is conducted of the CAISO management's compliance with its operations policies and procedures and presented to the CAISO Governing Board. A market notice is posted to allow Market Participants to input topics for review. Report is available upon request to Market Participants.

Manage Operations Support & Settlements (MOS) (80007)

- Improves market efficiency by finding the most cost effective way of doing business
- Lowers the financial risk of participating in the wholesale market that in turn lowers the cost of doing business with the ISO
- Translates lower costs into less overhead for ISO customers who can pass the savings to ratepayers



Last Updated: 9/12/13

Processes	Process Owner	Process Descriptions
Perform Market Validation (401)	Manager, Market Validation & Quality	Depicts the process of receiving price issues from the Day Ahead or Real Time markets, researching the issues and validating prices.
Manage Dispute Analysis & Resolution (402)	Manager, Market Settlement Validation & Resolution	Depicts the required activities to coordinate a timely, efficient and accurate dispute resolution process.
Manage Market Quality System (MQS) (403)	Manager, Market Settlement Design & Configuration	Depicts the activities related to the completion of post-process corrections on data from the Day-Ahead and Real-Time Markets. This process reduces the need for manual validation, verification and correction of transactional data that could affect market settlements, thereby reducing invoice errors and disputes. The Market Quality System (MQS) calculates expected energy costs, dispatch operating point, trading hubs, settlement allocations and start up/minimum load costs and publishes them on the OASIS website.
Manage Data Requests (404)	Manager, Market Settlement Design & Configuration	Depicts the required activities to coordinate a timely, efficient and accurate response to data requests from internal and external parties.
Manage Rules of Conduct (406)	Manager, Market Settlement Design & Configuration	Depicts the process to identify and review potential violations of the Rules of Conduct in CAISO Tariff, levy sanctions where violations are confirmed, allocate those funds as appropriate, and refer specific matters to DMM for further research and possible referral to FERC.
Periodic Meter Auditing (407)\	Manager, Market Services Meter Engineering & Analysis	Depicts the process of performing periodic audits (at least every two years) of metering installations to verify the integrity of meters and related components.
ISO RIG Engineering (408)	Manager, Market Services Meter Engineering & Analysis	Logical grouping for ABC purposes. Includes: - **RIG Incident Management** - Depicts the process or resolving RIG issues or incidents with existing market resources. - **SLIC Outage Coordination for RIG Activities in Production** - Depicts the process of coordinating outages that affect production RIG systems. The process includes tracking the outage in SLIC, and informing the SMSC and Real Time Operators at the start and conclusion of the outage. - **Certificate Tracking for RIG Installations** - Depicts the process of receiving a monthly list of expiring certificates from Information Security, and then contacting the generators with expiring certificates. After the generators request renewals, the RIG Engineers work with the generators to coordinate outages, and install the new certificates. - **RIG Site Visits** - Depicts the process of scheduling site visits with generators who are undergoing new construction, have undergone an ownership change, or are due for a periodic site visit from the RIG Engineers.
Energy Measurement, Acquisition, & Analysis (409)	Manager, Market Services Meter Engineering & Analysis	Depicts the required activities to collect, analyze and validate meter data submitted by scheduling coordinators, ISO-metered entities, metered subsystems and the Interties. Data must be confirmed as Settlement Quality Meter Data (SQMD) before being passed on to the Settlements team for use in the market clearing process.
SCME Self Audit Review (410)	Manager, Market Services Meter Engineering & Analysis	Each year, the metering group's compliance analyst contacts SCs who submit meter data to advise them of their annual audit requirements. The compliance analyst then confirms the SC's contact information and sends all of the required audit documentation to the SC. The SC then submits an audit plan for review and approval, and then submits the audit report once the audit is complete. Once all audits are complete for the year, the compliance analyst creates a lessons learned report ans submits the report to the Board of Governors.
Manage Market Clearing (411)	Controller	Depicts the process of reconciling Market and RMR invoices and receiving funds from market participants. Once funds are received, the ISO moves funds to investment and corporate accounts as necessary, and sends wire transfers to Market Participants to clear the market.
Manage Market Billing & Settlements (412)	Manager, Market Settlement Production	Depicts the required activities to collect market data, facilitate corrections to market data as necessary, calculate charges, process pass through bill data and publish credit, initial, recalc, rerun, and historic statements and invoices to market participants. Settlements Receiving market data from upstream systems, corrected data from the Market Quality System (MQS), and contractual information, the Settlements system calculates and issues an Initial Settlement statement on Trade Day +7 business days (T+7B) - not all data is available at this time and is estimated. Market participants will review the statement and, if appropriate, will register a dispute(s) with the ISO. On Trade Day +38 business days (T+38B) a Recalculation Statement is issued with complete data and dispute corrections; on Trade Day +76 business days (T+76B), Trade Day +18 months, +35 months, & +36 months (T+18M, T+35M, & T+36M) a Recalculation Statement is issued with dispute, re-run, GFN, etc. corrections. Billing Market participants receive a single Invoice (due ISO) or Payment Advice (due MP) that nets all charges and/or revenues for multiple trade months (or bill periods). Invoices include charges for market activities (from the settlements process above), FERC fees, the Grid Management Charge (GMC) and the Transmission Access Charge (TAC). Initial Invoices are issued twice for every Trade Month, 7B days after the 15th of the month and 7B days after Trade Month end. Recalculation Invoices are issued on Trade Month+38B. Wire payments between the ISO and market participants are made on Trade Month+15 B (on Initial invoices) and Trade Month+43 B (on Recalc invoices).

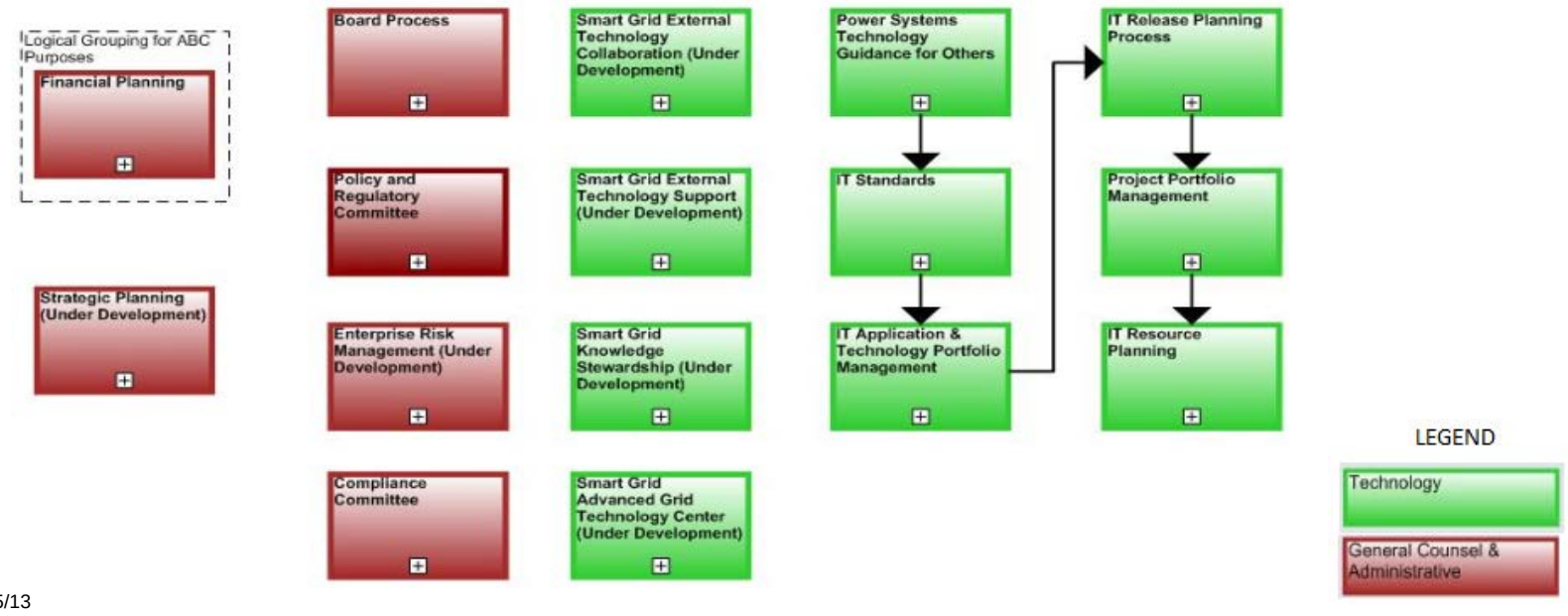
Manage Operations Support & Settlements (MOS) (80007) (Continued)

- Improves market efficiency by finding the most cost effective way of doing business
- Lowers the financial risk of participating in the wholesale market that in turn lowers the cost of doing business with the ISO
- Translates lower costs into less overhead for ISO customers who can pass the savings to ratepayers

Processes	Process Owner	Process Descriptions
Manage RMR Settlements (413)	Manager, Market Settlement Production	Depicts the process of running the RMR Owner invoice extraction, acceptance, and validation process and generating the CAISO RMR invoices for RMR Owners and PTOs.
Manage Settlements Quarterly Release Cycle (414)	Manager, Market Settlement Design & Configuration	Depicts the activities related to making non-project-related configuration changes to Settlements systems including, but not limited to, disputes, enhancements, FERC rulings, and Tariff amendments.
Market Issues Steering Committee (416)	Director, Market Services	The CAISO Market Issue Management policy provides the framework by which a cross function team of Operations, Information Technology and Market and Infrastructure Development can successfully manage issues associated with market functionality, processes or policy. It aims to ensure the following: - Identification of critical issue that have occurred and highlighted through internal analysis, or external inquiry - Determination of the root cause of identified issue - Determination of Market and Business Impact - Short and Long term resolution of the issue - Introduction of monitoring and control mechanisms - Prevention of future incidents through proactive issue identification
Perform Market Reporting (417)	Manager, Market Development & Analysis	Depicts the required activities to monitor and report on the daily, routine performance of the ISO markets to identify operations trends and anomalies and monitor ongoing issues. Market performance is summarized within daily internal reports and monthly reports to the Board of Governors and FERC.
Manage Good Faith Negotiation (GFN) Requests (418)	Director, Customer Service & Stakeholder Affairs	Depicts the activities around processing good faith negotiation (GFN) requests received from market participants.
Manage Price Corrections (419)	Manager, Market Settlement Production	Depicts the process of providing corrected pricing data for the Day Ahead or Real Time markets.

Plan & Manage Business (PMB) (80008)

- Aligns the strategic planning process more closely with budget planning
- Defines, creates and nurtures a culture of cost-consciousness as well as enhancing services while not adding costs
- Allows stakeholders to participate in ISO governance where costs and reliability issues are balanced



Last Updated: 3/25/13

Processes	Process Owner	Process Descriptions
Financial Planning (451)	Director, Financial Planning	Logical grouping for ABC purposes. Includes: Financial Planning, Budgeting & Rates - This process presents the milestones needed to complete the Operating & Maintenance and Capital Projects. This would ensure development of a comprehensive, well thought-out budget to meet CAISO needs. Manage Financial Planning - Depicts the process for long-term financial planning beyond the yearly budget. Considers the long-term rate structure for the ISO, looks at out years to develop the 10-year budget forecast, and includes the process of issuing bonds.
IT Application & Technology Portfolio Management (452)	Manager, IT Architecture	This process Identifies new or potential upgrade target technologies for implementation into the ISO's computing infrastructure (includes data architecture).
IT Resource Planning (453)	Manager, Program Lifecycle & Process	Depicts the process of resource planning of human resources among various projects or operational activities, maximizing the utilization of available personnel resources to achieve business goals.
Project Portfolio Management (454)	Manager, Program Lifecycle & Process	Depicts Program Office driven activities from portfolio and release planning through to software development and funding activities.
Power Systems Technology Guidance for Others (455)	Director, Power Systems Technology Development	Provides all technical guidance activities (answering questions, following up with vendors, reviewing technical requirements or designs, etc.).
IT Standards (456)	Manager, IT Architecture	Process is executed every time there is a request for software, hardware, technology, or a need when a new capability identified.
IT Release Planning Process (457)	Manager, Program Lifecycle & Process	Depicts the process of managing IT release planning.
Enterprise Risk Management (459)	Director, Interal Audit	This process depicts activities engaged in across business functions to identify risks and opportunities in the ISO's internal and external environments that would impact its business objectives, evaluate them to determine residual risk exposure, and develop and monitor enterprise risk mitigation strategies to address them. It leverages information across all business functions, and is a key input into the strategic planning process.
Compliance Committee (460)	VP, General Cousel & Chief Administrative Officer	Depicts the Compliance Committee activities which could include decisions as well as inputs to the Corporate Governance processes (ELT, Board of Governors, etc).
Board Process (461)	Assistant Corporate Secretary	Depicts the activities involved in the planning of regularly scheduled Board meetings, including agenda topic development, memo and presentation drafting, executive review of materials, delivery of materials to the Board, presentation dry run, and post-meeting activities.
Smart Grid External Technology Collaboration (462)		Grouping of 2 Smart Grid Technology collaboration activities
Smart Grid External Technology Collaboration (462)	Director, Smart Grid Technology Development	There is a large demand from technology innovators, vendors, and other stakeholders for the ISO to review new technologies, capabilities and in some cases engage directly in pilots to prove assumptions on the way to commercialization and use in ISO production. It is important for the ISO to be responsive to these vendors to demonstrate our support of the state goals and the advancement of technology as it applies to the ISO. ISO staff also increases its know of what technologies and capabilities are emerging (knowledge stewardship) and demonstrates directly how we are furthering smart grid capabilities. The smart grid team meets with technology providers to see their technology and assess how it may help with ISO challenges. We also evaluate pilots and demonstration projects and participate in the developing business case and project scope. Often we are requested to lead or participate in collaboration meetings on smart grid issues, etc. (e.g. telemetry using smart grid technology).
Smart Grid External Technology Support (462)	Director, Smart Grid Technology Development	The research community is working to advance smart grid technology to manage renewable integration and enable resources and capabilities to smooth the transition and further enable end users of energy to have more control in their energy use and cost. The ISO needs to understand and support this research to ensure it includes ISO needs and also to learn from others experiences. The smart grid team develops a high-level plan for what types of research we should support. We evaluate proposals and provide support letters where warranted. We take an advisory role in external research programs and support ISO data requests for the studies. We engage in organized research of EPRI and the CEC.
Smart Grid Knowledge Stewardship (464)	Director, Smart Grid Technology Development	Knowledge stewardship focuses on building the expertise of the smart grid team and the ISO organization as a whole as well as external stakeholders. As the grid evolves, we need to have an understanding of smart technologies and the capabilities they enable as well as the impact and opportunities these technologies may have for the ISO so we can take advantage of the capabilities and prepare for any impacts. The smart grid team provides content for presentations, FAQ lists, and other collateral to the communications info bank. We participate in research forums and conferences as well as researching independently to understand the evolving technologies. Externally, we present to regulatory agencies including the CPUC and CEC speak on panels and at industry events. We also collaboratively develop the renewable lecture series with training and are responsibility for the content and delivery of the key messages.
Smart Grid Advanced Grid Technology Center (465)	Director, Smart Grid Technology Development	The advanced grid technology center provides visitors with information about smart grid technologies and capabilities enabled by a smart grid. This enables the ISO to educate a variety stakeholders about smart grid and its relevance to the ISO. The exhibit format currently offered provides some level of education. The vision is to extend the technology center to include real demonstrations as feasible. The technology center required support to ensure all monitors are working as well as providing tours as requested. We develop and maintain a script and are working on planning for upgrades to the center.

Plan & Manage Business (PMB) (80008)

- Aligns the strategic planning process more closely with budget planning
- Defines, creates and nurtures a culture of cost-consciousness as well as enhancing services while not adding costs
- Allows stakeholders to participate in ISO governance where costs and reliability issues are balanced

Processes	Process Owner	Process Descriptions
Policy and Regulatory Committee	Deputy General Counsel - Regulatory	This process ensures consistency of ISO policy positions and coordination of approaches across ISO activities in order to enhance organizational effectiveness. To accomplish this, the process performs timely triage when new issues are identified, and provides guidance as needed to in-progress policy and implementation activities.
Strategic Planning	VP, General Counsel & Chief Administrative Officer	The process by which the ISO gathers internal and external inputs, evaluates them against the existing five-year strategy, updates strategic objectives and corporate initiatives, defines annual corporate goals, and aligns internal business strategies and resources to successfully implement the corporate initiatives and achieve strategic objectives. Also included in this process is the manner by which the ISO monitors and reports on corporate performance, as well as maintaining the corporate dashboard.

Support Business Services (SBS) (80009)

- Comprises the objective of institutional sustainability (people, technology) along with the Manage Human Capabilities process
- Supports well-defined, measured and controlled processes, disciplined business decision making, quality assurance and efficient implementations
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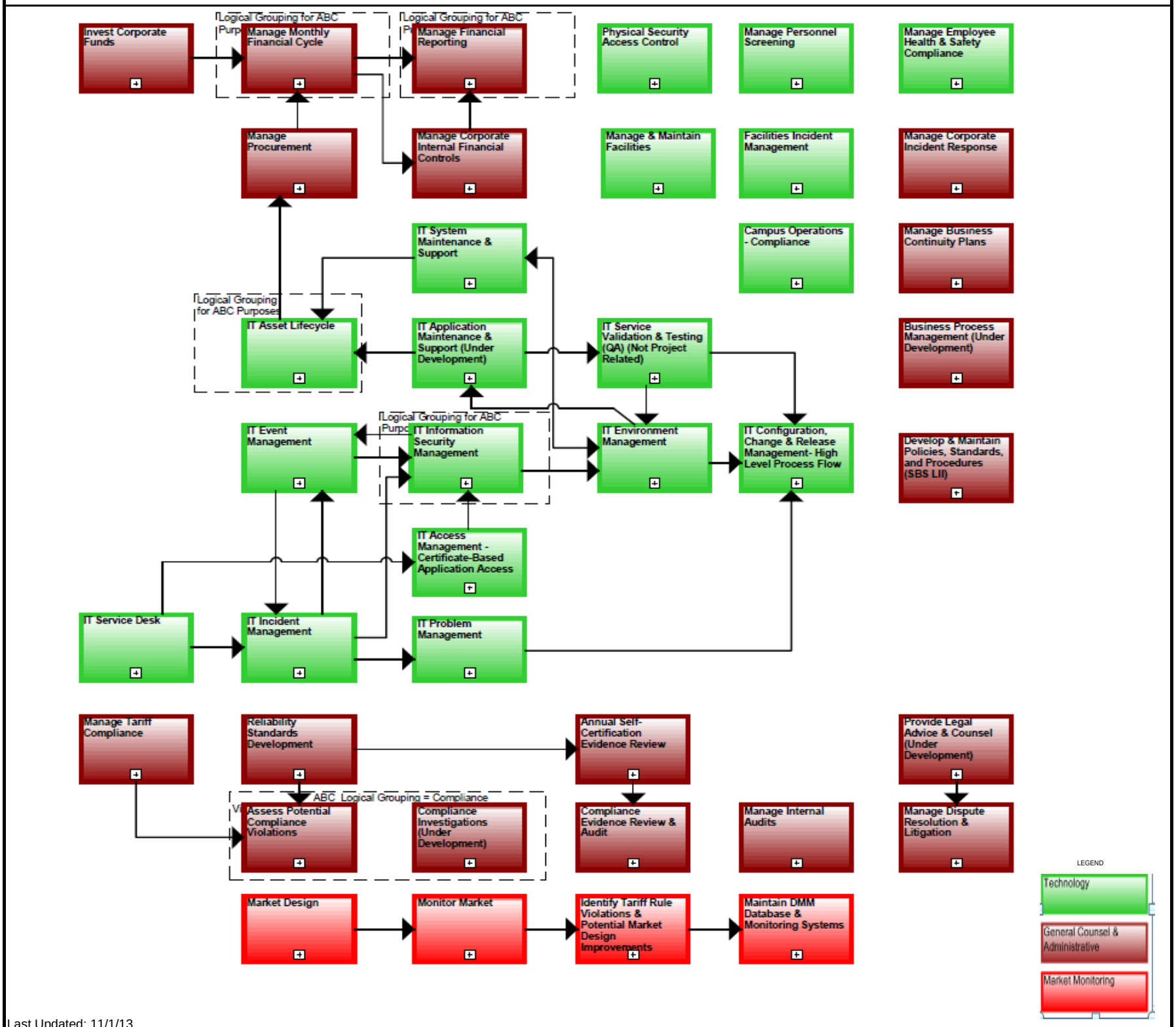

Last Updated: 11/1/13

Processes	Process Owner	Process Descriptions
Manage Monthly Financial Cycle (501)	Controller	Logical grouping for ABC purposes. Includes: **Manage Corporate Billing & Collections (Accounts Receivable) -** This process details the Corporate Accounts Receivables activities which include invoicing, processing payments and bank deposits. **Manage Accounts Payable (Invoices) -** This process details the - Invoice/PO validations for accuracy - Approval of payment sum in line with the business rules - Accurate and timely disbursements to vendors **Manage Accounts Payable (Expense Reports) -** Depicts the activities required to process employee expense reports inclucing auditing, review, approval, and payment. **Manage Monthly Financials -** This process details the collection, analysis and reporting of monthly financial data in an organized and timely manner for management and business units. Key phases include creating journal entries, validating data in modules, and then reconciling data in the general ledger, and consolidating financial information for review by the Financial Services group.
Invest Corporate Funds (502)	Treasurer	This process involves the short-term and intermediate term (up to 5 years) investing of ISO funds sourced from GMC collections. Investing is done within the parameters of the Board approved investment policy. The ISO must maintain adequate liquidity to pay obligations as they come due. Short-term funds are typically invested in bank balances and money market funds. Where cash is not required in the short-term, other investment types are used including corporate and government bonds, where yields are typically higher. Investments are procured through several broker-dealers. The ISO also manages funds related to its bond issuances, including unspent bond proceeds, and reserve funds related to the repayment of the debt.

Support Business Services (SBS) (80009) (Continued)

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Processes	Process Owner	Process Descriptions
Manage Financial Reporting (503)	Controller	Depicts the monthly, quarterly, and annual sub-processes needed to complete the financial reporting cycle. Logical Grouping for ABC purposes. Includes: **Monthly Business Unit Reports** - Process for generating monthly business unit reports, comparing Actuals vs. Budget, and sending the reports to the business units for review. **Quarterly Board Reports** - Process of gathering quarter-end close. **Quarterly FERC Form 3Q** - Process of gathering month-end close and other financial data to create the FERC Form 3Q. **Annual Sales and Use Tax Filing** - Process for filling out the Annual Sales and Use Tax Filing, seeking approval, and filing the forms with the State or County Tax Agency. **Annual 1099 Misc Income Filing** - Process of updating the Oracle AP module with updates for 1099 information, reviewing the 1099 information, running Oracle processes, and providing the Form B to vendors. **Annual 1099 Interest Income Filing** - Process of gathering gathering the amount of interest paid to customers, and determining the reportable amounts for the year. Accounting then creates and mails 1099 forms to customers and 1096 forms to the IRS. **Annual 571L Property Tax Filing** - Process for filling out the Annual Property Tax Filing Form 571L, seeking approval, and filing the forms with the Tax Assessor. Annual Audited Financial Statements - process of gathering month-end close information from the year and other financial data to create the Annual Audited Financial Statements. **Annual FERC Form 1** - Process of gathering month-end close and other financial data to create the FERC Form 1 **Annual FERC Form 582** - Process for gathering and reconciling FERC fee data. After submitting the data to FERC, the ISO reviews the FERC bill and sends additional invoices for fees to ISO Participants if needed. **Annual 990/ 199 Income Tax Filing** - process of gathering tax-related data to create Form 990 and Form 199.
IT Application Maintenance & Support (504)	Director, IT Infrastructure Engineering & Network Operations	All application support and maintenance not directly related to a project, Incident Management or Problem Management. Patching – normally patch Test, Stage and Production Break Fix – as needed with production fixes first and all others second. Daily maintenance is performed in terms of monitoring and proactive activities of log file , space management, application stop and start and error log review. Also have account management (create, remove, update). Backups and restores. Changes deployed. Includes IT Storage Commission, IT Operations Support- Infrastructure, Phone System Management, Network Applications Management.
IT Asset Lifecycle (505)	Manager, Asset Management	Logical grouping for ABC purposes. Includes: **IT Asset Lifecycle - Acquisition**, and **IT Asset Lifecycle - End of Use** Business practices that join financial, contractual and inventory functions to support life cycle management and strategic decision making for the IT environment. Assets include all elements of software and hardware that are found in the business environment.
IT Configuration, Change & Release Management- High Level Process Flow (508)	Manager, Data Center & Operations	Depicts the process to ensure that standardized methods and procedures are used for efficient and prompt handling of all changes to a controlled IT infrastructure, in order to minimize the number and impact of any related incidents upon implementation of changes. Provides the framework by which each IT Unit can successfully manage all infrastructure changes to their respective information systems. It aims to ensure the following: • All company software and hardware changes to controlled CAISO infrastructure computing environments will be planned, managed, communicated, tested, and documented. • A standard and consistent process to reduce the risk of errors that a change could introduce to the environment. • Integrity in the controlled CAISO infrastructure computing environments. • Consistent communications across divisional boundaries. • Changes are authorized properly, stakeholders are notified, and there is a tracking mechanism and audit trail for each change.
IT Environment Management (509)	Manager, Technology Systems Support	Provides the framework to manage IT system environment usage for projects, enhancements, maintenmance and training.
IT Event Management (510)	Manager, IT Architecture	Create new monitoring to detect and analyze events
IT Incident Management (511)	Manager, Critical Systems	Depicts the process to ensure restoration to a normal service operation as quickly as possible while minimizing the impact on business operations, thus ensuring that the best possible levels of service quality and availability are maintained. Also provides the framework by which IT can successfully manage incidents associated with applications and the infrastructure. It aims to ensure the following: • Normal service operation is restored as quickly as possible. • Adverse impacts on business operations are minimized. • The agreed upon levels of service quality and availability are maintained Includes IT Incident Escalation Notification Flow Severity 1 and 2
IT Information Security Management (512)	Manager, Information Security	Logical grouping for ABC purposes. Includes: **- IT Information Security Management - Daily CCA Access Review -** Ensure validation of critical cyber assets, daily. Align IT and business security to ensure information security is managed effectively in all services and service management activities **- IT Information Security Management - Quarterly Access Review -** Ensure validation of critical cyber assets, quarterly. Align IT and business security to ensure information security is managed effectively in all services and service management activities **- IT Information Security Management- Awareness and Training -** Align IT and business security to ensure information security is managed effectively in all services and service management activities
IT Problem Management (513)	Manager, Data Center & Operations	Depicts the process to resolve the root cause of IT problems. These may involve system tuning, changing operating system or device parameters, or even refactoring the application software to resolve poor performance due to poor design or bad coding practices. Provides the framework by which IT can successfully manage problems associated with applications and the infrastructure. It aims to ensure the following: • Identification of problems based on incidents that have occurred • Determination of the root cause of identified problems • Resolution of the problems • Introduction of monitoring and control mechanisms • Prevention of future incidents through proactive problem identification
IT Service Desk (514)	Manager, IT Operations - Service Desk	The objectives of the Service Desk are: 1) Providing a single (informed) point of contact for customers and 2) Facilitating the restoration of normal operational service with minimal business impact on the customer within agreed SLA levels and business priorities. Resumes “normal service” to the user as soon as possible using existing knowledge or tools or using the incident management process. Service request fulfillment for the end user. Includes Deskside Support and Request Fulfillment (MACs)

Support Business Services (SBS) (80009) (Continued)

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Processes	Process Owner	Process Descriptions
IT Service Validation & Testing (QA) (Not Project Related) (516)	Manager, Software Quality Assurance	For an enhancement: 1. Request for a software modification comes in from the Business Unit or possibly a MP 2. Request turns into a requirements document, if big enough it becomes a project if not it becomes an enhancement. 3. QA builds test cases based of the requirements. 4. Code is validated as it goes from Test to Stage with QA sign off for a Production release, Business Unit UAT is also done in Stage. 5. Once deployed to production a Business Unit SME validates in Production. For a defect fix/CMR: 1. Issue is identified by QA, Business SME or MP, a defect is written against the software. 2. Code is fixed and deployed to Test, QA validates against the defect which was written. 3. QA validates the defect and it is closed, code proceeds to Stage and Production. 4. Once deployed to production a Business Unit SME validates in Production.
IT System Maintenance & Support (517) and IT non-Production Environment Support (518)	Director, IT Infrastructure Engineering & Network Operations	All system maintenance and support not directly related to a project, Incident Management or Problem Management. Patching – normally patch Test, Stage and Production Break Fix – as needed with production fixes first and all others second. Daily maintenance is performed in terms of monitoring and proactive activities of log file , space management, application stop and start and error log review. Also have account management (create, remove, update). Backups and restores. Changes deployed. Includes IT Storage Commission, IT Operations Support- Infrastructure, Phone System Management, Network Applications Management
IT Access Management - Certificate-Based Application Access (519)	Manager, Corporate Systems	Depicts the process of providing certificate-based access to IT systems
Manage & Maintain Facilities (520)	Manager, Facilities	Depicts process for managing and maintaining CAISO facilities.
Facilities Incident Management (521)	Manager, Facilities	Depicts the process for managing facilities incidents (Sev 1 - 4).
Manage Corporate Incident Response (522)	Manager, Standardization & Quality	Depicts how the ISO will implement the Incident Command System (ICS) to manage an incident that affects business across the organization. Once implemented, the Incident Management Team uses this process to stabilize, mitigate, and terminate an incident.
Manage Business Continuity Plans (523)	Manager, Standardization & Quality	Depicts the process for identifying and evaluating the impacts of significant events that may adversely affect our business, assets, or employees, and to document, test, and train on mitigation strategies.
Campus Operations - Compliance (524)	Manager, Facilities	Depicts process for ensuring all ISO faciities and related activities meet compliance requirements.
Physical Security Access Control (525)	Manager, Physical Security	Depicts the process of identifying visitors to ISO facilities and determining their access requirements for badge issuance. Includes the monitoring of active badges and ensuring that badges have been deactivated for visitors and contractors who no longer require access.
Manage Personnel Screening (526)	Manager, Physical Security	Depicts the process for screening employee and contractor resources prior to badge issuance as well as initiation of the 7-year background check process and background checks due to self-reports. Also includes activities required to perform personnel risk assessments and drug screenings.
Manage Employee Health & Safety Compliance (527)	Manager, Physical Security	Depicts the core functions and activities of the Safety Department as required by Federal, State and Local law as it pertains to employee health and safety. Reinforces and builds the safety culture within the ISO by: 1) Compliance with all regulations related to safety 2) Implementing best practices to maximize safety 3) Conduct investigations related to safety concerns and make recommendations 4) Proacitvely audit the workplace to identify potential hazards 5) Training employees on general and job-specific safety topics
Manage Procurement (528)	Manager, Procurement & Vendor Management	This process starts with identification of Business requirements or changes to an approved project and details various activities from project package preparation & approval, commercial contract finalization, vendor selection to delivery of goods/services to business units as a part of corporate procurement activity. This is a sub-process of Procurement & Vendor Management process. The lifecycle of procurement process requires participation from many internal and external support areas including but not limited to business units, Vendors, IT Asset Lifecycle-Acquisition process, and Manage Accounts Payable (invoices) process.
Provide Legal Advice & Counsel (529)	VP, General Counsel & Chief Administrative Officer	Depicts the process of providing legal advice and counsel to other business units in the ISO.
Manage Dispute Resolution & Litigation (530)	Assistant General Counsel - Litigation & Mandatory Standards	This process deals with Managing Litigation after it is received by the Legal Department at CAISO.
Reliability Standards Development (532)	Director, Corporate Compliance	Depicts actions needed for managing changes to standards and the development of new standards for NERC and WECC reliability.
Compliance Evidence Review & Audit (533)	Director, Corporate Compliance	Depicts the process where the Compliance Team reviews evidence supporting the ISO's compliance with NERC and WECC reliability standards for the audit period.
Compliance Violations (534)		Grouping of 2 compliance violation activities
Compliance Investigations (534)	Director, Corporate Compliance	Depicts the formal and rigorous process for investigating potential compliance violations.
Assess Potential Compliance Violations (534)	Director, Corporate Compliance	Depicts the actions needed for notification and discovery of potential compliance violations, including preliminary assessment, reporting, and mitigation.
Manage Tariff Compliance (535)	Director, Corporate Compliance	Depicts the process of managing compliance with the ISO tariff.
Manage Internal Audits (536)	Director, Internal Audits	Depicts the approval and performance activities required for the scheduling, planning, conducting, documenting, and follow-up for deficiencies identified during internal audits.
Monitor Market (537)	Manager, Monitoring & Reporting	This process flow describes the market monitoring procedures followed for reviewing market behavior and market results. The process involves review of specific CAISO markets (real time, ancillary services, day-ahead congestion management etc.) on a daily basis to identify any anomalies or potentially inefficient market outcomes.
Identify Tariff Rule Violations & Potential Market Design Improvements (538)	Manager, Analysis & Mitigation	This process performs the following: 1) Identify and review potential violations of CAISO Tariff or market rules 2) Identify ineffective market design, provide recommendations, and /or refer internally for further assessment 3) Refer potential violations of Rules of Conduct to FERC 4) Recommend potential rule changes to CAISO
Annual Self-Certification Evidence Review (541)	Director, Corporate Compliance	Depicts the annual review process of the ISO's compliance with the NERC and WECC actively monitored reliability standards.
Manage Corporate Internal Financial Controls (542)	Controller	This process details the periodic review of Internal controls on the processes that directly impact the presentation and review of the financial statements of the company Briefly it involves, (a) Identification of gaps & design/implementation of new internal controls (b) Determination of Operating effectiveness of existing internal controls (c) Controls adherence audit & review of the status to ensure compliance
Market Design (543)	Manager, Analysis & Mitigation	This process depicts how proposed changes to the market design are reviewed.
Maintain DMM Database & Monitoring Systems (544)	Manager, Monitoring & Reporting	This process deals with the maintenance of DMM Database for timely and accurate management of market data which is an essential input for all of DMM's core functions. DMM maintains a DMM Datamart (P008) that contains market data received from a variety of sources.

Support Business Services (SBS) (80009) (Continued)

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Processes	Process Owner	Process Descriptions
Business Process Management (545)	Manager, Standardization & Quality	The Business Process Framework process is the development and application of the ISO's business architecture and process improvement methodology. Application of the methodology for process design, improvement, and efficiency are covered under this process. This process inherently covers the maintenance and administration of the ISO's Business Process Framework and associated processes.
Records Management (546)	Manager, Standardization & Quality	The records management program ensures that records created and received in the normal course of business are managed in accordance with federal and state laws and pertinent regulations and business requirements from creation to final disposition.
Develop & Maintain Policies, Procedures and Standards (547)	Director, Business Planning & Operations	This process ensures consistency in the development and maintenance of ISO policies, procedures, and standards, while increasing organizational effectiveness by ensuring adherence to a timeline requirements.

Support Customers & Stakeholders (SCS) (80010)

- Provides the highest quality of service to its customers, market participants and stakeholders
- Includes timely resolution of customer issues, corporate-wide customer relationship management and streamlined access to market information
- Provides a market design to accommodate renewables and demand response, while keeping costs reasonable and maintaining grid reliability

Last Updated: 3/13/13

Processes	Process Owner	Process Descriptions
Representing the ISO Externally (539) also includes ISO Outreach (604)	Director, Customer Service & Stakeholder Affairs	This process describes how CAISO employees should handle any policy or technical questions received from external sources.
Manage Client Inquiries (601) also includes Support Clients (607) and TP Mapping (608)	Manager, Customer Service	This process aims to improve Customer Service and ensure that CAISO's Scheduling Coordinators' (SC's) issues and inquiries get resolved in a timely manner. 1. Each SCs is assigned a Client Representative (CR). SC either calls Client Representative to raise inquiry or issue or directly logs the query in TRAIN through external web interface. 2. CAISO uses TRAIN to route the inquiry along the company. 3. Customer Services will either resolve the inquiry internally or will route it to a business unit using ownership matrix. 4. Assigned Business Unit plans and provides resolution back to Customer Services 5. Customer Services communicated the resolution to SC and closes the ticket in TRAIN Issues that fall outside the bid to bill processes, example CAISO policy issues, are handfled by Accounts Managers (AM).
Strategic Client Account Management (602)	Manager, Customer Service	ISO Account Managers develop high-level relationships with clients, with the goal of supporting quality dialogue between the ISO and key customers. Tasks include: fast response to customer inquiries on major projects and policy matters, working in in concert with customer staff to arrange senior level meetings and their agendas, coordinating the interaction with senior stakeholders and their ISO management peers, overseeing the response by the ISO to stakeholder questions, contributing to individual client interactions within the stakeholder process, and reporting to management on key customer issues, particularly on policy matters that will be addressed by the Board.
Manage Stakeholder Process (603)	Director, Customer Service & Stakeholder Affairs	Administer the stakeholder process in compliance with a set of quality control guidelines for the consistent management of meetings, documents, stakeholder comments and general process structure. Working with other depts, CSIA staff plans each engagement, from conception through the final Board meeting. A master engagement plan is created to guide the stakeholder process for each major initiative. A team is formed between CSIA and the functional organization leading the stakeholder process. Customer engagements, whether they be meetings, papers or conference calls, are planned and executed by these teams. A feedback loop at the end of each meeting helps to validate success, and sets the stage for ongoing improvements.
Government Affairs Process (609)	Directors, Federal Affairs & State Affairs	Depicts the activities required to perform the following: 1) Respond to inquiries from government and regulatory entities 2) Develop strategy jointly with ISO divisions 3) Maintain relationships with government and regulatory entities 4) Address concerns 5) Communicate the ISO's position to government and regulatory entities 6) Communicate government and regulatory entity positions internally at the ISO 7) Monitor the governmental environment 8) Develop work plans to implement ISO initiatives and strategies
Communications & Public Relations (610)	Director, Communications & Public Relations	The Communications and Public Relations Department presents a single, consistent and timely ISO voice and provides a broad range of clear, correct, and useful information to employees, stakeholders, media and the public-at-large. Corporate communication materials are developed and distributed by the department. These include brochures, information kits, annual reports, articles, news releases, market notices and broadcast productions. The team manages three websites: Internet, Market Participant Portal and Intranet sites. The department also develops new products and services, conducting stakeholder focus groups to identify and meet the business needs of market participants. Media relations provided by the department extends to newspaper, radio and TV as well as trade media and international news outlets. CommPR spokespersons provide 24/7 support to media and promote electricity conservation during peak periods of stress on the grid. The department trains in emergency preparedness and performs crisis communication management. All corporate events are coordinated by the department and the team also facilitates tours and speaking engagements.

California ISO
Shaping a Renewed Future

2013 Revenue Requirement using 2013 ABC data						Split of Mkt Svcs			Split of Sys Ops		
Revenue Requirement	2013 Budget	Market Services	System Operations	CRR Services	Indirect	Total	Real Time Market	Day Ahead Market	Total	Real Time Dispatch	Balancing Area Services
Direct O&M	$ 68,364	$ 12,863	$ 42,512	$ 845	$ 12,144	$ 12,863	$ 8,075	$ 4,788	$ 42,512	$ 14,093	$ 28,419
Support O&M	64,686	-	-	-	64,686	-	-	-	-	-	-
Non-ABC support O&M	29,857	614	1,759	53	27,431	614	553	61	1,759	1,653	106
Total O&M	**162,907**	**13,477**	**44,271**	**898**	**104,261**	**13,477**	**8,628**	**4,849**	**44,271**	**15,746**	**28,525**
Debt Service 2008 bonds	24,666	7,263	12,481	1,196	3,726	7,263	3,152	4,111	12,481	10,555	1,926
Debt Service 2009 bonds	17,847	-	-	-	17,847	-	-	-	-	-	-
Cash funded capital	24,000	-	-	-	24,000	-	-	-	-	-	-
Total debt service & capital	**66,513**	**7,263**	**12,481**	**1,196**	**45,573**	**7,263**	**3,152**	**4,111**	**12,481**	**10,555**	**1,926**
Other income	(7,900)	(660)	(4,940)	-	(2,300)	(660)	(544)	(116)	(4,940)	(1,878)	(3,062)
Operating reserve credit	(25,492)	(1,647)	(2,897)	(284)	(20,664)	(1,647)	(708)	(939)	(2,897)	(2,462)	(435)
Total before allocation of indirect costs	**196,028**	**18,433**	**48,915**	**1,810**	**126,870**	**18,433**	**10,528**	**7,905**	**48,915**	**21,961**	**26,954**
Total Direct Costs %		27%	70%	3%		100%	57%	43%	100%	45%	55%
Allocate indirect	-	34,255	88,809	3,806	(126,870)	34,255	19,525	14,730	88,809	39,964	48,845
Total revenue requirement	**$ 196,028**	**$ 52,688**	**$ 137,724**	**$ 5,616**		**$ 52,688**	**$ 30,053**	**$ 22,635**	**$ 137,724**	**$ 61,925**	**$ 75,799**
Service category percentages	**100%**	**27%**	**70%**	**3%**							
Total RR	**$ 196,028**	**$ 52,688**	**$ 137,724**	**$ 5,616**		**$ 52,688**	**$ 30,053**	**$ 22,635**	**$ 137,724**	**$ 61,925**	**$ 75,799**
Less Fees											
Market bid fees	(203)	(203)	-	-		(203)	(102)	(101)	-	-	-
InterSC-trade fees	(2,781)	(2,781)	-	-		(2,781)	-	(2,781)	-	-	-
SCID fees	(2,079)	(2,079)	-	-		(2,079)	(1,040)	(1,039)	-	-	-
TORs	(993)	-	(993)	-		-	-	-	(993)	(993)	-
CRR auction bid fees	(186)	-	-	(186)		-	-	-	-	-	-
Total fees	(6,242)	(5,063)	(993)	(186)		(5,063)	(1,142)	(3,921)	(993)	(993)	-
Net revenue requirement for rates	**$ 189,786**	**$ 47,625**	**$ 136,731**	**$ 5,430**		**$ 47,625**	**$ 28,911**	**$ 18,714**	**$ 136,731**	**$ 60,932**	**$ 75,799**
Net revenue requirement for rates %						**100%**	**61%**	**39%**	**100%**	**45%**	**55%**
Estimated volumes		514,168	474,712	566,649		514,168	514,168	514,168	474,712	474,712	474,712
Less grandfathered generation		-	(7,179)	-		-	-	-	(7,179)	(7,179)	(7,179)
Estimated volumes		514,168	467,533	566,649		514,168	514,168	514,168	467,533	467,533	467,533
2013 rates with new ABC		$ 0.0926	$ 0.2925	$ 0.0096		$ 0.0926	$ 0.0562	$ 0.0364	$ 0.2925	$ 0.1303	$ 0.1621

EIM (combined as one rate)	Real Time Combined	Real Time Market	Real Time Dispatch				Real Time Market			Real Time Dispatch	
Costs	$ 89,843	$ 28,911	$ 60,932				$ 28,911			$ 60,932	
Percentage of costs	100%	32%	68%				61%			45%	
EIM Rate using component rates	$ 0.1865	$ 0.0562	$ 0.1303			$ 0.0926	$ 0.0562		$ 0.2925	$ 0.1303	
EIM rate rounded	$ 0.19										

2013 ABC Level 2 Direct Costs											Split of Market Services		Split of System Operations		Split of Market Services			Split of System Operations		
ABC Level 2 Activities	Code	Market services	System Operations	CRR Sercvices	Indirect	2013 Budget	Market services	System Operations	CRR Services	Indirect	Real Time Market	Day Ahead Market	Real Time Dispatch	Balancing Area Services	Total	Real Time Market	Day Ahead Market	Total	Real Time Dispatch	Balancing Area Services
Develop Infrastructure (DI)	**80001**																			
Regulatory contract procedures	201				100%	$ 378	$ -	$ -	$ -	$ 378					$ -	$ -	$ -	$ -	$ -	$ -
Man Gen Intercon Proj (GIP) agrmts	202		100%			818	-	818	-	-				100%	-	-	-	818	-	818
Manage GIP	203		100%			2,342	-	2,342	-	-				100%	-	-	-	2,342	-	2,342
LT Transmission Planning	204		100%			4,273	-	4,273	-	-				100%	-	-	-	4,273	-	4,273
New transmission resources	205		100%			552	-	552	-	-				100%	-	-	-	552	-	552
Transmission maintenance studies	206		100%			499	-	499	-	-				100%	-	-	-	499	-	499
Load resource data	207		100%			268	-	268	-	-				100%	-	-	-	268	-	268
Season assessment	208		100%			223	-	223	-	-				100%	-	-	-	223	-	223
Queue management	209		100%			615	-	615	-	-				100%	-	-	-	615	-	615
Annual Delivery Assessment	210		100%			25	-	25	-	-				100%	-	-	-	25	-	25
Total DI						**9,993**	**-**	**9,615**	**-**	**378**					**-**	**-**	**-**	**9,615**	**-**	**9,615**
Develop Markets (DM)	**80002**																			
Manage Tariff Amendm	227				100%	355	-	-	-	355					-	-	-	-	-	-
Post order rehearing	228				100%	30	-	-	-	30					-	-	-	-	-	-
Develop State/Fed regulatory policy	229				100%	564	-	-	-	564					-	-	-	-	-	-
BPM change management process	230				100%	33	-	-	-	33					-	-	-	-	-	-
Develop infrastructure policy	231		100%			829	-	829	-	-				100%	-	-	-	829	-	829
Perform market analysis	232	100%				1,604	1,604	-	-	-	50%	50%			1,604	802	802	-	-	-
Develop market design	233	100%				2,242	2,242	-	-	-	50%	50%			2,242	1,121	1,121	-	-	-
Regulatory contract negotiations	234				100%	142	-	-	-	142					-	-	-	-	-	-
Total DM						**5,799**	**3,846**	**829**	**-**	**1,124**					**3,846**	**1,923**	**1,923**	**829**	**-**	**829**
Man Mkt & Rel Data & Model (MMR)	**80004**																			
Manage FNM maintenance	301	50%	50%			1,724	862	862	-	-	50%	50%	100%		862	431	431	862	862	-
Plan & develop ops sim training	302	20%	80%			300	60	240	-	-	100%		100%		60	60	-	240	240	-
ISO meter certification	303		100%			416	-	416	-	-				100%	-	-	-	416	-	416
Energy measure (EMAA) telemety	304		100%			100	-	100	-	-				100%	-	-	-	100	-	100
Metering sys config for mkt res	305		100%			70	-	70	-	-			100%		-	-	-	70	70	-
Manage CRRs	307			100%		574	-	-	574	-					-	-	-	-	-	-
Manage credit and collateral	308	45%	45%	10%		583	262	262	59	-	50%	50%	100%		262	131	131	262	262	-
Resource management	309	50%	50%			910	455	455	-	-	80%	20%	20%	80%	455	364	91	455	91	364
Manage reliability requirements	310		100%			931	-	931	-	-				100%	-	-	-	931	-	931
Manage operations planning	311		100%			1,321	-	1,321	-	-				100%	-	-	-	1,321	-	1,321
Manage WECC seasonal studies	312		100%			71	-	71	-	-				100%	-	-	-	71	-	71
PIRP	313	20%	80%			1	-	1	-	-	100%		100%		-	-	-	1	1	-
Man & facilitate procedure maint	314	20%	80%			841	168	673	-	-	100%			100%	168	168	-	673	-	673
Procedure Admin & Reporting	315	20%	80%			11	2	9	-	-	100%			100%	2	2	-	9	-	9
Plan & develop operations training	316	20%	80%			714	143	571	-	-	100%		100%		143	143	-	571	571	-
Execute & track operations training	317	20%	80%			1,383	277	1,106	-	-	100%		100%		277	277	-	1,106	1,106	-
CETAC activity	318		100%			73	-	73	-	-				100%	-	-	-	73	-	73
Provide stakeholder training	320				100%	286	-	-	-	286					-	-	-	-	-	-
SC management	321				100%	167	-	-	-	167					-	-	-	-	-	-
Total MMR						**10,476**	**2,229**	**7,161**	**633**	**453**					**2,229**	**1,576**	**653**	**7,161**	**3,203**	**3,958**

2013 ABC Level 2 Direct Costs											Split of Market Services		Split of System Operations		Split of Market Services			Split of System Operations		
ABC Level 2 Activities	Code	Market services	System Operations	CRR Sercvices	Indirect	2013 Budget	Market services	System Operations	CRR Services	Indirect	Real Time Market	Day Ahead Market	Real Time Dispatch	Balancing Area Services	Total	Real Time Market	Day Ahead Market	Total	Real Time Dispatch	Balancing Area Services
Manage Market & Grid (MMG)	**80005**																			
Manage DA market support	352	100%				115	115	-	-	-		100%			115	-	115	-	-	-
Manage RT market support	353	50%	50%			1,231	616	615	-	-	100%		100%		616	616	-	615	615	-
Outage & model management	355		100%			2,921	-	2,921	-	-				100%	-	-	-	2,921	-	2,921
Manage DA market	358	50%	50%			2,564	1,282	1,282	-	-		100%	80%	20%	1,282	-	1,282	1,282	1,026	256
Manage pre & post scheduling	359		100%			974	-	974	-	-				100%	-	-	-	974	-	974
Manage ops engineering support	362	20%	80%			1,148	230	918	-	-	50%	50%	100%		230	115	115	918	918	-
RT Mkt - shift supervisor: Post DA & Pre RT & Manage Emergency Ops	363	50%	50%			2,021	1,011	1,010	-	-	100%		20%	80%	1,011	1,011	-	1,010	202	808
RT Ops - Gen & RRC: Maintain Balancing Area & Manage RTPD	364	20%	80%			6,093	1,219	4,874	-	-	100%		100%		1,219	1,219	-	4,874	4,874	-
RT Ops - Transmission: Transmission & Electric System	365		100%			4,956	-	4,956	-	-				100%	-	-	-	4,956	-	4,956
RT Ops - Scheduling Desk - Manage RT Interchange Scheduling	366		100%			3,754	-	3,754	-	-				100%	-	-	-	3,754	-	3,754
Total MMG						**25,777**	**4,473**	**21,304**	**-**	**-**					**4,473**	**2,961**	**1,512**	**21,304**	**7,635**	**13,669**
MMG %s						**100%**	**17%**	**83%**							**100%**	**66%**	**34%**	**100%**	**36%**	**64%**
Man Ops Sup & Settlements (MOS)	**80007**																			
Man price validation & corrections	401	50%	50%			156	78	78	-	-	50%	50%	100%		78	39	39	78	78	-
Man dispute analysis & resolution	402				100%	725	-	-	-	725					-	-	-	-	-	-
Manage MQS	403	50%	50%			1,142	571	571	-	-	80%	20%	100%		571	457	114	571	571	-
Manage data requests	404				100%	97	-	-	-	97					-	-	-	-	-	-
Man reg no pay & deviation pen calc	405		100%			8	-	8	-	-				100%	-	-	-	8	-	8
Manage rules of conduct	406				100%	165	-	-	-	165					-	-	-	-	-	-
Periodic Meter Audit	407		100%			4	-	4	-	-			100%		-	-	-	4	4	-
ISO RIG engineering	408		100%			332	-	332	-	-				100%	-	-	-	332	-	332
Manage EMAA	409		100%			926	-	926	-	-			100%		-	-	-	926	926	-
Manage market clearing	411	45%	45%	10%		111	50	50	11	-	80%	20%	100%		50	40	10	50	50	-
Manage mkt billing & settlements	412	45%	45%	10%		1,202	541	541	120	-	80%	20%	100%		541	433	108	541	541	-
Manage RMR settlements	413		100%			10	-	10	-	-			100%		-	-	-	10	10	-
Manage settlements release cycle	414	45%	45%	10%		807	363	363	81	-	80%	20%	100%		363	290	73	363	363	-
Manage market performance	417	50%	50%			208	104	104	-	-	50%	50%	100%		104	52	52	104	104	-
Man dispute analysis & resolution	418				100%	24	-	-	-	24					-	-	-	-	-	-
Perform mkt validation	419	50%	50%			1,216	608	608	-	-	50%	50%	100%		608	304	304	608	608	-
Total MOS						**7,133**	**2,315**	**3,595**	**212**	**1,011**					**2,315**	**1,615**	**700**	**3,595**	**3,255**	**340**
Support Cust & Stakeholders (SCS)	**80010**																			
Represent ISO	539				100%	224	-	-	-	224					-	-	-	-	-	-
Client Inquiries	601				100%	1,318	-	-	-	1,318					-	-	-	-	-	-
Account management	602				100%	889	-	-	-	889					-	-	-	-	-	-
Stakeholder Processes	603				100%	666	-	-	-	666					-	-	-	-	-	-
Develop PTOs	605		100%			8	-	8	-	-				100%	-	-	-	8	-	8
Serve New Customers	606				100%	299	-	-	-	299					-	-	-	-	-	-
Government Affairs	609				100%	3,989	-	-	-	3,989					-	-	-	-	-	-
Commun & Public Relations	610				100%	1,793	-	-	-	1,793					-	-	-	-	-	-
Total SCS						**9,186**	**-**	**8**	**-**	**9,178**					**-**	**-**	**-**	**8**	**-**	**8**
Total Direct O&M						**$ 68,364**	**$ 12,863**	**$ 42,512**	**$ 845**	**$ 12,144**					**$ 12,863**	**$ 8,075**	**$ 4,788**	**$ 42,512**	**$ 14,093**	**$ 28,419**
Direct O&M %						**100%**	**19%**	**62%**	**1%**	**18%**					**100%**	**63%**	**37%**	**100%**	**33%**	**67%**

2013 ABC support costs, non-ABC support costs, other revenue and operating reserve credit											Split of Market Services		Split of System Operations		Split of Market Services			Split of System Operations		
ABC Level 1 Activities or Division	Market services	System Operations	CRR Services	Indirect	2013 Budget	Market services	System Operations	CRR Services	Indirect	Comments	Real Time Market	Day Ahead Market	Real Time Dispatch	Balancing Area Services	Total	Real Time Market	Day Ahead Market	Total	Real Time Dispatch	Balancing Area Services
ABC Support costs																				
Man Human Capabilities (MHC) (80003)				100%	$ 4,924	$ -	$ -		$ 4,924						$ -	$ -	$ -	$ -	$ -	$ -
Plan & Manage Business (PMB) (80008)				100%	9,973	-	-		9,973						-	-	-	-	-	-
Support Business Services (SBS) (80009)				100%	49,789	-	-	-	49,789						-	-	-	-	-	-
Total Support Activities					**$ 64,686**	**$ -**	**$ -**	**$ -**	**$ 64,686**						**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Non-ABC Support costs																				
Technology																				
Hardware & software maint & leases				100%	$ 8,941	$ -	$ -	$ -	$ 8,941						$ -	$ -	$ -	$ -	$ -	$ -
Communications (AT&T)				100%	5,952	-	-	-	5,952						-	-	-	-	-	-
Occupancy				100%	5,441	-	-	-	5,441						-	-	-	-	-	-
Operations & MQRI															-	-	-	-	-	-
Intermittent resource forecasting fee	20%	80%			1,687	337	1,350	-	-	use 80004 #313	100%		100%		337	337	-	1,350	1,350	-
General Counsel																			-	
Legal, audit & bank fees				100%	5,180	-	-	-	5,180						-	-	-	-	-	-
Professional fees - SSAE 16 audit	45%	45%	10%		539	243	243	53	-	use 80007 #412	80%	20%	100%		243	194	49	243	243	-
Professional fees - operations audit	17%	83%			200	34	166	-	-	use 80005 total	66%	34%	36%	64%	34	22	12	166	60	106
Insurance				100%	1,917	-	-		1,917						-	-	-	-	-	-
Total non-ABC support costs					**$ 29,857**	**$ 614**	**$ 1,759**	**$ 53**	**$ 27,431**						**$ 614**	**$ 553**	**$ 61**	**$ 1,759**	**$ 1,653**	**$ 106**
Other revenue																				
SC application fee				100%	$ 100	$ -	$ -	$ -	$ 100						$ -	$ -	$ -	$ -	$ -	$ -
MSS penalties				100%	250	-	-	-	250						-	-	-	-	-	-
SC training fees				100%	150	-	-	-	150						-	-	-	-	-	-
Intermittent resource forecasting fee	20%	80%			1,600	320	1,280	-	-	use 80004 #313	100%		100%		320	320	-	1,280	1,280	-
LGIP study fees		100%			2,000	-	2,000	-	-	use 80001 #203				100%	-	-	-	2,000	-	2,000
Interest				100%	1,800	-	-	-	1,800						-	-	-	-	-	-
COI path operator fees	17%	83%			2,000	340	1,660	-	-	use 80005 total	66%	34%	36%	64%	340	224	116	1,660	598	1,062
Total other revenue					**$ 7,900**	**$ 660**	**$ 4,940**	**$ -**	**$ 2,300**						**$ 660**	**$ 544**	**$ 116**	**$ 4,940**	**$ 1,878**	**$ 3,062**
Operating reserve credit																				
Decrease in 15% reserve for O&M				100%	$ 21	$ -	$ -	$ -	$ 21						$ -	$ -	$ -	$ -	$ -	$ -
25% debt service reserve 2008 bonds	29%	51%	5%	15%	5,680	1,647	2,897	284	852	use debt service allocation	43%	57%	85%	15%	1,647	708	939	2,897	2,462	435
25% debt service reserve 2009 bonds				100%	3,570	-	-	-	3,570	use debt service allocation					-	-	-	-	-	-
Revenue changes				100%	9,266	-	-	-	9,266						-	-	-	-	-	-
Expense changes				100%	6,955	-	-	-	6,955						-	-	-	-	-	-
Total operating reserve credit					**$ 25,492**	**$ 1,647**	**$ 2,897**	**$ 284**	**$ 20,664**						**$ 1,647**	**$ 708**	**$ 939**	**$ 2,897**	**$ 2,462**	**$ 435**

2013 Debt Service 2008 & 2009 Bonds and Cash Funded Capital										Split of Market Services		Split of System Operations		Split of Market Services			Split of System Operations		
System / Type	Market Services	System Operations	CRR Svcs	Indirect	2013 Budget	Market services	System Operations	CRR Svcs	Indirect	Real Time Market	Day Ahead Market	Real Time Dispatch	Balancing Area Services	Total	Real Time Market	Day Ahead Market	Total	Real Time Dispatch	Balancing Area Services
Debt Service 2008 Bonds																			
Operations Related Software																			
Automated Dispatch System (ADS)		100%			$ 30	$ -	$ 30	$ -	$ -			100%		$ -	$ -	$ -	$ 30	$ 30	$ -
Automated Load Forecast System (ALFS)	50%	50%			79	40	39	-	-	100%		100%		40	40	-	39	39	-
Congestion Revenue Rights (CRR)			100%		855	-	-	855	-					-	-	-	-	-	-
DMM & compliance Tools (SAS MARS)	50%	50%			478	239	239	-	-	50%	50%	100%		239	120	119	239	239	-
Energy Management System (EMS)		100%			1,923	-	1,923	-	-			20%	80%	-	-	-	1,923	385	1,538
Exist Transmiss Contracts Calculator (ETCC)		100%			5	-	5	-	-				100%	-	-	-	5	-	5
Full Network Model / State estimator	50%	50%			182	91	91	-	-	100%		100%		91	91	-	91	91	-
Integrated Forward Market (IFM) RTN	50%	50%			6,365	3,183	3,182	-	-		100%	100%		3,183	-	3,183	3,182	3,182	-
Market Quality System (MQS)	50%	50%			1,013	506	507	-	-	80%	20%	100%		506	405	101	507	507	-
Master file	50%	50%			409	205	204	-	-	100%		100%		205	205	-	204	204	-
Meter Data Acquisition System (MDAS)		100%			15	-	15	-	-			100%		-	-	-	15	15	-
New Res Interconnection (Rims) or (NRI)	20%	80%			219	44	175	-	-		100%		100%	44	-	44	175	-	175
Open Access Same Time Info System (OASIS)	50%	50%			66	33	33	-	-	100%		100%		33	33	-	33	33	-
Ops Meter Analysis & Reporting (OMAR)		100%			96	-	96	-	-			100%		-	-	-	96	96	-
Participating Intermittant Res Project (PIRP)	20%	80%			45	9	36	-	-	100%		100%		9	9	-	36	36	-
Portal	50%	50%			473	236	237	-	-	80%	20%	100%		236	189	47	237	237	-
CAISO Market Results interface (CMRI)	50%	50%			411	206	205	-	-	80%	20%	100%		206	165	41	205	205	-
Process Information System (PI)		100%			137	-	137	-	-				100%	-	-	-	137	-	137
RT markets (RTMA) split off 50% into HASP	20%	80%			1,271	254	1,017	-	-	100%		100%		254	254	-	1,017	1,017	-
HA Market (HASP) split off 50% from RTMA	50%	50%			1,270	635	635	-	-	100%		100%		635	635	-	635	635	-
Resource Adequacy	50%	50%			43	21	22	-	-		100%		100%	21	-	21	22	-	22
RMR application Validation Engine (RAVE)	50%	50%			5	3	2	-	-		100%		100%	3	-	3	2	-	2
Scheduling & Logging for ISO CA (SLIC)	50%	50%			295	147	148	-	-	100%		100%		147	147	-	148	148	-
Control Area Scheduler (CAS)		100%			47	-	47	-	-				100%	-	-	-	47	-	47
Sched Infrastructure Business Rules (SIBR)	50%	50%			1,801	900	901	-	-	50%	50%	100%		900	450	450	901	901	-
Settlements & Mkt Clearing (SaMC)	15%	75%	10%		3,407	511	2,555	341	-	80%	20%	100%		511	409	102	2,555	2,555	-
Total Operations related software					**20,940**	**7,263**	**12,481**	**1,196**	**-**					**7,263**	**3,152**	**4,111**	**12,481**	**10,555**	**1,926**
General Software & Fixed Assets																			
Client relations & engineering analysis tools				100%	154	-	-	-	154					-	-	-	-	-	-
LAN, WAN & monitoring (Tivoli)				100%	650	-	-	-	650					-	-	-	-	-	-
Office automation desktop laptop (OA)				100%	80	-	-	-	80					-	-	-	-	-	-
Oracle Corporate Financials				100%	606	-	-	-	606					-	-	-	-	-	-
Security External Physical & ISS (CUDA)				100%	99	-	-	-	99					-	-	-	-	-	-
Storage (EMC symmetrix)				100%	889	-	-	-	889					-	-	-	-	-	-
Land & feasibility studies				100%	238	-	-	-	238					-	-	-	-	-	-
NT servers & WEB servers				100%	232	-	-	-	232					-	-	-	-	-	-
New system equipment				100%	400	-	-	-	400					-	-	-	-	-	-
Office equip, furniture & leasehold imp				100%	378	-	-	-	378					-	-	-	-	-	-
Total fixed assets					**3,726**	**-**	**-**	**-**	**3,726**					**-**	**-**	**-**	**-**	**-**	**-**
Total debt service 2008 Bonds					**$ 24,666**	**$ 7,263**	**$ 12,481**	**$ 1,196**	**$ 3,726**					**$ 7,263**	**$ 3,152**	**$ 4,111**	**$ 12,481**	**$ 10,555**	**$ 1,926**
Total debt service 2008 Bonds %					**100%**	**29%**	**51%**	**5%**	**15%**					**100%**	**43%**	**57%**	**100%**	**85%**	**15%**

2013 Debt Service 2008 & 2009 Bonds and Cash Funded Capital										Split of Market Services		Split of System Operations		Split of Market Services			Split of System Operations		
System / Type	Market Services	System Operations	CRR Svcs	Indirect	2013 Budget	Market services	System Operations	CRR Svcs	Indirect	Real Time Market	Day Ahead Market	Real Time Dispatch	Balancing Area Services	Total	Real Time Market	Day Ahead Market	Total	Real Time Dispatch	Balancing Area Services
Debt Service 2009 Bonds																			
Building, land & feasibility studies	**0%**	**0%**	**0%**	**100%**	$ 17,847	$ -	$ -	$ -	$ 17,847					$ -	$ -	$ -	$ -	$ -	$ -
Total debt service 2009 Bonds					**$ 17,847**	**$ -**	**$ -**	**$ -**	**$ 17,847**					**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Cash Funded Capital	**0%**	**0%**	**0%**	**100%**	**$ 24,000**	**$ -**	**$ -**	**$ -**	**$ 24,000**					**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

Attachment B - 2015 GMC Cost of Service update - EIM administrative charge calculation

2015 Grid Management Charge Update Proposal

California Independent System Operator Corporation

California ISO

2015 GMC Update
Energy Imbalance Market Cost of Service Study

April 2, 2014

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Executive Summary

The ISO and PacifiCorp in early 2013 agreed to form a new Energy Imbalance Market (EIM). The EIM provides entities with the opportunity to leverage the ISO's existing real-time market platform to facilitate five minute economic dispatch. The EIM provides reliability and economic benefits to both existing market participants and new EIM entities by utilizing the ISO's 15-minute market and real-time dispatch. The EIM relies on the ISO's existing real time portion of the market services activities and system operations activities. The EIM fee for 2014 was developed in collaboration with stakeholders and was based on the ISO's 2010 cost of service study. This fee was approved by the ISO Board of Governors (ISO Board) and will be filed with the Federal Energy Regulatory Commission (FERC) in 2014. Conceptually, EIM participants will pay the same rate as existing customers but only for the real time market and real time dispatch activities specifically related to the EIM. The purpose of this paper is to describe the development of the EIM fee that will be proposed for approval and will be effective in 2015 as part of the updated grid management charge (GMC) and ISO revenue requirement.

Currently, the GMC is made up of three components or services: market services, system operations and congestion revenue rights (CRR) services.[1] The market services charge encompasses all activities related to the processing of bids to issuing schedules in both the day ahead market and real-time market. The system operations charge encompasses all activities related to the dispatch of energy in support of grid conditions and balancing area activities, such as transmission planning. The third component, CRR services charge encompasses activities surrounding congestion revenue rights. Real time activities occur in market services for the real time market and in system operations for real time dispatch. The ISO has used the cost of service analysis for 2015 described in a separate discussion paper, posted at the same time as this update, to develop the updated EIM fee that is the subject of this paper.

To determine the updated EIM fee, using the 2015 cost of service study, the ISO identified

[1] The GMC also comprises several fees, in addition to the EIM fee, which are not relevant to the development of the revised EIM fee. See separate cost of service study discussion paper.

and aggregated the real time activity costs allocated to the two main cost categories. Indirect costs were then allocated 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. For the final step, these two real time rates were added to derive the updated EIM rate (see Exhibit 2).

Table 1 – Summary of EIM Rate

Category	Net costs ($ in thousands)	Cost of real time activities	Percentage share of costs	Pro forma 2013 rate	EIM rate
Market Services	$47,625	$28,911	61%	$0.09	$0.06
System Operations	136,731	60,932	45%	$0.29	$0.13
CRR Services	5,430	-	-	$0.01	-
Total	**$189,786**	**$89,843**	**47%**		**$0.19**

The costs include the EIM share of all components of the ISO's revenue requirement such that EIM participants will pay the same rate as existing customers for the real time activities they are using.

Application of ABC to EIM Structure

As discussed in the 2015 cost of service study paper, the ABC analysis disaggregated the ISO's primary business functions into nine core processes (level 1 activities). Each core activity was then divided into major processes (level 2 activities) that 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 services.

Level 2 activities were mapped as one of the following: 1) all in one category or not in the category (100 percent or 0 percent); 2) a split between two categories (50 percent / 50 percent); or 3) partially in one category or another (80 percent or 20 percent). 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.

Mapping of Market Services to EIM activities

This mapping only addresses those level 2 activities that are mapped to market services, which then in turn were mapped to either the real time market (RTM) or the day ahead market (DAM). The direct ABC level 2 activities mapped to market services is taken from *Table 2 – Mapping of ABC Direct Operating Activities to Cost Categories* in the 2015 cost of service study paper.

Table 2 – Mapping of Market Services ABC Direct Operating Activities

Mapping of Market Services ABC level 2 Direct Operating Activities to EIM activities					
ABC Level 2 Activities	**Cost Code**	**Market services**	**RTM**	**DAM**	**Comments**
% of cost to allocate to category					
Definitions used in allocation			100%		the costs are entirely to support the RT market
				100%	the costs are entirely to support the DA market
			50%	50%	the costs support equally both RT and DA markets
			80%	20%	the costs are predominantly RT market related but have some DA market relationship
			20%	80%	the costs are predominantly DA market based but have some RT market relationship
ABC Direct Operating Activities					
Develop Markets (DM) (80002)					
Perform market analysis	232	100%	50%	50%	Market analysis and design encompasses both markets
Develop market design	233	100%	50%	50%	
Manage Market and Reliability Data and Modeling (MMR) (80004)					
Manage FNM maintenance	301	50%	50%	50%	The full network model encompasses both markets
Plan and develop operations simulator training	302	20%	100%		The grid is operated in real time
Manage credit and collateral	308	45%	50%	50%	Credit and collateral required for all markets
Resource management	309	50%	80%	20%	Transmission resource & operational characteristics are reflected in RT market
PIRP	313	20%	100%		Scheduling option for intermittent resources is in RT market
Manage & facilitate procedure maintenance	314	20%	100%		The grid is operated in real time
Procedure administration and reporting	315	20%	100%		
Plan and develop operations training	316	20%	100%		
Execute and track operations training	317	20%	100%		
Manage Markets and Grid (MMG) (80005)					
Manage DA market support	352	100%		100%	Applies to DA market
Operations RT support	353	50%	100%		Applies to RT market
Manage DA market	358	50%		100%	Applies to DA market
Manage operations engineering support	362	20%	50%	50%	Ensures system conditions accurately reflected in markets
RT market – shift supervisor – manage post DA and pre RT	363	50%	100%		Applies to RT market

Mapping of Market Services ABC level 2 Direct Operating Activities to EIM activities					
ABC Level 2 Activities	**Cost Code**	**Market services**	**RTM**	**DAM**	**Comments**
% of cost to allocate to category					
RT operations – Generation and RT renewables (GRC) desks - maintain balancing area and manage RT pre dispatch	364	20%	100%		Applies to RT market
Manage Operations Support and Settlements (MOS) (8007)					
Manage price validation & corrections	401	50%	50%	50%	Price corrections occur in both markets
Manage MQS	403	50%	80%	20%	Process to feed correct data into settlements (base EIM schedules are equivalent to DA schedules)
Manage market clearing	411	45%	80%	20%	Predominantly real time activity
Manage market billing & settlements	412	45%	80%	20%	
Manage settlements release cycle	414	45%	80%	20%	
Manage market performance	417	50%	50%	50%	Market performance and validation encompasses both markets
Perform market validation	419	50%	50%	50%	

This mapping was also applied to the software costs underlying the debt service portion of the revenue requirement. This market services mapping is taken from *Table 3 – Allocation of Debt Service and Capital to GMC to Cost Categories* in the 2015 cost of service study paper.

Table 3 – Allocation of Market Services Debt Service to RT Categories

Allocation of Market Services Debt Service to EIM activities				
System	**Market services**	**RTM**	**DAM**	**Comments**
		% of cost to allocate to category		
2008 Bond Debt Service (see spelled out abbreviations in cost of service discussion paper)				
ALFS	50%	100%		Load forecast is used in RT market
DMM & compliance Tools (SAS MARS)	50%	50%	50%	ISO market monitoring covers all markets
FNM / State estimator	50%	100%		Used to initialize the RT dispatch
IFM	50%		100%	Applies to DA market
MQS	50%	80%	20%	Use 80007 activity 403
Master file	50%	100%		Stores resource operating characteristics
RIMs	20%		100%	Balancing authority responsibility
OASIS	50%	100%		Posts market results
PIRP	20%	100%		Use 80007 activity 313
Portal	50%	80%	20%	Enables participants to input and receive market information
CMRI	50%	80%	20%	
RT markets	20%	100%		Applies to RT market
HASP	50%	100%		
Resource Adequacy	50%		100%	ISO process to implement resource adequacy
RAVE	50%		100%	ISO process to implement RMR
SLIC	50%	100%		Required for recording outages in RT market
SIBR	50%	50%	50%	Required for submitted bids
SaMC	15%	80%	20%	Based on RT and DA charge codes

The market services related non-payroll support costs were mapped from *Table 4 – Allocation of Non-Payroll Support Cost to GMC to Cost Categories* in the cost of service discussion paper.

Table 4 – Allocation of Market Services Non-Payroll Support Costs

Allocation of Market Services Non-Payroll Support Costs to EIM activities				
Type	**Market services**	**RTM**	**DAM**	**Comments**
		% of cost to allocate to category		
Non-Payroll Support Costs				
Operations Division				
PIRP forecasting costs	20%	100%		Use 80004 activity 313
General Counsel and Administrative Services Division				
SSAE 16 audit	45%	80%	20%	Use 80007 activity 412
Operational assessment	17%	To be based on %'s from 80005 between RTM and DAM		

The remaining market services other income from *Table 6 – Allocation of Other Income to GMC to Cost Categories* and operating reserve credit from *Table 7 – Allocation of Operating Reserve Credit to GMC to Cost Categories* in the 2015 cost of service study paper were then allocated to real time and day ahead components.

Table 5 – Allocation of Market Services Other Income

Allocation of Market Services Other Income to EIM activities				
Type	**Market services**	**RTM**	**DAM**	**Comments**
		% of cost to allocate to category		
Other Income				
PIRP forecasting fees	20%	100%		Use 80004 activity 313
COI path operator fees	17%	To be based on %'s from 80005 between RTM and DAM		

Table 6 – Allocation of Market Services Operating Reserve Credit

Allocation of Market Services Operating Reserve Revenue Credit to EIM activities				
Type	**Market services**	**RT Market**	**DA Market**	**Comments**
		% of cost to allocate to category		
Operating Reserve Credit				
25% debt service reserve on 2008 bonds	29%	To be based on %'s from 2008 bonds debt service between RTM and DAM		

FEES

Market service fees from *Table 23 – Estimation of Fee Revenue and mapping of Fees to Cost Categories* in the 2015 cost of service study paper are allocated as follows.

Table 7 – Allocation of Market Services Fees

Allocation of Market Services Other Income to EIM activities				
Type	**Market services**	**RTM**	**DAM**	**Comments**
		% of cost to allocate to category		
Fees				
Bid segment fees	100%	50%	50%	Bidding in both markets
Inter-SC trades	100%		100%	All in forward market
SCID fees	100%	50%	50%	Participate in both markets

Costing the Market Services EIM activities

The amounts from the 2015 cost of service study were applied to the market services categories to derive the direct costs of the real time and day ahead markets.

Table 8 – Components of the 2013 Market Services Revenue Requirement:

Revenue Requirement ($ in thousands)	2013 Market Services Budget
Direct O&M	$ 12,863
Non-ABC support O&M	614
Debt service 2008 bonds	7,263
Other income	(660)
Operating reserve credit	(1,647)
Allocation of Indirect costs	34,255
Revenue Requirement before fees	**53,028**
Fees	(5,063)
Total Market Services Revenue Requirement	**$ 47,625**

Completing the analysis required the following steps:

1. applying EIM activity percentages to non-ABC O&M support costs;
2. applying EIM activity percentages to ABC direct O&M costs;
3. applying EIM activity percentages to debt service costs, other income and operating reserve credit;
4. aggregating costs and allocate indirect costs to EIM activities based on percentage of direct costs and allocation of fees to EIM activities to determine the resulting EIM activity amounts and percentages; and
5. applying the EIM activity percentage to market services rate to determine the EIM market services component.

Step 1: Applying EIM activity percentages to non-ABC O&M support costs

The non-ABC support costs from *Table 10 – Allocation of non-ABC Support Costs to Cost Categories* in the 2015 cost of service study paper were allocated using the percentages shown in Table 4 above.

Table 9 – Allocation of Market Services Non-ABC Support Costs

Allocation of Market Services Non-ABC support costs to EIM Activities						
Non-ABC support costs	**Market Services**	**RTM**	**DAM**	**2013 Market Services Budget**	**RTM**	**DAM**
		% of costs allocated to activity			**Cost of activity $ in thousands**	
Non-ABC Support Costs						
Operations Division						
PIRP forecasting costs	20%	100%		$ 337	$ 337	$ -
General Counsel and Administrative Services Division						
SSAE 16 audit	45%	80%	20%	243	194	49
Operational assessment	17%	66%	34%	34	22	12
Total				**$ 614**	**$ 553**	**$ 61**

Step 2: Applying EIM activity percentages to ABC direct O&M Costs

The ABC direct O&M costs from *Table 15 – Mapping ABC Direct Operating Activities to Cost Categories* in the 2015 cost of service study paper were allocated using the percentages shown in Table 2 above.

Table 10 – Allocation of Market Services ABC Direct Operating Costs

Allocation of Market Services ABC Direct Operating Costs to EIM Activities							
ABC Level 2 Activities	**Cost Code**	**Market Services**	**RTM**	**DAM**	**2013 Market Services Budget**	**RTM**	**DAM**
			% of costs allocated to activity			**Cost of activity $ in thousands**	
ABC Direct Operating Costs							
Develop Markets (DM) (80002)							
Perform market analysis	232	100%	50%	50%	$ 1,604	$ 802	$ 802
Develop market design	233	100%	50%	50%	2,242	1,121	1,121
Total DM					**3,846**	**1,923**	**1,923**
Manage Market & Reliability Data & Modeling (MMR) (80004)							
Manage FNM maintenance	301	50%	50%	50%	862	431	431
Plan and develop operations simulator training	302	20%	100%		60	60	
Manage credit and collateral	308	45%	50%	50%	262	131	131
Resource management	309	50%	80%	20%	455	364	91
Manage & facilitate procedure maintenance	314	20%	100%		168	168	
Procedure admin & reporting	315	20%	100%		2	2	
Plan and develop operations training	316	20%	100%		143	143	
Execute and track operations training	317	20%	100%		277	277	
Total MMR					**2,229**	**1,576**	**653**
Manage Markets and Grid (MMG) (80005)							
Manage DA market support	352	100%		100%	115		115
Operations RT support	353	50%	100%		616	616	
Manage DA market	358	50%		100%	1,282		1,282

Allocation of Market Services ABC Direct Operating Costs to EIM Activities							
ABC Level 2 Activities	**Cost Code**	**Market Services**	**RTM**	**DAM**	**2013 Market Services Budget**	**RTM**	**DAM**
			% of costs allocated to activity			**Cost of activity $ in thousands**	
Manage operations engineering support	362	20%	50%	50%	230	115	115
RT market – shift supervisor – manage post DA and pre RT	363	50%	100%		1,011	1,011	
RTO – GRC desks - maintain balancing area and manage RT pre dispatch	364	20%	100%		1,219	1,219	
Total MMG					**4,473**	**2,961**	**1,512**
Total MMG %					**100%**	**66%**	**34%**
Manage Operations Support & Settlements (MOS) (80007)							
Manage price validation and corrections	401	50%	50%	50%	78	39	59
Manage MQS	403	50%	80%	20%	571	481	120
Manage market clearing	411	45%	80%	20%	50	33	8
Manage market billing & settlements	412	45%	80%	20%	541	427	107
Manage settlements release cycle	414	45%	80%	20%	363	374	94
Manage market performance	417	50%	50%	50%	104	71	70
Perform market validation	419	50%	50%	50%	608	298	298
Total MOS					**2,315**	**1,743**	**756**
Total Direct O&M					**$ 12,863**	**$ 8,508**	**$ 5,327**
Direct O&M %					**100%**	**61%**	**39%**

Step 3 – Allocating the remaining market service revenue requirements

Debt Service

The debt service costs from *Table 19 – Mapping Debt Service and Cash Funded Capital to Cost Categories* in the 2015 cost of service study paper were allocated using the percentages shown in Table 3 above.

Table 11 – Allocation of Market Service Debt Service Costs

Allocation of Market Services Debt Service Costs to EIM Activities						
System	**Market Services**	**RTM**	**DAM**	**2013 Market Services Budget**	**RTM**	**DAM**
		% of costs allocated to activity			**Cost of activity $ in thousands**	
2008 Bonds Debt Service Costs						
Operations Related Software						
ALFS	50%	100%		$ 40	$ 40	$ -
DMM & compliance Tools	50%		100%	239	120	119
FNM / State estimator	50%	100%		91	91	
IFM	50%		100%	3,183		3,183
MQS	50%	80%	20%	506	405	101
Master file	50%	100%		205	205	
NRI	20%		100%	44		44
OASIS	50%	100%		33	33	
PIRP	20%	100%		9	9	

Allocation of Market Services Debt Service Costs to EIM Activities						
System	**Market Services**	**RTM**	**DAM**	**2013 Market Services Budget**	**RTM**	**DAM**
		% of costs allocated to activity			**Cost of activity $ in thousands**	
Portal	50%	80%	20%	236	189	47
CMRI	50%	80%	20%	206	165	41
RTMA split off 50% into HASP	20%	100%		254	254	
HASP	50%		100%	635	635	
Resource Adequacy	50%		100%	21		21
RAVE	50%		100%	3		3
SLIC	50%	100%		147	147	
SIBR	50%	100%		900	450	450
SaMC	15%	80%	20%	511	409	102
Total 2008 bond debt service				**$ 7,263**	**$ 3,152**	**$ 4,111**
Total 2008 bond debt Service %				**100%**	**43%**	**57%**

Miscellaneous Revenue

The miscellaneous revenue from *Table 20 – Mapping Miscellaneous Revenue to Cost Categories* in the 2015 cost of service study paper was allocated using the percentages shown in Table 5 above.

Table 12 – Allocation of Market Services Miscellaneous Revenue

Allocation of Market Services Miscellaneous Revenue						
Type	**Market Services**	**RTM**	**DAM**	**2013 Market Services Budget**	**RTM**	**DAM**
		% of costs allocated to activity			**Cost of activities $ in thousands**	
Miscellaneous revenue						
Intermittent resource forecasting fee	20%	100%		$ 320	$ 320	$ -
COI path operator fees	17%	66%	34%	340	224	116
Total miscellaneous revenue				**$ 660**	**$ 544**	**$ 116**

Operating Reserve Credit

The operating reserve credit from *Table 21 – Mapping Operating Reserve Credit to Cost Categories* in the 2015 cost of service study paper was allocated using the percentages shown in Table 6 above.

Table 13 – Allocation of Market Services Operating Reserve Credit

Allocation of Market Services Operating reserve credit to EIM Activities						
Type	**Market Services**	**RTM**	**DAM**	**2013 Market Services Budget**	**RTM**	**DAM**
		% of costs allocated to activity			**Cost of activities $ in thousands**	
Operating Reserve Credit						
25% debt service reserve 2008 bonds	29%	43%	57%	$ 1,647	$ 708	$ 939
Total				**$ 1,647**	**$ 708**	**$ 939**

Step 4 - Aggregating revenue requirement into cost categories and allocating fees

The individual revenue requirements for each category were aggregated, indirect costs were allocated based on the total of direct costs and fees were allocated using the factors in Table 7 - Allocation of Market Services Fees.

Table 14 – Mapping Revenue Requirement to Cost Categories

Revenue Requirement ($ in thousands)	2013 Market Services Budget	Real Time Market	Day Ahead Market
Direct O&M $	$ 12,863	$ 8,075	$ 1,788
Non-ABC support O&M $	614	553	61
Debt Service 2008 bonds	7,263	3,152	4,111
Other income	(660)	(544)	(116)
Operating reserve	(1,647)	(708)	(939)
Total before allocation of indirect	**18,433**	**10,528**	**7,905**
Allocate indirect based on direct cost %	100%	57%	43%
Allocate indirect	34,255	19,525	14,730
Total Revenue requirement	**52,688**	**30,053**	**22,635**
Less Fees			
Market bid fees	(203)	(102)	(101)
Inter-SC bid fees	(2,781)		(2,781)
SCID fees	(2,079)	(1,040)	(1,039)
Total fees	**(5,063)**	**(1,142)**	**(3,921)**
Revenue requirement to collect	**$ 47,625**	**$ 28,911**	**$ 18,714**
% applicable to EIM activities	**100%**	**61%**	**39%**

Step 5 – Calculation of the EIM component of the 2013 market services rates

The percentages from Table 14 above were applied to the market services rate from *Table 23 – 2013 GMC rates Using Revised Cost Category Percentages* in the 2015 cost of service study paper.

Table 15 – EIM Component Rates of Market Services

Revenue Requirement	Market Services	Real Time Market
2013 Market Services rate	**$ 0.09**	
Revenue requirement to collect	$ 47,625	$ 28,911
% of costs applicable to EIM activities		61%
2013 rates of EIM activities		**$ 0.06**

Mapping of System Operations to EIM activities

This mapping only addresses those level 2 activities that are mapped to system operations that are in turn mapped to the real time dispatch (RTD) or the balancing authority services (BAS). The direct ABC level 2 activities mapped to system operations is taken from *Table 2 – Mapping of ABC Direct Operating Activities to Cost Categories* in the 2015 cost of service study paper.

Table 16 – Mapping of System Operations ABC Direct Operating Activities

Mapping of System Operations ABC level 2 Direct Operating Activities to EIM activities					
ABC Level 2 Activities	**Cost Code**	**System Operations**	**RTD**	**BAS**	**Comments**
			% of cost to allocate to category		
Definitions used in allocation			100%		the costs are entirely to support RT dispatch
				100%	the costs are entirely to support BA services
			50%	50%	the costs support equally both RT dispatch and BA services
			80%	20%	the costs are predominantly RT dispatch related but have some BA relationship
			20%	80%	the costs are predominantly BA services based but have some RT dispatch relationship
ABC level 2 Direct Operating Activities					
Develop Infrastructure (DM) (80001)					
Manage GIP agreements	202	100%		100%	This is a balancing authority responsibility
Manage GIP	203	100%		100%	
Long-term transmission planning	204	100%		100%	
New transmission resources	205	100%		100%	
Transmission maintenance studies	206	100%		100%	
Load resource data	207	100%		100%	
Seasonal assessment	208	100%		100%	
Queue management	209	100%		100%	
Annual delivery assessment	210	100%		100%	
Develop Markets (DM) (80002)					
Develop infrastructure policy	231	100%		100%	This is a balancing authority responsibility
Manage Market and Reliability Data and Modeling (MMR) (80004)					
Manage FNM maintenance	301	50%	100%		The grid id operated in real time
Plan and develop operations simulator training	302	80%	100%		The grid id operated in real time
ISO meter certification	303	100%		100%	The EIM entity is responsible for ensuring that their resources meet metering requirements.
EMMAA telemetry	304	100%		100%	
Metering system configuration for market resources	305	100%	100%		Ensure meter telemetry data is reflected in the real time market
Manage credit and collateral	308	45%	100%		Relates to billing for market transactions
Resource management	309	50%	20%	80%	Transmission resource and operational characteristics for management of the balancing area
Manage reliability requirements	310	100%		100%	This is an ISO process to implement resource adequacy
Manage operations planning	311	100%		100%	This is a balancing authority responsibility

Mapping of System Operations ABC level 2 Direct Operating Activities to EIM activities					
ABC Level 2 Activities	**Cost Code**	**System Operations**	**RTD**	**BAS**	**Comments**
			% of cost to allocate to category		
Manage WECC seasonal studies	312	100%		100%	
PIRP	313	80%	100%		Scheduling option for intermittent resources in real time market.
Manage & facilitate procedure maintenance	314	80%		100%	This is a balancing authority responsibility
Procedure administration and reporting	315	80%		100%	
Plan and develop operations training	316	80%	100%		The grid is operated in real time
Execute and track operations training	317	80%	100%		
CETAC activities	318	100%		100%	This is a balancing authority responsibility
Manage Markets and Grid (MMG) (80005)					
Operations RT support	353	50%	100%		Applies to real time market
Outage model and management	355	100%		100%	This is a balancing authority responsibility
Manage DA market	358	50%	80%	20%	DA schedules in ISO are equivalent to EIM base schedules
Manage pre and post scheduling	359	100%		100%	This is a balancing authority responsibility
Manage operations engineering support	362	80%	100%		Ensures system conditions accurately reflect real time market
RT market – shift supervisor – manage post DA and pre RT & manage emergency operations	363	50%	20%	80%	Manages ISO grid reliability and ensures real time market dispatch after reflecting system conditions and man
RTO – GRC desks - maintain balancing area and manage RT pre dispatch	364	80%	100%		This is the preparation for running the real time market
RTO – transmission desk – manage transmission and electric system	365	100%		100%	This is a balancing authority responsibility
RTO – scheduling desk – manage RT interchange scheduling	366	100%		100%	
Manage Operations Support and Settlements (MOS) (8007)					
Manage price validation & corrections	401	50%	100%		Price corrections are in real time
Manage MQS	403	50%	100%		Process to feed correct data into settlements (base EIM schedules are equivalent to DA schedules)
Manage regulation no pay & deviation penalty calculations	405	100%		100%	This is a balancing authority responsibility
Periodic meter audits	407	100%	100%		Validated meter data for settlement purposes
RIG engineering	408	100%		100%	This is a balancing authority responsibility
Manage energy measurement acquisition & analysis	409	100%	100%		Validated meter data for settlement purposes
Manage market clearing	411	45%	100%		Predominantly real time or market activity
Manage market billing & settlements	412	45%	100%		
Manage RMR settlements	413	100%	100%		
Manage settlements release cycle	414	45%	100%		
Manage market performance	417	50%	100%		Market analysis and validation encompasses both markets
Perform market validation	419	50%	100%		
Support Customers and Stakeholders (SCC) (80010)					
Develop participating transmission owners	605	100%		100%	This is a balancing authority responsibility

This mapping was also applied to the software underlying the 2008 bond debt service portion of the revenue requirement. The system operations mapping s taken from *Table 3 – Allocation of Debt Service and Capital to GMC to Cost Categories* in the 2015 cost of study discussion paper.

Table 17 – Allocation of System Operations Debt Service

Allocation of System Operations Debt Service to EIM activities				
System	**System Operations**	**RTD**	**BAS**	**Comments**
		% of cost to allocate to category		
2008 Bond Debt Service				
ADS	100%	100%		Used to send dispatch instructions to participating resources.
ALFS	50%	100%		Load forecast is used in real time
DMM & compliance tools	50%	100%		Market monitoring
EMS	100%		100%	This is primarily a balancing authority responsibility with some real time as the balancing authorities communicate with each other
ETCC	50%		100%	This is a balancing authority responsibility
FNM / State estimator	50%	100%		This is used to initialize the real time dispatch
IFM	50%	100%		
MQS	50%	100%		Process to feed correct data into settlements (base EIM schedules are equivalent to DA schedules)
Master file	50%	100%		Stores resource operating characteristics
MDAS	100%	100%		Receives meter data for settlement purposes
RIMs	80%		100%	This is a balancing authority responsibility
OASIS	50%	100%		Market results include EIM results
OMAR	100%	100%		Receives meter data for settlement purposes
PIRP	80%	100%		Scheduling option for intermittent resources in real time market
Portal	50%	100%		Enables EIM participants to input and receive market information
CMRI	50%	100%		
Pi	100%		100%	This is a balancing authority responsibility
RT markets	80%	100%		Includes the hour ahead, real time dispatch and fifteen minute market
HASP	50%	100%		
Resource Adequacy	50%		100%	This is a process to implement resource adequacy
RAVE	50%		100%	This is a process to implement RMR
SLIC	50%	100%		Required for reflecting outages in the real time
CAS	50%		100%	This is a balancing authority responsibility
SIBR	50%	100%		This is required for submitted bids
SaMC	75%	100%		Based on day ahead and real time charge codes

Next the system operations related non-payroll support costs were mapped from *Table 4 – Allocation of Non-Payroll Support Cost to GMC to Cost Categories* in the 2015 cost of service study paper.

Table 18 – Allocation of System Operations Non-Payroll Support Costs

Allocation of System Operations Non-Payroll Support Costs to EIM activities				
Type	**System Operations**	**RTD**	**BAS**	**Comments**
		% of cost to allocate to category		
Non-Payroll Support Costs				
Operations Division				
PIRP forecasting costs	80%	100%		Use 80004 activity 313
General Counsel and Administrative Services Division				
SSAE 16 audit	45%	100%		Use 80007 activity 412
Operational assessment	83%	To be based on %'s from 80005 between RTD and BAS		

The remaining system operations other income *Table 6 – Allocation of Other Income to GMC to Cost Categories* and operating reserve credit *Table 7 – Allocation of Operating Reserve Credit to GMC to Cost Categories,* both in the 2015 cost of service study paper, were then allocated to their RTD and BAS components.

Table 19 – Mapping of System Operations Other Income

Allocation of System Operations Other Income to EIM activities				
Type	**System Operations**	**RTD**	**BAS**	**Comments**
		% of cost to allocate to category		
Other Income				
PIRP forecasting fees	80%	100%		Use 80004 activity 313
LGIP study fees	100%		100%	Use 80001 activity 203
COI path operator fees	83%	To be based on %'s from 80005 between RTD and BAS		

Table 20 – Mapping of System Operations Operating Reserve Credit

Allocation of Market Services Operating Reserve Revenue Credit to EIM activities				
Type	**System Operations**	**RTD**	**BAS**	**Comments**
		% of cost to allocate to category		
Operating Reserve Credit				
25% debt service reserve on 2008 bonds	51%	To be based on %'s from 2008 bonds debt service between RTD and BAS		

FEES

Transmission ownership rights charges were allocated 100 percent to real time dispatch.

Costing the System Operations EIM activities

The amounts from the 2015 cost of service study were applied to the system operations categories to derive the direct costs of the RTD and BAS.

Table 21 – Components of the 2013 System Operations Revenue Requirement:

Revenue Requirement ($ in thousands)	2013 System Operations Budget
Direct O&M	$ 42,512
Non-ABC support O&M	1,759
Debt service 2008 bonds	12,481
Other income	(4,940)
Operating reserve credit	(2,897)
Allocation of Indirect costs	88,809
Revenue requirement before fees	**137,724**
Fees	(993)
Total System Operations Revenue Requirement	**$ 136,731**

Completing the analysis required the following steps:

1. applying EIM activity percentages to non-ABC O&M support costs;
2. applying EIM activity percentages to ABC direct O&M costs;
3. applying EIM activity percentages to debt service costs, other Income and operating reserve credit;
4. aggregating costs and allocate indirect costs to EIM activities based on percentage of direct costs and allocating fees to EIM activities to determining resulting EIM activity amounts and percentages; and
5. applying EIM activity percentage to market services rate to determine the EIM market services component.

Step 1: Applying EIM activity percentages to non-ABC O&M support costs

The non-ABC support costs from *Table 10 – Allocation of non-ABC Support Costs to Cost Categories* in the 2015 cost of service study paper were allocated using the percentages shown in Table 18 above.

Table 22 – Allocation of System Operations Non-ABC Support Costs

Allocation of System Operations Non-ABC support costs to EIM Activities						
Non-ABC support costs	**System Operations**	**RT Dispatch**	**BA Services**	**2013 System Operations Budget**	**RT Dispatch**	**BA Services**
		% of costs allocated to activity			**Cost of activity $ in thousands**	
Non-ABC support costs						
Operations Division						
PIRP forecasting costs	80%	100%		$ 1,350	$ 1,350	$ -
General Counsel and Administrative Services Division						
SSAE 16 audit	45%	100%		243	243	
Operational assessment	83%	36%	64%	166	60	106
Total				**$ 1,759**	**$ 1,653**	**$ 106**

Step 2: Applying EIM activity percentages to ABC direct O&M Costs

The ABC direct O&M costs from *Table 15 – Mapping ABC Direct Operating Activities to Cost Categories* in the 2015 cost of service study paper were allocated using the percentages shown in Table 16 above.

Table 23 – Allocation of System Operations ABC Direct Operating Costs

Allocation of System Operations ABC Direct Operating Costs to EIM Activities							
ABC Level 2 Activities	**Cost Code**	**System Operations**	**RTD**	**BAS**	**2013 System Operations Budget**	**RTD**	**BAS**
			% of costs allocated to activity			**Cost of activity $ in thousands**	
ABC Direct Operating Costs							
Develop Infrastructure (DI) (80001)							
Manage GIP agreements	202	100%		100%	$ 818	$ -	$ 818
Manage GIP	203	100%		100%	2,342		2,342
Long-term transmission planning	204	100%		100%	4,723		4,723
New transmission resources	205	100%		100%	552		552
Transmission maintenance studies	206	100%		100%	499		499
Load resource data	207	100%		100%	268		268
Seasonal assessment	208	100%		100%	223		223
Queue management	209	100%		100%	615		615
Annual delivery assessment	210	100%		100%	25		25
Total DI					**9,615**		**9,915**
Develop Markets (DM) (80002)							
Develop infrastructure policy	231	100%	100%		829		829
Total DM					**829**		**829**
Manage Market & Reliability Data & Modeling (MMR) (80004)							
Manage FNM maintenance	301	50%	100%		862	862	
Plan and develop operations simulator training	302	80%	100%		240	240	
ISO meter certification	303	100%		100%	416		416
EMMAA telemetry	304	100%		100%	100		100

Allocation of System Operations ABC Direct Operating Costs to EIM Activities							
ABC Level 2 Activities	**Cost Code**	**System Operations**	**RTD**	**BAS**	**2013 System Operations Budget**	**RTD**	**BAS**
			% of costs allocated to activity			**Cost of activity $ in thousands**	
Metering system configuration for market resources	305	100%	100%		70	70	
Manage credit and collateral	308	45%	100%		262	262	
Resource management	309	50%	20%	80%	455	91	364
Manage reliability requirements	310	100%			931		931
Manage operations planning	311	100%			1,321		1,321
Manage WECC seasonal studies	312	100%			71		71
PIRP	313	80%			1	1	
Manage & facilitate procedure maintenance	314	80%		100%	673		673
Procedure administration and reporting	315	80%			9		9
Plan and develop operations training	316	80%	100%		571	571	
Execute and track operations training	317	80%	100%		1,106	1,106	
CETAC activities	318	100%			73		73
Total MMR					**7,161**	**3,203**	**3,958**
Manage Markets and Grid (MMG) (80005)							
Operations RT support	353	50%	100%		615	615	
Outage model and management	355	100%		100%	2,921		2,921
Manage DA market	358	50%	80%	20%	1,282	1,026	256
Manage pre and post scheduling	359	100%		100%	974		974
Manage operations engineering support	362	80%	100%		918	918	
RT market – shift supervisor – manage post DA and pre RT	363	50%	20%	80%	1,010	202	808
RTO – GRC desks - maintain balancing area and manage RT pre dispatch	364	80%	100%		4,874	4,874	
RTO – transmission desk – manage transmission and electric system	365	100%		100%	4,956		4,956
RTO – scheduling desk – manage RT interchange scheduling	366	100%		100%	3,754		3,754
Total MMG			**36%**	**64%**	**21,304**	**7,635**	**13,669**
Manage Operations Support & Settlements (MOS) (80007)							
Manage price validation and corrections	401	50%	100%		78	78	
Manage MQS	403	50%	100%		571	571	
Manage regulation no pay & deviation penalty calculations	405	100%		100%	8		8
Periodic meter audit	407	100%	100%		4		4
RIG engineering	408	100%		100%	332		332
Manage energy measurement acquisition & analysis	409	100%	100%		926	926	
Manage market clearing	411	45%	100%		50	50	
Manage market billing & settlements	412	45%	100%		541	541	
Manage RMR settlements	413	100%	100%		10	10	
Manage settlements release cycle	414	45%	100%		363	363	
Manage market performance	417	50%	100%		104	104	

Allocation of System Operations ABC Direct Operating Costs to EIM Activities							
ABC Level 2 Activities	**Cost Code**	**System Operations**	**RTD**	**BAS**	**2013 System Operations Budget**	**RTD**	**BAS**
			% of costs allocated to activity			**Cost of activity $ in thousands**	
Perform market validation	419	50%	100%		608	608	
Total MOS					**3,595**	**3,255**	**340**
Support Customers and Stakeholders (SCS) (80010)							
Develop PTOs	605	100%		100%	8		8
Total SCS					**8**	**-**	**8**
Total Direct O&M					**$ 42,512**	**$ 14,093**	**$ 28,419**
Direct O&M %					**100%**	**33%**	**67%**

Step 3 – Allocating remaining system operations revenue requirement components

Debt Service

The debt service costs from *Table 19 – Mapping Debt Service and Cash Funded Capital to Cost Categories* in the 2015 cost of service study paper were allocated using the percentages shown in Table 17 above.

Table 24 – Allocation of System Operations Debt Service Costs

Allocation of Market Services Debt Service Costs to EIM Activities						
System	**System Operation**	**RTD**	**BAS**	**2013 System Operations Budget**	**RTD**	**BAS**
		% of costs allocated to activity			**Cost of activity $ in thousands**	
Debt Service Costs						
ADS	100%	100%		$ 30	$ 30	$ -
ALFS	50%	100%		39	39	
DMM & compliance Tools	50%	100%		239	239	
EMS	100%	20%	80%	1,923	385	1,538
ETCC	50%		100%	5		5
FNM / State estimator	50%	100%		91	91	
IFM	50%	100%		3,182	3,182	
MQS	50%	100%		507	507	
Master file	50%	100%		204	204	
MDAS	100%	100%		15	15	
NRI	80%		100%	175		175
OASIS	50%	100%		33	33	
OMAR	100%	100%		96	96	
PIRP	80%	100%		36	36	
Portal	50%	100%		237	237	
CMRI	50%	100%		205	205	
PI	100%		100%	137		137

Allocation of Market Services Debt Service Costs to EIM Activities						
System	**System Operation**	**RTD**	**BAS**	**2013 System Operations Budget**	**RTD**	**BAS**
		% of costs allocated to activity			**Cost of activity $ in thousands**	
RT markets	80%	100%		1,017	1,017	
HASP	50%	100%		635	635	
Resource Adequacy	50%		100%	22		22
RAVE	50%		100%	2		2
SLIC	50%	100%		148	148	
CAS	100%		100%	47		47
SIBR	50%	100%		901	901	
SaMC	75%	100%		2,555	2,555	
Total 2008 bond debt service				**$ 12,481**	**$ 10,555**	**$ 1,926**
Total 2008 Bond debt Service %				**100%**	**85%**	**15%**

Miscellaneous Revenue

The miscellaneous revenue from *Table 20 – Mapping Miscellaneous Revenue to Cost Categories* in the 2015 cost of service study paper was allocated using the percentages shown in Table 19 above.

Table 25 – Allocation of System Operations Miscellaneous Revenue

Allocation of System Operations Miscellaneous Revenue						
Type	**System Operations**	**RTD**	**BAS**	**2013 System Operations Budget**	**RTD**	**BAS**
		% of costs allocated to activity			**Cost of activities $ in thousands**	
Miscellaneous revenue						
Intermittent resource forecasting fee	80%	100%		$ 1,280	$ 1,280	$ -
LGIP study fees	100%		100%	2,000		2,000
COI path operator fees	83%	36%	64%	1,660	598	1,062
Total miscellaneous revenue				**$ 4,940**	**$ 1,878**	**$ 3,062**

Operating Reserve Credit

The operating reserve credit from *Table 21 – Mapping Operating Reserve Credit to Cost Categories* in the cost of service discussion paper was allocated using the percentages shown in Table 20 above.

Table 26 – Allocation of System Operations Operating Reserve Credit

Allocation of System Operations Operating reserve credit to EIM Activities						
Type	**System Operations**	**RTD**	**BAS**	**2013 System Operations Budget**	**RTD**	**BAS**
		% of costs allocated to activity			**Cost of activities $ in thousands**	
Operating Reserve Credit						
25% debt service reserve 2008 bonds	51%	85%	15%	$ 2,897	$ 2,462	$ 435
Total				**$ 2,897**	**$ 2,462**	**$ 435**

Step 4 – Aggregating revenue requirement into cost categories and allocating fees

The individual revenue requirements for each category were aggregated, indirect costs were allocated based on the total of direct costs and fees were allocated as described above.

Table 27 – Mapping Revenue Requirement to Cost Categories

Revenue Requirement ($ in thousands)	2013 System Operations Budget	Real Time Dispatch	Balancing Authority Services
Direct O&M $	$ 42,512	$ 14,093	$ 28,419
Non-ABC support O&M $	1,759	1,653	106
Debt Service 2008 bonds	12,481	10,555	1,926
Other income	(4,940)	(1,878)	(3,062)
Operating reserve	(2,897)	(2,462)	(435)
Total before allocation of indirect	**48,915**	**21,961**	**26,954**
Allocate indirect based on direct cost %	100%	45%	55%
Allocate indirect	88,809	39,964	48,845
Total Revenue requirement	**137,724**	**61,925**	**75,799**
Less TOR charges	(993)	(993)	
Revenue requirement to collect	**$ 136,731**	**$ 60,932**	**$ 75,799**
% applicable to EIM activities	**100%**	**45%**	**55%**

Step 5 – Calculation of EIM component of 2013 system operations rates

The percentages from Table 27 above were applied to the system operations rate from *Table 23 – 2013 GMC rates Using Revised Cost Category Percentages* in the 2015 cost of service study paper.

Table 28 – EIM Component Rate for System Operations

Revenue Requirement	System Operations	Real Time Dispatch
2013 System Operations rate	**$ 0.29**	
Revenue requirement to collect	$ 136,731	$ 60,932
% of costs applicable to EIM activities		45%
2013 system operations rate for EIM activities		**$ 0.13**

Summary of EIM Rate

The results of the cost of service analysis for the EIM fee that will go into effect in 2015 are as reflected in the following table:

Summary of EIM Rate for 2015

Category	Net costs ($ in thousands)	Cost of real time activities	Percentage share of costs	Pro forma 2013 rate	EIM rate
Market services	$ 47,625	$ 28,911	61%	$ 0.09	$ 0.06
System Operations	136,731	60,932	45%	$ 0.29	$ 0.13
CRR services	5,430	n/a		$ 0.01	
Total	**$ 189,786**	**$ 89,843**	**47%**		**$ 0.19**

Attachment C - 2015 GMC Cost of Service update - transmission ownership right calculation

2015 Grid Management Charge Update Proposal

California Independent System Operator Corporation

California ISO

Grid Management Charge
Proposed 2015 Updates

April 2, 2014

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Executive Summary

The Grid Management Charge (GMC) is the vehicle through which the California Independent System Operator Corporation (ISO) recovers its annual revenue requirement from the entities that use ISO services. Funding the annual revenue requirement ensures that the ISO recovers its administrative, operating and capital costs. The current GMC rate design was vetted through a stakeholder process, approved by the ISO Board of Governors (ISO Board) and the Federal Energy Regulatory Commission (FERC) in 2011, and became effective January 1, 2012 ("the 2012 GMC structure").[1] As part of that order, the annual maximum revenue requirement was capped at $197 million for 2012 and $199 million for 2013 and 2014. To exceed the maximum limit, the FERC would have to approve an ISO filing seeking a revenue requirement increase under Section 205 of the Federal Power Act (FPA); however, the ISO is committed to operate within its budget and did not seek such an increase during this three year period. The current revenue requirement expires at the end of 2014; accordingly the ISO must seek a revised revenue requirement beginning in 2015.

The GMC is made up of three service buckets and seven fees. The revenue requirement is allocated into the three service buckets: market services, system operations and congestion revenue rights (CRR) services based on percentages developed in the 2012 cost of service study. The seven fees are fixed amounts and the energy imbalance market (EIM) fee and transmission ownership rights (TOR) fee were derived from the 2012 cost of service study.

In 2013 the ISO and PacifiCorp agreed to form a new EIM. The EIM provides entities with the opportunity to leverage the ISO's existing real-time market platform to facilitate five minute economic dispatch. The EIM relies on the real time portion of the

[1] *California Independent System Operator Corporation* 136 FERC ¶61,236 (September 30, 2011).

market services activities and system operations activities. The EIM fee, derived from the 2010 GMC cost of service study, was developed in collaboration with stakeholders, approved by the ISO Board and will be filed with FERC in 2014. It is fixed for 2014. In a separate discussion paper, the ISO has calculated the EIM fee that will be proposed as part of the GMC structure to take effect in 2015.

Last, in addition to adjusting the service category cost percentages and updating the EIM fee based on the 2015 cost of service study, the ISO has updated the TOR rate using updated costs and the current Activity Based Costing (ABC) methodology.

Summary of the existing charges

	Charge Code	%	Rate
Service Categories			
Market Services	4560	27%	$ 0.0867
System Operations	4561	69%	$ 0.2890
CRR Services	4562	4%	$ 0.0112
Fees			
Bid Segment Fee	4515	fixed	$ 0.005
Inter-SC Trade Fee	4512	fixed	$ 1.00
EIM Fee	TBD	fixed	$ 0.19
TOR Fee	4563	fixed	$ 0.27
CRR Auction Bid Fee	4516	fixed	$ 1.00
Participating Intermittent Resource Fee	701	fixed	$ 0.10
SCID Fee - billed monthly	4575	fixed	$ 1,000

The ISO proposal for the 2015 GMC cost category percentages, updated EIM and TOR fees and revenue requirement updates are based on the following methodology and analysis:

1) Updating the percentage allocation for the three service categories using the 2015 cost of service study. The cost of service study is based on actual time incurred by ISO employees during 2013 applied to the 2013 budget.
2) Updating the EIM fee
    a) starting with the 2015 cost of service update
    b) then applying the percentage share of real time costs for market

services to the 2013 rate for market services and

c) applying the percentage share of real time costs for system operations to the 2013 rate for system operations and

d) combining the two rates to determine the EIM rate.

3) Updating the TOR using the 2015 cost of service update.

4) Proposing a revenue requirement maximum and time period

In light of this analysis the ISO proposes the following revisions to the GMC to be effective January 1, 2015.

Summary of the proposed changes for 2015

	Charge Code	Old %	New %	Current rate	New Rate if different
Service Categories					
Market Services	4560	27%	**27%**	Annual calculation	
System Operations	4561	69%	**70%**		
CRR Services	4562	4%	**3%**		
Fees					
Bid Segment Fee	4515	fixed		$ 0.005	
Inter-SC Trade Fee	4512			$ 1.00	
EIM Fee	TBD			$ 0.19	
TOR Fee	4563			$ 0.27	**$ 0.24**
CRR Auction Bid Fee	4516			$ 1.00	
PIRP Forecasting Fee	701			$ 0.10	
SCID Fee – billed monthly	4575			$ 1,000	

As further discussed below, the ISO proposes to set the annual revenue requirement maximum at $202 million. If the ISO desires a further increase in the maximum, it will seek stakeholder input and make a filing under Section 205 of the FPA requesting FERC approval.

However, the ISO will recalculate the cost categories percentages, EIM and TOR fees every three years and will address the updated information with stakeholders. If those percentages change, a filing will be made with FERC to modify the rates or percentages.

Updating the Percentages Applied to Service Categories

The process to update the percentages applied to the service categories is presented in the 2015 cost of service study posted at the same time as this summary paper and summarized in Exhibit 2. The cost of service analysis was used to determine the percentages for the three cost categories as reflected in the table below.

Summary of Cost Category Percentages

Cost Category Percentages from Cost of Service Studies	2012 Study using 2010 data	2015 Study using 2013 data	Change
Market Services	27%	**27%**	-
System Operations	69%	**70%**	1%
CRR Services	4%	**3%**	(1%)

Updating the EIM Fee

The cost of service analysis for the EIM fee that will go into effect in 2015 is set forth in a separate discussion paper posted at the same time as this summary paper and summarized in Exhibit 2. The results are reflected in the following table:

Summary of EIM Rate for 2015

Category	Net costs ($ in thousands)	Cost of real time activities	Percentage share of costs	Pro forma 2013 rate	EIM rate
Market services	$ 47,625	$ 28,911	61%	$ 0.09	$ 0.06
System Operations	136,731	60,932	45%	$ 0.29	$ 0.13
CRR services	5,430	n/a		$ 0.01	
Total	**$ 189,786**	**$ 89,843**	**47%**		**$ 0.19**

Updating the TOR Rate

In the 2012 cost of service study, three areas were identified in which ISO services were required for TORs:

1) **Real-Time Operations** – The ISO provides support on an emergency basis for flows on TORs, in a manner similar to standby service.

2) **Scheduling** – The ISO provides check-outs with neighboring balancing authorities (BA) in order to schedule flows across boundaries. .

3) **Outage Management** – The ISO provides for the scheduling and coordination of outages across the BA.

It was determined that TORs utilize the ABC level 2 activities identified in the table below. These activities are all related to system operations because there is no TOR participation in the market and thus market services costs are not applicable. The costs for the specific level 2 activities from the 2013 cost of service update were identified and the indirect dollars were then allocated based on the direct percentage, using the process described below, to derive a total of $44.1 million in direct and indirect costs that would be allocated to TORs. A table summarizing the cost of TORs is as follows (the level 1 and level 2 codes and costs are from the separate 2015 cost of service study set forth in a separate paper).

Cost of TOR-related Activities

ABC level 2 activities ($ in thousands)	**Factor**	**ABC level 1 code**	**ABC level 2 code**	**System Operations direct allocation**
Manage full network model	100%	80004	301	$ 862
Outage and model management	100%	80005	355	2,921
Manage DA market	100%	80005	358	1,282
Manage operations engineering studies	100%	80005	362	918
Real time (RT) market – shift supervisor – post DA and pre RT and manage emergency operations	100%	80005	363	1,010
RTO – transmission desk – transmission and electric system	100%	80005	365	4,956
RTO – scheduling desk – manage RT interchange scheduling	100%	80005	366	3,754
TOR related direct costs				**$ 15,703**

Indirect system operations indirect costs were allocated based on the percentage of direct costs as shown in the following table.

Calculation of TOR-related costs ($ in thousands)

TOR related direct costs	**$**	**15,703**
Total system operations direct costs	$	48,915
Percentage of TORs to system operations direct costs		32%
System operations indirect costs	$	88,809
TOR related indirect costs	**$**	**28,419**
Total TOR related direct and indirect costs	**$**	**44,122**

Then the ratio of TOR MWh to the total system operations (flow) MWh was calculated to determine the usage percentage.

TORs as a Percentage of Total Volumes

	Volumes in MWh
2013 system operations volume	465,286,577
Add back grandfathered contracts	7,179,000
Total gross TOR volume (supply and demand)	8,097,490
Total adjusted system operations volume	480,563,067
Total gross TOR volume	8,097,490
TOR as a percentage of gross volume	**1.69%**

The amount to collect is then derived by multiplying the TOR related costs by the TOR percentage results. The TOR rate is then determined by dividing the amount to collect by the 2013 forecasted TOR volume. The revised TOR rate of $0.24 cents is as follows.

Calculation of TOR Rate for 2015

Total direct and indirect TOR costs	$ 44,122,000
TOR percentage of total volumes	1.69%
TOR costs to collect	$ 745,660
TOR MWh for 2013	3,162,319
TOR updated rate per MWh	**$ 0.24**

Revenue Requirement Maximum Proposal

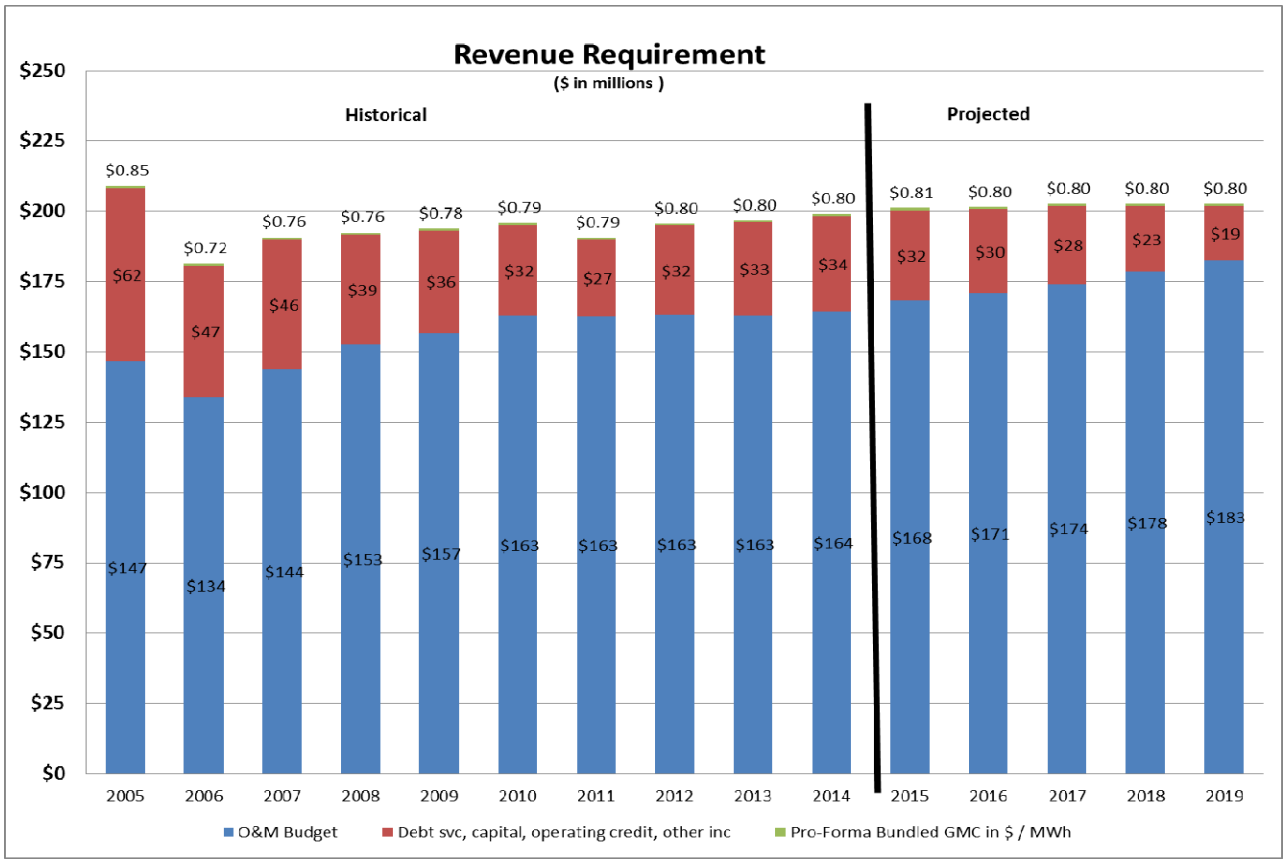
The last 2015 GMC update component is establishing a new revenue requirement maximum. The current maximum is $199 million. The following is a table of past revenue requirement maximums.

Historical Revenue Requirement Maximums

Year	Revenue Requirement Maximum (in millions)
1998 - 2004	Filed budget
2005	$ 218
2006	$ 222
2007 - 2009	$ 195
2010 - 2012	$ 197
2013 - 2014	$ 199

The ISO's long term forecast indicates the revenue requirement in the range of $200 million to $205 million over the next five to seven years. The ISO is proposing a long term revenue requirement maximum of $202 million. Although the proposal is less than the forecast in the out years, the ISO believes it can extract sufficient savings to maintain its proposed revenue requirement maximum.

Chart of Historical and Projected Revenue Requirements



The ISO proposes to retain the same process currently included in the tariff with respect to the revenue requirement maximum except that there will be no sunset date. As long as the ISO's annual budget for each year does not exceed that year's revenue requirement maximum, and no GMC rate design or billing determinant modifications are proposed for the next year, the ISO will not seek changes to the revenue requirement cap or the GMC rate structure through a Section 205 filing.

The ISO will update its cost of service analysis every three years to determine the cost category percentages and EIM and TOR rates. If any percentages or rates change, the ISO will review them with stakeholders and seek FERC approval.

The current budget approval stakeholder process will remain in the tariff and culminates with each annual budget being presented to the ISO Board for approval at its December meeting and posted on the ISO website afterward.

Next Steps

The stakeholder process for the 2015 GMC update will continue with the following timeline:

- April 17, 2014 – Stakeholder discussion of proposal
- May 20, 2014 – Additional Stakeholder meeting if necessary
- July 17-18, 2014 – Seek Board approval of 2015 GMC update
- August 14, 2014 – Stakeholder meeting to review tariff amendments
- September 2014 – File 2015 GMC update with FERC.

Attachment D – Epstein Testimony

2015 Grid Management Charge Update Proposal

California Independent System Operator Corporation

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 – Draft Final Proposal

2015 Grid Management Charge Update Proposal

California Independent System Operator Corporation

California ISO

Grid Management Charge
Final Proposed 2015 Update

May 12, 2014

Table of Contents

Executive Summary

Management of the California Independent System Operator Corporation (ISO) intends to take this proposal to its Board of Governors (ISO Board) for approval at its July 17-18 2014 meeting. Following discussions with stakeholders since the stakeholder meeting on April 17, this final proposal adopts the proposals put forward in the Grid Management Charge (GMC) documents. The ISO received comments requesting additional information on eligible intermittent resource (EIR) forecast fees and the revenue requirement maximum which we have responded below.

The GMC is the vehicle through which the ISO recovers its annual revenue requirement from entities that use ISO services. Funding the annual revenue requirement ensures that the ISO recovers its administrative, operating and capital costs. The current GMC rate design was vetted through a stakeholder process, approved by the ISO Board and the Federal Energy Regulatory Commission (FERC) in 2011, and became effective January 1, 2012 ("the 2012 GMC structure").[1] As part of that order, the annual maximum revenue requirement (also referred to as the revenue cap) was capped at $197 million for 2012 and $199 million for 2013 and 2014. The current revenue requirement cap expires at the end of 2014; accordingly the ISO must seek a revised revenue requirement cap beginning in 2015.

The GMC is made up of three service categories and seven fees. The revenue requirement is allocated into the three service categories: market services, system operations and congestion revenue rights (CRR) services based on percentages developed in the 2012 cost of service study. There are two fees that are included in miscellaneous revenues that are included in the determination of the revenue requirement: the energy imbalance market (EIM) administrative charge and EIR

[1] *California Independent System Operator Corporation* 136 FERC ¶61,236 (September 30, 2011).

forecasting fees. The EIR forecast fee was previously called the participating intermittent resource program (PIRP) forecast fee but was the name was changed in 2014. The fee was inadvertently described in the discussion papers as the PIRP forecast fee. There are 5 fees that are part of the rate structure and are deducted from the respective service categories: bid segment fees, inter-scheduling coordinator (SC) trade fees, SC Identification (ID) fees, transmission ownership right (TOR) charge and CRR auction bid fees. All the fees are fixed except for the EIM administrative charge and the TOR charge which were derived from the 2013 cost of service study. These two charges and the service category percentages remain fixed until the next cost of service study.

The methodology and analysis supporting the ISO proposal for the 2015 GMC cost category percentages, updated EIM and TOR charges are fully described in the previously distributed discussion papers at: http://www.caiso.com/Pages/documentsbygroup.aspx?GroupID=72f94714-e777-4666-96b5-2948f249f67c

The ISO proposes to set the annual revenue requirement maximum at $202 million. If the ISO determines that an increase in the revenue requirement maximum is necessary, it will first seek stakeholder input followed by a filing requesting FERC approval under Section 205 of the Federal Power Act.

However, the ISO will recalculate the cost categories percentages, EIM and TOR charges every three years and will review the updated information with stakeholders. If the percentages change, a filing will be made with FERC to modify the rates and/or percentages.

In light of this analysis the ISO proposes the following revisions to the GMC to be effective January 1, 2015.

Current and Proposed GMC Structure for 2015

	Charge Code	Current %, Rate or Maximum	Proposed %, Rate or Maximum	Change
Included in miscellaneous revenue				
EIM Administrative Charge	4564	$ 0.19	$ 0.19	-
EIR Forecast Fee	701	$ 0.10	$ 0.10	-
Rate structure items				
Service Category percentages				
Market Services	4560	27%	27%	-
System Operations	4561	69%	71%	2%
CRR Services	4562	4%	2%	(2%)
Fees and charges				
Bid Segment Fee	4515	$ 0.005	$ 0.005	-
Inter-SC Trade Transaction Fee	1512	$ 1.00	$ 1.00	-
SCID Charge	4575	$ 1,000	$ 1,000	-
TOR Charge	4563	$ 0.27	$ 0.24	$ (0.03)
CRR Transaction Fee	4516	$ 1.00	$ 1.00	-
Revenue Requirement				
Maximum amount		$199 million	$202 million	$3 million
Period		2015	No end date	
Update to cost service study			Every 3 years	

EIR Forecast Fee

The EIR forecast fee of 10 cents was set forth in the tariff in 2003 (Appendix F Schedule 4) to recover the costs paid by the ISO to third parties for forecasts of intermittent resources. EIR forecast fee revenues and forecasting costs included in the budget for the last two years are shown in the following table. The excess revenues that the ISO received offset some of the ISO's internal costs in managing the third-party forecast vendor.

	2013 budget	2014 budget
EIR forecasting fee revenues	$1,600,000	$2,100,000
EIR forecasting costs	$1,494,987	$1,974,175

Revenue Requirement Maximum

The ISO is proposing a long term revenue requirement maximum of $202 million. The ISO proposes to retain the same process currently included in the tariff with respect

to the revenue requirement cap except that there will be no sunset date. As long as the ISO's annual budget for each year does not exceed that year's revenue requirement maximum, and no GMC rate design or billing determinant modifications are proposed for the next year, the ISO will not seek changes to the revenue requirement maximum or the GMC rate structure through a Section 205 filing. The current budget approval stakeholder process will remain in the tariff with each annual budget being presented to the ISO Board for approval at its December meeting and is subsequently posted on the ISO website.

In the table on page 36 of the April 17 Briefing on 2015 GMC Update, the ISO provided a table showing the major components of the actual revenue requirement from 2005 through 2014 and projected amounts of the revenue requirement for 2015 to 2019. http://www.caiso.com/Documents/Briefing-2015_GridManagementChargeUpdate.pdf. The following table is included to clarify the amounts shown in the graph ($ amounts in millions):

Year	O&M Budget	All other costs (a)	Total revenue requirement	Bundled rate cents per MWh
Actual revenue requirement				
2005	$147	$62	$209	85
2006	$134	$47	$181	72
2007	$144	$46	$190	76
2008	$153	$39	$192	76
2009	$157	$36	$193	78
2010	$163	$32	$195	79
2011	$163	$27	$190	79
2012	$163	$32	$195	80
2013	$163	$33	$196	80
2014	$164	$34	$198	80
Projected revenue requirement				
2015	$168	$32	$200	80
2016	$170	$30	$200	80
2017	$174	$28	$202	80
2018	$178	$23	$201	80
2019	$183	$19	$202	80

The category labeled "All other costs" includes all of the revenue requirement

categories except for the O&M budget, debt service including the 25% debt service reserve, cash funded capital, operating reserve credit from prior year and miscellaneous income.

The ISO plans to fund future capital projects from GMC funds and not through the issuance of debt. GMC funding for capital projects avoids interest costs, the 25% debt service reserve and issuance costs. Annual capital and project budgets are forecast to run from $19 million to $24 million. Cash funded capital takes the place of the 2008 debt service which was used primarily to fund the software related to the new market.

The ISO's current revenue requirement is $198 million which is 99.5 percent of the revenue requirement maximum of $199 million. The ISO believes that a long term commitment to a revenue cap is superior to a six year term. The ISO has learned that it is a greater challenge to manage costs in the out years rather than to seek an extension.

Over the last five years the increase in the consumer price index (CPI) has averaged 2.1% while the increase in the ISO revenue requirement has averaged only 0.5%. The increase in the proposed revenue requirement maximum from $199 million to $202 million is only 1.5% - which is in line with the CPI for 2013 of 1.5%. It should also be noted that although the revenue requirement increased 1.7% from $195 million in 2012 to $198 million in 2014 the combined GMC rates (market services, system operations and CRR services) only increased 0.08% from a combined 38.66 cents/MWh in 2012 to 38.69 cents/MWh in 2014. The difference in increases between the revenue requirement and the GMC rates is due to an increase in total MWh volume throughput. Under the assumption that MWh volumes will increase over time, a long term cap of $202 million will keep rates flat or decreasing.

There is an extensive annual budget process where stakeholders can provide guidance and submit comments on the budget to the ISO Board. A three year cost of service update is being proposed which will provide input on the rate structure. The ISO

believes that there are sufficient opportunities for stakeholders to engage in the process, review the efficiency of the rate design and provide input into the resulting rates.

Next Steps

The stakeholder process for the 2015 GMC update will continue as follows:

- May 20, 2014 – Stakeholder call on final proposal
- July 17-18, 2014 – Seek Board approval of 2015 GMC update
- August 14, 2014 – Stakeholder meeting to review tariff amendments
- September 2014 – File 2015 GMC update with FERC.

Attachment F – Responses to Stakeholder Comments

2015 Grid Management Charge Update Proposal

California Independent System Operator Corporation

2015 GMC Update Tariff call responses to stakeholder comments August 14, 2014

MID comments
1) In Section 11.22.2.6, the ISO proposes to delete text describing that the formula in Appendix F, Schedule 1, Part C sums certain costs and components to obtain a total revenue requirement. What is the reason for this deletion? Is the reason for such deletion due to potential duplication of what is set forth in Appendix F in terms of the calculation of the total revenue requirement? 2) In Section 11.22.2.6, what is the reason for the deletion of the parenthetical cross-reference to ISO Tariff Section 11.17 after the text "surplus revenues from the previous year or period", which described a component of annual ISO website postings? The current Section reference goes to a persistent deviation metric for Bid Cost Recovery, which seems to be in error. Is there a different Tariff section cross-reference that should be cited? 3) What does the language mean that the fees cited in Sections 11.22.4 (TOR Charges), 11.22.5 (Bid Segment Fee), 11.22.6 (CRR Transaction Fee), 11.22.7, (Inter-Scheduling Coordinator Trade Transaction Fee), and 11.22.8 (Scheduling Coordinator ID Charge), are subject to adjustment, as described in Appendix F, Schedule 1 Part A? Is this language proposed simply because such fees can be adjusted as a result of cost of service studies through Section 205 filings? 4) In Appendix F, Schedule 1, Part C, the ISO proposes to modify the definition of "CAISO Other Costs and Revenues" to include Uniform System of Accounts 457.1 (Direct costs charged to associate companies) and 457.2 (Indirect costs charged to associate companies). What is intended to be captured by reference to these accounts? Also, in that text, the ISO proposes to delete reference to "Scheduling Coordinator application and training fees, and fines assessed and collected by the CAISO". The way the ISO has reorganized this provision, it appears limited to those Uniform System of Account numbers cited in the parenthetical. Is this interpretation true, and is the ISO proposing not to include miscellaneous fines in this provision, or, for example, Scheduling Coordinator application fees? If this interpretation is not correct, should the language be clarified to signify that "Scheduling Coordinator application and training fees, and fines assessed and collected by the CAISO" are still included within "CAISO Other Costs and Revenues"? 5) In Appendix F, Schedule 1, Part D, the ISO is proposing to issue the draft budget book (i.e., budget detail) to stakeholders subsequent to the initial submission of the draft budget to the ISO Board. Is it possible to have the budget book disclosed to stakeholders earlier, or alternatively, commit to posting the draft budget book simultaneously when submitted to the ISO Board, and have the Tariff language specifically state such commitment? 6) In Appendix F, Schedule 1, Part D, the ISO proposes to add a "capital projects report" in its periodic financial reports, but delete inclusion of a "statement of operating reserves". Are operating reserves intended to be reported elsewhere? If not, such operating reserves should continue to be described in the ISO's periodic financial reports as useful information to ISO stakeholders.

ISO response
1) Yes, the deletion was to avoid duplicative language. The revenue requirement definitions are described in detail in Appendix F, Schedule 1, Part A. 2) The reference to Section 11.17 was deleted because Section 11.17 is no longer being used. There is no other cross-reference for Section 11.22.2.6. 3) Yes. The language is meant to clarify that all the fees are subject to review and change as part of the three year filing under section 205 not just the percentages, TOR and EIM administrative charges.

ISO response
4) The reference to FERC accounts 457.1 and 457.2 covers the FERC accounts where revenues are reported in the FERC Form 1. Account 457.1 is for "Regional Transmission Revenues" and account 457.2 is for "Regional Transmission Miscellaneous revenues". The tariff was not updated when FERC created these accounts. These accounts include but are not limited to LGIP study fees, SC and CRR application fees, EIM administrative charges, COI path operator charges, EIR forecast fees and all the other fees, fines and charges the ISO collects. Because these FERC accounts include a broad scope of fees, fines and charges, it was not necessary to have a listing of the specific revenues, fines, fees and charges. 5) As discussed on the stakeholder call, the ISO Board needs to review the budget in executive session before it is released to stakeholders. The Board needs the option to make any revision prior to the budget's release. The book is usually published on the ISO website within a week of the Board meeting. 6) In practice, the ISO has not included a statement of operating reserves as part of periodic reporting for some time. However, the statement of capital projects has always been included in the periodic reporting. The tariff language change reflects this reporting practice. There is annual reconciliation of the operating reserve that is provided as an exhibit to the preliminary and final board book published for stakeholder use in October and December of each year.

CDWR comment
1) SWP reviewed the final proposal on 2015 GMC Update. CAISO proposed 2015 GMC will be made up of three service categories and seven fees. These seven fees consist of: 1) Bid Segment Fee, 2) Inter-SC Trade Fee, 3) CRR Transaction Fee, 4) TOR Fee, 5) SCID Fee, 6) EIM Administrative Charge/Fee, and 7) EIR Forecast Fee. It remains unclear whether or not the EIM Administrative Charge/Fee and the EIR Forecast Fee, are deducted from the respective three service categories, similar to the other five GMC fees. In response to SWP's previous comments in this stakeholder process, CAISO stated the EIM Administrative Charge/Fee and EIR Fee will be included in miscellaneous revenues, which are included in the GMC revenue requirement formula under CAISO Other Costs and Revenues, but that these Charges/Fees are not part of the 2015 GMC rate structure. 2) In Appendix F Rate Schedules, Schedule 1, Part A, the CAISO proposes that an updated cost of service study will be done every three years starting in 2018, and that this includes the EIM Administrative Charge. SWP believes this study should be done annually for a new market charge such as EIM whose effects on costs are still less certain.

ISO response
1) SWP is correct that the EIM administrative charges and EIR forecast fees are included in miscellaneous revenue used to determine the total revenue requirement. The rate structure is determined using the three cost category percentages and deducting the remaining fees and charges from the revenue requirement. However, as noted in the comments above, the EIM Administrative Charge is not part of the GMC and is not credited back to the GMC service categories.

ISO response
2) The proposal to perform the cost of service study on a three year cycle was discussed in detail with stakeholders during the 2015 GMC Update initiative and approved by the ISO Board. An annual cost of service study was not considered during the stakeholder process or presented to the Board. In response to the suggestion that the cost of service study should be done more frequently, the ISO notes the administrative costs and burden of conducting an annual study would far outweigh any benefits because there is very little annual change in the ISO's allocation of resources. Furthermore, the ISO's ability to forecast the EIM's impact on resources is fairly predictable because the EIM charge simply actually provides access to an existing market.

Attachment G – Presentation Materials from Stakeholder Meeting

2015 Grid Management Charge Update Proposal

California Independent System Operator Corporation

Briefing on 2015 GMC Update

Mike Epstein
Director Financial Planning

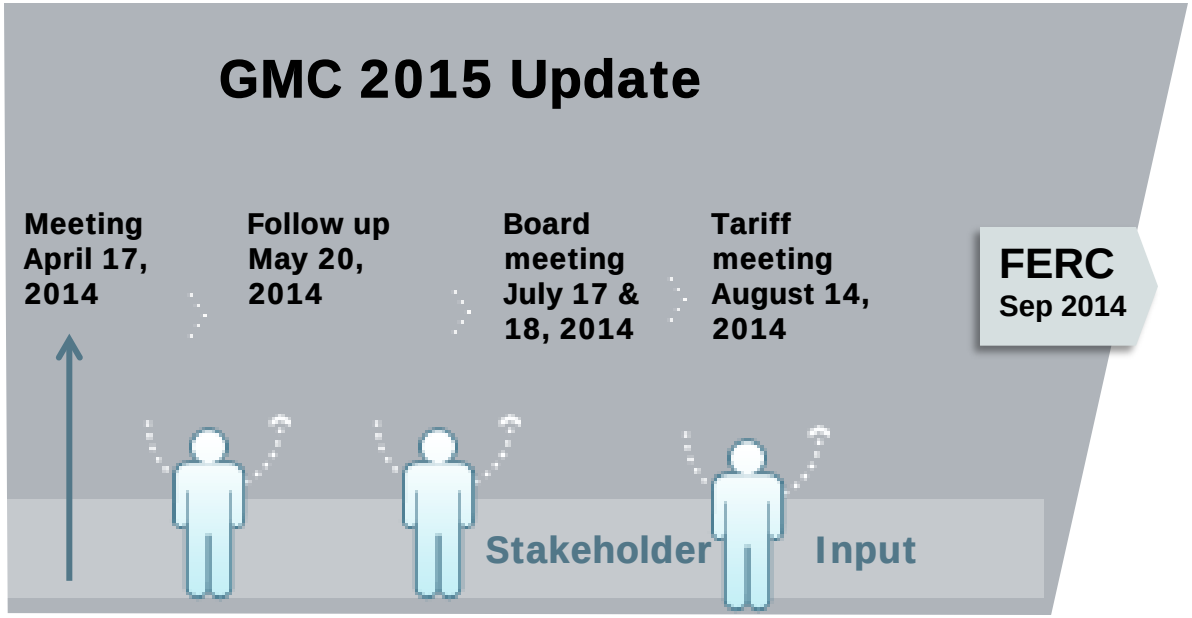
Stakeholder meeting
April 17, 2014

Agenda

TOPIC	PRESENTER
Timeline and GMC update components	Michael Epstein
Overview of Activity Based Costing (ABC)	Tricia Johnstone
Updated cost of service study	Michael Epstein
Revised cost category percentages	Michael Epstein
Updated Energy Imbalance Market (EIM) cost of service study	Michael Epstein
Revised Transmission Ownership Rights (TOR) fee	Michael Epstein
Proposed revenue requirement cap and extension	Michael Epstein
Calendar and next steps	Michael Epstein
Stakeholder feedback and discussion	Group

Timeline and GMC update components

Timeline for 2015 GMC update



We are here

The 2015 GMC update process extends through September.

Current Event	Date
Discussion of proposal with stakeholders	April 17, 2014

Upcoming Events	Date
Follow up stakeholder meeting if necessary	May 20, 2014
Board meeting to consider proposal	July 17-18, 2014
Stakeholder tariff meeting	August 17, 2014
GMC tariff filing with FERC	September 2014

2015 GMC Update Components

- No change in basic structure
  - Three buckets: Market Services, System Operations and Congestion Revenue Rights (CRR) services
  - Four fixed fees: Bid segment, Inter-SC trade, SCID and CRR auction bid
  - Two charges based on updated ABC analysis: EIM and TOR
- Update cost of service percentages to apply to
  - Same process as done in 2012
  - revenue requirement allocation to three buckets
  - EIM administrative charge
  - TOR charges
- New revenue requirement cap and extension period

Updating Cost of Service Study

- Rates calculated by multiplying overall revenue requirement by percentages to allocate costs to the three buckets
  - Market Services
  - System Operations
  - CRR Services
- Rates determined by deducting fees and dividing by estimated volumes
- Cost of service study undertaken to derive the three percentages

The ISO's Revenue Requirement for 2013

Revenue requirement ($ in millions)	2013
O&M	$162.9
Other revenue (Includes interest, PIRP forecast fees, interconnection study fees, etc.)	(7.9)
2008 bond debt service (with 25% reserve)	24.7
2009 bond debt service (with 25% reserve)	17.8
Cash funded capital	24.0
Operating reserve credit	(25.5)
Total	**$196.0**
Transmission volume TWh	244.8
Pro forma bundled GMC ($ per MWh)	$0.80

Calculation of GMC rates for 2013 ($ in millions)

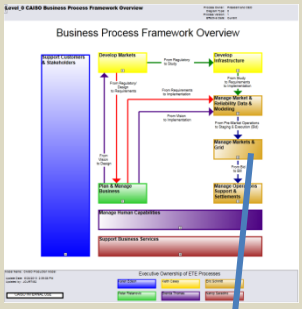
Component	Mkt Svc	Sys Ops	CRR	Total
Apply % to derive category costs	27%	69%	4%	100%
Revenue requirement	$52.9	$135.3	$7.8	$196.0
Less fees and charges: Bid segment	(0.2)			(0.2)
Inter-SC Trade	(2.8)			(2.8)
SCID	(2.1)			(2.1)
TOR charges		(1.0)		(1.0)
CRR Auction Bid			(0.2)	(0.2)
Total fees and charges	(5.1)	(1.0)	(0.2)	(6.3)
Recoverable costs	**$47.8**	**$134.3**	**$7.6**	**$189.7**
Volumes TWh	514.2	474.7	566.6	
Less grandfathered contracts	-	7.2	-	
Net volumes	514.2	467.5	566.6	
Actual Rates for 2013	**$0.093**	**$0.287**	**$0.013**	

Overview of ABC Processes

What is the Business Process Framework?

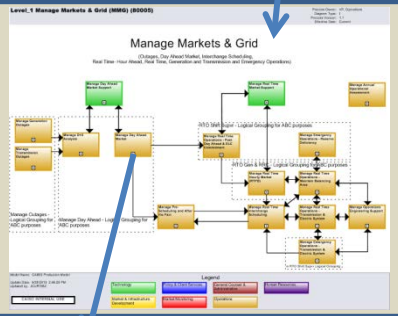
- High level view of ISO activities
  - Groups tactical core processes into strategic groupings
  - Illustrates high-level information streams
- Diagrams provide a visual representation of the work
- Demonstrates flow of ‘work’ through different business processes and business units

ABC data is collected for Level I and II



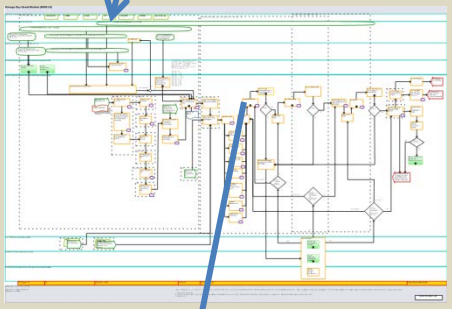
Level 0

End-to-End Business Activities View



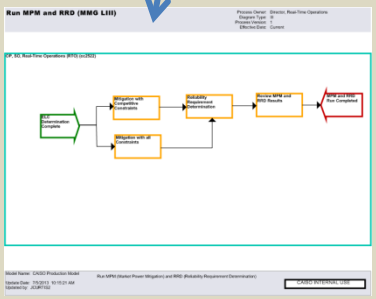
Level I

"Strategic" – Processes



Level II

"Tactical" – Core Business Processes

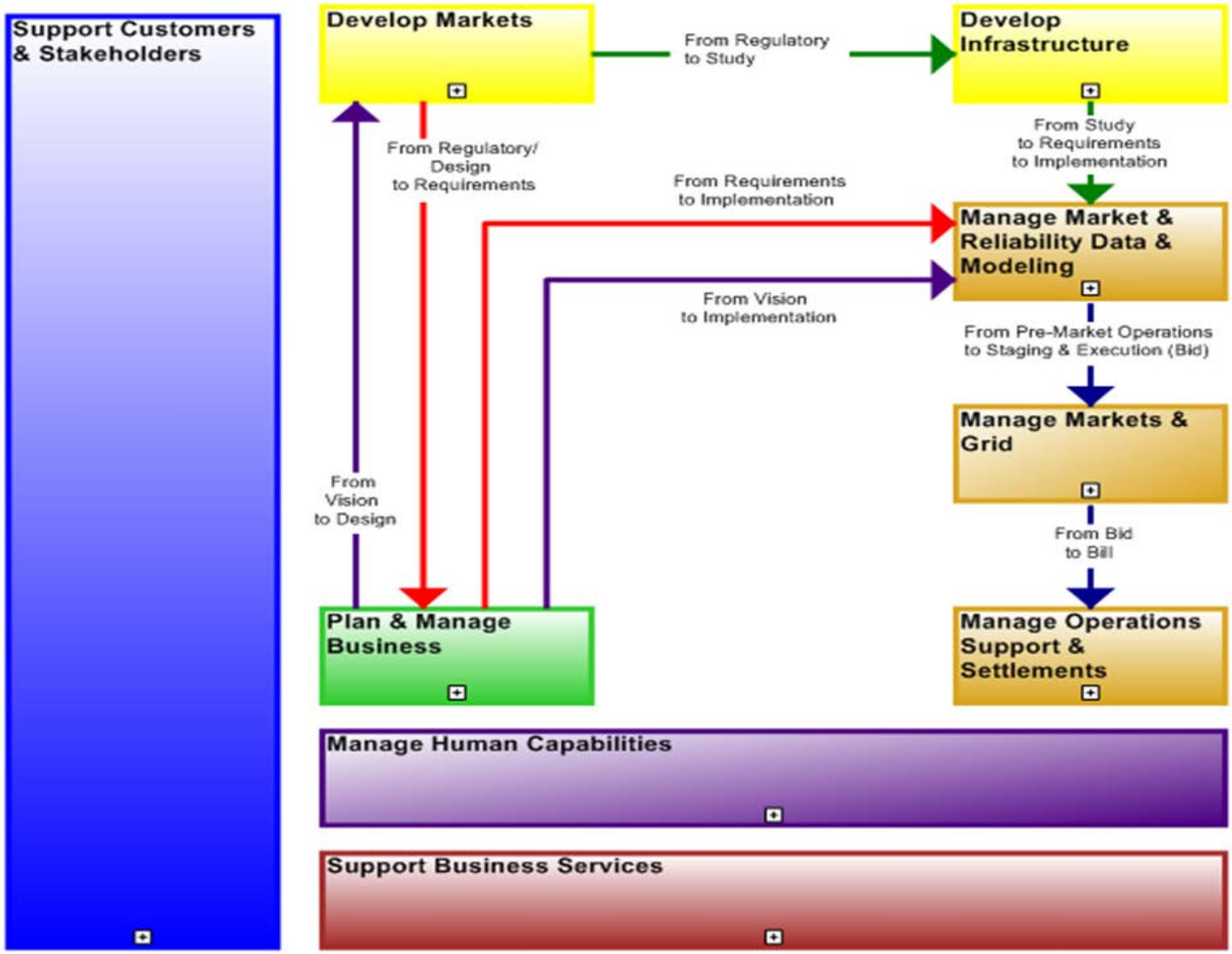


Level III

"Procedural" – Task Level Activities

ISO Mapping of Core Business Processes

- 9 High level activities
- 6 direct and 3 support
- Time tracked at level 2 for 154 activities
- Completed in 2011



Level 1 Direct Activities with example of major level 2 processes
(see detail in exhibit 1)

- Develop infrastructure (80001) – transmission planning - 9 level 2 activities
- Develop markets (80002) – design and implement wholesale market - 7 level 2 activities
- Manage market and reliability data and modeling (80004) - full network model – 19 level 2 activities
- Operate market and grid (80005) – system operations, scheduling and outages – 10 level 2 activities
- Manage operations support and settlements (80007) – metering, settlements and market quality – 15 level 2 activities
- Support customers and stakeholders (800010) – client and external relations – 8 level 2 activities

Level 1 Support Activities with example of major level 2 processes
(see detail in exhibit 1)

- Manage human capabilities (80003) – human resources – 8 level 2 activities
- Plan and manage business (80008) – CEO, planning and governance – 16 level 2 activities
- Support business services (80009) – IT, facilities, compliance and legal – 42 level 2 activities

Updated cost of service study

Mapping Activities and Software To Service Categories

- Mapped activities and software to four categories:
  - Market services
  - System Operations
  - CRR services
  - Indirect costs – no distinguishable attribute to either specific category
- Used following rules:
  - 100% or 0% if entirely in one category or not
  - 50% / 50% if supports both market services and system operations
    - or its split after 10% went to CRRs thus 45% / 45%
  - 80% / 20% if partially in one activity or the other

Cost of Service Update

- Same process as 2012
- Break 2013 O&M into payroll and non-payroll costs
- 2013 hours used to allocate cost center $s to activities
  - 6 direct activities broken down into level 2 activities
  - 3 support activities remain at level 1
  - Budget allocated by multiplying % of department time in each level 1 or level 2 activity
- Resulting activity costs then mapped to 3 service categories or indirect
  - Direct level 2 activities
  - Support level 1 activities
- Mapped non-payroll costs to 3 service categories or indirect

Breakdown of O&M Costs (amounts in millions)

	Total	CEO	MID	Tech	Ops	GCAS	MQRI	PCS
Develop infrastructure	$ 10.0		$ 9.7			$ 0.1	$ 0.2	
Develop markets	5.8		3.3		$ 0.1	0.4	2.0	
Manage market and reliability data and modeling	10.5		0.4	$ 1.3	7.5	0.6	0.3	$ 0.4
Manage market and grid	25.8			0.8	24.7		0.3	
Manage operations support and settlements	7.1			0.2	5.5	0.2	1.2	
Support customers and stakeholders	9.2			0.1		0.1		9.0
Total direct	**68.4**		**13.4**	**2.4**	**37.8**	**1.4**	**4.0**	**9.4**
Manage human capabilities	4.9					4.9		
Plan and manage business	10.0	$ 1.9		4.9	1.1	1.9	0.2	
Support business services	49.8	2.8	0.5	31.0	3.1	11.2	0.7	0.5
Total Indirect	**64.7**	**4.7**	**0.5**	**35.9**	**4.2**	**18.0**	**0.9**	**0.5**
Total ABC activities	**133.1**	**4.7**	**13.9**	**38.3**	**42.0**	**19.4**	**4.9**	**9.9**
Total non-payroll	**29.8**			**20.3**	**0.7**	**7.8**	**1.0**	
Total O&M costs	**$162.9**	**$ 4.7**	**$13.9**	**$ 58.6**	**$ 42.7**	**$ 27.2**	**$ 5.9**	**$ 9.9**

Cost of Service Update

Divisional abbreviations used in chart on preceding page

- CEO – Chief executive officer
- MID – Market and infrastructure development
- Tech – Technology
- Ops – Operations
- GCAS – General counsel and administrative services
- MQRI – Market quality and renewable integration
- PCS – Policy and client services

Summary of Direct Activities (amounts in thousands)

components	%	Total budget	Market Services	System operations	CRR services	Indirect
Develop infrastructure	15%	$ 9,993		$ 9,615		$ 378
Develop markets	8%	5,799	$ 3,846	829		1,124
Manage market and reliability data and modeling	15%	10,476	2,229	7,161	$ 633	453
Manage market and grid	39%	25,777	4,473	21,304		
Manage operations support and settlements	10%	7,133	2,315	3,595	212	1,011
Support customers and stakeholders	13%	9,186		8		9,178
Total direct	**100%**	**$ 68,364**	**$ 12,863**	**$ 42,512**	**$ 845**	**$ 12,144**

Cost of Service Update

- Mapped software to 3 service categories or indirect
  - Allocated 2008 debt service based on mapping
- Mapped remaining revenue requirement components to 3 service categories or indirect
  - 2009 bond debt service and cash funded capital
  - Other revenue and
  - Operating reserve credit
- Aggregated amounts in 3 service categories and indirect
- Allocated Indirect costs based on %s of direct costs

Summary of Cost of Service Study (amounts in thousands)

Components	Total budget	Market Services	System operations	CRR services	Indirect
Direct O&M	$ 68,364	$ 12,863	$ 42,512	$ 845	$ 12,144
Support O&M	64,686				64,686
Non-payroll O&M	29,857	614	1,759	53	27,431
2008 bonds	24,666	7,263	12,481	1,196	3,726
2009 bonds	17,847				17,847
Cash funded capital	24,000				24,000
Other income	(7,900)	(660)	(4,940)		(2,300)
Operating reserve credit	(25,492)	(1,647)	(2,897)	(284)	(20,664)
Total before indirect	196,028	18,433	48,915	1,810	126,870
Allocate indirect		34,255	88,809	3,806	(126.870)
Total	$ 196,028	$ 52.688	$ 137,724	$ 5,616	$ -
Percentage		27%	70%	3%	

Proposed cost category percentages

Service Category	Current %'s (from 2010 study)	Proposed 2015 %'s (using 2013 study)	Change
Market Services	27%	27%	-
System Operations	69%	70%	1%
CRR Services	4%	3%	(1%)

Updated Energy Imbalance Market (EIM) cost of service study

Determine rates for calculation of EIM administrative Charge

- Started with 2013 revenue requirement broken down into 3 services using cost of service study %s of 27% for market services, 70% for system operations and 3% for CRR services.
- Applied fees to 3 service categories
  - Market Services - Bid segment, Inter-SC trades and SCID fees
  - System Operations – TORs fees
  - CRR services - CRR auction bid fees
- Divided resulting costs by estimated 2013 volumes to derive rates:
  - Market services = $0.09;
  - System operations = $0.29;
  - CRR services = $0.001

Calculation of Rates Using Cost of Service Study

($ amounts in thousands)

components	Total budget	Market Services	System operations	CRR services
Apply updated % allocation		27%	70%	3%
Revenue requirement	$196,028	$ 52,688	$ 137,724	$ 5,616
Less: Bid segment fees	(203)	(203)		
Inter-SC trade fees	(2,781)	(2,781)		
SCID monthly fees	(2,079)	(2,079)		
TOR charges	(993)		(993)	
CRR auction bid fees	(186)			(186)
Total fees	(6,242)	(5,063)	(993)	(186)
Total	$189,786	$ 47,625	$ 136,731	$ 5,430
Estimated volumes in MW or MWh		514,168	467,533	566,649
Rate per MW or MWh rounded		$0.09	$0.29	$0.01

EIM administrative charge rate (EIM rate)

- EIM rate is the aggregate of real time (RT) share of
  - Market Services: $0.09 and System Operations: $0.29
- Break down Market Services and System Operations into their RT components: RT market and RT dispatch
- RT % equals % of RT $'s over total category $s:
  - Market services RT market: $28.9M / $47.6M = 61%
  - System operations RT dispatch: $60.9M / $136.7M = 45%
- RT rates equal RT %'s times category rates
  - RT market (market services): 61% x $0.09 = $0.06
  - RT dispatch (system operations): 45% x $0.29 = $0.13
- Aggregate RT rates to derive EIM rate
  - $0.06 RT market + $0.13 RT dispatch
  - Equals EIM rate of $0.19

Breakdown of Market Services

($ amount in thousands)

components	Market Services	Real Time Market	Day Ahead Market
Direct O&M	$12,863	$8,075	$4,788
Non-payroll O&M	614	553	61
Debt service 2008 bonds	7,263	3,152	4,111
Other income	(660)	(544)	(116)
Operating reserve credit	(1,647)	(708)	(939)
Allocate indirect	34,255	19,525	14,730
Total before fees	52,688	30,053	22,635
Less Fees and charges (bid segment, Inter-SC trade and SCID)	(5,063)	(1,142)	(3,921)
Net revenue requirement	**$47,625**	**$28,911**	**$18,714**
Percentage	100%	**61%**	39%
Rate	$0.09	**$0.06**	

Breakdown of System Operations

($ amount in thousands)

components	System Operations	Real Time Dispatch	Balancing Area Services
Direct O&M	$42,512	$14,093	$28,419
Non-payroll O&M	1,759	1,653	106
Debt service 2008 bonds	12,481	10,555	1,926
Other income	(4,940)	(1,878)	(3,062)
Operating reserve credit	(2,897)	(2,462)	(435)
Allocate indirect	88,809	39,964	48,845
Total before fees	137,724	61,925	75,799
Less fees and charges (TORs)	(993)	(993)	
Net revenue requirement	**$136,731**	**$60,932**	**$75,799**
Percentage	100%	**45%**	55%
Rate	$0.29	**$0.13**	

Proposed EIM Administrative Charge – based on updated cost of service analysis

EIM Administrative Charge	Total	Real time market component	Real Time Dispatch component
Proposed EIM administrative charge from 2013 study	$0.19	$0.06	$0.13
Current EIM administrative charge from 2010 study	$0.19	$0.06	$0.13

Updated Transmission Ownership Rights (TOR) charge

TOR charge rate

- TOR involves 9 direct level 2 activities in system operations
- Aggregate direct system operations level 2 $'s and allocate system operations indirect $'s by share of direct $s
  - $16M / $49M = 32% x $89M = $28M indirect+16M direct = $44M total
- Determine TOR flows as % of total flows =
  - 8M TWh / 481TWh = 1.7%
- Multiply TOR % of flow times TOR related costs
  - 1.7% x $44M = $0.7M = amount to collect
- Divide by 2013 budgeted flows to derive rate of $0.24
  - $0.7M / 3.2 MWh = $0.24 per MWh

	Current rate	Proposed rate	Change
TOR charge	$0.27	$0.24	($0.03)

Proposed revenue requirement cap and extension

Revenue Requirement Cap

Current revenue requirement cap is $199M

- Expires at end of 2014

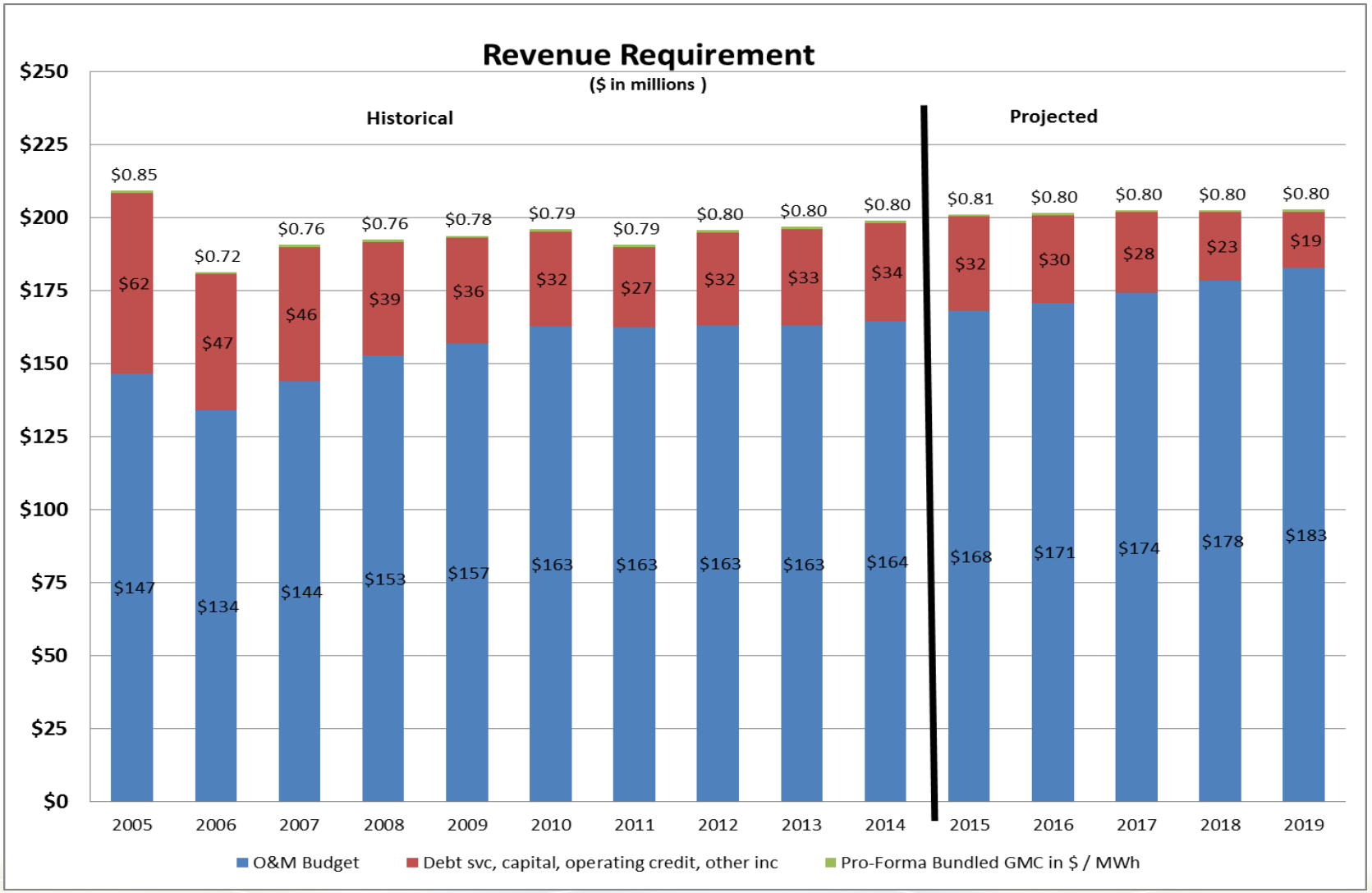
Propose increase in cap to $202M with no expiration

- Only a 1% increase
- Less than a 0.6% annual increase since 2007 (7 years)

Update cost of service study on a 3 year cycle

- Change service category percentages, EIM rate and TOR rate as needed

Historical and Projected Revenue requirement



Calendar and next steps

Calendar of Events in 2014

Month	Upcoming Events
April 17	2015 GMC Update stakeholder meeting
May 20	2015 GMC Update stakeholder meeting if necessary
May 28-29	May Board meeting
June 17	**2015 ISO budget stakeholder kickoff meeting**
July 17-18	2015 GMC Update to Board for approval
August 14	2015 GMC Update stakeholder meeting on tariff language
September	2015 GMC Update filed with FERC
September 18-19	**2015 ISO budget to Board for review and posting**
October 17	**2015 ISO budget stakeholder meeting**
November 6-7	November board meeting
December 18-19	**2015 ISO budget to Board for approval**

Next Steps

Written stakeholder comments due to ISO	April 24
• Send to GMC@caiso.com	
ISO posts comments	April 25
ISO posts response to comments	May 1

Stakeholder feedback and discussion

Attachment H – Clean Tariff Sheets

2015 Grid Management Charge Update Proposal

California Independent System Operator Corporation

11.22.2.5 Allocation of the GMC Among Scheduling Coordinators

The costs recovered through the Grid Management Charge shall be allocated to the service charges that comprise the Grid Management Charge. The costs recovered through the Grid Management Charge shall not exceed $202 million 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; and

(c) CRR Services Charge.

The charges shall be levied separately monthly in arrears on all Scheduling Coordinators based on the billing determinants specified below for each charge in accordance with formulae set out 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.

* * *

11.22.2.6 Calculation and Adjustment of the Grid Management Charge

The charges set forth in Section 11.22.2.5 that comprise the Grid Management Charge shall be calculated annually through the formula set forth in Appendix F, Schedule 1, Part A. The CAISO shall post on the CAISO Website each year, before the rates go into effect, as described in Appendix F, Schedule 1, Part D, data showing the adjustment to the rates to reflect any change in the annual revenue requirement, variance between forecast and actual costs for the previous year or period, or any surplus revenues from the previous year or period, or the inability to recover from a Scheduling Coordinator its share of the Grid Management Charge, or any under-achievement of a forecast of the billing determinant volumes used to establish the rates.

Appendix F, Schedule 1, Part B sets forth the conditions under which a quarterly adjustment to the Grid Management Charge will be made.

* * *

11.22.4 TOR Charges

The ISO will exempt TORs from the Market Services Charge and the System Operations Charge that are calculated through the formula set forth in Appendix F, Schedule 1, Part A. The TOR Charge will be $0.24/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 Charges against the revenue requirement for System Operations Charge as described in Appendix F, Schedule 1, Part A.

11.22.5 Bid Segment Fee

Each Scheduling Coordinator submitting a Bid will be subject to a Bid Segment Fee of $0.005 per segment of the Bid. The Bid Segment Fee is subject to adjustment as described in Appendix F, Schedule 1, Part A. The CAISO will credit amounts recovered through the Bid Segment Fee against the revenue requirement for Market Services Charge as described in Appendix F, Schedule 1, Part A.

11.22.6 CRR Transaction Fee

Each Scheduling Coordinator submitting a CRR Allocation nomination or CRR Auction bid will be subject to a CRR Transaction Fee of $1.00 per submitted nomination or bid. The CRR Transaction Fee is subject to adjustment as described in Appendix F, Schedule 1, Part A. The CAISO will credit amounts recovered through the CRR Transaction Fee against the revenue requirement for CRR Services Charge as described in Appendix F, Schedule 1, Part A.

11.22.7 Inter-Scheduling Coordinator Trade Transaction Fee

Each Scheduling Coordinator submitting an Inter-Scheduling Coordinator Trade will be subject to a Inter-Scheduling Coordinator Trade Transaction Fee of $1.00 per party per Inter-Scheduling Coordinator Trade. The Inter-Scheduling Coordinator Trade Transaction Fee is subject to adjustment as described in Appendix F, Schedule 1, Part A. The CAISO will credit amounts

recovered through the Inter-Scheduling Coordinator Trade Transaction Fee against the revenue requirement for Market Services Charge as described in Appendix F, Schedule 1, Part A.

11.22.8 Scheduling Coordinator ID Charge

The Scheduling Coordinator ID Charge for each Scheduling Coordinator is $1,000.00 per month, per Scheduling Coordinator ID Code for any Trading Month in which the Scheduling Coordinator has market activity. The Scheduling Coordinator ID Charge is subject to adjustment as described in Appendix F, Schedule 1, Part A. The CAISO will credit amounts recovered through the Scheduling Coordinator ID Charges against the revenue requirement for Market Services Charges as described in Appendix F, Schedule 1, Part A.

* * *

Appendix A

Definitions

* * *

- Bid Segment Fee

The Grid Management Charge fee described at Section 11.22.5.

* * *

- CAISO Cash-Funded Capital and Project Costs

Costs for projects or studies undertaken during the year or over several years, determination of requirements for capital, projects or assets with a useful life of more than one (1) year and project office labor devoted to capital that are funded from the Grid Management Charge instead of being financed.

* * *

- CAISO Financing Costs

The CAISO's financing costs that are approved by the CAISO Governing Board, including capital expenditures that may be financed over such period as the CAISO Governing Board shall decide. These costs include the requirement to collect an amount in excess of the annual debt service obligations as specified in the rate covenants of the official statements for each CAISO bond offering.

* * *

* * *

- CRR Services Charge

The Grid Management Charge component described in Section 11.22.2.5.3.

- CRR Transaction Fee

The Grid Management Charge fee described in Section 11.22.6.

-EIM Administrative Charge

The fee imposed on transactions in the energy imbalance market as described in Section 29.11(i)(1).

* * *

- 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.

* * *

- Inter-SC Trade Transaction Fee

The Grid Management Charge fee described in Section 11.22.7.

* * *

- Market Services Charge

The Grid Management Charge component described in Section 11.22.2.5.1.

* * *

- Scheduling Coordinator ID Charge

The Grid Management Charge charge described in Section 11.22.8.

* * *

- System Operations Charge

The Grid Management Charge component described in Section 11.22.2.5.2.

* * *

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: (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, shall be allocated to the service charges specified in Part A of this Schedule 1 as follows: twenty seven (27) percent to Market Services; seventy (70) percent to System Operations; and three (3) percent to CRR Services. Starting in 2017 and every three (3) years thereafter, 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 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, as well as the EIM Administrative 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 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 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 by forecast annual gross absolute value of MWh of real-time energy flows on the ISO Controlled Grid, net of amounts excluded pursuant to Part E of this Schedule.
3. The rate for the CRR Services Charge will be calculated by dividing the annual GMC revenue requirement allocated to this service category by the forecast annual sum of awarded MW of CRRs per hour.

The rates for the foregoing charges 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 B – Quarterly Adjustment, If Required

Each component rate of the GMC will be adjusted automatically on a quarterly basis, up or down, so that rates reflect the annual revenue requirement as posted on the CAISO Website, as applicable, if the estimated revenue collections for that component, after accounting for revenue collected from the Bid Segment Transaction Fee, the CRR Transaction Fee, the Inter-Scheduling Coordinator Trade Transaction Fee, the Scheduling Coordinator ID Charge and the TOR Charge, on an annual basis, change by more than two (2) percent or $1 million, whichever is greater, during the year. Such adjustment may be implemented not more than once per calendar quarter, and will be effective the first day of the next calendar month.

The rates will be adjusted according to the formulae listed in Appendix F, Schedule 1, Part A with the billing determinant(s) readjusted on a going-forward basis to reflect the change of more than two (2) percent or $1 million, whichever is greater, from the estimated revenue collections provided in the annual informational filing.

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 excess or shortfall in collections of the prior year’s rates compared to the budgeted amounts;

(b) The excess or shortfall in actual CAISO Operating Costs, CAISO Other Costs and Revenues and CAISO Financing Costs for the prior year compared to the budgeted amounts;

(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.

Part D – Information Requirements

Budget Schedule

The CAISO will convene, prior to the commencement of the annual budget process, an initial meeting with stakeholders to: (a) receive ideas to control CAISO costs; (b) receive ideas for projects to be considered in the capital budget development process; and, (c) receive suggestions for reordering CAISO priorities in the coming year.

Within two (2) weeks of the initial meeting, the ideas presented by the stakeholders shall be communicated in writing to the CAISO's officers, directors and managers as part of the budget development process, and a copy of this communication shall be made available to stakeholders.

The CAISO shall submit the following information either at the initial meeting with stakeholders or subsequent to the initial submission of the draft budget to the CAISO Governing Board: (a) proposed capital budget with indicative projects for the next 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) 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.

Subsequent to the initial submission of the draft budget to the CAISO Governing Board, the CAISO will provide stakeholders expenditures and activities in detail for the next subsequent calendar year (in the form of a draft of the budget book for the CAISO Governing Board). Certain of this detailed information which is deemed commercially sensitive will only be made available to parties that pay the CAISO's GMC (or regulators) who execute a confidentiality agreement.

The CAISO shall provide such materials on a timely basis to provide stakeholders at least one full Board meeting cycle to review and prepare comments on the draft annual budget to the CAISO Governing Board.

At least one month prior to the CAISO Governing Board meeting scheduled to consider approval of the proposed budget, the CAISO will hold a meeting open to all stakeholders to discuss the details of the CAISO's budget and revenue requirement for the forthcoming year.

Prior to a final recommendation by the CAISO Governing Board on the CAISO's draft annual budget, the CAISO shall respond in writing to all written comments on the draft annual budget submitted by stakeholders and/or the CAISO shall issue a revised draft budget indicating in detail the manner in which the stakeholders' comments have been taken into consideration.

The CAISO will provide no fewer than forty-five (45) days for stakeholder review of its annual budget between initial budget posting and final approval of the budget by the CAISO Governing Board.

Budget Posting

After the approval of the annual budget by the CAISO Governing Board, the CAISO will post on the CAISO Website the CAISO operating and capital budget to be effective during the subsequent fiscal year, and the billing determinant volumes used to develop the rate for each component of the GMC, together with workpapers showing the calculation of such rates.

Periodic Financial Reports

The CAISO will create periodic financial reports consisting of an income statement, balance sheet, capital projects report and such other reports as are required by the CAISO Governing Board. The periodic financial reports will be posted on the CAISO Website not less than quarterly.

Attachment I – Marked Tariff Sheets

2015 Grid Management Charge Update Proposal

California Independent System Operator Corporation

11.22.2.5 Allocation of the GMC Among Scheduling Coordinators

The costs recovered through the Grid Management Charge shall be allocated to the service charges that comprise the Grid Management Charge. The costs recovered through the Grid Management Charge shall not exceed $202~~197~~ million ~~for 2012 and $199 million for 2013 and 2014~~ unless the CAISO submits a tariff amendment increasing this ~~such~~ amount~~s~~ pursuant to Section 205 of the FPA and FERC accepts such amendment. ~~For subsequent years, the ISO must submit a tariff amendment establishing a maximum revenue requirement, which shall be subject to FERC approval.~~ 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; and

(c) CRR Services Charge.

The charges shall be levied separately monthly in arrears on all Scheduling Coordinators based on the billing determinants specified below for each charge in accordance with formulae set out 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.

* * *

11.22.2.6 Calculation and Adjustment of the Grid Management Charge

The charges set forth in Section 11.22.2.5 that comprise the Grid Management Charge shall be calculated annually through the formula set forth in Appendix F, Schedule 1, Part A.

~~The formula set forth in Appendix F, Schedule 1, Part C sums the CAISO Operating Costs (less any available expense recoveries), CAISO Other Costs and Revenues, CAISO Financing Costs, and CAISO Operating Cost Reserve adjustment and CAISO Cash-Funded Capital and Project Costs associated with each of the CAISO service charges to obtain a total revenue requirement.~~

~~This revenue requirement is allocated to each service as follows: twenty seven (27) percent to Market Services; sixty nine (69) percent to System Operations; and four(4) percent to CRR Services.~~

~~The revenue requirement for each service then shall be divided by the forecast annual or periodic billing determinant volume to obtain a rate for each service, which will be payable by Scheduling Coordinators as set forth in Section 11.22.2.5. The rates so established will be adjusted annually, through the operation of the formula set forth in Appendix F, Schedule 1, Part A.~~ The CAISO shall post on the CAISO Website each year, before the ~~adjusted~~ rates go into effect, as described in Appendix F, Schedule 1, Part D, data showing the adjustment to the rates ~~adjusted~~ to reflect any change in the annual revenue requirement, variance between forecast and actual costs for the previous year or period, or any surplus revenues from the previous year or period ~~(as defined in Section 11.17)~~, or the inability to recover from a Scheduling Coordinator its share of the Grid Management Charge, or any under-achievement of a forecast of the billing determinant volumes used to establish the rates. Appendix F, Schedule 1, Part B sets forth the conditions under which a quarterly adjustment to the Grid Management Charge will be made.

* * *

11.22.4 TOR Charges

The ISO will exempt TORs from the Market Services Charge and the System Operations Charge that are calculated through the formula set forth in Appendix F, Schedule 1, Part A. The TOR Charge will be $0.24~~7~~/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 Charges against the revenue requirement for System Operations Charge as described in Appendix F, Schedule 1, Part A.

11.22.5 Bid Segment Fee

Each Scheduling Coordinator submitting a Bid will be subject to a Bid Segment Fee of $0.005 per segment of the Bid. The Bid Segment Fee is subject to adjustment as described in Appendix F, Schedule 1, Part A. The CAISO will credit amounts recovered through the Bid Segment Fee

against the revenue requirement for Market Services Charge as described in Appendix F, Schedule 1, Part A.

11.22.6 CRR Transaction Fee

Each Scheduling Coordinator submitting a CRR Allocation nomination or CRR Auction bid will be subject to a CRR Transaction Fee of $1.00 per submitted nomination or bid. The CRR Transaction Fee is subject to adjustment as described in Appendix F, Schedule 1, Part A. The CAISO will credit amounts recovered through the CRR Transaction Fee against the revenue requirement for CRR Services Charge as described in Appendix F, Schedule 1, Part A.

11.22.7 Inter-Scheduling Coordinator Trade Transaction Fee

Each Scheduling Coordinator submitting an Inter-Scheduling Coordinator Trade will be subject to a Inter-Scheduling Coordinator Trade Transaction Fee of $1.00 per party per Inter-Scheduling Coordinator Trade. The Inter-Scheduling Coordinator Trade Transaction Fee is subject to adjustment as described in Appendix F, Schedule 1, Part A. The CAISO will credit amounts recovered through the Inter-Scheduling Coordinator Trade Transaction Fee against the revenue requirement for Market Services Charge as described in Appendix F, Schedule 1, Part A.

11.22.8 Scheduling Coordinator ID Charge

The Scheduling Coordinator ID Charge for each Scheduling Coordinator is $1,000.00 per month, per Scheduling Coordinator ID Code for any Trading Month in which the Scheduling Coordinator has market activity. The Scheduling Coordinator ID Charge is subject to adjustment as described in Appendix F, Schedule 1, Part A. The CAISO will credit amounts recovered through the Scheduling Coordinator ID Charges against the revenue requirement for Market Services Charges as described in Appendix F, Schedule 1, Part A.

* * *

Appendix A

Definitions

* * *

- Bid Segment Fee

The Grid Management Charge fee described at Section 11.22.5.

* * *

- CAISO Cash-Funded Capital and Project Costs

Costs for projects or studies undertaken during the year or over several years, determination of requirements for capital, projects or assets with a useful life of more than one (1) year and project office labor devoted to capital that are funded from the Grid Management Charge instead of being financed.

* * *

- CAISO Financing Costs

The CAISO's financing costs that are approved by the CAISO Governing Board, including capital expenditures that may be financed over such period as the CAISO Governing Board shall decide. ~~CAISO Financing Costs shall also include the CAISO Start Up and Development Costs. The amortized amount to be included in the Grid Management Charge shall be equal to the amount necessary to amortize fully all CAISO Start Up and Development Costs over a period of five (5) years, or such longer period as the CAISO Governing Board shall decide.~~ These costs include the requirement to collect an amount in excess of the annual debt service obligations as specified in the rate covenants of the official statements for each CAISO bond offering.

* * *

~~**- CAISO Memorandum Account**~~**[Not Used]**

~~The memorandum account established by each California IOU pursuant to California Public Utilities Commission Order D. 96-08-038 date August 2, 1996 which records all CAISO start up and development costs incurred by that California IOU.~~

* * *

~~**- CAISO Start Up And Development Costs**~~**[Not Used]**

~~The CAISO's costs outstanding to the credit of the CAISO Memorandum Account plus any additional start up or development costs incurred after the date of Resolution E 3459 (July 17, 1996), plus any additional capital expenditure incurred by the CAISO in 1998.~~

* * *

- CRR Services Charge

The Grid Management Charge component described in Section 11.22.2.5.3.

- CRR Transaction Fee

The Grid Management Charge fee described in Section 11.22.6.

- EIM Administrative Charge

The fee imposed on transactions in the energy imbalance market as described in Section 29.11(i)(1).

* * *

- 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, ~~and~~ 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.

* * *

- Inter-SC Trade Transaction Fee

The Grid Management Charge fee described in Section 11.22.7.

* * *

- Market Services Charge

The Grid Management Charge component described in Section 11.22.2.5.1.

* * *

- Scheduling Coordinator ID Charge

The Grid Management Charge charge described in Section 11.22.8.

* * *

- System Operations Charge

The Grid Management Charge component described in Section 11.22.2.5.2.

* * *

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: (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, shall be allocated to the service charges specified in Part A of this Schedule 1 as follows: twenty seven (27) percent to Market Services; seventy ~~sixty nine~~ (70~~69~~) percent to System Operations; and three~~four~~ (3~~4~~) percent to CRR Services. Starting in 2017~~8~~ and every three (3) years thereafter, 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 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, as well as the EIM Administrative 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 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 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 by forecast annual gross absolute value of MWh of real-time energy flows on the ISO Controlled Grid, net of amounts excluded pursuant to Part E of this Schedule.
3. The rate for the CRR Services Charge will be calculated by dividing the annual GMC revenue requirement allocated to this service category by the forecast annual sum of awarded MW of CRRs per hour.

The rates for the foregoing charges 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 B – Quarterly Adjustment, If Required

Each component rate of the GMC will be adjusted automatically on a quarterly basis, up or down, so that rates reflect the annual revenue requirement as posted on the CAISO Website, as

applicable, if the estimated revenue collections for that component, after accounting for revenue collected from the Bid Segment Transaction Fee, the CRR Transaction Fee, the Inter-Scheduling Coordinator Trade Transaction Fee, ~~and~~ the Scheduling Coordinator ID Charge and the TOR Charge, on an annual basis, change by more than two (2) percent or $1 million, whichever is greater, during the year. Such adjustment may be implemented not more than once per calendar quarter, and will be effective the first day of the next calendar month.

The rates will be adjusted according to the formulae listed in Appendix F, Schedule 1, Part A with the billing determinant(s) readjusted on a going-forward basis to reflect the change of more than two (2) percent or $1 million, whichever is greater, from the estimated revenue collections provided in the annual informational filing.

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 Financing Costs, including debt service on CAISO Start Up and Development Costs and subsequent capital expenditures;~~
- 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 ~~except for the collection of the remaining payments of the 2008 bonds which shall be divided evenly between 2012 and 2013~~.

(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, ~~and~~ 456, 457.1 and 457.2 subaccounts). ~~, including but not limited to Scheduling Coordinator application and training fees, and fines assessed and collected by the CAISO.~~

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

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

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

(b) The excess or shortfall in actual CAISO Operating Costs, CAISO Other Costs and Revenues and CAISO Financing Costs for the prior year compared to the budgeted amounts;

(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.

Part D – Information Requirements

Budget Schedule

The CAISO will convene, prior to the commencement of the annual budget process, an initial meeting with stakeholders to: (a) receive ideas to control CAISO costs; (b) receive ideas for projects to be considered in the capital budget development process; and, (c) receive suggestions for reordering CAISO priorities in the coming year.

Within two (2) weeks of the initial meeting, the ideas presented by the stakeholders shall be communicated in writing to the CAISO's officers, directors and managers as part of the budget development process, and a copy of this communication shall be made available to stakeholders.

The CAISO shall submit the following information either at the initial meeting with stakeholders or s~~S~~ubsequent to the initial submission of the draft budget to the CAISO Governing Board~~, the CAISO will provide stakeholders with the following information~~: (a) proposed capital budget with indicative projects for the next 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 next subsequent calendar year (in the form of a draft of the budget book for the CAISO 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.

Subsequent to the initial submission of the draft budget to the CAISO Governing Board, the CAISO will provide stakeholders expenditures and activities in detail for the next subsequent calendar year (in the form of a draft of the budget book for the CAISO Governing Board). Certain of this detailed information which is deemed commercially sensitive will only be made available to parties that pay the CAISO's GMC (or regulators) who execute a confidentiality agreement.

The CAISO shall provide such materials on a timely basis to provide stakeholders at least one full Board meeting cycle to review and prepare comments on the draft annual budget to the CAISO Governing Board.

At least one month prior to the CAISO Governing Board meeting scheduled to consider approval of the proposed budget, the CAISO will hold a meeting open to all stakeholders to discuss the details of the CAISO's budget and revenue requirement for the forthcoming year.

Prior to a final recommendation by the CAISO Governing Board on the CAISO's draft annual budget, the CAISO shall respond in writing to all written comments on the draft annual budget submitted by stakeholders and/or the CAISO shall issue a revised draft budget indicating in detail the manner in which the stakeholders' comments have been taken into consideration.

The CAISO will provide no fewer than forty-five (45) days for stakeholder review of its annual budget between initial budget posting and final approval of the budget by the CAISO Governing Board.

Budget Posting

After the approval of the annual budget by the CAISO Governing Board, the CAISO will post on the CAISO Website the CAISO operating and capital budget to be effective during the subsequent fiscal year, and the billing determinant volumes used to develop the rate for each component of the GMC, together with workpapers showing the calculation of such rates.

Periodic Financial Reports

The CAISO will create periodic financial reports consisting of an income statement, balance sheet, capital projects report ~~statement of operating reserves,~~ and such other reports as are required by the CAISO Governing Board. The periodic financial reports will be posted on the CAISO Website not less than quarterly.