Decision **PROPOSED DECISION OF ALJ ROSCOW** **(Mailed 6/7/2016)**

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Joint Application of Pacific Gas and Electric Company (U39E), Southern California Edison Company (U338E) and San Diego Gas & Electric Company (U902E) for Adoption of Electric Revenue Requirements and Rates Associated with the Market Redesign and Technology Upgrade (MRTU) Initiative.	Application 12-01-014 (Filed January 31, 2012)

DECISION APPROVING 2010 UTILITY EXPENDITURES FOR CAISO MARKET REDESIGN TECHNOLOGY UPGRADE IMPLEMENTATION ACTIVITIES

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DECISION APPROVING 2010 UTILITY EXPENDITURES FOR CAISO MARKET REDESIGN TECHNOLOGY UPGRADE IMPLEMENTATION ACTIVITIES

Summary

This Decision resolves the California Public Utilities Commission's (Commission) review of the implementation of the California Independent System Operator's "Market Redesign and Technology Upgrade" by Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company. Having completed our review, we determine the following:

1. Each utility has demonstrated that it reasonably and prudently identified and followed best industry practices in developing and implementing the California Independent System Operator's Market Redesign and Technology Upgrade (MRTU);
2. Each utility has demonstrated that the costs recorded in their Market Redesign and Technology Upgrade Memorandum Accounts for 2010 MRTU implementation activities are incremental to costs previously authorized in their General Rate Case proceedings and have been reasonably incurred to implement the MRTU initiative, and should therefore be recovered in rates; and
3. The ratemaking mechanisms and procedural vehicles proposed by each utility to replace consideration of these costs in annual Energy Resource Recovery Account compliance cases are found to be reasonable.

This proceeding is closed.

1. Background

The California Independent System Operators' (CAISO) is charged with managing California's electricity grid and is regulated by the Federal Energy Regulatory Commission (FERC). The CAISO's Market Redesign Technology

Upgrade (MRTU) is an initiative that it implemented in 2009 to upgrade the efficiency of energy dispatch and improve the wholesale electricity market system by introducing new market features and advanced computer software technology. The MRTU was intended to: (1) enhance wholesale market efficiencies through use of a more accurate grid model;
(2) provide more transparent prices for the generation and delivery of energy;
(3) enhance electric reliability by coordinating with the Commission's Resource Adequacy program; and (4) prevent market manipulation by market participants. To implement the MRTU, the CAISO required certain actions and expenditures by Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), and San Diego Gas & Electric Company (SDG&E), for which the utilities sought recovery from ratepayers.[1]

The Commission first indicated that it would review MRTU implementation costs in annual utility Energy Resource Recovery Account (ERRA) compliance proceedings in May 2007, when it approved separate requests by PG&E, SCE and SDG&E to establish Market Redesign and Technology Upgrade Memorandum Accounts (MRTUMA).[2] These accounts enabled the utilities to record the incremental capital-related revenue requirement and operation and maintenance (O&M) expenses associated with implementing the MRTU initiative, so that they may subsequently request approval to recover these costs in rates. The Commission stated that in order to recover amounts recorded in its MRTUMA, each utility must demonstrate that

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[1] The CAISO refers to its subsequent, ongoing activities to implement additional market design features as the "Markets and Performance" phase of MRTU (MAP).

[2] *See* Resolution E-4093, Resolution E-4087, and Resolution E-4088, respectively.

its entries to the MRTUMA are incremental to costs previously authorized by the Commission, and have been reasonably incurred to implement the MRTU initiative.[3] The Commission directed the three utilities to seek recovery of the amounts recorded in their MRTUMAs in their ERRA "reasonableness" proceedings (i.e., the annual ERRA compliance reviews for each utility).

The joint application reviewed in this decision had its origins in the ERRA compliance review proceedings for the 2009 and 2010 record years for PG&E, SCE and SDG&E. In each of those proceedings, the Division of Ratepayer Advocates (DRA) filed a motion seeking to bifurcate the MRTU implementation cost recovery portions from these proceedings, and to instead consolidate the MRTU portions into a single and separate proceeding.[4] DRA argued that even though the Commission authorized the three utilities to apply for recovery of the MRTU costs in each utility's annual ERRA application, these costs warranted a more thorough review than that normally performed in such proceedings.
In support of this position, DRA referenced Decision (D.) 09-12-021, in which the Commission states that the scope of its review of PG&E's MRTU costs is not

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[3] Incremental in this context means that the amounts recorded in the MRTUMA are in addition to that portion of a utility's previously-authorized revenue requirement for funding the CAISO's MRTU initiative.

[4] *See* May 18, 2011 *Motion Of The Division of Ratepayer Advocates To Bifurcate The MRTU Implementation Cost Recovery Portions of Energy Resource Recovery Account Compliance Proceedings and Consolidate Those Portions Into a Single and Separate Proceeding."*

On September 26, 2013, DRA was renamed the Office of Ratepayer Advocates (ORA) pursuant to Senate Bill (SB) 96 (Stats. 2013, ch. 356). This decision retains historical references to "DRA" for purposes of clarity.

necessarily a traditional reasonableness review, but rather a determination of whether the MRTU-related costs can be verified and are incremental.[5]

To better understand the context of our decision today, we also note that DRA observed that the magnitude of the MRTU cost recovery requests made by each of the three utilities varied widely. DRA reasoned that since the same CAISO directive, FERC tariffs, and technical requirements influenced the MRTU implementation costs for all three utilities, a consolidated review would allow the Commission to perform a consistent review and comparison of the different approaches to compliance of each utility as well as the different circumstances (such as resource portfolios, customer demands, reliability issues, and information systems) that are reflected in the calculation of each utility's MRTU implementation costs.

On June 23, 2011, the assigned Administrative Law Judges (ALJ) for the six proceedings affected by DRA's motion collectively ruled and denied DRA's motion to bifurcate the review of MRTU-related expenses and capital for the 2009 record period ERRA proceedings.[6] However, for the 2010 record period proceedings, the joint ruling granted the Motion, stating: "as these proceedings are in their early stages, there is an opportunity to consider MRTU issues as a whole without disruption to the overall ERRA proceedings."[7]

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[5] *See* D. 09-12-021 at 3, footnote 1. In D.09-12-021, the Commission approved PG&E's forecasted 2010 ERRA revenue requirement. The scoping memo for that proceeding had earlier denied PG&E's request that MRTU cost recovery be included in the scope of the proceeding, instead deferring the issue to PG&E's ERRA Compliance filing or a separate application.

[6] Applications (A.) 10-02-012, A.10-04-002, and A.10-06-001.

[7] The 2010 Record Period proceedings are A.11-02-011, A.11-04-001, and A.11-06-003.

On August 12, 2011, the assigned ALJ issued a ruling in the 2010 record period proceedings providing further guidance regarding the consolidated review (August 2011 Ruling). PG&E, SCE, and SDG&E were ordered to jointly file one application that describes how they implemented MRTU, the costs of those efforts to date, likely future costs, and to propose how the recovery of those costs should be requested and reviewed in future proceedings. The ruling stated that the purpose of consolidating the review of MRTU costs for the 2010 record period was to conduct a review of best practices across the three utilities, noting that "each utility asserts that it conducted its implementation activities in accordance with prior Commission orders; this consolidated review will provide an opportunity for the utilities to substantiate this message with a unified presentation."

In order to establish the record necessary for this review, the utilities were directed to (1) file a joint application that presents the MRTU-related portions of their 2010 ERRA compliance applications and testimony for recovery in this proceeding, and file motions to withdraw that material from their individual applications and supporting testimony in Application (A.) 11-02-011, A.11-04-001, and A.11-06-003, and (2) include in their joint application a report that provides the information listed below:

a. A detailed description of how each utility identified and followed best practices in researching, developing and implementing its MRTU systems;

b. A detailed description of the major systems that were modified or created to implement MRTU, and the rationale for doing so;

c. Documentation of actual and forecast annual spending associated with MRTU implementation:

1. Capital and expense spending authorized to date, separately identified by proceeding (e.g., General Rate Case (GRC), ERRA, any others);
2. Pending requests for approval of capital and expense spending; and
3. Itemized forecast of future annual spending, separately identified by proceeding (e.g., GRC, ERRA, any others).

d. A proposed ratemaking mechanism and procedural vehicle to replace consideration of these costs in annual ERRA compliance cases.

The August 2011 Ruling also established the procedural steps that would be followed to conclude this proceeding after the filing of the joint application, a workshop would be held to provide the opportunity for the utilities to jointly present their report and respond to questions from parties and Commission staff. A round of comments and reply comments would follow. The assigned Commissioner or ALJ could issue further procedural direction after reviewing the record developed through this process. If no further steps were deemed necessary, a proposed decision would be issued based on the record.

The utilities filed a joint motion on September 12, 2011, seeking clarification of several items in the August 2011 Ruling. On November 2, 2011, a Joint Commissioner and Administrative Law Judge Ruling (Joint Ruling) provided further clarification regarding the consolidated review. First, the Joint Ruling denied the utilities' request that the Commission clarify that MRTU implementation costs for the 2010 record period and up through the date of any final decision in the joint proceeding will be reviewed only under the "incremental and verifiable" standard mentioned in D.09-12-021. In denying this requested clarification, the Joint Ruling stated that "it is illogical to suggest that the Commission would ignore evidence of unreasonable behavior by a utility that it regulates, much less place that topic entirely outside the scope of the proceeding to begin with." Second, the Joint Ruling agreed with the Joint Utilities' clarification that they each will be permitted to demonstrate how they identified and followed "best practices" to research, develop, and implement their respective MRTU systems given their unique circumstances prior to MRTU. Third, the Joint Ruling clarified that the consolidated review was not intended to create and retroactively apply a new standard of review, but rather that the MRTU implementation costs examined in the consolidated MRTU proceeding would be reviewed for reasonableness, as the Commission used the term in the Resolutions it adopted in 2007 to approve each utility's request to establish their MRTUMA: each utility "must first provide justification that its entries to the MRTUMA are incremental and have been reasonably incurred to implement the CAISO MRTU initiative."

In compliance with the guidance described above, PG&E, SCE and SDG&E filed this joint application on January 31, 2012. PG&E's prepared testimony in support of the joint application consists of two exhibits, Exhibits PG&E-1 and PG&E-2. SCE's prepared testimony consists of one exhibit, Exhibit SCE-1. SDG&E's prepared testimony consists of one exhibit, Exhibit SDG&E-1. Each of the exhibits identified here is received into evidence in this proceeding.

On March 5, The Utility Reform Network (TURN) filed a protest to the joint application. In its protest, TURN stated "although TURN does not know the full extent of its participation in this proceeding at this time, TURN generally intends to address the reasonableness of the revenue requirements requested by each utility and the associated ratemaking mechanisms on behalf of residential ratepayers." TURN did not file further comments. Thus, DRA is the only party that substantively addressed any of the utilities' MRTU revenue requirements or proposed ratemaking mechanisms.

The utilities presented their respective reports at a March 12, 2012 workshop. Following the workshop, at the request of the assigned Commissioner and assigned ALJ, the utilities provided additional information regarding (1) the total MRTU implementation expenditures made by each utility, as well as the annual revenue requirements associated with those expenditures, and (2) the 2010 MRTU implementation capital expenditures made by each utility, broken down by CAISO release. That information is marked as Exhibit ALJ-1 and received into evidence in this proceeding.

On April 9, 2012, DRA filed its "Comments on MRTU Implementation Best Practices Workshop and MRTU Incurred Incremental Cost Report." On May 3, 2012, PG&E and SDG&E filed reply comments. PG&E's comments included a document prepared jointly by PG&E and DRA, a "Joint PG&E-DRA Recommendation and Statement of DRA Position on 2013 Revenue Requirements."

2. Issues Before the Commission

In the joint application, each utility requests that the Commission issue orders as follows:

2.1. PG&E

1. Determine that PG&E's 2010 MRTU implementation expenditures are reasonable;
2. Authorize PG&E to reflect $64.9 million in MRTU-related revenue requirements in rates effective January 1, 2013; and
3. Approve PG&E's proposed ratemaking mechanism and procedural vehicle to replace consideration of MRTU-related incremental expenditures in ERRA compliance cases.

2.2 SCE

1. Approve recovery of incremental capital and O&M in the amount of $17.345 million (including franchise fees and uncollectibles) recorded in 2010 associated with undercollections in SCE's MRTUMA;
2. Approve SCE's rate proposals associated with its proposed MRTU-related revenue requirements, to be effective in rates on January 1, 2013; and
3. Approve SCE's proposed ratemaking mechanism and procedural vehicle to replace consideration of MRTU-related incremental expenditures in ERRA compliance cases.

2.3 SDG&E

1. Authorize SDG&E to recover the MRTU-related electric revenue requirement of $1.6 million associated with cost undercollections recorded in 2010 in its MRTUMA;
2. Authorize SDG&E to transfer the $1.6 million balance to its Non-Fuel Generation Balancing Account (NGBA); and
3. Approve SDG&E's proposed ratemaking mechanism and procedural vehicle to permit the MRTU costs to be considered in the appropriate GRC instead of in the annual ERRA compliance case.

Of the requests listed above, DRA contested only PG&E's proposal to recover the 2013 revenue requirements associated with its incremental 2009, 2010, 2012, and 2013 expenditures in 2013 rates. DRA proposed to delay recovery of these amounts in 2015 rates.

In today's Decision, we resolve each utility's request that we determine whether their 2010 MRTU implementation expenditures were reasonable, and we address their related requests for authority to recover those costs in rates. We also address each utility's proposed ratemaking mechanism and procedural vehicle to replace consideration of MRTU-related incremental expenditures in their respective ERRA compliance cases.

In order to make determinations on these requests, we must also complete the overarching task identified in the August 2011 Ruling: conduct a consistent review and comparison of the different approaches to compliance of each utility, given the different circumstances in which they found themselves at the outset of the CAISO's MRTU project. These matters are the subject of the joint report prepared by the utilities. Although the Commission has already issued decisions resolving each utility's request for recovery of MRTU implementation costs incurred prior to 2010, we will demonstrate below that the joint report on these initial efforts provided significant value in our review of the 2010 requests. First, portions of the 2010 requests are related to capital expenditures approved by earlier decisions, so the joint report aided our understanding of these requests. Second, the joint report aided our understanding and evaluation of the merits of the 2010 expenditures underlying these requests, by placing them in the context of the earlier efforts undertaken by each utility to implement the MRTU.

The remainder of this decision proceeds in chronological order: first by reviewing the joint utility report on those aspects of MRTU implementation that preceded the 2010 record period, then by addressing each utility's 2010 cost recovery requests, and then by reviewing the utilities' expected future expenditures. We conclude by summarizing our more recent actions with respect to our review of MRTU revenue requirements for more recent record periods, because those actions at times superseded the utilities' proposed procedural vehicles for reviewing their future requests for MRTU-related cost recovery.

3. Implementation of MRTU Prior to 2010

As directed in the August 2011 Ruling, in their joint application the utilities provided an extensive summary of activities undertaken from the inception of the CAISO's MRTU project, including a detailed description of how each utility identified and followed best practices in researching, developing and implementing its MRTU systems, followed by a detailed description of the major systems that were modified or created to implement MRTU, and the rationale for doing so. The utilities also provided documentation of the capital and expense spending authorized to date, separately identified by proceeding (e.g., GRC, ERRA, any others.)

As noted above, PG&E, SCE and SDG&E provided this information in the form of Exhibits PG&E-1 and PG&E-2, Exhibit SCE-1, and Exhibit SDG&E-1. Subsequent events in this proceeding afforded the utilities an opportunity to discuss their implementation of MRTU in a unified fashion. For example, at the March 12, 2012 workshop the utilities jointly presented their respective reports, provided additional material that compared and contrasted their utility-specific implementation efforts, and responded to questions.[8] Furthermore, in response to questions at the workshop by the assigned Commissioner and ALJ, the utilities provided additional comparative information regarding the total MRTU implementation expenditures made by each utility, as well as the revenue requirements associated with those expenditures.[9] This information is sufficient to enable the Commission to reach conclusions on each utility's request for relief included in the joint application.

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[8] This presentation, entitled "MRTU Implementation Best Practices Workshop," is attached to PG&E's May 3, 2012 Reply Comments. The "compare and contrast" material is provided on slides 21-26 in the presentation: "Key IOU Similarities and Differences." The utilities also included material entitled "Best Practices: Main Themes" on slides 11-20 of the workshop presentation.

[9] As noted earlier, this material has been marked as Exhibit ALJ-1 and entered into evidence.

Indeed, the value of conducting this consolidated review is clearly illustrated in the table below, excerpted from Exhibit ALJ-1, which summarizes the spending by each utility to implement MRTU. The notable differences between the utilities—with respect to amounts spent, the timing of that spending, or both—speak to the reason this consolidated proceeding was initiated. For example, the most notable difference shown in the table is the much lower overall costs incurred by SDG&E in comparison to both PG&E and SCE. Another difference is that SCE's overall implementation costs are higher than PG&E, even though the two utilities are generally considered to be similar in size and therefore likely to encounter similar complexities in their procurement activities.

Table 1

Joint Application for Recovery of MRTU Implementation Costs

		Actual - Thousands of Dollars					Forecast - Thousands of Dollars			
		2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
PG&E	**Capital**				$50,648	$12,637				
	O&M	$0	$1,011	$3,429	$7,987	$7,418				
	Total Annual Expenditure	$0	$1,011	$3,429	$58,635	$20,055	$15,125	$6,400	$20,600	N/A
	Cumulative Total Expenditure		$1,011	$4,440	$63,075	$83,130	$98,255	$104,655	$125,255	$125,255
SCE	**Capital**	$3,565	$21,119	$24,297	$16,358	$2,638				
	O&M	$0	$3,828	$4,120	$9,430	$10,968				
	Total Annual Expenditure	$3,565	$24,947	$28,417	$25,788	$13,606	$20,500	$7,700	$7,000	$9,000
	Cumulative Total Expenditure		$28,512	$56,929	$82,717	$96,323	$116,823	$124,523	$131,523	$140,523
SDG&E	**Capital**	$0	$1,686	$796	$564	$1,733				
	O&M	$0	$130	$271	$1,171	$892				
	Total Annual Expenditure	$0	$1,816	$1,066	$1,734	$2,624	$2,500	$1,500	N/A	N/A
	Cumulative Total Expenditure		$1,816	$2,882	$4,616	$7,241	$9,741	$11,241	$11,241	$11,241

Source: March 26, 2012 e-mail from PG&E to Assigned Commissioner Florio, ALJ Roscow, and Service List for A.12-01-014

PG&E footnotes

1. Capital expenditures are reflected in the year in which the project became operative.
   Actual capital spending by year was: 2006 - $715K; 2007 - $12,434K; 2008 - $29,090K; 2009 - $11,245K; 2010 - $9,802K.
2. 2011 Expenditures will be included for reasonableness review in an Application to be filed on April 16, 2012.
3. O&M costs are total O&M expenses (not incremental expenses).

SCE footnotes

1. Annual capital expenditures are shown by year for 2006-2009. Recovery of the total 2006-2009 capital expenditures of $65.36 million started after MRTU go-live in 2009 and the project went operative.
2. Capital expenditures in this table include corporate overheads. Corporate overheads were not included in line 1 (Direct Capital Expenditures) in table IV-8 on page 55 in the SCE's MRTU Report and Prepared Testimony for A.12-01-014, however they were included in the revenue requirement calculations in line 5.
3. O&M costs are total O&M expenses (not incremental expenses).
4. The forecast for 2011 includes capital and incremental O&M.
5. The forecast for 2012-2014 is the capital forecast from the GRC.

SDG&E footnotes

1. Capital expenditures are presented for reasonableness review for the year in which they are spent.
2. 2011 Expenditures will be included for reasonableness review in SDG&E's 2011 ERRA Compliance Application filed on June 1, 2012.
3. 2012 forecast (reflected in the GRC Application) does not include expenditures for capital.

3.1. Each Utility Provided a Detailed Description of How It Identified and Followed Best Practices in Researching, Developing and Implementing its MRTU Systems

As noted above, the basis for DRA's motion to bifurcate the Commission's review of MRTU implementation from annual ERRA compliance proceedings was its belief that a consolidated review would allow the Commission to perform one overarching review and comparison of each utility's different approach to compliance with CAISO requirements. This would allow the Commission to consider utility-specific circumstances (such as resource portfolios, customer demands, reliability issues, and information systems) that are reflected in each utility's MRTU implementation costs.

Although each utility began its MRTU project in different circumstances, DRA made a reasonable observation that the utilities, to date, had not fully explained and discussed the practical and financial implications of the varying circumstances encountered by each utility. We agree that by discussing the three utilities together, we are better able to reach conclusions regarding the reasonableness of their individual actions.

3.1.1. Starting Points

Each utility begins its testimony by describing the "starting point" for its MRTU project, focusing on its existing power portfolio, its existing information technology (IT) infrastructure, and its existing vendor relationships. In this way, PG&E, SCE and SDG&E provide a useful foundation for the Commission's understanding and evaluation of the subsequent expenditures made to integrate their existing power portfolios, their existing IT infrastructure, and existing vendor relationships with the requirements of MRTU.

3.1.1.1. PG&E

PG&E describes the starting point for its MRTU project in Chapter 2 of Exhibit PG&E-1.

First, regarding its existing power portfolio, PG&E describes the implications of managing what it describes as "an extremely complex set of resources in the CAISO market:"

> The generation portfolio consists of several hundred resources, including an extensive hydro system, with 67 conventional powerhouses and 107 generating units; nuclear generation; hundreds of Qualifying Facilities and multiple counterparty contracts. The complexity and size of PG&E's portfolio translated into thousands of transactions with CAISO on a daily basis. The volume of data required for bidding and scheduling resources, and the corresponding volume of data for settlements dictated that automated systems would be required to participate in the CAISO MRTU market.[10]

Second, regarding its existing IT infrastructure, PG&E states that at the start of MRTU, each line of business had separate, but interconnected systems. Some of the systems had recently undergone IT upgrades, some systems had recently been procured from vendors, and some were vendor systems at the end of their lifecycle. PG&E notes that at the start of the implementation process, CAISO requirements were not fully defined, and the MRTU "go-live" date was uncertain; PG&E concludes that given this environment, each line of business worked within PG&E's framework of the MRTU implementation program management and governance to assess their existing systems, and made

[10] Exhibit PG&E-1 at pages 2-1 to 2-2.

decisions to modify, replace or procure new systems based on CAISO requirements, PG&E's own business needs and the status of existing systems.[11]

Third, regarding its existing vendor relationships, PG&E states that it had a combination of in-house-developed and vendor-procured software at the start of MRTU. In cases where the vendor relationship was strong and the vendor offered a product compatible with the new MRTU market, PG&E elected to stay with that vendor and implement their MRTU software. In cases where there was no existing vendor relationship, PG&E elected either to modify existing legacy software or to undertake a vendor selection process to procure new systems.[12]

3.1.1.2. SCE

SCE describes the starting point for its MRTU project in Chapter 1 of Exhibit SCE-1.

First, regarding its existing power portfolio, SCE describes a "large, varied and complex" power portfolio consisting of utility-owned generation, Qualifying Facilities resources, renewable power contracts and conventional power contracts of varying type and duration, including generators located outside the CAISO control area. SCE states that "based on the expected number of daily transactions with CAISO and the size and complexity of SCE's portfolio, SCE concluded that it was essential to have automated systems in place at MRTU go-live to handle the various transactions required by the MRTU market."[13]

Regarding its existing IT infrastructure, SCE states that it essentially started with a blank slate regarding its legacy IT systems for the MRTU project:

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11 *Ibid.*

12 *Ibid.*

13 Exhibit SCE-1 at 2.

SCE would have been required to either replace a "major" 10-year old in-house legacy system with a vendor system or essentially rebuild the in-house system from scratch using current technology.[14]

Regarding its existing vendor relationships, SCE states that since the major legacy system at the start of MRTU had been developed in-house, SCE did not have any major existing vendor relationships for the systems that would be impacted by MRTU. Existing vendors for tools used by other areas of SCE's organization (e.g., long-term energy planning tools) were invited to participate in the solicitation process for the new MRTU software tools.[15]

3.1.1.3. SDG&E

SDG&E describes the starting point for its MRTU project in Exhibit SDG&E-1. Unlike PG&E and SCE, SDG&E summarizes in tabular form its existing power portfolio, its existing IT infrastructure, and its existing vendor relationships.[16] A key point made in SDG&E's testimony is that it did not have to rely on vendor solutions to meet all MRTU requirements, and thus was able to implement MRTU at lower cost than other "market participants with more challenging portfolio size, diversity and legacy systems and vendors issues."[17]

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[14] *Ibid.*

[15] *Ibid.*

[16] Exhibit SDG&E-1 at pages TC-1 through TC-7.

[17] *Id.* at TC-7.

3.1.2. Researching, Developing and Implementing MRTU Systems

The August 2011 Ruling required that the utilities begin their joint report by describing the steps they each took to research, develop and implement their MRTU systems based on their particular circumstances.

3.1.2.1. PG&E

In Chapter 2 of Exhibit PG&E-1, PG&E describes the "most significant" steps that it took to manage what it describes as "the complexity and large-scale nature of MRTU." These steps are listed below:[18]

1. PG&E used an initial impact assessment for program management;
2. PG&E set up a program management organization and governance structure;
3. PG&E established a Program Management Office to manage MRTU implementation within PG&E;
4. PG&E retained existing systems where possible, and purchased new systems as needed using a rigorous vendor selection process;
5. PG&E utilized a rigorous information technology project development methodology to facilitate the integration of the new technology requirements;
6. PG&E actively participated in the CAISO stakeholder process.

PG&E concludes this section of its testimony by noting that "the MRTU implementation structure and timeline changed dramatically from when FERC first approved the CAISO's MRTU proposal in September 2006 to when MRTU was implemented in April 2009 … although PG&E partnered closely with the

[18] Exhibit PG&E-1 at pages 2-3 to 2-13.

CAISO, it was the CAISO, not PG&E, who controlled the evolution of MRTU business requirements and implementation timeline."[19]

3.1.2.2. SCE

SCE states that in order to perform all of the necessary functions required by MRTU, it developed an MRTU program and set up a vendor selection process, which it describes as "consistent with industry best practices" for managing large projects and purchasing large software packages.[20]

First, SCE describes how it researched its MRTU project by: (1) actively participating in the CAISO stakeholder process, (2) comparing MRTU market rules with other ISO markets in the country, (3) surveying vendors for the MRTU project, and (4) soliciting advice and assistance from an outside consultant.[21]

Next, in order to develop and implement its MRTU systems, SCE describes how it organized its MRTU program organized around a central Program Management Office with multiple "core" and "common" workstreams.[22] SCE describes how, "consistent with SCE and industry best practices" for managing large programs, SCE implemented a program management, oversight, and reporting structure to enable the company to respond to CAISO-driven changes while maintaining control over the project.[23]

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[19] *Id.* at pages 2-13.

[20] Exhibit SCE-1 at 3.

[21] *Id.* at 3-4.

[22] *Id.* at 5. As explained by SCE, "a core workstream delivers functionality to end users and a common workstream provides services to one or more core workstreams."

[23] *Id.* at 6-13.

Like PG&E, SCE's testimony also describes how its MRTU program "was subject to extensive revisions throughout the project lifecycle, including repeated changes to the CAISO go-live schedule, CAISO-driven project scope changes, and business and technical requirements changes," and how these extensive delays and revisions contributed to significantly higher project costs.[24]

Finally, SCE describes how it decided whether to develop the necessary software to implement MRTU in-house, or to purchase systems from outside vendors. SCE concludes "after weighing the pluses and minuses of purchasing vendor software versus in-house development, SCE decided that the best course for the MRTU project was to utilize vendor products where such products were available and cost-effective, and develop in-house solutions for system integration and reporting."[25] SCE describes the steps it followed in its vendor selection process, describing the process as "consistent with SCE and industry best practices for handling procurement of large software packages."[26] SCE also procured additional software packages from other vendors, to provide specific functionality that was not available in its other purchased software packages, and utilized consultants and contractors from several consulting companies. SCE states that these software and consulting vendors provided services at customary rates.[27]

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[24] *Id.* at 13-16.

[25] *Id.* at 18.

[26] *Ibid.* SCE's vendor selection process involved: (1) requirements gathering; (2) issuing Requests for Information; (3) conceptual solutions development and vendor demonstrations; and (4) issuing Requests for Proposal.

[27] Exhibit SCE-1 at 22.

3.1.2.3. SDG&E

In its testimony, SDG&E states that the implementation of MRTU at SDG&E was a collaborative process that involved many departments across the company including, but not limited to, Electric & Fuel Procurement, IT, and Supply Management: "each department worked closely together striving to achieve best practices and successfully implement MRTU."[28]

According to SDG&E, the majority of its MRTU system costs were incurred in earlier years to acquire and implement MRTU software applications from one vendor, though SDG&E continues to incur ongoing costs, such as license fees, vendor support and software enhancements to maintain these systems and respond to new CAISO products. SDG&E states that these ongoing vendor costs are incremental to the up-front costs already incurred, but are therefore lower than alternative solutions from new vendors that would require a new software and hardware platform. SDG&E states that its initial selection of its software vendor followed a competitive and thorough selection process. SDG&E again notes that it did not rely on vendor solutions to meet all MRTU requirements, which appears to have reduced its costs relative to PG&E and SCE. However, SDG&E states that higher-cost solutions may ultimately be needed for certain CAISO systems "depending on future market design developments and SDG&E's functional requirements."[29]

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[28] Exhibit SDG&E-1 at TC-6.

[29] *Id.* at TC-7.

3.2. Each Utility Provided a Detailed Description of its Major Systems That Were Modified or Created to Implement MRTU, and its Rationale for Doing So

The second required topic for the joint report was that each utility provide descriptions of the major systems that it modified or created to implement MRTU, and its rationale for doing so.

3.2.1. PG&E

PG&E organized its discussion of the major systems that it modified or created to implement MRTU into three sections, covering its Front, Middle, and Back Offices, each of which, according to PG&E, had major systems that were implemented under the MRTU initiative.[30]

PG&E states that its "Front Office" is responsible for meeting PG&E's electric load obligations in a least-cost manner. With the introduction of MRTU, the Front Office had to comprehensively change the manner in which it forecast PG&E's supply and demand, performed resource optimization, and traded electricity.

PG&E states that its "Middle Office" is responsible for carrying out PG&E's risk management control objectives, which are designed to mitigate aberrant trader activities, minimize business operational risks, enable portfolio managers and traders to comply with risk management policies and procedures, facilitate setting of controls and limits, and provide decision-makers with relevant analytics and portfolio reports to manage the portfolio's market and

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[30] The summary below is taken from Exhibit PG&E-1 at 2-15 through 2-16. In Chapter 3 of Exhibit PG&E-1, PG&E provides more detailed descriptions of the modified systems necessitated by the MRTU initiative.

credit risks. PG&E states that its risk and portfolio management systems and processes were significantly redesigned to meet MRTU-related requirements.

PG&E states that its "Back Office" is responsible for the administration of the power contracts for generation that serves PG&E's service area; invoicing and settlements; disputes; and charge code reconciliation with the CAISO. PG&E states that implementation of MRTU required extensive modifications to PG&E's Back Office infrastructure and processes.

3.2.2. SCE

SCE organizes its discussion of the major systems that were installed, modified or created to implement MRTU, and the rationale behind these decisions, according to the "project workstreams" that covered these major systems: (1) Planning; (2) Operations; and (3) Settlement and Data Management.[31]

First, SCE describes its planning processes, which included forecasting the value of Congestion Revenue Rights (CRR) and acquiring CRRs; generating price forecasts for the MRTU environment; and developing a daily and monthly "least-cost dispatch" resource plan. SCE states that the project work performed by the Planning workstream can be categorized into the following business areas: (1) transmission planning; (2) demand forecasting; (3) price forecasting; (4) short-term planning; and (5) market design and analysis.

Second, SCE describes the "Operations and Settlements" workstream of the MRTU program and how it covered the implementation of new business processes and systems for multiple business groups across both the

[31] The summary below is taken from Exhibit SCE-1 at 22-36.

front- and back-office areas within its Power Procurement Business Unit (PPBU). The business groups covered by this workstream were Short-Term Planning, Power Trading, Gas Trading, Day-Ahead Operations, Real-Time Operations, Market Operations and Settlement Analysis, CAISO Settlements and Allocations, Contract Settlements, and Finance and Reporting.

Third, SCE describes the data management workstream, which was responsible for implementing a common data store for all MRTU data, as well as system interfaces between the various applications that are required under MRTU, and a PPBU data access and reporting system.

3.2.3. SDG&E

SDG&E's testimony describes "the major systems that were modified or created to implement MRTU, and the rationale for doing so."[32] SDG&E states that in order to minimize the risk related to meeting the CAISO's published implementation schedule, the development and deployment plan for MRTU at SDG&E was divided into the following phases:

- Phase 1: Beginning in March 2007, SDG&E implemented portfolio optimization using vendor-provided software products in the pre-MRTU market.
- Phase 2: Beginning in August 2007, SDG&E initiated preparation for MRTU scheduling and data capture using the same products. These tasks were completed by the MRTU launch.
- Phase 3: Following MRTU go-live and up to the date of its testimony, SDG&E maintained a steady pace of software enhancements to meet expanding CAISO requirements as well as changes within its resource

[32] Exhibit SDG&E-1 at pages TC-7 through TC-8.

portfolio. Also, SDG&E purchased an additional software module to forecast energy awards, revenues, operating costs and day-ahead bid analysis.

- Phase 4: Beginning in 2010, SDG&E initiated an additional software project with the same vendor, an Electric & Fuel Procurement Data Mart.

SDG&E summarizes these activities by noting that the large amount of data generated by the MRTU environment required SDG&E to acquire data analytics software to automate data management, analysis and reporting. According to SDG&E, the automation provided by such software freed up procurement staff to focus on analyzing useful data to continuously improve portfolio management decisions.

4. Each Utility Provided Documentation of Authorized-to-Date, Pending, and Forecast Annual Spending Associated with MRTU Implementation

The August 2011 Ruling required that in the third section of the Joint Report each utility provide information about its past, pending, and forecast costs associated with their MRTU implementation activities.

This step in our review is not directly necessary in order to make specific findings and conclusions about each utility's pending requests for recovery of 2010 expenditures, because the Commission has already granted cost recovery, subject to audit, for costs incurred in 2009 and earlier. Nevertheless, we begin our consolidated review at the beginning of the MRTU project in order to fully understand variances in both the level and timing of expenses between PG&E, SCE and SDG&E.

4.1. Authorized-To-Date Spending (2007-2009)

The August 2011 Ruling directed the utilities to provide documentation of both capital and expense spending authorized by the Commission prior to 2010, identified separately by category and proceeding (e.g., GRC, ERRA, and any others). This area of each utility's written testimony was less thorough than their narrative descriptions of their implementation efforts, and therefore had to be supplemented, first by the workshop presentations, and later with additional post-workshop information that the utilities provided in response to questions at the workshop (i.e., Exhibit ALJ-1.) This material is presented below to establish context with respect to each utility's spending prior to the 2010 record period.

4.1.1. PG&E

PG&E documents its authorized spending associated with MRTU implementation in Chapter 5 of its testimony. The table below summarizes that information, providing capital spending and expenses authorized to date, separately identified by proceeding, for PG&E's initial implementation of MRTU as well as the subsequent 2010 Markets and Performance Phase of MRTU. Capital expenditures are listed in the year in which the associated capital projects became operational.

Table 2
Pacific Gas and Electric Company
MRTU Incremental Authorized Expenditures
2007-2009
($000)

		Authorized To-Date			
Line No.	Description	2007	2008	2009	Total
1	Incurred Capital Expenditures Approved in 2009 ERRA			50,648	50,648
2	Incurred Capital Expenditures Requested in This Proceeding				
3	Incurred Expense Approved in 2009 ERRA		2,459	6,491	8,950
4	Incurred Expense Requested in This Proceeding			469	469
5	Forecast Expense Approved in 2007 General Rate Case (GRC)	1,022	1,022	1,022	3,066
6	Total	1,022	3,481	58,630	63,133

Source: Exhibit PG&E-1 at page 5-1.

4.1.2. SCE

SCE documents its authorized spending associated with MRTU implementation in Chapter 4 of Exhibit SCE-1. Costs incurred from 2006 through

2009 were addressed in SCE's 2009 ERRA compliance proceeding.[33] Regarding SCE's actual MRTU-related direct capital expenditures through 2009 (Line 1 in the table below), as SCE observes in its testimony, the Commission found in D.11-02-002 that $56.254 million was reasonable and recoverable, subject to an audit to be performed by a third party. Similarly, regarding SCE's MRTU-related O&M expenses through 2009 (Line 2 in the table below), the Commission found in D.11-02-002 that $17.4 million was reasonably incurred and recoverable.

SCE addresses capital and expense spending authorized to date in its General Rate Case proceedings, and the question of whether this spending is incremental, in a footnote:[34]

> The Commission included the revenue requirement of approximately $4.4 million of MRTU-type capital expenditures in SCE's 2006 GRC (2006-2008). By December 31, 2008 (i.e. the end of the 2006 GRC cycle), SCE has only closed $3.07 million of this capital to rate base. As such, SCE did not record a capital-related revenue requirement in the MRTUMA during the 2006 GRC cycle. The Commission excluded recovery of all MRTU-related capital from SCE's 2009 GRC (D.09-03-025). Therefore, 100% of the MRTU capital-related revenue requirement is incremental to what was authorized to be included in the GRC-related revenue requirement and SCE began to record the MRTU capital-related revenue requirement in the MRTUMA in 2009.

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[33] *See* D.11-10-002 in A.10-04-002.

[34] Exhibit SCE-1 at 55.

Table 3 Southern California Edison Company MRTU Incremental Capital Expenditures and O&M Expenses ($000)						
		Authorized To-Date				
Line No.	Description	2006	2007	2008	2009	Total
1	Direct Capital Expenditures	3,310	18,906	21,234	12,804	56,254
2	Total MRTU O&M Expenses	-	3,828	4,120	9,430	17,378
3	Less: Non-Incremental and Non-Jurisdictional	-	(1,351)	(1,509)	(5,833)	(8,693)
4	Total Incremental O&M Recorded in MRTUMA	-	2,477	2,611	3,597	8,685
5	Capital Revenue Requirement Recorded in MRTUMA (Depreciation, Return and Taxes)	-	-	-	2,450	2,450
6	Interest Recorded in MRTUMA	-	10	62	4	76
7	Total Recorded in MRTUMA (L4+L5+L6)	-	2,487	2,673	6,051	11,211

Source: Exhibit SCE-1 at 55

4.1.3. SDG&E

In Exhibit SDG&E-1, SDG&E provides information regarding its MRTU implementation costs in a written narrative, rather than a summary table. Following the March 12, 2012 workshop, SDG&E provided additional information regarding its total MRTU implementation expenditures, as well as the revenue requirements associated with those expenditures. That information is reproduced in the table below.

	Table 4 SAN DIEGO GAS AND ELECTRIC MRTU COSTS 2007-2009 ($ 000)				
	Capital Costs	Approved Subject to Refund Pending Audit in D.11-10-029			Total
Line No.		2007	2008	2009	2007-2009
1	AFUDC Settlement	$0.04	$0.03	$0.05	$0.12
2	Computer Hardware	0.31	-0.27	0.00	0.04
3	Contractor / Consultant	0.67	0.48	0.15	1.3
4	Labor	0.10	0.07	0.01	0.18
5	Overhead	0.08	0.05	0.01	0.14
6	Software	0.48	0.44	0.34	1.26
7	Total Capital	$1.69	$0.80	$0.56	$3.05
8	O&M	$0.13	$0.27	$1.17	$1.57
9	Total "Expenditures"	$1.82	$1.07	$1.73	$4.62
	Revenue Requirement	Approved Subject to Refund Pending Audit in D.11-10-029			Total
		2007	2008	2009	2007-2009
1	Capital Costs (Depr, Taxes, Return)	$0.00	$0.46	$0.53	$0.99
2	O&M (from above)	0.13	0.27	1.17	1.57

3	Interest	0.00	0.01	0.01	0.02
4	Total "Revenue Requirement"	$0.13	$0.74	$1.70	$2.57

4.1.4. Conclusion

The Commission authorized recovery of the costs summarized above in each utility's ERRA compliance proceeding for the 2009 record period (A.10-02-012, A.10-04-002, and A.10-06-001 for PG&E, SCE and SDG&E, respectively). However, in each case the Commission conditioned that cost recovery upon the completion of an audit by an independent auditor chosen by the Commission's Division of Water and Audits.[35] The audits were completed and filed and served in this proceeding in November 2012 and January 2013. For each utility, the auditor did not identify any material instances of noncompliance with the Commission's MRTU-related directives, and found that the costs in the MRTUMA were incremental, that revenue requirements were reasonable and that all funds were spent on MRTU projects.

4.2. The Utility Requests Regarding 2010 MRTUMA Balances

4.2.1. PG&E's Requested Spending

At the time that this joint application was filed, PG&E requested that the Commission authorize the company to collect $64.9 million in MRTU-related revenue requirements in rates. That amount reflected a credit that, as explained below, has since been approved in another Commission proceeding. Thus, PG&E's requested authorization now totals $67.5 million. There are two components to PG&E's request.

[35] For PG&E, SCE and SDG&E *see* D.11-07-039, Ordering Paragraph (OP) 6; D.11-10-002, OP 5; and D.11-10-029, OP 4, respectively.

The first component of PG&E's request concerns the 2007-2009 MRTU costs incurred by PG&E. The Commission found these capital costs and O&M expenses to be reasonable in D.11-07-039. However, the related revenue requirement had only been approved through 2012, with the expectation that the revenue requirements for 2013 and onward would be approved in future Commission proceedings. Thus, in this proceeding PG&E requests approval of the revenue requirement that recovers the remaining 2007-2009 MRTU-related costs that were not recovered through the revenue requirement approved in D.11-07-039. Of the $59.5 million in capital and expense costs found reasonable, PG&E has collected $18.3 million in rates. Thus, in this decision we authorize PG&E to collect the remaining revenue requirement of $50.564 million in rates. As noted above, all of the underlying costs were found to be reasonable in D.11-07-039.

The second component of PG&E's request concerns PG&E's incremental 2010 MRTU expenses and capital costs, where PG&E is reiterating the request it originally made in A.11-02-011.[36] As shown in the table below, PG&E requests approval of 2010 capital expenditures of $12.636 million and expenses of $6.789 million, a total of $19.425 million. PG&E also expected to incur $1.099 million in expenses already approved by the Commission in its 2007 GRC proceeding.

[36] *See* Exhibit PG&E-1, Table 5-1.

	Table 5 Pacific Gas and Electric Company Requested MRTU Incremental Expenditures A.12-01-014 ($000)			
		A.12-01-014	2007 GRC	
Line No.	Description			Total
1	Incurred Capital Expenditures Requested in This Proceeding	12,636		12,636
2	Incurred Expense Requested in This Proceeding	6,789		6,789
3	Forecast Expense Approved in 2007 GRC		1,099	1,099
4	Total	19,425		20,524

With respect to recovery of its 2010 MRTU costs, PG&E requests that the Commission determine that PG&E's incremental 2010 MRTU expenditures of $20.524 million were reasonably incurred, and that the Commission authorize PG&E to recover in rates the $19.425 million of that amount that has not already been included in PG&E's 2007 GRC revenue requirement. According to PG&E, Exhibit PG&E-2 demonstrates the reasonableness of these expenditures. PG&E states that it has presented substantial evidence, sponsored by witnesses directly knowledgeable about the expenditures, to demonstrate that PG&E's expenditures were reasonable, and that no issues have been raised with respect to those expenditures. In its comments, DRA does not take issue with the reasonableness of PG&E's incremental 2010 MRTU expenditures,[37] but recommends an audit of the 2010 recorded revenue requirement.[38]

We have reviewed PG&E's testimony and supporting documentation, and we find PG&E's total 2010 MRTU expenses and capital costs to be incremental and reasonably incurred. We therefore authorize the recovery of the 2010 expenses and capital costs recorded in PG&E's MRTUMA.

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[37] PG&E May 3, 2012 Reply Comments at 5.

[38] DRA April 9, 2012 Comments on MRTU Implementation Best Practices Workshop and MRTU Incurred Incremental Cost Report at 3.

Finally, at the time that this joint application was filed, the nature of PG&E's request in this proceeding differed from the requests made by SCE and SDG&E because PG&E also requested that the Commission decide on PG&E's recovery of MRTU expenditures not just for 2010, but for 2011-2013 as well. According to PG&E, because its next GRC would not set rates until 2014, a transition approach for 2011, 2012, and 2013 was needed. Therefore, PG&E proposed that its incremental 2011 MRTU expenditures be considered in a separate proceeding, which has already been filed.[39] For 2012 and 2013, PG&E proposed that for ratemaking and cost recovery purposes the Commission adopt, in this proceeding, PG&E's estimates of incremental MRTU expenditures for these years. However, as explained later in this decision, during the pendency of this proceeding, PG&E subsequently requested and received Commission authorization to recover MRTU expenditures for 2012 and 2013 in the ERRA compliance proceedings that addressed those record years. Thus, we do not consider PG&E's transition approach further in this decision.[40]

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[39] *See* A.12-04-009. A Commission decision in that proceeding is expected following the resolution of the instant proceeding.

[40] In the joint application, PG&E sought authorization to reflect, in 2013 rates, a negative amount of $(2.6) million in revenue requirements associated with PG&E's forecast of 2012 and 2013 MRTU incremental expenditures. PG&E stated that the amount is negative due to the favorable tax treatment afforded the capital expenditures that PG&E anticipated it would be making in connection with MRTU activities in 2012 and 2013. Therefore, the original total amount for which PG&E sought recovery in the joint application was $64.9 million in MRTU-related revenue requirements. As noted, PG&E's requests related to 2012 and 2013 MRTU incremental expenditures are no longer being considered in the instant proceeding, so this decision approves a total revenue requirement of $67.5 million.

With respect to the remaining dispute between PG&E and DRA regarding recovery of the 2013 revenue requirements associated with PG&E's incremental 2009, 2010, 2012, and 2013 expenditures, the essence of the dispute is that PG&E requested that the Commission authorize PG&E to recover these amounts in 2013 rates, while DRA proposed to delay recovery of these amounts in 2015 rates. Since this dispute emerged, PG&E has filed A.14-02-008, its ERRA compliance application for the 2013 record period. The scope of that proceeding includes the questions of whether the costs booked by PG&E to the MRTUMA in 2013 were reasonable, and whether PG&E met its burden of proof regarding its claim for cost recovery. Therefore, we do not address that dispute in this decision.

4.2.2. SCE's Requested Spending

In this proceeding, SCE is requesting Commission approval to recover approximately $6.34 million of its incremental and verifiable O&M costs recorded in the MRTUMA during the 2010 Record Period. These O&M costs covered SCE's additional operating costs (e.g., additional personnel and maintenance costs for computer hardware and software) incurred to implement MRTU and subsequent Market and Performance (MAP) initiatives.

In addition, SCE is requesting: 1) approval of $2.04 million of MRTU-related direct capital costs incurred on the MRTU project and 2) approval that these capital costs and associated overhead costs are to be included in the capital base used in determining the capital revenue requirement recorded in the MRTUMA. Based on the total MRTU-related capital base, SCE recorded a capital-related revenue requirement (i.e., depreciation, return on rate base, and taxes) in the MRTUMA in the amount of $10.787 million in 2010.

Thus, SCE's total request for recovery of 2010-related costs is $17.146 million. The table below summarizes the amounts requested by SCE in this proceeding.[41]

Table 6 Southern California Edison Company MRTU Incremental Capital Expenditures and O&M Expenses 2010 Request ($000)		
Line No.	Description	
1	Direct Capital Expenditures	2,040
2	Total MRTU O&M Expenses	10,968
3	Less: Non-Incremental and Non-Jurisdictional	(4,629)
4	Total Incremental O&M Recorded in MRTUMA (L1+L2+L3)	6,339
5	Capital Revenue Requirement Recorded in MRTUMA (Depreciation, Return and Taxes)	10,787
6	Interest Recorded in MRTUMA	19
7	Total Recorded in MRTUMA (L4+L5+L6)	17,146

In its April 9, 2012 "Comments on MRTU Implementation Best Practices Workshop and MRTU Incurred Incremental Cost Report," DRA states that it does not oppose the request but recommends an audit of the 2010 recorded revenue requirement in SCE's MRTUMA.

After review of SCE's testimony and supporting documentation, we find SCE's 2010 MRTU expenses and capital costs to be incremental and reasonably incurred. However, we cannot for certain determine the verifiability of SCE's figures at this time, as required by D.09-12-021. We therefore authorize the recovery of the 2010 expenses and capital costs recorded in SCE's MRTUMA, subject to refund based upon an audit of the MRTUMA. We discuss this audit requirement at the end of this section of this Decision.

41 With the inclusion of franchise fees and uncollectibles, SCE's total request is $17.345 million.

4.2.3. SDG&E's Requested Spending

SDG&E requests that the Commission authorize SDG&E to recover the MRTU-related electric revenue requirement of $1.6 million associated with cost undercollections recorded in 2010 in its MRTUMA, and authorize SDG&E to transfer the $1.6 million balance to the NGBA. SDG&E asserts that the costs and expenses recorded to the MRTUMA for 2010 were appropriate and correctly stated, and therefore recoverable in accordance with applicable Commission policy and decisions. SDG&E states that its 2010 MRTUMA included both capital and O&M costs, primarily for software-related items, contracted support, and incremental direct labor.

	Table 7 SAN DIEGO GAS AND ELECTRIC 2010 MRTU COSTS Requested in A.12-01-014 ($ 000)	
Line No.		
	Capital Costs	
1	AFUDC Settlement	0.05
2	Computer Hardware	0.18
3	Contractor / Consultant	0.92
4	Labor	0.08
5	Overhead	0.08
6	Software	0.43
7	Total Capital	1.73
8	O&M	0.89
9	Total "Expenditures"	2.62
	Revenue Requirement	
10	Capital Costs (Depr, Taxes, Return)	0.68
11	O&M (from above)	0.89
12	Interest	0.01
13	Total "Revenue Requirement"	1.58

In its April 9, 2012 "Comments on MRTU Implementation Best Practices Workshop and MRTU Incurred Incremental Cost Report," DRA states that it does not oppose SDG&E's request but recommends an audit of the 2010 recorded revenue requirement.

After review of SDG&E's testimony and supporting documentation, we find SDG&E's 2010 MRTU expenses and capital costs to be incremental and reasonably incurred. We therefore authorize the recovery of the 2010 expenses and capital costs recorded in SDG&E's MRTUMA.

4.2.4. Division of Ratepayers Advocates' Audit Recommendation

As noted above, DRA does not oppose each utility's request that the Commission adopt their requested 2010 revenue requirements, but recommends an audit of their respective MRTUMAs for the 2010 record period. DRA's request mirrors the Commission's treatment of the utility's request for cost recovery for prior periods: in each utility's ERRA compliance proceeding for the 2009 record period, the Commission authorized recovery of the costs incurred and recorded prior to 2010, but conditioned that cost recovery upon the completion of an audit by an independent auditor chosen by the Commission's Division of Water and Audits.

As also noted above, the required audits were completed and filed and served in this proceeding in November 2012 and January 2013. For each utility, the auditor did not identify any material instances of noncompliance with the Commission's MRTU-related directives, and found that the costs in the MRTUMA were incremental, that revenue requirements were reasonable and that all funds were spent on MRTU projects.

We decline to adopt the audit requirement recommended by DRA. As shown in Table 1 above, the bulk of the utilities' spending to implement MRTU occurred prior to 2010; the Commission-ordered audits of that spending did not identify any matters that required further Commission action. It is reasonable to expect that an audit of 2010 activities would reach the same conclusion, especially since the utility activities were consistent with those reviewed during the pre-2010 audits. It is not necessary to devote further resources to auditing utility compliance with the Commission's MRTU-related directives.

4.3. Forecast Spending

Similar to our review earlier in this decision of authorized spending to date, our review of the utilities' forecast MRTU spending is not directly necessary in order to make findings and conclusions about each utility's specific requests for recovery of 2010 costs, because we determine later in this decision how the Commission will review future requests for cost recovery. Nevertheless, we complete our consolidated review of the utilities' MRTU implementation projects with an overview of their forecast future costs in order to place the variances we have documented so far fully into context for the project as a whole.

4.3.1. PG&E's Forecast Spending

PG&E summarizes its forecast incremental MRTU expenditures for 2011-2013 in Table 5-2 of Exhibit PG&E-1.[42] PG&E states that "in accordance with Commission directives, PG&E has been and will continue to be fully engaged in implementation activities related to the subsequent phases of MRTU." The CAISO refers to its ongoing activities to implement additional market design features as the "Markets and Performance" phase of MRTU (MAP). PG&E's Table 5-2 provides a summary forecast of future annual spending relating to MRTU MAP for the years 2011-2013, broken down into four categories:

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[42] Exhibit PG&E-1 at page 5-3.

- Capital expenditures associated with anticipated Information Technology (IT) projects;
- Expenses associated directly with those capital expenditures;
- Expenses forecasted to be incurred by PG&E's Energy Procurement (EP) function; and
- Expenses forecasted to be incurred by PG&E's Demand Response (DR) group.

Table 8
Pacific Gas and Electric Company
MRTU Incremental Cost Forecast
2011-2013
($000)

Line No.	Description	2011	2012	2013	Total 2011-2013
1	Forecasted Capital Expenditures	14,800	6,200	19,600	40,600
2	Forecasted Incremental Expense: IT	250	200	1,000	1,450
3	Forecasted Incremental Expense: EP	0	0	0	0
4	Forecasted Incremental Expense: DR	75	0	0	75
5	Totals	17,136	8,412	22,613	42,125

PG&E notes that forecasts of IT capital expenditures, and expenses directly associated with IT capital expenditures, are not presented for 2014 and beyond. This is consistent with PG&E's cost recovery proposal, which proposes that in conjunction with PG&E's next GRC cycle, which was scheduled to begin in 2014, PG&E's capital expenditures associated with responding to CAISO market initiatives be recovered in PG&E's GRC.[43]

Similarly, forecasts of Energy Procurement and DR-related expenses are also not presented beyond 2013. PG&E states that any MRTU-related expenses incurred by PG&E's Energy Procurement function are already reflected in PG&E's currently adopted GRC revenue requirement. With respect to DR,

[43] *Id.* at 5-2.

PG&E states that the forecast expenses in 2011 represent the costs driven by DR business needs to implement the Proxy Demand Resource (PDR) component of MRTU. PG&E does not currently forecast that its DR function will incur any MRTU-related expenditures beyond 2011. To the extent that PG&E does incur such costs after 2011, PG&E anticipates it will request recovery of those costs in the 2012-2014 DR proceeding, or a subsequent application related to that proceeding.[44]

4.3.2. SCE's Forecast Spending

SCE summarizes its forecast incremental MRTU expenditures for 2011-2014 in Exhibit SCE-1. For 2011, SCE states that it incurred approximately $10.8 million in capital and $8.9 million in incremental O&M expenses while implementing these initiatives and operating in the MRTU market in 2011. Consistent with SCE's prior practice for the MRTUMA, SCE will only seek recovery of O&M expenses that are incremental to the amount authorized in the 2009 GRC. SCE states its intention to seek recovery of these costs in a future ERRA compliance proceeding.[45]

For its 2012-2014 forecasted MRTU spending, SCE states "SCE's forecasted MRTU spending for 2012-2014 includes both O&M spending for operating in the MRTU market and capital spending to implement new market initiatives." In an apparent reference to its 2012 General Rate Case (A.10-11-015), SCE states "the O&M spending was included in the general O&M forecast for the impacted

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[44] *Ibid.*

[45] Exhibit SCE-1 at 64: "For the 2011 record period SCE proposes to describe and seek recovery of the costs incurred while implementing the CAISO 2011 initiatives and operating in the MRTU market in 2011 as part of the ERRA filing for 2011."

business units (Power Procurement and IT)." For 2012-2014 capital spending, SCE does directly refer to its 2012 GRC:

> The capital spending was described in Section F of Exhibit SCE-08 in SCE 2012 General Rate Case filing, A.10-11-015. These forecasts were made based on the known CAISO market initiatives at that time. CAISO periodically reassesses their planned release schedules, which can cause new initiatives to be added and existing initiatives to be modified or deferred. Based on the latest available information from CAISO, SCE continues to believe that the GRC forecast continues to be valid.[46]

4.3.3. SDG&E's Forecast Spending

Regarding its forecast activity in 2011 and 2012, SDG&E states that the transactions recorded as revenue requirements in the MRTUMA from January 1, 2011 through December 31, 2011 are expected to be approximately $2 million undercollected.

SDG&E states that in its then-pending GRC Application (A.10-12-005), the forecasted MRTU-related expenditures for Test Year 2012 were $1.5 million.

5. Proposed Ratemaking Mechanisms and Procedural Vehicles to Replace Consideration of MRTU Implementation Costs in Annual ERRA Compliance Cases

For the fourth and final section of the Joint Report required by the August 2011 Ruling, the utilities were directed to provide a proposed ratemaking mechanism and procedural vehicle to replace consideration of MRTU implementation costs in annual ERRA compliance cases. Each utility makes a similar proposal regarding the proper future procedural home for review of ongoing MRTU spending:

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[46] Exhibit SCE-1 at 57. SCE then includes, at pages 57-63, what appears to be a reproduction of its GRC testimony.

- For 2011 MRTU implementation costs, review would once again take place in the 2012 ERRA compliance proceedings that are typically filed by PG&E, SCE and SDG&E in the months of February, April, and June, respectively.
- For 2012 MRTU implementation costs, SDG&E and SCE stated that there were proposals pending in each of their then-underway General Rate Cases, wherein they sought Commission approval for their forecast 2012 costs.

  -- In the event they received such approval, both SDG&E and SCE proposed to close and eliminate their MRTUMA.

  -- In the future, MRTU costs would be recovered on a prospective basis, according to forecasts reviewed and approved in each GRC.
- PG&E proposed to include its prospective MRTU-related costs to be included in the utility's 2014 GRC filing.

During the pendency of the instant proceeding, each utility followed the procedural steps outlined in their respective proposals and we have resolved the question of how we will replace consideration of MRTU implementation costs in annual ERRA compliance cases. We explain the current status of each utility below.

5.1. PG&E

PG&E presented its cost recovery proposal in Chapter 6 of Exhibit PG&E-1. PG&E explained that its next GRC proceeding was expected to be filed with the Commission for the 3-year period beginning in 2014. In that proceeding, PG&E intended to forecast its MRTU capital and expense revenue requirements in the same manner as for all of PG&E's other GRC revenue requirements, and planned to propose to recover these amounts as part of GRC-authorized cost recovery.

Until that GRC, PG&E proposed the following:

1. With respect to 2010 and 2011 MRTU expenditures, these costs have already been incurred under the current MRTUMA cost recovery structure.
   a. PG&E has presented its 2010 incremental MRTU expenditures for review in this proceeding.
   b. PG&E proposed to present its 2011 incremental MRTU expenditures for reasonableness review and cost recovery authorization in an application to be filed in March 2012.
2. With respect to 2012 and 2013 MRTU capital and expense expenditures, PG&E proposed that these amounts be established, and cost recovery authorized, on a forecast basis in this proceeding.

PG&E's actions during the pendency of this proceeding were consistent with its proposal.

As noted above, for the 2011 record period PG&E requested authorization to recover a $7.9 million balance in its MRTUMA in a separate application, A.12-04-009. The Commission expects to address PG&E's request shortly after issuing a decision in the instant application.

For the 2012 record period, PG&E requested authorization to recover a $3.583 million balance in its MRTUMA as part of its ERRA compliance application, A.13-02-023. The Commission approved PG&E's request in D.16-04-006.

For the 2013 record period, PG&E requested authorization to recover $3.763 million in capital expenditures and $2.185 million in incremental expenses recorded in its MRTUMA as part of its ERRA compliance application, A.14-02-008. An amended scoping memo in that proceeding recently set aside submission of the proceeding and scheduled additional testimony, hearings, and briefing for the latter half of 2016.

For the 2014 record period and beyond, PG&E requested Commission authority to include costs related to CAISO Market Design Initiatives in its GRC request, in order to recover these costs as part of its electric generation revenue requirements. The Commission's decision in that proceeding reflects adoption of PG&E's request.[47]

5.2. SCE

SCE's actions during the pendency of this proceeding were also consistent with its proposal.

For the 2011 record period, SCE requested authorization to recover a $20.38 million balance in its MRTUMA as part of its ERRA compliance application, A.12-04-001. The Commission approved SCE's request in D.13-12-045.

For the 2012 record period, SCE's GRC request for approval of its forecast 2012 costs was denied by the Commission in D.12-11-051. Thus, SCE requested authorization to recover a $7.027 million balance in its MRTUMA as part of its ERRA compliance application that addressed the 2012 record period, A.13-04-001. The Commission approved SCE's request in D.14-05-023.

For the 2013 record period, SCE requested authorization to recover a $5.7 million balance in its MRTUMA as part of its ERRA compliance application, A.14-04-006. The Commission approved SCE's request in D.15-11-011.

For the 2014 record period, SCE requested authorization to recover the balance in its MRTUMA as part of its ERRA compliance application, A.15-04-002. That proceeding has not yet been decided by the Commission.

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[47] *See* A.12-11-009, Exhibit PG&E-10 at pages 9-5 through 9-6, and D.14-08-002, Appendix C, Table 1-2, footnote (a) and Table 14, Line 9.

In its most recent GRC application, A.13-11-003, SCE proposed to recover its 2013 and 2014 capital forecast in the MRTUMA, and then close the account. MRTU-related costs would be recovered on a forecast basis through future GRCs. The Commission approved SCE's request in D.15-11-021.

5.3. SDG&E

SDG&E supports its cost recovery proposal by noting that the MRTUMA was established in order to record and recover Commission-authorized costs that are incremental to costs authorized under the effective GRC revenue requirements. According to SDG&E, while the MRTUMA served a purpose during the development of the MRTU, now that the MRTU has been implemented for several years, the MRTUMA could be dissolved and all funding and costs associated with MRTU should be combined in its GRCs.

SDG&E's actions during the pendency of this proceeding were consistent with its proposal.

For the 2011 record period, SDG&E requested authorization to recover the balance in its MRTUMA as part of its ERRA compliance application, A.12-06-003. The Commission approved SDG&E's request in D.13-07-031.

In its 2012 GRC application, A.10-12-005, SDG&E had proposed to shift the O&M and capital from the MRTU to that GRC proceeding. MRTU-related costs would be recovered on a forecast basis through future GRCs. In D.13-05-010, the Commission authorized SDG&E to include its MRTU costs in the GRC and no longer in the MRTUMA. In D.15-05-015, issued in SDG&E's ERRA compliance proceeding for the 2012 record period, the Commission approved a settlement that included SDG&E's proposal to eliminate the MRTUMA.

5.4. Discussion

We endorse the outcomes described above with respect to the review and recovery of the post-2010 recorded costs for PG&E, SCE and SDG&E. We reiterate here that each utility successfully demonstrated in this proceeding that its MRTU-related spending through 2010 is reasonable. Each utility has also established in this proceeding a factual foundation for review of their costs from 2011 onward, in that they have provided the required reporting and documentation of the "best practices" that they each followed in their implementation activities, and credibly accounted for any observed differences in their respective spending levels through 2010.

Very little about MRTU expenses distinguishes them in any way from other utility expenses; rather, our purpose in identifying this category for special attention at the outset of implementation of the CAISO's project, and in this proceeding, had much to do with the fact that these expenditures were necessary to implement the CAISO-required new and technically complicated market framework, and thus should be reviewed closely for reasonableness. To facilitate this close review, we initially directed that it take place in each utility's annual ERRA compliance proceeding, a much smaller venue than their triennial GRC proceedings. We reviewed each utility's spending through 2009 in each utility's 2010 proceeding, and found the spending to be reasonable, subject to audit. Although the spending for 2010 was initially filed in each utility's 2011 ERRA compliance proceeding before being consolidated for review in this joint application, it was not the Commission's intention to continue the annual ERRA-based reviews in perpetuity. We agree with the utilities, and DRA, that it is reasonable to review future MRTU-related revenue requirements in each utility's respective GRC proceeding.

6. Conclusion

As required by the August 2011 Ruling, PG&E, SCE, and SDG&E have each provided detailed descriptions of the steps they took to research, develop, and implement their respective MRTU systems based on their particular circumstances. As we have described and summarized above, each utility submitted testimony that specifically addresses each topic required by the August 2011 Ruling. That testimony was further summarized at the March 12, 2012 workshop. Pursuant to the schedule adopted in this proceeding, other parties then had the opportunity to comment on the utility filings. Based on our review of the testimony provided by each utility, we conclude that the actions taken by PG&E, SCE, and SDG&E to research, develop, and implement their respective MRTU systems were reasonable given their particular circumstances.

We further conclude that PG&E, SCE, and SDG&E should be authorized to recover the costs incurred and recorded in 2010 regarding the actions they took to research, develop, and implement their respective MRTU systems.

For PG&E, while DRA did take issue with the categorization of costs for which PG&E seeks recovery in this proceeding, neither DRA nor any other party submitted comments taking issue with PG&E's testimony on its implementation of MRTU. For SCE, no party submitted comments taking issue with its testimony. For SDG&E, no party submitted comments taking issue with its testimony.

As we have discussed in greater detail above, we conclude that PG&E, SCE and SDG&E have each provided sufficient testimony to enable the Commission "to compare and clearly identify cost differences before the costs are approved." PG&E, SCE and SDG&E have (1) adequately identified and discussed the differences among them regarding MRTU implementation costs and (2) provided adequate information to enable the Commission to understand and evaluate the observable cost differences between the utilities, and to find those differences acceptable.

7. Categorization and Need for Hearing

In Resolution ALJ 176-3289 dated February 16, 2012, the Commission preliminarily categorized this application as ratesetting and that evidentiary hearings were necessary. On January 11, 2013, at the request of PG&E and ORA, the assigned ALJ issued an e-mail ruling removing the previously scheduled evidentiary hearings from the calendar. Given these developments, we make a final determination here that the category of this proceeding is ratesetting, and a public hearing is not necessary.

8. Comments on Proposed Decision

The proposed decision of the ALJ in this matter was mailed to the parties in accordance with Section 311 of the Public Utilities Code and comments were allowed under Rule 14.3 of the Commission's Rules of Practice and Procedure. Comments were filed on June 27, 2016 by PG&E. No reply comments were filed.PG&E requests that the proposed decision (PD) be revised in three areas.

First, PG&E addresses the PD's treatment of 2007-2009 Market Redesign and Technology Upgrade (MRTU) costs incurred by PG&E. These capital costs and Operations and Maintenance (O&M) expenses had previously been found reasonable by the Commission in Decision (D.) 11-07-039, but the related revenue requirement had only been approved through 2012, with the expectation that the revenue requirements for 2013 and onward would be approved in future Commission proceedings. Thus, in this proceeding PG&E requested approval of a revenue requirement to recover the remaining 2007-2009 MRTU-related costs that were not recovered through the revenue requirement approved in D.11-07-039. PG&E requests that the PD be revised to approve recovery of this remaining revenue requirement for the 2007-2009 costs. PG&E's description of this matter is accurate, and the PD has been revised to authorize PG&E to collect in rates the $50.564 million revenue requirement for remaining 2007-2009 MRTU-related costs.

Second, PG&E addresses the PD's treatment of the 2010 MRTU-related O&M expenses requested by PG&E in this application. PG&E agrees with the PD's conclusion that PG&E's 2010 MRTU-related costs were reasonable, but notes that PG&E had requested approval of $6,789,000 for O&M expenses, not the $6,321,000 indicated in the PD. The PD has been revised to make this correction.

Third, PG&E addresses the PD's treatment of the 2010 MRTU-related revenue requirement requested by PG&E in this application. PG&E documents that the requested revenue requirement for 2010 MRTU-related costs is $10,083,000 for capital expenditures and $6,859,000 in O&M expenses (including franchise fees and uncollectibles), a total of $16,942,000. The PD has been revised to make this correction.

9. Assignment of Proceeding

Michel Peter Florio is the assigned Commissioner and Stephen C. Roscow is the assigned ALJ in this proceeding.

Findings of Fact

1. Implementation of the CAISO's MRTU fundamentally changed the manner in which energy is procured and sold by energy market participants in California.

2. The processes required to support MRTU are substantially more complex than the previous processes the CAISO used to balance the electric demand and generation on the transmission grid under the CAISO's control.

3. Implementation of MRTU required significant changes to the CAISO's systems and processes.

4. Implementation of MRTU required significant changes to the systems and processes of PG&E, SCE and SDG&E.

5. By describing the "starting point" for their MRTU projects, PG&E, SCE and SDG&E provide a useful foundation for the Commission's understanding and evaluation of the subsequent expenditures made to integrate their existing power portfolios, their existing IT infrastructure, and existing vendor relationships with the requirements of MRTU.

6. PG&E, SCE and SDG&E provided detailed descriptions of the steps they took to research, develop, and implement their respective MRTU systems based on their particular circumstances.

7. PG&E, SCE and SDG&E provided detailed descriptions of their major systems that were modified or created to implement MRTU, and their rationales for their actions.

8. PG&E, SCE and SDG&E have each provided sufficient testimony to enable the Commission to compare and clearly identify cost differences before the costs are approved.

9. PG&E's 2010 MRTU capital-related costs of $12.636 million were incremental to its General Rate Case expenses and reasonably incurred.

10. PG&E's 2010 MRTU implementation expenses of $6.789 million were incremental to its General Rate Case expenses and reasonably incurred.

11. PG&E's request that the Commission adopt, in this proceeding, PG&E's estimates of incremental MRTU expenditures for 2012 and 2013 has been addressed by the Commission in other proceedings.

12. SCE's 2010 MRTU capital-related costs of $12.827 million were incremental to its General Rate Case expenses and reasonably incurred.

13. SCE's 2010 MRTU implementation expenses of $6.34 million were incremental to its General Rate Case expenses and reasonably incurred.

14. SDG&E's 2010 MRTU capital-related costs of $0.68 million were incremental to its General Rate Case expenses and reasonably incurred.

15. SDG&E's 2010 MRTU implementation expenses of $0.89 million were incremental to its general rate case expenses and reasonably incurred.

16. The audits of the utilities' pre-2010 MRTU implementation activities ordered by the Commission did not identify any material instances of noncompliance with the Commission's MRTU-related directives, and found that the costs in the MRTUMA were incremental, that revenue requirements were reasonable and that all funds were spent on MRTU projects.

Conclusions of Law

1. The actions taken by PG&E, SCE, and SDG&E to research, develop, and implement their respective MRTU systems were reasonable given their particular circumstances.

2. PG&E, SCE, and SDG&E should be authorized to recover the 2010 costs of the actions they took to research, develop, and implement their respective MRTU systems.

3. The actions taken by PG&E, SCE, and SDG&E to modify or create the major systems necessary to implement MRTU were reasonable given their particular circumstances.

4. PG&E, SCE, and SDG&E should be authorized to recover the 2010 costs of the actions they took to modify or create the major systems necessary to implement MRTU.

5. PG&E, SCE, and SDG&E have adequately identified the differences among them regarding MRTU implementation costs and provided adequate basis for the Commission to understand and evaluate the observable cost differences.

6. The Commission previously approved the reasonableness of PG&E's 2007-2009 MRTU-related costs in Decision 11-07-039 and authorized PG&E to recover a portion of those costs through a revenue requirement of $18.3 million. PG&E should be authorized to include its remaining 2007-2009 MRTU-related revenue requirement of $50.564 million in rates.

7. G&E's 2010 MRTU implementation expenditures are reasonable.

8. PG&E should be authorized to include its 2010 MRTU-related revenue requirement of $16.942 million in rates.

9. SCE's 2010 MRTU implementation expenditures are reasonable.

10. SCE should be authorized to include its 2010 MRTU-related revenue requirement of $17.345 million (including franchise fees and uncollectibles) in rates.

11 SDG&E's 2010 MRTU implementation expenditures are reasonable.

12. SDG&E should be authorized to include its 2010 MRTU-related revenue requirement of $1.6 million in rates and to transfer the $1.6 million balance in its MRTUMA to the NGBA.

13. It is not necessary to devote further resources to auditing utility compliance with the Commission's MRTU-related directives.

O R D E R

IT IS ORDERED that:

1. Pacific Gas and Electric Company is authorized to collect in rates the $50.564 million 2007-2009 Market Redesign and Technology Upgrade revenue requirement that it has requested to recover in this proceeding.
2. Pacific Gas and Electric Company is authorized to collect in rates the $16.942 million 2010 Market Redesign and Technology Upgrade revenue requirement that it has requested to recover in this proceeding.
3. Southern California Edison Company is authorized to collect in rates the $17.345 million Market Redesign and Technology Upgrade revenue requirement that it has requested to recover in this proceeding.
4. San Diego Gas & Electric Company is authorized to collect in rates the $1.6 million Market Redesign and Technology Upgrade revenue requirement that it has requested to recover in this proceeding.
5. Application 12-01-014 is closed.

This order is effective today.

Dated ____________________________, at San Francisco, California.