Application of SAN DIEGO GAS & ELECTRIC)
COMPANY for authority to update its gas and)
electric revenue requirement and base rates)
effective January 1, 2016   (U 902-M)   )

Application No. 14-11-___
Exhibit No.: (SDG&E-19-CWP)

CAPITAL WORKPAPERS TO

PREPARED DIRECT TESTIMONY

OF STEPHEN J. MIKOVITS

ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

NOVEMBER 2014

SDGE

Exhibit SDG&E-19-CWP - INFORMATION TECHNOLOGY

Exhibit SDG&E-19-CWP - INFORMATION TECHNOLOGY

Exhibit SDG&E-19-CWP - INFORMATION TECHNOLOGY

Overall Summary For Exhibit No. SDG&E-19-CWP

Area:	**INFORMATION TECHNOLOGY**
Witness:	**Stephen J. Mikovits**

	In 2013 $ (000)		
	Adjusted-Forecast		
	2014	**2015**	**2016**
A. CS - Field & SCG Mtr Reading	121	0	0
B. CS - Operations, Information, and Technologies	26,743	26,317	15,579
C. Electric Distribution	15,029	5,954	2,372
D. Facilities	0	112	1,288
E. Gas Distribution	0	1,160	0
F. Procurement	2,658	2,438	986
G. Information Technology	49,723	26,103	15,163
Total	**94,274**	**62,084**	**35,388**

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Category:	A. CS - Field & SCG Mtr Reading
Workpaper:	00834A

Summary for Category: A. CS - Field & SCG Mtr Reading

	In 2013$ (000)			
	Adjusted-Recorded	**Adjusted-Forecast**		
	2013	**2014**	**2015**	**2016**
Labor	0	96	0	0
Non-Labor	0	25	0	0
NSE	0	0	0	0
Total	**0**	**121**	**0**	**0**
FTE	0.0	0.9	0.0	0.0

00834A PT13024 SORTCustomer Service Field MDT Refresh

Labor	0	96	0	0
Non-Labor	0	25	0	0
NSE	0	0	0	0
Total	**0**	**121**	**0**	**0**
FTE	0.0	0.9	0.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00834A - PT13024 SORTCustomer Service Field MDT Refresh**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00834.0
Category:	A. CS - Field & SCG Mtr Reading
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834A - PT13024 SORTCustomer Service Field MDT Refresh

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	96	0	0
Non-Labor	Zero-Based	0	0	0	0	0	25	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	121	0	0
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0

Business Purpose:

Replacing the MDTs for CSF will provide new devices to replace critical tools used to link the field technicians with not only the SORT System, but with Service Dispatch and Field Management.
Replacing the aging hardware will allow the project team to implement wireless capabilities for CSF, including GPS tracking capability to improve safety for these field technicians.
Replacing the aging AEG with wireless broadband and deliver expanded wireless data capacity
Minimize current hardware breakdown and downtime issues.

Physical Description:

Install and Implement ~250 MDT devices and associated hardware/software.
Windows XP OS
Hardware Encryption
NetMotion VPN
Verizon/ATT Backhaul
Replace ~250 docking stations for all current CSF service vehicles
Install ~250 CSF field employees added to Verizon/ATT wireless contract
Work with Desktop Services to develop CSF base image.
Microsoft Office Suite 2003 (Upon agreement with field management)

Project Justification:

The purpose of this project is to replace the current Mobile Data Terminals (MDTs) for Customer Service Field (CSF). The MDTs are at end of life (most are at least eight (8) years old) and must be upgraded to meet minimum requirements for wireless broadband and GPS capabilities. The MDT Refresh Project will replace approximately 215 Panasonic Toughbooks and all associated peripheral devices (docking stations, vehicle mounts, printers, etc.).
This wireless capability will eliminate the current requirement for the Advanced Enterprise Gateway (AEG) and the Motorola 900MHz Data Radio Network. Those areas are the two biggest points of failure in the current SORT System. In the event of failure of either the AEG or the Data Radio Network, the CSF Technicians would be stranded with no ability to communicate data within the SORT System.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00834.0
Category:	A. CS - Field & SCG Mtr Reading
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834A - PT13024 SORTCustomer Service Field MDT Refresh

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00834A**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00834.0
Category:	A. CS - Field & SCG Mtr Reading
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834A - PT13024 SORTCustomer Service Field MDT Refresh
Workpaper Detail:	00834A.001 - SORT Customer Service Field MDT Refresh

In-Service Date: 03/31/2014

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	96	0	0
Non-Labor	25	0	0
NSE	0	0	0
Total	121	0	0
FTE	0.9	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Category:	B. CS - Operations, Information, and Technologies
Workpaper:	VARIOUS

Summary for Category: B. CS - Operations, Information, and Technologies

	In 2013$ (000)			
	Adjusted-Recorded	**Adjusted-Forecast**		
	2013	**2014**	**2015**	**2016**
Labor	0	7,308	9,674	4,938
Non-Labor	0	19,435	16,643	10,641
NSE	0	0	0	0
Total	**0**	**26,743**	**26,317**	**15,579**
FTE	0.0	71.5	95.7	48.6

00831B PT15009 EBPP Tech Refresh

Labor	0	0	272	1,140
Non-Labor	0	0	1,808	2,751
NSE	0	0	0	0
Total	**0**	**0**	**2,080**	**3,891**
FTE	0.0	0.0	2.7	11.2

00832A PT14006 Branch Office Technical and Security Improvements

Labor	0	0	0	0
Non-Labor	0	0	824	0
NSE	0	0	0	0
Total	**0**	**0**	**824**	**0**
FTE	0.0	0.0	0.0	0.0

00833D PT15012 I-Avenue Replacement

Labor	0	0	1,093	90
Non-Labor	0	0	1,855	155
NSE	0	0	0	0
Total	**0**	**0**	**2,948**	**245**
FTE	0.0	0.0	10.7	0.9

00831A PT15007 SDGE.com Redesign

Labor	0	0	286	0
Non-Labor	0	0	0	0
NSE	0	0	0	0
Total	**0**	**0**	**286**	**0**
FTE	0.0	0.0	2.8	0.0

00831J PT14015 C&I Business Portal

Labor	0	0	0	1,476
Non-Labor	0	0	0	5,871
NSE	0	0	0	0
Total	**0**	**0**	**0**	**7,347**
FTE	0.0	0.0	0.0	14.5

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Category: B. CS - Operations, Information, and Technologies

Workpaper: VARIOUS

	In 2013$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2013	2014	2015	2016
00831L PT14023 IVR Phase 4 SDGE				
Labor	0	395	0	0
Non-Labor	0	156	0	0
NSE	0	0	0	0
Total	**0**	**551**	**0**	**0**
FTE	0.0	3.9	0.0	0.0
00831O PT11013 SCG My Account Accessibility Phase 3				
Labor	0	7	0	0
Non-Labor	0	106	0	0
NSE	0	0	0	0
Total	**0**	**113**	**0**	**0**
FTE	0.0	0.1	0.0	0.0
00831P PT12051 SDG&E My Account Accessibility				
Labor	0	859	329	0
Non-Labor	0	3,845	1,258	0
NSE	0	0	0	0
Total	**0**	**4,704**	**1,587**	**0**
FTE	0.0	8.4	3.2	0.0
03849C PT15800 Bill Re-Design 2015				
Labor	0	0	1,449	1,094
Non-Labor	0	0	480	300
NSE	0	0	0	0
Total	**0**	**0**	**1,929**	**1,394**
FTE	0.0	0.0	14.2	10.7
00831M PT14040 Direct Access Service Request (DASR) Upgrade				
Labor	0	0	239	0
Non-Labor	0	0	134	0
NSE	0	0	0	0
Total	**0**	**0**	**373**	**0**
FTE	0.0	0.0	2.3	0.0
00831N PT14065 CCA - Community Choice Aggregation				
Labor	0	0	2,950	0
Non-Labor	0	0	0	0
NSE	0	0	0	0
Total	**0**	**0**	**2,950**	**0**
FTE	0.0	0.0	29.9	0.0
03849A PT14039 CEN Phase 4 - System Enhancements				
Labor	0	0	291	291
Non-Labor	0	0	164	164
NSE	0	0	0	0
Total	**0**	**0**	**455**	**455**
FTE	0.0	0.0	2.9	2.9

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Category:	B. CS - Operations, Information, and Technologies
Workpaper:	VARIOUS

	In 2013$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2013	2014	2015	2016
03851D PT13003 GRC Phase 2				
Labor	0	456	0	0
Non-Labor	0	182	0	0
NSE	0	0	0	0
Total	**0**	**638**	**0**	**0**
FTE	0.0	4.5	0.0	0.0
03851F PT13021 Critical Peak Pricing Default (CPP_D)				
Labor	0	1,204	1,021	0
Non-Labor	0	4,027	6,424	0
NSE	0	0	0	0
Total	**0**	**5,231**	**7,445**	**0**
FTE	0.0	11.8	10.0	0.0
04843A PT14843 Smart Meter IT Phase 3 Billing				
Labor	0	392	0	0
Non-Labor	0	525	0	0
NSE	0	0	0	0
Total	**0**	**917**	**0**	**0**
FTE	0.0	3.8	0.0	0.0
10872A PTSPP Smart Peak Pricing				
Labor	0	698	0	0
Non-Labor	0	1,236	0	0
NSE	0	0	0	0
Total	**0**	**1,934**	**0**	**0**
FTE	0.0	6.8	0.0	0.0
13849A PT13026 Reduce your Use Opt In				
Labor	0	306	0	0
Non-Labor	0	692	0	0
NSE	0	0	0	0
Total	**0**	**998**	**0**	**0**
FTE	0.0	3.0	0.0	0.0
00831E PT14005 Off But Registering (OBR) Enhancement				
Labor	0	0	554	0
Non-Labor	0	0	0	0
NSE	0	0	0	0
Total	**0**	**0**	**554**	**0**
FTE	0.0	0.0	5.4	0.0
00833F PT14013 Centralized Calcuation Engine				
Labor	0	675	1,053	0
Non-Labor	0	1,396	1,954	0
NSE	0	0	0	0
Total	**0**	**2,071**	**3,007**	**0**
FTE	0.0	6.6	10.3	0.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Category: B. CS - Operations, Information, and Technologies

Workpaper: VARIOUS

	In 2013$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2013	2014	2015	2016
00833G PT14017 Smart Energy Advisor 2				
Labor	0	1,026	0	0
Non-Labor	0	1,698	0	0
NSE	0	0	0	0
Total	**0**	**2,724**	**0**	**0**
FTE	0.0	10.0	0.0	0.0
00833R PT13013 SMART METER OPERATION CENTER NETWORK				
Labor	0	102	0	0
Non-Labor	0	212	0	0
NSE	0	0	0	0
Total	**0**	**314**	**0**	**0**
FTE	0.0	1.0	0.0	0.0
00833U PT13009 Smart Energy Advisor				
Labor	0	256	0	0
Non-Labor	0	857	0	0
NSE	0	0	0	0
Total	**0**	**1,113**	**0**	**0**
FTE	0.0	2.5	0.0	0.0
03849B PT13012 Net Energy Metering				
Labor	0	45	0	0
Non-Labor	0	26	0	0
NSE	0	0	0	0
Total	**0**	**71**	**0**	**0**
FTE	0.0	0.4	0.0	0.0
03851H PT13031 SMOC EXCEPTION MANAGEMENT (SMOC-EM)				
Labor	0	386	51	0
Non-Labor	0	2,416	457	0
NSE	0	0	0	0
Total	**0**	**2,802**	**508**	**0**
FTE	0.0	3.8	0.5	0.0
00821A PT13010 CUSTOMER ANALYTICS SYSTEM 2013				
Labor	0	501	0	0
Non-Labor	0	2,061	0	0
NSE	0	0	0	0
Total	**0**	**2,562**	**0**	**0**
FTE	0.0	4.9	0.0	0.0
03853B PT14030 Customer Analytics System - Phase II				
Labor	0	0	86	114
Non-Labor	0	0	1,285	1,225
NSE	0	0	0	0
Total	**0**	**0**	**1,371**	**1,339**
FTE	0.0	0.0	0.8	1.2

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Category: B. CS - Operations, Information, and Technologies

Workpaper: VARIOUS

	In 2013$ (000)			
	Adjusted-Recorded	**Adjusted-Forecast**		
	2013	**2014**	**2015**	**2016**
03853C PT16003 Customer Analytics System - III				
Labor	0	0	0	733
Non-Labor	0	0	0	175
NSE	0	0	0	0
Total	**0**	**0**	**0**	**908**
FTE	0.0	0.0	0.0	7.2

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00831B - PT15009 EBPP Tech Refresh**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00831B - PT15009 EBPP Tech Refresh

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	272	1,140
Non-Labor	Zero-Based	0	0	0	0	0	0	1,808	2,751
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	0	2,080	3,891
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	2.7	11.2

Business Purpose:

The purpose of the Electronic Bill Presentment and Payment "EBPP" Tech Refresh project is to replace the existing back-end technology platform for the online electronic bill payment process ("EBPP") available to customers through SDG&E's My Account website. Upgrading the technology now will enable continued support of the site before the vendor for our current technology stops supporting the existing product in 2018. This is the same vendor supporting the customer-facing My Account portal site which is being replaced as part of the SDG&E My Account Accessibility project (project #12051). Updating the platform will improve stability, dependability and cost to support EBPP for customers. This is important because of the increased needs of the SDG&E customer base as demonstrated by EBPP's ability to handle the increased volume of transactions required by the C&I customers being addressed by the CPP-D project.

Physical Description:

The project will provide improved stability and dependability of EBPP as we continue to promote and drive increased adoption of our online services. Oracle Payments provides the many to many relationship functionality that will serve as the foundation for supporting the business needs of our C&I customers. Recurring Payment adoption rates and cash flow improvements will be realized due to an enhanced Recurring Payment process.

Project Justification:

Updating the user interface enhances the customer experience and allows for the implementation of accessibility requirements in accordance with the MOU ("Memorandum of Understanding") with Disabilities Rights Advocates

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00831B - PT15009 EBPP Tech Refresh

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00831B**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00831B - PT15009 EBPP Tech Refresh
Workpaper Detail:	00831B.001 - My Account Portal is being replaced as part of the MAAUI project. This project propose
In-Service Date:	12/31/2016
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	272	1,140
Non-Labor	0	1,808	2,751
NSE	0	0	0
Total	**0**	**2,080**	**3,891**
FTE	0.0	2.7	11.2

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00832A - PT14006 Branch Office Technical and Security Improvements**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00832.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00832A - PT14006 Branch Office Technical and Security Improvements

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	0	0
Non-Labor	Zero-Based	0	0	0	0	0	0	824	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	0	824	0
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Business Purpose:

The purpose of the Branch Office Technical and Security Improvements project is to provide for more secure financial transactions, easier cash and payment reconciliation, improved processing/handling and an overall better customer payment experience. The project will seek to improve upon the existing payment handling and processing in the Branch Offices. This project will also identify improvements to help with payment processing and better ways to track and secure cash that is received from the customers, such as Smart Safes. After identifying improved cash security and payment processing solutions, the project will implement the most cost effective and efficient products wherever possible.

Physical Description:

The scope will be centered on purchasing new equipment for the Branch Offices to replace existing outdated equipment and provide new payment options for customer. Also, the focus will be to strengthen the customer experience at the Branch Offices.

Project Justification:

For example, debit card payments are currently not available to customers who wish to pay over the counter in the Branch Offices, cash and change is given out by hand, and the existing Payment Entry Processing system ("PEP") is not efficient and is not entirely compatible with any of the new software programs or project initiatives for the CCC and Branch Offices. As such, this incompatibility has led to the creation of inefficient and more costly workarounds. There are also issues between the PEP system and some of the newer implementations for the SEAd and CAS projects. In addition, this project will address several known technology issues with SDG&E's ExpressPay kiosks. The existing kiosks are outdated from a technology standpoint and are in need of software upgrades and/or retrofitting and need to be replaced with a newer, more efficient technology.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00832.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00832A - PT14006 Branch Office Technical and Security Improvements

Forecast Methodology:

Labor - Zero-Based

Full implementation assumes all new equipment is purchased and up and running.

Non-Labor - Zero-Based

Full implementation assumes all new equipment is purchased and up and running.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00832A**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00832.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00832A - PT14006 Branch Office Technical and Security Improvements
Workpaper Detail:	00832A.001 - The scope will be centered on purchasing new equipment for the Branch Offices to replac

In-Service Date: 12/31/2015

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	0	824	0
NSE	0	0	0
Total	**0**	**824**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00833D - PT15012 I-Avenue Replacement**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833D - PT15012 I-Avenue Replacement

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	0	1,093	90
Non-Labor	Zero-Based	0	0	0	0	0	0	1,855	155
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**2,948**	**245**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	10.7	0.9

Business Purpose:

I-Avenue, also known as Saratoga, is a CRM tool used by Commercial and Industrial services. In short, the system manages and tracks the interaction that takes place between SDG&E and its business customers. An upgrade is needed to bring the system up to current technology, and will require additional changes to master data to meet the customer's desire to have a more real-time, holistic view of each customer's usage profile.

Physical Description:

Configure SAP-CRM out the box functionality to support business requirements using standard CRM functionality: appointments, notes, contact lists, calendars, letters and reporting as well as, client specific views. The system will require additional changes to master data to meet the clients desire to have a 360 degree customer view.

Project Justification:

Move approximately 150 I-Avenue (Saratoga) CRM business users to enterprise CRM (SAP) application. The primary groups being effecting are SDG&E C&I Services, Trade Allies, Fire Prevention and Delinquent Phone List business client groups. SCG gas business using I-Avenue will not be part of the project.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833D - PT15012 I-Avenue Replacement

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00833D**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833D - PT15012 I-Avenue Replacement
Workpaper Detail:	00833D.001 - Move approximately 150 I-Avenue (Saratoga) CRM business users to enterprise CRM (SAP) a

In-Service Date: 06/30/2016

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	1,093	90
Non-Labor	0	1,855	155
NSE	0	0	0
Total	**0**	**2,948**	**245**
FTE	0.0	10.7	0.9

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00831A - PT15007 SDGE.com Redesign**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831A - PT15007 SDGE.com Redesign

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	286	0
Non-Labor	Zero-Based	0	0	0	0	0	0	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	0	286	0
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0

Business Purpose:

The purpose of the SDGE.com Redesign project is to redesign the SDG&E's website, SDGE.com. The website has become a prominent and essential communications channel to connect with customers.   The redesign is needed because of new customer technologies (e.g. mobile, social media) and increase search engine friendliness.   The website redesign will incorporate customer usage trend data and above-mentioned technologies to improve self-service. An enhanced navigation and information architecture will help customers find information easier and faster, a consistent experience with My Account, as well as removing out of date information, adding new features and technologies that were not available when the site was last built, and integration of the latest social media interfaces, image and video galleries, and blogging interfaces. Additionally, a redesign will help with compatibility with the latest browsers and accessibility requirements.

Physical Description:

A redesign will include research and testing, information architecture, and design and development. Advanced analytics will also be included as part of the redesign project. A large part of the first phase of development will be information gathering and planning, leading up to the research. Also needed will be testing and a maintenance strategy as part of a digital roadmap.

Project Justification:

Redesign company website, SDGE.com. Our website has become a prominent and essential communications channel to connect with customers.   A redesign is needed to stay on top of best practices. The redesign will help us stay up-to-date with new technologies and increase search engine friendliness.   The website redesign will utilize new trends and above-mentioned technologies to improve self-service, thus reducing calls and raising customer satisfaction.

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 00831.0

Category: B. CS - Operations, Information, and Technologies

Category-Sub: 2. Improving Customer Experience

Workpaper Group: 00831A - PT15007 SDGE.com Redesign

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on internal labor hours quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00831A**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831A - PT15007 SDGE.com Redesign
Workpaper Detail:	00831A.001 - Redesign company website, SDGE.com. Our website has become a prominent and essential c
In-Service Date:	12/31/2015
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	286	0
Non-Labor	0	0	0
NSE	0	0	0
Total	**0**	**286**	**0**
FTE	0.0	2.8	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00831J - PT14015 C&I Business Portal**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831J - PT14015 C&I Business Portal

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	0	1,476
Non-Labor	Zero-Based	0	0	0	0	0	0	0	5,871
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	0	0	7,347
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.5

Business Purpose:

The purpose of the C&I Business Portal is to address the specific needs of the large and medium commercial and industrial (C&I) customers. Currently, My Account provides online self-service for Residential and Small Commercial customers, however does not address the specific needs of the medium and large C&I customers. To satisfy the requests from this segment of customers and to enhance the customer experience for those that utilize our existing and future on-line customer tools, a C&I Business Portal will be developed for Medium and Large C&I customers. This portal will be a centralized location that provides the C&I customer roles the ability to utilize tools that support energy analysis from a cost and consumption level, event management, rate eligibility and enrollment, bill payment, benchmarking and energy efficiency.   Across those functions additional capabilities will be developed to allow for role based access and complex analysis such as:
•   Business level C&I Customer Registration into My Account allowing access to business-level related functions supporting C&I tools
•   Aggregation and disaggregation of accounts, for multi-account customers.
•   Management of complex (Many-to-Many) relationships between master users and delegated users for selected business functions
•   Customer Managed Contact Management at the user level
•   Subscription/Alerts

Physical Description:

Build out a WebPortal within the Oracle's WebCenter CMS to utilize new advance functions, which may include the ability to Design & Layout the entire look and feel of the front-end and backend separate from functionality. Organize and manage the structure of SDG&E website, content or data. Manage (create,modify,delete) user accounts and their information. Define user roles and setup permissions or use predefined ones. The ability to manage and setup user groups and set customer access permissions. Manage regional settings (language, character sets, date & time format, decimal points, etc.) Automatically manage mailing list and subscriptions and unsubscribes. Customizable administrative interfaces (functionality, access and actions restrictions in sections, and designs.)

Project Justification:

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831J - PT14015 C&I Business Portal

Currently, My Account provides online self-service for Residential and Small Commercial customers. However, it does not address the specific needs of the Large and Medium Commercial & Industrial (C&I) customers. This concept document addresses the requirement to enhance the customer experience for those that utilize on-line customer tools by developing a C&I WebPortal solution. The Web Portal will connect people, processes and information with a suite of functions: Web Experience management, content management, and collaboration technologies. Leverage existing investments by offering a complete, open and integrated user experience by providing standards-based support to improve the reuse of SDG&E existing resources and extend the value of existing systems. Features like content management will provide the ability for SDG&E to interact with the customer to manage text, pages, documents, images, data records, links, news, articles, topics, posts, products, catalogs, galleries, forms, polls, security, etc. Improve business productivity by providing social and collaborative services to help build the connections between people, information and applications, provides business activity streams so users can navigate, discover and access content in context, and offers dynamic, personalized role-based content in a collaborative environment.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831J - PT14015 C&I Business Portal

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00831J**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831J - PT14015 C&I Business Portal
Workpaper Detail:	00831J.001 - Build out a WebPortal within the Oracle's WebCenter CMS to utilize new advance functio

In-Service Date: 12/31/2016

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	240
Non-Labor	0	0	757
NSE	0	0	0
Total	0	0	997
FTE	0.0	0.0	2.4

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831J - PT14015 C&I Business Portal
Workpaper Detail:	00831J.002 - C&I Business Portal

In-Service Date: 12/31/2016

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	160
Non-Labor	0	0	1,135
NSE	0	0	0
Total	0	0	1,295
FTE	0.0	0.0	1.6

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831J - PT14015 C&I Business Portal
Workpaper Detail:	00831J.003 - C&I Business Portal

In-Service Date:	12/31/2016
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	646
Non-Labor	0	0	1,592
NSE	0	0	0
Total	**0**	**0**	**2,238**
FTE	0.0	0.0	6.3

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831J - PT14015 C&I Business Portal
Workpaper Detail:	00831J.004 - C&I Business Portal
In-Service Date:	12/31/2016
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	430
Non-Labor	0	0	2,387
NSE	0	0	0
Total	0	0	2,817
FTE	0.0	0.0	4.2

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00831L - PT14023 IVR Phase 4 SDGE**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831L - PT14023 IVR Phase 4 SDGE

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	395	0	0
Non-Labor	Zero-Based	0	0	0	0	0	156	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**551**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	3.9	0.0	0.0

Business Purpose:

The SDG&E IVR manages incoming customer calls to the CCC. The application guides the customer through menus, which either provide functions for the customer to self-serve (e.g. extend the due date on their bill; arrange for a gas appliance service order) or collects information about the caller to route the call to the properly skilled agent. The IVR 2014 project will shorten the call flow from the IVR entry to main menu and sub-menu; eliminate unnecessary caller authentication; minimize steps to complete a gas appliance service order; revise prompt verbiage for improved clarity and succinctness; and add self-service opportunities to start/stop service. The enhancements are intended to improve the experience for the caller and entice callers to use self-service. The benefits of this project are to increase IVR self-service and to reduce calls to the ESS and ESS workforce.

Physical Description:

Main and secondary menu changes; add a 'payment options' menu, identify callers at point of need; change gas appliance and shut-off call flows to increase self service
Move profile lookup call (IV02) into the IVR (from the Genesys strategy)
Implement Payment Arrangements web service (built for My Account)
Create an entry point in the Payment Arrangements leg of the application, to allow the CCC to transfer callers into the IVR to complete bill payment extension
Add IVR modules to improve call routing
Add NAICS code to the IV02 profile

Project Justification:

These changes will improve the overall IVR self service rate by 2.5 – 3%. In addition to increasing the self service rate, changes to the application will also result in better customer experience.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831L - PT14023 IVR Phase 4 SDGE

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00831L**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831L - PT14023 IVR Phase 4 SDGE
Workpaper Detail:	00831L.001 - SDG&E IVR system has been proven working however the results were modest. The IVR self-
In-Service Date:	12/31/2014
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	395	0	0
Non-Labor	156	0	0
NSE	0	0	0
Total	**551**	**0**	**0**
FTE	3.9	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00831O - PT11013 SCG My Account Accessibility Phase 3

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831O - PT11013 SCG My Account Accessibility Phase 3

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	7	0	0
Non-Labor	Zero-Based	0	0	0	0	0	106	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	113	0	0
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0

Business Purpose:

The purpose of the MAAUI Phase 3 (PDF Bill remediation) project is to complete the update to My Account and comply with TY 2011 GRC Memorandum of Understanding with the Center for Accessible Technology (C for AT). SoCalGas has long supported website usability and accessibility and has been making steady progress meeting its commitments to website accessibility as outlined in its Section 4.A.2.d of the MOU which states: ".... the third party vendor software used for My Account will be rewritten to utilize accessible web pages that are compliant with Priorities A and AA and produce PDF documents that will be in an accessible format that would allow for a reader to review them using a screen reader". In July of 2013 the My Account system rewrite was completed and Priority AA compliance was confirmed by the C for AT. SoCalGas continues to modify the 25 months of billing history stored as PDF documents and available online to every My Account user in order to be remain compliant with the MOU. More specifically, key requirements for the MAAUI Phase 3 project includes providing an alternative bill format that is readable with "screen readers" and font enlargement software and to provide accessible linkage to the new alternative bill format. SoCalGas' web and My Account teams have collaborated closely with the C for AT and other internal or external website accessibility resources in order to assure that all our customers with special needs can utilize every feature of socalgas.com and My Account. This project will provide Priority AA accessibility compliance to every feature and function in My Account

Physical Description:

Redesign of the web user interface for the My Account applications (no technical upgrades/changes)

Project Justification:

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831O - PT11013 SCG My Account Accessibility Phase 3

The purpose of the MAAUI Phase 3 (PDF Bill remediation) project is to complete the update to My Account and comply with TY 2011 GRC Memorandum of Understanding with the Center for Accessible Technology (C for AT). SoCalGas has long supported website usability and accessibility and has been making steady progress meeting its commitments to website accessibility as outlined in its Section 4.A.2.d of the MOU which states: ".... the third party vendor software used for My Account will be rewritten to utilize accessible web pages that are compliant with Priorities A and AA and produce PDF documents that will be in an accessible format that would allow for a reader to review them using a screen reader". In July of 2013 the My Account system rewrite was completed and Priority AA compliance was confirmed by the C for AT. SoCalGas continues to modify the 25 months of billing history stored as PDF documents and available online to every My Account user in order to be remain compliant with the MOU. More specifically, key requirements for the MAAUI Phase 3 project includes providing an alternative bill format that is readable with "screen readers" and font enlargement software and to provide accessible linkage to the new alternative bill format. SoCalGas' web and My Account teams have collaborated closely with the C for AT and other internal or external website accessibility resources in order to assure that all our customers with special needs can utilize every feature of socalgas.com and My Account. This project will provide Priority AA accessibility compliance to every feature and function in My Account

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 00831.0

Category: B. CS - Operations, Information, and Technologies

Category-Sub: 2. Improving Customer Experience

Workpaper Group: 00831O - PT11013 SCG My Account Accessibility Phase 3

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00831O**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831O - PT11013 SCG My Account Accessibility Phase 3
Workpaper Detail:	00831O.001 - SCG My Account Accessibility
In-Service Date:	03/31/2014
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	7	0	0
Non-Labor	106	0	0
NSE	0	0	0
Total	113	0	0
FTE	0.1	0.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00831P - PT12051 SDG&E My Account Accessibility**

Area:	INFORMATION TECHNOLOGY	
Witness:	Stephen J. Mikovits	
Budget Code:	00831.0	
Category:	B. CS - Operations, Information, and Technologies	
Category-Sub:	2. Improving Customer Experience	
Workpaper Group:	00831P - PT12051 SDG&E My Account Accessibility	

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	859	329	0
Non-Labor	Zero-Based	0	0	0	0	0	3,845	1,258	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**4,704**	**1,587**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	8.4	3.2	0.0

Business Purpose:

The purpose of the SDG&E My Account Accessibility is to update the customer-facing My Account portal site to comply with TY 2008 GRC Memorandum of Understanding ("MOU") with the Disability Rights Advocates while improving usability and upgrading the portal technology platform. The My Account portal site provides customers with convenient access to online service options. Updating the user interface will enhance customer experience through improved visual layout, additional personalization, and newer technology. The new technology will allow for the implementation Priority A and Priority AA Web Content Accessibility Guidelines 2.0 and requirements per section §4.3 of the 2008 MOU in order to ensure all our customers, including those with special needs, can utilize every My Account feature. Pages will be easier to read and customers who sign up can view their SDG&E bill, schedule online payments, manage service requests, view energy charts, and use analysis tools. New personalization will present at-a-glance balance and bill payment information, and an improved tailored account summary. The implementation of responsive design will create a seamless web experience with the same look-and-feel across mobile devices and other company sites, such as sdge.com. Supporting computer-alternative devices, such as mobile smartphones and tablets, will provide greater access to My Account for customers who may have barriers to technology. Upgrading the portal technology platform now will enable continued support of the site before the vendor for our current WebLogic technology stops supporting the existing product in 2018.

Physical Description:

Redesigned User Interface (My Account "look & feel") with Responsive Design
Usability improvements to promote self-service containment (where possible)
100% Accessibility Compliance including Accessible PDF Bill
Content Management & Tailored Treatments with utilization of portal features
Technology Refresh & Portal Migration to WebCenter Platform (HW & SW)
My Account site optimization including technical improvements & maintenance efficiencies
CSR Module – maintain consistency between module and My Account

Project Justification:

Compliance with §4.3 of the 2008 GRC Memorandum of Understanding (MOU) with the Disability Rights Advocates. The MOU was signed June of 2007 and agreed to be completed in 'a reasonable time.' The project needs to move forward in order to show progress on this agreement, show we intend to uphold our commitments and maintain credibility in negotiation with Interveners. Proof of progress will prevent legal action to force compliance and avoid potential lawsuits such as those experienced by Target & Amazon. (In 2008, Target settled a lawsuit agreeing to pay $6 million to the National Federation of the Blind.)

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831P - PT12051 SDG&E My Account Accessibility

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00831P**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831P - PT12051 SDG&E My Account Accessibility
Workpaper Detail:	00831P.001 - SDG&E My Account Accessibility

In-Service Date:	12/31/2014
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	859	0	0
Non-Labor	3,845	0	0
NSE	0	0	0
Total	**4,704**	**0**	**0**
FTE	8.4	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831P - PT12051 SDG&E My Account Accessibility
Workpaper Detail:	00831P.004 - SDG&E My Account Accessibility
In-Service Date:	05/31/2015
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	329	0
Non-Labor	0	1,258	0
NSE	0	0	0
Total	0	1,587	0
FTE	0.0	3.2	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
03849C - PT15800 Bill Re-Design 2015**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03849.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	03849C - PT15800 Bill Re-Design 2015

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	1,449	1,094
Non-Labor	Zero-Based	0	0	0	0	0	0	480	300
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	0	1,929	1,394
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	14.2	10.7

Business Purpose:

The purpose of the Bill Redesign project is to improve SDG&E's customer bill to address changes in the electric utility industry. The existing customer bill was designed in 2008 and implemented in 2010. As the electric industry is changing, our existing bill format lacks the flexibility to meet the expectations or the future needs of our customers. This project will leverage the existing formatting software to redesign our bill, and to enhance the bill presentation and graphics. Customer generation is expanding dramatically and new technologies are constantly providing new options for our customers. Smart Meter data allows us to provide more specific and targeted information that ever before.

Physical Description:

Rate reform, SPP and Demand Response programs will require us to provide timely, valuable and easy to read power usage information, alternative rate options and other important information to our customers to help them to make informed decisions in support of energy use, cost and conservation. While these tools are available now to customers online, over half our customers still receive a paper bill. The objective of this project is to target those customers and provide a paper bill that is easier to understand, incorporates more graphic information and provides a large font option.

Project Justification:

SDG&E also plans to offer customers currently receiving a paper bill the option of a one sheet/two page summary bill in lieu of the current full bill detail.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03849.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	03849C - PT15800 Bill Re-Design 2015

Forecast Methodology:

Labor - Zero-Based

Based on historical and vendor estimates

Non-Labor - Zero-Based

Based on historical and vendor estimates

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 03849C**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03849.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	03849C - PT15800 Bill Re-Design 2015
Workpaper Detail:	03849C.001 - Bill Re-Design 2015
In-Service Date:	12/31/2016
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	1,449	1,094
Non-Labor	0	480	300
NSE	0	0	0
Total	0	1,929	1,394
FTE	0.0	14.2	10.7

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00831M - PT14040 Direct Access Service Request (DASR) Upgrade

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00831M - PT14040 Direct Access Service Request (DASR) Upgrade

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	0	239	0
Non-Labor	Zero-Based	0	0	0	0	0	0	134	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**373**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0

Business Purpose:

The Direct Access Service Request ("DASR") System is a data management system used by SDG&E to exchange electronic and manual data input and output files with the Electronic Data Interchange (EDIX) System, CISCO, and other data management systems. The DASR system allows for the enrollment, termination, and customer account management associated with customers receiving electric or gas commodity services from an Electric Service Provider under the Direct Access ("DA") Program (electric), an Aggregator under the Core Aggregation Transportation Program (gas), or a Community Choice Aggregator ("CCA") under the Community Choice Aggregation Program (electric), collectively known as Energy Service Providers (ESPs). The DASR system upgrade will automate the DASR and related system processes (EDI, Service Order, and Load Migration), streamline processes across multiple applications to reduce existing time-lag, automate all DASR service orders, minimize the necessity for manual processing and verification of DASRs, ensure the accuracy of all DA billing, reduce the cancel and re-bill of customer billing due to data errors, and automate the Load Migration Reporting to the CAISO. These functional and technical enhancements are required to support the current DA business and are foundational to CCA. The current system has reached the end of its useful life and is to be reconfigured or replaced.

Physical Description:

The current system has reached the end of its useful life and is to be reconfigured or replaced. The new or reconfigured DASR System must have the functional capabilities required to support efficient, accurate, and timely processing of service requests and other electronic data exchanges between SDG&E and LSEs, inlcuding Community Choice Aggregators, and their agents.

Project Justification:

The new or reconfigured DASR System must have the functional capabilities required to support efficient, accurate, and timely processing of service requests and other electronic data exchanges between SDG&E and Load Serving Entities (LSE), including CCAs, and their agents. While the system changes required for CCA are being proposed under a separate project, implementing these DASR enhancements will mitigate the company's risk of not being fully prepared to develop and deploy the CCA-specific enhancements under regulatory timing constraints.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00831M - PT14040 Direct Access Service Request (DASR) Upgrade

Forecast Methodology:

Labor - Zero-Based

Estimate based on vendor quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00831M

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00831M - PT14040 Direct Access Service Request (DASR) Upgrade
Workpaper Detail:	00831M.001 - The current system has reached the end of its useful life and is to be reconfigured or
In-Service Date:	12/31/2015
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	239	0
Non-Labor	0	134	0
NSE	0	0	0
Total	0	373	0
FTE	0.0	2.3	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00831N - PT14065 CCA - Community Choice Aggregation

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00831N - PT14065 CCA - Community Choice Aggregation

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	2,950	0
Non-Labor	Zero-Based	0	0	0	0	0	0	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	0	2,950	0
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	29.9	0.0

Business Purpose:

The purpose of the Community Choice Aggregation ("CCA") capital project is to make the necessary changes to SDG&E's systems to implement CCA. CCA permits cities and counties to provide electric commodity services to customers located within their jurisdiction. Under CCA, SDG&E would be required to provide basic CCA implementation services as well as ongoing support, including, SDG&E consolidated billing for all CCA customers within their boundaries and ongoing DASR communications between the CCA and SDG&E. The existing DASR system requires a technical upgrade and functional enhancements to meet the current Direct Access business needs. The CCA project is dependent on these DASR system modifications as these changes are foundational to the DASR CCA enhancements. The DASR upgrade has been proposed under a separate project due to the risk of timing constraints to complete those changes ahead of the development work required for implementing CCA.

Physical Description:

Systems impacted: Service Orders, Billing, Finance, Revenue, IVR, MyAcct, SDGE.com, Direct Access Service Request, Customer Relationship Management, Aclara & DataWarehouse. The DASR portion of this project has also been proposed as a separate project due to the risk of timing constraints to complete before a CCA is prepared to implement.

Project Justification:

In accordance with SDG&E's CPUC-approved Electric Rule 27, no later than six months after a CCA files an implementation plan with the CPUC, SDG&E must be prepared to provide initial CCA implementation services. These services include a platform to facilitate electronic communication between a CCA and SDG&E, in addition to ongoing support including SDG&E consolidated billing, meter reading, and other customer services. SDG&E recently received a request for data from a city and is aware of another CCA-eligible entity that has set aside funding for a CCA feasibility study. While it is difficult to predict if and when a city or county will ultimately implement CCA, SDG&E must be prepared nonetheless. Based on recent examples of CCAs becoming active in California, it seems entirely possible that a CCA could be implemented within two years after commencing its feasibility study. Thus, SDG&E believes that it is necessary to start the work on the upgrades to its systems now to be ready to serve a CCA within the six-month period discussed above.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00831N - PT14065 CCA - Community Choice Aggregation

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00831N**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00831N - PT14065 CCA - Community Choice Aggregation
Workpaper Detail:	00831N.001 - Community Choice Aggregation

In-Service Date: 12/31/2015

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	1,370	0
Non-Labor	0	0	0
NSE	0	0	0
Total	**0**	**1,370**	**0**
FTE	0.0	13.4	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00831N - PT14065 CCA - Community Choice Aggregation
Workpaper Detail:	00831N.002 - CCA - Customer Choice Aggregation
In-Service Date:	12/31/2015
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	587	0
Non-Labor	0	0	0
NSE	0	0	0
Total	**0**	**587**	**0**
FTE	0.0	5.8	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00831N - PT14065 CCA - Community Choice Aggregation
Workpaper Detail:	00831N.003 - CCA - Customer Choice Aggregation
In-Service Date:	12/31/2015
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	666	0
Non-Labor	0	0	0
NSE	0	0	0
Total	0	666	0
FTE	0.0	7.5	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00831N - PT14065 CCA - Community Choice Aggregation
Workpaper Detail:	00831N.004 - CCA - Customer Choice Aggregation
In-Service Date:	12/31/2015
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	327	0
Non-Labor	0	0	0
NSE	0	0	0
Total	0	327	0
FTE	0.0	3.2	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
03849A - PT14039 CEN Phase 4 - System Enhancements**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03849.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	03849A - PT14039 CEN Phase 4 - System Enhancements

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	291	291
Non-Labor	Zero-Based	0	0	0	0	0	0	164	164
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**455**	**455**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	2.9	2.9

Business Purpose:

The purpose of the Customer Energy Network ("CEN") Phase 4 project is to enhance the current CEN system which provides Smart Meter consumption information to external third parties who provide online presentment and other service offerings. Enhancements are necessary to meet requirements mandated in the decision Authorizing Provision of Customer Energy Data to Third Parties Upon Customer Request (CPUC D.13-09-025). Enhancements include conforming to the Energy Services Platform Interface (ESPI) data standard, third party registration portal, enrollment and other user interface changes in SDG&E's My Account web site. Additionally, CPUC D.13-09-025 mandated changes are also required to CEN's back-office platform to include application programming interfaces (API) and web services, reporting and administration services that manage third party and customer enrollments.

Physical Description:

The Customer Energy Network (CEN) Phase 4 project will enhance the CEN system to include cost data (leveraging the Centralized Calculation Engine), add gas consumption data, allow enrollments directly from the third party and support the new open standards for exchanging consumption information.

Project Justification:

The Customer Energy Network (CEN) system provides SmartMeter consumption information to external third parties who provide online presentment and other services. CEN Phase 4 project will enhance the current CEN system to meet the requirements mandated in the Customer Data Access ruling, provide automation of third party setup and maintenance to reduce future O&M support pressures and support Customer Services business needs.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03849.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	03849A - PT14039 CEN Phase 4 - System Enhancements

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 03849A**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03849.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	03849A - PT14039 CEN Phase 4 - System Enhancements
Workpaper Detail:	03849A.001 - The Customer Energy Network (CEN) system provides SmartMeter consumption information to

In-Service Date: 12/31/2015

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	291	0
Non-Labor	0	164	0
NSE	0	0	0
Total	**0**	**455**	**0**
FTE	0.0	2.9	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03849.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	03849A - PT14039 CEN Phase 4 - System Enhancements
Workpaper Detail:	03849A.002 - CEN Phase 4 - System Enhancements

In-Service Date: 12/31/2016

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	291
Non-Labor	0	0	164
NSE	0	0	0
Total	**0**	**0**	**455**
FTE	0.0	0.0	2.9

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
03851D - PT13003 GRC Phase 2**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03851.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	03851D - PT13003 GRC Phase 2

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	456	0	0
Non-Labor	Zero-Based	0	0	0	0	0	182	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**638**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	4.5	0.0	0.0

Business Purpose:

The GRC Phase II project is being implemented in compliance with CPUC D.14-01-002 in Phase II of SDG&E's 2012
General Rate Case application (A.10-12-005). More specifically, the project includes making changes to SDG&E's
Customer Information System to enable the billing of the electric rates adopted by D.14-01-002. In addition, the electric
rate changes also need to be made to SDG&E's online Energy Management Tool which provides customers with
bill-to-date, bill history and other electric energy pricing information.   The rate changes became effective for customers on
May 1, 2014.

Physical Description:

#1 Eliminate Minimum Charge and Create a New Customer Charge for Residential (SIR 88895)
#2 Consolidating Tiers 3 and 4 (SIR 88896)
#3 New Medical Consumption Codes and use of DMSM for billing Multi-unit Rates (SIR 88897)
#4 Redesign Critical Peak Prices (CPP) for Events (SIR 88898)

Project Justification:

CISCO and Aclara system changes required to support GRC Phase 2.
For CISCO, 3 additional O&M (SIR) items that are not specific to GRC, which the client has requested be worked along
with GRC due to the synergies involved.
CISCO and Aclara system changes required to support the Triennial Cost Allocation Proceeding (TCAP).

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03851.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	03851D - PT13003 GRC Phase 2

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 03851D**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03851.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	03851D - PT13003 GRC Phase 2
Workpaper Detail:	03851D.001 - GRC Phase 2
In-Service Date:	07/31/2014
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	456	0	0
Non-Labor	182	0	0
NSE	0	0	0
Total	638	0	0
FTE	4.5	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
03851F - PT13021 Critical Peak Pricing Default (CPP_D)

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03851.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	03851F - PT13021 Critical Peak Pricing Default (CPP_D)

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	1,204	1,021	0
Non-Labor	Zero-Based	0	0	0	0	0	4,027	6,424	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	5,231	7,445	0
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	11.8	10.0	0.0

Business Purpose:

The purpose of the CPP-D (Critical Peak Pricing – Default) Medium project is to support the rollout and ongoing management of the CPP rate for the mid-sized business customers in SDG&E's service territory. Unlike the small business customers, mid-sized customers have more complex electric service and multiple accounts serving their business which drives the need for a more robust tool for SDG&E to use to manage the enrollment, billing, anniversary management, and outreach. Likewise, the customers require more complex functionality to manage being on a critical peak pricing rate compared to their more simplistic time-of-use rate structure.

The CPP-D Medium project includes an online tool for the mid-sized customers to manage and monitor their energy usage and costs with the ability to group their accounts and review them at an aggregate level as well as to monitor the details down to each account and interval. Furthermore, C&I customers who are group billed will have the ability to view and pay their bills online, access historical group bills (including a download/print feature) and will have the option to select paperless billing.

Demand response events, a key component of the CPP rate, will be managed including customer notifications, event day management and post event analytics and metrics for the customers to manage their performance. The tool will also provide this customer group with high level benchmarking for their business type as well as recommendations for energy efficiency programs to consider.

Physical Description:

The scope of the CPP-D Medium project includes the implementation of two online tools for the customers to access and a number of integrations into SDG&E's existing application portfolio. Key integrations included in the project are My Account, Customer Relationship Management (CRM) and Customer Information System. Without this automation project, the implementation of the CPP-D rate for the mid-sized customers would be done with manual processes and providing no tool for the customers to effectively manage their participation on the new time-of-use rate.

Project Justification:

Critical Peak Pricing Rates are required to be rolled out to our customers by the CPUC. Our large commercial and industrial (C&I) customers, ~1,700 customers, were defaulted onto this new rate manually in 2008. The on-going processing remains manually intensive today. Small business customers, ~120,000, will be defaulted thru the Smart Pricing Program (SPP) automation. This leaves ~9,000 medium C&I customers who will not have not been defaulted. These medium customers are more complex than the small businesses as they likely have more meters and more complex operations, but still don't have the internal resources to effectively manage their energy.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03851.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	03851F - PT13021 Critical Peak Pricing Default (CPP_D)

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 03851F**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03851.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	03851F - PT13021 Critical Peak Pricing Default (CPP_D)
Workpaper Detail:	03851F.001 - Critical Peak Pricing Default (CPP_D)
In-Service Date:	12/31/2014
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	1,204	0	0
Non-Labor	3,365	0	0
NSE	0	0	0
Total	4,569	0	0
FTE	11.8	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03851.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	03851F - PT13021 Critical Peak Pricing Default (CPP_D)
Workpaper Detail:	03851F.002 - Critical Peak Pricing Default (CPP_D)

In-Service Date: 10/31/2015

Description:

Software Licenses Purchased

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	0
Non-Labor	662	2,000	0
NSE	0	0	0
Total	662	2,000	0
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03851.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	03851F - PT13021 Critical Peak Pricing Default (CPP_D)
Workpaper Detail:	03851F.003 - Critical Peak Pricing Default (CPP_D)

In-Service Date: 10/31/2015

Description:

Hardware Purchases

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	0	365	0
NSE	0	0	0
Total	**0**	**365**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 03851.0

Category: B. CS - Operations, Information, and Technologies

Category-Sub: 3. Mandated

Workpaper Group: 03851F - PT13021 Critical Peak Pricing Default (CPP_D)

Workpaper Detail: 03851F.004 - Critical Peak Pricing Default (CPP_D)

In-Service Date: 03/31/2015

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	1,021	0
Non-Labor	0	4,059	0
NSE	0	0	0
Total	**0**	**5,080**	**0**
FTE	0.0	10.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
04843A - PT14843 Smart Meter IT Phase 3 Billing**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	04843.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	04843A - PT14843 Smart Meter IT Phase 3 Billing

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	392	0	0
Non-Labor	Zero-Based	0	0	0	0	0	525	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**917**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	3.8	0.0	0.0

Business Purpose:

SDG&E installed a Smart Meter system throughout the San Diego and Orange County service areas to improve operational efficiencies, enhance customer service, and enable demand response. Approved by the CPUC on April 12, 2007, the Smart Meter Program has replaced and/or retrofitted approximately 1.4 million electric meters and 865,000 gas meters. The project established a two-way communications infrastructure, provided automated meter reading in place of manual meter reading, integrated customer information and billing systems, measured energy use in fifteen (15) minute or one hour intervals, provided integrated remote disconnect/reconnect capabilities and is in the process of providing a Home Area Network (HAN). SDG&E will implement the final phase of the Smart Meter billing system to support complex commercial/industrial accounts. Standby service, conjunctive billed, clean generation service and complex net meter accounts will be supported with this final phase. The project will allow approximately 600 Smart Meters to be installed for the complex commercial/industrial accounts.

Physical Description:

The system enhancements / processes will allow installation of approximately 600 meters.

Project Justification:

While these capital expenses are recovered through the Advanced Metering Infrastructure Balancing Account, pursuant to CPUC D.07-04-043 and as modified by D.11-03-042, these expenses are included herein for the purpose of determining SDG&E's rate base for its TY 2016 GRC

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	04843.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	04843A - PT14843 Smart Meter IT Phase 3 Billing

Forecast Methodology:

Labor - Zero-Based

The GRC forecast includes estimated current incremental internal resources assigned 100% to this integration effort and additional contract labor support thru the end of 2014.

Non-Labor - Zero-Based

The GRC forecast includes estimated current incremental internal resources assigned 100% to this integration effort and additional contract labor support thru the end of 2014.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 04843A**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	04843.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	04843A - PT14843 Smart Meter IT Phase 3 Billing
Workpaper Detail:	04843A.001 - Smart Meter IT Phase 3 Billing
In-Service Date:	12/31/2014
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	392	0	0
Non-Labor	525	0	0
NSE	0	0	0
Total	**917**	**0**	**0**
FTE	3.8	0.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
10872A - PTSPP Smart Peak Pricing**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10872.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	10872A - PTSPP Smart Peak Pricing

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	698	0	0
Non-Labor	Zero-Based	0	0	0	0	0	1,236	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,934**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	6.8	0.0	0.0

Business Purpose:

The purpose of this phase of the overall SPP is to implement additional customer engagement functionality for NEM customers, enhancements allowing for new customers to enroll in the SPP rates over the phone, a new system for understanding the effectiveness of our outreach and education efforts, enhanced reporting and updates to our customer subscription, and alert architecture. The expected completion date for this phase is Q4 2014, with estimated capital expenses of $1,934,000 for 2014. While these capital expenses are recovered through the Dynamic Pricing Balancing Account, pursuant to CPUC D.12-12-004, these expenses are included herein for the purpose of determining SDG&E's rate base for its TY 2016 GRC

Physical Description:

The systems impacted include: Service Orders, Billing, My Account, Customer Relationship Management, Aclara & Data Warehouse

Project Justification:

The project was approved in CPUC filing A.10-07-009

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10872.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	10872A - PTSPP Smart Peak Pricing

Forecast Methodology:

Labor - Zero-Based

The GRC forecast includes estimated current incremental internal resources assigned to this integration effort and additional contract labor support thru the end of 2014.

Non-Labor - Zero-Based

The GRC forecast includes estimated current incremental internal resources assigned to this integration effort and additional contract labor support thru the end of 2014.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 10872A**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10872.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	10872A - PTSPP Smart Peak Pricing
Workpaper Detail:	10872A.001 - SPP CPUC
In-Service Date:	12/31/2014
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	698	0	0
Non-Labor	1,236	0	0
NSE	0	0	0
Total	1,934	0	0
FTE	6.8	0.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
13849A - PT13026 Reduce your Use Opt In**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	13849.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	13849A - PT13026 Reduce your Use Opt In

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	306	0	0
Non-Labor	Zero-Based	0	0	0	0	0	692	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	998	0	0
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0

Business Purpose:

The RYU Opt-In project complied with CPUC D.13-07-003 by converting the Peak Time Rebate ("PTR") program to an opt-in program, including taking customer calls to participate in the program, coding such customers as program participants, and enabling SDG&E to call a PTR program event involving only those customers who have taken the action necessary to opt into the program. This allows only those customers who have opted into the program to receive PTR program event alert notifications and be eligible to receive bill credits for load reductions achieved during PTR program events. Additional activities included modifying the online bill presentment of PTR program results, energy savings and bill credits through the EMT contained within SDG&E's My Account system. The PTR Opt-In project became available to customers on May 1, 2014.

Physical Description:

The RYU Opt-In project will allow SDG&E to:
•Leverage the investment in the Contact & Campaign Management (CCM) framework to manage RYU: subscriptions, customer segmentation, campaign execution, and campaign feedback. This will eliminate the need for Silverpop to manage these functions.
•Provide RYU credits only to customers who are RYU-eligible AND have subscribed to RYU alerts.

Project Justification:

RYU alert subscriptions will all be managed in the same way as SPP alerts, outage alerts, and newsletters, both internally and externally, providing a more uniform customer experience. Eliminating the majority of the program's "free-riders" will ensure that credit payments are focused on those customers who are providing statistically significant load reduction

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	13849.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	13849A - PT13026 Reduce your Use Opt In

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 13849A**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	13849.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	3. Mandated
Workpaper Group:	13849A - PT13026 Reduce your Use Opt In
Workpaper Detail:	13849A.001 - Reduce your Use Opt In

In-Service Date: 07/31/2014

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	306	0	0
Non-Labor	692	0	0
NSE	0	0	0
Total	998	0	0
FTE	3.0	0.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00831E - PT14005 Off But Registering (OBR) Enhancement**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00831E - PT14005 Off But Registering (OBR) Enhancement

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	0	554	0
Non-Labor	Zero-Based	0	0	0	0	0	0	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**554**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	5.4	0.0

Business Purpose:

The purpose of the OBR Enhancement project is to automate the process of identifying and investigating situations where energy consumption is recorded on a company meter but system records indicate that the premise is inactive or OBR. The existing OBR process involves many manual tasks such as reviewing reports, making phone calls, and initiating field visits to determine the cause for consumption and who is responsible. The project will allow for automated monitoring and identification of these scenarios, will enable automated notifications to be mailed and/or delivered to premises and decision logic to leverage remote disconnect when possible.

Physical Description:

The scope will be centered on automating the existing Off But Registering (OBR) processes including the identification of unbilled energy, the "Give Notice" letter generation and Remote Disconnection, when appropriate.

Project Justification:

Customer Operations (Billing and Meter Revenue Protection) identify and investigate situations where energy consumption is recorded on a company meter but system records indicate that the premise is inactive (Off But Registering)
 - Today's processes are manual. Working from reports, manually making phone calls or initiating field visits to try to determine the cause for consumption and who is responsible.
 - Customer Billing and Meter Revenue Protection are both receiving information at the meter level, some of which leads to duplication
 - The project will allow for automated monitoring and identification of these scenarios, will enable automated notifications to be mailed and/or delivered to premises and decision logic to leverage remote disconnect when possible.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00831E - PT14005 Off But Registering (OBR) Enhancement

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

N/A

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00831E**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00831.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00831E - PT14005 Off But Registering (OBR) Enhancement
Workpaper Detail:	00831E.001 - The scope will be centered on automating the existing Off But Registering (OBR) proces

In-Service Date: 07/31/2015

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	554	0
Non-Labor	0	0	0
NSE	0	0	0
Total	**0**	**554**	**0**
FTE	0.0	5.4	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00833F - PT14013 Centralized Calcuation Engine**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00833F - PT14013 Centralized Calcuation Engine

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	675	1,053	0
Non-Labor	Zero-Based	0	0	0	0	0	1,396	1,954	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	2,071	3,007	0
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	6.6	10.3	0.0

Business Purpose:

The purpose of the Centralized Calculation Engine project is to implement a single engine to automate rate and complex billing calculations, utilizing consistent data sets from standard data sources, which can then be presented to internal users at will, in near real time, and at various portals. The development of this tool is anticipated to be foundational for use by other projects including the DRMS Project and Electric Vehicle to Grid Project. The first phase of this project will provide a single calculation engine to drive rate calculation, rate comparisons, modeling, pricing, and testing of rates. Currently there are multiple tools across different business units, both manual and automated, which utilize inconsistent data and methodologies to predict, model, and demonstrate rate scenarios and use cases. The need for this functionality will only increase as rates continually change and become more complex at a rapid pace. This tool will not replace the presentment of these calculations, but may become a data source for these calculations.

Physical Description:

The proposed scope of the project would be the development of a single calculation engine (software solution) which will automate and standardize rate calcluation, complex and exception billing calculations. The goal of the end system is to access calculations that can be presented to users at will, in real time, and at various portals because the underlying data is trusted; while realizing both hard and soft benefits from not having to rely on multiple vendors for various portions of this output.

Project Justification:

A need has been identified to provide a single calculation engine to drive rate calculation, rate comparisons, modeling, pricing and rate analysis. There are multiple tools in many organizations and business units, both manual and automated, which utilize inconsistant data, input and methodologies to predict, model and demonstrate rate scenarios and use cases.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00833F - PT14013 Centralized Calcuation Engine

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00833F**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00833F - PT14013 Centralized Calcuation Engine
Workpaper Detail:	00833F.001 - The proposed scope of the project would be the development of a single calculation engi
In-Service Date:	12/31/2014
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	675	0	0
Non-Labor	979	0	0
NSE	0	0	0
Total	1,654	0	0
FTE	6.6	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00833F - PT14013 Centralized Calcuation Engine
Workpaper Detail:	00833F.002 - Centralized Calcuation Engine

In-Service Date: 12/31/2014

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	417	0	0
NSE	0	0	0
Total	**417**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00833F - PT14013 Centralized Calcuation Engine
Workpaper Detail:	00833F.003 - Centralized Calcuation Engine
In-Service Date:	12/31/2015
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	1,053	0
Non-Labor	0	1,371	0
NSE	0	0	0
Total	0	2,424	0
FTE	0.0	10.3	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00833F - PT14013 Centralized Calcuation Engine
Workpaper Detail:	00833F.004 - Centralized Calcuation Engine
In-Service Date:	12/31/2015
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	0
Non-Labor	0	583	0
NSE	0	0	0
Total	0	583	0
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00833G - PT14017 Smart Energy Advisor 2**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00833G - PT14017 Smart Energy Advisor 2

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	1,026	0	0
Non-Labor	Zero-Based	0	0	0	0	0	1,698	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**2,724**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0

Business Purpose:

The purpose of the Smart Energy Advisor desktop ("SEAd 2") project is to implement credit workflow into the Smart Energy Advisor desktop. The enhancement will streamline credit conversations and allow ESS to process credit orders more efficiently and in less time. The project will also make other functional and user interface improvements to improve the effectiveness of the ESS. The new functionality will allow ESS to process credit orders more efficiently and in less time.

Physical Description:

Further develop the SEAD (smart energy advisor desktop) platform to incorporate and streamline CISCO credit functions.
The platform will introduce more customer profile information from the CAS (customer analytics system) project and access other data sources for greater insight into customers, premises, accounts, and energy use.

Project Justification:

ESS are using a green screen view of the customer, with muiltiple applications to get information necessary to perform their jobs, such as On-Line Help, CISCO, CSR Portal into My Account. These multiple applications and screens mean the ESS (Energy Services Specialist) has a fragmented view of the customer and extends handle time while customer is on the call.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00833G - PT14017 Smart Energy Advisor 2

Forecast Methodology:

Labor - Zero-Based

Based on efforts performed by SEAD1 and the number current credit screens in CISCO.

Non-Labor - Zero-Based

Based on efforts performed by SEAD1 and the number current credit screens in CISCO.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00833G**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00833G - PT14017 Smart Energy Advisor 2
Workpaper Detail:	00833G.001 - ESS are using a green screen view of the customer with muiltiple applications to get i

In-Service Date: 12/31/2014

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	617	0	0
Non-Labor	290	0	0
NSE	0	0	0
Total	**907**	**0**	**0**
FTE	6.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00833G - PT14017 Smart Energy Advisor 2
Workpaper Detail:	00833G.002 - Smart Energy Advisor 2

In-Service Date: 12/31/2014

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	153	0	0
Non-Labor	1,162	0	0
NSE	0	0	0
Total	**1,315**	**0**	**0**
FTE	1.5	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00833G - PT14017 Smart Energy Advisor 2
Workpaper Detail:	00833G.003 - Smart Energy Advisor 2

In-Service Date:	04/30/2014
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	206	0	0
Non-Labor	49	0	0
NSE	0	0	0
Total	**255**	**0**	**0**
FTE	2.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00833G - PT14017 Smart Energy Advisor 2
Workpaper Detail:	00833G.004 - Smart Energy Advisor 2
In-Service Date:	12/31/2014
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	50	0	0
Non-Labor	197	0	0
NSE	0	0	0
Total	**247**	**0**	**0**
FTE	0.5	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00833R - PT13013 SMART METER OPERATION CENTER NETWORK

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00833R - PT13013 SMART METER OPERATION CENTER NETWORK

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	102	0	0
Non-Labor	Zero-Based	0	0	0	0	0	212	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	314	0	0
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0

Business Purpose:

The Smart Meter Operations Center ("SMOC") project is a multi-year, multi-phase project to establish a SMOC. The project will centralize operations and improve operational efficiency by applying visualization packages, advanced data analytics and reporting tools to aid in network monitoring, exception management, work management, asset management to optimize network and data performance. Phase I will deliver network monitoring and visualization by providing Smart Meter Operations Analysts with network monitoring capabilities including search and notification features displayed in a geographic format to improve operational efficiencies.

Physical Description:

• The Smart Meter Management solution shall support protocols such as syslog & SNMPv3 to receive changes to the health statuses of the cell relays & smart meters.
• The Smart Meter Management solution shall provide security capabilities to enable role-based access control & NERC CIP compliance (to be validated with Information
Security)
• The Smart Meter Management solution shall be capable of applying advanced analytics to raw Smart Meter Data to provide users with meaningful results.
• The solution must leverage existing software and enterprise platforms where functionally practical
• The Smart Meter Management solution shall be able to optimally manage data and scale based on the following metrics:
• Number of users: 50 concurrent users
• Number of cell relays: ~2,500 cell relays
• Number of data points per cell relay: ~21
• Number of smart meter endpoints: 2.2 M
• Visualization of smart meter endpoints by different levels of exceptions
• Number of data points per smart meter endpoint: ~10 (estimated);
• Data Storage: ~24Tb (primary production) per year (3 year data retention)
• Number of data sources (advanced analytics): ~8
• Number of data element categories (advanced analytics): ~100
• Number of Use Cases for development: ~90
• Ability to send, receive and record "ping" device check signals at 1 minute intervals
• Ability to receive and record prescribed data elements at 5 minute, 15 minute or 3 times per day intervals.

Project Justification:

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00833R - PT13013 SMART METER OPERATION CENTER NETWORK

A vast network of approximately 1.4 million Smart Meters and 800 thousand gas modules has been created to improve the revenue
stream through data accuracy and fewer estimated bills. The Smart Meter network has also created new opportunity customer energy
management programs such as Reduce Your Use and eventually, interval billing for lower consumption customers. The Smart Meter
Network is the foundation for Smart Grid technologies; smart meters provide hourly data that makes "Green Button", Smart Pricing and
other energy programs possible. All of these programs and innovations would not be possible without smart meter real-time energy
information.
Smart Meter Operations Center, Initiative #2 will centralize operations, improve operational efficiency and Smart Meter network
reliability by applying a network management system; visualization, reporting tools and data analytics to aid in network monitoring,
exception management and troubleshooting.
Smart Meter Operations Center provide centralized information supporting customer service and establishing the foundation to support
other company initiatives such as Smart Grid.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00833R - PT13013 SMART METER OPERATION CENTER NETWORK

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00833R

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00833R - PT13013 SMART METER OPERATION CENTER NETWORK
Workpaper Detail:	00833R.001 - SMART METER OPERATION CENTER NETWORK

In-Service Date: 05/31/2014

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	102	0	0
Non-Labor	212	0	0
NSE	0	0	0
Total	**314**	**0**	**0**
FTE	1.0	0.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00833U - PT13009 Smart Energy Advisor**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00833U - PT13009 Smart Energy Advisor

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	256	0	0
Non-Labor	Zero-Based	0	0	0	0	0	857	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,113**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0

Business Purpose:

The purpose of the Smart Energy Advisor desktop ("SEAd") project is to deliver a unified, process centric user interface for the CCC. The desktop establishes functional and technical capabilities including telephony integration, customer search, verification, customer relationship overview, and customer wrap up functions. The unified user interface improves the efficiency and effectiveness of the Energy Services Specialists ("ESS"). Since 1997, the company's front-line ESS staff has been using a mainframe "green screen" to access customer information. This user interface requires multiple key strokes and screen views to address common customer questions and requests. The SEAd interface is a modern browser-based interface that consolidates multiple screens into one display and provides ESS with a single sign-on to various mainframe and web applications. Furthermore, the project also provides for an upgrade to the on-line help system that the ESS use to research information and procedures to assist customers.

Physical Description:

Login authentication
• Computer Telephony Integration (CTI) with Avaya
• Internet Explorer (version 8 or above) or Google Chrome
• System must be SDG&E 'branded' on screens
• Ability to support peak user load (160 connections)
• System response time has not been determined but will be quantified in requirements phase
• Systems integration development, leveraging existing web services (with expected modifications) or other appropriate data exchange techniques.
• Oracle database instance

Project Justification:

This project is intended to improve ESS performance and efficiency with advanced technology and effective tool. The benefits of this project are to control and reduce Average Handle Time. This project will enable individual ESS to handle more calls, and lower ESS cost of service.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00833U - PT13009 Smart Energy Advisor

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00833U**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00833U - PT13009 Smart Energy Advisor
Workpaper Detail:	00833U.001 - Smart Energy Advisor
In-Service Date:	04/30/2014
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	256	0	0
Non-Labor	857	0	0
NSE	0	0	0
Total	1,113	0	0
FTE	2.5	0.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
03849B - PT13012 Net Energy Metering**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03849.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	03849B - PT13012 Net Energy Metering

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	45	0	0
Non-Labor	Zero-Based	0	0	0	0	0	26	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	71	0	0
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0

Business Purpose:

The standards and billing processes for Net Energy Metering ("NEM") are defined under CPUC Code 2827 and SDG&E's NEM tariff, Schedule NEM. NEM is currently the fastest growing program at SDG&E, averaging a 40% increase each year. The purpose of the NEM capital project is to address 30 known NEM billing system deficiencies and enhancements including bill calculation and display improvements, online processing improvements, and customer communication enhancements.

Physical Description:

Net Energy Metering Bill Calculation Improvements currently defined in the System Information Requests (SIRs)
Net Energy Metering Bill Display Improvements currently defined in the System Information Requests (SIRs)
Net Energy Metering On-Line Processing Improvements currently defined in the System Information Requests (SIRs)
Customer Communication Enhancements currently defined in the System Information Requests (SIRs)

Project Justification:

Benefits of this project include reducing the need for hiring additional labor to support continued NEM growth. These enhancements will allow for only needing one incremental FTE in 2014, two incremental FTEs in 2015, and one incremental FTE in 2016.   Without these enhancements, the incremental resource requirement would have been another 4.0 FTEs by 2016. Additional NEM project benefits include reduced internal maintenance costs associated with troubleshooting and manually resolving issues, reduced number of customer phone calls and inquiries for the Customer Contact Center, and improved overall customer experience and satisfaction due to effective communication and transparency.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03849.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	03849B - PT13012 Net Energy Metering

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 03849B**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03849.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	03849B - PT13012 Net Energy Metering
Workpaper Detail:	03849B.001 - NEM
In-Service Date:	07/31/2014
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	45	0	0
Non-Labor	26	0	0
NSE	0	0	0
Total	71	0	0
FTE	0.4	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
03851H - PT13031 SMOC EXCEPTION MANAGEMENT (SMOC-EM)

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03851.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	03851H - PT13031 SMOC EXCEPTION MANAGEMENT (SMOC-EM)

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	386	51	0
Non-Labor	Zero-Based	0	0	0	0	0	2,416	457	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	2,802	508	0
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	3.8	0.5	0.0

Business Purpose:

The SMOC - Exception Management ("SMOC-EM") is Phase II of the multi-year project to establish a SMOC. As part of Phase II of the project, SDG&E will deliver Smart Meter Operations' Analysts with results necessary to effectively resolve meter exceptions and network issues by use of event correlation and data analytics. SMOC-EM will deliver an information system integrated with multiple existing data sources to identify specific events or conditions resulting in exceptions or non-reporting meters while eliminating false-positive exceptions and pinpointing true exception meters and non-communicating network devices.

Physical Description:

SMOC-EM will deliver an information system integrated with multiple existing data sources to identify specific events or conditions resulting in exceptions or non-reporting meters while eliminating false-positive exceptions and pinpointing true exception meters and non-communicating network devices

Project Justification:

The SMOC system will combine essential data from multiple applications allowing expedient data analysis and troubleshooting, work order management for accelerated results.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03851.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	03851H - PT13031 SMOC EXCEPTION MANAGEMENT (SMOC-EM)

Forecast Methodology:

Labor - Zero-Based

Project is currently in progress

Non-Labor - Zero-Based

Project is currently in progress

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 03851H**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03851.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	03851H - PT13031 SMOC EXCEPTION MANAGEMENT (SMOC-EM)
Workpaper Detail:	03851H.001 - SMOC EXCEPTION MANAGEMENT (SMOC-EM)

In-Service Date: 03/31/2015

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	386	51	0
Non-Labor	2,416	457	0
NSE	0	0	0
Total	**2,802**	**508**	**0**
FTE	3.8	0.5	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00821A - PT13010 CUSTOMER ANALYTICS SYSTEM 2013

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00821.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	6. Understanding Customers
Workpaper Group:	00821A - PT13010 CUSTOMER ANALYTICS SYSTEM 2013

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	501	0	0
Non-Labor	Zero-Based	0	0	0	0	0	2,061	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	2,562	0	0
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	4.9	0.0	0.0

Business Purpose:

The purpose of the Customer Analytics System ("CAS") Phase 1 establishes an analytical system within Customer Services to store and analyze customer data. The CAS system centralizes data from multiple systems to allow efficient analysis using current technologies. Phase 1 allows the company to target customers with relevant services and programs through the Energy Services Specialists in the CCC. Phase 1 also provides an Enterprise Analytics Roadmap to align analytics projects across SDG&E to achieve efficiencies. Currently, customer data is stored in multiple systems that have been developed historically to satisfy separate project requirements. Consolidating relevant information about customers is difficult and complex, and the company uses multiple methods to access and analyze the information. Additionally, when a customer contacts the company, the ESS do not have the information necessary to present additional services or programs that the customer may be eligible for in an efficient manner. The CAS 2013 project is addressing these issues in two ways

Physical Description:

First, the Enterprise Analytics Roadmap evaluates the analytical systems across the company in support of SDG&E's "Smart Grid Deployment Plan - Integrated and Cost Cutting Systems for Data Management and Analytics". The Roadmap aligns similar types of data, analytical methods, and tools to identify synergies suitable for this project. Second, the project will develop a Next Best Option analytical system using customer data obtained from multiple data sources within the company. Integrating this data and developing the analytics for the purpose of the Next Best Option will be completed for several programs and services. The Next Best Option will evaluate relevant information about customers and compare that to the programs and services that SDG&E offers. Analytics will be used to inform ESS of the most relevant programs and services for a customer who calls the CCC. Company standards on information security and protecting customer privacy will be followed.

Project Justification:

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 00821.0

Category: B. CS - Operations, Information, and Technologies

Category-Sub: 6. Understanding Customers

Workpaper Group: 00821A - PT13010 CUSTOMER ANALYTICS SYSTEM 2013

Business Problems:

The Energy Service Specialists (ESS) do not have timely or sufficient information about a customer to efficiently answer questions, provide expert advice, and offer personalized recommendations

Customer expectations on customer service are increasing, and affect conversations related to billing and rates

The company has many analytics solutions, but there are data silos and inefficiencies in data that affect customers

Solutions:

Create a Customer Services analytics roadmap and an Enterprise analytics roadmap that are aligned

Leverage the Enterprise Analytics System (EAS) so that Customer Services can share common customer and business data elements

Provide the ESS with summarized information based on the specific customer call and workflow, and offer recommendations to help customers achieve their desired energy lifestyle.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00821.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	6. Understanding Customers
Workpaper Group:	00821A - PT13010 CUSTOMER ANALYTICS SYSTEM 2013

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00821A**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00821.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	6. Understanding Customers
Workpaper Group:	00821A - PT13010 CUSTOMER ANALYTICS SYSTEM 2013
Workpaper Detail:	00821A.001 - CUSTOMER ANALYTICS SYSTEM 2013

In-Service Date: 09/30/2014

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	501	0	0
Non-Labor	1,921	0	0
NSE	0	0	0
Total	2,422	0	0
FTE	4.9	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00821.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	6. Understanding Customers
Workpaper Group:	00821A - PT13010 CUSTOMER ANALYTICS SYSTEM 2013
Workpaper Detail:	00821A.002 - CUSTOMER ANALYTICS SYSTEM 2013

In-Service Date:	04/30/2014
Description:	

Software Purchase

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	0
Non-Labor	80	0	0
NSE	0	0	0
Total	80	0	0
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00821.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	6. Understanding Customers
Workpaper Group:	00821A - PT13010 CUSTOMER ANALYTICS SYSTEM 2013
Workpaper Detail:	00821A.003 - CUSTOMER ANALYTICS SYSTEM 2013

In-Service Date: 04/30/2014

Description:

Hardware Purchase

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	60	0	0
NSE	0	0	0
Total	**60**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
03853B - PT14030 Customer Analytics System - Phase II

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03853.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	6. Understanding Customers
Workpaper Group:	03853B - PT14030 Customer Analytics System - Phase II

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	86	114
Non-Labor	Zero-Based	0	0	0	0	0	0	1,285	1,225
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	0	1,371	1,339
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.2

Business Purpose:

The purpose of the CAS Phase II project is to gain further understanding of customers using data analytics to achieve efficiencies in customer outreach. CAS Phase II will introduce data governance and data quality processes to improve the accuracy of customer data, maximizing re-use across the company in customer outreach campaigns, new product & service development, and internal reporting. The project will integrate more data sources into the common data model and define definitions for common understanding of customer segments across multiple business groups. The CAS Phase II project will build upon the data integration and data model established in the CAS 2013 project. CAS Phase II will integrate more data sources into the common data model and define definitions for common understanding of customer segments across multiple business groups. The result will be better understanding of customer segments, improved communications that align with customer needs, and a better customer experience.

Physical Description:

Five to seven new data sources will be integrated into EAS to support Customer Analytics. In addition, data quality and governance processes will be developed and deployed to support the data model for Customer Analytics. Self Service capabilities wiil be delivered to various business functions at SDG&E. Real time data integration (CDC).

Project Justification:

Will allow more targeted marketing campaigns with more efficient budgets. This project will minimize data gathering and data clean-up that most business users are doing today in separate and inconsistent ways. Maximizes the use of customer data to make strategic, tactical, and operational decisions.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03853.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	6. Understanding Customers
Workpaper Group:	03853B - PT14030 Customer Analytics System - Phase II

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 03853B**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03853.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	6. Understanding Customers
Workpaper Group:	03853B - PT14030 Customer Analytics System - Phase II
Workpaper Detail:	03853B.001 - Five to seven new data sources will be integrated into EAS to support Customer Analytic

In-Service Date: 12/31/2015

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	73	0
Non-Labor	0	321	0
NSE	0	0	0
Total	0	394	0
FTE	0.0	0.7	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03853.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	6. Understanding Customers
Workpaper Group:	03853B - PT14030 Customer Analytics System - Phase II
Workpaper Detail:	03853B.002 - Customer Analytics System - Phase II

In-Service Date:	12/31/2015
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	13	0
Non-Labor	0	964	0
NSE	0	0	0
Total	0	977	0
FTE	0.0	0.1	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03853.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	6. Understanding Customers
Workpaper Group:	03853B - PT14030 Customer Analytics System - Phase II
Workpaper Detail:	03853B.003 - Customer Analytics System - Phase II

In-Service Date: 12/31/2016

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	97
Non-Labor	0	0	306
NSE	0	0	0
Total	**0**	**0**	**403**
FTE	0.0	0.0	1.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03853.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	6. Understanding Customers
Workpaper Group:	03853B - PT14030 Customer Analytics System - Phase II
Workpaper Detail:	03853B.004 - Customer Analytics System - Phase II

In-Service Date:	12/31/2016
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	17
Non-Labor	0	0	919
NSE	0	0	0
Total	**0**	**0**	**936**
FTE	0.0	0.0	0.2

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
03853C - PT16003 Customer Analytics System - III**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03853.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	6. Understanding Customers
Workpaper Group:	03853C - PT16003 Customer Analytics System - III

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	0	733
Non-Labor	Zero-Based	0	0	0	0	0	0	0	175
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	0	0	908
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.2

Business Purpose:

The purpose of the CAS Phase III project is to provide business users with information and analytic tools to optimize channel usage by customers and Customer Programs effectiveness. This will involve integrating further data sources from web, Branch Office, and IVR channels into the Enterprise Analytics System for channel optimization. It will also include integrating further data sources from other databases and some 3rd parties for monitoring energy efficiency and demand response program effectiveness.

Physical Description:

Five to seven new data sources will be integrated into Enterprise Analytics System to support Customer Analytics. Data quality and governance processes will expanded. Channel optimization analytics tools will be evaluated and deployed. Program effectiveness analytics tools will be evaluated and deployed.

Project Justification:

Will allow Customer Services groups to optimize channel effectiveness by customer, minimizing the cost to serve customers through these channels. More effective Program analysis will minimize customer acquisition costs and provide greater clarity on program participation by customers, which will also allow SDG&E to affect better Program design with the CPUC through better data.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03853.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	6. Understanding Customers
Workpaper Group:	03853C - PT16003 Customer Analytics System - III

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 03853C**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03853.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	6. Understanding Customers
Workpaper Group:	03853C - PT16003 Customer Analytics System - III
Workpaper Detail:	03853C.001 - Customer Analytics System - III

In-Service Date: 12/31/2016

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	623
Non-Labor	0	0	44
NSE	0	0	0
Total	**0**	**0**	**667**
FTE	0.0	0.0	6.1

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03853.0
Category:	B. CS - Operations, Information, and Technologies
Category-Sub:	6. Understanding Customers
Workpaper Group:	03853C - PT16003 Customer Analytics System - III
Workpaper Detail:	03853C.002 - Customer Analytics System - III

In-Service Date: 12/31/2016

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	110
Non-Labor	0	0	131
NSE	0	0	0
Total	**0**	**0**	**241**
FTE	0.0	0.0	1.1

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Category:	C. Electric Distribution
Workpaper:	VARIOUS

Summary for Category: C. Electric Distribution

	In 2013$ (000)			
	Adjusted-Recorded	**Adjusted-Forecast**		
	2013	**2014**	**2015**	**2016**
Labor	0	5,094	2,745	1,321
Non-Labor	0	9,935	3,209	1,051
NSE	0	0	0	0
Total	**0**	**15,029**	**5,954**	**2,372**
FTE	0.0	49.9	27.0	12.9

00834C PT12039 ESS MDT

Labor	0	0	0	0
Non-Labor	0	48	0	0
NSE	0	0	0	0
Total	**0**	**48**	**0**	**0**
FTE	0.0	0.0	0.0	0.0

00834D PT13011 SDGE MDT Replacement

Labor	0	0	0	0
Non-Labor	0	451	0	0
NSE	0	0	0	0
Total	**0**	**451**	**0**	**0**
FTE	0.0	0.0	0.0	0.0

00833K PT14029 Asset Photo Repository (APR)

Labor	0	0	301	0
Non-Labor	0	0	0	0
NSE	0	0	0	0
Total	**0**	**0**	**301**	**0**
FTE	0.0	0.0	3.0	0.0

00833L PT14044 Powerworkz Upgrade and Enhancements

Labor	0	335	224	0
Non-Labor	0	0	0	0
NSE	0	0	0	0
Total	**0**	**335**	**224**	**0**
FTE	0.0	3.3	2.2	0.0

00833M PT14062 Electric GIS 2014 Enhancements

Labor	0	119	458	0
Non-Labor	0	130	360	0
NSE	0	0	0	0
Total	**0**	**249**	**818**	**0**
FTE	0.0	1.2	4.5	0.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Category: C. Electric Distribution

Workpaper: VARIOUS

	In 2013$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2013	2014	2015	2016
00833P PT13006 Performance Management Reporting Phase 2 (PMR2)				
Labor	0	317	0	0
Non-Labor	0	675	0	0
NSE	0	0	0	0
Total	**0**	**992**	**0**	**0**
FTE	0.0	3.1	0.0	0.0
00833Q PT13007 POLE LOADING CALCULATION REPOSITORY				
Labor	0	266	0	0
Non-Labor	0	154	0	0
NSE	0	0	0	0
Total	**0**	**420**	**0**	**0**
FTE	0.0	2.6	0.0	0.0
00833T PT13022 Electric GIS 2013 Enhancements				
Labor	0	422	0	0
Non-Labor	0	246	0	0
NSE	0	0	0	0
Total	**0**	**668**	**0**	**0**
FTE	0.0	4.1	0.0	0.0
00835B PT14027 Performance Management Reporting Phase 3 (PMR3)				
Labor	0	0	540	398
Non-Labor	0	0	208	227
NSE	0	0	0	0
Total	**0**	**0**	**748**	**625**
FTE	0.0	0.0	5.3	3.9
07864A PT15801 CPD Enh ph 2 SDGE				
Labor	0	0	920	923
Non-Labor	0	0	811	824
NSE	0	0	0	0
Total	**0**	**0**	**1,731**	**1,747**
FTE	0.0	0.0	9.0	9.0
07864B PT07864 SDGE CPD Enh Phase 1				
Labor	0	3,635	302	0
Non-Labor	0	8,231	1,830	0
NSE	0	0	0	0
Total	**0**	**11,866**	**2,132**	**0**
FTE	0.0	35.6	3.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00834C - PT12039 ESS MDT**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00834.0
Category:	C. Electric Distribution
Category-Sub:	2. Growth/Capacity
Workpaper Group:	00834C - PT12039 ESS MDT

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	0	0
Non-Labor	Zero-Based	0	0	0	0	0	48	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	48	0	0
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Business Purpose:

Support of Operational Reliability and avoided labor costs due to field Supervisors/Crews down time and O&M budgets due to expired warranty (ends 2011) on these units.

Physical Description:

This project seeks the replacement of approximately 143 MDT units utilized by SDGE Transmission Crews, Substation Crews, and Field Supervisors.

Project Justification:

These units were issued in 2008 and the replacement is being done in accordance with guidelines outlined in the MDT standards for MDT life cycle, due to the environment in which units are used on a daily basis, and because of their current condition.
Not replacing these units will result in Operational Disruption due to failures, O&M expenses for repairs, and higher capital costs in following years due to replacement cycles.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00834.0
Category:	C. Electric Distribution
Category-Sub:	2. Growth/Capacity
Workpaper Group:	00834C - PT12039 ESS MDT

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00834C

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00834.0
Category:	C. Electric Distribution
Category-Sub:	2. Growth/Capacity
Workpaper Group:	00834C - PT12039 ESS MDT
Workpaper Detail:	00834C.001 - ESS MDT

In-Service Date: 03/31/2014

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	0
Non-Labor	48	0	0
NSE	0	0	0
Total	48	0	0
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00834D - PT13011 SDGE MDT Replacement**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00834.0
Category:	C. Electric Distribution
Category-Sub:	2. Growth/Capacity
Workpaper Group:	00834D - PT13011 SDGE MDT Replacement

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	0	0
Non-Labor	Zero-Based	0	0	0	0	0	451	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	451	0	0
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Business Purpose:

Comply with corporate initiative to upgrade to Microsoft Window 7 and Office 2010 by April 8, 2014 when Microsoft will begin charging fees for continued support of Windows XP.

Physical Description:

- FHS supports 1048 units in the field.
- Funding of this project will cover the equipment and vendor services provided for:
- 407 unit replacements (167 Gas, 198 Electric, 1 Transmission, 41 Miscellaneous)
- 48 unit replacements with current stock on hand
- 122 unit reconfigurations with Windows 7 and Office 2010
- Remaining units will be upgraded to Windows 7 and Office 2010 as follows:
- 119 units for Field Supervisors will be replaced in 2013 under a 2012 funded capital project.
- 352 units are currently running Windows 7 with Office 2010 and will be replaced in subsequent years at the end of their warranty period

Project Justification:

This project is to replace MDT units supported by Enterprise Systems Solutions Field Hardware Support (FHS) and used by SDG&E Gas and Electric field personnel. This project complies with the corporate implementation of Microsoft Windows 7 and Office 2010.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00834.0
Category:	C. Electric Distribution
Category-Sub:	2. Growth/Capacity
Workpaper Group:	00834D - PT13011 SDGE MDT Replacement

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00834D**

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 00834.0

Category: C. Electric Distribution

Category-Sub: 2. Growth/Capacity

Workpaper Group: 00834D - PT13011 SDGE MDT Replacement

Workpaper Detail: 00834D.001 - PT13011 SDGE MDT Replacement

In-Service Date: 05/31/2014

Description:

	Forecast In 2013 $(000)		
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	451	0	0
NSE	0	0	0
Total	**451**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00833K - PT14029 Asset Photo Repository (APR)

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833K - PT14029 Asset Photo Repository (APR)

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	0	301	0
Non-Labor	Zero-Based	0	0	0	0	0	0	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**301**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0

Business Purpose:

Eliminate travel costs for verification of attachments and installations on electric facilities.
Enhance analysis of field assets.
Reduce cost of photo collection, storage, and retrieval.

Physical Description:

Web-based internal photo upload tool that associates photos to an electric structure.
Web-based external photo upload tool accessible through MyPartners website.
Link from GIS Desktop and Mobile apps to display associated photos.
Develop records retention strategy.
Automated photo resize/compression tool to streamline photo upload and reduce storage.

Project Justification:

Allow internal users and external business partners to capture photos related to SDG&E facilities. Provide an intuitive and
rapid upload tool. Allow field and office GIS users to request and display all historical photos of a selected facility.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833K - PT14029 Asset Photo Repository (APR)

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

N/A

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00833K**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833K - PT14029 Asset Photo Repository (APR)
Workpaper Detail:	00833K.001 - Allow internal users and external business partners to capture photos related to SDG&E
In-Service Date:	12/31/2015
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	301	0
Non-Labor	0	0	0
NSE	0	0	0
Total	**0**	**301**	**0**
FTE	0.0	3.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00833L - PT14044 Powerworkz Upgrade and Enhancements

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833L - PT14044 Powerworkz Upgrade and Enhancements

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	335	224	0
Non-Labor	Zero-Based	0	0	0	0	0	0	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	335	224	0
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	3.3	2.2	0.0

Business Purpose:

Lower risk of environmental non-compliance and lower fire risk for poles on environmental hold. Better work management tracking for TCM and Fire Safety. Improved system usability for TCM, VM, and Fire Safety.

Physical Description:

Vegetation Management (VM): Create new integration with environmental tracking system (ETS) to track and manage environmental release expiration dates on a pole-by-pole basis. Transmission Construction and Maintenance (TCM): Maintenance Management (generate and track TCM Work Orders electronically, provide Switch Maintenance Scheduling, develop integration between CIMA and PowerWorkz, and configure Cityworks for Underground Crews and Construction, develop Fire Safety DB in GIS, and perform Cityworks 2013 Upgrade.

Project Justification:

Powerworkz is a GIS -integrated work management sytem used by Vegetation Management and Transmission Construction & Maintenance (TCM) to manage their operations. This project facilitates increased integration with environmental systems to reduce risk of non-compliance and fire hazards. The project also enables the system to be used for managing additional work processes for TCM.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833L - PT14044 Powerworkz Upgrade and Enhancements

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00833L**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833L - PT14044 Powerworkz Upgrade and Enhancements
Workpaper Detail:	00833L.001 - Powerworkz
In-Service Date:	12/31/2015
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	335	224	0
Non-Labor	0	0	0
NSE	0	0	0
Total	335	224	0
FTE	3.3	2.2	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00833M - PT14062 Electric GIS 2014 Enhancements**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833M - PT14062 Electric GIS 2014 Enhancements

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	119	458	0
Non-Labor	Zero-Based	0	0	0	0	0	130	360	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	249	818	0
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.2	4.5	0.0

Business Purpose:

Bundled enhancements will provide efficiencies and reduce manual processes thereby eliminating the need to hire additional support on the maintenance of the GIS application. Estimation of cost avoidance is under $500K a year.

Physical Description:

2014 bundled enhancements to include, but is not limited: Continuing Smart Grid enhancements, GIS user interface (desktop, web, & mobile) enhancements, GWD/GIS enhancements, consolidation of web viewers, overnight batch processing, WMS/GIS integration, access to GIS web from personnel devices and mobile GIS platform replacement. These bundled enhancements will not include: ESRI/ArcFM release 10.x upgrade, re-engineering of Electric Distribution Schematics (SOM & UG), development and implementation of Electric Transmission Tie-Line Schematics, and Gas specific enhancements.

Project Justification:

2014 bundled enhancements to address necessary enhancements in the SIR database to extend the overall functionality of the GIS applications.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833M - PT14062 Electric GIS 2014 Enhancements

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00833M**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833M - PT14062 Electric GIS 2014 Enhancements
Workpaper Detail:	00833M.001 - Electric GIS 2014 Enhancements

In-Service Date: 12/31/2014

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	119	0	0
Non-Labor	130	0	0
NSE	0	0	0
Total	**249**	**0**	**0**
FTE	1.2	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833M - PT14062 Electric GIS 2014 Enhancements
Workpaper Detail:	00833M.003 - Electric GIS 2014 Enhancements
In-Service Date:	05/30/2015
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	458	0
Non-Labor	0	360	0
NSE	0	0	0
Total	**0**	**818**	**0**
FTE	0.0	4.5	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00833P - PT13006 Performance Management Reporting Phase 2 (PMR2)

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833P - PT13006 Performance Management Reporting Phase 2 (PMR2)

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	317	0	0
Non-Labor	Zero-Based	0	0	0	0	0	675	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**992**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	3.1	0.0	0.0

Business Purpose:

PMR2 will provide Electric Distribution with tools to help us improve the quality and timeliness of compliance data and reduce our compliance risks. It will do that by combining this data in useful and timely ways. Currently, we use manual processes for compliance assurance. These include manual data extractions from SAP-PM and GIS that are then analyzed in MS-Access. This process has inherent accuracy risks and it consumes resources that could be used for higher priority compliance activities. PMR2 reporting will enable proactive identification of GIS-SAP-Click data discrepancies, data entry error, and abnormal condition information. Through this, it will improve the visibility around jobs with hazardous conditions (e.g., DOE Switches) and with approaching due dates.

PMR2 will enable Electric Distribution to improve performance and drive long-term efficiency gains by providing visibility around performance. It will help us find ways to increase "wrench-time", or crew utilization, through more aggressive scheduling, better coordination, and consistent performance expectations.
PMR2 will empower key users with strong business knowledge to innovate by providing self-service tools to create, modify, and publish reports.

Physical Description:

Develop 45 operational reports
• Install 15 Digital Crew Boards with associated software and hardware in district crew rooms/docks
• Provide self-service capability to create reports and tools
• Schedule pushed performance and exception reports

• Implement an architectural solution that provides flexibility to quickly change data models
• Bring work management reporting development in house to reduce vendor cost and improve time-to-market
• Publish metadata for GIS (including code and description for coded fields)

Project Justification:

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 00833.0

Category: C. Electric Distribution

Category-Sub: 4. Business Optimization

Workpaper Group: 00833P - PT13006 Performance Management Reporting Phase 2 (PMR2)

PMR2 provides KPI, performance, and operational reporting from Click, SAP, and GIS data beyond what was provided by PMR1 or the OpEx 20/20 projects. The scope will include metrics, on-demand and pushed reports, ad-hoc reporting capability, near real-time reporting, and digital display "crew boards" installed in the C&O districts. This project provides data and tools for strategic asset planning and self-service. This project will allow us to bring report development in-house and avoid vendor costs and reporting inaccuracies, and to improve our ability to be more responsive in report development. Further, we will use SAP HANA, a new technology, which provides the capability for rapid design changes and extremely responsive report delivery. The delivered HANA infrastructure can provide storage for future Electric Division projects.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833P - PT13006 Performance Management Reporting Phase 2 (PMR2)

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00833P**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833P - PT13006 Performance Management Reporting Phase 2 (PMR2)
Workpaper Detail:	00833P.001 - PMR2
In-Service Date:	07/31/2014
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	317	0	0
Non-Labor	675	0	0
NSE	0	0	0
Total	992	0	0
FTE	3.1	0.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00833Q - PT13007 POLE LOADING CALCULATION REPOSITORY**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833Q - PT13007 POLE LOADING CALCULATION REPOSITORY

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	266	0	0
Non-Labor	Zero-Based	0	0	0	0	0	154	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**420**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0

Business Purpose:

CPUC General Order 95 requires that system safety information, including pole loading calculations, be available to Communication Infrastructure Providers and the CPUC upon request. Failure to comply can result in fines. Currently Pole Loading Calculations are being stored in multiple locations such as department SharePoint, personal email inboxes, department share drives, personal file cabinets and file folders, and at Iron Mountain. SDG&E has liability exposure that can be reduced and potential labor savings that can be achieved through implementing a centralized repository to archive and retrieve pole loading calculations. Additionally, a reduction in safety risk is expected by providing field crews the ability to view historical pole load
calculations and identify excess loading situations where the calculations may not be current.

Physical Description:

• Adopt new business process for retrieving Pole Loading calculations
• Store pole loading calculations in new centralize Pole Loading Repository
• The application that displays Pole loading Calculations should be accessible to both internal employees and external business partners, including Communication Infrastructure Providers
• System shall provide a mechanism to allow Osmose or other vendors to store PLC documents to the central location .
• Contractors should also be able to access previously stored pole loading calculations System shall interface with GIS to display Pole Loading Calculation data
• System shall extract and store Pole Loading Calculation data from Graphical Work Design (GWD) pole loading calculations tool
• The application shall allow users to view tabular data as well as download most current Pole Loading Calculations
• System shall perform, pole validation prior to allowing the upload of pole loading calculations
• System shall identify the date that the most current Pole Loading Calculation was performed and identify the most current
• System shall allow for reporting on tabular fields

Project Justification:

Mechanical pole loading calculations are currently performed within SDG&E by Designers and Planners within both the Transmission and Distribution organizations. Pole loading calculations are also performed by parties external to SDG&E, including Communication Infrastructure Companies (CIPs) and Contract Designers. The results of the calculations are stored in various formats with varying degrees of data integrity. Mobile users, including field
crews and supervisors do not have readily available access to historical pole load calculations. This project would create a central storage location for all pole loading calculations and make them easily accessible to internal employees, contractors and CIPs .

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833Q - PT13007 POLE LOADING CALCULATION REPOSITORY

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00833Q**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833Q - PT13007 POLE LOADING CALCULATION REPOSITORY
Workpaper Detail:	00833Q.001 - POLE LOADING CALCULATION REPOS

In-Service Date: 08/31/2014

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	266	0	0
Non-Labor	91	0	0
NSE	0	0	0
Total	357	0	0
FTE	2.6	0.0	0.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 00833.0

Category: C. Electric Distribution

Category-Sub: 4. Business Optimization

Workpaper Group: 00833Q - PT13007 POLE LOADING CALCULATION REPOSITORY

Workpaper Detail: 00833Q.002 - POLE LOADING CALCULATION REPOS

In-Service Date: 08/31/2014

Description:

	Forecast In 2013 $(000)		
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	63	0	0
NSE	0	0	0
Total	**63**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00833T - PT13022 Electric GIS 2013 Enhancements**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833T - PT13022 Electric GIS 2013 Enhancements

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	422	0	0
Non-Labor	Zero-Based	0	0	0	0	0	246	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	668	0	0
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	4.1	0.0	0.0

Business Purpose:

Desktop, Web & Mobile Enhancements: Enhancements to Desktop Applications will reduce editing time associated with the capture and maintenance of Electric Transmission, Substation, Electric Distribution and Telecom data. Web and Mobile enhancements will reduce user time associated with the access, retrieval and plotting of data/information necessary to perform key Planning, Engineering, Design, Construction, Operation, Maintenance, Inspection and Accounting functions.
Data Management/Validation Enhancements: Implementation of business validation rules will improved data accuracy/conformity, while potentially reducing time associated with the capture, maintenance and posting of data.
Enhance data/information accuracy will improve essential interfaces with Outage Management System (OMS), SynerGEE, Engineering Data Warehouse (EDW), GWD, PowerWorkz, etc., while also improving Planning, Engineering, Design, Construction, Operation, Maintenance, Inspection and Accounting functions.
Schematic Enhancements: Enhancements will reduce EGISS editor time required to update and maintain schematics (30%-50% reduction). Potential deployment of XML files will provide enhanced access, navigation and functionality to both mobile and web users. Such enhanced user experiences will also translate to significant improvement in user acceptance of the Enterprise GIS.

Physical Description:

Desktop and Mobile – Software: ArcGIS 9.3.2Sp2, ArcFM 9.3.2Sp2, ArcGIS Server 9.3.2Sp2, ArcFM Server 9.3.2sp2, ArcFM Viewer 9.3.2sp2, ArcGIS Engine Runtime 9.3.2, ArcSDE 9.3.2sp2, ArcFM GDBM 9.3.2sp2, Sempra Desktop Installer, Windows Server 2008 R2 64Bits, Citrix Xen App Version V6, Citrix ICA Client 12.1, Windows 7, Oracle 11.1.07, Screwdrivers 4.5, Adobe Reader X 10.1
Web Servers - Additional application servers and database servers are required.

Project Justification:

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833T - PT13022 Electric GIS 2013 Enhancements

Desktop, Web & Mobile Enhancements: Desktop enhancements will address, but are not limited to; Conflict Reconciliation, Work History Management, Facility ID Assignment, Asset Retirement, Cogeneration Management, Smart Grid Upgrades, etc. A large portion of this work is anticipated to enhance core software provided by Schneider/Telvent. Web & Mobile enhancements will focus on, but are not limited to; Data/information Access, Navigation, Printing/Plotting, Publishing, Reporting, use of Stored Displays, etc.
Data Management/Validation Enhancement: Enhancements will address the development and implementation of business rules to ensure more accurate and efficient management of data and feature relations during the editing functions and data posting operations.
Schematic Enhancements: The Project will implement performance recommendations made by ESRI within version 9.3.1 Service Pack 2 in an attempt to reduce time associated with the generation and maintenance of schematics. More specifically enhancements to the Circuit Restore functions will contribute significantly to potential time savings. Consideration will also be given to the potential push of schematic XML files (rather than PDFs) to the Mobile Data Terminal (MDT), which will provide several user enhancements.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833T - PT13022 Electric GIS 2013 Enhancements

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00833T**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833T - PT13022 Electric GIS 2013 Enhancements
Workpaper Detail:	00833T.001 - Electric GIS 2013 Enhancements
In-Service Date:	08/31/2014
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	422	0	0
Non-Labor	246	0	0
NSE	0	0	0
Total	**668**	**0**	**0**
FTE	4.1	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00835B - PT14027 Performance Management Reporting Phase 3 (PMR3)

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00835.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00835B - PT14027 Performance Management Reporting Phase 3 (PMR3)

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	540	398
Non-Labor	Zero-Based	0	0	0	0	0	0	208	227
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	0	748	625
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	5.3	3.9

Business Purpose:

1. Increase productivity and efficiencies. Establish and standardize Key Performance Indicators and goals for ERO
2. Manage workforce and workload proactively through visibility of work and resources.
3. Manage, identify and proactively correct Liability, Safety and Compliance through ongoing data analytics.
4. Enhance customer experience through improved execution of planning and field work.

Physical Description:

1. Develop 50 to 75 reports / dashboards
2. Develop CPD data integration
3. Modify Existing PMR Dashboards & ReportS and HANA Database to Align with Click 8
4. Analysis of system use and adhoc processes/systems
5. Develop Click 8 Interface to Digital Boards
6. Develop SAP Financial data integration
7. Develop Click 8 Mobile Timekeeping data integration
8. Develop Crew Callout data integration

Project Justification:

Operational & Performance Management reporting system to further expand the use of Click, SAP and GIS data analytics and incorporate CPD, Click 8 and potentially SAP Construction Work order financials and other key systems. Identify key opportunities to maximize the use of SAP, Click and GIS and the data shared between these systems and other adhoc systems. Continue to drive operational goals providing near real time reports and interactive presentation of Key Performance Indicators in support of the Electric Regional Operations (ERO) organization.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00835.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00835B - PT14027 Performance Management Reporting Phase 3 (PMR3)

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00835B**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00835.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00835B - PT14027 Performance Management Reporting Phase 3 (PMR3)
Workpaper Detail:	00835B.001 - Phase 3

In-Service Date:	12/31/2015
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	540	0
Non-Labor	0	208	0
NSE	0	0	0
Total	0	748	0
FTE	0.0	5.3	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00835.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00835B - PT14027 Performance Management Reporting Phase 3 (PMR3)
Workpaper Detail:	00835B.002 - Phase 3
In-Service Date:	12/31/2016
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	398
Non-Labor	0	0	227
NSE	0	0	0
Total	0	0	625
FTE	0.0	0.0	3.9

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
07864A - PT15801 CPD Enh ph 2 SDGE**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	07864.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	07864A - PT15801 CPD Enh ph 2 SDGE

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	920	923
Non-Labor	Zero-Based	0	0	0	0	0	0	811	824
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	0	1,731	1,747
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	9.0	9.0

Business Purpose:

Completion of this project is necessary to derive benefits identified in the business case for OpEx CPD project and to avoid incremental new costs (See Appendix 3 for estimates of avoided costs). This project will also provide enhancements necessary to support DIMP and CP10 compliance programs and DOT reporting.

Physical Description:

The following enhancements are in scope for CPD:
Automating the work order authorization (WOA) Approval Process
Simplifying field memos for SDG&E supervisors
Adding upfront validations during planning to ensure proper accounting treatment are selected (capital and O&M splits)
Increasing Area Resource Scheduling (ARSO) usability of tracking schedule dependencies between work requests
Allowing planners to easily account for large field changes on construction projects
Ease of use enhancements (data entry, screen consolidations, screen drop downs, etc.)
OMS/SAP interface
Improve performance of accounting month-end closing programs
Perform changes necessary to adopt FAM project processes

Project Justification:

This project is necessary to complete remaining CPD deployments for SDG&E and SCG throughout 2014. Activities to be performed relating to future deployments include training, data conversion, system configuration, and storm period support including defect resolution.

In addition to completing remaining deployments, the project team will complete many defects and system enhancements. Currently, there are approximately 450 prioritized enhancements. Many of these enhancements will be completed as part of the CPD2 project during 2014. A CPD Enhancement Phase 2 project is likely to be recommended for 2015. See Appendix B for details on enhancement scope. The following are the assumptions of this business case:

All deployments and enhancements will be completed during 2014 except for GWD electric.
This scenario assumes that full GWD electric deployment is delayed and will be completed during early 2015.
Funding for GWD electric deployment and enhancements is through June 30, 2015. SAP/Click deployments and enhancements will be completed by December 31, 2014.
It is likely that 2015 funding will be requested for SAP and Click enhancements.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	07864.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	07864A - PT15801 CPD Enh ph 2 SDGE

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 07864A**

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 07864.0

Category: C. Electric Distribution

Category-Sub: 4. Business Optimization

Workpaper Group: 07864A - PT15801 CPD Enh ph 2 SDGE

Workpaper Detail: 07864A.001 - CPD project after the deployment additional new and necessary ehancements are required

In-Service Date: 12/31/2015

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	847	0
Non-Labor	0	746	0
NSE	0	0	0
Total	**0**	**1,593**	**0**
FTE	0.0	8.3	0.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 07864.0

Category: C. Electric Distribution

Category-Sub: 4. Business Optimization

Workpaper Group: 07864A - PT15801 CPD Enh ph 2 SDGE

Workpaper Detail: 07864A.002 - CPD project after the deployment additional new and necessary ehancements are required

In-Service Date: 12/31/2015

Description:

	Forecast In 2013 $(000)		
Years	**2014**	**2015**	**2016**
Labor	0	73	0
Non-Labor	0	65	0
NSE	0	0	0
Total	**0**	**138**	**0**
FTE	0.0	0.7	0.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 07864.0

Category: C. Electric Distribution

Category-Sub: 4. Business Optimization

Workpaper Group: 07864A - PT15801 CPD Enh ph 2 SDGE

Workpaper Detail: 07864A.003 - CPD project after the deployment additional new and necessary ehancements are required

In-Service Date: 12/31/2016

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	850
Non-Labor	0	0	758
NSE	0	0	0
Total	0	0	1,608
FTE	0.0	0.0	8.3

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	07864.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	07864A - PT15801 CPD Enh ph 2 SDGE
Workpaper Detail:	07864A.004 - CPD project after the deployment additional new and necessary ehancements are required
In-Service Date:	12/31/2016
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	73
Non-Labor	0	0	66
NSE	0	0	0
Total	0	0	139
FTE	0.0	0.0	0.7

Note: Totals may include rounding differences.

Beginning of Workpaper Group
07864B - PT07864 SDGE CPD Enh Phase 1

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	07864.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	07864B - PT07864 SDGE CPD Enh Phase 1

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	3,635	302	0
Non-Labor	Zero-Based	0	0	0	0	0	8,231	1,830	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**11,866**	**2,132**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	35.6	3.0	0.0

Business Purpose:

. Completion of this project is necessary to derive benefits identified in the business case for OpEx CPD project and to avoid incremental new costs. This project will also provide enhancements necessary to support DIMP and CP10 compliance programs and DOT reporting.

Physical Description:

The following enhancements are in scope for CPD:
Automating the work order authorization (WOA) Approval Process
Simplifying field memos for SDG&E supervisors
Adding upfront validations during planning to ensure proper accounting treatment are selected (capital and O&M splits)
Increasing Area Resource Scheduling (ARSO) usability of tracking schedule dependencies between work requests
Allowing planners to easily account for large field changes on construction projects
Ease of use enhancements (data entry, screen consolidations, screen drop downs, etc.)
OMS/SAP interface
Improve performance of accounting month-end closing programs
Perform changes necessary to adopt FAM project processes

Project Justification:

This project is necessary to complete remaining CPD deployments for SDG&E and SCG throughout 2014. Activities to be performed relating to future deployments include training, data conversion, system configuration, and storm period support including defect resolution.

In addition to completing remaining deployments, the project team will complete many defects and system enhancements. Currently, there are approximately 450 prioritized enhancements. Many of these enhancements will be completed as part of the CPD2 project during 2014. A CPD Enhancement Phase 2 project is likely to be recommended for 2015. See Appendix B for details on enhancement scope. The following are the assumptions of this business case:

All deployments and enhancements will be completed during 2014 except for GWD electric.
This scenario assumes that full GWD electric deployment is delayed and will be completed during early 2015.
 Funding for GWD electric deployment and enhancements is through June 30, 2015. SAP/Click deployments and enhancements will be completed by December 31, 2014.
It is likely that 2015 funding will be requested for SAP and Click enhancements.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	07864.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	07864B - PT07864 SDGE CPD Enh Phase 1

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 07864B**

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 07864.0

Category: C. Electric Distribution

Category-Sub: 4. Business Optimization

Workpaper Group: 07864B - PT07864 SDGE CPD Enh Phase 1

Workpaper Detail: 07864B.001 - SDGE CPD Enh Phase 1

In-Service Date: 12/31/2014

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	3,635	0	0
Non-Labor	6,089	0	0
NSE	0	0	0
Total	**9,724**	**0**	**0**
FTE	35.6	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	07864.0
Category:	C. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	07864B - PT07864 SDGE CPD Enh Phase 1
Workpaper Detail:	07864B.002 - SDGE CPD Enh Phase 1
In-Service Date:	12/31/2014
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	0
Non-Labor	2,142	0	0
NSE	0	0	0
Total	2,142	0	0
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 07864.0

Category: C. Electric Distribution

Category-Sub: 4. Business Optimization

Workpaper Group: 07864B - PT07864 SDGE CPD Enh Phase 1

Workpaper Detail: 07864B.003 - SDGE CPD Enh Phase 1

In-Service Date: 12/31/2015

Description:

	Forecast In 2013 $(000)		
Years	**2014**	**2015**	**2016**
Labor	0	302	0
Non-Labor	0	1,830	0
NSE	0	0	0
Total	**0**	**2,132**	**0**
FTE	0.0	3.0	0.0

Note: Totals may include rounding differences.

San Diego Gas & Electric Company
2016 GRC - APP
Capital Workpapers

Area: INFORMATION TECHNOLOGY
Witness: Stephen J. Mikovits
Category: D. Facilities
Workpaper: 03851B

Summary for Category: D. Facilities

	In 2013$ (000)			
	Adjusted-Recorded	**Adjusted-Forecast**		
	2013	**2014**	**2015**	**2016**
Labor	0	0	42	302
Non-Labor	0	0	70	986
NSE	0	0	0	0
Total	**0**	**0**	**112**	**1,288**
FTE	0.0	0.0	0.4	3.0

03851B PT14003 Smart Meter Operations Center - Command Center

Labor	0	0	42	302
Non-Labor	0	0	70	986
NSE	0	0	0	0
Total	**0**	**0**	**112**	**1,288**
FTE	0.0	0.0	0.4	3.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
03851B - PT14003 Smart Meter Operations Center - Command Center

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03851.0
Category:	D. Facilities
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	03851B - PT14003 Smart Meter Operations Center - Command Center

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	42	302
Non-Labor	Zero-Based	0	0	0	0	0	0	70	986
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	0	112	1,288
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.4	3.0

Business Purpose:

A Command Center will allow Smart Meter Operations an opportunity to fully utilize tools developed in the preceding SMOC network and operations management initiatives whereas the existing Smart Meter Operations location does not functionally meet the need of the business. (Efficiency improvement: ~$300K)

Physical Description:

The Smart Meter Operations Center will be designed to accommodate multiple large-scale display monitors, control consoles and equipment essential to enhance the visualization and analytical tools developed in Initiatives #1 & #2. (more on tab 3)

Project Justification:

The existing Smart Meter facility is spatially and functionally inadequate to support the needs of the operation. The Smart Meter Operations Center will provide operators with large-scale monitoring devices capable of displaying geographic imagery mirroring network conditions and deliver dashboard information to visually display near real time status of overall Smart Meter network health. The project team requests consideration in the Mission Master plan (retrofit of the existing Skills Training facility is the preferred solution). Use Permit conditions are a concern and downside risk concerning this request. Relocation of the existing Skill Training Operation will be necessary to support a solution at this location.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03851.0
Category:	D. Facilities
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	03851B - PT14003 Smart Meter Operations Center - Command Center

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 03851B**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03851.0
Category:	D. Facilities
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	03851B - PT14003 Smart Meter Operations Center - Command Center
Workpaper Detail:	03851B.001 - The existing Smart Meter facility is spatially and functionally inadequate to support t
In-Service Date:	12/31/2016
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	42	302
Non-Labor	0	70	986
NSE	0	0	0
Total	**0**	**112**	**1,288**
FTE	0.0	0.4	3.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Category:	E. Gas Distribution
Workpaper:	00833N

Summary for Category: E. Gas Distribution

	In 2013$ (000)			
	Adjusted-Recorded	**Adjusted-Forecast**		
	2013	**2014**	**2015**	**2016**
Labor	0	0	160	0
Non-Labor	0	0	1,000	0
NSE	0	0	0	0
Total	**0**	**0**	**1,160**	**0**
FTE	0.0	0.0	1.6	0.0

00833N PT14064 SAP GAS GuiXT - SDGE

Labor	0	0	160	0
Non-Labor	0	0	1,000	0
NSE	0	0	0	0
Total	**0**	**0**	**1,160**	**0**
FTE	0.0	0.0	1.6	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00833N - PT14064 SAP GAS GuiXT - SDGE**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	E. Gas Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833N - PT14064 SAP GAS GuiXT - SDGE

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	160	0
Non-Labor	Zero-Based	0	0	0	0	0	0	1,000	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**1,160**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0

Business Purpose:

'- Improved data quality of compliance inspection & maintenance history. Errors introduced by users can result in "false non-compliance". Penalties of $50,000 per day per occurance can be incurred. Reducing the potential for error, reduces the associated risk.
- Reduction of training, including refresher training, simplified user job aides.

Physical Description:

The project will include the development and implementation of clerical and supervisory roles that support SDG Distribution leakage, cathodic protection and other pipeline inspection and maintenance activities. The resulting design be tailored to SDG-specific roles & responsibilities, but will leverage the GuiXT modules implemented for similar functionality at SCG.

Project Justification:

SAP Plant Maintenance (PM) is used for all Gas Distribution mandated inspection and maintenance work. This project will simplify the SAP interface for back-end users to reduce the number of errors, simplify and reduce required training and support, and increase user efficiency.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	E. Gas Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833N - PT14064 SAP GAS GuiXT - SDGE

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00833N**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	E. Gas Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833N - PT14064 SAP GAS GuiXT - SDGE
Workpaper Detail:	00833N.001 - SAP Plant Maintenance (PM) is used for all Gas Distribution mandated inspection and mai
In-Service Date:	12/31/2015
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	160	0
Non-Labor	0	1,000	0
NSE	0	0	0
Total	**0**	**1,160**	**0**
FTE	0.0	1.6	0.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Category: F. Procurement

Workpaper: VARIOUS

Summary for Category: F. Procurement

	In 2013$ (000)			
	Adjusted-Recorded	**Adjusted-Forecast**		
	2013	**2014**	**2015**	**2016**
Labor	0	508	749	286
Non-Labor	0	2,150	1,689	700
NSE	0	0	0	0
Total	**0**	**2,658**	**2,438**	**986**
FTE	0.0	5.2	7.4	2.8

00833H PT14018 E&FP Operations and Analytics Programs

Labor	0	57	195	0
Non-Labor	0	280	428	0
NSE	0	0	0	0
Total	**0**	**337**	**623**	**0**
FTE	0.0	0.6	1.9	0.0

00811A PT12040 CA.ISO 2012 INITIATIVES

Labor	0	156	32	0
Non-Labor	0	474	111	0
NSE	0	0	0	0
Total	**0**	**630**	**143**	**0**
FTE	0.0	1.7	0.3	0.0

00833B PT15006 E&FP PCI and Allegro New Modules

Labor	0	0	229	0
Non-Labor	0	0	1,000	0
NSE	0	0	0	0
Total	**0**	**0**	**1,229**	**0**
FTE	0.0	0.0	2.3	0.0

00833E PT16002 E&FP 2016 CAISO Mandates

Labor	0	96	293	286
Non-Labor	0	458	150	700
NSE	0	0	0	0
Total	**0**	**554**	**443**	**986**
FTE	0.0	0.9	2.9	2.8

03851G PT13027 E&FP Spring 2014 CAISO Mandates

Labor	0	199	0	0
Non-Labor	0	938	0	0
NSE	0	0	0	0
Total	**0**	**1,137**	**0**	**0**
FTE	0.0	2.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00833H - PT14018 E&FP Operations and Analytics Programs

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	F. Procurement
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00833H - PT14018 E&FP Operations and Analytics Programs

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	57	195	0
Non-Labor	Zero-Based	0	0	0	0	0	280	428	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**337**	**623**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.6	1.9	0.0

Business Purpose:

Implement additional analytic capability and operational systems to manage SDGE's Renewable Portfolio Standard (RPS) requirements

Physical Description:

Combine or create systems to include the operation and data storage of the complex contracts. Include many analytical situations for estimating and probability weighting portfolio procurement and reporting to the CPUC and CEC.
RPS Renewable Portfollio Standard; Fully integrated solution of E&FP resources to track renewables procured to enable compliance; RPS Operational Combine Originations, Contract Admin, Contract Management, and Risk Systems data to get the most up to date information to get a RPS number; RPS Analytics should be able to shock the portfollio as new resources are contemplated to enable viewing of the differences in our RPS number.

Project Justification:

Additional analytic capability and operational systems are needed to manage these requirements which include enhancements to existing systems. The RPS program requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 33% of total procurement by 2020.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	F. Procurement
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00833H - PT14018 E&FP Operations and Analytics Programs

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00833H**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	F. Procurement
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00833H - PT14018 E&FP Operations and Analytics Programs
Workpaper Detail:	00833H.001 - Combine or create systems to include the operation and data storage of the complex cont
In-Service Date:	12/31/2015
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	57	195	0
Non-Labor	80	280	0
NSE	0	0	0
Total	**137**	**475**	**0**
FTE	0.6	1.9	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	F. Procurement
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00833H - PT14018 E&FP Operations and Analytics Programs
Workpaper Detail:	00833H.002 - E&FP Operations and Analytics Programs
In-Service Date:	12/31/2015
Description:	

Software Licenses

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	0
Non-Labor	200	148	0
NSE	0	0	0
Total	200	148	0
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00811A - PT12040 CA.ISO 2012 INITIATIVES**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00811.0
Category:	F. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	00811A - PT12040 CA.ISO 2012 INITIATIVES

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	156	32	0
Non-Labor	Zero-Based	0	0	0	0	0	474	111	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	630	143	0
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.7	0.3	0.0

Business Purpose:

The objective of the California Independent System Operator (CAISO) 2012 Initiative is to implement the following objectives:
-Implement two High Availability Servers
-Implement the CAISO Fall 2012 Release
-Implement the CAISO Spring 2013 Release
-Implement the CAISO Fall 2013 Release
-Implement additional data analytic solutions (Profit + Loss and Resource Adequacy).

Physical Description:

Enable SDG&E to effectively conduct market operations in the CAISO environment to remain compliant with the CAISO's FERC-approved tariff, business practices and the CPUC's least-cost dispatch standards.
Develop additional data marts to broaden, improve and automate analysis of complex market and operational data to support portfolio management decisions.

Project Justification:

Operation within the CAISO environment is required to manage SDG&E's bundled portfolio. PCI software and data marts provide SDG&E with consistent (and largely automated) processes to operate in CAISO environment, enabling effective management of the portfolio and compliance with CAISO rules. Enhancements to PCI software and data marts under this project are needed to keep pace with numerous new CAISO planned for 2012. Absent these enhancements, SDG&E would need to resort to manual workarounds.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00811.0
Category:	F. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	00811A - PT12040 CA.ISO 2012 INITIATIVES

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00811A**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00811.0
Category:	F. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	00811A - PT12040 CA.ISO 2012 INITIATIVES
Workpaper Detail:	00811A.001 - CA.ISO 2012 INITIATIVES

In-Service Date: 06/30/2015

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	156	32	0
Non-Labor	151	111	0
NSE	0	0	0
Total	307	143	0
FTE	1.7	0.3	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00811.0
Category:	F. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	00811A - PT12040 CA.ISO 2012 INITIATIVES
Workpaper Detail:	00811A.002 - CA.ISO 2012 INITIATIVES

In-Service Date:	06/30/2014
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	0
Non-Labor	323	0	0
NSE	0	0	0
Total	323	0	0
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00833B - PT15006 E&FP PCI and Allegro New Modules**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	F. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	00833B - PT15006 E&FP PCI and Allegro New Modules

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	229	0
Non-Labor	Zero-Based	0	0	0	0	0	0	1,000	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**1,229**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0

Business Purpose:

Implement new functionality in the Allegro and Power Cost Inc (PCI) system.

Physical Description:

PCI Modules: PCI Journal, Submitted Bids, eTag, LDAP, Price Analyzer, Congestion Analyzer
Allegro Modules: Bookouts, Curtailments, Confirms, NG 8.2, Power 8.1, Credit 8.2, Position 8.1, BI, PCI Webservice

Project Justification:

There are two operational systems that E&FP uses for procurement, Allegro and Power Cost, Inc (PCI). Each of these software systems change as markets change and new processes are needed for E&FP to effectively purchase commodities to meet requirements and to manage our portfolio.

This project is needed to purchase and implement the software that is necessary in Allegro and PCI. In the past we had separated the two systems in business cases, but now that they are more mature it seems relevant to include scope from both as major enhancements to the systems.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	F. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	00833B - PT15006 E&FP PCI and Allegro New Modules

Forecast Methodology:

Labor - Zero-Based

PCI and Allegro are the sole source of developers and the project is run by our PMO with internal resources in the project.

Non-Labor - Zero-Based

PCI and Allegro are the sole source of developers and the project is run by our PMO with internal resources in the project.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00833B**

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 00833.0

Category: F. Procurement

Category-Sub: 3. Mandated

Workpaper Group: 00833B - PT15006 E&FP PCI and Allegro New Modules

Workpaper Detail: 00833B.001 - There are two operational systems that E&FP uses for procurement, Allegro and Power Cos

In-Service Date: 12/31/2015

Description:

	Forecast In 2013 $(000)		
Years	**2014**	**2015**	**2016**
Labor	0	57	0
Non-Labor	0	750	0
NSE	0	0	0
Total	**0**	**807**	**0**
FTE	0.0	0.6	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	F. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	00833B - PT15006 E&FP PCI and Allegro New Modules
Workpaper Detail:	00833B.002 - There are two operational systems that E&FP uses for procurement, Allegro and Power Cos
In-Service Date:	12/31/2015
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	172	0
Non-Labor	0	250	0
NSE	0	0	0
Total	0	422	0
FTE	0.0	1.7	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00833E - PT16002 E&FP 2016 CAISO Mandates**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	F. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	00833E - PT16002 E&FP 2016 CAISO Mandates

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	96	293	286
Non-Labor	Zero-Based	0	0	0	0	0	458	150	700
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**554**	**443**	**986**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.9	2.9	2.8

Business Purpose:

Comply with CAISO mandated changes scheduled for 2016.

Physical Description:

CAISO will implement sevaral new initiatives in 2016 relating to reliability services, cost allocation overall market review and multi-year forward requirement.

Project Justification:

The CAISO initiatives for the 2016 releases (semi-annual) will require new modules and configuration in our Power Costs Inc. (PCI) or Allegro assets. PCI system is our system for communication with the CAISO for bidding and scheduling, and Allegro is our system of record for trades and valuation of our portfolio.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	F. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	00833E - PT16002 E&FP 2016 CAISO Mandates

Forecast Methodology:

Labor - Zero-Based

PCI/Allegro are the sole source of developers and the project is run by our PMO with internal resources in the project.

Non-Labor - Zero-Based

PCI/Allegro are the sole source of developers and the project is run by our PMO with internal resources in the project.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00833E**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	F. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	00833E - PT16002 E&FP 2016 CAISO Mandates
Workpaper Detail:	00833E.001 - 2016 CAL ISO Mandates
In-Service Date:	12/31/2016
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	286
Non-Labor	0	0	700
NSE	0	0	0
Total	**0**	**0**	**986**
FTE	0.0	0.0	2.8

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 00833.0

Category: F. Procurement

Category-Sub: 3. Mandated

Workpaper Group: 00833E - PT16002 E&FP 2016 CAISO Mandates

Workpaper Detail: 00833E.002 - E&FP 2014-2015 CAISO Mandates

In-Service Date: 12/31/2014

Description:

	Forecast In 2013 $(000)		
Years	**2014**	**2015**	**2016**
Labor	96	0	0
Non-Labor	358	0	0
NSE	0	0	0
Total	**454**	**0**	**0**
FTE	0.9	0.0	0.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 00833.0

Category: F. Procurement

Category-Sub: 3. Mandated

Workpaper Group: 00833E - PT16002 E&FP 2016 CAISO Mandates

Workpaper Detail: 00833E.003 - E&FP 2014-2015 CAISO Mandates

In-Service Date: 12/31/2014

Description:

	Forecast In 2013 $(000)		
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	100	0	0
NSE	0	0	0
Total	**100**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	F. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	00833E - PT16002 E&FP 2016 CAISO Mandates
Workpaper Detail:	00833E.004 - E&FP 2014-2015 CAISO Mandates
In-Service Date:	12/31/2015
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	293	0
Non-Labor	0	75	0
NSE	0	0	0
Total	**0**	**368**	**0**
FTE	0.0	2.9	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	F. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	00833E - PT16002 E&FP 2016 CAISO Mandates
Workpaper Detail:	00833E.005 - E&FP 2014-2015 CAISO Mandates
In-Service Date:	12/31/2015
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	0
Non-Labor	0	75	0
NSE	0	0	0
Total	0	75	0
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
03851G - PT13027 E&FP Spring 2014 CAISO Mandates

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03851.0
Category:	F. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	03851G - PT13027 E&FP Spring 2014 CAISO Mandates

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	199	0	0
Non-Labor	Zero-Based	0	0	0	0	0	938	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,137**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0

Business Purpose:

•Implement CAISO mandated changes (required to maintain participation in CAISO, or subject to large penalties)
•Forecasting system changes will improve the accuracy of load numbers which drives down ratepayer cost.
•Reduction of exposure to imbalance market through enhancements to the dispatch position system

Physical Description:

CAISO will implement a new 15-minute scheduling option in the real-time market to comply with FERC Order No. 764, which requires us to offer intra-hourly scheduling on our portfolio. We will also be implementing financially binding 15-minute economic bids, which will optimize the integration of variable energy resources (VERs) and address other identified market inefficiencies.
Because of the change to 15-minute scheduling and bidding, a new PCI software release is required. As well, existing excel tools utilized for load forecast system and dispatch position system and bidding templates will have to be enhanced or replaced to comply with the CAISO initiative 764.

Project Justification:

SDG&E must comply with the CAISO changes made as a result of FERC order 764 in order to be a scheduling coordinator at the CAISO. The CAISO will start to release the technical specifications for the change on 9/11/2013.
The CAISO release date is May 1, 2014.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03851.0
Category:	F. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	03851G - PT13027 E&FP Spring 2014 CAISO Mandates

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 03851G**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03851.0
Category:	F. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	03851G - PT13027 E&FP Spring 2014 CAISO Mandates
Workpaper Detail:	03851G.001 - E&FP Spring 2014 CAISO Mandates

In-Service Date: 12/31/2014

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	199	0	0
Non-Labor	391	0	0
NSE	0	0	0
Total	590	0	0
FTE	2.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03851.0
Category:	F. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	03851G - PT13027 E&FP Spring 2014 CAISO Mandates
Workpaper Detail:	03851G.002 - E&FP Spring 2014 CAISO Mandates
In-Service Date:	12/31/2014
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	0
Non-Labor	472	0	0
NSE	0	0	0
Total	472	0	0
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 03851.0

Category: F. Procurement

Category-Sub: 3. Mandated

Workpaper Group: 03851G - PT13027 E&FP Spring 2014 CAISO Mandates

Workpaper Detail: 03851G.003 - E&FP Spring 2014 CAISO Mandates

In-Service Date: 12/31/2014

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	0
Non-Labor	75	0	0
NSE	0	0	0
Total	75	0	0
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Category:	G. Information Technology
Workpaper:	VARIOUS

Summary for Category: G. Information Technology

	In 2013$ (000)			
	Adjusted-Recorded	**Adjusted-Forecast**		
	2013	**2014**	**2015**	**2016**
Labor	0	5,179	4,632	2,445
Non-Labor	0	44,544	21,471	12,718
NSE	0	0	0	0
Total	**0**	**49,723**	**26,103**	**15,163**
FTE	0.0	50.7	45.8	24.1

00817A PT14031 SDG&E Data Warehouse Upgrade

Labor	0	0	0	104
Non-Labor	0	0	0	1,425
NSE	0	0	0	0
Total	**0**	**0**	**0**	**1,529**
FTE	0.0	0.0	0.0	1.0

00817B PT15003 SDGE Desktop Hardware Refresh

Labor	0	0	156	284
Non-Labor	0	0	2,028	2,200
NSE	0	0	0	0
Total	**0**	**0**	**2,184**	**2,484**
FTE	0.0	0.0	1.5	2.8

00827A PT14032 SDG&E SCADA Log Management Expansion

Labor	0	22	0	0
Non-Labor	0	735	0	0
NSE	0	0	0	0
Total	**0**	**757**	**0**	**0**
FTE	0.0	0.2	0.0	0.0

00827B PT14045 Generation IS Equipment Refresh

Labor	0	54	0	0
Non-Labor	0	275	0	0
NSE	0	0	0	0
Total	**0**	**329**	**0**	**0**
FTE	0.0	0.5	0.0	0.0

00827C PT15001 Remote Server Rooms

Labor	0	0	26	26
Non-Labor	0	0	132	132
NSE	0	0	0	0
Total	**0**	**0**	**158**	**158**
FTE	0.0	0.0	0.3	0.3

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Category:	G. Information Technology
Workpaper:	VARIOUS

| | In 2013$ (000) | | | |
| | Adjusted-Recorded | Adjusted-Forecast | | |
	2013	2014	2015	2016
00827D PT15005 SDGE Video-enabled Collaboration Room Upgrade				
Labor	0	0	105	0
Non-Labor	0	0	290	0
NSE	0	0	0	0
Total	**0**	**0**	**395**	**0**
FTE	0.0	0.0	1.0	0.0
00829B PT14034 SDGE CI Small Cap Projects				
Labor	0	0	0	0
Non-Labor	0	380	380	380
NSE	0	0	0	0
Total	**0**	**380**	**380**	**380**
FTE	0.0	0.0	0.0	0.0
00829C PT14035 2014 SDG&E Microwave Upgrade and Enhancement				
Labor	0	52	149	88
Non-Labor	0	0	810	0
NSE	0	0	0	0
Total	**0**	**52**	**959**	**88**
FTE	0.0	0.5	1.5	0.9
00829E PT14038 Mobile Command Trailer Enhancement				
Labor	0	95	32	0
Non-Labor	0	446	116	0
NSE	0	0	0	0
Total	**0**	**541**	**148**	**0**
FTE	0.0	0.9	0.3	0.0
00829F PT13014 SDGE LAND MOBILE RADIO				
Labor	0	103	0	0
Non-Labor	0	1,471	0	0
NSE	0	0	0	0
Total	**0**	**1,574**	**0**	**0**
FTE	0.0	1.0	0.0	0.0
00829G PT14004 SDGE SCADA Log Management				
Labor	0	21	0	0
Non-Labor	0	750	0	0
NSE	0	0	0	0
Total	**0**	**771**	**0**	**0**
FTE	0.0	0.2	0.0	0.0
00833C PT15008 Service Order Routing Technology (SORT) Upgrade				
Labor	0	0	57	24
Non-Labor	0	0	440	219
NSE	0	0	0	0
Total	**0**	**0**	**497**	**243**
FTE	0.0	0.0	0.6	0.3

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Category:	G. Information Technology
Workpaper:	VARIOUS

	In 2013$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2013	2014	2015	2016
00835A PT14021 PostgreSQL OpenSource DBMS				
Labor	0	0	140	0
Non-Labor	0	0	262	0
NSE	0	0	0	0
Total	**0**	**0**	**402**	**0**
FTE	0.0	0.0	1.4	0.0
03851E PT13018 SDG&E WebLogic Integration				
Labor	0	220	0	0
Non-Labor	0	74	0	0
NSE	0	0	0	0
Total	**0**	**294**	**0**	**0**
FTE	0.0	2.2	0.0	0.0
08869A PT11018 SDGE WAN REBUILD PHASE IV				
Labor	0	135	0	0
Non-Labor	0	592	0	0
NSE	0	0	0	0
Total	**0**	**727**	**0**	**0**
FTE	0.0	1.3	0.0	0.0
00829D PT14036 SDGE Downtown SCADA				
Labor	0	228	143	0
Non-Labor	0	2,092	0	0
NSE	0	0	0	0
Total	**0**	**2,320**	**143**	**0**
FTE	0.0	2.2	1.4	0.0
00833S PT13017 CISCO DATA RETENTION				
Labor	0	119	0	0
Non-Labor	0	20	0	0
NSE	0	0	0	0
Total	**0**	**139**	**0**	**0**
FTE	0.0	1.2	0.0	0.0
03851C PT0460 IT Financial Planning				
Labor	0	0	189	0
Non-Labor	0	0	800	0
NSE	0	0	0	0
Total	**0**	**0**	**989**	**0**
FTE	0.0	0.0	1.9	0.0
10874A PT12052 SDGE GRID COMMUNICATIONS SYSTEM (SGCS)				
Labor	0	603	0	0
Non-Labor	0	22,145	0	0
NSE	0	0	0	0
Total	**0**	**22,748**	**0**	**0**
FTE	0.0	5.9	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Category:	G. Information Technology
Workpaper:	VARIOUS

	In 2013$ (000)			
	Adjusted-Recorded	**Adjusted-Forecast**		
	2013	**2014**	**2015**	**2016**
10875A Smart Grid Critical Infrastructure Cybercity				
Labor	0	221	0	0
Non-Labor	0	1,261	0	0
NSE	0	0	0	0
Total	**0**	**1,482**	**0**	**0**
FTE	0.0	2.1	0.0	0.0
10875B Smart Grid Cybersecurity Training Environment				
Labor	0	238	0	0
Non-Labor	0	1,203	0	0
NSE	0	0	0	0
Total	**0**	**1,441**	**0**	**0**
FTE	0.0	2.3	0.0	0.0
10875C Smart Grid DIIS Phase 2				
Labor	0	90	0	0
Non-Labor	0	0	0	0
NSE	0	0	0	0
Total	**0**	**90**	**0**	**0**
FTE	0.0	0.9	0.0	0.0
10875D Smart Grid - Security Compliance Management Phase 1				
Labor	0	80	0	0
Non-Labor	0	46	0	0
NSE	0	0	0	0
Total	**0**	**126**	**0**	**0**
FTE	0.0	0.8	0.0	0.0
10875E Smart Grid - Substation Security				
Labor	0	69	0	0
Non-Labor	0	375	0	0
NSE	0	0	0	0
Total	**0**	**444**	**0**	**0**
FTE	0.0	0.7	0.0	0.0
10875F Smart Grid - Threat Intelligence				
Labor	0	98	0	0
Non-Labor	0	41	0	0
NSE	0	0	0	0
Total	**0**	**139**	**0**	**0**
FTE	0.0	1.0	0.0	0.0
10875G Smart Grid Field Area Secure Device Monitoring and Management				
Labor	0	0	120	228
Non-Labor	0	0	945	1,575
NSE	0	0	0	0
Total	**0**	**0**	**1,065**	**1,803**
FTE	0.0	0.0	1.2	2.2

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Category: G. Information Technology

Workpaper: VARIOUS

	In 2013$ (000)		
	Adjusted-Recorded	Adjusted-Forecast	
	2013	2014	2015	2016

10875H Smart Grid Secure Distributed Network Protocol

	2013	2014	2015	2016
Labor	0	0	109	168
Non-Labor	0	0	788	1,155
NSE	0	0	0	0
Total	**0**	**0**	**897**	**1,323**
FTE	0.0	0.0	1.1	1.6

10875I Smart Grid Security Incident and Event Management (SIEM)

	2013	2014	2015	2016
Labor	0	0	109	109
Non-Labor	0	0	788	788
NSE	0	0	0	0
Total	**0**	**0**	**897**	**897**
FTE	0.0	0.0	1.1	1.1

10875J Smart Grid Substation Security In a Box

	2013	2014	2015	2016
Labor	0	0	109	142
Non-Labor	0	0	788	1,208
NSE	0	0	0	0
Total	**0**	**0**	**897**	**1,350**
FTE	0.0	0.0	1.1	1.4

10875K Condition Based Maintenance Analytics

	2013	2014	2015	2016
Labor	0	166	154	0
Non-Labor	0	1,790	869	0
NSE	0	0	0	0
Total	**0**	**1,956**	**1,023**	**0**
FTE	0.0	1.6	1.6	0.0

10875L Smart Grid Data Analytics

	2013	2014	2015	2016
Labor	0	0	665	665
Non-Labor	0	0	1,464	1,464
NSE	0	0	0	0
Total	**0**	**0**	**2,129**	**2,129**
FTE	0.0	0.0	6.6	6.6

10875M Distributed Energy Resource Management (DERMS)

	2013	2014	2015	2016
Labor	0	489	1,002	418
Non-Labor	0	6,613	7,758	207
NSE	0	0	0	0
Total	**0**	**7,102**	**8,760**	**625**
FTE	0.0	4.8	9.8	4.1

10875N ADMS Phase 2

	2013	2014	2015	2016
Labor	0	1,456	535	0
Non-Labor	0	2,342	485	0
NSE	0	0	0	0
Total	**0**	**3,798**	**1,020**	**0**
FTE	0.0	14.3	5.2	0.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Category: G. Information Technology

Workpaper: VARIOUS

	In 2013$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2013	2014	2015	2016
10875O DRMS (Demand Response Management System) - Phase 1				
Labor	0	461	692	0
Non-Labor	0	839	805	200
NSE	0	0	0	0
Total	**0**	**1,300**	**1,497**	**200**
FTE	0.0	4.5	6.8	0.0
10877A PT10018 Windows 7 Platform Replacement				
Labor	0	38	0	0
Non-Labor	0	266	0	0
NSE	0	0	0	0
Total	**0**	**304**	**0**	**0**
FTE	0.0	0.4	0.0	0.0
11878A Smart Grid Network Anomaly Detection Business Case				
Labor	0	121	121	121
Non-Labor	0	788	788	788
NSE	0	0	0	0
Total	**0**	**909**	**909**	**909**
FTE	0.0	1.2	1.2	1.2
11878C Smart Grid Log Management				
Labor	0	0	19	15
Non-Labor	0	0	735	557
NSE	0	0	0	0
Total	**0**	**0**	**754**	**572**
FTE	0.0	0.0	0.2	0.1
11878D Smart Grid Field Network Access Control				
Labor	0	0	0	53
Non-Labor	0	0	0	420
NSE	0	0	0	0
Total	**0**	**0**	**0**	**473**
FTE	0.0	0.0	0.0	0.5

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00817A - PT14031 SDG&E Data Warehouse Upgrade

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00817.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00817A - PT14031 SDG&E Data Warehouse Upgrade

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	0	104
Non-Labor	Zero-Based	0	0	0	0	0	0	0	1,425
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	0	0	1,529
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0

Business Purpose:

Upgrade and consolidate servers supporting the SDG&E Data Warehouses which contain customer data, meter read data, and engineering data, as well as upgrading the servers and software running the Informatica application.

Physical Description:

Project will spend >$500K in off-the-shelf software products for the construction of the upgraded environments (Dev, QA, & Prod). Project is focused on upgrading infrastructure and the Informatica application software, and the upgrade and consolidation of three current production Data Warehouse environments to a single instance. Project will also ensure that all existing reports & processes are functional in the new environment.

Project Justification:

Existing Infrastructure supporting Data Warehouse is over 6 years old. Demand on the systems has resulted in degraded performance with nightly data loads, and the age of the infrastructure presents an increased risk of significant unplanned down time due to component failure, as well as continued issues with responsiveness for clients using this system for Meter Revenue Projection and Transformer Load Analysis on a daily basis. To address these issues, this project proposes to replace hardware and upgrade Informatica to the current release (9.x), upgrade all Informatica Workflows and ETL Processes, and consolidate the instances of CISCO, SMart Meter, and Engineering Data Warehouses.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00817.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00817A - PT14031 SDG&E Data Warehouse Upgrade

Forecast Methodology:

Labor - Zero-Based

Estimate based on vendor quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00817A**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00817.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00817A - PT14031 SDG&E Data Warehouse Upgrade
Workpaper Detail:	00817A.001 - Existing Infrastructure supporting Data Warehouse is over 6 years old. Demand on the s
In-Service Date:	11/30/2016
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	104
Non-Labor	0	0	1,425
NSE	0	0	0
Total	**0**	**0**	**1,529**
FTE	0.0	0.0	1.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00817B - PT15003 SDGE Desktop Hardware Refresh**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00817.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00817B - PT15003 SDGE Desktop Hardware Refresh

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	156	284
Non-Labor	Zero-Based	0	0	0	0	0	0	2,028	2,200
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	0	2,184	2,484
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	1.5	2.8

Business Purpose:

Proactively replace roughly 4800 desktops and laptops starting in 2015 . Evaluate business requirements and ensure the final product meets or exceeds them.

Physical Description:

Proactively replace roughly 4800 desktops and laptops

Project Justification:

Sempra's laptops and desktop have a useful life cycle of five years. After five years of service they will be out of warranty and no longer fit for their intended purpose. As well the asset will not have the technical capability to meet the businesses needs and out of warranty failures are expected to exceed 10% a year. It's common for spare parts to not be available from the manufacture after the devices fifth year of age so, it's possible that repair may not be feasible for failed assets older than 5 years.

A hardware refresh program should be investigated as a proactive solution to the above concerns. Once an asset reaches its' fifth year of service it should be proactive replaced to ensure the business has an asset fit for purpose and to mitigate as many failures as possible to reduce impact on production.

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 00817.0

Category: G. Information Technology

Category-Sub: 1. Technical Obsolescence

Workpaper Group: 00817B - PT15003 SDGE Desktop Hardware Refresh

Forecast Methodology:

Labor - Zero-Based

Estimate based on vendor quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00817B**

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 00817.0

Category: G. Information Technology

Category-Sub: 1. Technical Obsolescence

Workpaper Group: 00817B - PT15003 SDGE Desktop Hardware Refresh

Workpaper Detail: 00817B.001 - Sempra's laptops and desktop have a useful life cycle of five years. After five years o

In-Service Date: Not Applicable

Description:

	Forecast In 2013 $(000)		
Years	**2014**	**2015**	**2016**
Labor	0	156	284
Non-Labor	0	2,028	2,200
NSE	0	0	0
Total	**0**	**2,184**	**2,484**
FTE	0.0	1.5	2.8

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00827A - PT14032 SDG&E SCADA Log Management Expansion

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00827.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00827A - PT14032 SDG&E SCADA Log Management Expansion

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	22	0	0
Non-Labor	Zero-Based	0	0	0	0	0	735	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**757**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0

Business Purpose:

Expand existing Splunk log management infrastructure to adrress Audit MCA releating to SDGE SCADA systems.

Physical Description:

Purchase 2 servers, 32TB SAN storage, incremental Splunk licensing.

Project Justification:

Expand existing Splunk log management infrastructure to adrress Audit MCA releating to SDGE SCADA systems.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00827.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00827A - PT14032 SDG&E SCADA Log Management Expansion

Forecast Methodology:

Labor - Zero-Based

Estimate based on vendor quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00827A**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00827.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00827A - PT14032 SDG&E SCADA Log Management Expansion
Workpaper Detail:	00827A.001 - Expand existing Splunk log management infrastructure to adrress Audit MCA releating to

In-Service Date: 04/30/2014

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	22	0	0
Non-Labor	735	0	0
NSE	0	0	0
Total	**757**	**0**	**0**
FTE	0.2	0.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00827B - PT14045 Generation IS Equipment Refresh**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00827.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00827B - PT14045 Generation IS Equipment Refresh

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	54	0	0
Non-Labor	Zero-Based	0	0	0	0	0	275	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**329**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0

Business Purpose:

The IS/IT equipment supporting the security of the Palomar Energy Center (PEC) and Miramar Energy Facility (MEF) control centers are End-of-Life and End-of-Support. This project will evalute options and alternatives for updating that infrastructure.

Physical Description:

The replacement of Information Security Managed Firewalls (4), Intrusion Prevention Devices (4), Jump Server (2) and Routers (replaced with firewalls) protecting the control networks at the PEC and MEF sites.

Project Justification:

The IS/IT equipment supporting the security of the Palomar Energy Center (PEC) and Miramar Energy Facility (MEF) control centers are End-of-Life and End-of-Support. This project will evalute options and alternatives for updating that infrastructure.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00827.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00827B - PT14045 Generation IS Equipment Refresh

Forecast Methodology:

Labor - Zero-Based

The project will leverage existing product standards and company contract agreements

Non-Labor - Zero-Based

The project will leverage existing product standards and company contract agreements

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00827B**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00827.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00827B - PT14045 Generation IS Equipment Refresh
Workpaper Detail:	00827B.001 - Generation IS Equipment Refresh

In-Service Date: 06/30/2014

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	54	0	0
Non-Labor	275	0	0
NSE	0	0	0
Total	**329**	**0**	**0**
FTE	0.5	0.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00827C - PT15001 Remote Server Rooms**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00827.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00827C - PT15001 Remote Server Rooms

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	0	26	26
Non-Labor	Zero-Based	0	0	0	0	0	0	132	132
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**158**	**158**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3

Business Purpose:

This project will fund physical and small scale computing infrastructure for computing facilities located in the field. These locations include construction offices, operating bases, substations and other locations were the compute performance requirements or data collection indicate installation of local converged computing infrastructure.

Physical Description:

Physical and small scale computing infrastructure

Project Justification:

This project will fund physical and small scale computing infrastructure for computing facilities located in the field. These locations include construction offices, operating bases, substations and other locations were the compute performance requirements or data collection indicate installation of local converged computing infrastructure.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00827.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00827C - PT15001 Remote Server Rooms

Forecast Methodology:

Labor - Zero-Based

Estimate based on vendor quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00827C**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00827.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00827C - PT15001 Remote Server Rooms
Workpaper Detail:	00827C.001 - This project will fund physical and small scale computing infrastructure for computing

In-Service Date: 12/31/2015

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	26	0
Non-Labor	0	132	0
NSE	0	0	0
Total	**0**	**158**	**0**
FTE	0.0	0.3	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00827.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00827C - PT15001 Remote Server Rooms
Workpaper Detail:	00827C.002 - This project will fund physical and small scale computing infrastructure for computing
In-Service Date:	12/31/2016
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	26
Non-Labor	0	0	132
NSE	0	0	0
Total	0	0	158
FTE	0.0	0.0	0.3

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00827D - PT15005 SDGE Video-enabled Collaboration Room Upgrade

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00827.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00827D - PT15005 SDGE Video-enabled Collaboration Room Upgrade

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	105	0
Non-Labor	Zero-Based	0	0	0	0	0	0	290	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**395**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0

Business Purpose:

Productive client interactions between geographically distant conf rooms; travel time/expense avoidance for employees;
integrations with mobile users; framework to allow collaboration with external entities.

Physical Description:

The scope will include infrastructure to upgrade the video conferencing equipment in ~30 SDGE video conferencing rooms.
The new equipment will integrate with existing and proposed solutions (Lync and TelePresence).

Project Justification:

Sempra's current video conferencing enabled rooms (Polycom not TelePresence) have outdated equipment that is out of
support, out of warranty and difficult to use. This project will implement a solution to manage these devices.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00827.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00827D - PT15005 SDGE Video-enabled Collaboration Room Upgrade

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Based on general HW list price estimates

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00827D**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00827.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00827D - PT15005 SDGE Video-enabled Collaboration Room Upgrade
Workpaper Detail:	00827D.001 - Sempra's current video conferencing enabled rooms (Polycom not TelePresence) have outda
In-Service Date:	06/30/2015
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	105	0
Non-Labor	0	290	0
NSE	0	0	0
Total	**0**	**395**	**0**
FTE	0.0	1.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00829B - PT14034 SDGE CI Small Cap Projects**

San Diego Gas & Electric Company
2016 GRC - APP
Capital Workpapers

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00829.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00829B - PT14034 SDGE CI Small Cap Projects

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	0	0
Non-Labor	Zero-Based	0	0	0	0	0	380	380	380
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**380**	**380**	**380**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Business Purpose:

Maintain and improve CI service and network reliability, and enhance our ability to recover from damage to our fiber optics cable plant.

Physical Description:

Scope will include purchases of small capital assets under $75,000. Purchase examples can included but are not limited to fiber optics test sets used to locate breaks and identify problem areas, installation of Operational Status Displays in areas occupied by Computing Infrastructure engineers, crash kit for NAS, blade servers and other CI service objectives to be determined and prioritized.

Project Justification:

Multiple SDGE Small Cap projects for covering business customer operational issues, safety, network improvements, faster service delivery, collaboration, and innovation.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00829.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00829B - PT14034 SDGE CI Small Cap Projects

Forecast Methodology:

Labor - Zero-Based

N/A

Non-Labor - Zero-Based

Based on general HW list price estimates

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00829B**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00829.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00829B - PT14034 SDGE CI Small Cap Projects
Workpaper Detail:	00829B.001 - Multiple SDGE Small Cap projects covering business customer operational issues, safety,
In-Service Date:	Not Applicable
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	380	380	380
NSE	0	0	0
Total	**380**	**380**	**380**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00829C - PT14035 2014 SDG&E Microwave Upgrade and Enhancement

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00829.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00829C - PT14035 2014 SDG&E Microwave Upgrade and Enhancement

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	52	149	88
Non-Labor	Zero-Based	0	0	0	0	0	0	810	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	52	959	88
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.5	1.5	0.9

Business Purpose:

1. Reduce outages to existing links due over utilization for corporate locations utilizing microwave backhauls
2. Reduce the amount of spare parts due to standardization of microwave hardware
3. Provide more optionsfor business unit applications due to increased capacity

Physical Description:

1. Replace older hardware to provide supportability, increased bandwidth and enhanced security
2. Add capacity to existing links to provide stability to corporate and substation networks
3. Where possible add new microwave links to replace existing leased line circuits
4. Establish a microwave ring to provide redundant paths for the core network

Project Justification:

To expand the microwave coverage, add security features, and add capacity to existing links for future growth on the corporate and substation networks. Currently we have a number of links that are at capacity with some suffering performance issues, along with the aging hardware it is becoming difficult to obtain replacement parts. Identify existing leased line circuits that could be migrated to microwave to reduce O&M expenditures.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00829.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00829C - PT14035 2014 SDG&E Microwave Upgrade and Enhancement

Forecast Methodology:

Labor - Zero-Based

Based on current upgrade work that is being performed

Non-Labor - Zero-Based

Based on current upgrade work that is being performed

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00829C**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00829.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00829C - PT14035 2014 SDG&E Microwave Upgrade and Enhancement
Workpaper Detail:	00829C.001 - To expand the microwave coverage add security features and add capacity to existing I

In-Service Date: 12/31/2016

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	52	149	88
Non-Labor	0	810	0
NSE	0	0	0
Total	52	959	88
FTE	0.5	1.5	0.9

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00829E - PT14038 Mobile Command Trailer Enhancement**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00829.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00829E - PT14038 Mobile Command Trailer Enhancement

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	95	32	0
Non-Labor	Zero-Based	0	0	0	0	0	446	116	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	541	148	0
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.9	0.3	0.0

Business Purpose:

1. WAN Connectivity: These trailers may be deployed anywhere at any time – potentially even out of the SDG&E and SoCalGas service territories. As such, it is critical that quality, high-speed connectivity be established and maintained throughout the deployment which may be days or even weeks 2. The trailers are often deployed in remote areas where travel time limits remote support capabilities. Significant delays do occur waiting for technical support to be dispatched and arriving onsite Solution: Develop remote management capabilities that include provisioning visibility to the onboard system as well as connectivity that could work in the event of WAN problems 3. Currently, an All-in-One printer provides on-board capability. However, each user laptop must be configured to point to the printer. Field personnel also want the capability of generating full-size prints Solution: Thoroughly analyze current configurations, develop a technical solution to operability and provide large format printing capability. 4. It is unclear what the expected performance from the Riverbed appliances will be. Since a variety of WAN connections may be used, some with fairly limited bandwidth, the most efficient use of the connection is needed Solution: Develop and implement the most efficient acceleration and bandwidth management solution available

Physical Description:

Enhancements to alleviate work by reducing on-site support and provide high-speed connectivity throughout the deployment allowing field personel quickier access to information. These would include enhancements to (1) WAN Connectivity (2) Network Acceleration (3) Remote Management (4) Printing

Project Justification:

A fully functional command, control and communications mobile facility supporting a wide variety of field operations.

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 00829.0

Category: G. Information Technology

Category-Sub: 1. Technical Obsolescence

Workpaper Group: 00829E - PT14038 Mobile Command Trailer Enhancement

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Based on general HW list price estimates

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00829E

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00829.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00829E - PT14038 Mobile Command Trailer Enhancement
Workpaper Detail:	00829E.001 - A fully functional command control and communications mobile facility supporting a wid
In-Service Date:	01/31/2015
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	95	32	0
Non-Labor	446	116	0
NSE	0	0	0
Total	541	148	0
FTE	0.9	0.3	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00829F - PT13014 SDGE LAND MOBILE RADIO**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00829.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00829F - PT13014 SDGE LAND MOBILE RADIO

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	103	0	0
Non-Labor	Zero-Based	0	0	0	0	0	1,471	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,574**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0

Business Purpose:

Provide field personnel with access to a reliable means of wireless radio communication and allows for the replacement of failed field equipment to be upgraded.

Physical Description:

Existing core controller is at vendor end of life; IT needs to upgrade existing core controller to provide a high level of availability and supportability.

Project Justification:

Since 2000, SDG&E has built and operated a Motorola private tactical field mobile voice radio system to manage mission-critical day-to-day operations, ensure field personnel safety, as well as respond during emergency situations. As demonstrated during the 2007 wildfires and the September 8, 2011 outage, this system represents the only reliable communications method across SDG&E's service territory during such events when commercial services are not available. With the system over 10 years old, vendor support for the current legacy platform is no longer available and neither are the spare hardware accessories. With 2000 mobile subscriber units in the fleet and 56 dispatch console positions, it is imperative that this legacy system be upgraded to a next generation and supported platform.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00829.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00829F - PT13014 SDGE LAND MOBILE RADIO

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00829F**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00829.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00829F - PT13014 SDGE LAND MOBILE RADIO
Workpaper Detail:	00829F.001 - SDGE LAND MOBILE RADIO
In-Service Date:	07/31/2014
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	103	0	0
Non-Labor	1,471	0	0
NSE	0	0	0
Total	1,574	0	0
FTE	1.0	0.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00829G - PT14004 SDGE SCADA Log Management**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00829.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00829G - PT14004 SDGE SCADA Log Management

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	21	0	0
Non-Labor	Zero-Based	0	0	0	0	0	750	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	771	0	0
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0

Business Purpose:

This project will implement a new log management system for all SDGE Electric Distribution SCADA network and server infrastructure that produce log information. This system will use established hardware and software product standards and configuration which will include new servers, storage and Splunk licensing. This new log management system will monitor all servers, workstations, and network devices in the SDGE Electric Distribution SCADA environment. Information Security will be involved in the review and monitoring of logging configurations and determining that all systems are appropriately configured.

Physical Description:

Integrate SDGE Electric Distribution Operations requirements into communications and notification process and procedures and solution with existing security controls (SEIM, log management, etc.) to mitigate increase application count

Project Justification:

The project will resolve and close Audit 13-230 MCA 1.D relating to SDGE Electric Distribution (SCADA) systems and will create new capability to monitor logs and access controls for SDGE Distribution SCADA networks.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00829.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00829G - PT14004 SDGE SCADA Log Management

Forecast Methodology:

Labor - Zero-Based

Based on internal labor hours estimate to complete work

Non-Labor - Zero-Based

Based on vendor estimates

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00829G**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00829.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00829G - PT14004 SDGE SCADA Log Management
Workpaper Detail:	00829G.001 - SDGE SCADA Log Management

In-Service Date:	11/30/2014
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	21	0	0
Non-Labor	750	0	0
NSE	0	0	0
Total	**771**	**0**	**0**
FTE	0.2	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00833C - PT15008 Service Order Routing Technology (SORT) Upgrade

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833C - PT15008 Service Order Routing Technology (SORT) Upgrade

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	57	24
Non-Labor	Zero-Based	0	0	0	0	0	0	440	219
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**497**	**243**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.3

Business Purpose:

Improvements in the hardware with automatic failover will make a more reliable system and will alleviate concern over long outages to repair the system. Rewrite of the SOPE application that produces non-metered orders written in an obsolete language (PowerBuilder) will become a maintainable application once again. Failover for Call Ahead will be implemented to ensure continued customer notification by the service technicians. Redesign of the data flow in the reporting system will allow improved reporting support for field management.

Physical Description:

The scope will be limited to the applications & hardware within the SORT system: SOPE, dispatch, mobile, Call Ahead, reporting, etc. However, the scope of this project will not include the mobile devices.

Project Justification:

Aging hardware and the delay in SORT replacement project for the next few years, brings an increasing risk of system failure. This project aims to mitigate risks and extend the life of this tier 1 application.   This project will focus on those areas that have been identified as the highest areas of risk leading to instability of the system, degrading of performance & unreliability.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833C - PT15008 Service Order Routing Technology (SORT) Upgrade

Forecast Methodology:

Labor - Zero-Based

Estimate based on vendor quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00833C**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833C - PT15008 Service Order Routing Technology (SORT) Upgrade
Workpaper Detail:	00833C.005 - The scope will be limited to the applications & hardware within the SORT system: SOPE
In-Service Date:	05/30/2016
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	46	19
Non-Labor	0	352	175
NSE	0	0	0
Total	**0**	**398**	**194**
FTE	0.0	0.5	0.2

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833C - PT15008 Service Order Routing Technology (SORT) Upgrade
Workpaper Detail:	00833C.006 - The scope will be limited to the applications & hardware within the SORT system: SOPE

In-Service Date: 05/30/2016

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	11	5
Non-Labor	0	88	44
NSE	0	0	0
Total	0	99	49
FTE	0.0	0.1	0.1

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00835A - PT14021 PostgreSQL OpenSource DBMS

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00835.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00835A - PT14021 PostgreSQL OpenSource DBMS

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	140	0
Non-Labor	Zero-Based	0	0	0	0	0	0	262	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**402**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0

Business Purpose:

Bring cost benefit awareness to the business and IT of capability of mature open source solutions. Business and IT realization of credible alternatives to Oracle that are significantly cheaper than Oracle Database and maintenance.Development of a methodology for future evaluations of other open source database alternatives (i.e. MySQL). Development of additional DBA skillsets

Physical Description:

Partner up with application teams to pilot three (3) application systems, new or existing, to run with PostgreSQL as RDBMS. A set of three database environments will be setup and configured capable of handling Disaster Recovery, High Availabilty, High-Transaction and Large Volume.

Project Justification:

This project seeks to build on the PostgreSQL Proof of Concept activity completed by the IT DBA Group in 2013. The project purpose is to mature an open source RDBMS platform to rival Oracle's database position at Sempra. With a mature PostgreSQL alternative, we will be able to achieve two significant objectives: 1) To offer a standard, open source RDBMS technology that new and existing projects / applications can use with high confidence; 2) To drastically lower TCO database costs through the shrinking or elimination of our Oracle database appetite

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00835.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00835A - PT14021 PostgreSQL OpenSource DBMS

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00835A

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00835.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00835A - PT14021 PostgreSQL OpenSource DBMS
Workpaper Detail:	00835A.001 - Partner up with application teams to pilot three (3) application systems, new or existi

In-Service Date: 06/30/2015

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	140	0
Non-Labor	0	262	0
NSE	0	0	0
Total	**0**	**402**	**0**
FTE	0.0	1.4	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
03851E - PT13018 SDG&E WebLogic Integration**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03851.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	03851E - PT13018 SDG&E WebLogic Integration

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	220	0	0
Non-Labor	Zero-Based	0	0	0	0	0	74	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**294**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0

Business Purpose:

Eliminate the risk of running our mission critical applications on an unsupported vendor product better position ourselves to support business enhancements reduce risk of instability and potential outages, resulting in damaging our reputation with our customers

Physical Description:

Smart Meter - Remote Connect Disconnect (RCDC), Load Side Voltage Check (LSVC), Remote Meter Configuration (RMC)
Outage Management System (OMS) and Distribution Management System (DMS)
SDGE Account Manager

Project Justification:

Oracle WebLogic Integration (WLI) platform is obsolete and lacking full vendor support since Oracle acquired BEA WebLogic on April 29th 2008. Since that time there has been a staged reduction in support levels from Oracle, where today we can no longer obtain software fixes for established defects. There are critical SDG&E system integration components still running on WLI and we are aware of specific stability issues that have contributed to system failures, resulting in outages and direct customer impacts. For as long as we continue to utilize WLI we be at risk of such outages and damaging our reputation with our customers.
This project will migrate all integration components from WLI to Oracle Service Bus (OSB) and/or Oracle Business Process Execution Language (BPEL) to provide a stable and fully supported platform for future projects and enhancements.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03851.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	03851E - PT13018 SDG&E WebLogic Integration

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 03851E**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03851.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	03851E - PT13018 SDG&E WebLogic Integration
Workpaper Detail:	03851E.001 - SDG&E WebLogic Integration

In-Service Date:	10/31/2014
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	220	0	0
Non-Labor	74	0	0
NSE	0	0	0
Total	**294**	**0**	**0**
FTE	2.2	0.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
08869A - PT11018 SDGE WAN REBUILD PHASE IV**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	08869.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	08869A - PT11018 SDGE WAN REBUILD PHASE IV

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	135	0	0
Non-Labor	Zero-Based	0	0	0	0	0	592	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**727**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0

Business Purpose:

The new systems delivered by WAN Rebuild 2010 (phase III) and this project (SDGE WAN Rebuild Phase IV) will be capable of more efficient use of expensive transport (circuits), enable capacity upgrades as required (additional cost), and provide network flexibility in support of major programs.

Physical Description:

Provide capacity to support 2011 OpEx CBM go-live sites / services scheduled through 2nd Quarter 2012 (24 sites) using a combination of leased and private circuits.
Deploy 24 SRX240 new routers for CBM
Upgrade / Deploy 20 Metro-E circuits
Upgrade routers to OS 10.4.R3 and further implementation of Traffic Engineering and QOS attributes to support efficient traffic management
Implement 3 DVM radio upgrades using the current standard Aviat hardware.
Retire the legacy Passport and SONET Nortel network (11 nodes) based on recommendations from design work underway (a single homogenous network)
Deploy 10 "ruggedized" routers for sites where environmental condition dictate

Project Justification:

The project will deploy the incremental capacity upgrades required to support the OpEx CBM, retire SONET Nortel network, upgrade end-of-life MW hardware which has served Sempra for nearly 15 years, and increase the efficiency of managing the network through software enhancements and technologies to remotely manage devices. The new systems delivered by WAN Rebuild 2010 (phase III) and this project (SDGE WAN Rebuild Phase IV) will be capable of more efficient use of expensive transport (circuits), enable capacity upgrades as required (additional cost), and provide network flexibility in support of major programs.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	08869.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	08869A - PT11018 SDGE WAN REBUILD PHASE IV

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 08869A**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	08869.0
Category:	G. Information Technology
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	08869A - PT11018 SDGE WAN REBUILD PHASE IV
Workpaper Detail:	08869A.001 - SDGE WAN REBUILD PHASE IV
In-Service Date:	12/31/2014
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	135	0	0
Non-Labor	592	0	0
NSE	0	0	0
Total	**727**	**0**	**0**
FTE	1.3	0.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00829D - PT14036 SDGE Downtown SCADA**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00829.0
Category:	G. Information Technology
Category-Sub:	3. Mandated
Workpaper Group:	00829D - PT14036 SDGE Downtown SCADA

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	228	143	0
Non-Labor	Zero-Based	0	0	0	0	0	2,092	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**2,320**	**143**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	2.2	1.4	0.0

Business Purpose:

The new SCADA Sysytem will provide increased capacity, increased accessibility, eliminate dependency on current HQ based system, and allow long-term flexibility of the physical location of HQ.

Physical Description:

Removal of the SCADA System from HQ will require redesign and upgrading of the existing system in the downtown area. The redesign and upgrade will incorporate a fiber optic backbone, supportin a multi node fiber rings, with full redundancy & sub-second recovery.

Project Justification:

The current SCADA Communications System in Downtown San Diego must be removed from Sempra HQ. We will evaluate a complete reconfiguration of the SCADA system. This project will install and configure a new backbone network for the existing SCADA ingrastructure in downtown San Diego.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00829.0
Category:	G. Information Technology
Category-Sub:	3. Mandated
Workpaper Group:	00829D - PT14036 SDGE Downtown SCADA

Forecast Methodology:

Labor - Zero-Based

Project proceeding as expected, trenching, real estate conflicts, and all work being performed at night.

Non-Labor - Zero-Based

Project proceeding as expected, trenching, real estate conflicts, and all work being performed at night.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00829D**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00829.0
Category:	G. Information Technology
Category-Sub:	3. Mandated
Workpaper Group:	00829D - PT14036 SDGE Downtown SCADA
Workpaper Detail:	00829D.001 - The current SCADA Communications System in Downtown San Diego must be removed from Se

In-Service Date: 01/31/2015

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	228	143	0
Non-Labor	2,092	0	0
NSE	0	0	0
Total	2,320	143	0
FTE	2.2	1.4	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
00833S - PT13017 CISCO DATA RETENTION**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	G. Information Technology
Category-Sub:	3. Mandated
Workpaper Group:	00833S - PT13017 CISCO DATA RETENTION

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	119	0	0
Non-Labor	Zero-Based	0	0	0	0	0	20	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**139**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0

Business Purpose:

According to California Civil Code Section 1798.81 and CPUC restrictions on data retention, covered entities must retain customer information for only as long as necessary to fulfill purposes consented to by their customers. California Civil Code requires organizations to securely dispose of personal information when it is no longer required by the business. This project also supports a management corrective action item to satisfy internal audit 12-131.3 (Customer Data Privacy).

Physical Description:

Identifying the specific length of retention per CISCO table.
Ability to retain data necessary for financial reporting where necessary.
Ability to report the data to be purged prior to the final purge.

Project Justification:

Data is retained indefinitely on CISCO, which may contravene retention commitments and justifiable business purpose. There is currently 14 years worth of customer data contained in CISCO. The implications of inaccurate communication of personal information warrants retention practices in order to meet published notices and meet PUC requirements.

Scope includes the need to establish appropriate legal and business definitions for customer data retention. Comply with our published privacy statement to keep customer information only for as long as necessary to serve and handle matters like billing disputes, inquiries and system planning. Retention periods vary based upon the specific circumstances and business needs, but will most typically be three to ten years.

Establish the technical capabilities to manage the purging of customer data over a specific number of years per CISCO table.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	G. Information Technology
Category-Sub:	3. Mandated
Workpaper Group:	00833S - PT13017 CISCO DATA RETENTION

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 00833S**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	00833.0
Category:	G. Information Technology
Category-Sub:	3. Mandated
Workpaper Group:	00833S - PT13017 CISCO DATA RETENTION
Workpaper Detail:	00833S.001 - CISCO DATA RETENTION
In-Service Date:	03/31/2014
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	119	0	0
Non-Labor	20	0	0
NSE	0	0	0
Total	139	0	0
FTE	1.2	0.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
03851C - PT0460 IT Financial Planning**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03851.0
Category:	G. Information Technology
Category-Sub:	4. Business Optimization
Workpaper Group:	03851C - PT0460 IT Financial Planning

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	0	189	0
Non-Labor	Zero-Based	0	0	0	0	0	0	800	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**989**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0

Business Purpose:

More consistent O&C reporting for actuals, budgets, outlooks and long range planning.   Ability to track changes in forecasts and perform ad hoc analysis.

Physical Description:

The system will have a central repository with web based reporting and drill down capability for all IT O&M outlooks and actuals. The system will have the ability to simulate and track multiple scenarios with one set of centralized outlook loaders. Shared service and net O&M reporting will track shared service allocations and overhead loaders from beginnning to end with sending and receiving cost centers. This information will be presented for budgeting in a meaningful manner.

Project Justification:

Annual budgets and monthly O&C costs are entered into SAP once per year. Outlooks are created twice per year with annual plans completed manually in Excel. Monthly reporting does not incorporate shared service allocations. The process is manually intensive with data adjusted and formatted to meet the reporting requirements.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03851.0
Category:	G. Information Technology
Category-Sub:	4. Business Optimization
Workpaper Group:	03851C - PT0460 IT Financial Planning

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 03851C**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	03851.0
Category:	G. Information Technology
Category-Sub:	4. Business Optimization
Workpaper Group:	03851C - PT0460 IT Financial Planning
Workpaper Detail:	03851C.001 - Annual budgets and monthly O&C costs are entered into SAP once per year. Outlooks are
In-Service Date:	12/31/2015
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	189	0
Non-Labor	0	800	0
NSE	0	0	0
Total	**0**	**989**	**0**
FTE	0.0	1.9	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
10874A - PT12052 SDGE GRID COMMUNICATIONS SYSTEM (SGCS)**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10874.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10874A - PT12052 SDGE GRID COMMUNICATIONS SYSTEM (SGCS)

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	603	0	0
Non-Labor	Zero-Based	0	0	0	0	0	22,145	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**22,748**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	5.9	0.0	0.0

Business Purpose:

Electric T&D has undertaken various SmartGrid initiatives aimed at automating various operations previously performed via manual inspection. Process automation requires new and updated telecommunications to carry field asset status back to the Data Center. Options for fulfilling the varied monitoring requirements of key field assets will be investigated and implemented.

Physical Description:

Program scope will consist of implementing telecommunications in four areas: 1) Low Power Communications Network, 2) Substation Communications, 3) Field Broadband Connections, 4) SCADA Optimization. These varied solutions should provide needed telecommunications for current, as well as additional future initiatives.

Project Justification:

Field workers currently performing manual inspections will be freed up to perform other more critical tasks. With automated processes, company may be able to avoid potential fines and penalties that could result from undetected or untimely discovery of problems. New systems will provide capacity for some additional SmartGrid initiatives in the future.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10874.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10874A - PT12052 SDGE GRID COMMUNICATIONS SYSTEM (SGCS)

Forecast Methodology:

Labor - Zero-Based

Project is currently in process and forecast is based on current assumptions.

Non-Labor - Zero-Based

Project is currently in process and forecast is based on current assumptions.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 10874A**

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 10874.0

Category: G. Information Technology

Category-Sub: 5. Integration with new Smart Grid Technology

Workpaper Group: 10874A - PT12052 SDGE GRID COMMUNICATIONS SYSTEM (SGCS)

Workpaper Detail: 10874A.001 - SDGE GRID COMMUNICATIONS SYSTEM (SGCS)

In-Service Date: 12/31/2014

Description:

	Forecast In 2013 $(000)		
Years	**2014**	**2015**	**2016**
Labor	603	0	0
Non-Labor	22,145	0	0
NSE	0	0	0
Total	**22,748**	**0**	**0**
FTE	5.9	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
10875A - Smart Grid Critical Infrastructure Cybercity

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875A - Smart Grid Critical Infrastructure Cybercity

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	221	0	0
Non-Labor	Zero-Based	0	0	0	0	0	1,261	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,482**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0

Business Purpose:

Strategic partnerships to monetize the use of the critical infrastructure cybercity
Ability to train targeted personnel in a real world SCADA training environment using real world scenarios
Greater ability for SDGE to react, respond, and recover from a cyber security incident
Limit potential damage a cyber security incident could have on the electric or gas grid
Ability to establish an industry leading cybersecurity training program for system critical infrastructure operators and cybersecurity professionals across the nation
Ability to conduct advanced training for SDGE Cybersecurity resources in a simulated SCADA/ICS environment to develop better competencies

Physical Description:

The main objective of this project is to deliver a critical infrastructure cybercity environment comprised of a virtualized model of San Diego like critical infrastructure assets and systems. The backend hardware and communication systems will host small scale SCADA systems controlling the model city's power generation plants, electric and gas transmission and distribution infrastructure, water treatment facilities, hospitals, banks, transit facilities, retail shops, and even the city's residential homes. A number of real world cybersecurity attack scenarios on the city's gas and electric systems will be developed in order to provide a environment for SDGE's grid operators, Information Security team, and Corporate Security personnel to execute SDGE's incident response plans and activities. This will not only build proficiencies for front line SDGE responders, but also refine SDGE's cybersecurity response plans/procedures to minimize potential areas of weakness or concern.
The overall vision includes making this new SDGE training environment a SCADA operator and Cybersecurity regional/national training hub. The plan includes establishing strategic partnerships and building multiple revenue streams from the use of this specialized training environment. Various training organizations, critical infrastructure operators, universities, government agencies, or other entities could then leverage this environment to provide services. This training environment provides SDGE an opportunity to become a national leader in SCADA operator cybersecurity training, SCADA offensive and defensive cybersecurity training, and cybersecurity incident response training.

Project Justification:

The ability to react, respond, and recover from an cybersecurity attack is crucial to maintaining the security and reliability of the electric grid. On the front lines of this battle our SDGE's Electric Transmission and Distribution electric operators, Corporate Security operators, and various members of Information Security's incident response team. Currently SDGE does not have an environment aimed to allow these critical resources to prepare and practice SDGE's identification, response, reaction, and recover processes/procedures to a serious cybersecurity incident.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875A - Smart Grid Critical Infrastructure Cybercity

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 10875A

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875A - Smart Grid Critical Infrastructure Cybercity
Workpaper Detail:	10875A.001 - The ability to react, respond, and recover from an cybersecurity attack is crucial to m

In-Service Date: 12/31/2014

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	176	0	0
Non-Labor	1,008	0	0
NSE	0	0	0
Total	1,184	0	0
FTE	1.7	0.0	0.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 10875.0

Category: G. Information Technology

Category-Sub: 5. Integration with new Smart Grid Technology

Workpaper Group: 10875A - Smart Grid Critical Infrastructure Cybercity

Workpaper Detail: 10875A.002 - The ability to react, respond, and recover from an cybersecurity attack is crucial to m

In-Service Date: 12/31/2014

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	45	0	0
Non-Labor	253	0	0
NSE	0	0	0
Total	**298**	**0**	**0**
FTE	0.4	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
10875B - Smart Grid Cybersecurity Training Environment

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875B - Smart Grid Cybersecurity Training Environment

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	238	0	0
Non-Labor	Zero-Based	0	0	0	0	0	1,203	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,441**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0

Business Purpose:

The ability to react, respond, and recover from an cybersecurity attack is crucial to maintaining the security and reliability of the electric grid. On the front lines of this battle our SDGE's Electric Transmission and Distribution electric operators, Corporate Security operators, members of Information Security's incident response team. Currently SDGE does not have a formalized cyber security training course or environment aimed to educate SDGE's first responders to properly react, respond, and recover from a serious cybersecurity incident.

Physical Description:

The main objective of this project is to deliver a cybersecurity training environment comprised of a virtualized model of San Diego. The backend hardware and communication systems will host small scale SCADA systems controlling the model city's power generation plants, electric and gas transmission and distribution infrastructure, water treatment facilities, hospitals, banks, transit facilities, retail shops, and even the city's residential homes. A number of real world cybersecurity attack scenarios on the city's gas and electric systems will be developed in order to provide a training environment for SDGE's grid operators, Information Security team, and Corporate Security personnel to execute SDGE's incident response plans and activities. This will not only build proficiencies for front line SDGE responders, but also refine SDGE's cybersecurity response plans/procedures to minimize potential areas of weakness or concern.
The overall vision includes making this new SDGE training environment a SCADA operator and Cybersecurity regional/national training hub. The plan includes establishing strategic partnerships and building multiple revenue streams from the use of this specialized training environment. Various training organizations, critical infrastructure operators, universities, government agencies, or other entities could then leverage this environment to provide services. This training environment provides SDGE an opportunity to become a national leader in SCADA operator cybersecurity training, SCADA offensive and defensive cybersecurity training, and cybersecurity incident response training. Delivering a cutting edge training environment like this would not only improve SDGE's ability to detect, respond, and recover from a cybersecurity incident but also assist professionals around the nation/world

Project Justification:

Strategic partnerships to monetize the use of the training environment
Ability to train targeted personnel in a real world SCADA training environment using real world scenarios
Greater ability for SDGE to react, respond, and recover from a cyber security incident
Limit potential damage a cyber security incident could have on the electric or gas grid
Ability to establish an industry leading cybersecurity training program for system critical infrastructure operators and cybersecurity professionals across the nation
Ability to conduct advanced training for SDGE Cybersecurity resources in a simulated SCADA/ICS environment to develop better competencies

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875B - Smart Grid Cybersecurity Training Environment

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 10875B**

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 10875.0

Category: G. Information Technology

Category-Sub: 5. Integration with new Smart Grid Technology

Workpaper Group: 10875B - Smart Grid Cybersecurity Training Environment

Workpaper Detail: 10875B.001 - The ability to react, respond, and recover from an cybersecurity attack is crucial to m

In-Service Date: 12/31/2014

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	238	0	0
Non-Labor	1,203	0	0
NSE	0	0	0
Total	**1,441**	**0**	**0**
FTE	2.3	0.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
10875C - Smart Grid DIIS Phase 2**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875C - Smart Grid DIIS Phase 2

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	90	0	0
Non-Labor	Zero-Based	0	0	0	0	0	0	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**90**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0

Business Purpose:

The DIIS Phase 2 project will build functionalities to track and provision multiple programs including Rule 21 (Advanced Energy Storage, Fuel Cells, and Biogas), Wholesale Distribution Access Tariff (WDAT), and Electric Vehicles (EV), building on top of the Net Energy Metering (NEM) functionalities built in phase 1. DIIS will provide analytical tools and reporting functionality for customer-owned generation as well as electric vehicle assets on SDG&E's electric network.

Physical Description:

Accessibility- The system shall provide users access to information and functionality, as defined by users matrix.
Auditing, Reporting– The system shall be able to produce a list of all provisioned users, and their access permission, a list of changes made to the application data, and all log messages will be forwarded to Sempra's Enterprise Log Monitoring.
Availability- The System shall be available 24/7/365, except during planned outages, however the SLA shall be 6 am – 6 pm Monday through Friday
Capacity- The system shall be able to handle 50 total users and 10 concurrent users (beyond phase 1 totals)
Compatibility- The System shall meet Usability requirements on common browsers and user devices for external users (Android browsers, apple browsers, google chrome, firefox. Internal users will be supported in IE 8)
Concurrency- The system shall deliver Optimistic Concurrency control on all database write operations.
Documentation- The system shall meet all the documentation requirements mentioned in the detailed requirements documents.
Efficiency- The system shall prevent consuming the limit of database connections, web server connections, memory, and CPU.
Error Handling- The system shall meet the error handling requirements.
Maintainability- The system shall meet the maintainability requirements described the detailed non-functional requirements.

Project Justification:

CPUC Electric Rule 21 – Electric Rule 21 is a tariff that describes the interconnection, operating, and metering requirements for generation facilities to be connected to a utility's distribution system, over which the California Public Utilities Commission (CPUC) has jurisdiction. Penalties for non-compliance may be levied.
CPUC Alternative Fuel Vehicle OIR D.11-07-029 – AFV OIR D.11-07-029 establishes policies to overcome barriers to Electric Vehicle deployment and compliance. Penalties for non-compliance may be levied.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875C - Smart Grid DIIS Phase 2

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 10875C**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875C - Smart Grid DIIS Phase 2
Workpaper Detail:	10875C.001 - Smart Grid DIIS Phase 2

In-Service Date: 03/31/2014

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	90	0	0
Non-Labor	0	0	0
NSE	0	0	0
Total	90	0	0
FTE	0.9	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
10875D - Smart Grid - Security Compliance Management Phase 1

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875D - Smart Grid - Security Compliance Management Phase 1

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	80	0	0
Non-Labor	Zero-Based	0	0	0	0	0	46	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**126**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0

Business Purpose:

Implement an industry preferred software solution designed to managed Enterprise Risk and Compliance process and workflow. Additionally, the solution will provide a centralized capability for threat/vulnerability, risk and compliance tracking and reporting.

Physical Description:

Ensure the company is able to satisfy current and future legal and security requirements.
Reduce risk related to legal and security non-compliance.
Align risk treatment responsibility with company internal financial accounting rules.
Eliminate follow-on audit deficiencies related to threat and vulnerability management program deficiencies.
Assist with the remediation of risks identified in the Information Security Risk Assessments (PCI and Customer Privacy).
Consolidate ISISC processes for control implementation and ongoing compliance activities.
Reduce duplicate compliance management efforts.
Provide a near real time view of security compliance across all company business units.
Automate trend analysis and reporting for analysts and decision makers.
Automate security compliance management workflows (requests, approvals, attestation and risk treatment).
Position IT to provide an extensible enterprise solution for risk and compliance activities.

Project Justification:

In support of SDG&E's smart grid efforts, the ISISC department will deploy a solution to ensure that privacy, security and compliance objectives are accomplished with the introduction of Smart Grid process and technology. Currently, compliance objectives are accomplished via a combination independent and non-integrated control workbooks (over 10) and de-centralized processes. Because of the decentralized approach, the ISISC department cannot track cyber risk effectively across departments and compliance is a point in time snapshot based on a manual process for quarterly attestation, which results in random controls being tested only one a quarter. The Compliance Management project will implement a software solution that will consolidate numerous compliance workbooks (PCI, SOX, Customer Privacy) as well as the information security requirements into a unified control framework; implement process within the software to manage and report on security incidents, threats and vulnerabilities. The lack of an effective and scalable threat and vulnerability tracking solution was originally identified as an audit issue during the smart meter project, but is actually a broader enterprise issue. ISISC conducted a recent security assessments of both customer privacy controls and Payment Card Industry Controls. Both assessments identified numerous high level risks (43 for Customer Privacy) (9 for PCI Merchant Level 3) that can be attributed to the existing company approach to compliance activities.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875D - Smart Grid - Security Compliance Management Phase 1

Forecast Methodology:

Labor - Zero-Based

Project was completed March 2014.

Non-Labor - Zero-Based

Project was completed March 2014.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 10875D**

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 10875.0

Category: G. Information Technology

Category-Sub: 5. Integration with new Smart Grid Technology

Workpaper Group: 10875D - Smart Grid - Security Compliance Management Phase 1

Workpaper Detail: 10875D.001 - Smart Grid - Security Compliance Management Phase 1

In-Service Date: 03/31/2014

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	80	0	0
Non-Labor	46	0	0
NSE	0	0	0
Total	126	0	0
FTE	0.8	0.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
10875E - Smart Grid - Substation Security**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875E - Smart Grid - Substation Security

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	69	0	0
Non-Labor	Zero-Based	0	0	0	0	0	375	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**444**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0

Business Purpose:

The purpose of this phase of the project is to enhance a number of unlicensed and unused security capabilities on the deployed substation/field gateways and build the supporting infrastructure required to integrate these new capabilities into SDGE's established Smart Grid security, controls, and processes such as Smart Logging Infrastructure, RSA, Security Incident and Event Monitoring, and Security Compliance Manager. These new security capabilities would be specifically for Smart Grid and Electric Transmission/Distribution intelligent electronic devices (IEDs) residing on TCP/IP networks. As SDGE slowly moves away from legacy serial communications to TCP/IP based communications, the security capabilities provided by this project will give Information Security and SDGE assets owners preventative and detective controls to better defend against the threats associated with TCP/IP field area networks.

Physical Description:

System must have the ability to allow simultaneous software/firmware upgrades for multiple substations and field gateways
System must have the ability to alert when configuration or firmware changes are made to IEDs
System must have the ability to manage passwords for IEDS

Project Justification:

Field assets and intelligent electronic devices are not compliant with SDGE's password standards. This project would allow field asset owners to comply with SDGE's password and configuration standards and provide the necessary technical capabilities to meet future regulatory requirements (NERC CIP or NIST's emerging critical infrastructure security framework)

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875E - Smart Grid - Substation Security

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 10875E**

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 10875.0

Category: G. Information Technology

Category-Sub: 5. Integration with new Smart Grid Technology

Workpaper Group: 10875E - Smart Grid - Substation Security

Workpaper Detail: 10875E.001 - Smart Grid - Substation Security

In-Service Date: 03/31/2014

Description:

	Forecast In 2013 $(000)		
Years	**2014**	**2015**	**2016**
Labor	69	0	0
Non-Labor	375	0	0
NSE	0	0	0
Total	**444**	**0**	**0**
FTE	0.7	0.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
10875F - Smart Grid - Threat Intelligence**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875F - Smart Grid - Threat Intelligence

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	98	0	0
Non-Labor	Zero-Based	0	0	0	0	0	41	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**139**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0

Business Purpose:

IT has limited capabilities in technology, process, and people to gather specific information about new threats and vulnerabilities relevant to Smart Grid technologies currently being deployed. Smart Grid Threat Intelligence project enhances our threat monitoring, analyzing, and disseminating capabilities. This project will provide the resources necessary to enable the IT Threat and Vulnerability Management team (TVM) to detect, deter, and respond to emerging threats to Smart Grid infrastructure to ensure the integrity and availability of electric transmission, electric distribution, and Smart Grid systems.
The Smart Grid Threat Intelligence solution and processes will integrate directly with the Archer system being implemented by the Smart Grid SCM project. This will allow a seamless integration with SCM Archer modules for reporting and provides access to this information to end users (alerting / notification).
The technology, processes, and services provided by this project, are necessary to address the increasing need to protect Smart Grid systems against the increasing cyber security threats.

Physical Description:

Threat intelligence gathering that may impact on integrity or availability of Smart Grid infrastructure.

 Provide indicators of compromised Smart Grid systems.

Report generation for intelligence and vulnerability alerts.
Implement automated controls for monitoring and responding to Smart Grid cyber threats

Provide threat intelligence for:

Cyber related attacks against the Smart Grid infrastructure
Malware trends
Zero day attacks
Misuse of company name

Provide behavioral monitoring and indicators allowing IS TVM team to investigate for signs of compromised systems

Project Justification:

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 10875.0

Category: G. Information Technology

Category-Sub: 5. Integration with new Smart Grid Technology

Workpaper Group: 10875F - Smart Grid - Threat Intelligence

Information Security policy framework requires systems be implemented to secure the Smart Grid, SCADA, and mission critical infrastructure from cyber attack.
Smart Grid Deployment Plan (SGDP) states SDG&E will "evolve our existing security capabilities to detect, alert, and respond to new Smart Grid cyber and physical threats (pg. 149)."

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875F - Smart Grid - Threat Intelligence

Forecast Methodology:

Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

Non-Labor - Zero-Based

Project is currently in - progress. Based on actual timeline of the project to complete.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 10875F**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875F - Smart Grid - Threat Intelligence
Workpaper Detail:	10875F.001 - Smart Grid - Threat Intelligence
In-Service Date:	03/31/2014
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	98	0	0
Non-Labor	41	0	0
NSE	0	0	0
Total	139	0	0
FTE	1.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
10875G - Smart Grid Field Area Secure Device Monitoring and Management

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875G - Smart Grid Field Area Secure Device Monitoring and Management

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	0	120	228
Non-Labor	Zero-Based	0	0	0	0	0	0	945	1,575
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**1,065**	**1,803**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	1.2	2.2

Business Purpose:

As cybersecurity threats continue to increase, critical infrastructure operations need to ensure they can protect against and quickly respond to any threats. The goal of this project is to provide SDG&E the ability to detect, respond, and mitigate security vulnerabilities or risks at the Smart Grid component level.

Physical Description:

This project will deploy technologies focused on monitoring the security health of Smart Grid Intelligent Electronic Devices (IEDs). In the event the security health changes, this technology will have the ablitiy to quaratine and minimize potential impact to SDG&E's Smart Grid and Electric Transmission and Distribution enviornments.

Project Justification:

Gain abilities to monitor and manage the security health of device controlling the electric grid, quarantine potentially compromised IEDs and increased reliability, trust, and resiliency from the IEDs

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875G - Smart Grid Field Area Secure Device Monitoring and Management

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 10875G**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875G - Smart Grid Field Area Secure Device Monitoring and Management
Workpaper Detail:	10875G.001 - Smart Grid Field Area Secure Device Monitoring and Management

In-Service Date: 02/28/2016

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	120	30
Non-Labor	0	945	0
NSE	0	0	0
Total	0	1,065	30
FTE	0.0	1.2	0.3

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875G - Smart Grid Field Area Secure Device Monitoring and Management
Workpaper Detail:	10875G.002 - Phase2
In-Service Date:	12/31/2016
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	198
Non-Labor	0	0	1,575
NSE	0	0	0
Total	0	0	1,773
FTE	0.0	0.0	1.9

Note: Totals may include rounding differences.

Beginning of Workpaper Group
10875H - Smart Grid Secure Distributed Network Protocol

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875H - Smart Grid Secure Distributed Network Protocol

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	109	168
Non-Labor	Zero-Based	0	0	0	0	0	0	788	1,155
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**897**	**1,323**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.6

Business Purpose:

Currently our SCADA applications leverage a protocol DNP3 for communicating to remote terminal units (RTUs) and intelligent electronic devices (IEDs) which has no built in security mechansims. This project is to enhance SDG&E's capabilities to support IEEE's latest version of the DNP3 protocol 1815:2012. Included in this new version of the protocol is a feature called Secure Authentication, which will allow SDG&E to properly authenticate and ensure integrity of the DNP3 communications.

Physical Description:

To enhance SDG&E's SCADA master systems, RTUs, and IEDs to support IEEE 1815:2012 (Secure DNP3). Included in this effort will be setting up a secure DNP3 authority to issue proper certificate types and establishing a test environment.

Project Justification:

This project will created the ability to authenticate DNP3 communications, ensure integrity of DNP3 communications and the ability to ensure vendors conform to the latest DNP3 standard

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875H - Smart Grid Secure Distributed Network Protocol

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 10875H**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875H - Smart Grid Secure Distributed Network Protocol
Workpaper Detail:	10875H.001 - Smart Grid Secure Distributed Network Protocol
In-Service Date:	12/31/2015
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	109	0
Non-Labor	0	788	0
NSE	0	0	0
Total	**0**	**897**	**0**
FTE	0.0	1.1	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875H - Smart Grid Secure Distributed Network Protocol
Workpaper Detail:	10875H.002 - Phase2
In-Service Date:	12/31/2016
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	168
Non-Labor	0	0	1,155
NSE	0	0	0
Total	0	0	1,323
FTE	0.0	0.0	1.6

Note: Totals may include rounding differences.

Beginning of Workpaper Group
10875I - Smart Grid Security Incident and Event Management (SIEM)

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875I - Smart Grid Security Incident and Event Management (SIEM)

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	109	109
Non-Labor	Zero-Based	0	0	0	0	0	0	788	788
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**897**	**897**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1

Business Purpose:

Expand the enterprise standard Security Incedent and Event Management systems to accommodate new infrastructure deployed by Smart Grid program

Physical Description:

Purchase HA pair of Event Processors for processing and parsing of logs, increased storage of log data, increased EPS thresholds.

Project Justification:

Ability to monitor and manage security elements impacting the Smart Grid

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875I - Smart Grid Security Incident and Event Management (SIEM)

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 10875I**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875I - Smart Grid Security Incident and Event Management (SIEM)
Workpaper Detail:	10875I.001 - Smart Grid Security Incident and Event Management (SIEM)

In-Service Date: 12/31/2015

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	109	0
Non-Labor	0	788	0
NSE	0	0	0
Total	**0**	**897**	**0**
FTE	0.0	1.1	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875I - Smart Grid Security Incident and Event Management (SIEM)
Workpaper Detail:	10875I.002 - ph2
In-Service Date:	12/31/2016
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	109
Non-Labor	0	0	788
NSE	0	0	0
Total	0	0	897
FTE	0.0	0.0	1.1

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
10875J - Smart Grid Substation Security In a Box**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875J - Smart Grid Substation Security In a Box

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	109	142
Non-Labor	Zero-Based	0	0	0	0	0	0	788	1,208
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**897**	**1,350**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.4

Business Purpose:

As intelligence devices are being distributed throughout SDG&E's grid and residing within substation networks or wireless field area networks, SDG&E must also distribute security technologies to protect these computing assets. The assets being deployed in the field are evolving from simple hardware devices to hardened computing platforms running enterprise class operating systems and software. SDG&E must extend security services into these new substation and field networks.

Physical Description:

The scope of this project is to deploy a single device in a substation with the capabilities of providing multiple cyber security functions in a disaggregated, discconnect, and/or low bandwidth scenario to all asset residing on a substation LAN or field area network

Project Justification:

This project will created the ability to extend securtiy services to networks and assets outside of "CORP" network, provide security services in a disaaggregated, disconnected, and/or low bandwidth scenarios and assist in maintaining our security posture in remote or discconected sites

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875J - Smart Grid Substation Security In a Box

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 10875J**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875J - Smart Grid Substation Security In a Box
Workpaper Detail:	10875J.001 - Smart Grid Substation Security In a Box

In-Service Date: 12/31/2015

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	109	0
Non-Labor	0	788	0
NSE	0	0	0
Total	**0**	**897**	**0**
FTE	0.0	1.1	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875J - Smart Grid Substation Security In a Box
Workpaper Detail:	10875J.002 - ph2
In-Service Date:	12/31/2016
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	142
Non-Labor	0	0	1,208
NSE	0	0	0
Total	0	0	1,350
FTE	0.0	0.0	1.4

Note: Totals may include rounding differences.

Beginning of Workpaper Group
10875K - Condition Based Maintenance Analytics

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875K - Condition Based Maintenance Analytics

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	166	154	0
Non-Labor	Zero-Based	0	0	0	0	0	1,790	869	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,956**	**1,023**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.6	1.6	0.0

Business Purpose:

This project will enhance the CBM network for substation transformers. The project will co-develop algorithms and data analytics modules. All of this will provide better assessment of overall condition of a substation.

Physical Description:

Working with a collaboration, to develop loss of life caluclations and enhance prioritization of maintenance.

Project Justification:

Faliure prevention, Streamline maintenance and create accurate alerts and alarms, Ratepayer will benefit through improved distribution efficiencies.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875K - Condition Based Maintenance Analytics

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 10875K**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875K - Condition Based Maintenance Analytics
Workpaper Detail:	10875K.001 - Condition Based Maintenance Analytics

In-Service Date:	12/31/2015
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	82	77	0
Non-Labor	1,790	869	0
NSE	0	0	0
Total	**1,872**	**946**	**0**
FTE	0.8	0.8	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875K - Condition Based Maintenance Analytics
Workpaper Detail:	10875K.002 - Condition Based Maintenance Analytics
In-Service Date:	12/31/2015
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	84	77	0
Non-Labor	0	0	0
NSE	0	0	0
Total	**84**	**77**	**0**
FTE	0.8	0.8	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
10875L - Smart Grid Data Analytics**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875L - Smart Grid Data Analytics

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	0	665	665
Non-Labor	Zero-Based	0	0	0	0	0	0	1,464	1,464
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**2,129**	**2,129**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	6.6	6.6

Business Purpose:

The project will implement new data sources for the load forecasting process and for planning power flow analysis:
Weather Normalizing and Adverse Factors: Use historical weather data and weather models to determine weather normalizing and adverse factors for each substation and circuit.

Net-metered PV Contribution: Determine the contribution from net-metered PV generation for each circuit, using installed system nameplate capacities and output from nearby metered PV systems

Planning Power Flow Analysis: Feed Smart Meter data into SynerGEE, enabling the power flow analysis models to factor in actual loads on a circuit rather than using connected kVA distribution loads on a circuit. Upgrade SynerGEE client software to V5, which has better PV modeling and many other improvements. Deploy client workstations with a 64-bit OS and additional RAM to speed up modeling

Physical Description:

Load forecasting uses per-substation factors calculated using data from up to 140+ weather stations
Algorithm is well-defined, calculations are automated and repeatable
Contribution from each net-metered PV system estimated as a variable percentage of system nameplate capacity.
Measured output and nameplate capacity of nearby metered PV systems used to calculate the contribution from net-metered PV systems at any given point time.
Algorithm is well-defined, calculations are automated and repeatable
Spot loads located using GIS data
Remaining load distributed according to Smart Meter measured data (i.e., actual load)
SynerGEE version 5 client, workstations with 64-bit OS and more RAM

Project Justification:

Optimized capital capacity plant investment based on more accurate load forecasts and power flow analysis.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875L - Smart Grid Data Analytics

Forecast Methodology:

Labor - Zero-Based

Based on internal labor quotations.

Non-Labor - Zero-Based

Based on vendor quotations.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 10875L**

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 10875.0

Category: G. Information Technology

Category-Sub: 5. Integration with new Smart Grid Technology

Workpaper Group: 10875L - Smart Grid Data Analytics

Workpaper Detail: 10875L.001 - Smart Grid Data Analytics

In-Service Date: 12/31/2016

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	333	333
Non-Labor	0	732	732
NSE	0	0	0
Total	0	1,065	1,065
FTE	0.0	3.3	3.3

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 10875.0

Category: G. Information Technology

Category-Sub: 5. Integration with new Smart Grid Technology

Workpaper Group: 10875L - Smart Grid Data Analytics

Workpaper Detail: 10875L.002 - Smart Grid Data Analytics

In-Service Date: 12/31/2016

Description:

	Forecast In 2013 $(000)		
Years	**2014**	**2015**	**2016**
Labor	0	332	332
Non-Labor	0	732	732
NSE	0	0	0
Total	**0**	**1,064**	**1,064**
FTE	0.0	3.3	3.3

Note: Totals may include rounding differences.

Beginning of Workpaper Group
10875M - Distributed Energy Resource Management (DERMS)

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875M - Distributed Energy Resource Management (DERMS)

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	489	1,002	418
Non-Labor	Zero-Based	0	0	0	0	0	6,613	7,758	207
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**7,102**	**8,760**	**625**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	4.8	9.8	4.1

Business Purpose:

The project will optimize resource utilization in response to system operational events, enviromental and equiment conditions (collectively reliability events), and market price conditions. DERMS includes several different, but integrated, software components that incoporate advanced optimization algorithms to dispatch demand and supply side resources.

Physical Description:

Develop a primary enterprise-wide solution capable of monitoring, optimizing and dispatching utility, 3rd party and customer-owned DER that interacts with microgrids and other DER controllers. Implement a price drive system management model.

Project Justification:

Societal/Enviromental, Economic and Reliabilty and Stacking benefits. Other benefits: Quantify benefits matrix, Enable installed DER to achieve their full potential benefits, Tax benefit for Self Developed SoftwarePotential for incremental revenue streams

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 10875.0

Category: G. Information Technology

Category-Sub: 5. Integration with new Smart Grid Technology

Workpaper Group: 10875M - Distributed Energy Resource Management (DERMS)

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 10875M**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875M - Distributed Energy Resource Management (DERMS)
Workpaper Detail:	10875M.001 - Distributed Energy Resource Management (DERMS)

In-Service Date: 12/31/2016

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	0
Non-Labor	6,613	7,758	207
NSE	0	0	0
Total	6,613	7,758	207
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875M - Distributed Energy Resource Management (DERMS)
Workpaper Detail:	10875M.002 - Distributed Energy Resource Management (DERMS)

In-Service Date: 12/31/2016

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	489	1,002	418
Non-Labor	0	0	0
NSE	0	0	0
Total	489	1,002	418
FTE	4.8	9.8	4.1

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
10875N - ADMS Phase 2**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875N - ADMS Phase 2

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	1,456	535	0
Non-Labor	Zero-Based	0	0	0	0	0	2,342	485	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	3,798	1,020	0
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	14.3	5.2	0.0

Business Purpose:

The scope of this project is to implement a new version of NMS to support the integration of Distributed Energy Resoures (DERs) taking advantage of their capabilities and maintain/enhance Distribution Management System (DMS) functionality, while maintaining current OMS/DMS integration and functionality.

Physical Description:

ADMS Phase II will implement the newest release of the NMS system taking advantage of the DERs in its power flow solution that will maintain/enhance the DMS functionalities. Furthermore, current NMS integrations will be refactored and a new SCADA test simulator will be integrated. Here are the high level functional requirements for Phase II:

1. Upgrade and configure the latest version of NMS which integrates DERs into the power flow model
2. Refactor Custom Integration to work with the latest version of NMS
3. Modify integration to the FocalPoint ETL
4. Integration of SCADA Distpatch Training Simulator

Project Justification:

The benefits from phase 2 of this project will be measured by improvements in reliability (SAIDI) and improvements in asset utilization from the integration with distributed energy resources. SAIDI improvements will result from quicker determination of fault location and development of plans to isolate the faulted area and restore customers. Improvements in asset utilization will result from monitoring the system load during peak periods and transferring load to avoid exceeding equipment limits. SCADA simulator will finally allow realistic testing and training of SCADA network. Improved reporting performance will allow quicker outage and distribution management decisions and actions.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875N - ADMS Phase 2

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 10875N**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875N - ADMS Phase 2
Workpaper Detail:	10875N.001 - ADMS Phase 2
In-Service Date:	12/31/2015
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	1,456	535	0
Non-Labor	2,342	485	0
NSE	0	0	0
Total	**3,798**	**1,020**	**0**
FTE	14.3	5.2	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
10875O - DRMS (Demand Response Management System) - Phase 1

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875O - DRMS (Demand Response Management System) - Phase 1

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	461	692	0
Non-Labor	Zero-Based	0	0	0	0	0	839	805	200
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	1,300	1,497	200
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	4.5	6.8	0.0

Business Purpose:

The Demand Response Portfolio consists of 11 programs which are currently managed under various different systems with mainly manual processes. There is no single view of the portfolio in order to make well informed cost effective decisions for demand response. Technology that has been deployed for HAN DR Programs adds to the proliferation of current system footprint (DRCA, ecobee, OpenADR Server). DRCA is lacking functionality to send two-way DR signals, text messaging to devices and price signals. The system does not allow for proactive monitoring and alerts on connectivity.

Physical Description:

The DRMS Project will enable the management of SDG&E's entire demand response portfolio with the following integrated capabilities: program management, enrollment, eligibility, device management, event management, forecasting, settlement, analytics/reporting and workflow. The full project implementation for all programs will take 2-3 years to complete with a phased approach. The first phase will implement functionality necessary to retire a high-cost application, APX, automate manual processes for ongoing benefits and provide the functionality needed to send text messaging to devices, two-way DR and prices signal and monitor device connectivity. The subsequent phases will cover the portfolio of DR programs and add the additional integrations necessary for an enterprise solution.

Project Justification:

The additional functionality that the DRMS project offers is in alignment with CPUC orders to enable a retail market for HAN, the long term procurement plan and CPUC Rule 32. Customers will reap the benefits of the Smart Meter investment and experience the full functionality of the HAN devices available for purchase; participation in auto-DR programs with 2-way communication of devices and having price information that will help educate/inform them on the current and future dynamic rates. This integrated solution will provide a single view of the entire DR portfolio for more accurate forecasting.

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY

Witness: Stephen J. Mikovits

Budget Code: 10875.0

Category: G. Information Technology

Category-Sub: 5. Integration with new Smart Grid Technology

Workpaper Group: 10875O - DRMS (Demand Response Management System) - Phase 1

Forecast Methodology:

Labor - Zero-Based

Estimate based on internal labor hours quotations

Non-Labor - Zero-Based

Estimate based on vendor quotations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 10875O**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875O - DRMS (Demand Response Management System) - Phase 1
Workpaper Detail:	10875O.001 - Demand Response Control Application (DRCA)

In-Service Date: 12/31/2015

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	461	692	0
Non-Labor	420	403	0
NSE	0	0	0
Total	**881**	**1,095**	**0**
FTE	4.5	6.8	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10875.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10875O - DRMS (Demand Response Management System) - Phase 1
Workpaper Detail:	10875O.002 - Demand Response Control Application (DRCA)

In-Service Date:	12/31/2015
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	419	402	200
NSE	0	0	0
Total	**419**	**402**	**200**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
10877A - PT10018 Windows 7 Platform Replacement**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10877.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10877A - PT10018 Windows 7 Platform Replacement

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	38	0	0
Non-Labor	Zero-Based	0	0	0	0	0	266	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**304**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0

Business Purpose:

At the conclusion of the SDG&E Windows 7 Project, the SORT team approached us to upgrade the PCs that had opted out of the regularly scheduled upgrade due to the incompatibility of the SORT application.

Physical Description:

Due to the fact that PC's running SORT would not be upgraded through the project because they wouldn't have the remediation of that software for Windows 7 until end of 2014 or beginning of 2015. Fortunately, SORT compatibility issue with Windows 7 was resolved by the end of 2013, but the timing was off to include it with the SDG&E Windows 7 project as the project was closing down.

Project Justification:

By upgrading SORT machines using capital dollars under the SDG&E Windows 7 project, the company can avoid using approximately $317,000 ($2,500 x 125) O&M dollars to fund the hardware, internal labors and vendor services.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10877.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10877A - PT10018 Windows 7 Platform Replacement

Forecast Methodology:

Labor - Zero-Based

Project was completed in 2Q of 2014.

Non-Labor - Zero-Based

Project was completed in 2Q of 2014.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 10877A**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	10877.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	10877A - PT10018 Windows 7 Platform Replacement
Workpaper Detail:	10877A.001 - 2014 Platform Replacement

In-Service Date: 12/31/2014

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	38	0	0
Non-Labor	266	0	0
NSE	0	0	0
Total	**304**	**0**	**0**
FTE	0.4	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
11878A - Smart Grid Network Anomaly Detection Business Case

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	11878.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	11878A - Smart Grid Network Anomaly Detection Business Case

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	121	121	121
Non-Labor	Zero-Based	0	0	0	0	0	788	788	788
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		0	0	0	0	0	909	909	909
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2

Business Purpose:

Scope for this first phase includes identification and evaluation of next generation network anomaly detection (NAD) technologies capable of detecting anomalies / threats / attacks traversing SDG&E's field area networks (FAN) and wide area networks (WAN). The project will evaluate SDGE's network topology and identify key WAN and FAN networks where this NAD technology should be deployed, initially focusing on protecting critical networks and devices with the highest potential exposure. The NAD system will be integrated with established Information Security systems such as log management infrastructure and security incident and event monitoring solution so events and alerts can be viewed and responded to by SDGE's Security Operations Center (SOC).

Physical Description:

Capability to capture and conduct forensic investigations or root cause analyses
Capability to detect anomalies and take appropriate action to reduce potential impacts
Capability for distribution operators to gain situational awareness to cyber security incidents within in distribution networks
in real time

Project Justification:

New capability to identify, respond and recover from a cyber incident in critical Smart Grid and SCADA networks.
Limit impact a cyber security incident on the electric grid.
Reduce recover times during a cyber security incident.
Leverage this new technology for future compliance requirements (such as NERC CIP v5 IDS requirements)

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	11878.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	11878A - Smart Grid Network Anomaly Detection Business Case

Forecast Methodology:

Labor - Zero-Based

Based on internal labor quotations.

Non-Labor - Zero-Based

Based on vendor estimates.

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 11878A**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	11878.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	11878A - Smart Grid Network Anomaly Detection Business Case
Workpaper Detail:	11878A.001 - Phase 1

In-Service Date: 12/31/2014

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	13	0	0
Non-Labor	158	0	0
NSE	0	0	0
Total	171	0	0
FTE	0.1	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	11878.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	11878A - Smart Grid Network Anomaly Detection Business Case
Workpaper Detail:	11878A.002 - Phase 1
In-Service Date:	12/31/2014
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	108	0	0
Non-Labor	630	0	0
NSE	0	0	0
Total	**738**	**0**	**0**
FTE	1.1	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	11878.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	11878A - Smart Grid Network Anomaly Detection Business Case
Workpaper Detail:	11878A.003 - Phase 2
In-Service Date:	12/31/2015
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	13	0
Non-Labor	0	158	0
NSE	0	0	0
Total	**0**	**171**	**0**
FTE	0.0	0.1	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	11878.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	11878A - Smart Grid Network Anomaly Detection Business Case
Workpaper Detail:	11878A.004 - Phase 2
In-Service Date:	12/31/2015
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	108	0
Non-Labor	0	630	0
NSE	0	0	0
Total	0	738	0
FTE	0.0	1.1	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	11878.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	11878A - Smart Grid Network Anomaly Detection Business Case
Workpaper Detail:	11878A.005 - Phase 3
In-Service Date:	12/31/2016
Description:	

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	13
Non-Labor	0	0	158
NSE	0	0	0
Total	**0**	**0**	**171**
FTE	0.0	0.0	0.1

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	11878.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	11878A - Smart Grid Network Anomaly Detection Business Case
Workpaper Detail:	11878A.006 - Phase 3
In-Service Date:	12/31/2016
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	108
Non-Labor	0	0	630
NSE	0	0	0
Total	0	0	738
FTE	0.0	0.0	1.1

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
11878C - Smart Grid Log Management**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	11878.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	11878C - Smart Grid Log Management

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	0	19	15
Non-Labor	Zero-Based	0	0	0	0	0	0	735	557
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**754**	**572**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1

Business Purpose:

Expand centralized Log Management systems for new Smart Grid deployments

Physical Description:

Expand centralized Log Management systems for new Smart Grid deployments

Project Justification:

Expand centralized Log Management systems for new Smart Grid deployments

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	11878.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	11878C - Smart Grid Log Management

Forecast Methodology:

Labor - Zero-Based

Based on internal labor estimations

Non-Labor - Zero-Based

Based on vendor estimations

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 11878C**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	11878.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	11878C - Smart Grid Log Management
Workpaper Detail:	11878C.001 - Expand centralized Log Management systems for new Smart Grid deployments

In-Service Date: 12/31/2015

Description:

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	19	0
Non-Labor	0	735	0
NSE	0	0	0
Total	0	754	0
FTE	0.0	0.2	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	11878.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	11878C - Smart Grid Log Management
Workpaper Detail:	11878C.002 - Expand centralized Log Management systems for new Smart Grid deployments
In-Service Date:	12/31/2016
Description:	

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	15
Non-Labor	0	0	557
NSE	0	0	0
Total	0	0	572
FTE	0.0	0.0	0.1

Note: Totals may include rounding differences.

**Beginning of Workpaper Group
11878D - Smart Grid Field Network Access Control**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	11878.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	11878D - Smart Grid Field Network Access Control

Summary of Results (Constant 2013 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Labor	Zero-Based	0	0	0	0	0	0	0	53
Non-Labor	Zero-Based	0	0	0	0	0	0	0	420
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**473**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5

Business Purpose:

This project will implement Network Access Control (NAC) technology within sub-stations and remote facilities where a higher risk of unauthorized devices connected to the control systems exist. Typically, these facilities are located in remote areas not staffed by field technicians and have a higher risk of break ins. NAC technology will allow Information Security (IS) analysts to monitor the control system networks at these facilities and identify when new devices are connected or attempting to connect. The technology then allows the analyst to make a decision as to whether the connection should be allowed or rejected.

Physical Description:

This project will implement Network Access Control (NAC) technology within sub-stations and remote facilities where a higher risk of unauthorized devices connected to the control systems exist.

Project Justification:

These facilities are located in remote areas not staffed by field technicians and have a higher risk of break ins. NAC technology will allow Information Security (IS) analysts to monitor the control system networks at these facilities and identify when new devices are connected or attempting to connect. The technology then allows the analyst to make a decision as to whether the connection should be allowed or rejected.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	11878.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	11878D - Smart Grid Field Network Access Control

Forecast Methodology:

Labor - Zero-Based

Forecast based on internal labor hour estimates

Non-Labor - Zero-Based

Forecast based on historical vendor estimates

NSE - Zero-Based

N/A

**Beginning of Workpaper Sub Details for
Workpaper Group 11878D**

Area:	INFORMATION TECHNOLOGY
Witness:	Stephen J. Mikovits
Budget Code:	11878.0
Category:	G. Information Technology
Category-Sub:	5. Integration with new Smart Grid Technology
Workpaper Group:	11878D - Smart Grid Field Network Access Control
Workpaper Detail:	11878D.001 - Smart Grid Field Network Access Control

In-Service Date: 12/31/2016

Description:

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	53
Non-Labor	0	0	420
NSE	0	0	0
Total	**0**	**0**	**473**
FTE	0.0	0.0	0.5

Note: Totals may include rounding differences.