Application of SAN DIEGO GAS & ELECTRIC)
COMPANY for authority to update its gas and)
electric revenue requirement and base rates)
effective January 1, 2019 (U 902-M))

Application No. 17-10-007

Exhibit No.: (SDG&E-24-CWP-R)

REVISED CAPITAL WORKPAPERS TO PREPARED DIRECT TESTIMONY OF CHRISTOPHER R. OLMSTED ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

DECEMBER 2017

A Sempra Energy utility®

2019 General Rate Case - REVISED

INDEX OF WORKPAPERS

Exhibit SDG&E-24-CWP-R - INFORMATION TECHNOLOGY

2019 General Rate Case - REVISED

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Exhibit SDG&E-24-CWP-R - INFORMATION TECHNOLOGY

2019 General Rate Case - REVISED

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Exhibit SDG&E-24-CWP-R - INFORMATION TECHNOLOGY

Overall Summary For Exhibit No. SDG&E-24-CWP-R

Area: INFORMATION TECHNOLOGY

Witness: Christopher R. Olmsted

	In 2016 $ (000)		
	Adjusted-Forecast		
	2017	2018	2019
A. Controller, Reg Affrs, Legal	1,369	0	0
B. CS - Field	2,250	0	0
C. CS - Information & Technologies	20,583	21,109	1,818
D. CS - Office Operations	14,897	15,774	16,332
E. Fleet Services	2,168	4,514	7,632
F. IT	38,373	50,414	80,924
G. Procurement	3,005	426	0
H. Gas System Integrity	110	0	0
J. Electric Distribution	36,811	38,134	33,071
Total	**119,566**	**130,371**	**139,777**

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Category: A. Controller, Reg Affrs, Legal
Workpaper: VARIOUS

Summary for Category: A. Controller, Reg Affrs, Legal

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	39	0	0
Non-Labor	0	1,330	0	0
NSE	0	0	0	0
Total	**0**	**1,369**	**0**	**0**
FTE	0.0	0.3	0.0	0.0
00810A T15061 POWERPLAN S REIMBURSABLES & REFUNDS (CAC)				
Labor	0	39	0	0
Non-Labor	0	160	0	0
NSE	0	0	0	0
Total	**0**	**199**	**0**	**0**
FTE	0.0	0.3	0.0	0.0
00813H T15086 POWERPLANS REG MGMT SOL FOR FERC TRANS R				
Labor	0	0	0	0
Non-Labor	0	1,170	0	0
NSE	0	0	0	0
Total	**0**	**1,170**	**0**	**0**
FTE	0.0	0.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00810A - T15061 POWERPLAN S REIMBURSABLES & REFUNDS (CAC)

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00810.0
Category: A. Controller, Reg Affrs, Legal
Category-Sub: 3. Mandated
Workpaper Group: 00810A - T15061 POWERPLAN S REIMBURSABLES & REFUNDS (CAC)

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	39	0	0
Non-Labor	Zero-Based	0	0	0	0	0	160	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**199**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0

Business Purpose:

The emplementation of the PowerPlan Reimbursables & Refunds module will improve controls, reporting, and visibility into the Reimbursable and Refund processes, eliminate significant risks associated with human error due to the manual input and offline calculations and data management required by the current processes as compared to processes inherent in the vendor's vanilla solution, provide enterprise application solution framework that is modern and vendor supported, and the solution will offer a more accurate and streamlined solution for the accounting of the CPUC mandated CAC and CIAC customer requested construction projects. Such solution will not only help ensure that the company stays in compliance with the Rule 15 and 16 tariff regulatory requirements but also contribute to higher degree of customer satisfaction.

Physical Description:

Vendor will replace the Customer Advances for Construction (CAC) legacy application and automate the Contributions In Aid of Construction (CIAC) manual processes.

Project Justification:

This project will implement the PowerPlan's Reimbursables & Refunds module that will replace the Customer Advances for Construction (CAC) legacy application and automate the Contributions In Aid of Construction (CIAC) manual processes. The solution will provide a tight integration and reconciliation with SAP's Accounts Receivable and Accounts Payable modules, Customer and Work Management systems; thus providing improved controls, reporting, and visibility in the company's Reimbursable and Refund processes.

(The Financial Asset Management (FAM) Project purchased PowerPlan's software including a Reimbursables & Refunds module. This project proposes to deploy the module integrating both CAC and CIAC deposit and customer payment management with the asset lifecycle).

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00810.0
Category:	A. Controller, Reg Affrs, Legal
Category-Sub:	3. Mandated
Workpaper Group:	00810A - T15061 POWERPLAN S REIMBURSABLES & REFUNDS (CAC)

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00810A

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00810.0
Category:	A. Controller, Reg Affrs, Legal
Category-Sub:	3. Mandated
Workpaper Group:	00810A - T15061 POWERPLAN S REIMBURSABLES & REFUNDS (CAC)
Workpaper Detail:	00810A.001 - T15061 POWERPLAN S REIMBURSABLES & REFUNDS (CAC)
In-Service Date:	05/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	39	0	0
Non-Labor	160	0	0
NSE	0	0	0
Total	**199**	**0**	**0**
FTE	0.3	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group

00813H - T15086 POWERPLANS REG MGMT SOL FOR FERC TRANS R

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	A. Controller, Reg Affrs, Legal
Category-Sub:	3. Mandated
Workpaper Group:	00813H - T15086 POWERPLANS REG MGMT SOL FOR FERC TRANS R

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	0	0	0
Non-Labor	Zero-Based	0	0	0	0	0	1,170	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,170**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Business Purpose:

The PowerPlan's Regulatory Management Suite will allow SDG&E to:
- Strategically manage business and optimize cost recovery efforts through future revenue forecasting methodology
- Mitigate the risk for disallowance and revenue loss
- Eliminate duplication of efforts across departments that supports SDG&E's regulatory filings with the FERC
- Enable reporting flexibility to comply with increased regulatory requirements, increased rate filings, and greater scrutiny by Intervenors
- Streamline data flow with automated data extracts from PowerPlan and any existing Information Technology systems
- Reduce rate case cycle times to allow for more detailed analysis
- Ensure compliance with consistent, repeatable methodologies
- Eliminate error prone spreadsheets and manual processes with auditable automation
- Strengthen policy positions with improved data analysis and standard reporting
- Improve data integrity with standardized integration for financial reconciliation, revenue requirement calculation and reporting

Physical Description:

Implement PowerPlan Regulatory Management Solution for the FERC Transmission Business. Automate critical processes and create a single system of record ("Regulatory Ledger") for FERC Transmission Revenue Model. Enable use of single system of record as platform for FERC Transmission analysis and decision making, and
Perform a technical upgrade of the current PowerPlan version to 2015.1 version in order to support this implementation, as well as all the existing PowerPlan's production modules.

Project Justification:

Strategically manage business and optimize cost recovery efforts through future revenue forecasting methodology, mitigate the risk for disallowance and revenue loss, eliminate duplication of efforts across departments that supports SDG&E's regulatory filings with the FERC, enable reporting flexibility to comply with increased regulatory requirements, increased rate filings, and greater scrutiny by Intervenors, streamline data flow with automated data extracts from PowerPlan and any existing Information Technology systems, reduce rate case cycle times to allow for more detailed analysis, ensure compliance with consistent, repeatable methodologies, eliminate error prone spreadsheets and manual processes with auditable automation, strengthen policy positions with improved data analysis and standard reporting, and improve data integrity with standardized integration for financial reconciliation, revenue requirement calculation and reporting.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	A. Controller, Reg Affrs, Legal
Category-Sub:	3. Mandated
Workpaper Group:	00813H - T15086 POWERPLANS REG MGMT SOL FOR FERC TRANS R

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00813H

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	A. Controller, Reg Affrs, Legal
Category-Sub:	3. Mandated
Workpaper Group:	00813H - T15086 POWERPLANS REG MGMT SOL FOR FERC TRANS R
Workpaper Detail:	00813H.001 - T15086 POWERPLANS REG MGMT SOL FOR FERC TRANS R
In-Service Date:	04/30/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	1,170	0	0
NSE	0	0	0
Total	**1,170**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Category: B. CS - Field
Workpaper: VARIOUS

Summary for Category: B. CS - Field

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	445	0	0
Non-Labor	0	1,805	0	0
NSE	0	0	0	0
Total	**0**	**2,250**	**0**	**0**
FTE	0.0	3.9	0.0	0.0
00833B RAMP - INCREMENTAL T16040 SORT EXTENSION				
Labor	0	249	0	0
Non-Labor	0	1,412	0	0
NSE	0	0	0	0
Total	**0**	**1,661**	**0**	**0**
FTE	0.0	2.2	0.0	0.0
00811E T16042 FIELD PARTS REPLACEMENT				
Labor	0	196	0	0
Non-Labor	0	393	0	0
NSE	0	0	0	0
Total	**0**	**589**	**0**	**0**
FTE	0.0	1.7	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00833B - RAMP - INCREMENTAL T16040 SORT EXTENSION

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	B. CS - Field
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833B - RAMP - INCREMENTAL T16040 SORT EXTENSION

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	249	0	0
Non-Labor	Zero-Based	0	0	0	0	0	1,412	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,661**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0

Business Purpose:

Reduce risk of an extended or unrecoverable service interruption and add funcionality:
-Replace aging physical servers with virtual servers
-Update vendor-supported versions of database and operating systems
-Extend the life of the SORT System through 2021
-Application enhancements (Appendix B)
-Windows 10 compatibility
-Enhance geocoding for scheduling and capability for turn-by-turn directions to technicians

Physical Description:

The SORT Project will:
-Replace physical application servers running AIX 5.3 with virtual appliances running Linux (Service Suite) and Windows Server 2012 (SLR)
-Replace Oracle 10g databases on IBM servers running AIX with Oracle 12c databases on dedicated Sempra-standard Linux servers
-Upgrade Service Suite from v8.0 to v9.6, including migration of Compose Forms and Validation Rule Editor (VRE).
-Replace the Pitney Bowes geocoding application with an enterprise GIS web service, modify MMI to insert NAD-83 or WGS-84 coordinates into orders, and restore the capability for Street Level Routing.

Project Justification:

The SORT system has several key components which have reached end-of-life for vendor support. There is a high risk of an extended or unrecoverable outage of the SORT system. This project will reduce risk of an extended or unrecoverable service interruption and add funcionality.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	B. CS - Field
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833B - RAMP - INCREMENTAL T16040 SORT EXTENSION

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00833B

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	B. CS - Field
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833B - RAMP - INCREMENTAL T16040 SORT EXTENSION
Workpaper Detail:	00833B.001 - RAMP - INCREMENTAL T16040 SORT EXTENSION
In-Service Date:	03/31/2017

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	52	0	0
NSE	0	0	0
Total	**52**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	B. CS - Field
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833B - RAMP - INCREMENTAL T16040 SORT EXTENSION
Workpaper Detail:	00833B.001 - RAMP - INCREMENTAL T16040 SORT EXTENSION

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	B. CS - Field
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833B - RAMP - INCREMENTAL T16040 SORT EXTENSION
Workpaper Detail:	00833B.002 - RAMP - INCREMENTAL T16040 SORT EXTENSION
In-Service Date:	03/31/2017

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	249	0	0
Non-Labor	1,360	0	0
NSE	0	0	0
Total	**1,609**	**0**	**0**
FTE	2.2	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	B. CS - Field
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833B - RAMP - INCREMENTAL T16040 SORT EXTENSION
Workpaper Detail:	00833B.002 - RAMP - INCREMENTAL T16040 SORT EXTENSION

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Beginning of Workpaper Group
00811E - T16042 FIELD PARTS REPLACEMENT

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	B. CS - Field
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00811E - T16042 FIELD PARTS REPLACEMENT

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	196	0	0
Non-Labor	Zero-Based	0	0	0	0	0	393	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**589**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0

Business Purpose:

This project will expand the current service offerings available through our Field Services while building new employee skills and leverage service delivery capabilities for a fixed list of parts replacements, repairs, maintenance while in the customer's home. The project would involve setting up a field orders capability, and direct billing capabilities for this additional service. CPUC approved this service through Resolution G-3500 in July 2015 to support SDG&E's Expanded Marketplace initiative and SDG&E Future Focus. Both strategies seek to offer value-adding products and services, and will be negatively impacted if we are not able to charge customers on the SDG&E bill for these services.

Physical Description:

Set-up a field orders capability, and direct billing capabilities for this additional service. New parts replacement form will be created on the Service Suite Mobile Application, extend customer service orders to include parts/labor, and add new tables in Data Warehouse for Business "ad hoc" queries for quarterly and annual reports.

Project Justification:

SDG&E's FPRS will offer customers the option to purchase parts and service needed for repairs related to their gas appliance at the premise. The service will cover sales and installation of parts for gas appliances and equipment owned by SDG&E customers, including, but not limited to: gas line valves, connectors, thermocouples, filters, control valves, and pilot generators. Expand customer's view of SDG&E as a full-service provider of home safety and convenience solutions, increases customer satisfaction, supports the Future Focus SDG&E strategy with new products and services. Enhance customer service experience by providing customers with convenience of on-the-spot repairs and reduce number of negative customer experiences where we need to shutoff gas.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	B. CS - Field
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00811E - T16042 FIELD PARTS REPLACEMENT

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00811E

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	B. CS - Field
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00811E - AM - Module Installs Labor/Non-Labor
Workpaper Detail:	00811E.001 - T16042 FIELD PARTS REPLACEMENT
In-Service Date:	08/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	196	0	0
Non-Labor	393	0	0
NSE	0	0	0
Total	**589**	**0**	**0**
FTE	1.7	0.0	0.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Category: C. CS - Information & Technologies
Workpaper: VARIOUS

Summary for Category: C. CS - Information & Technologies

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	3,539	4,577	630
Non-Labor	0	17,044	16,532	1,188
NSE	0	0	0	0
Total	**0**	**20,583**	**21,109**	**1,818**
FTE	0.0	30.8	39.7	5.5
00811I T16027 MY ACCOUNT RELIABILITY AND SIR BUNDLED W				
Labor	0	139	37	0
Non-Labor	0	487	134	0
NSE	0	0	0	0
Total	**0**	**626**	**171**	**0**
FTE	0.0	1.2	0.3	0.0
00811L T16036 CUSTOMER AUTHORIZATION				
Labor	0	128	0	0
Non-Labor	0	1,072	0	0
NSE	0	0	0	0
Total	**0**	**1,200**	**0**	**0**
FTE	0.0	1.1	0.0	0.0
00831B T19004 Gas Customer Choice Automation (GCCA)				
Labor	0	0	362	90
Non-Labor	0	0	854	220
NSE	0	0	0	0
Total	**0**	**0**	**1,216**	**310**
FTE	0.0	0.0	3.1	0.8
00811B T19006 2017 Residential TOU Default Pilot Program				
Labor	0	1,732	3,348	115
Non-Labor	0	6,750	12,200	750
NSE	0	0	0	0
Total	**0**	**8,482**	**15,548**	**865**
FTE	0.0	15.1	29.1	1.0
00811D T19007 CPUC GRC Ph2 SDGE				
Labor	0	863	426	0
Non-Labor	0	4,970	3,136	0
NSE	0	0	0	0
Total	**0**	**5,833**	**3,562**	**0**
FTE	0.0	7.5	3.7	0.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Category: C. CS - Information & Technologies
Workpaper: VARIOUS

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
00811H T16033 POWER YOUR DRIVE/ENTERPRISE FUNCTIONALITY				
Labor	0	197	0	0
Non-Labor	0	1,316	0	0
NSE	0	0	0	0
Total	**0**	**1,513**	**0**	**0**
FTE	0.0	1.7	0.0	0.0
00811J T15076 RESIDENTIAL RATE REFORM (RROIR/RDW)				
Labor	0	111	0	0
Non-Labor	0	721	0	0
NSE	0	0	0	0
Total	**0**	**832**	**0**	**0**
FTE	0.0	1.0	0.0	0.0
00811M T16037 RATE REFORM TOU				
Labor	0	110	0	0
Non-Labor	0	551	0	0
NSE	0	0	0	0
Total	**0**	**661**	**0**	**0**
FTE	0.0	1.0	0.0	0.0
00811N T16038 AB802 BENCHMARKING				
Labor	0	245	0	0
Non-Labor	0	674	0	0
NSE	0	0	0	0
Total	**0**	**919**	**0**	**0**
FTE	0.0	2.1	0.0	0.0
00831A RAMP - INCREMENTAL T19003 DRMS (Demand Response Management System) Phase 3				
Labor	0	0	404	425
Non-Labor	0	0	208	218
NSE	0	0	0	0
Total	**0**	**0**	**612**	**643**
FTE	0.0	0.0	3.5	3.7
00831H RAMP - INCREMENTAL T15831 DEMAND RESPONSE MANAGEMENT SYSTEMS (DRMS)				
Labor	0	14	0	0
Non-Labor	0	503	0	0
NSE	0	0	0	0
Total	**0**	**517**	**0**	**0**
FTE	0.0	0.1	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group

00811I - T16027 MY ACCOUNT RELIABILITY AND SIR BUNDLED W

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00811I - T16027 MY ACCOUNT RELIABILITY AND SIR BUNDLED W

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	139	37	0
Non-Labor	Zero-Based	0	0	0	0	0	487	134	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**626**	**171**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.2	0.3	0.0

Business Purpose:

Optimization efforts are desired to minimize site outages and maximize the ability to monitor and communicate system operations. Improve My Account reliability by conducting a Component Failure Impact Analysis (CFIA) study and improving system monitoring by using the Wily tool and introducing synthetic monitoring. Senate Bill 120 is a California Public Utility Commission mandate indicating, that in cases where the landlord is paying for the utilities being used by a tenant, that the tenant has a right to be notified that their power is in jeopardy of being shut off due to non-payment by the landlord.

Physical Description:

1. Risk Exception EXC-2422756. Strengthen authentication process by replacing Zip Code with alternate authentication field
2. New consolidator for customer eBill delivery.
3. SB 120 for online turn-on/move order changes to determine owner/customer relationships
4. Update online payment arrangements to allow edits to short term and installment payment arrangements
5. Black Button. Online customers may select to have their electric meter directly energized without manual intervention
6. Return Payment automation

Project Justification:

Optimization efforts are desired to minimize site outages and maximize the ability to monitor and communicate system operations. Improve My Account reliability by conducting a Component Failure Impact Analysis (CFIA) study and improving system monitoring by using the Wily tool and introducing synthetic monitoring. In addition the project will replace Web Access Control Security Framework (WACSF), implement rolling restarts, improve performance by evaluating key web services and creating automated test suites for performance & load testing, Improve My Account by implementing needed functional enhancements to the system, such as, adding a new consolidator to increase eBill enrollments, modifying registration to comply with audit recommendations, enhancing customer self-service capabilities and adhering to online regulatory compliance rules.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00811I - T16027 MY ACCOUNT RELIABILITY AND SIR BUNDLED W

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00811I

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00811I - T16027 MY ACCOUNT RELIABILITY AND SIR BUNDLED W
Workpaper Detail:	00811I.001 - T16027 MY ACCOUNT RELIABILITY AND SIR BUNDLED W
In-Service Date:	12/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	139	0	0
Non-Labor	487	0	0
NSE	0	0	0
Total	**626**	**0**	**0**
FTE	1.2	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00811I - T16027 MY ACCOUNT RELIABILITY AND SIR BUNDLED W
Workpaper Detail:	00811I.002 - T16027 MY ACCOUNT RELIABILITY AND SIR BUNDLED W
In-Service Date:	03/31/2018

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	37	0
Non-Labor	0	134	0
NSE	0	0	0
Total	**0**	**171**	**0**
FTE	0.0	0.3	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00811L - T16036 CUSTOMER AUTHORIZATION

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00811L - T16036 CUSTOMER AUTHORIZATION

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	128	0	0
Non-Labor	Zero-Based	0	0	0	0	0	1,072	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,200**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0

Business Purpose:

Streamline existing disparate processes for handling LOAs and associated requests for customer data by implementing two primary solutions:
1. An internally-focused centralized and automated solution for storing and managing LOAs; and
2. An externally-focused web-based platform for customers and third parties to submit and manage LOAs.
The internal solution will help to ensure compliance with existing mandates and ensure responsible sharing of customer information with third parties, while the external solution will enhance customer experience. Both will improve efficiency within SDG&E.
Regulatory Mandates:
Rule 32 (Demand Response Provider)
Mandated: External web platform, electronic web form, external web API/mashup, electronic signature
Supports mandate: Central repository, enterprise lookup, capture paper form (inferred under, “improve manual processes”)
AB802 (Benchmarking)
Supports mandate: External web platform, electronic web form, central repository, enterprise lookup, capture paper form
Rule 33 and the Smart Grid Privacy Decision (D.11-07-056)
Supports mandate: Standardize process for customer revocation of data access to third parties

Physical Description:

1. External Web Portal & Web API Mash-up for Customers and Third Parties
2. Electronic Web Form with Electronic Signature Click-Through
3. Central Repository & Enterprise Lookup with automated workflow
4. Integration with CISCO to provide customer account validation. (required to support Rule 32 and AB802 functionality)
5. Capture New Paper & Scanned LOA Forms

Project Justification:

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00811L - T16036 CUSTOMER AUTHORIZATION

1. Provide a centralized repository for storing, tracking, and validating all LOA's to ensure LOA's are complete and active prior to sharing customer data with third parties.
2. Maintain compliance with regulatory mandates by ensuring repeatable, responsible and verifiable data sharing.
3. Reduce administrative costs and cross-departmental communication hindrances associated with existing manual processes by standardizing and automating the LOA process.
4. Enhance customer experience by providing customers & third parties an online LOA form and streamlined process to expedite processing of the request without the need to resubmit multiple LOA's for the same request. Customer & third party access to modern and convenient technologies such as digital signature and smart device access will also enhance customer experience.
5. Reduce risk of privacy related incidents surrounding misuse and unauthorized sharing of customer information; simplify process for allowing customer ability to revoke authorization

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00811L - T16036 CUSTOMER AUTHORIZATION

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00811L

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00811L - T16036 CUSTOMER AUTHORIZATION
Workpaper Detail:	00811L.001 - T16036 CUSTOMER AUTHORIZATION
In-Service Date:	07/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	128	0	0
Non-Labor	1,072	0	0
NSE	0	0	0
Total	**1,200**	**0**	**0**
FTE	1.1	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00831B - T19004 Gas Customer Choice Automation (GCCA)

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	C. CS - Information & Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831B - T19004 Gas Customer Choice Automation (GCCA)

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	0	362	90
Non-Labor	Zero-Based	0	0	0	0	0	0	854	220
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**1,216**	**310**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	3.1	0.8

Business Purpose:

The Gas Customer Choice Automation project will automate the Gas Imbalance reporting and curtailment processes to provide audit risk reduction, process risk reduction, and effiencies.

Physical Description:

Provide a software solution to perform the following functions:
Create a central repository and reporting for Gas Customer Choice capabilities.
Manage gas core and non-core imbalance reporting and customer communications, contract maintenance.
Enable gas curtailment processes including analysis of available load, event monitoring, and violations reporting.

Project Justification:

Reduce risk associated with meeting CPUC mandate for Gas imbalance reporting (schedule GIMB)
Reduce customer impact and cost due to potential delays or mistakes in core / non-core imbalance reporting.
Reduce liability for not delivering accurate imbalance reports on time.
Increased oversight / visibility into Gas Curtailment processes
Effiencies due to business process automation

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	C. CS - Information & Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831B - T19004 Gas Customer Choice Automation (GCCA)

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00831B

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	C. CS - Information & Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831B - T19004 Gas Customer Choice Automation (GCCA)
Workpaper Detail:	00831B.001 - T19004 Gas Customer Choice Automation (GCCA)
In-Service Date:	12/31/2018

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	362	0
Non-Labor	0	854	0
NSE	0	0	0
Total	**0**	**1,216**	**0**
FTE	0.0	3.1	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	C. CS - Information & Technologies
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831B - T19004 Gas Customer Choice Automation (GCCA)
Workpaper Detail:	00831B.002 - T19004 Gas Customer Choice Automation (GCCA)
In-Service Date:	02/28/2019

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	90
Non-Labor	0	0	220
NSE	0	0	0
Total	**0**	**0**	**310**
FTE	0.0	0.0	0.8

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00811B - T19006 2017 Residential TOU Default Pilot Program

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00811.0
Category: C. CS - Information & Technologies
Category-Sub: 3. Mandated
Workpaper Group: 00811B - T19006 2017 Residential TOU Default Pilot Program

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	1,732	3,348	115
Non-Labor	Zero-Based	0	0	0	0	0	6,750	12,200	750
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**8,482**	**15,548**	**865**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	15.1	29.1	1.0

Business Purpose:

The residential TOU Default project shall implement the Time of Use (TOU) pilot plan stated in the advice letter 3020-E filed on December 16, 2016 to the CPUC. California Public Utilities Commission (CPUC or Commission) Decision (D.) 15-07-001, dated July 3, 2015. D.15-07-001, among other things, directed SDG&E, Pacific Gas and Electric Company, and Southern California Edison Company —collectively the Investor-Owned Utilities (IOUs)—to conduct certain “pilot” programs and studies of residential time-of-use (TOU) electric rate designs beginning the summer of 2016.

Physical Description:

The solution will support the Res TOU Program to execute the following:
1. Test two default tariffs, which are structurally the same as the two rates tested in its opt-in TOU pilot.
2. Transition 100,000 customers to TOU pricing in March 2018 based on the customers’ billing cycle.
3. Send out default notifications in January 2018 to approximately 125,000 to 150,000 randomly selected residential customers.
4. Send various pre, on-going and post-notifications starting October 2017.
5. Test a wide array of ME&O options that vary with respect to communication channel, content, frequency, and other factors across audiences.
6. Assess customer awareness and satisfaction levels on the different default pilot rates, and to determine which offers and communication methods are the most effective.
7. Implement tools and applications that will allow tracking and monitoring transactions, system defects and impacts on day-to-day business processes.
8. Upgrade or enhance some of the information technology systems.

Project Justification:

1. Adhere to the CPUC mandate to pilot a select number of customers to residential TOU rates.
2. Enhance systems and processes which directly impacts the efficient and effective delivery of these two TOU rates to pilot customers
3. Implement tools and applications which will help collect, track and report failure points.
4. Implement tools and applications which will help manage customers transition to the TOU rates
5. Increase knowledge and awareness on operational and system deficiency for the 2019 default.
6. Implement tools and applications which will help collect, analyze and allow insights of how customers behave and respond to the ME&O ‘s communication strategy.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00811B - T19006 2017 Residential TOU Default Pilot Program

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00811B

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00811B - AM - Computer Software Labor/Non-Labor
Workpaper Detail:	00811B.001 - T19006 2017 Residential TOU Default Pilot Program
In-Service Date:	12/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	1,732	0	0
Non-Labor	2,100	0	0
NSE	0	0	0
Total	**3,832**	**0**	**0**
FTE	15.1	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00811B - AM - Computer Software Labor/Non-Labor
Workpaper Detail:	00811B.002 - T19006 2017 Residential TOU Default Pilot Program
In-Service Date:	12/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	4,000	0	0
NSE	0	0	0
Total	**4,000**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00811B - AM - Computer Software Labor/Non-Labor
Workpaper Detail:	00811B.003 - T19006 2017 Residential TOU Default Pilot Program
In-Service Date:	06/30/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	650	0	0
NSE	0	0	0
Total	**650**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00811B - AM - Computer Software Labor/Non-Labor
Workpaper Detail:	00811B.004 - T19006 2017 Residential TOU Default Pilot Program
In-Service Date:	12/31/2018

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	3,348	0
Non-Labor	0	12,200	0
NSE	0	0	0
Total	**0**	**15,548**	**0**
FTE	0.0	29.1	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00811B - AM - Computer Software Labor/Non-Labor
Workpaper Detail:	00811B.005 - T19006 2017 Residential TOU Default Pilot Program
In-Service Date:	03/31/2019

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	115
Non-Labor	0	0	750
NSE	0	0	0
Total	**0**	**0**	**865**
FTE	0.0	0.0	1.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00811D - T19007 CPUC GRC Ph2 SDGE

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00811D - T19007 CPUC GRC Ph2 SDGE

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	863	426	0
Non-Labor	Zero-Based	0	0	0	0	0	4,970	3,136	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**5,833**	**3,562**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	7.5	3.7	0.0

Business Purpose:

The primary focus of the GRC Phase II filing is to implement key rate structure changes across Residential, Commercial and Industrial rate classes. These changes will require significant changes to several systems including: CISCO, CRM/SAP, My Account, Aclara, C3 and CCE. GRC Phase II A15-04-012 is a regulatory filing. Proposed decision expected May 2017, Final Decision June 2017 and Implementation tentatively scheduled for March 2018 and October 2018.

Physical Description:

The key changes to be implemented with this project include:
- Update TOU periods for all impacted rate schedules
- Implement 11 new rates across Residential, Commercial and Agriculture rate classes
- Additional rate structure and pricing changes (see scope slide for more details)

Project Justification:

Ensure SDG&E is compliant with the GRC Phase II ruling. Align the TOU periods more closely with the true system demand. Ensure the revised TOU rate offerings are available prior to the start of Residential Default activities in 2018.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00811D - T19007 CPUC GRC Ph2 SDGE

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00811D

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00811D - AM - Data Collector Unit Labor/Non-Labor
Workpaper Detail:	00811D.001 - T19007 CPUC GRC Ph2 SDGE
In-Service Date:	12/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	863	0	0
Non-Labor	4,970	0	0
NSE	0	0	0
Total	**5,833**	**0**	**0**
FTE	7.5	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00811D - AM - Data Collector Unit Labor/Non-Labor
Workpaper Detail:	00811D.002 - T19007 CPUC GRC Ph2 SDGE
In-Service Date:	06/30/2018

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	426	0
Non-Labor	0	3,136	0
NSE	0	0	0
Total	**0**	**3,562**	**0**
FTE	0.0	3.7	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00811H - T16033 POWER YOUR DRIVE/ENTERPRISE FUNCTIONALITY

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00811H - T16033 POWER YOUR DRIVE/ENTERPRISE FUNCTIONALITY

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	197	0	0
Non-Labor	Zero-Based	0	0	0	0	0	1,316	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,513**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0

Business Purpose:

Build the IT infrastructure to support the Enrollment, Charging Consumption, Billing, Payment Application, and Reporting of the Power Your Drive pilot (multiple charging stations constructed for driver convenience at Multi-Unit Dwellings and work places (Target: 350 sites and 3,500 charging stations). The project will require integration with multiple Electric Vehicle Service Providers (providers that construct and/or install EV charging stations) who's charging and metering technology must meet SDG&E reliability and accuracy standards as well as data and communication protocols to facilitate pricing signals to SDG&E customers as well as customer energy usage to SDG&E.

Physical Description:

The project scope includes upgrades that are PYD specific and charged to the PYD balancing account (web Enrollment and My Account modifications, meter/charger inventory tracking, Service Orders (account holder start, stop, change service as well as meter/charger repair/replacement, and Finance/Credit), as well as Enterprise assets that shall support 3rd party meter read accuracy and hourly TOU pricing and bill calculations.

Project Justification:

- Supports state and local government climate action plans and related targets for EV adoption by CA drivers
- Enhances SDG&E's reputation for proactive adoption of technology that enhances livability in our communities
- Incentivize customers to use grid resources at times when demand and prices are at their lowest

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00811H - T16033 POWER YOUR DRIVE/ENTERPRISE FUNCTIONALITY

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00811H

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00811H - T16033 POWER YOUR DRIVE/ENTERPRISE FUNCTIONALITY
Workpaper Detail:	00811H.001 - T16033 POWER YOUR DRIVE/ENTERPRISE FUNCTIONALITY
In-Service Date:	06/30/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	197	0	0
Non-Labor	1,316	0	0
NSE	0	0	0
Total	**1,513**	**0**	**0**
FTE	1.7	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00811J - T15076 RESIDENTIAL RATE REFORM (RROIR/RDW)

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00811J - T15076 RESIDENTIAL RATE REFORM (RROIR/RDW)

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	111	0	0
Non-Labor	Zero-Based	0	0	0	0	0	721	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**832**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0

Business Purpose:

The following rate changes must be supported in the SPP framework, impacting CISCO, CRM/SAP, My Account, and Aclara.
RROIR: 1) 2-tiered billing. 2, 3) Monthly service fee to replace minimum bill charge ($10 max/$5 max CARE), CPI-adjusted gradual increase. 4) Increased minimum bill charge for non-CARE master-metered customers (from $0.17/day to $0.30/day). 5) Line item discount for CARE to achieve effective discount rate of 30 to 34%. 6) FERA line item discount. 7) MB non-CARE rates. 8) Baseline transition allowance 9) 3 TOU Experimental Pilots; Each has different On-peak period; All pilots include Demand Differentiating Monthly Service Fee (DDMSF), 3 TOU periods, no tiers, no baseline credits, no bill protection. 10) Optional untiered TOU rate (DDMSFTOU), 11 to 6 pm peak-period , available for non-pilot customers
RDW: TOU periods will change to align more closely with Demand based on historical analyses (e.g Peak: 2 to 9 pm).
TOU changes will impact the following: Customer Programs -- CPP, SPP and PTR (RYU Rewards); Systems: CISCO, CRM, My Account, Aclara. Also, 3rd-party vendor-hosted software and programs need to be evaluated for change management requirements.
RROIR and RDW are both regulatory filings:
RROIR. R.12-06-013. Proposed Decision expected April 2015. Final Decision expected May 2015. Implementation expected July 1, 2015
RDW A.14-01-027 Proposed and Final Decisions TBD. Implementation expected Nov 1, 2015

Physical Description:

1. Billing, Revenue & Finance changes required in CISCO
2. Changes required in CRM
3. Changes required in My Account
4. System Testing
5. Changes to integrations
6. Coordinate with Aclara to conduct off-cycle release; Need coordination with CISCO and testing

Project Justification:

RROIR and RDW are both regulatory filings:
RROIR. R.12-06-013. Proposed Decision expected April 2015. Final Decision expected May 2015. Implementation expected July 1, 2015
RDW A.14-01-027 Proposed and Final Decisions TBD. Implementation expected Nov 1, 2015

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00811J - T15076 RESIDENTIAL RATE REFORM (RROIR/RDW)

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00811J

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00811J - T15076 RESIDENTIAL RATE REFORM (RROIR/RDW)
Workpaper Detail:	00811J.001 - T15076 RESIDENTIAL RATE REFORM (RROIR/RDW)
In-Service Date:	02/28/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	111	0	0
Non-Labor	721	0	0
NSE	0	0	0
Total	**832**	**0**	**0**
FTE	1.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00811M - T16037 RATE REFORM TOU

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00811M - T16037 RATE REFORM TOU

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	110	0	0
Non-Labor	Zero-Based	0	0	0	0	0	551	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**661**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0

Business Purpose:

The following rate changes must be supported in the SPP framework, impacting CISCO, CRM/SAP, My Account, and Aclara.

RROIR: 1) 2-tiered billing. 2, 3) Monthly service fee to replace minimum bill charge ($10 max/$5 max CARE), CPI-adjusted gradual increase. 4) Increased minimum bill charge for non-CARE master-metered customers (from $0.17/day to $0.30/day). 5) Line item discount for CARE to achieve effective discount rate of 30 to 34%. 6) FERA line item discount. 7) MB non-CARE rates. 8) Baseline transition allowance 9) 3 TOU Experimental Pilots; Each has different On-peak period; All pilots include Demand Differentiating Monthly Service Fee (DDMSF), 3 TOU periods, no tiers, no baseline credits, no bill protection. 10) Optional untiered TOU rate (DDMSFTOU), 11 to 6 pm peak-period , available for non-pilot customers

RDW: TOU periods will change to align more closely with Demand based on historical analyses (e.g Peak: 2 to 9 pm). TOU changes will impact the following: Customer Programs -- CPP, SPP and PTR (RYU Rewards); Systems: CISCO, CRM, My Account, Aclara. Also, 3rd-party vendor-hosted software and programs need to be evaluated for change management requirements.

RROIR and RDW are both regulatory filings:

RROIR. R.12-06-013. Proposed Decision expected April 2015. Final Decision expected May 2015. Implementation expected July 1, 2015

RDW A.14-01-027 Proposed and Final Decisions TBD. Implementation expected Nov 1, 2015

Physical Description:

1. Billing, Revenue & Finance changes required in CISCO
2. Changes required in CRM
3. Changes required in My Account
4. System Testing
5. Changes to integrations
6. Coordinate with Aclara to conduct off-cycle release; Need coordination with CISCO and testing

Project Justification:

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00811M - T16037 RATE REFORM TOU

RROIR and RDW are both regulatory filings:
RROIR. R.12-06-013. Proposed Decision expected April 2015. Final Decision expected May 2015. Implementation expected July 1, 2015
RDW A.14-01-027 Proposed and Final Decisions TBD. Implementation expected Nov 1, 2015

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00811M - T16037 RATE REFORM TOU

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00811M

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00811M - T16037 RATE REFORM TOU
Workpaper Detail:	00811M.001 - T16037 RATE REFORM TOU
In-Service Date:	06/30/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	110	0	0
Non-Labor	551	0	0
NSE	0	0	0
Total	**661**	**0**	**0**
FTE	1.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00811N - T16038 AB802 BENCHMARKING

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00811.0
Category: C. CS - Information & Technologies
Category-Sub: 3. Mandated
Workpaper Group: 00811N - T16038 AB802 BENCHMARKING

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	245	0	0
Non-Labor	Zero-Based	0	0	0	0	0	674	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**919**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0

Business Purpose:

AB802 was signed into law in October 2015. The bill requires utilities by January 1, 2016 to maintain records of the energy usage data of all buildings to which they provide service for at least the most recent 12 complete months. By January 1, 2017, the bill requires each utility, upon the request and the written authorization or secure electronic authorization of the owner, owner's agent, or operator of a covered building, as defined, to deliver or provide aggregated energy usage data for a covered building to the owner, owner's agent, operator, or to the owner's account in the ENERGY STAR Portfolio Manager, subject to specified requirements.

The CA Energy Commission (CEC) has the responsibility to implement AB802. The CEC will develop regulations for AB802 towards the development of the CEC Benchmarking Program.
This project will create or modify business processes and will develop the necessary IT infrastructure in order to send a minimum of 12 months of aggregated usage data to EPA Portfolio Manager, or to the building owner.
Mandated implementation. Statutory dates: 1/1/2016 – utility collect and maintain energy data; 1/1/2017 – utility to process AB802 request. CEC Regulations: TBD. Advice Letter 2870-E/2463-G provided for the establishment of a memo account to track costs with an effective date of 4/22/2016, and allowed for refundable capital as a funding mechanism.

Physical Description:

1. Enhance to accept request AB802 request and respond with aggregated consumption (AB802)
2. EPA Tracker to manage AB802 workflow until closure. This will also include frequent email notifications to requestor based on request status.
3. EPA Tracker will be integrated with PGL to log all AB802 request for verification and approval
4. EPA Tracker will be integrated with CAP for Letter of Authorization (LOA) submitted by customers
5. Existing CISCO process (CIBI880D) will be enhanced to aggregate the consumption at building level using the list of meters provided

Project Justification:

1. Compliance with AB802 Statutory requirements and CA Energy Commission regulations.
2. Building owners will have the ability to obtain whole-building energy usage data in aggregation without their tenants' consent.
3. Building owners will better understand their energy consumption through standardized energy use metrics.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00811N - T16038 AB802 BENCHMARKING

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00811N

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	C. CS - Information & Technologies
Category-Sub:	3. Mandated
Workpaper Group:	00811N - T16038 AB802 BENCHMARKING
Workpaper Detail:	00811N.001 - T16038 AB802 BENCHMARKING
In-Service Date:	06/30/2017

Description:

see workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	245	0	0
Non-Labor	674	0	0
NSE	0	0	0
Total	**919**	**0**	**0**
FTE	2.1	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group

00831A - RAMP - INCREMENTAL T19003 DRMS (Demand Response Management System) Phase 3

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00831.0
Category: C. CS - Information & Technologies
Category-Sub: 4. Business Optimization
Workpaper Group: 00831A - RAMP - INCREMENTAL T19003 DRMS (Demand Response Management System) Phase 3

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	0	404	425
Non-Labor	Zero-Based	0	0	0	0	0	0	208	218
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**612**	**643**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	3.5	3.7

Business Purpose:

The Demand Response (DR) portfolio consists of several programs which are managed using multiple systems and manual processes. There is no single view of the portfolio in order to support well informed business decisions for meeting the demand response needs for SDG&E and CAISO. Technology platforms currently deployed to support the portfolio have proliferated. Legacy systems are difficult to use and costly to maintain. Advanced technology in the market supports new standards, desired functionality, and the flexibility to more effectively design and implement new programs, customer initiatives, and regulatory mandates. The DRMS program enables the management of SDG&E's entire DR portfolio with integrated capabilities for program management, device management, and reporting/analytics.

Physical Description:

The implementation of all DR programs will be completed in a phased approach. Phase 1 (2016) delivers functionality necessary to support Home Area Network (HAN) device enablement and customer self service (Entryway), and a new platform (DRMS) that retires a high cost legacy application (APX) and automates manual processes for the Capacity Bid Program (CBP). Phase 2 (2016/2017) will deliver similar functionality for the SummerSaver Air Conditioner program, and enhancements to DRMS. This Phase 3 project (2017/2018) will deliver additional incentive based DR programs (Base Interuptable Program, Peak Gen, Technical Incentives), and device programs (SCTD) in a single integrated architecture.

Project Justification:

This project will provide a single view of the entire DR portfolio for more accurate planning, forecasting and execution. This will further reduce/eliminate point solutions for a more automated and integrated solution. This project further delivers a technology foundation for future integration with CAISO wholesale market integration, Distributed Energy Management System (DERMS), and future initiatives and programs.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	C. CS - Information & Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00831A - RAMP - INCREMENTAL T19003 DRMS (Demand Response Management System) Phase 3

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00831A

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	C. CS - Information & Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00831A - RAMP - INCREMENTAL T19003 DRMS (Demand Response Management System) Phase 3
Workpaper Detail:	00831A.001 - RAMP - INCREMENTAL T19003 DRMS (Demand Response Management System) Phase 3
In-Service Date:	12/31/2018

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	404	0
Non-Labor	0	208	0
NSE	0	0	0
Total	**0**	**612**	**0**
FTE	0.0	3.5	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	C. CS - Information & Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00831A - RAMP - INCREMENTAL T19003 DRMS (Demand Response Management System) Phase 3
Workpaper Detail:	00831A.001 - RAMP - INCREMENTAL T19003 DRMS (Demand Response Management System) Phase 3

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	C. CS - Information & Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00831A - RAMP - INCREMENTAL T19003 DRMS (Demand Response Management System) Phase 3
Workpaper Detail:	00831A.002 - RAMP - INCREMENTAL T19003 DRMS (Demand Response Management System) Phase 3
In-Service Date:	04/30/2019

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	425
Non-Labor	0	0	218
NSE	0	0	0
Total	**0**	**0**	**643**
FTE	0.0	0.0	3.7

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	C. CS - Information & Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00831A - RAMP - INCREMENTAL T19003 DRMS (Demand Response Management System) Phase 3
Workpaper Detail:	00831A.002 - RAMP - INCREMENTAL T19003 DRMS (Demand Response Management System) Phase 3

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Beginning of Workpaper Group

00831H - RAMP - INCREMENTAL T15831 DEMAND RESPONSE MANAGEMENT SYSTEMS (DRMS)

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00831.0
Category: C. CS - Information & Technologies
Category-Sub: 4. Business Optimization
Workpaper Group: 00831H - RAMP - INCREMENTAL T15831 DEMAND RESPONSE MANAGEMENT SYSTEMS (DRMS)

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	14	0	0
Non-Labor	Zero-Based	0	0	0	0	0	503	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**517**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0

Business Purpose:

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, anlytics/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 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.

Physical Description:

Enhance DRMS solution to support Capacity Bidding including functionality to specific to commision direction D.16-06-029, OP 29.

Project Justification:

Resolution E-4527 - HAN Implementation Plan: This will allow customers to receive the full benefit of HAN by sending prices to their devices.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	C. CS - Information & Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00831H - RAMP - INCREMENTAL T15831 DEMAND RESPONSE MANAGEMENT SYSTEMS (DRMS)

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00831H

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	C. CS - Information & Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00831H - RAMP - INCREMENTAL T15831 DEMAND RESPONSE MANAGEMENT SYSTEMS (DRMS)
Workpaper Detail:	00831H.001 - RAMP - INCREMENTAL T15831 DEMAND RESPONSE MANAGEMENT SYSTEMS (DRMS)
In-Service Date:	07/31/2017

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	14	0	0
Non-Labor	503	0	0
NSE	0	0	0
Total	**517**	**0**	**0**
FTE	0.1	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	C. CS - Information & Technologies
Category-Sub:	4. Business Optimization
Workpaper Group:	00831H - RAMP - INCREMENTAL T15831 DEMAND RESPONSE MANAGEMENT SYSTEMS (DRMS)
Workpaper Detail:	00831H.001 - RAMP - INCREMENTAL T15831 DEMAND RESPONSE MANAGEMENT SYSTEMS (DRMS)

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Category: D. CS - Office Operations
Workpaper: VARIOUS

Summary for Category: D. CS - Office Operations

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	3,254	3,147	1,546
Non-Labor	0	11,643	12,627	14,786
NSE	0	0	0	0
Total	**0**	**14,897**	**15,774**	**16,332**
FTE	0.0	28.3	27.3	13.5
00831C T16052 EBPP TECH REFRESH				
Labor	0	0	408	214
Non-Labor	0	0	1,592	811
NSE	0	0	0	0
Total	**0**	**0**	**2,000**	**1,025**
FTE	0.0	0.0	3.5	1.9
00831I T15064 SMART METER SYSTEMS UPGRADE				
Labor	0	780	139	139
Non-Labor	0	2,560	341	341
NSE	0	0	0	0
Total	**0**	**3,340**	**480**	**480**
FTE	0.0	6.8	1.2	1.2
00811F T16039 BILL REDESIGN PHASE 2				
Labor	0	357	403	103
Non-Labor	0	753	823	509
NSE	0	0	0	0
Total	**0**	**1,110**	**1,226**	**612**
FTE	0.0	3.1	3.5	0.9
00831P T19047 Smart Meter Network Modernization				
Labor	0	0	464	514
Non-Labor	0	0	4,402	9,701
NSE	0	0	0	0
Total	**0**	**0**	**4,866**	**10,215**
FTE	0.0	0.0	4.0	4.5
00834S T16043 ADVANCED ANALYTICS FOUNDATION				
Labor	0	0	0	0
Non-Labor	0	384	0	0
NSE	0	0	0	0
Total	**0**	**384**	**0**	**0**
FTE	0.0	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Category: D. CS - Office Operations
Workpaper: VARIOUS

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
00831G T16020 NET ENERGY MEETING (NEM 2.0)				
Labor	0	55	0	0
Non-Labor	0	504	0	0
NSE	0	0	0	0
Total	**0**	**559**	**0**	**0**
FTE	0.0	0.5	0.0	0.0
00811K T14038 DASR SYSTEM UPGRADE				
Labor	0	155	0	0
Non-Labor	0	198	0	0
NSE	0	0	0	0
Total	**0**	**353**	**0**	**0**
FTE	0.0	1.3	0.0	0.0
00831D T16047 CENTRALIZED CALCULATION ENGINE PH3 (CCE PH3)				
Labor	0	258	0	0
Non-Labor	0	1,580	0	0
NSE	0	0	0	0
Total	**0**	**1,838**	**0**	**0**
FTE	0.0	2.2	0.0	0.0
00831F T16025 IDS BILLING ENHANCEMENT				
Labor	0	61	0	0
Non-Labor	0	300	0	0
NSE	0	0	0	0
Total	**0**	**361**	**0**	**0**
FTE	0.0	0.5	0.0	0.0
00831K T19038 Off But Registering (OBR) Enhancement Project				
Labor	0	0	559	0
Non-Labor	0	0	0	0
NSE	0	0	0	0
Total	**0**	**0**	**559**	**0**
FTE	0.0	0.0	4.9	0.0
00831L T19037 Remote Meter Configuration (RMC) Rebuild				
Labor	0	0	275	0
Non-Labor	0	0	230	0
NSE	0	0	0	0
Total	**0**	**0**	**505**	**0**
FTE	0.0	0.0	2.4	0.0
00831M RAMP - INCREMENTAL T19036 Enhanced Network Analytics				
Labor	0	0	470	576
Non-Labor	0	0	3,356	3,424
NSE	0	0	0	0
Total	**0**	**0**	**3,826**	**4,000**
FTE	0.0	0.0	4.1	5.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Category: D. CS - Office Operations
Workpaper: VARIOUS

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
00832A T19001 Branch Office Kiosk Replacement				
Labor	0	0	429	0
Non-Labor	0	150	1,408	0
NSE	0	0	0	0
Total	**0**	**150**	**1,837**	**0**
FTE	0.0	0.0	3.7	0.0
00832B T16034 SMART METER NETWORK ENHANCEMENT				
Labor	0	619	0	0
Non-Labor	0	1,915	0	0
NSE	0	0	0	0
Total	**0**	**2,534**	**0**	**0**
FTE	0.0	5.4	0.0	0.0
03849A T19031 FoF - IVR Project				
Labor	0	284	0	0
Non-Labor	0	368	0	0
NSE	0	0	0	0
Total	**0**	**652**	**0**	**0**
FTE	0.0	2.5	0.0	0.0
03849B T19030 FoF - KANA Enhancements and Online Training				
Labor	0	249	0	0
Non-Labor	0	1,111	0	0
NSE	0	0	0	0
Total	**0**	**1,360**	**0**	**0**
FTE	0.0	2.2	0.0	0.0
03849C T19029 FoF - Propensity to Pay				
Labor	0	436	0	0
Non-Labor	0	1,095	0	0
NSE	0	0	0	0
Total	**0**	**1,531**	**0**	**0**
FTE	0.0	3.8	0.0	0.0
16871A T16028 SMART METER NETWORK DEVICES				
Labor	0	0	0	0
Non-Labor	0	725	475	0
NSE	0	0	0	0
Total	**0**	**725**	**475**	**0**
FTE	0.0	0.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00831C - T16052 EBPP TECH REFRESH

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00831.0
Category: D. CS - Office Operations
Category-Sub: 1. Technical Obsolescence
Workpaper Group: 00831C - T16052 EBPP TECH REFRESH

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	0	408	214
Non-Labor	Zero-Based	0	0	0	0	0	0	1,592	811
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**2,000**	**1,025**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	3.5	1.9

Business Purpose:

EBPP is based on a product, eDocs, which was subsequently purchased by Oracle. Oracle no longer provides support for this product. SDG&E does not have the eDocs source code. This project proposes re-engineering the EBPP system to remove eDocs and streamline the batch processes. This project will leverage the work done by the MATRIX project which replaced eDocs for The Gas Company, particularly for the batch processes. The current batch processes require a high level of support and are candidates for rewrite. The goal is to remove eDocs from both the batch and online portions of the system. In addition, this project will provide needed functional enhancements to the system, creating a new payment confirmation email and payment processing that will prevent repeated returned payments from occurring due to invalid bank account issues.

Physical Description:

1.Rewrite EBPP Online Pages
2. Rewrite EBPP Batch Jobs
3. Rewrite Indexer job and jobs dependent on it

Project Justification:

Improved stability and dependability of EBPP as we continue to promote and drive self-service adoption of our online services. EBPP provides the following functionality:
Online payments:
- During September 2016, EBPP processed $99.6 million in one time and recurring payments
- 192,947 payments through recurring payments
- 283,169 payments using one time payment
The ability to view bills online, both on EBPP pages and through consolidator eBill where customers can view their bill on their financial institution's website
- Approximately 76,000 customers are signed up for eBill at their financial institution
- Approximately 626,000 accounts are currently paperless
Improved cash flow by preventing reoccurring return payments due to invalid bank routing numbers. There are approximately 50 returned EBPP payments per month where the customer has entered the wrong banking information.
Enhanced customer satisfaction by providing payment email notifications.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00831C - T16052 EBPP TECH REFRESH

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00831C

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00831C - T16052 EBPP TECH REFRESH
Workpaper Detail:	00831C.001 - T16052 EBPP TECH REFRESH
In-Service Date:	12/31/2018

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	408	0
Non-Labor	0	1,592	0
NSE	0	0	0
Total	**0**	**2,000**	**0**
FTE	0.0	3.5	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00831C - T16052 EBPP TECH REFRESH
Workpaper Detail:	00831C.002 - T16052 EBPP TECH REFRESH
In-Service Date:	03/31/2019

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	214
Non-Labor	0	0	811
NSE	0	0	0
Total	**0**	**0**	**1,025**
FTE	0.0	0.0	1.9

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00831I - T15064 SMART METER SYSTEMS UPGRADE

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00831.0
Category: D. CS - Office Operations
Category-Sub: 1. Technical Obsolescence
Workpaper Group: 00831I - T15064 SMART METER SYSTEMS UPGRADE

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	780	139	139
Non-Labor	Zero-Based	0	0	0	0	0	2,560	341	341
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**3,340**	**480**	**480**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	6.8	1.2	1.2

Business Purpose:

The Smart Meter System Upgrade project will replace the production and non-production hardware for the OWCE and MDMS systems. The current IBM database servers will be replaced with Cisco X86 blades with Red Hat Linux. The physical Windows application servers will be replaced with Windows virtual servers. The MDMS Oracle database will be upgraded from 10g to 12c and utilize an SSD storage solution for optimized data management and performance. The MDMS application software will be upgraded from IEE 7.0 (Itron Enterprise Edition) SP4.0 HF10 to the current release IEE 8.1 or later. The OWCE application software will be upgraded from OWCE 3.9 HF3 to the current release OWCE 6.6. Additionally, the project will select a vendor to redefine the overall Smart Meter testing methodology and develop test automation for end-to-end Smart Meter system testing. This improved Smart Meter testing process will ensure that these systems are thoroughly tested during this project and will provide the process and tools required for ongoing software release testing and Smart Meter configuration and firmware testing in the future.

Physical Description:

Replace IBM database servers. The MDMS application software will be upgraded from IEE 7.0 (Itron Enterprise Edition) SP4.0 HF10 to the current release IEE 8.1 or later. The OWCE application software will be upgraded from OWCE 3.9 HF3 to the current release OWCE 6.6. Define the overall Smart Meter testing methodology and develop test automation for end-to-end Smart Meter system testing. This improved Smart Meter testing process will ensure that these systems are thoroughly tested during this project and will provide the process and tools required for ongoing software release testing and Smart Meter configuration and firmware testing in the future. Provide analysis and if warranted, report recommendations to enhance business operations and streamline applications through additional configuration of available MDMS functionality. Provide analysis and if warranted, report recommendations to upgrade IEE 6.6 to Beryllium.

Project Justification:

Reduce risk of catastrophic system failure and avoid significant costs associated with system recovery and lost revenue (a catastrophic failure could result in approximately $1.3M in application and data recovery costs for each incident). A prolonged outage of the Smart Meter Systems will negatively impact customer experience.
Refreshing the Smart Meter systems hardware and software will ensure stable state operations for the next several years.
IEE 8.1 & OWCE 6.6 resolve several current production issues and provides:
- Improved estimations and validations capabilities
- Migration from physical application servers to virtual servers
- Optimized data management
- Streamline of testing processes
- Improve system manageability of vendor supported applications

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00831I - T15064 SMART METER SYSTEMS UPGRADE

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00831I

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00831I - T15064 SMART METER SYSTEMS UPGRADE
Workpaper Detail:	00831I.001 - T15064 SMART METER SYSTEMS UPGRADE
In-Service Date:	12/31/2019
Description:	

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	139
Non-Labor	0	0	341
NSE	0	0	0
Total	**0**	**0**	**480**
FTE	0.0	0.0	1.2

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00831I - T15064 SMART METER SYSTEMS UPGRADE
Workpaper Detail:	00831I.002 - T15064 SMART METER SYSTEMS UPGRADE
In-Service Date:	12/31/2018
Description:	

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	139	0
Non-Labor	0	341	0
NSE	0	0	0
Total	**0**	**480**	**0**
FTE	0.0	1.2	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00831I - T15064 SMART METER SYSTEMS UPGRADE
Workpaper Detail:	00831I.003 - T15064 SMART METER SYSTEMS UPGRADE
In-Service Date:	12/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	780	0	0
Non-Labor	2,560	0	0
NSE	0	0	0
Total	**3,340**	**0**	**0**
FTE	6.8	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00811F - T16039 BILL REDESIGN PHASE 2

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	D. CS - Office Operations
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00811F - T16039 BILL REDESIGN PHASE 2

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	357	403	103
Non-Labor	Zero-Based	0	0	0	0	0	753	823	509
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,110**	**1,226**	**612**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	3.1	3.5	0.9

Business Purpose:

This project will improve the customer experience by enhancing key aspects of the bill, utilizing color to make it easier to read, and support increased customer engagement in support of Rate Reform and time-of-use rate changes. Regulatory mandates dictate the content of the current SDG&E bill (Appendix I)
•Energy Division has recommended we pursue improving our bill as part of the Rate Reform proceedings
•MOU signed with the Center for Accessible Technology commits SDG&E to a large font bill
•SDG&E's pending 2016 GRC requests funds to provide a bill that is easier to understand, incorporates more graphics and provides a large font option

Physical Description:

Refresh the customer bill to by converting to color, enhancing the 13 month usage charts and converting it to TOU for TOU customers, improving the display for usage comparison information, updating the tier chart, adding a Daily Average Hourly Electricity chart, adding in a customer's Highest Usage Point, enhancing the Breakdown of Electric Fees section, streamlining the Payment Options section and offering a Large Font version

Project Justification:

Customer Satisfaction Benefits:
•Improves customer experience by enhancing key aspects of the bill and adding color
•Supports transition to time-of-use rates and Rate Reform
•Enhanced 13 month usage chart and create TOU version
•Infographic usage comparison
•Electricity Usage "Snapshot" page
•Improved Tier Chart (consistent with Bill Ready Notification Enhancement)
•Daily Average Hourly Electricity Usage Chart illustrating that when you use electricity matters
•Highest Usage Point - introduces the concept of Demand

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	D. CS - Office Operations
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00811F - T16039 BILL REDESIGN PHASE 2

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00811F

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	D. CS - Office Operations
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00811F - AM - Meter Installs Labor/Non-Labor
Workpaper Detail:	00811F.001 - T16039 BILL REDESIGN PHASE 2
In-Service Date:	04/30/2019

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	103
Non-Labor	0	0	509
NSE	0	0	0
Total	**0**	**0**	**612**
FTE	0.0	0.0	0.9

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	D. CS - Office Operations
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00811F - AM - Meter Installs Labor/Non-Labor
Workpaper Detail:	00811F.002 - T16039 BILL REDESIGN PHASE 2
In-Service Date:	12/31/2018

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	403	0
Non-Labor	0	823	0
NSE	0	0	0
Total	**0**	**1,226**	**0**
FTE	0.0	3.5	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	D. CS - Office Operations
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00811F - AM - Meter Installs Labor/Non-Labor
Workpaper Detail:	00811F.003 - T16039 BILL REDESIGN PHASE 2
In-Service Date:	12/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	357	0	0
Non-Labor	753	0	0
NSE	0	0	0
Total	**1,110**	**0**	**0**
FTE	3.1	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00831P - T19047 Smart Meter Network Modernization

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831P - T19047 Smart Meter Network Modernization

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	0	464	514
Non-Labor	Zero-Based	0	0	0	0	0	0	4,402	9,701
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**4,866**	**10,215**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	4.0	4.5

Business Purpose:

This project will systematically replace approximately 2,300, 3G RF Cell Relays with enhanced 4G RF/IPv6 Cell Relays and compliment the Smart Meter Network Mitigation project which addresses hard-to-reach, poor performing electric meters and gas modules. Following phases will strategically replace electric meters and gas modules to strengthen communications and leverage new functionality. This new infrastructure would permit the Company to add new capabilities not specifically related to metering, offering broadened opportunities for greater visibility and control of our electric and gas distribution systems.
This new infrastructure would permit the Company to add new capabilities not specifically related to metering, offering broadened opportunities for greater visibility and control of our electric and gas distribution systems

This project will overlay a new internet protocol version 6 (IPv6) communications infrastructure designed for different device types enabling new functionality and services. The project will deliver a field area network upgrade path which facilitates the integration of new multi-vendor meters, Internet of Things (IoT) sensors, as well as having the ability to provide connectivity services to 3rd party devices (e.g., methane gas sensors, water meters, street lights, EV charging stations, solar inverters, etc.).

Physical Description:

The SDG&E Smart Meter Network consists of approximately 2,800 operational Itron OpenWay radio frequency local area network (RFLAN) 3G Cell Relays. The Cell Relays provide routing functions for over 2.2 million existing Company RFLAN electric and gas meters. The majority of the existing Cell Relays are near the end of their useful life.
Reportedly, in Q1 of 2019 Verizon will discontinue support of 3G communication devices and in Q1 of 2020, AT&T will follow suit. If the Cell Relays are not replaced with 4G or better communication technology, the network will stop communicating.
Additionally, greater efficiency and new revenue opportunities exist with modernizing our network capabilities. The existing Smart Meter Network is not capable of supporting additional communication devices limiting functionality and scalability to support newer technologies, e.g. Internet of Things (IoT) sensors, methane gas sensors, 3rd party devices (water meters, street lights, EV charging stations, solar inverters, etc.).

Project Justification:

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831P - T19047 Smart Meter Network Modernization

1. Provides solution to avoid service interruption when Carriers stop supporting 3G technology in 2019/2020.
2. Enhances mesh coverage, reduces "hard to reach scenarios".
3. Incorporates additional SDGE "medium BW" requirements (WX sensors, monitoring)
4. Creates a foundation for future gas and electric efficiency projects to enable targeted upgrades and monitoring.
New IoT revenue opportunities
1) EV charging stations
2) Municipal water solutions
3) Solar energy management
4) Street light management

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831P - T19047 Smart Meter Network Modernization

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00831P

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831P - T19047 Smart Meter Network Modernization
Workpaper Detail:	00831P.001 - T19047 Smart Meter Network Modernization
In-Service Date:	12/31/2018

Description:

Phase 1

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	464	0
Non-Labor	0	4,402	0
NSE	0	0	0
Total	**0**	**4,866**	**0**
FTE	0.0	4.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831P - T19047 Smart Meter Network Modernization
Workpaper Detail:	00831P.002 - T19047 Smart Meter Network Modernization
In-Service Date:	12/31/2019

Description:

Phase 1

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	420
Non-Labor	0	0	6,784
NSE	0	0	0
Total	**0**	**0**	**7,204**
FTE	0.0	0.0	3.7

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00831P - T19047 Smart Meter Network Modernization
Workpaper Detail:	00831P.003 - T19047 Smart Meter Network Modernization
In-Service Date:	12/31/2019

Description:

Phase 2

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	94
Non-Labor	0	0	2,917
NSE	0	0	0
Total	**0**	**0**	**3,011**
FTE	0.0	0.0	0.8

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00834S - T16043 ADVANCED ANALYTICS FOUNDATION

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	D. CS - Office Operations
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00834S - T16043 ADVANCED ANALYTICS FOUNDATION

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	0	0	0
Non-Labor	Zero-Based	0	0	0	0	0	384	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**384**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Business Purpose:

The project will build an analytics test bed with a focus on cognitive and machine learning technology. Learn, design and implement an architecture that can be utilized by anticipated projects requiring predictive and machine analytics to better meet the growing needs and demands to create business efficiencies utilizing automation to save on avoided costs.

Physical Description:

The project will procure IBM's Watson technology for a ~3 month subscription where the technology will be utilized to learn and realize real world cognitive learning use cases at Sempra Energy Utilities
Project Team will build and document hands-on experience with cognitive learning applications
The project will build hardware environments including:
Oversee the building and configuration of a cognitive learning development/staging Server
Oversee the building and configuration of Hadoop development nodes used as a source to provide data for cognitive computing
The project will build data integration access between the Hadoop Data Lake nodes and the Watson Service/Server.
The test bed will be built in such a way that integration to other cognitive computing solutions will be possible if required.
The project will define the data architecture necessary to support the recently submitted Enhanced Network Analytics (ENA) and Customer Call Optimization (CCO) Business Cases.

Project Justification:

This project is integral to laying and providing a foundation for which Customer Call Center Optimization, Smart Meter/City Analytics and IOT Projects will be implemented using advanced analytics technology.

These tools will provide the foundation for future projects to come forward with substantial benefits to the company like:
- Solve and prioritize complex major network communication and exception choke point issues within the Smart Meter Network
- Efficiency in Smart Meter operational processes to support recent initiated TOU programs
- Minimize number of estimated bills and billing errors and maximize on-time billing of customers to support TOU programs
- Enable optimization and efficiencies in the Customer Call Center, particularly in Advanced Interactive Voice Response (IVR) capabilities

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	D. CS - Office Operations
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00834S - T16043 ADVANCED ANALYTICS FOUNDATION

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00834S

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	D. CS - Office Operations
Category-Sub:	2. Improving Customer Experience
Workpaper Group:	00834S - T16043 ADVANCED ANALYTICS FOUNDATION
Workpaper Detail:	00834S.001 - T16043 ADVANCED ANALYTICS FOUNDATION
In-Service Date:	01/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	384	0	0
NSE	0	0	0
Total	**384**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00831G - T16020 NET ENERGY MEETING (NEM 2.0)

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	3. Mandated
Workpaper Group:	00831G - T16020 NET ENERGY MEETING (NEM 2.0)

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	55	0	0
Non-Labor	Zero-Based	0	0	0	0	0	504	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**559**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0

Business Purpose:

The business case is based on SDG&E's August 3rd NEM 2.0 filing, which is considered the "high watermark" for project scope. A preliminary decision was received on December 15, which differs from this filing and will be analyzed in the coming weeks. The project team will re-estimate the project effort in 2016 Q1, after the final decision is provided.
Under the August 3rd filing, customers who take service under NEM, after the 617 MW cap for SDG&E is hit, would be credited and charged at a different rate that is more cost based. SDG&E's current proposal includes the following three different rate options for customers:
1) Default Rate Option: Under the Default Unbundled Rate Option is an unbundled rate which consists of a : (i) System Access Fee - (fixed charge per month) for the recovery of curb-to-meter infrastructure and customer services, as well as the Public Purpose Program ("PPP") surcharge; (ii) Grid Use Charge - (demand charge kW) for the recovery of capacity-related distribution costs; (iii) Time-of-Use ("TOU") rates charged for energy delivered to the customer-generator; and (iv) a wholesale rate for energy exported by the customer-generator.
2) Sun Credits Option: This rate option is for NEM customers that elect to sell all of their generation to the utility. All generation produced by a customer-generator's on-site DG system would be exported to the grid. Under this option, SDG&E
would compensate the customer-generator for exported generation through a bill credit equivalent to the retail system average commodity rate. This option requires an installation of a separate meter to track the generation exported to the grid at the customer-generator's expense. Utility services received would then be charged through the standard billing rate.
3) Disadvantaged Communities: $50M Ratepayer-funded program, which places utility-owned solar on multi-family dwellings for the benefit of residential customers. Property owner is paid $5/kW/month.

Physical Description:

1. Changes to the DIIS system to differentiate processing for NEM 2.0 interconnection agreements – new 2.0 application, notifications, communications, and back-end tracking.
2. Changes to Aclara on-line calculations including Bill-To-Date, Bill Forecast, Goals/Alerts and Rate Comparison for NEM 2.0.
3. Put NEM 2.0 functionality into Centralized Calculation Engine (CCE).

Project Justification:

CPUC-mandated project allows all customers to participate in the NEM program without negatively impacting non-participating customers, either by shifting costs to non-participating customers or putting at risk the safety and reliability of the grid.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	3. Mandated
Workpaper Group:	00831G - T16020 NET ENERGY MEETING (NEM 2.0)

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00831G

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	3. Mandated
Workpaper Group:	00831G - T16020 NET ENERGY MEETING (NEM 2.0)
Workpaper Detail:	00831G.001 - T16020 NET ENERGY MEETING (NEM 2.0)
In-Service Date:	06/30/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	55	0	0
Non-Labor	504	0	0
NSE	0	0	0
Total	**559**	**0**	**0**
FTE	0.5	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00811K - T14038 DASR SYSTEM UPGRADE

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00811.0
Category: D. CS - Office Operations
Category-Sub: 4. Business Optimization
Workpaper Group: 00811K - T14038 DASR SYSTEM UPGRADE

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	155	0	0
Non-Labor	Zero-Based	0	0	0	0	0	198	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**353**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0

Business Purpose:

This project is required in order for the CCA project to proceed.
Implement a new system that meets both electric and gas needs, while providing a foundation for community choice aggregation (CCA) needs.
Migrate all user interfaces, currently developed in PowerBuilder, to a new maintainable platform.
Centralize business logic, currently spread across multiple systems, into the new DASR system.
Develop CISCO integrations, based on new system design, which consolidates DASR data and business logic into one system.
Develop EDI integrations to support all electric and gas data exchanges with Energy Service Providers.
Develop components to generate and track letters and reports for customers and LSEs.
Assembly Bill 117 – Gives California cities and counties the ability to aggregate the electric loads of residents, businesses and public facilities to facilitate the purchase and sale of electrical energy in a more competitive market.
Senate Bill 790 – Utilities must cooperate fully with cities and counties that investigate, pursue or implement CCA programs, fostering a fair competition in the energy industry.

The CPUC-approved rules require SDG&E to support CCA within six months of the date that a CCA files an implementation plan at the CPUC. The City of San Diego is currently conducting a CCA feasibility study and the County of San Diego has set aside funding for a feasibility study.

Physical Description:

1. Re-develop all current user interfaces (UIs), and add new UIs
2. Centralize business logic, currently spread across multiple systems, into the new DASR system.
3. Build integrations to Cisco to support all ESP service request functionality being centrally maintained in DASR
4. Build functionality to better support mandated Load Migration Reporting to CAISO
5. Integrate with Sempra Utilities printing/distribution system (Ex-Stream) & operation in Monterey Park
6. Use industry-standard reporting tools against optimized data model.

Project Justification:

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00811K - T14038 DASR SYSTEM UPGRADE

- Removes barrier to CCA regulatory implementation timeline (6 months) – Would miss timeline without DASR replacement
- Positions SDGE to support CCA.
- Automates GAS process (currently manual).
- Streamlines electric processes across multiple applications – reduces timeline, improves efficiency, and increases accuracy
- Reduces risk around customer privacy breaches, and improves customer satisfaction via improved workflow and reduced exception volume

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00811K - T14038 DASR SYSTEM UPGRADE

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00811K

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00811.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00811K - T14038 DASR SYSTEM UPGRADE
Workpaper Detail:	00811K.001 - T14038 DASR SYSTEM UPGRADE
In-Service Date:	02/28/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	155	0	0
Non-Labor	198	0	0
NSE	0	0	0
Total	**353**	**0**	**0**
FTE	1.3	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00831D - T16047 CENTRALIZED CALCULATION ENGINE PH3 (CCE PH3)

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00831D - T16047 CENTRALIZED CALCULATION ENGINE PH3 (CCE PH3)

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	258	0	0
Non-Labor	Zero-Based	0	0	0	0	0	1,580	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,838**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0

Business Purpose:

This project's primary goal is two part:
- Establish CCE as the single system which provides bill impacts for current and future proposed electric rates
- Utilize CCE to provide Rate Comparison reports for Residential default

There are no regulatory mandates, however, upcoming rate filings will require an additional level of understanding of customer bill impacts across multiple customer segments, which the CCE will provide.

Physical Description:

Configure additional high priority electric rates and rate attribute for What If analysis and Batch Rate Comparison.
Residential: DRTOU
Commercial: ALTOUDGRCP2, ATOU/CP2, OLTOU/CP2
Agriculture: PATODCP2
Street Lighting: ATC
Rate Attributes: VNM, NEM Agg.

Project Justification:

CCE is an internal engine and tool that does not carry a reliance on external parties or vendors for configuration or maintenance of Company's existing rates and associated data for rate modeling, comparison or analysis. The tool may be used for customer bill impact analysis calculations, analysis and configuration which may occur prior to commission filings. Business Services will have increased efficiencies from a significantly reduced need of eRAP rate comparison tool. Supports volume requirements necessary to support Batch Rate Comparison due to the regulatory mandate to send all residential customers twice a year Rate Comparison Reports.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00831D - T16047 CENTRALIZED CALCULATION ENGINE PH3 (CCE PH3)

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00831D

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00831D - T16047 CENTRALIZED CALCULATION ENGINE PH3 (CCE PH3)
Workpaper Detail:	00831D.001 - T16047 CENTRALIZED CALCULATION ENGINE PH3 (CCE PH3)
In-Service Date:	06/30/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	258	0	0
Non-Labor	1,580	0	0
NSE	0	0	0
Total	**1,838**	**0**	**0**
FTE	2.2	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00831F - T16025 IDS BILLING ENHANCEMENT

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00831F - T16025 IDS BILLING ENHANCEMENT

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	61	0	0
Non-Labor	Zero-Based	0	0	0	0	0	300	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**361**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0

Business Purpose:

This project will do the following:
Any rate which is billed in IDS Billing and needs shadow billing will be included.
PTR credits will be correctly calculated in IDS Billing.
CISCO BIAD screens will be enhanced to handle shadow billing functionality

The project will be implemented in two releases:
Mid-July 2016 Release 1: Shadow Billing enhancements, PTR, BIAD Options 1 & 4 (Consumption)
Feb 2017 Release 2: BIAD Options 2 & 3 (Dollars)
(Note: BIAD Option numbers reference different pieces of functionality available on the CISCO BIAD screen.)
This is a mandatory project in order to bill our customers in an accurate and timely manner. IDS Billing must be enhanced as soon as possible as customers with complex meter relationships cannot currently be shadow billed.

Physical Description:

Enhance the Legacy Billing System with shadow billing functionality for any rate which needs shadow billing and does not have shadow billing implemented.
The shadow billing/Otherwise Applicable Rates (OAR) which will be included are:
DRTOD, DR, DRLI, A, AD, ASTOD, ATOU, ADTOU, ALTOU, AYTOU, A6TOU, ALTOUDGR, OLTOU, PA, PATOD, DRTOU, DRSES, EVTOU2, PAT1

Project Justification:

We will be able to correctly bill our customers and calculate shadow bills monthly.
Enhancing BIAD screens to include shadow billing allows for immediate and accurate bill correction for a much better customer experience. IT is no longer needed to manually fix the data in the database. While there are currently a low volume of IDS Billing accounts which require this functionality, it is possible the numbers could exceed 4200 accounts annually as customers choose rates which require shadow billing.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00831F - T16025 IDS BILLING ENHANCEMENT

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00831F

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00831F - T16025 IDS BILLING ENHANCEMENT
Workpaper Detail:	00831F.001 - T16025 IDS BILLING ENHANCEMENT
In-Service Date:	03/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	61	0	0
Non-Labor	300	0	0
NSE	0	0	0
Total	**361**	**0**	**0**
FTE	0.5	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00831K - T19038 Off But Registering (OBR) Enhancement Project

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00831K - T19038 Off But Registering (OBR) Enhancement Project

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	0	559	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**	**559**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	4.9	0.0

Business Purpose:

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.

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:

- Reduced operating labor costs for Customer Operations
- Billing
 - Reduction in non-labor for Customer Service Field in overtimes costs ($45k per year)
 - Improved customer service through schedule availability

- Reallocation of resources for Customer Operations - Meter Revenue Protection leading to reduction in lost and unaccounted for energy (estimated at $160k per year)

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00831K - T19038 Off But Registering (OBR) Enhancement Project

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00831K

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00831K - T19038 Off But Registering (OBR) Enhancement Project
Workpaper Detail:	00831K.001 - T19038 Off But Registering (OBR) Enhancement Project
In-Service Date:	11/30/2018
Description:	

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	559	0
Non-Labor	0	0	0
NSE	0	0	0
Total	**0**	**559**	**0**
FTE	0.0	4.9	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00831L - T19037 Remote Meter Configuration (RMC) Rebuild

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00831L - T19037 Remote Meter Configuration (RMC) Rebuild

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	0	275	0
Non-Labor	Zero-Based	0	0	0	0	0	0	230	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**505**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0

Business Purpose:

The Remote Meter Configuration (RMC) application, as is, is not capable of scaling to keep up with demand.
RMC is used to reconfigure meters in Production to meet energy program requirements such as Time of Use (TOU), Net Energy Metering (NEM), etc.. As customers migrate to more complex programs, meter attributes must be changed/reconfigured to support such programs, the existing RMC application is not capable of completing these change transactions.

Physical Description:

The project proposes to eliminate system constraints and relieve stress on the existing CIS (CISCO) system by instituting new processing services in a separate (existing) application.
Improve the RMC process by instituting changes to the RMC application, addressing deterministic processing by implementing 8 hour and time-to-live features.
Additionally, provide an application service designed to manage configuration change data, correlate events, monitor billing cycles and validate transactions. Improvement must accomodate 10,000 meter configurations a day.

Project Justification:

- Eliminates field orders to replace meters to meet customer program needs
- Eliminates inefficient, manual workaround practices of meter reconfiguration
- Relieve stress on the existing CIS (CISCO) system
- Capability to clearing the current backlog and meet growing customer demand remotely
- Supports energy programs and meets customer expectations

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00831L - T19037 Remote Meter Configuration (RMC) Rebuild

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00831L

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00831L - T19037 Remote Meter Configuration (RMC) Rebuild
Workpaper Detail:	00831L.001 - T19037 Remote Meter Configuration (RMC) Rebuild
In-Service Date:	09/30/2018
Description:	

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	275	0
Non-Labor	0	230	0
NSE	0	0	0
Total	**0**	**505**	**0**
FTE	0.0	2.4	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00831M - RAMP - INCREMENTAL T19036 Enhanced Network Analytics

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00831M - RAMP - INCREMENTAL T19036 Enhanced Network Analytics

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	0	470	576
Non-Labor	Zero-Based	0	0	0	0	0	0	3,356	3,424
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**3,826**	**4,000**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	4.1	5.0

Business Purpose:

The project will build a Smart Meter analytics platform that enables efficient and robust data processing, and enhanced reporting and analytics capabilities required to maintain current service levels. The platform will integrate customer information, meter data and attributes, distribution assets, weather data, and data from various sources which is required to proactively report, analyze and prioritize data quality issues and meter exceptions. This application will also establish the foundation required to quickly scale and store new data, develop new analytical dashboards, and provide necessary reporting.

Physical Description:

1. Build a Tier 2 data/DR environment for Smart Meter Operations supporting Smart Meter data management and analytical needs.
2. The Enhanced Network Analytics will improve operations in the following functional areas by application of event correlation and data analytics: *Data Visualizations *Exception Management *Risk mitigation / Security Awareness
3. Enhance monitoring of systems, processed jobs, communication network and network devices with advanced analytical and user interface tools. Enhancements shall provide Smart Meter operators with dashboard reports and geographical presentments in real time of systems, network devices, associated performances and status, and functionalities that will automatically generate and issue trouble notifications.
4. Develop a new Information System to integrate multiple systems, consolidate and analyze key data from multiple systems to support expeditious and efficient operations and maintenance of network devices and meter endpoints both electric and gas.
5. Provide resolution for exception meters associated with definable events eliminating false-positive exception meters from the evaluation process.
6.Provide a centralized data system by integrating data elements/attributes from various systems.
7. Provide reporting tools to aid in SOX compliance and CPUC reporting.
8. Enhance Smart Meter benefits delivery to billing and non-billing stakeholders.
9. Provide the ability to analyze energy usage, meter technical data, trouble tickets and customer information to support processes related to high bill complaints, firmware and hardware failure and/or meter technical failure
10. Report meter removal, repair and replacement orders
11. Provide the ability to process and deliver voltage profiles
12. Apply analytics to process and report in near real time, end point disconnect and/or reconnect failure – false-positives, etc.
13. Capture and report weaknesses in the mesh network meter reregistration/deregistration.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00831M - RAMP - INCREMENTAL T19036 Enhanced Network Analytics

Project Justification:

Operational Benefits:
- Improve efficiencies in Smart Meter operational processes to support current and planned TOU programs
- Minimize number of estimated bills, billing errors and maximize on-time billing of customers to support TOU programs
- Proactively report, analyze and prioritize data quality and meter exception issues prior to billing to reduce daily SMO and Billing troubleshooting and inquiries

Strategic Opportunities:
- The platform establishes a foundation where future strategic initiatives can leverage and/or extend the existing integrated data, avoiding redundant project development costs for interface development, hardware and application support requirements and activities
- Provides an additional tool that could be leveraged to generate revenue, pending regulatory approval

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00831M - RAMP - INCREMENTAL T19036 Enhanced Network Analytics

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00831M

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00831M - RAMP - INCREMENTAL T19036 Enhanced Network Analytics
Workpaper Detail:	00831M.001 - RAMP - INCREMENTAL T19036 Enhanced Network Analytics
In-Service Date:	12/31/2018

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	470	0
Non-Labor	0	1,089	0
NSE	0	0	0
Total	**0**	**1,559**	**0**
FTE	0.0	4.1	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00831M - RAMP - INCREMENTAL T19036 Enhanced Network Analytics
Workpaper Detail:	00831M.001 - RAMP - INCREMENTAL T19036 Enhanced Network Analytics

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00831M - RAMP - INCREMENTAL T19036 Enhanced Network Analytics
Workpaper Detail:	00831M.002 - RAMP - INCREMENTAL T19036 Enhanced Network Analytics
In-Service Date:	12/31/2018

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	0	1,767	0
NSE	0	0	0
Total	**0**	**1,767**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00831M - RAMP - INCREMENTAL T19036 Enhanced Network Analytics
Workpaper Detail:	00831M.002 - RAMP - INCREMENTAL T19036 Enhanced Network Analytics

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00831M - RAMP - INCREMENTAL T19036 Enhanced Network Analytics
Workpaper Detail:	00831M.003 - RAMP - INCREMENTAL T19036 Enhanced Network Analytics
In-Service Date:	03/31/2018

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	0	500	0
NSE	0	0	0
Total	**0**	**500**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00831M - RAMP - INCREMENTAL T19036 Enhanced Network Analytics
Workpaper Detail:	00831M.003 - RAMP - INCREMENTAL T19036 Enhanced Network Analytics

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: o

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00831M - RAMP - INCREMENTAL T19036 Enhanced Network Analytics
Workpaper Detail:	00831M.004 - RAMP - INCREMENTAL T19036 Enhanced Network Analytics
In-Service Date:	12/31/2019

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	576
Non-Labor	0	0	2,094
NSE	0	0	0
Total	**0**	**0**	**2,670**
FTE	0.0	0.0	5.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00831M - RAMP - INCREMENTAL T19036 Enhanced Network Analytics
Workpaper Detail:	00831M.004 - RAMP - INCREMENTAL T19036 Enhanced Network Analytics

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00831M - RAMP - INCREMENTAL T19036 Enhanced Network Analytics
Workpaper Detail:	00831M.005 - RAMP - INCREMENTAL T19036 Enhanced Network Analytics
In-Service Date:	12/31/2019

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	0	0	1,330
NSE	0	0	0
Total	**0**	**0**	**1,330**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00831.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00831M - RAMP - INCREMENTAL T19036 Enhanced Network Analytics
Workpaper Detail:	00831M.005 - RAMP - INCREMENTAL T19036 Enhanced Network Analytics

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Beginning of Workpaper Group
00832A - T19001 Branch Office Kiosk Replacement

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00832.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00832A - T19001 Branch Office Kiosk Replacement

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	0	429	0
Non-Labor	Zero-Based	0	0	0	0	0	150	1,408	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**150**	**1,837**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.0

Business Purpose:

The existing self-serve payment kiosks in the Branch Offices, which offer 24/7 bill payment availability, have lived their useful life; hardward and software have aged and are due for replacement. This project will explore the availability of new self-serve payment kiosks to replace existing antiquated ones with state of the art units that offer conveniences, efficiencies, and customer privacy safeguards. Product purchase, turnkey and lease options will be considered. After identifying improved cash security and payment processing solutions, the project will implement the cost effective/efficient products where possible. This project will help to increase Branch Office efficiencies, better secure financial transactions and improve the customer payment experience.

Physical Description:

The scope will be centered on purchasing new equipment for the Branch Offices to replace existing outdated equipment and provide convenient and secured payment options for customer with enhanced technology; such as credit/debit card payment, bill stacker, and paperless check payments. The focus will also be to improve the customer experience while using a self-serve option at the Branch Offices, continue to encourage customers to self-serve thereby decreasing cost per transaction and increase customer satisfaction ratings.
Replace 10 units with existing vendor and minimal integration updates.

Project Justification:

Decrease face-to-face transactions over the counter thereby decreasing overall processing time through the gain of efficiencies; secure financial transactions and easier reconciliation; improving customer payment experience, faster transaction processing and shorter wait times, resulting in workforce reductions and improved customer satisfaction. Eliminates time-consuming efforts to troubleshoot and track on-going issues with existing antiquated units/equipment.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00832.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00832A - T19001 Branch Office Kiosk Replacement

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00832A

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00832.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00832A - T19001 Branch Office Kiosk Replacement
Workpaper Detail:	00832A.001 - T19001 Branch Office Kiosk Replacement
In-Service Date:	12/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	150	0	0
NSE	0	0	0
Total	**150**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00832.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00832A - T19001 Branch Office Kiosk Replacement
Workpaper Detail:	00832A.002 - T19001 Branch Office Kiosk Replacement
In-Service Date:	12/31/2018

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	429	0
Non-Labor	0	1,408	0
NSE	0	0	0
Total	**0**	**1,837**	**0**
FTE	0.0	3.7	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00832B - T16034 SMART METER NETWORK ENHANCEMENT

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00832.0
Category: D. CS - Office Operations
Category-Sub: 4. Business Optimization
Workpaper Group: 00832B - T16034 SMART METER NETWORK ENHANCEMENT

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	619	0	0
Non-Labor	Zero-Based	0	0	0	0	0	1,915	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**2,534**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	5.4	0.0	0.0

Business Purpose:

This is the first of a phased effort to modernize the existing Smart Meter Network by introducing next generation hardware to the Smart Meter Network environment. At face value, this is a Smart Meter network refresh project. Strategically, this project provides a foundation to leverage the Smart Meter network to enable multi-use and revenue generating opportunities. Specifically, the project will deploy up to 600 enhanced Cell Relays in strategic locations to achieve maximum benefits from connecting to hard-to-reach, stranded meters and methane sensors introducing expanded use of the SDG&E Smart Meter Network infrastructure to support gas safety situational awareness in conjunction with the (SCG/SDG&E) Pipeline Safety Enhancement Program (PSEP).

Physical Description:

This project will overlay a new internet protocol version 6 (IPv6) communications infrastructure designed for different device types enabling new functionality and services. This new infrastructure would permit the Company to add new capabilities and revenue sources not specifically related to metering. The project will deliver a field area network upgrade path which facilitates the integration of new multi-vendor meters, Internet of Things (IoT) sensors, as well as having the ability to provide connectivity services to 3rd party devices (e.g., methane gas sensors, water meters, street lights, EV charging stations, solar inverters, etc.).

Project Justification:

Operational Benefits:
- Leveraging technology and system re-engineering to increase efficiency, reduce costs and enhance mesh coverage in “hard to reach” scenarios resulting in an estimated 30% fewer manually read meters. ($45,000 annual hard savings)
- Provides opportunities to improve employee and/or customer safety, may offset Pipeline Safety Enhancement Program expenditures in SDG&E territory by utilizing the Smart Meter Network to transport methane gas monitoring data to Gas Control.
- Creates a foundation for future gas safety and efficiency projects to enable targeted pipeline upgrades and monitoring in areas of cathodic protection.
- Supporting the execution of major projects and initiatives (e.g. CPUC R.13-12-011 Water Nexus, SCADA, Adpative Street Lights)
- Incorporates additional SDGE "medium BW" requirements (WX sensors, monitoring)

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00832.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00832B - T16034 SMART METER NETWORK ENHANCEMENT

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00832B

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00832.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00832B - T16034 SMART METER NETWORK ENHANCEMENT
Workpaper Detail:	00832B.001 - T16034 SMART METER NETWORK ENHANCEMENT
In-Service Date:	12/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	493	0	0
Non-Labor	1,587	0	0
NSE	0	0	0
Total	**2,080**	**0**	**0**
FTE	4.3	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00832.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	00832B - T16034 SMART METER NETWORK ENHANCEMENT
Workpaper Detail:	00832B.002 - T16034 SMART METER NETWORK ENHANCEMENT
In-Service Date:	03/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	126	0	0
Non-Labor	328	0	0
NSE	0	0	0
Total	**454**	**0**	**0**
FTE	1.1	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
03849A - T19031 FoF - IVR Project

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03849.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	03849A - T19031 FoF - IVR Project

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	284	0	0
Non-Labor	Zero-Based	0	0	0	0	0	368	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**652**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0

Business Purpose:

This project is required to support the Fueling our Future project's objectives, increase self-service and reduce customer calls handled by Customer Contact Center agents. The project will add fumigation turn-off function to the IVR, expand emergency options, streamline IVR flows for appliance servive orders, credits and outages functions. This project will constrain excessive repeat callers to self-service.

Physical Description:

This project will add Fumigation turn-off self-service function, streamline appliance service orders flow to improve self-service and customer experience, and to match the new streamline ASO process. This project will reroute credit excessive-repeat callers to self-service, insist callers to specify the purpose of their calls before transferring callers to agents. This project will expand emergency menu to include detailed emergency types, quickly post gas odor messages to help customers self-service. This project will quickly post outage information regarding outage start time, cause, restoration time and numbers of callers.

Project Justification:

Enhancing self-service in IVR will lead to greater operation efficiency, customer experience and satisfaction.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03849.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	03849A - T19031 FoF - IVR Project

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 03849A

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03849.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	03849A - T19031 FoF - IVR Project
Workpaper Detail:	03849A.001 - T19031 FoF - IVR Project
In-Service Date:	11/30/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	284	0	0
Non-Labor	368	0	0
NSE	0	0	0
Total	**652**	**0**	**0**
FTE	2.5	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
03849B - T19030 FoF - KANA Enhancements and Online Training

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03849.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	03849B - T19030 FoF - KANA Enhancements and Online Training

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	249	0	0
Non-Labor	Zero-Based	0	0	0	0	0	1,111	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,360**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0

Business Purpose:

The Customer Contact Center (CCC) uses separate vendors for live chat and e-mail response, creating a non-intergrated view of the three primary customer contact channels (ESS assisted, live chat, and e-mail). This options to mitigate this are to enable the features of live chat, Case management, and e-mail features within Kana's Enterprise bundle, previously purchased under the SEAd I project. The integration of chat and e-mail with the desktop (SEAd) will provide ESSs the ability to view the various customer interactions. In addition, the integration will help in optimization of resources due to the single system for transacting with customers through dynamic routing and prioritization across calls, e-mail, and incoming chat. Seperate from the Kana aspect, Energy Service Specialists are trained in a classroom environment. The options being sought for this project are to secure a computer based training.

Physical Description:

To funtionalize and integrate existing features within the KANA Enterprise Bundle (Case Management, Live Chat, E-Mail). To implement computer based training for onboarding Energy Service Specialists. Integrate KANA products into existing applications that are currently used. For on-line training: Secure vendor for on-line training.

Project Justification:

Integrated view of the customer channels and contacts, providing better service and holistic view of the customer contacts. Facilitate the ability for more Energy Service Specialists to be working across the three different channels, providing increased morale and reducing burnout from taking calls.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03849.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	03849B - T19030 FoF - KANA Enhancements and Online Training

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 03849B

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03849.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	03849B - T19030 FoF - KANA Enhancements and Online Training
Workpaper Detail:	03849B.001 - T19030 FoF - KANA Enhancements and Online Training
In-Service Date:	08/31/2017
Description:	

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	849	0	0
NSE	0	0	0
Total	**849**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03849.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	03849B - T19030 FoF - KANA Enhancements and Online Training
Workpaper Detail:	03849B.002 - T19030 FoF - KANA Enhancements and Online Training
In-Service Date:	08/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	249	0	0
Non-Labor	262	0	0
NSE	0	0	0
Total	**511**	**0**	**0**
FTE	2.2	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
03849C - T19029 FoF - Propensity to Pay

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 03849.0
Category: D. CS - Office Operations
Category-Sub: 4. Business Optimization
Workpaper Group: 03849C - T19029 FoF - Propensity to Pay

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	436	0	0
Non-Labor	Zero-Based	0	0	0	0	0	1,095	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,531**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	3.8	0.0	0.0

Business Purpose:

Improving credit scoring and allowing that scoring to more granularly define a treatment and correct path for customers is expected to accelerate cash flow and reduce uncollectable expense as well as eliminating unnecessary mail and field collection activities. Perform analytics to determine what factors most strongly contribute to credit risk assessment. Revamp Behavioral Score calculation, allowing new data points indicated by analytic model. Allow for triggered purchase of external data (such as Experian credit score), when internal score reaches trigger point, do determine if customer shows a recent pattern of increased delinquency overall. Modify credit strategy selection logic to create risk based treatments for Low/Med/High/'Special Handle' credit assessments which will be defined as ranges of the new score calculation. Include contact points in strategies that use more modern and cost effective communication, such as email and SMS/Text, as appropriate and allowed by tariff. Tie risk assessment/scoring into deposit request and return logic to improve debt coverage by triggering new/additional deposit requests or continue to hold existing deposits based on credit risk. Provide front-end screens accessible by Credit to change rules governing behavior score weightings, credit strategies and pay agreements without needing to wait extended periods of time for IT 'datafix' to occur. Continue to analyze credit data to further refine behavioral scores, and credit treatments.

Physical Description:

- Update Behavioral Score
- Add/Integrate Credit Score
- Add new channels for communication
- Update Deposit Strategies
- Changes to Payment Arrangements

Project Justification:

Create "Propensity to Pay" scoring model and systems to increase collections percentage. Will improve collections (cash flow) and minimize bad debt write-offs by:
• Tailoring payment strategies upfront with customers before their accounts go in arrears
• Prioritizing work for field collectors working 48 hour orders and collection close orders (they will work those with the lowest propensity to pay scores – bigger risk of not paying, rather than working higher propensity to pay scores – those with lower risk of not paying)
This is a documented idea through Fueling Our Future.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03849.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	03849C - T19029 FoF - Propensity to Pay

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 03849C

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03849.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	03849C - T19029 FoF - Propensity to Pay
Workpaper Detail:	03849C.001 - T19029 FoF - Propensity to Pay
In-Service Date:	11/30/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	436	0	0
Non-Labor	1,095	0	0
NSE	0	0	0
Total	**1,531**	**0**	**0**
FTE	3.8	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
16871A - T16028 SMART METER NETWORK DEVICES

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 16871.0
Category: D. CS - Office Operations
Category-Sub: 4. Business Optimization
Workpaper Group: 16871A - T16028 SMART METER NETWORK DEVICES

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	0	0	0
Non-Labor	Zero-Based	0	0	0	0	0	725	475	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**725**	**475**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Business Purpose:

Purchase and installation of Smart Meter Network Devices to enable communication of company metering equipment to achieve its full "over-the-air" capability. Network Devices are required for new construction where meters do not communicate after installation.

Physical Description:

Purchase and installation of Smart Meter Network Devices to enable communication of company metering equipment.

Project Justification:

Smart Meter Network Devices enable communication of company metering equipment to achieve its full "over-the-air" capability. Network Devices are required for new construction where meters do not communicate after installation.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	16871.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	16871A - T16028 SMART METER NETWORK DEVICES

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 16871A

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	16871.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	16871A - T16028 SMART METER NETWORK DEVICES
Workpaper Detail:	16871A.001 - T16028 SMART METER NETWORK DEVICES
In-Service Date:	12/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	725	0	0
NSE	0	0	0
Total	**725**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	16871.0
Category:	D. CS - Office Operations
Category-Sub:	4. Business Optimization
Workpaper Group:	16871A - T16028 SMART METER NETWORK DEVICES
Workpaper Detail:	16871A.002 - T16028 SMART METER NETWORK DEVICES
In-Service Date:	11/30/2018

Description:

See workpaper descrioption

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	0	475	0
NSE	0	0	0
Total	**0**	**475**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Category: E. Fleet Services
Workpaper: VARIOUS

Summary for Category: E. Fleet Services

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	485	633	739
Non-Labor	0	1,683	3,881	6,893
NSE	0	0	0	0
Total	**0**	**2,168**	**4,514**	**7,632**
FTE	0.0	4.2	5.5	6.4
00833L T19020 SDGE Fleet M5 Upgrade Phase I				
Labor	0	485	274	274
Non-Labor	0	1,683	1,352	1,578
NSE	0	0	0	0
Total	**0**	**2,168**	**1,626**	**1,852**
FTE	0.0	4.2	2.4	2.4
00834R T19021 SDGE Fleet Fuel Management Phase II				
Labor	0	0	359	465
Non-Labor	0	0	2,529	5,315
NSE	0	0	0	0
Total	**0**	**0**	**2,888**	**5,780**
FTE	0.0	0.0	3.1	4.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00833L - T19020 SDGE Fleet M5 Upgrade Phase I

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00833.0
Category: E. Fleet Services
Category-Sub: 1. Technical Obsolescence
Workpaper Group: 00833L - T19020 SDGE Fleet M5 Upgrade Phase I

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	485	274	274
Non-Labor	Zero-Based	0	0	0	0	0	1,683	1,352	1,578
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**2,168**	**1,626**	**1,852**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	4.2	2.4	2.4

Business Purpose:

SDGE “owns” a fleet of over-the-road vehicles and off-the road equipment to service SDGE’s utility infrastructure. The utility uses computer applications to manage maintenance parts and work orders, vehicle financing and lease payments, environmental compliance, vehicle registration and titles and vendor and contract management.

Physical Description:

SDGE currently uses Assetworks M4 as its vehicle management system application, M4 is no longer supported by the vendor. The purpose of this project is upgrade from M4 to the Assetworks M5 application. SDGE will leverage some of the information technology applications implemented by SCG and will go after the SCG implementation. Project scope will be similar to the SCG Fleet Services M5 Upgrade project.

Project Justification:

Current Vehicle Management System is obsolete and is not longer supported by the vendor. Additionally, the server is no longer supported by either SoCalGas IT nor Microsoft. This project will update these systems.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	E. Fleet Services
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833L - T19020 SDGE Fleet M5 Upgrade Phase I

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00833L

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	E. Fleet Services
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833L - T19020 SDGE Fleet M5 Upgrade Phase I
Workpaper Detail:	00833L.001 - T19020 SDGE Fleet M5 Upgrade Phase I
In-Service Date:	12/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	485	0	0
Non-Labor	1,683	0	0
NSE	0	0	0
Total	**2,168**	**0**	**0**
FTE	4.2	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	E. Fleet Services
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833L - T19020 SDGE Fleet M5 Upgrade Phase I
Workpaper Detail:	00833L.002 - T19020 SDGE Fleet M5 Upgrade Phase I
In-Service Date:	12/31/2018

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	274	0
Non-Labor	0	1,352	0
NSE	0	0	0
Total	**0**	**1,626**	**0**
FTE	0.0	2.4	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	E. Fleet Services
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833L - T19020 SDGE Fleet M5 Upgrade Phase I
Workpaper Detail:	00833L.003 - T19020 SDGE Fleet M5 Upgrade Phase I
In-Service Date:	09/30/2019

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	274
Non-Labor	0	0	1,578
NSE	0	0	0
Total	**0**	**0**	**1,852**
FTE	0.0	0.0	2.4

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00834R - T19021 SDGE Fleet Fuel Management Phase II

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	E. Fleet Services
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834R - T19021 SDGE Fleet Fuel Management Phase II

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	0	359	465
Non-Labor	Zero-Based	0	0	0	0	0	0	2,529	5,315
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**2,888**	**5,780**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	3.1	4.0

Business Purpose:

EJ Ward III, the current fuel management system is obsolete and not supported by the vendor. This project will replace EJ Ward III with software, hardware, and cellular data acquisition components that are fully vendor supported. The application will integrate with the new AssetWorks M5 fleet management application targeted for deployment in 4Q2018. The new system will provide capabilities to collect vehicle mileage and diagnostic information through the use of the company cellular network for optimized vehicle maintenance, tracking, and increase tracking of the green fleet that do not utilize the fueling island (currently, only vehicles that fuel at the fuel island are tracked).

Physical Description:

In-vehicle Hardware - Replace existing Ward 3 hardware with new hardware.
Fuel Islands - Replace EJ Ward 3 fuel islands with new fuel islands.
Software - Replace EJ Ward 3 software with new software.

Project Justification:

System will optimize vehicle maintenance by providing accurate odometer readings (vehicle mileage), live diagnostic information and provide tracking of our increasing green fleet inventory. System will upgrade existing Fuel Islands to provide Ethernet/WiFi connectivity for increased reliability as well as provide added security by requiring an employee ID badge.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	E. Fleet Services
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834R - T19021 SDGE Fleet Fuel Management Phase II

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00834R

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	E. Fleet Services
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834R - T19021 SDGE Fleet Fuel Management Phase II
Workpaper Detail:	00834R.001 - T19021 SDGE Fleet Fuel Management Phase II
In-Service Date:	12/31/2018

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	359	0
Non-Labor	0	2,529	0
NSE	0	0	0
Total	**0**	**2,888**	**0**
FTE	0.0	3.1	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	E. Fleet Services
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834R - T19021 SDGE Fleet Fuel Management Phase II
Workpaper Detail:	00834R.002 - T19021 SDGE Fleet Fuel Management Phase II
In-Service Date:	11/30/2019

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	465
Non-Labor	0	0	5,315
NSE	0	0	0
Total	**0**	**0**	**5,780**
FTE	0.0	0.0	4.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Category: F. IT
Workpaper: VARIOUS

Summary for Category: F. IT

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	4,319	4,329	3,063
Non-Labor	0	34,054	46,085	77,861
NSE	0	0	0	0
Total	**0**	**38,373**	**50,414**	**80,924**
FTE	0.0	37.2	37.6	22.4

00818A T16030 SDGE PRIVATE NETWORK REFRESH PHASE 2

Labor	0	164	0	0
Non-Labor	0	692	0	0
NSE	0	0	0	0
Total	**0**	**856**	**0**	**0**
FTE	0.0	1.4	0.0	0.0

00827A T15082 SDGE TRANSM COMM RELIABILITY IMPROVEMENT

Labor	0	720	0	0
Non-Labor	0	9,604	0	0
NSE	0	0	0	0
Total	**0**	**10,324**	**0**	**0**
FTE	0.0	6.3	0.0	0.0

00827B T15080 SCADA RADIO REPLACEMENT & EXPANSION

Labor	0	837	0	0
Non-Labor	0	1,024	0	0
NSE	0	0	0	0
Total	**0**	**1,861**	**0**	**0**
FTE	0.0	7.3	0.0	0.0

00827C T14048 SDGE OUT OF BAND MGMT

Labor	0	198	0	0
Non-Labor	0	174	0	0
NSE	0	0	0	0
Total	**0**	**372**	**0**	**0**
FTE	0.0	1.3	0.0	0.0

00833C T16021 Advanced Distribution Mgmt System Phase 3

Labor	0	282	0	0
Non-Labor	0	820	133	0
NSE	0	0	0	0
Total	**0**	**1,102**	**133**	**0**
FTE	0.0	2.5	0.0	0.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Category: F. IT
Workpaper: VARIOUS

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
00833E T19017 SDG&E Data Warehouse and Hadoop Platform Upgrade				
Labor	0	104	169	0
Non-Labor	0	962	1,166	0
NSE	0	0	0	0
Total	**0**	**1,066**	**1,335**	**0**
FTE	0.0	0.9	1.5	0.0
00834E T19012 LTE Communications Network				
Labor	0	0	889	762
Non-Labor	0	0	22,000	49,500
NSE	0	0	0	0
Total	**0**	**0**	**22,889**	**50,262**
FTE	0.0	0.0	7.7	6.6
00834G T19013 Downtown SCADA Communications Infrastructure Modernization				
Labor	0	476	1,270	959
Non-Labor	0	734	2,475	4,730
NSE	0	0	0	0
Total	**0**	**1,210**	**3,745**	**5,689**
FTE	0.0	4.1	11.0	4.1
00834H T15088 SDGE ENTERPRISE DESKTOP REFRESH				
Labor	0	147	0	0
Non-Labor	0	2,781	0	0
NSE	0	0	0	0
Total	**0**	**2,928**	**0**	**0**
FTE	0.0	1.3	0.0	0.0
00834J T19018 SQL Server 2016 Enterprise Environment				
Labor	0	44	0	0
Non-Labor	0	1,276	0	0
NSE	0	0	0	0
Total	**0**	**1,320**	**0**	**0**
FTE	0.0	0.4	0.0	0.0
00834K T19019 2017 SDGE Mainframe Capacity Hardware Upgrade				
Labor	0	0	95	141
Non-Labor	0	0	2,178	4,434
NSE	0	0	0	0
Total	**0**	**0**	**2,273**	**4,575**
FTE	0.0	0.0	0.8	1.2
00834M T19025 SDGE Private Network Expansion and Refresh (Phase 3)				
Labor	0	594	0	0
Non-Labor	0	3,645	0	0
NSE	0	0	0	0
Total	**0**	**4,239**	**0**	**0**
FTE	0.0	5.2	0.0	0.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Category: F. IT
Workpaper: VARIOUS

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
00834N T19026 SDGE Private Network Expansion and Refresh (Phase 4)				
Labor	0	0	594	0
Non-Labor	0	0	3,080	0
NSE	0	0	0	0
Total	**0**	**0**	**3,674**	**0**
FTE	0.0	0.0	5.2	0.0
00834O T19027 Transmission Communications Reliability Enhancement - Phase II				
Labor	0	465	931	606
Non-Labor	0	6,304	11,780	14,025
NSE	0	0	0	0
Total	**0**	**6,769**	**12,711**	**14,631**
FTE	0.0	4.0	8.1	5.3
00834P T19028 NOC Modernization				
Labor	0	179	0	0
Non-Labor	0	4,079	0	0
NSE	0	0	0	0
Total	**0**	**4,258**	**0**	**0**
FTE	0.0	1.6	0.0	0.0
00834Q T19009 SDGE Self Support Small Cap 2017 - 2019 (Routine)				
Labor	0	0	0	0
Non-Labor	0	500	635	635
NSE	0	0	0	0
Total	**0**	**500**	**635**	**635**
FTE	0.0	0.0	0.0	0.0
00834T T16053 WAN LIFE CYCLE EXTENSION 2016				
Labor	0	63	0	0
Non-Labor	0	247	0	0
NSE	0	0	0	0
Total	**0**	**310**	**0**	**0**
FTE	0.0	0.5	0.0	0.0
00834U T19044 SDGE Private Network Expansion & Refresh (Phase 5)				
Labor	0	0	0	595
Non-Labor	0	0	0	3,300
NSE	0	0	0	0
Total	**0**	**0**	**0**	**3,895**
FTE	0.0	0.0	0.0	5.2
00834V T16051 SDGE MAINFRAME CAPACITY UPGRADE AND HW TECH REFRESH				
Labor	0	22	0	0
Non-Labor	0	3	0	0
NSE	0	0	0	0
Total	**0**	**25**	**0**	**0**
FTE	0.0	0.2	0.0	0.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Category: F. IT
Workpaper: VARIOUS

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
15869A T15869 SMART GRID ENDPOINT PROTECTION				
Labor	0	24	0	0
Non-Labor	0	194	0	0
NSE	0	0	0	0
Total	**0**	**218**	**0**	**0**
FTE	0.0	0.2	0.0	0.0
00833G T19041 Electronic Bill Presentment & Payment (EBPP) for Sundry Billing & Customer Gen				
Labor	0	0	381	0
Non-Labor	0	0	1,210	0
NSE	0	0	0	0
Total	**0**	**0**	**1,591**	**0**
FTE	0.0	0.0	3.3	0.0
00834D T19010 2018/2019 SDGE MDT Technology Obsolescence				
Labor	0	0	0	0
Non-Labor	0	0	1,268	1,237
NSE	0	0	0	0
Total	**0**	**0**	**1,268**	**1,237**
FTE	0.0	0.0	0.0	0.0
00834F T16024 2016/2017 SDGE MDT TECHNOLOGY OBSOLESCEN				
Labor	0	0	0	0
Non-Labor	0	1,015	160	0
NSE	0	0	0	0
Total	**0**	**1,015**	**160**	**0**
FTE	0.0	0.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00818A - T16030 SDGE PRIVATE NETWORK REFRESH PHASE 2

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00818.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00818A - T16030 SDGE PRIVATE NETWORK REFRESH PHASE 2

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	164	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**	**856**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0

Business Purpose:

This project will:
1 – Upgrade nine existing SDGE microwave radio backbone links to provide network redundancy, added capacity and replace “End of Life” and “End of Support” devices.
2 – Add four new links to provide redundancy and diversity for network resiliency.

Physical Description:

Upgraded microwave links to a minimum of 155 Mbps will ensure adequate capacity for increased network traffic and to support future applications
Network infrastructure will have more diverse and redundant links to ensure a more robust and reliable network
Hybrid IP enabled microwave radio links with TDM capabilities.
Microwave radios at each site will be connected to the SDGE Out of Band Management system at the time of each sites upgrade allowing remote repowering of devices and limiting the number of physical site visits required for this activity.

Project Justification:

Lowering the risk to the business by limiting outages caused by aging equipment.
Replace obsolete microwave radio equipment and enable native Internet Protocol (IP) connectivity at each of the sites to support MPLS protocol. Aligns with Lockard & White recommendation #3.
Enable additional bandwidth to existing SDGE microwave radio links
Refresh existing microwave radio equipment to vendor supportable levels.
Reduce outage times to critical infrastructure by introducing dynamic network redundancy.
Reduce complexity of operational support by implementing a single network management system (currently two).
Provide standardized microwave technology capable of supporting MPLS protocol for ongoing and future projects such as SDGE Transmission Communications Reliability Improvement (TCRI), SDGE SCADA Radio Replacement (SRR), Corporate Substation Security and Condition-Based Maintenance (CBM).

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00818.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00818A - T16030 SDGE PRIVATE NETWORK REFRESH PHASE 2

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00818A

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00818.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00818A - T16030 SDGE PRIVATE NETWORK REFRESH PHASE 2
Workpaper Detail:	00818A.001 - T16030 SDGE PRIVATE NETWORK REFRESH PHASE 2
In-Service Date:	03/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	164	0	0
Non-Labor	692	0	0
NSE	0	0	0
Total	**856**	**0**	**0**
FTE	1.4	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00827A - T15082 SDGE TRANSM COMM RELIABILITY IMPROVEMENT

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00827.0
Category: F. IT
Category-Sub: 1. Technical Obsolescence
Workpaper Group: 00827A - T15082 SDGE TRANSM COMM RELIABILITY IMPROVEMENT

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	720	0	0
Non-Labor	Zero-Based	0	0	0	0	0	9,604	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**10,324**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	6.3	0.0	0.0

Business Purpose:

The project will transform the existing TDM communication inter-site infrastructure (substation to substation and substation to head-end) of selected substations to redundant IP/MPLS infrastructure offering diverse communication paths, dynamic & intelligent rerouting, robust monitoring (24x7x365 NOC), and alerting and correlation capabilities.

Physical Description:

This will be done in three phases:
Phase I : 10 of the 23 prioritized critical substations and 3 aggregation (DACS) locations requiring the least amount of infrastructure upgrades
Phase II: Remaining 13 critical substations (of the 23 prioritized substations) and remaining aggregation locations requiring extensive design changes or long lead-time equipment/services
Phase III: Remainder of existing substations
This business case will cover phase I. Business cases for phase II and III will be developed in parallel

Project Justification:

The project will improve reliability of transmission SCADA communication services and increase visibility and awareness of underlying communication system problems that affect SCADA and protective relay communications.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00827.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00827A - T15082 SDGE TRANSM COMM RELIABILITY IMPROVEMENT

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00827A

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00827.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00827A - T15082 SDGE TRANSM COMM RELIABILITY IMPROVEMENT
Workpaper Detail:	00827A.001 - T15082 SDGE TRANSM COMM RELIABILITY IMPROVEMENT
In-Service Date:	06/30/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	720	0	0
Non-Labor	9,604	0	0
NSE	0	0	0
Total	**10,324**	**0**	**0**
FTE	6.3	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00827B - T15080 SCADA RADIO REPLACEMENT & EXPANSION

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00827.0
Category: F. IT
Category-Sub: 1. Technical Obsolescence
Workpaper Group: 00827B - T15080 SCADA RADIO REPLACEMENT & EXPANSION

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	837	0	0
Non-Labor	Zero-Based	0	0	0	0	0	1,024	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,861**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	7.3	0.0	0.0

Business Purpose:

This project's goals are:
1. Replace the aging SCADA radio equipment with newer technology with enhanced security features including communication encryption, endpoint authentication and authorization by the end of 2017.
2. Transform the existing TDM infrastructure at SCADA master radio sites to fully redundant IP equipment by the end of 2017.
3. Address issues with SCADA backend severs by the end of 2017 ($200K).
4. Test and begin replacement of exiting RMS 900 RTUs in critical sites with newer standard communication devices
5. Expand backhaul links not covered by the Private Network Replacement Project (PNR) to support the additional SCADA traffic by end of March 2016

Physical Description:

1. Manage finance for the business to test and replace a subset of existing RMS900 RTUs in critical sites
2. Replace 1788 GE end point radios, 30 radio masters and 200 repeater radios including SDGE Electric Distribution, SDGE Gas Transmission
3. Expand SCADA radio coverage with a potential to reduce the number of repeater sites. Number of repeaters to be reduced is pending RF analysis
4. Address backhaul capacity constrains (San Clemente to Encina, Rattlesnake, Borrego and Los Pinos)
5. Repeaters moved to licensed spectrum where available
5. Address issues with SCADA backend ACS Servers

Project Justification:

1. Lower the risk to business from cyber attacks that could result in distribution outages
2. Address SCADA backend issues to support Serial to IP connectivity in line with current transport strategy
3. Address backhaul capacity to support expanded SCADA radio coverage
4. Replace RMS900 RTUs in critical sites with vendor supported compatible RTUs

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00827.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00827B - T15080 SCADA RADIO REPLACEMENT & EXPANSION

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00827B

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00827.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00827B - T15080 SCADA RADIO REPLACEMENT & EXPANSION
Workpaper Detail:	00827B.001 - T15080 SCADA RADIO REPLACEMENT & EXPANSION
In-Service Date:	03/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	837	0	0
Non-Labor	1,024	0	0
NSE	0	0	0
Total	**1,861**	**0**	**0**
FTE	7.3	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00827C - T14048 SDGE OUT OF BAND MGMT

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00827.0
Category: F. IT
Category-Sub: 1. Technical Obsolescence
Workpaper Group: 00827C - T14048 SDGE OUT OF BAND MGMT

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	198	0	0
Non-Labor	Zero-Based	0	0	0	0	0	174	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**372**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0

Business Purpose:

The project will implement Out of Band Management solution for 412 locations across the SDG&E and SCG service territories. The project scope will include procurement, deployment and configuration of 700 Out of Band Management devices. Providing this Out of Band Mgmt solution allows for network support personnel to remotely connect to all sites throughout the service territory regardless of the network state. This will enable faster response time and provide for continued coverage and support with limited resource availability.

Physical Description:

Out of Band Management for 265 SDGE Sites.

Project Justification:

The project will enable IT to meet ever growing network demands and achieve labor reductions through attrition and reduction of positions that are budgeted but unfilled. This results in cost savings of $372k annually for SDGE. The project will also enable the Company to realize significant cost savings by reducing IT fleet size by 4 vehicles, eliminating the need to add new vehicles for filled vacancies and reducing the need to replace aging vehicles. The reductions of these vehicles reduces our risks of CMVI for the Company, reduces fuel consumption and lessens gas emissions.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00827.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00827C - T14048 SDGE OUT OF BAND MGMT

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00827C

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00827.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00827C - T14048 SDGE OUT OF BAND MGMT
Workpaper Detail:	00827C.001 - T14048 SDGE OUT OF BAND MGMT
In-Service Date:	06/30/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	198	0	0
Non-Labor	174	0	0
NSE	0	0	0
Total	**372**	**0**	**0**
FTE	1.3	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00833C - T16021 Advanced Distribution Mgmt System Phase 3

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833C - T16021 Advanced Distribution Mgmt System Phase 3

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	282	0	0
Non-Labor	Zero-Based	0	0	0	0	0	820	133	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,102**	**133**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0

Business Purpose:

The ADMS3 project will be required to implement new devices, protection schemes, implement the product version of the damage assessment tool, provide DERMS support within NMS, improve power flow solutions, and implement a centralized Volt-VAr optimization tool.

Physical Description:

Upgrade and configure major NMS code lines (1.12 SP3, then 2.3)
Upgrade NMS and FocalPoint application server infrastructure including OS and WebLogic
Upgrade FocalPoint application to version 6.6.5
Configure NMS and FocalPoint software for new device classes
Build foundation for DERMS and NMS integration including As-Switched Model, DER Time to Live, and Dispatch Schedules into NMS
Migrate to NMS native damage assessment tool and enable non-outage events
Develop requirements and design for conducting damage assessment through NMS mobile application
Implement NMS Volt-VAr optimization tools based on results from Volt-VAr working group
Improve power flow solutions by incorporating transmission breaker status and phase angles

Project Justification:

Cost Avoidance, Grid Reliability and Safety – Configuration patching in NMS without incurring a system outage.
System Reliability – NMS and FocalPoint hardware will be re-architected and installed on brand new, optimized hardware
Cost Avoidance, Grid Reliability and Safety – Improved reliability and safety with the support of new SCADA devices
Cost Avoidance and Grid Reliability – Optimize the efficiency and potentially reduce customer impact of planned and unplanned switching
Improved Outage Reporting

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833C - T16021 Advanced Distribution Mgmt System Phase 3

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00833C

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833C - T16021 Advanced Distribution Mgmt System Phase 3
Workpaper Detail:	00833C.001 - T16021 Advanced Distribution Mgmt System Phase 3
In-Service Date:	12/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	282	0	0
Non-Labor	820	0	0
NSE	0	0	0
Total	**1,102**	**0**	**0**
FTE	2.5	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833C - T16021 Advanced Distribution Mgmt System Phase 3
Workpaper Detail:	00833C.002 - T16021 Advanced Distribution Mgmt System Phase 3
In-Service Date:	01/31/2018

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	0	133	0
NSE	0	0	0
Total	**0**	**133**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00833E - T19017 SDG&E Data Warehouse and Hadoop Platform Upgrade

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00833.0
Category: F. IT
Category-Sub: 1. Technical Obsolescence
Workpaper Group: 00833E - T19017 SDG&E Data Warehouse and Hadoop Platform Upgrade

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	104	169	0
Non-Labor	Zero-Based	0	0	0	0	0	962	1,166	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,066**	**1,335**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.9	1.5	0.0

Business Purpose:

This project is a base project to ensure that all at risk Data Warehouses (Smart Meter DW, Customer DW, Engineering DW and Customer Contact Center DW) and ETL environment can continue to operate at the base level to meet business requirements. The goal is to decommission all unsupported and at-risk environments by leveraging Open Source ETL tool for data staging and transformation using Hadoop. SQL Data Warehouse would still be used as the final BI layer to offer a seamless transition for business users for their reporting needs. This project will deliver the design and development of one BI report directly against a high volume data source in the Hadoop Data Lake. This project will also include the upgrade of the Hadoop environment to enable more security features within Hadoop.

Physical Description:

1) Consolidate the four at risk DW onto one single SQL Server HW used for BI reporting
2) Upgrade SQL Server SW to the latest version: SQL 2016.
3) Rewrite all Informatica Power Center ETL and SQL Stored Procedures using an Open Source ETL tool for data staging and transformations in Hadoop.
4) Upgrade Hadoop Environment to HDP 2.4 to take advantage of new security features.

Project Justification:

1) Eliminate all at risk environment to meet base level operations and services.
2) Leverage Strategic Hadoop Data Lake Platform to load data and transformation thus allowing other projects to leverage the same data in the Lake.
3) Improve daily Data Load processing time.
4) Eliminate Informatica Power Center SW by leverage Open Source ETL tool
5) Reduce overall disk space in SQL Server by leveraging low-cost storage used by Hadoop Platform.
6) Take advantage of Hadoop data security to manage access control from files level down to rows and columns levels (with encryption).

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833E - T19017 SDG&E Data Warehouse and Hadoop Platform Upgrade

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00833E

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833E - T19017 SDG&E Data Warehouse and Hadoop Platform Upgrade
Workpaper Detail:	00833E.001 - T19017 SDG&E Data Warehouse and Hadoop Platform Upgrade
In-Service Date:	12/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	104	0	0
Non-Labor	892	0	0
NSE	0	0	0
Total	**996**	**0**	**0**
FTE	0.9	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833E - T19017 SDG&E Data Warehouse and Hadoop Platform Upgrade
Workpaper Detail:	00833E.002 - T19017 SDG&E Data Warehouse and Hadoop Platform Upgrade
In-Service Date:	12/31/2018

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	169	0
Non-Labor	0	1,051	0
NSE	0	0	0
Total	**0**	**1,220**	**0**
FTE	0.0	1.5	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833E - T19017 SDG&E Data Warehouse and Hadoop Platform Upgrade
Workpaper Detail:	00833E.003 - T19017 SDG&E Data Warehouse and Hadoop Platform Upgrade
In-Service Date:	12/31/2017
Description:	

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	70	0	0
NSE	0	0	0
Total	**70**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833E - T19017 SDG&E Data Warehouse and Hadoop Platform Upgrade
Workpaper Detail:	00833E.004 - T19017 SDG&E Data Warehouse and Hadoop Platform Upgrade
In-Service Date:	09/30/2018
Description:	

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	0	115	0
NSE	0	0	0
Total	**0**	**115**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00834E - T19012 LTE Communications Network

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834E - T19012 LTE Communications Network

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	0	889	762
Non-Labor	Zero-Based	0	0	0	0	0	0	22,000	49,500
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**22,889**	**50,262**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	7.7	6.6

Business Purpose:

Existing wireless communications infrastructure is increasingly inadequate to meet the demand for greater volumes of data at high speed. Expanding the existing systems can provide coverage over a larger area but cannot meet the demand for high volume low latency data and control. To address the need SDGE will implement a private broadband wireless digital communications network.

Physical Description:

Implement a private LTE network that can be expanded in stages, as needed, to provide communications capability in traditionally difficult to reach locations in addition to providing a wireless network with broadband capabilities for a variety of uses - voice, SCADA, Advanced SCADA, pipeline integrity and others.

Project Justification:

Expanded communications coverage for historically high risk fire areas and other areas will improve service reliability, response times and employee and public safety.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834E - T19012 LTE Communications Network

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00834E

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834E - T19012 LTE Communications Network
Workpaper Detail:	00834E.002 - T19012 LTE Communications Network
In-Service Date:	12/31/2018

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	889	0
Non-Labor	0	22,000	0
NSE	0	0	0
Total	**0**	**22,889**	**0**
FTE	0.0	7.7	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834E - T19012 LTE Communications Network
Workpaper Detail:	00834E.003 - T19012 LTE Communications Network
In-Service Date:	11/30/2019

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	762
Non-Labor	0	0	49,500
NSE	0	0	0
Total	**0**	**0**	**50,262**
FTE	0.0	0.0	6.6

Note: Totals may include rounding differences.

Beginning of Workpaper Group

00834G - T19013 Downtown SCADA Communications Infrastructure Modernization

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834G - T19013 Downtown SCADA Communications Infrastructure Modernization

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	476	1,270	959
Non-Labor	Zero-Based	0	0	0	0	0	734	2,475	4,730
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,210**	**3,745**	**5,689**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	4.1	11.0	4.1

Business Purpose:

The downtown area, where we service some of our largest high profile customers, needs communications infrastructure upgrades. The current copper wires are more than twenty years old, suffer frequent interruptions, and will not support the transformation to IP SCADA communications and remote network management. Approximately 10 of the existing Remote Terminal Units (RTU) will be replaced with IP capable units.

Physical Description:

This project will replace the aging copper cable infrastructure in the downtown area with fiber optic cable and install network infrastructure (switches, routers, etc.) as needed, replace legacy RTU with IP capable units and eliminate the use of a legacy, nonsupported, communication protocol, and implement remote monitoring and management of the network assets.

Project Justification:

Improved communications reliability will promote situational awareness concerning the downtown area, enable remote management of communications infrastructure, improve outage response, shorten the time needed to stand up new sites from IT communications prespective.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834G - T19013 Downtown SCADA Communications Infrastructure Modernization

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00834G

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834G - T19013 Downtown SCADA Communications Infrastructure Modernization
Workpaper Detail:	00834G.001 - T19013 Downtown SCADA Communications Infrastructure Modernization
In-Service Date:	12/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	476	0	0
Non-Labor	734	0	0
NSE	0	0	0
Total	**1,210**	**0**	**0**
FTE	4.1	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834G - T19013 Downtown SCADA Communications Infrastructure Modernization
Workpaper Detail:	00834G.002 - T19013 Downtown SCADA Communications Infrastructure Modernization
In-Service Date:	12/31/2018

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	1,270	0
Non-Labor	0	2,475	0
NSE	0	0	0
Total	**0**	**3,745**	**0**
FTE	0.0	11.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834G - T19013 Downtown SCADA Communications Infrastructure Modernization
Workpaper Detail:	00834G.003 - T19013 Downtown SCADA Communications Infrastructure Modernization
In-Service Date:	05/31/2019

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	959
Non-Labor	0	0	4,730
NSE	0	0	0
Total	**0**	**0**	**5,689**
FTE	0.0	0.0	4.1

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00834H - T15088 SDGE ENTERPRISE DESKTOP REFRESH

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834H - T15088 SDGE ENTERPRISE DESKTOP REFRESH

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	147	0	0
Non-Labor	Zero-Based	0	0	0	0	0	2,781	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**2,928**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0

Business Purpose:

This project will resolve the following issues:
Previous hardware standards for memory, CPU, etc, have proven to be inadequate for many users, as computing resource requirements to run advanced applications such as GIS and Click have surpassed the capabilities of the existing workstation hardware. This has resulted in significant work efficiency impacts, particularly to employees in operations and engineering roles.
Business units have been purchasing new/replacement desktop hardware out of O&M at the rate of 150/month over past 6 months. The last enterprise system refresh was 2011-2014, Over 50% of these machines will be out of warranty by the end of 2017.
Calls have been increasing to the IT support groups to provide repair and/or replace assistance for degraded service on machines in the environment.

Physical Description:

Procure/configure/deploy ~3300 Windows 10 workstations to office-based SDGE employees. Workstations include combination of desktops, laptops and tablets; laptops will be provided in “bundle” to include dock, adapters/dongles, headset, case. One workstation per employee. An allowance for replacement of ~10% of monitors/peripherals is included.
Perform foundational work to support above deployment, including Windows 10 image development and testing.
Assess, test, remediate and validate applications compatibility on Windows 10 platform. Remediation could include minor code changes, application virtualization (App-V), or other workarounds (ie, VDI running Win 7).
Deploy Office 365 tools to same users as part of desktop refresh, including but not limited to: OfficeProPlus, Skype for Business, SharePoint Online, OneDrive, Delve. Project has strong dependency on Office 365 Adoption Project for organizational change management.
Update CMDB and solidify asset management process to ensure accurate asset tracking

Project Justification:

Significantly improved client experience relative to workstation performance, productivity tool integration and usability; increasing employee productivity and reducing frustration/complaints.
O&M cost avoidance to replace underperforming or aged hardware
Reduced hardware repair calls to Service Desk and IT support groups.
Increased mobility, flexibility for office workers (refresh will increase laptop:desktop ratio)

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834H - T15088 SDGE ENTERPRISE DESKTOP REFRESH

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00834H

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834H - T15088 SDGE ENTERPRISE DESKTOP REFRESH
Workpaper Detail:	00834H.001 - T15088 SDGE ENTERPRISE DESKTOP REFRESH
In-Service Date:	12/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	147	0	0
Non-Labor	2,781	0	0
NSE	0	0	0
Total	**2,928**	**0**	**0**
FTE	1.3	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00834J - T19018 SQL Server 2016 Enterprise Environment

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00834.0
Category: F. IT
Category-Sub: 1. Technical Obsolescence
Workpaper Group: 00834J - T19018 SQL Server 2016 Enterprise Environment

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	44	0	0
Non-Labor	Zero-Based	0	0	0	0	0	1,276	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,320**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0

Business Purpose:

The Sempra SQL shared database servers support over 1500 databases for key business areas such as Finance, Emergency Services, Customer Programs, E&FP, Gas Operations, Smart Meter Operations, Regulatory Affairs, MyInfo and IT Services. Additionally, the Sempra SQL shared database servers are used as the host of information for applications such as MCS, SEAD, Reveal, SMOC, ClickMobile. Some of these areas have requirements that are regulatory mandates.
The hardware components for SQL 2012 shared database servers are 5 years old and are scheduled to fall out of support, and with increasing demand this will strain the current infrastructure and make it vulnerable to failure. The software components for SQL 2005 shared database servers have already gone out of support, and do not support security initiatives for handling encryption-at-rest.

Physical Description:

Project will consist of planning and implementing the SQL 2016 shared server environment comprising of 9 servers to include DEV, QA, PROD and DR environments. Upgrade to a higher-performance hardware platform and to the current version of Windows operating system and SQL Server database software. Include support for a built-in data encryption-at-rest, and support for data encryption-in-transit and data masking capabilities. Include support for High Availability in PROD environment. Include support for database backup compression which will save money on backup storage. With this new environment, projects will be able to save money otherwise spent on paying for their own dedicated database servers and SQL Server licensing costs.

Project Justification:

HA will provide the ability to avoid business disruption/delays associated with database server failure. Built-in data encryption-at-rest will provide ability to avoid legal liabilities associated with unencrypted data as well as intangibles such as loss of customer confidence and brand reputation. Support for encryption-in-transit through SSL will provide mechanism for applications to encrypt their connections to the SQL Server databases. Support for Always Encrypted capability will provide applications ability to secure and protect sensitive data even from DBAs. Support for Dynamic Data Masking capabilities to limit exposure of sensitive data by masking it to non-privileged users. SQL 2016 provides support for these additional new features and capabilities that applications will be able to leverage to improve security, operations and performance: updateable columnstore indexes to improve performance of data queries), temporal tables for auditing/capturing data changes (potential usage for SOX applications), built-in JSON support, row-level security, memory-optimized tables, Stretch Database (integration with Azure).

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834J - T19018 SQL Server 2016 Enterprise Environment

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00834J

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834J - T19018 SQL Server 2016 Enterprise Environment
Workpaper Detail:	00834J.001 - T19018 SQL Server 2016 Enterprise Environment
In-Service Date:	06/30/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	44	0	0
Non-Labor	1,276	0	0
NSE	0	0	0
Total	**1,320**	**0**	**0**
FTE	0.4	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00834K - T19019 2017 SDGE Mainframe Capacity Hardware Upgrade

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834K - T19019 2017 SDGE Mainframe Capacity Hardware Upgrade

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	0	95	141
Non-Labor	Zero-Based	0	0	0	0	0	0	2,178	4,434
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**2,273**	**4,575**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.2

Business Purpose:

The monthly Mainframe Capacity Management reports show continued mainframe growth, with SDGE being the primary consumer, seeing 30% growth in capacity over the last 7 months. The SDGE workload was not anticipated and was primarily the result of net new data mining being performed by the Customer Operations team. Regulatory requirements and limitations of the CISCO application were the primary reasons for the data mining. In addition, since October of 2015, CISCO has experienced a chronic application program abend condition which on several occassions has resulted in the CISCO 6am FInance SLA (Service Level Agreement) being missed (including a miss for the entire 2016 year). Processing errors have occurred for numerous reasons, but are primarily related to data issues (OC4, OC7 and User errors for invalid data). At times the errors in jobs are rerun 2-6 times before successfully completing. The delays associated with the reruns result in the batch workload extending into daytime call center processing, maximizing processor usage for extended periods of time and requiring the development environment to be limited on their assigned processor usage, extending the time for development jobs to complete, thereby impacting project schedules. Based on current capacity and performance reports, coupled with our understanding that SDGE growth is expected to climb, we anticipate needing to run at full capacity 100% of the time commencing November 2017. Between now and November 2017, even with running at full capacity, the risk is still high for missing the CISCO SLA due to the chronic CISCO application abend condition.

Physical Description:

Refresh mainframe architecture, adding additional capacity to support business application growth. Replace aging storage technology, providing improved performance for all business transactions and nightly billing cycle. Align DR platform hardware with Production hardware to maximiz/leverage technology enhancements.

Project Justification:

•Production performance enhancements can be exploited by replacing end-of-life DR hardware platform.
• Early planning for upgrade will provide opportunities to secure preferred ISV pricing.
• I/O performance improved significantly by exploitiung new stoarge technologies.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834K - T19019 2017 SDGE Mainframe Capacity Hardware Upgrade

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00834K

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834K - T19019 2017 SDGE Mainframe Capacity Hardware Upgrade
Workpaper Detail:	00834K.002 - T19019 2017 SDGE Mainframe Capacity Hardware Upgrade
In-Service Date:	12/31/2018

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	95	0
Non-Labor	0	2,178	0
NSE	0	0	0
Total	**0**	**2,273**	**0**
FTE	0.0	0.8	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834K - T19019 2017 SDGE Mainframe Capacity Hardware Upgrade
Workpaper Detail:	00834K.003 - T19019 2017 SDGE Mainframe Capacity Hardware Upgrade
In-Service Date:	10/31/2019

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	141
Non-Labor	0	0	4,434
NSE	0	0	0
Total	**0**	**0**	**4,575**
FTE	0.0	0.0	1.2

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00834M - T19025 SDGE Private Network Expansion and Refresh (Phase 3)

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00834.0
Category: F. IT
Category-Sub: 1. Technical Obsolescence
Workpaper Group: 00834M - T19025 SDGE Private Network Expansion and Refresh (Phase 3)

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	594	0	0
Non-Labor	Zero-Based	0	0	0	0	0	3,645	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**4,239**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	5.2	0.0	0.0

Business Purpose:

The SDG&E network has a number of microwave (MW) communication infrastructure with aging hardware that were initially installed for a TDM-based environment; some of these links are also at capacity while others suffer from continued performance issues. It has become increasingly difficult to obtain replacement parts. Advancing field technologies require the deployment of new IP MW radios with MPLS and Synchronous Ethernet capabilites (not currently supported by legacy microwave infrastructure)
In addition to the existing legacy links above, the Encina smokestack, currently a communications hub for SDG&E and the major MW route for all North County sites is scheduled for demolition in January 2018 putting a number of MW links in jeopardy and in need of migration.

Physical Description:

1) Upgrade existing SDGE microwave radio backbone sites to provide needed network redundancy, add capacity and replace End of Life and End of Support device (EOL/EOS).
2) Enable native Internet Protocol (IP) connectivity over the MW radio network to replace aged Ethernet over TDM (NTU) devices which will allow for a more increased and scalable IP capacity at all sites.
3) Migrate substations on leased lines to private network to reduce O&M, increase performance and reliability and add security
4) Find suitable shelter and tower location to replace Encina Smokestack and design; license and install alternate microwave communication infrastructure to maintain SDG&E network integrity and reliability

Project Justification:

Lowering risk to business impacting outages caused by aging equipment.
Deploy native IP-based MW radios to work seamlessly with an all-MPLS network while allowing a natural transition for TDM circuits.
Enable additional bandwidth to existing SDGE microwave radio paths.
Refresh existing microwave radio equipment to vendor supportable levels.
Reduce outage times to critical infrastructure by introducing dynamic network redundancy.
Enable additional bandwidth for ongoing and future projects such as SDG&E field technology projects.
Reduce complexity of operational support by implementing a single network management system (currently two).

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834M - T19025 SDGE Private Network Expansion and Refresh (Phase 3)

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00834M

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834M - T19025 SDGE Private Network Expansion and Refresh (Phase 3)
Workpaper Detail:	00834M.001 - T19025 SDGE Private Network Expansion and Refresh (Phase 3)
In-Service Date:	11/30/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	594	0	0
Non-Labor	3,645	0	0
NSE	0	0	0
Total	**4,239**	**0**	**0**
FTE	5.2	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00834N - T19026 SDGE Private Network Expansion and Refresh (Phase 4)

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834N - T19026 SDGE Private Network Expansion and Refresh (Phase 4)

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	0	594	0
Non-Labor	Zero-Based	0	0	0	0	0	0	3,080	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**3,674**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	5.2	0.0

Business Purpose:

The SDG&E network has a number of microwave (MW) communication infrastructure with aging hardware that were initially installed for a TDM-based environment; some of these links are also at capacity while others suffer from continued performance issues. It has become increasingly difficult to obtain replacement parts. Advancing field technologies require the deployment of new IP MW radios with MPLS and Synchronous Ethernet capabilites (not currently supported by legacy microwave infrastructure).
This phase aims to:
1-Replace remaining end of life MW hardware, install IP-based technology; expand the microwave coverage to increase efficiency and eliminate network points of failure; also add security features and increase capacity to existing links for future growth on the corporate and substation networks.
2-Migrate key sites currently on leased line circuits to private MW to increase security and reliability and reduce O&M expenditures.
3-Migrate Encina MW radio & equipment to a new location ahead of the Encina smokestack demolition scheduled for 2018.

Physical Description:

This phase will:
1 - Upgrade remaining existing SDGE microwave radio backbone sites to provide needed network redundancy, add capacity and replace End of Life and End of Support device (EOL/EOS).
2 - Enable native Internet Protocol (IP) connectivity over the MW radio network to replace aged Ethernet over TDM (NTU) devices which will allow for a more increased and scalable IP capacity at all sites.
3 - Migrate substations on leased lines to private network to reduce O&M, increase performance and reliability and add security.
4 - Find suitable shelter and tower location to replace Encina Smokestack and design; license and install alternate microwave communication infrastructure to maintain SDG&E network integrity and reliability.

Project Justification:

Lowering risk to business impacting outages caused by aging equipment.
Deploy native IP-based MW radios to work seamlessly with an all-MPLS network while allowing a natural transition for TDM circuits
Enable additional bandwidth to existing SDGE microwave radio paths
Refresh existing microwave radio equipment to vendor supportable levels.
Reduce outage times to critical infrastructure by introducing dynamic network redundancy
Enable additional bandwidth for ongoing and future projects such as SDG&E field technology projects
Reduce complexity of operational support by implementing a single network management system (currently two).

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834N - T19026 SDGE Private Network Expansion and Refresh (Phase 4)

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00834N

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834N - T19026 SDGE Private Network Expansion and Refresh (Phase 4)
Workpaper Detail:	00834N.001 - T19026 SDGE Private Network Expansion and Refresh (Phase 4)
In-Service Date:	11/30/2018

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	594	0
Non-Labor	0	3,080	0
NSE	0	0	0
Total	**0**	**3,674**	**0**
FTE	0.0	5.2	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group

00834O - T19027 Transmission Communications Reliability Enhancement - Phase II

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00834.0
Category: F. IT
Category-Sub: 1. Technical Obsolescence
Workpaper Group: 00834O - T19027 Transmission Communications Reliability Enhancement - Phase II

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	465	931	606
Non-Labor	Zero-Based	0	0	0	0	0	6,304	11,780	14,025
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**6,769**	**12,711**	**14,631**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	4.0	8.1	5.3

Business Purpose:

SDGE has experienced failures of legacy Time Division Multiplexing (TDM) equipment resulting in several long duration communication outages at critical substations. The TDM network is a complicated system of technologies that has limited remote monitoring and failover capabilities resulting in delayed service restoration as on-site investigation, troubleshooting, and restoration is required. Over the last decade, telecommunications have been undergoing an industry wide transformation from TDM-centric infrastructure to IP/MPLS network services. Support of legacy TDM network devices and interface equipment is becoming increasingly difficult to maintain due to lack of vendor support.
Phase II (all remaining Electric Transmission and Distribution substations) of the TCRI project will standardize the network communications equipment and monitoring by replacing the existing older network communication inter-site and intra-site infrastructure. The project will further address single points of failure in the network by providing diverse communication paths, dynamic & intelligent rerouting, robust monitoring (24x7x365 NOC), and alerting and correlation capabilities.

Physical Description:

Phase II of this project will complete the design, implementation, and commissioning of standardized communication infrastructure developed during Phase I of this project. The remaining Electric Transmission substations (~100) and associated transit communication sites are included within the scope of this project. All remaining legacy telecommunications equipment will be decommissioned and removed from the field.

Services such as LMR, LPCN and SCADA Radio are out of scope for this project
.

Project Justification:

Enable faster provisioning and prioritization of communications services. Provide increased visibility and awareness of underlying network communication system problems and improve reliability of SCADA communications. The project will also enable the capability for redundant communications for SCADA devices in effort to improve availability. Enable real-time network monitoring and Service Level Agreements (SLA's) on communications pathways.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834O - T19027 Transmission Communications Reliability Enhancement - Phase II

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00834O

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834O - T19027 Transmission Communications Reliability Enhancement - Phase II
Workpaper Detail:	00834O.001 - T19027 Transmission Communications Reliability Enhancement - Phase II
In-Service Date:	12/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	465	0	0
Non-Labor	6,304	0	0
NSE	0	0	0
Total	**6,769**	**0**	**0**
FTE	4.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834O - T19027 Transmission Communications Reliability Enhancement - Phase II
Workpaper Detail:	00834O.002 - T19027 Transmission Communications Reliability Enhancement - Phase II
In-Service Date:	12/31/2018

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	931	0
Non-Labor	0	11,780	0
NSE	0	0	0
Total	**0**	**12,711**	**0**
FTE	0.0	8.1	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834O - T19027 Transmission Communications Reliability Enhancement - Phase II
Workpaper Detail:	00834O.003 - T19027 Transmission Communications Reliability Enhancement - Phase II
In-Service Date:	11/30/2019

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	606
Non-Labor	0	0	14,025
NSE	0	0	0
Total	**0**	**0**	**14,631**
FTE	0.0	0.0	5.3

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00834P - T19028 NOC Modernization

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834P - T19028 NOC Modernization

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	179	0	0
Non-Labor	Zero-Based	0	0	0	0	0	4,079	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**4,258**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0

Business Purpose:

In the last few years, the IT organization has added a number of new services, applications, network upgrades and circuits and users. These services doubled the demand for the Network Operation Center (NOC) and staff to meet the Service Level Agreements and Service Level Objectives for its business and IT customers. IBM has recently completed an Operational Readiness Review for NOC and concluded that for the NOC to keep up with the current and future demand of clients, applications and services, it needs to consolidate and upgrade its fragmented tools, reengineer its legacy processes and structures, provide a single dashboard for monitoring and alerting, speed automations of tasks and dramatically modernize its existing legacy environment. The NOC modernization project will prepare the NOC and its staff to exceed client expectations for existing and future workloads with IT and OT network convergence including new services and upgrades.

Physical Description:

Update and improve on ITOT Network tools for monitoring, automation, and management for domain level fault isolation based on current organizational structure by:
Providing the necessary tools to monitor key services.
Providing a single dashboard for monitoring and alerting of IT/OT network events.
Automate event notifications and ticket generations for key network incidents.
Automate reporting to key end clients.
Provide streamlined processes for staff.
Provide state of the art video screens for staff to efficiently manage day to day operations in alignment with GridOps video displays.

Project Justification:

Lower Mean Time to Resolution (MTTR) through proactive monitoring and alerting.
Lower provisioning time for some existing and new services.
Provide a higher level of SLA to end clients.
Proactive notification, isolation, and resolution of network problems prior to unplanned outages.
Improved domain level fault isolation based on current organizational structure.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834P - T19028 NOC Modernization

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00834P

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834P - T19028 NOC Modernization
Workpaper Detail:	00834P.001 - T19028 NOC Modernization
In-Service Date:	11/30/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	179	0	0
Non-Labor	4,079	0	0
NSE	0	0	0
Total	**4,258**	**0**	**0**
FTE	1.6	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00834Q - T19009 SDGE Self Support Small Cap 2017 - 2019 (Routine)

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00834.0
Category: F. IT
Category-Sub: 1. Technical Obsolescence
Workpaper Group: 00834Q - T19009 SDGE Self Support Small Cap 2017 - 2019 (Routine)

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	0	0	0
Non-Labor	Zero-Based	0	0	0	0	0	500	635	635
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**500**	**635**	**635**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Business Purpose:

This project funding request is to cover multiple SDGE Small Cap projects for 2017 - 2019 covering routine business customer operational issues, safety, network improvements, Information Security, faster service delivery, collaboration, and innovation.

Physical Description:

Small Cap 2017 - 2019 will cover individual capital purchases benefitting the overall network, security, collaboration and its operational efficiency. All purchases will fall within the confines of the capitalization rules, including some of the following guidelines:
- Primary use is purchase replacements for defective, broken, or expired infrastructure. Utilization to address critical capacity issues is also acceptable.
- Hardware and Hardware labor ONLY
- Quotes should have line item detail to ensure compliance with capitalization policy
- IT “Physical” Hardware (tangible assets): > $5,000
- IT “Virtual” Hardware (intangible assets): no cost
- Substantial Minor Units of Property: > $10,000
  - Additions/betterments – Facilities
  - Environmental costs – Installation, remediation, removal, abandonments, and remediation
- Remodeling (e.g. demo, wall construction, painting, flooring, etc): > $25,000
- Total per system cost (h/w, h/w labor & overheads): < $75,000
- No asset bundling or grouping
- SQL Server licenses not eligible

Project Justification:

Small Cap projects improve the overall performance of the network, thereby making it easier for employees to do their job more effectively and efficiently.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834Q - T19009 SDGE Self Support Small Cap 2017 - 2019 (Routine)

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00834Q

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834Q - T19009 SDGE Self Support Small Cap 2017 - 2019 (Routine)
Workpaper Detail:	00834Q.001 - T19009 SDGE Self Support Small Cap 2017 - 2019 (Routine)
In-Service Date:	Not Applicable

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	500	635	635
NSE	0	0	0
Total	**500**	**635**	**635**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00834T - T16053 WAN LIFE CYCLE EXTENSION 2016

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00834.0
Category: F. IT
Category-Sub: 1. Technical Obsolescence
Workpaper Group: 00834T - T16053 WAN LIFE CYCLE EXTENSION 2016

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	63	0	0
Non-Labor	Zero-Based	0	0	0	0	0	247	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**310**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0

Business Purpose:

This project is being developed to perform a lifecycle extension of the Wide Area Network. Planned for 2016 are eight (8) core WAN locations (Monterey Park, Rancho Bernardo, Century Park, One Wilshire, Mission, Metro, Miramar, Gas Company Tower) for a total 16 core devices, replacing end of life/end of sale core components for each device while maximizing the existing asset.
This project is focused on lifecycle extension only to maintain vendor supportability, system reliability, and the ability to continue to meet evolving client requirements. This project will not implement new architectures or network services.

Physical Description:

Fully warranted and vendor supported Juniper MX-based routing infrastructure for the next 5 years.
“Push” integration between router devices and network controller

Project Justification:

Refreshing the Juniper core device components will ensure the company has a reliable, highly available and supportable WAN infrastructure by bringing the WAN up to current generation of operational software.
Continued vendor support to reduce time to restore during unplanned incidents.
Continued vendor software updates to address reliability and security issues.
Continued reliability of network communication utilized to support applications used by clients and customers.
Upgrade EOL Route Engines, Switch Controller Boards and I/O boards that can no longer be software upgraded.
Extend the functional life of the existing WAN infrastructure for another 5-7 years.
Avoid a “forklift” upgrade of the WAN in the next 1-3 years (20MM$+).
Move from monitor/modeling mode to active Software Defined Networking functionality of Northstar.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834T - T16053 WAN LIFE CYCLE EXTENSION 2016

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00834T

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834T - T16053 WAN LIFE CYCLE EXTENSION 2016
Workpaper Detail:	00834T.001 - T16053 WAN LIFE CYCLE EXTENSION 2016
In-Service Date:	04/30/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	63	0	0
Non-Labor	247	0	0
NSE	0	0	0
Total	**310**	**0**	**0**
FTE	0.5	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00834U - T19044 SDGE Private Network Expansion & Refresh (Phase 5)

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834U - T19044 SDGE Private Network Expansion & Refresh (Phase 5)

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	0	0	595
Non-Labor	Zero-Based	0	0	0	0	0	0	0	3,300
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3,895**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2

Business Purpose:

The SDG&E network has a number of microwave (MW) communication infrastructure with aging hardware that were initially installed for a TDM-based environment; some of these links are also at capacity while others suffer from continued performance issues. It has become increasingly difficult to obtain replacement parts. Advancing field technologies require the deployment of new IP MW radios with MPLS and Synchronous Ethernet capabilites (not currently supported by legacy microwave infrastructure).

Physical Description:

This upgrade aims to:
1-Replace end of life MW hardware, install IP-based technology; expand the microwave coverage to increase efficiency and eliminate network points of failure,; also add security features and increase capacity to existing links for future growth on the corporate and substation networks.
2-Migrate key sites currently on leased line circuits to private MW to increase security and reliability and reduce O&M expenditures.

Project Justification:

Lowering risk to business impacting outages caused by aging equipment.
Deploy native IP-based MW radios to work seamlessly with an all-MPLS network while allowing a natural transition for TDM circuits.
Enable additional bandwidth to existing SDGE microwave radio paths.
Refresh existing microwave radio equipment to vendor supportable levels.
Reduce outage times to critical infrastructure by introducing dynamic network redundancy.
Enable additional bandwidth for ongoing and future projects such as SDG&E field technology projects.
Reduce complexity of operational support by implementing a single network management system (currently two).

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834U - T19044 SDGE Private Network Expansion & Refresh (Phase 5)

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00834U

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834U - T19044 SDGE Private Network Expansion & Refresh (Phase 5)
Workpaper Detail:	00834U.001 - T19044 SDGE Private Network Expansion & Refresh (Phase 5)
In-Service Date:	10/31/2019

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	595
Non-Labor	0	0	3,300
NSE	0	0	0
Total	**0**	**0**	**3,895**
FTE	0.0	0.0	5.2

Note: Totals may include rounding differences.

Beginning of Workpaper Group

00834V - T16051 SDGE MAINFRAME CAPACITY UPGRADE AND HW TECH REFRESH

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834V - T16051 SDGE MAINFRAME CAPACITY UPGRADE AND HW TECH REFRESH

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	22	0	0
Non-Labor	Zero-Based	0	0	0	0	0	3	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**25**	**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 replace the mainframe hardware with an upgraded configuration that will satisfy current mainframe capacity demands.
The upgraded hardware will utilize much faster 10GB network technology.
Both Production and DR mainframe hardware will be upgraded to current, more efficient, fully supported technology.

Physical Description:

Replace the mainframe hardware with an upgraded configuration that will satisfy current mainframe capacity demands.
Upgraded hardware will utilize much faster 10GB network technology.
SLAs for existing workload will be consistently met.
The DR machine will effectively mirror production.
Acquisition and installation of upgraded solid state storage array in scope.

Project Justification:

Restore the performance required to consistently meet current SLAs.
SDGE Customer Operations will be able to mine customer data to satisfy regulatory requirements.
The DR machine will be capable of handling the production workload.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834V - T16051 SDGE MAINFRAME CAPACITY UPGRADE AND HW TECH REFRESH

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00834V

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834V - T16051 SDGE MAINFRAME CAPACITY UPGRADE AND HW TECH REFRESH
Workpaper Detail:	00834V.001 - T16051 SDGE MAINFRAME CAPACITY UPGRADE AND HW TECH REFRESH
In-Service Date:	03/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	22	0	0
Non-Labor	3	0	0
NSE	0	0	0
Total	**25**	**0**	**0**
FTE	0.2	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
15869A - T15869 SMART GRID ENDPOINT PROTECTION

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	15869.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	15869A - T15869 SMART GRID ENDPOINT PROTECTION

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	24	0	0
Non-Labor	Zero-Based	0	0	0	0	0	194	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**218**	**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 test and deploy SDG&E's endpoint protection technologies to identified Smart Grid servers and workstations in the data centers, control centers, substations, and field environments.

Physical Description:

Develop and test proper endpoint protection policies and processes for each use case (connected/disconnected). Add hardware and licensing to SDG&E's remote privileged access management technology to support Smart Grid applications. Establish new internal remote access process and procedures for internal and external vendors and administrators.

Project Justification:

Visibility and protection against advanced malware threats leveraging next generation end point protection solution for Smart Grid server platforms. Automatically change account passwords for Smart Grid applications for better protection.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	15869.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	15869A - T15869 SMART GRID ENDPOINT PROTECTION

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 15869A

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	15869.0
Category:	F. IT
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	15869A - T15869 SMART GRID ENDPOINT PROTECTION
Workpaper Detail:	15869A.001 - T15869 SMART GRID ENDPOINT PROTECTION
In-Service Date:	03/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	24	0	0
Non-Labor	194	0	0
NSE	0	0	0
Total	**218**	**0**	**0**
FTE	0.2	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group

00833G - T19041 Electronic Bill Presentment & Payment (EBPP) for Sundry Billing & Customer Generation

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	F. IT
Category-Sub:	4. Business Optimization
Workpaper Group:	00833G - T19041 Electronic Bill Presentment & Payment (EBPP) for Sundry Billing & Customer Generation

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	0	381	0
Non-Labor	Zero-Based	0	0	0	0	0	0	1,210	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**1,591**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0

Business Purpose:

Currently non electric and gas billing (Sundry Billing) processes requires that a paper invoice be mailed out and the payer can only send in a physical check to pay for the services being billed. This project proposes to purchase and deploy SAP's Biller Direct software. Biller Direct is EBPP (Electronic Bill Presentment & Payment) software that is tied directly to SAP's Accounts Receivables module. This software will provide the option to send the customer a notice of invoice availability via email and allow the customer to view and pay the invoice online via an ACH transaction through the Biller Direct portal.

Physical Description:

Purchase and deploy SAP Biller Direct for Sundry Billing at SDGE and SCG. The initial deployment and pilot will be for SDGE Customer Generation followed by other areas of the company that utilize Sundry billing services. This may include bills for CAC, NBMS and Claims.

Project Justification:

This project will allow the company to offer technology that has been in use at other businesses and for our Electric and Gas customers for years. As a fortune 500 company our image as a technology leader falters because we can't bill or accept payment electronically for these services. The biggest saving for this effort will be the value to our company image. Other soft saving in check processing and invoice handling. We also anticipate a reduction in postage fees.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	F. IT
Category-Sub:	4. Business Optimization
Workpaper Group:	00833G - T19041 Electronic Bill Presentment & Payment (EBPP) for Sundry Billing & Customer Generation

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00833G

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	F. IT
Category-Sub:	4. Business Optimization
Workpaper Group:	00833G - T19041 Electronic Bill Presentment & Payment (EBPP) for Sundry Billing & Customer Generatio
Workpaper Detail:	00833G.001 - T19041 Electronic Bill Presentment & Payment (EBPP) for Sundry Billing & Customer Gener
In-Service Date:	11/30/2018

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	0	726	0
NSE	0	0	0
Total	**0**	**726**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	F. IT
Category-Sub:	4. Business Optimization
Workpaper Group:	00833G - T19041 Electronic Bill Presentment & Payment (EBPP) for Sundry Billing & Customer Generatio
Workpaper Detail:	00833G.002 - T19041 Electronic Bill Presentment & Payment (EBPP) for Sundry Billing & Customer Gener
In-Service Date:	11/30/2018

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	381	0
Non-Labor	0	484	0
NSE	0	0	0
Total	**0**	**865**	**0**
FTE	0.0	3.3	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00834D - T19010 2018/2019 SDGE MDT Technology Obsolescence

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00834.0
Category: F. IT
Category-Sub: 4. Business Optimization
Workpaper Group: 00834D - T19010 2018/2019 SDGE MDT Technology Obsolescence

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	0	0	0
Non-Labor	Zero-Based	0	0	0	0	0	0	1,268	1,237
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**1,268**	**1,237**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Business Purpose:

This project is for the 2018 and 2019 replacement of MDTs utilized by SDGE Electric and Gas Transmission & Distribution field personnel. This is a base business requirement as the field personnel rely on this equipment to respond to storms, outages, etc. which can directly impact SAIDI/SAIFI (System Average Interruption Duration Index/System Average Interruption Frequency Index).

Physical Description:

Develop and deploy MDTs and applications that will replace approximately 299 units in 2018 and 299 in 2019. This 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 general condition at the end of four years.

Project Justification:

Reduces field personnel down time. Avoids repair charges to O&M budgets due to expired warranty on these units. Upgrade helps meet technology requirements and improve user productivity utilizing MDT field applications with faster remote connection, processing speed, memory and increased hard drive size.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	4. Business Optimization
Workpaper Group:	00834D - T19010 2018/2019 SDGE MDT Technology Obsolescence

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00834D

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	4. Business Optimization
Workpaper Group:	00834D - T19010 2018/2019 SDGE MDT Technology Obsolescence
Workpaper Detail:	00834D.001 - T19010 2018/2019 SDGE MDT Technology Obsolescence
In-Service Date:	12/31/2018
Description:	

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	0	1,268	0
NSE	0	0	0
Total	**0**	**1,268**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	4. Business Optimization
Workpaper Group:	00834D - T19010 2018/2019 SDGE MDT Technology Obsolescence
Workpaper Detail:	00834D.002 - T19010 2018/2019 SDGE MDT Technology Obsolescence
In-Service Date:	12/31/2019

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	0	0	1,237
NSE	0	0	0
Total	**0**	**0**	**1,237**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00834F - T16024 2016/2017 SDGE MDT TECHNOLOGY OBSOLESCEN

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00834.0
Category: F. IT
Category-Sub: 4. Business Optimization
Workpaper Group: 00834F - T16024 2016/2017 SDGE MDT TECHNOLOGY OBSOLESCEN

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	0	0	0
Non-Labor	Zero-Based	0	0	0	0	0	1,015	160	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,015**	**160**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Business Purpose:

This project is to replace MDT (Mobile Data Terminals) units supported by Enterprise System Solutions Field Hardware Support (FHS) and used by SDG&E Gas and Electric Field and Contract personnel.

Physical Description:

This project will replace approximately 235 units in 2016 and 294 units in 2017 used by various organizations throughout SDG&E. This 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 general condition at the end of four years. The technology will be evaluated to insure users will be able to take full advantage of new features being developed in field applications such as Click Mobile and GIS Mobile.

Project Justification:

Improve field personnel experience related to MDT performance and usability increasing productivity and reducing frustration/complaints.
O&M cost avoidance for MDT repairs, replacements, crew and vehicle down time, and reduction in time spent by the Field Hardware Support team to diagnose and repair failed MDT's.
Provides MDT's that can take full advantage of field application enhancements and revised business processes.
Field personnel will have improved wireless network capability to receive planned and emergency orders, job information, and to report back real-time status and completion information in the field.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	4. Business Optimization
Workpaper Group:	00834F - T16024 2016/2017 SDGE MDT TECHNOLOGY OBSOLESCEN

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00834F

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	4. Business Optimization
Workpaper Group:	00834F - T16024 2016/2017 SDGE MDT TECHNOLOGY OBSOLESCEN
Workpaper Detail:	00834F.001 - T16024 2016/2017 SDGE MDT TECHNOLOGY OBSOLESCEN
In-Service Date:	04/30/2018

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	0	160	0
NSE	0	0	0
Total	**0**	**160**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	F. IT
Category-Sub:	4. Business Optimization
Workpaper Group:	00834F - T16024 2016/2017 SDGE MDT TECHNOLOGY OBSOLESCEN
Workpaper Detail:	00834F.002 - T16024 2016/2017 SDGE MDT TECHNOLOGY OBSOLESCEN
In-Service Date:	12/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	1,015	0	0
NSE	0	0	0
Total	**1,015**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Category: G. Procurement
Workpaper: VARIOUS

Summary for Category: G. Procurement

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	511	148	0
Non-Labor	0	2,494	278	0
NSE	0	0	0	0
Total	**0**	**3,005**	**426**	**0**
FTE	0.0	4.4	1.3	0.0
00833A T16046 E&FP ALLEGRO: TECHNOLOGY CHANGE IN CURRE				
Labor	0	203	0	0
Non-Labor	0	926	0	0
NSE	0	0	0	0
Total	**0**	**1,129**	**0**	**0**
FTE	0.0	1.8	0.0	0.0
00813D T19015 E&FP 2017 CAISO Mandates				
Labor	0	198	148	0
Non-Labor	0	743	278	0
NSE	0	0	0	0
Total	**0**	**941**	**426**	**0**
FTE	0.0	1.7	1.3	0.0
00813E T16026 E&FP 2016 CAISO MANDATES				
Labor	0	62	0	0
Non-Labor	0	419	0	0
NSE	0	0	0	0
Total	**0**	**481**	**0**	**0**
FTE	0.0	0.5	0.0	0.0
00814A T15060 METER DATA SETTLEMENT & PRICING (MDSP)				
Labor	0	48	0	0
Non-Labor	0	406	0	0
NSE	0	0	0	0
Total	**0**	**454**	**0**	**0**
FTE	0.0	0.4	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group

00833A - T16046 E&FP ALLEGRO: TECHNOLOGY CHANGE IN CURRE

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00833.0
Category: G. Procurement
Category-Sub: 1. Technical Obsolescence
Workpaper Group: 00833A - T16046 E&FP ALLEGRO: TECHNOLOGY CHANGE IN CURRE

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	203	0	0
Non-Labor	Zero-Based	0	0	0	0	0	926	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,129**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0

Business Purpose:

Allegro Development Corp. has recently (beginning in 2014) begun implementing a major product technology revamp, in the form of a new platform called “Allegro Horizon Technology”. This will move Allegro product users into a unified and consolidated product platform that incorporates current technology trends. It is a bottom-up change that essentially creates a new product platform for Allegro to continue to build and support ETRM features that impacts the data models, the business processes and functions, and extensions SDGE has built up over time to support our unique use cases/ reporting requirements. In addition to the platform upgrade, the Horizon version of Allegro product will include some of our long-standing enhancement requests and issues resolution that addresses a number of pain points for the E&FP and IT teams.

Physical Description:

Transition to new Allegro Horizon architecture released in 2015 by Allegro.
Upgrade reports and SSRS to new Allegro Horizon current data model.
Keep EDIX file transfer where appropriate but upgrade PCI integration to a modern integration architecture (EDIX or web-service).
Migrate to Allegro Horizon class events.

Project Justification:

Allegro no longer supports functional changes or enhancements to existing software currently used by SDG&E. We historically have implemented changes and enhancements with Allegro yearly. The changes enable us to keep efficient and compliant with regulatory or market changes.
Additional benefits from moving to the new Allegro Horizon include more accurate forecasts to the front office for portfolio management and hedging.
Allegro performs a critical function at SDG&E involving for E&FP accounting interfacing directly with SAP. From a risk perspective it’s crucial that we don’t fall too far behind the current Allegro version to implement latest calculation engines and accounting capabilities.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	G. Procurement
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833A - T16046 E&FP ALLEGRO: TECHNOLOGY CHANGE IN CURRE

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00833A

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	G. Procurement
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833A - T16046 E&FP ALLEGRO: TECHNOLOGY CHANGE IN CURRE
Workpaper Detail:	00833A.001 - T16046 E&FP ALLEGRO: TECHNOLOGY CHANGE IN CURRE
In-Service Date:	07/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	203	0	0
Non-Labor	926	0	0
NSE	0	0	0
Total	**1,129**	**0**	**0**
FTE	1.8	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00813D - T19015 E&FP 2017 CAISO Mandates

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	G. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	00813D - T19015 E&FP 2017 CAISO Mandates

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	198	148	0
Non-Labor	Zero-Based	0	0	0	0	0	743	278	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**941**	**426**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.7	1.3	0.0

Business Purpose:

In order to remain a scheduling coordinator, SDGE is required to remain compliant with the California Independent Systems Operator (CAISO) program initiatives typically implemented and released twice a year, which include major updates during Fall and Spring Releases, with some independent releases on as-needed basis). Three major software applications are in place to assist us with the various functionalities needed to support the CAISO interactions. These include:
1. Power Costs System Inc. (PCI) Suite of Applications is our system for communication with the CAISO for bidding and scheduling
2. Allegro is our SOX system of record for commodity trading, risk management, and accounting
3. Versify is our resource adequacy (RA) planning, operations, and analytics system
Our assessment of the the CAISO planned initiatives for 2017 will require new and updated software components and configuration changes in all of these IT software assets. Projects to comply with the 2017 CAISO initiatives require meeting the CAISO published schedule timeline and the use of PMO, IT, Vendor, and E&FP resources.

Physical Description:

The initiatives that will have an impact on E&FP, IT and vendor efforts during 2017 have been identified based on the RUG process of the ISO, and include:
1. Automated Dispatch System (ADS) Technology Upgrade (Internal E&FP effort)
2. Commitment Cost Enhancements Phase 3 (Opportunity Cost Adder for Use Limited Resources)
3. Contingency Modeling Enhancements- Bid Cost Recovery (BCR) Implications - special case
4. Reliability Services Initative/Capacity Procurement Mechanism (RSI/CPM) Phase 1B/2 (Impact to PCI Resource Adequacy (RA) Non SE Outage Screen), and Versify application)
5. Bidding Rules Enhancements Part B
6. Aliso Canyon
7. Regional Resource Adequacy Planning (PacifiCorp joining in 2019 will require this capability in 2017)
8. Cost Allocation Mechanism (Versify/ Allegro impact)
9. CPUC Resource Adequacy (Versify Impacts)

Project Justification:

In order to remain a scheduling coordinator, SDGE is required to remain compliant with the California Independent Systems Operator (CAISO) program initiatives typically implemented and released twice a year, which include major updates during Fall and Spring Releases, with some independent releases on as-needed basis). Three major software applications are in place to assist us with the various functionalities needed to support the CAISO interactions.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	G. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	00813D - T19015 E&FP 2017 CAISO Mandates

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00813D

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	G. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	00813D - T19015 E&FP 2017 CAISO Mandates
Workpaper Detail:	00813D.001 - T19015 E&FP 2017 CAISO Mandates
In-Service Date:	12/31/2017

Description:

See workpapaer description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	198	0	0
Non-Labor	743	0	0
NSE	0	0	0
Total	**941**	**0**	**0**
FTE	1.7	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	G. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	00813D - T19015 E&FP 2017 CAISO Mandates
Workpaper Detail:	00813D.002 - T19015 E&FP 2017 CAISO Mandates
In-Service Date:	03/31/2018
Description:	

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	148	0
Non-Labor	0	278	0
NSE	0	0	0
Total	**0**	**426**	**0**
FTE	0.0	1.3	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00813E - T16026 E&FP 2016 CAISO MANDATES

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	G. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	00813E - T16026 E&FP 2016 CAISO MANDATES

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	62	0	0
Non-Labor	Zero-Based	0	0	0	0	0	419	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**481**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0

Business Purpose:

The CAISO initiatives for 2016 (semi-annual) will require new software modules and configuration changes in our Power Costs System Inc., (PCI), Allegro, and Versify IT software assets. Projects to comply with the 2016 CAISO initiatives require meeting the CAISO published schedule timeline and the use of PMO, IT, Vendor, and E&FP resources.

Physical Description:

The current scope of the CAISO initiatives are:
Capacity Procurement Mechanism Replacement
Commitment Cost Enhancements
Post Implementation OMS Enhancements
Flexible Ramping Product
Contingency Modeling Enhancements
PIRP Decommissioning

Project Justification:

Comply with CAISO mandated changes.
Achieve operational efficiencies.
Keep current software capital assets under maintenance levels and fully supported.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	G. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	00813E - T16026 E&FP 2016 CAISO MANDATES

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00813E

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	G. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	00813E - T16026 E&FP 2016 CAISO MANDATES
Workpaper Detail:	00813E.001 - T16026 E&FP 2016 CAISO MANDATES
In-Service Date:	12/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	62	0	0
Non-Labor	419	0	0
NSE	0	0	0
Total	**481**	**0**	**0**
FTE	0.5	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00814A - T15060 METER DATA SETTLEMENT & PRICING (MDSP)

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00814.0
Category:	G. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	00814A - T15060 METER DATA SETTLEMENT & PRICING (MDSP)

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	48	0	0
Non-Labor	Zero-Based	0	0	0	0	0	406	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**454**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0

Business Purpose:

Create a new system/process to automate, calculate and submit settlement data to the CAISO updated OMAR system, and to calculate and provide TBS (Transitional Bundled Service) pricing to CISCO. Incorporate CAISO calculated actuals & UFE (Unaccounted for Energy) into database for analytics and reporting.

Physical Description:

The scope of the project is to replace/consolidate the three existing systems with the ISO Settlements solution. A new user interface and B2B services are in scope. B2B services will be modified to align with CIM standard and to convert to GMT, and the existing FTP solution will be replaced. The new solution will also remove the custom OMAR certificates by leveraging the CAISO Multiple Application (CMA) certificates.
House and extract all meter data from CISCO system. Automate extraction.
Automate AS Calculation; Estimated meter data input; DST Time Change

Project Justification:

Remove the dependency on time consuming and error-prone manual processes that rely on Tier 4 data warehouse for regulatory reporting application by maintaining a single repository for meter data.(CISCO)
Replace the aging existing ESSA system that no longer complies with company IT standards.
Create an easier to support tools to enable re-defining the TBS rates Time Of Use periods.
Reduce risk of fines through "reasonability checks" and reports built into the new system.
Create easier processes to validate and update electric rate characteristics for TBS pricing.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00814.0
Category:	G. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	00814A - T15060 METER DATA SETTLEMENT & PRICING (MDSP)

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00814A

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00814.0
Category:	G. Procurement
Category-Sub:	3. Mandated
Workpaper Group:	00814A - T15060 METER DATA SETTLEMENT & PRICING (MDSP)
Workpaper Detail:	00814A.001 - T15060 METER DATA SETTLEMENT & PRICING (MDSP)
In-Service Date:	03/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	48	0	0
Non-Labor	406	0	0
NSE	0	0	0
Total	**454**	**0**	**0**
FTE	0.4	0.0	0.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Category: H. Gas System Integrity
Workpaper: 00813I

Summary for Category: H. Gas System Integrity

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	24	0	0
Non-Labor	0	86	0	0
NSE	0	0	0	0
Total	**0**	**110**	**0**	**0**
FTE	0.0	0.2	0.0	0.0

00813I T15073 SDGE GOPA Phase 3

Labor	0	24	0	0
Non-Labor	0	86	0	0
NSE	0	0	0	0
Total	**0**	**110**	**0**	**0**
FTE	0.0	0.2	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00813I - T15073 SDGE GOPA Phase 3

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	H. Gas System Integrity
Category-Sub:	3. Mandated
Workpaper Group:	00813I - T15073 SDGE GOPA Phase 3

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	24	0	0
Non-Labor	Zero-Based	0	0	0	0	0	86	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**110**	**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 expand the existing reporting platform implemented by the GOPA Phase 2 Project, to include new operational data integrations and reports that will provide SDG Gas Operations with more robust, easy to use, “on-demand” reports which will be made accessible to SDG M&I, Locate and Mark, M&R, and ARSO Operational Management and Supervisory Staff.

This project will deliver new data and reporting capabilities that will enable Gas Operations (SCG & SDG) to respond to a growing number of ad-hoc operational and engineering report requests. It will also implement a new “self-service” data dictionary for the GOPA platform that will help all end users understand each field on the GOPA reports, eliminating misinterpretation of the information and the need to continually ask questions about the significance of the data.
This project will leverage existing capabilities and resources of 1) Enterprise SAP HANA platform, 2) SAP Business Objects (BOBJ) reporting platform, 3) GOPA Phase 2 reports, as well as implement new data integrations from source systems, 4) ARCOS, 5) MyTime System, and 6) Franson GPSGate in order to provide additional information pertinent to SDG Operations.

Physical Description:

Deliver 153 SCG and SDG Gas Operations self-service reports and ad-hoc reporting capabilities
Automate the acquisition, validation, and integration of data from SAP Plant Maintenance, ClickSchedule, KorTerra, MyTime, Franson GPSGate, ARCOS, and SAP FI/CO within SAP HANA
Implement information Steward (Data Dictionary) for GOPA reports

Project Justification:

Increase operational efficiencies by reducing the duplicate and manual efforts required to obtain, format, and analyze data
Increase business insight into operations by providing additional analytical data and reports to SCG and SDG management
Increase operational standardization and consistency across companies by providing the same level of reporting capabilities for both SCG and SDGE Operations
Supports compliance with mandate GO112-E by providing “real time” access to KPI metrics to meet reporting requirements

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	H. Gas System Integrity
Category-Sub:	3. Mandated
Workpaper Group:	00813I - T15073 SDGE GOPA Phase 3

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00813I

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	H. Gas System Integrity
Category-Sub:	3. Mandated
Workpaper Group:	00813I - T15073 SDGE GOPA Phase 3
Workpaper Detail:	00813I.001 - T15073 SDGE GOPA Phase 3
In-Service Date:	04/30/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	24	0	0
Non-Labor	86	0	0
NSE	0	0	0
Total	**110**	**0**	**0**
FTE	0.2	0.0	0.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Category: J. Electric Distribution
Workpaper: VARIOUS

Summary for Category: J. Electric Distribution

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	9,228	8,172	8,026
Non-Labor	0	27,583	29,962	25,045
NSE	0	0	0	0
Total	**0**	**36,811**	**38,134**	**33,071**
FTE	0.0	80.3	71.1	69.8
00813A RAMP - INCREMENTAL T16045 CPD ENHANCEMENTS PHASE 3				
Labor	0	3,026	349	0
Non-Labor	0	4,908	539	0
NSE	0	0	0	0
Total	**0**	**7,934**	**888**	**0**
FTE	0.0	26.3	3.0	0.0
00813B RAMP - INCREMENTAL T16035 CMP SAP ENHANCEMENT				
Labor	0	392	0	0
Non-Labor	0	631	0	0
NSE	0	0	0	0
Total	**0**	**1,023**	**0**	**0**
FTE	0.0	3.4	0.0	0.0
00813C T16029 DIIS PHASE 4				
Labor	0	115	0	0
Non-Labor	0	238	0	0
NSE	0	0	0	0
Total	**0**	**353**	**0**	**0**
FTE	0.0	1.0	0.0	0.0
00813G T13004 TRANS & SUBSTN INTEGRATION (TSPI)				
Labor	0	22	0	0
Non-Labor	0	481	0	0
NSE	0	0	0	0
Total	**0**	**503**	**0**	**0**
FTE	0.0	0.2	0.0	0.0
00829A T16050 SDGE ENHANCED MOBILE COMMAND TRAILER				
Labor	0	18	0	0
Non-Labor	0	77	0	0
NSE	0	0	0	0
Total	**0**	**95**	**0**	**0**
FTE	0.0	0.2	0.0	0.0

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Category: J. Electric Distribution
Workpaper: VARIOUS

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
00829B T16055 EMERGENCY FIELD COMMUNICATION SERVICES				
Labor	0	115	0	0
Non-Labor	0	1,157	0	0
NSE	0	0	0	0
Total	**0**	**1,272**	**0**	**0**
FTE	0.0	1.0	0.0	0.0
00833D RAMP - INCREMENTAL T19016 Modernizing Outage Reporting (MOR)				
Labor	0	771	984	262
Non-Labor	0	479	707	79
NSE	0	0	0	0
Total	**0**	**1,250**	**1,691**	**341**
FTE	0.0	6.7	8.6	2.3
00833F RAMP - INCREMENTAL T15067 POWERWORKZ UPGRADE				
Labor	0	381	326	424
Non-Labor	0	855	390	507
NSE	0	0	0	0
Total	**0**	**1,236**	**716**	**931**
FTE	0.0	3.3	2.8	3.7
00833I RAMP - INCREMENTAL T19022 Electric GIS 2017 Enhancements				
Labor	0	0	447	0
Non-Labor	0	0	2,108	0
NSE	0	0	0	0
Total	**0**	**0**	**2,555**	**0**
FTE	0.0	0.0	3.9	0.0
00833J RAMP - INCREMENTAL T19023 CPD Enhancement Phase 4				
Labor	0	0	2,970	2,970
Non-Labor	0	0	6,984	6,984
NSE	0	0	0	0
Total	**0**	**0**	**9,954**	**9,954**
FTE	0.0	0.0	25.8	25.8
00833K RAMP - INCREMENTAL T19024 Electric GIS 2018 Enhancements				
Labor	0	0	0	381
Non-Labor	0	0	0	660
NSE	0	0	0	0
Total	**0**	**0**	**0**	**1,041**
FTE	0.0	0.0	0.0	3.3
00834I T19014 SDGE FAN Voice and Dispatch				
Labor	0	1,989	1,722	3,175
Non-Labor	0	7,670	8,094	8,793
NSE	0	0	0	0
Total	**0**	**9,659**	**9,816**	**11,968**
FTE	0.0	17.3	15.0	27.6

Note: Totals may include rounding differences.

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Category: J. Electric Distribution
Workpaper: VARIOUS

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
14860A RAMP - INCREMENTAL T14860 DISTRIBUTED ENERGY RESOURCE MGMT (DERMS)				
Labor	0	708	351	663
Non-Labor	0	1,535	3,276	3,015
NSE	0	0	0	0
Total	**0**	**2,243**	**3,627**	**3,678**
FTE	0.0	6.2	3.1	5.8
00813F RAMP - INCREMENTAL T19011 Patrol Inspect Auto Corrective Maintenance Program (CMP				
Labor	0	0	0	0
Non-Labor	0	646	0	0
NSE	0	0	0	0
Total	**0**	**646**	**0**	**0**
FTE	0.0	0.0	0.0	0.0
00833M T17003 FoF - ET & Substation Project Lifecycle				
Labor	0	646	723	60
Non-Labor	0	2,418	4,220	4,029
NSE	0	0	0	0
Total	**0**	**3,064**	**4,943**	**4,089**
FTE	0.0	5.6	6.3	0.5
03851A T19035 FoF - Business Process Management (BPM) Automation				
Labor	0	601	0	0
Non-Labor	0	1,658	0	0
NSE	0	0	0	0
Total	**0**	**2,259**	**0**	**0**
FTE	0.0	5.2	0.0	0.0
03851C RAMP - INCREMENTAL T19033 FoF - Engineering Project Lifecycle				
Labor	0	0	0	0
Non-Labor	0	2,064	1,965	491
NSE	0	0	0	0
Total	**0**	**2,064**	**1,965**	**491**
FTE	0.0	0.0	0.0	0.0
03851E RAMP - INCREMENTAL T19002 FoF - TSPI Phase 3				
Labor	0	254	46	91
Non-Labor	0	1,594	249	487
NSE	0	0	0	0
Total	**0**	**1,848**	**295**	**578**
FTE	0.0	2.2	0.4	0.8
03852A T19032 FoF - Unmanned Aerial System (UAS) Analytics				
Labor	0	190	254	0
Non-Labor	0	1,172	1,430	0
NSE	0	0	0	0
Total	**0**	**1,362**	**1,684**	**0**
FTE	0.0	1.7	2.2	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group

00813A - RAMP - INCREMENTAL T16045 CPD ENHANCEMENTS PHASE 3

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00813.0
Category: J. Electric Distribution
Category-Sub: 1. Technical Obsolescence
Workpaper Group: 00813A - RAMP - INCREMENTAL T16045 CPD ENHANCEMENTS PHASE 3

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	3,026	349	0
Non-Labor	Zero-Based	0	0	0	0	0	4,908	539	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**7,934**	**888**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	26.3	3.0	0.0

Business Purpose:

CPD was implemented with the recognition that while functional, additional enhancements should be made to further improve the efficacy of the software solution. This is further underscored by the recent Fueling Our Future (FOF) initiative submittals requesting CPD, Click Mobile and GWD enhancements.

Physical Description:

The work proposed includes enhancements to the functionality of SAP, Click Mobile and GWD, (planned and as placeholders for FOF) specifically:
Enhance SAP to support large design construction orders from 500 CU's to 1,000 CU's and to 7,000 CU's
Stabilize GWD from various system related issues for users to be able to use the system productively.
"Usability/Front end": Exploring options to implement improved SAP functionality to enhance the overall client experience. (in flight and FOF suggestion)
Improve Process For Updates To GIS From Field Observations (GMDT form in SAP) (FOF)
Creating unplanned/emergency orders in CPD. This is a 24/7 solution expected to go live during 4th Q 2016.
Design change order processing – enables field personnel to change service orders and field memos themselves vs the practice of contacting Project Management or help desk to make the corrections.
Field Change Order processing (will be implemented in August 2016) and applies to large designs (field memos or service orders will still be corrected via the DCO (Design Change Order) –process)
Incorporate CPD orders with Click Mobile touch application – Q1/Q2 2016
Modify SAP to enable the management of emergency orders
Usability and miscellaneous enhancements (166 targeted for 2016, 72% remain to be completed)
Complete tasks necessary toward decommissioning of DPSS
Provide training on electric GWD, new enhancements & refresher training
Support for SAP Upgrade project (HANA ECC upgrade) for CPD regression testing and troubleshooting

Project Justification:

This project will provide enhancements to support FOF, efficiency, ability to demonstrate compliance and avoidance of non-compliance through work processes, documentation, and data integration.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00813A - RAMP - INCREMENTAL T16045 CPD ENHANCEMENTS PHASE 3

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00813A

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00813A - RAMP - INCREMENTAL T16045 CPD ENHANCEMENTS PHASE 3
Workpaper Detail:	00813A.001 - RAMP - INCREMENTAL T16045 CPD ENHANCEMENTS PHASE 3
In-Service Date:	09/30/2017

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	129	0	0
NSE	0	0	0
Total	**129**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00813A - RAMP - INCREMENTAL T16045 CPD ENHANCEMENTS PHASE 3
Workpaper Detail:	00813A.001 - RAMP - INCREMENTAL T16045 CPD ENHANCEMENTS PHASE 3

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00813A - RAMP - INCREMENTAL T16045 CPD ENHANCEMENTS PHASE 3
Workpaper Detail:	00813A.002 - RAMP - INCREMENTAL T16045 CPD ENHANCEMENTS PHASE 3
In-Service Date:	12/31/2017

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	3,026	0	0
Non-Labor	4,779	0	0
NSE	0	0	0
Total	**7,805**	**0**	**0**
FTE	26.3	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00813A - RAMP - INCREMENTAL T16045 CPD ENHANCEMENTS PHASE 3
Workpaper Detail:	00813A.002 - RAMP - INCREMENTAL T16045 CPD ENHANCEMENTS PHASE 3

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00813A - RAMP - INCREMENTAL T16045 CPD ENHANCEMENTS PHASE 3
Workpaper Detail:	00813A.003 - RAMP - INCREMENTAL T16045 CPD ENHANCEMENTS PHASE 3
In-Service Date:	02/28/2018

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	349	0
Non-Labor	0	539	0
NSE	0	0	0
Total	**0**	**888**	**0**
FTE	0.0	3.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00813A - RAMP - INCREMENTAL T16045 CPD ENHANCEMENTS PHASE 3
Workpaper Detail:	00813A.003 - RAMP - INCREMENTAL T16045 CPD ENHANCEMENTS PHASE 3

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Beginning of Workpaper Group
00813B - RAMP - INCREMENTAL T16035 CMP SAP ENHANCEMENT

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00813.0
Category: J. Electric Distribution
Category-Sub: 1. Technical Obsolescence
Workpaper Group: 00813B - RAMP - INCREMENTAL T16035 CMP SAP ENHANCEMENT

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	392	0	0
Non-Labor	Zero-Based	0	0	0	0	0	631	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,023**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	3.4	0.0	0.0

Business Purpose:

Execute system enhancements to improve compliance with the SDGE Corrective Maintenance Program. All in-scope features (e.g. interfaces, etc.) are interdependent with SAP in order to extend the technical capabilities for Maintenance & Inspection. This project will reduce or remove critical process steps (e.g. manual steps) that are prone to error and integrate systems which are used outside of the core SAP PM system used to manage work and information.

Physical Description:

Line Segment Bundling
Interval Change Process Automation (e.g. pulling inspection forward)
System Enhancement to Record Inspections by Structure
Rather Than EquipmentEnhancement to cancel OHVI/QC overlap orders
Cancel/Complete Order Workflow
GMDT Form and Workflow Enhancement
CMP Quality Management and Issue Tracking System
End-to-End Automation of contracted inspection work (e.g. Wood Pole Intrusive)
SAP Automation of Maintenance Plan Running
Create New Inspection Date Field on 1A Notifications
hange SAP Underground MAT Code Descriptions

Project Justification:

Regulatory Compliance , Safety & Reliability - This project will increase the integrity of the Corrective Maintenance Program through a number of enhancements that all are interdependent with SAP PM and reduce non-compliance risk.
Line area bundling – Could improve scheduling efficiencies . Possible soft savings.
Canceled work order - Providing a workflow for orders that are administratively canceled will increase visibility and require supervisor approval to ensure that corrective work and inspections are completed as scheduled. This will reduce safety risk associated with corrective work not being completed reduce the risk of being out of compliance in the event that a job is canceled in error.
Quality Management and Issue Tracking – This project will provide for improved governance and program transparency by configuring the Archer software to validate that compliance work is completed as required and by providing an issue tracker.
Automation and scheduling of maintenance plan runs to help ensure no compliance plans are missed.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00813B - RAMP - INCREMENTAL T16035 CMP SAP ENHANCEMENT

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00813B

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00813B - RAMP - INCREMENTAL T16035 CMP SAP ENHANCEMENT
Workpaper Detail:	00813B.001 - RAMP - INCREMENTAL T16035 CMP SAP ENHANCEMENT
In-Service Date:	12/31/2017

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	392	0	0
Non-Labor	631	0	0
NSE	0	0	0
Total	**1,023**	**0**	**0**
FTE	3.4	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00813B - RAMP - INCREMENTAL T16035 CMP SAP ENHANCEMENT
Workpaper Detail:	00813B.001 - RAMP - INCREMENTAL T16035 CMP SAP ENHANCEMENT

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Beginning of Workpaper Group
00813C - T16029 DIIS PHASE 4

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00813.0
Category: J. Electric Distribution
Category-Sub: 1. Technical Obsolescence
Workpaper Group: 00813C - T16029 DIIS PHASE 4

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	115	0	0
Non-Labor	Zero-Based	0	0	0	0	0	238	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**353**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0

Business Purpose:

DIIS Phase 4 will expand the DIIS system to include automation of City/County inspection process, Renewable Meter Adapter (RMA) application and payment collection, expanded automation for Rule 21 applications, increased data sent to the Engineering Data Warehouse (EDW) for easier regulatory reporting, digital forms for the Backup Generator process, and the creation of performance scripts to help isolate and resolve technical bottlenecks.

Physical Description:

1. City/County inspection automation
2. RMA application and payment process
3. Additional data fields from DIIS to EDW
4. New Backup Generator process
6. Full online automation of the Rule 21 application
7. New performance testing scripts plus new performance monitoring tools

Project Justification:

This project will save City Inspectors time on each inspection, save contractors time and money when submitting RMA applications and payments, will increase the safety of the overall SDG&E system by automating the manual paper process and increase visibility into the location of these facilities, will eliminate the manual steps taken by distributed generation contractors to complete paper process, and automate the treatment of large (> 1 MW) NEM-eligible customer-owned facilities, and identify and correct technical bottlenecks through will increase the user experience for both external (solar contractors and customers) as well as internal (Customer Generation, CCC, C&I, Billing) end users.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00813C - T16029 DIIS PHASE 4

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00813C

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00813C - T16029 DIIS PHASE 4
Workpaper Detail:	00813C.001 - T16029 DIIS PHASE 4
In-Service Date:	05/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	115	0	0
Non-Labor	238	0	0
NSE	0	0	0
Total	**353**	**0**	**0**
FTE	1.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00813G - T13004 TRANS & SUBSTN INTEGRATION (TSPI)

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00813G - T13004 TRANS & SUBSTN INTEGRATION (TSPI)

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	22	0	0
Non-Labor	Zero-Based	0	0	0	0	0	481	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**503**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0

Business Purpose:

Electric Transmission and Distribution (T&D) Engineering is responsible for cost estimation, design, engineering and project management of major electric transmission and substation projects. The annual spend for projects generated from the Electric Transmission and Distribution Engineering department ranges from $10M to 100M.The current cost estimation tool, Budget Scheduling Estimating (BSE), has reached the end of its useful life, and is supported by IT for only break and fix situations. The Work Order Authorization (WOA) and Capital Budget Document (CBD) submission, tracking, and approval processes are manually intensive and require extensive man-hours to submit, track and manage. This proposal is to replace the existing BSE tool with a more robust, and IT supported cost estimation tool that utilizes geospatial capabilities to access GIS layers as well as transmission and substation assemblies. Also, the proposed solution will revamp the standard assemblies for transmission and substation and store them in a centralized data repository so that other tools will be able to access them. Finally, this solution will automate the WOA and CBD submission, review, tracking and approval processes.

Physical Description:

Replace the existing BSE application, adding interfaces to other technologies
3D geospatial cost estimation tool with access to GIS layers and Transmission and Substation assemblies
PLS-CADD and AutoCAD integration with the new estimation tool
Work order Authorization (WOA) and Capital Budget Documentation (CBD) submission, review and approval process automation
The new estimation tool will be integrated with TM1 and SAP to deliver financial analysis tools

Project Justification:

Process Improvement
Create better credibility with interveners through enhanced forecasting. Better credibility will lead to better relationships with FERC, CPUC and other interveners and fewer data requests.
Enhance our business partners, FERC, and CPUC experience by fulfilling their data requests within the requested timeframe.
Provide better tracking of projects financially by comparing planned costs vs. actuals, during construction.
Empower internal departments (i.e. SDG&E Environmental Services, Land Services) to collaborate more in developing more accurate cost estimates
Increase accessibility to and sharing of essential project information for estimating projects using a centralize data repository
Provide a better platform to access essential project information so more informed decisions can be made
Enhance and maintain data accuracy of assemblies – materials, costs, and labor information via data maintenance tools

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00813G - T13004 TRANS & SUBSTN INTEGRATION (TSPI)

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00813G

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00813G - T13004 TRANS & SUBSTN INTEGRATION (TSPI)
Workpaper Detail:	00813G.001 - T13004 TRANS & SUBSTN INTEGRATION (TSPI)
In-Service Date:	10/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	22	0	0
Non-Labor	481	0	0
NSE	0	0	0
Total	**503**	**0**	**0**
FTE	0.2	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00829A - T16050 SDGE ENHANCED MOBILE COMMAND TRAILER

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00829.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00829A - T16050 SDGE ENHANCED MOBILE COMMAND TRAILER

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	18	0	0
Non-Labor	Zero-Based	0	0	0	0	0	77	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**95**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0

Business Purpose:

New emergency command trailer was purchased in July, 2016 and used by the US Forest service as a mobile command vehicle, to support SDG&E personnel during an event.
This project will be to setup the new trailer with IT supported communications and electronics

Physical Description:

The build will consist of the following capabilities:
900 MHz, 800 MHz, and 450 MHz radios (excludes radio consoles): two (2) for the workspace and one (1) in conference room (3 total)
Iridium satellite phones with external antennas and attached analog phones. One (1) for each workspace and one (1) in the conference room. With speaker available on the analog phone or speaker phone capability in conf room.
Direct TV: 2 receivers Monitors - AV matrix switch from any of the stations in the trailer to one or many of the monitors.
2 MiFi devices for the interim. 1 Verizon & 1 AT&T Users will use MDTs with cellular data cards
Office supplies, printer etc.
4G/LTE and satellite voice and data backhaul to the Sempra Corporate network.
Add ability for IT Network Operations Center (NOC) to provide remote network and power management support.

Project Justification:

Ability to have seating for 6 with up to 20 concurrent laptop connections with a focus on being able to directly report and work with the EOC.
Provide a bigger SDG&E presence at events.
Ability to support two (2) concurrently active cellular 4G/LTE network connections for increased capacity and carrier flexibility while deployed
Increased satellite data bandwidth capacity and reliability
Secure user access with BYOD laptop, tablet, smart phone are all on Wi-Fi

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00829.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00829A - T16050 SDGE ENHANCED MOBILE COMMAND TRAILER

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00829A

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00829.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00829A - T16050 SDGE ENHANCED MOBILE COMMAND TRAILER
Workpaper Detail:	00829A.001 - T16050 SDGE ENHANCED MOBILE COMMAND TRAILER
In-Service Date:	04/30/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	18	0	0
Non-Labor	77	0	0
NSE	0	0	0
Total	**95**	**0**	**0**
FTE	0.2	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00829B - T16055 EMERGENCY FIELD COMMUNICATION SERVICES

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00829.0
Category: J. Electric Distribution
Category-Sub: 1. Technical Obsolescence
Workpaper Group: 00829B - T16055 EMERGENCY FIELD COMMUNICATION SERVICES

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	115	0	0
Non-Labor	Zero-Based	0	0	0	0	0	1,157	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,272**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0

Business Purpose:

This project will develop and deploy 10 IT emergency communication trailers that are standardized with new capabilities. These will be built to support satellite and microwave broadband capabilities deployable to either SDG&E or SoCalGas incidents. The antenna and all components will be securely racked in an easy to move, fully enclosed, custom designed trailer that's specifically built to provide broadband connectivity anywhere, regardless of existing communications infrastructure. The five satellite trailers will be configured to quickly deploy and establish broadband connectivity. The five microwave trailers will generally need to be deployed in pairs and will require a longer setup time to create the point to point communication path.

Physical Description:

Satellite – 5 quickly deployable trailers
Microwave – 5 quickly deployable trailers
Standards for Satellite and Microwave Comm Trailer
Cell on Wheels and Fly Away Kit for cellular voice coverage

Project Justification:

Provide rapid deployment of connectivity for multiple emergency field operations sites simultaneously for both utilities in an emergency situation.
Provide secure, reliable intra-company and internet connectivity for AT&T cellular voice, video, data and IP applications, for emergency field operation employees and guests.
Provide a business capability to delivery high bandwidth communication when deploying microwave trailers to a site.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00829.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00829B - T16055 EMERGENCY FIELD COMMUNICATION SERVICES

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00829B

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00829.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00829B - T16055 EMERGENCY FIELD COMMUNICATION SERVICES
Workpaper Detail:	00829B.001 - T16055 EMERGENCY FIELD COMMUNICATION SERVICES
In-Service Date:	04/30/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	115	0	0
Non-Labor	1,157	0	0
NSE	0	0	0
Total	**1,272**	**0**	**0**
FTE	1.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00833D - RAMP - INCREMENTAL T19016 Modernizing Outage Reporting (MOR)

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00833.0
Category: J. Electric Distribution
Category-Sub: 1. Technical Obsolescence
Workpaper Group: 00833D - RAMP - INCREMENTAL T19016 Modernizing Outage Reporting (MOR)

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	771	984	262
Non-Labor	Zero-Based	0	0	0	0	0	479	707	79
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,250**	**1,691**	**341**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	6.7	8.6	2.3

Business Purpose:

Starting in Q2 2017, MOR will provide a more effective outage analytics reporting system as well as improved NMS functionality to support outage analytics, distribution management functionality, and other required NMS changes.
Outage Analytics:
1. Replace FocalPoint application with a vendor supported platform to ensure long-term vendor support.
2. Replace the current DSOR (which is a static document of outages at a specific point in time, distributed to 200+ end-users with varying needs) with more useful, on demand outage analysis tools to enable user groups to get the information specifically for their needs.
3. Replace Reliability Reporting applications with an IT-supported, streamlined, and efficient system that can be used for standard and ad-hoc reports (potentially part of the reporting upgrade in #1).
NMS:
4. Support on-going changes to NMS including device class updates, configuration changes to support EDO, and outage analytics reporting.
5. DMS Enhancements: improving powerflow results, Volt-VAr implementation, real-time AMI meter information, and DERMS integrations.

Physical Description:

1. Replace FocalPoint with a new vendor-supported reporting system to extend lifespan:
- Migrate existing reports to the new platform.
- Replace the current form of the DSOR with a user-friendly, on demand, outage report(s) that meets a wide range of end-user needs which involves research and surveys with the current group of recipients to understand their data needs.
- Consolidate two legacy systems (FocalPoint and Reliability applications) into one integrated platform.
- Provide enhanced Reliability analytics and reports (current reports will be analyzed for improvement in both the presentment of data and the distribution method which includes CPUC annual, internal weekly and monthly, other standard Reliability reports, and ad hoc reporting).
- Provide flexibility to integrate other datasources for reporting (e.g. CMP, CPD/EFR, EDW).
2. Suport changes to NMS for outage analytics, DMS functionality, and support for system changes for new devices, protection schemes, etc.

Project Justification:

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833D - RAMP - INCREMENTAL T19016 Modernizing Outage Reporting (MOR)

1. Extend FocalPoint (or replacement system) lifespan by upgrading to a vendor-supported product.
2. Consolidate two legacy systems for improved user experience and provide support for entire proccess.
3. Greatly enhanced end-user experience due to receiving timely and useful outage information on demand and potentially provide improved NRT outage reporting.
4. Streamlined, efficient, and a fully IT-supported system for our Reliability outage reporting.
5. Upgrades and enhancements to the Reliability reporting system would be able to occur, and would follow clear, established processes to minimize risk to the system.
6. Reliability group would be out of the business of maintaining a technical system, and could focus more on business tasks.
7. Potential PBR improvement (based on integrated reporting).
8. Provide NMS support for on-going changes including device classes, protection schemes, DMS functionality (FLISR, VOLT-VAr, SS), and DERMS integrations.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833D - RAMP - INCREMENTAL T19016 Modernizing Outage Reporting (MOR)

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00833D

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833D - RAMP - INCREMENTAL T19016 Modernizing Outage Reporting (MOR)
Workpaper Detail:	00833D.001 - RAMP - INCREMENTAL T19016 Modernizing Outage Reporting (MOR)
In-Service Date:	12/31/2017

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	771	0	0
Non-Labor	479	0	0
NSE	0	0	0
Total	**1,250**	**0**	**0**
FTE	6.7	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833D - RAMP - INCREMENTAL T19016 Modernizing Outage Reporting (MOR)
Workpaper Detail:	00833D.001 - RAMP - INCREMENTAL T19016 Modernizing Outage Reporting (MOR)

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833D - RAMP - INCREMENTAL T19016 Modernizing Outage Reporting (MOR)
Workpaper Detail:	00833D.002 - RAMP - INCREMENTAL T19016 Modernizing Outage Reporting (MOR)
In-Service Date:	12/31/2018

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	984	0
Non-Labor	0	707	0
NSE	0	0	0
Total	**0**	**1,691**	**0**
FTE	0.0	8.6	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833D - RAMP - INCREMENTAL T19016 Modernizing Outage Reporting (MOR)
Workpaper Detail:	00833D.002 - RAMP - INCREMENTAL T19016 Modernizing Outage Reporting (MOR)

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833D - RAMP - INCREMENTAL T19016 Modernizing Outage Reporting (MOR)
Workpaper Detail:	00833D.003 - RAMP - INCREMENTAL T19016 Modernizing Outage Reporting (MOR)
In-Service Date:	03/31/2019

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	262
Non-Labor	0	0	79
NSE	0	0	0
Total	**0**	**0**	**341**
FTE	0.0	0.0	2.3

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833D - RAMP - INCREMENTAL T19016 Modernizing Outage Reporting (MOR)
Workpaper Detail:	00833D.003 - RAMP - INCREMENTAL T19016 Modernizing Outage Reporting (MOR)

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: o

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Beginning of Workpaper Group
00833F - RAMP - INCREMENTAL T15067 POWERWORKZ UPGRADE

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00833.0
Category: J. Electric Distribution
Category-Sub: 1. Technical Obsolescence
Workpaper Group: 00833F - RAMP - INCREMENTAL T15067 POWERWORKZ UPGRADE

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	381	326	424
Non-Labor	Zero-Based	0	0	0	0	0	855	390	507
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,236**	**716**	**931**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	3.3	2.8	3.7

Business Purpose:

Build a new mobile application for the Vegetation Application that eliminates the daily replication of GIS data and replaces the MDT's large and complicated applications with a single small application.
Perform a version upgrade for ESRI, Cityworks and infraMAP
Migrate the 90+ reports from the operational database to a dedicated reporting database. This also includes migrating the reports from Crystal Reports to SQL Server Reporting Services.

Physical Description:

Construct a new mobile application for the tree trimmers and the pole brushers. The application will replace infraMAP and the Launch Pad.
Streamline the launch pad to reduce the overall time needed to synchronize the server and the MDT's.
Migrate 90+ reports from Crystal Reports to SQL Server Reporting Services and moving off of the production database to the the new read-only database.
Upgrade ESRI software on server front-end to version 10.2.1
Upgrade ESRI server database to version 10.2.1
Upgrade ESRI software version on MDT front-end to version 10.2.1
Upgrade MDT database server to SQL Express 2012
Upgrade MDT database to ESRI version 10.2.1
Upgrade MDT InfraMAP software to version 8
Upgrade Cityworks software to version 2014

Project Justification:

Immediately reduces vegetation vendor costs and helps mitigate future increases.
Eliminates the issue of running on unsupported software
Improves back office performance when generating reports and eliminates system spikes that impact field users.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833F - RAMP - INCREMENTAL T15067 POWERWORKZ UPGRADE

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00833F

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833F - RAMP - INCREMENTAL T15067 POWERWORKZ UPGRADE
Workpaper Detail:	00833F.001 - RAMP - INCREMENTAL T15067 POWERWORKZ UPGRADE
In-Service Date:	12/31/2019

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	424
Non-Labor	0	0	507
NSE	0	0	0
Total	**0**	**0**	**931**
FTE	0.0	0.0	3.7

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833F - RAMP - INCREMENTAL T15067 POWERWORKZ UPGRADE
Workpaper Detail:	00833F.001 - RAMP - INCREMENTAL T15067 POWERWORKZ UPGRADE

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833F - RAMP - INCREMENTAL T15067 POWERWORKZ UPGRADE
Workpaper Detail:	00833F.002 - RAMP - INCREMENTAL T15067 POWERWORKZ UPGRADE
In-Service Date:	12/31/2018

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	326	0
Non-Labor	0	390	0
NSE	0	0	0
Total	**0**	**716**	**0**
FTE	0.0	2.8	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833F - RAMP - INCREMENTAL T15067 POWERWORKZ UPGRADE
Workpaper Detail:	00833F.002 - RAMP - INCREMENTAL T15067 POWERWORKZ UPGRADE

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833F - RAMP - INCREMENTAL T15067 POWERWORKZ UPGRADE
Workpaper Detail:	00833F.003 - RAMP - INCREMENTAL T15067 POWERWORKZ UPGRADE
In-Service Date:	12/31/2017

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	381	0	0
Non-Labor	855	0	0
NSE	0	0	0
Total	**1,236**	**0**	**0**
FTE	3.3	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833F - RAMP - INCREMENTAL T15067 POWERWORKZ UPGRADE
Workpaper Detail:	00833F.003 - RAMP - INCREMENTAL T15067 POWERWORKZ UPGRADE

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Beginning of Workpaper Group
00833I - RAMP - INCREMENTAL T19022 Electric GIS 2017 Enhancements

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00833.0
Category: J. Electric Distribution
Category-Sub: 1. Technical Obsolescence
Workpaper Group: 00833I - RAMP - INCREMENTAL T19022 Electric GIS 2017 Enhancements

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	0	447	0
Non-Labor	Zero-Based	0	0	0	0	0	0	2,108	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**2,555**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	3.9	0.0

Business Purpose:

The Enterprise GIS requires several application (Desktop, Web, GEARS and Portal) enhancements/upgrades and data model expansions to keep pace with escalating regulatory, reliability, safety, service, efficiency and growth requirements.

Physical Description:

The scope of this project is to identify, evaluate, prioritize and/or implement essential SDG&E Electric GIS only enhancements such as: Mobile GMDT work-flow implementation, Desktop business rule validation expansion, SPARC/EOC (Portal) expansion, Data Model development, (Smart Grid, Telecom, Secondary, Archiving, etc.), Web upgrade analysis and Work Order History optimization.

Project Justification:

1) Promotes and enhances the efficient reporting of GIS only data clean-up.
2) Ensures the capture and maintenance of more accurate GIS data.
3) Provides enhanced emergency response visualization options.
4) Affords enhancement consideration for Web upgrade.
5) Reduces as-built, reconciliation and GIS posting costs.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833I - RAMP - INCREMENTAL T19022 Electric GIS 2017 Enhancements

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00833I

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833I - RAMP - INCREMENTAL T19022 Electric GIS 2017 Enhancements
Workpaper Detail:	00833I.001 - RAMP - INCREMENTAL T19022 Electric GIS 2017 Enhancements
In-Service Date:	12/31/2018

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	447	0
Non-Labor	0	2,108	0
NSE	0	0	0
Total	**0**	**2,555**	**0**
FTE	0.0	3.9	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833I - RAMP - INCREMENTAL T19022 Electric GIS 2017 Enhancements
Workpaper Detail:	00833I.001 - RAMP - INCREMENTAL T19022 Electric GIS 2017 Enhancements

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Beginning of Workpaper Group
00833J - RAMP - INCREMENTAL T19023 CPD Enhancement Phase 4

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833J - RAMP - INCREMENTAL T19023 CPD Enhancement Phase 4

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	0	2,970	2,970
Non-Labor	Zero-Based	0	0	0	0	0	0	6,984	6,984
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**9,954**	**9,954**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	25.8	25.8

Business Purpose:

The Construction, Planning and Design Project (CPD) fully implemented SAP/Click Mobile and Gas GWD to all SDG&E regions as of December 31, 2014. Additional funding is required in 2017 to continue to deliver SAP enhancements that will further improve the efficacy of the implemented SAP/Click Mobile and GWD functionalities in supporting large design. The end result will be improvements to end user experience that will further leverage the integrative capabilities of the implemented systems.

Physical Description:

Enhancements to existing functionalities include the continuation of the 2016 "Large Design and Summarization" for downstream processes and reports, ensuring SAP and GWD performance meets business requirements, fine tuning the implemented functions and adding necessary improvements identified through the client's experience in using the new systems. As anticipated, end-users require imrovements in the way SAP is utilized to meet evolving as well as matured business requirements. New enhancements include usability changes that will aid toward the improvement of cost accounting, internal and external customer service, additional process controls to ensure regulatory compliance, and improved data capture to minimize data errors, gaps and compliance reporting requirements.

Project Justification:

Streamline and meet/improve system performance, data entry requirements and end user processing time. Enable external design contractors to access the approved areas of the systems. Continue development of end user reports. Create functionality to enable orders to be processed on a wider variety of mobile devices (smart phones, ipads, etc.), making the overall experience stabile, optimized, portable and simplified.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833J - RAMP - INCREMENTAL T19023 CPD Enhancement Phase 4

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.
.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00833J

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833J - RAMP - INCREMENTAL T19023 CPD Enhancement Phase 4
Workpaper Detail:	00833J.001 - RAMP - INCREMENTAL T19023 CPD Enhancement Phase 4
In-Service Date:	12/31/2018

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	2,970	0
Non-Labor	0	6,984	0
NSE	0	0	0
Total	**0**	**9,954**	**0**
FTE	0.0	25.8	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833J - RAMP - INCREMENTAL T19023 CPD Enhancement Phase 4
Workpaper Detail:	00833J.001 - RAMP - INCREMENTAL T19023 CPD Enhancement Phase 4

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833J - RAMP - INCREMENTAL T19023 CPD Enhancement Phase 4
Workpaper Detail:	00833J.002 - RAMP - INCREMENTAL T19023 CPD Enhancement Phase 4
In-Service Date:	09/30/2019

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	2,970
Non-Labor	0	0	6,984
NSE	0	0	0
Total	**0**	**0**	**9,954**
FTE	0.0	0.0	25.8

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833J - RAMP - INCREMENTAL T19023 CPD Enhancement Phase 4
Workpaper Detail:	00833J.002 - RAMP - INCREMENTAL T19023 CPD Enhancement Phase 4

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Beginning of Workpaper Group
00833K - RAMP - INCREMENTAL T19024 Electric GIS 2018 Enhancements

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00833.0
Category: J. Electric Distribution
Category-Sub: 1. Technical Obsolescence
Workpaper Group: 00833K - RAMP - INCREMENTAL T19024 Electric GIS 2018 Enhancements

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	0	0	381
Non-Labor	Zero-Based	0	0	0	0	0	0	0	660
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1,041**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3

Business Purpose:

The Enterprise GIS requires several application (Desktop, Mobile, Web and Portal) enhancements/upgrades and data model expansions to keep pace with escalating regulatory, reliability, safety, service, efficiency and growth requirements.

Physical Description:

The scope of this project is to identify, evaluate, prioritize and/or implement essential SDG&E Electric GIS only enhancements to our Mobile, AFES, Portal and Web environments.

Project Justification:

1) Promotes and enhances the efficient reporting of GIS only data clean-up.
2) Ensures the capture and maintenance of more accurate GIS data.
3) Provides enhanced emergency response visualization options.
4) Affords enhancement consideration for Web upgrade.
5) Reduces as-built, reconciliation and GIS posting costs.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833K - RAMP - INCREMENTAL T19024 Electric GIS 2018 Enhancements

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00833K

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833K - RAMP - INCREMENTAL T19024 Electric GIS 2018 Enhancements
Workpaper Detail:	00833K.001 - RAMP - INCREMENTAL T19024 Electric GIS 2018 Enhancements
In-Service Date:	12/31/2019

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	381
Non-Labor	0	0	660
NSE	0	0	0
Total	**0**	**0**	**1,041**
FTE	0.0	0.0	3.3

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00833K - RAMP - INCREMENTAL T19024 Electric GIS 2018 Enhancements
Workpaper Detail:	00833K.001 - RAMP - INCREMENTAL T19024 Electric GIS 2018 Enhancements

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Beginning of Workpaper Group
00834I - T19014 SDGE FAN Voice and Dispatch

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 00834.0
Category: J. Electric Distribution
Category-Sub: 1. Technical Obsolescence
Workpaper Group: 00834I - T19014 SDGE FAN Voice and Dispatch

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	1,989	1,722	3,175
Non-Labor	Zero-Based	0	0	0	0	0	7,670	8,094	8,793
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**9,659**	**9,816**	**11,968**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	17.3	15.0	27.6

Business Purpose:

For continued field crew safety during emergencies and critical gas and electric operations, the fleet of current analog voice radios must be replaced with up to date digital radios. This is in response to near or past term unsupportability due to unavailability of replacement equipment and repair services. If left in current state, sporadic outages as well as high O&M expenditures will mount with increased frequency.

Physical Description:

Replace mission critical analog radios and consoles with digital capable equipment, refresh analog base stations to digital base stations, and provide high available radio infrastructure for disaster recovery purposes. Project will include expansion of the current radio coverage area and will replace leased.

Project Justification:

Replacement analog radios are no longer manufactured and are avaialable only on the secondary market. This effort will provide a supportable, reliable means of voice communications and dispatch for day-to-day operations, as well as emergency response. New system will provide a potential for doubling call capacity.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834I - T19014 SDGE FAN Voice and Dispatch

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00834I

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834I - T19014 SDGE FAN Voice and Dispatch
Workpaper Detail:	00834I.001 - T19014 SDGE FAN Voice and Dispatch
In-Service Date:	12/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	1,989	0	0
Non-Labor	7,670	0	0
NSE	0	0	0
Total	**9,659**	**0**	**0**
FTE	17.3	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834I - T19014 SDGE FAN Voice and Dispatch
Workpaper Detail:	00834I.002 - T19014 SDGE FAN Voice and Dispatch
In-Service Date:	12/31/2018

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	1,722	0
Non-Labor	0	8,094	0
NSE	0	0	0
Total	**0**	**9,816**	**0**
FTE	0.0	15.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00834.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	00834I - T19014 SDGE FAN Voice and Dispatch
Workpaper Detail:	00834I.003 - T19014 SDGE FAN Voice and Dispatch
In-Service Date:	11/30/2019

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	3,175
Non-Labor	0	0	8,793
NSE	0	0	0
Total	**0**	**0**	**11,968**
FTE	0.0	0.0	27.6

Note: Totals may include rounding differences.

Beginning of Workpaper Group

14860A - RAMP - INCREMENTAL T14860 DISTRIBUTED ENERGY RESOURCE MGMT (DERMS)

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 14860.0
Category: J. Electric Distribution
Category-Sub: 1. Technical Obsolescence
Workpaper Group: 14860A - RAMP - INCREMENTAL T14860 DISTRIBUTED ENERGY RESOURCE MGMT (DERMS)

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	708	351	663
Non-Labor	Zero-Based	0	0	0	0	0	1,535	3,276	3,015
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**2,243**	**3,627**	**3,678**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	6.2	3.1	5.8

Business Purpose:

The development of a DERMS solution that is capable of monitoring, optimizing, and dispatching Dislribuled Energy Resources (DER) connected al the Dislribulion and Transmission system levels. This solution acls as a primary enterprise-wide solution Integrated with the Outage Management and Dala Management systems (OMS/OMS). Geographical Information System (GIS). and other. This solution supports SDG&E's long term strategy to implement unbundled rates and price-driven system management.

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 & other DER controllers.
•Enable future Demand Response Management Systems (ORMS) to balance generation and load within a geographical area or electrical subsystem.
•Integrate load forecasting, day-ahead price signals, demand programs (ORMS). providing mulliple
•Integrate wilh OMS/OMS, GIS, Distribution SCADA, CAISO, third party aggregators, and other systems.
•Enable microgrid controllers to interact wilh ORMS to balance generation and load within a geographical area.
•Implement a price-driven system management.

Project Justification:

This solution acls as a primary enterprise-wide solution Integrated with the Outage Management and Dala Management systems (OMS/OMS).
Geographical Information System (GIS). and other. This solution supports SDG&E's long term strategy to implement unbundled rates and price-driven system management.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	14860.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	14860A - RAMP - INCREMENTAL T14860 DISTRIBUTED ENERGY RESOURCE MGMT (DERMS)

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 14860A

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	14860.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	14860A - RAMP - INCREMENTAL T14860 DISTRIBUTED ENERGY RESOURCE MGMT (DERMS)
Workpaper Detail:	14860A.001 - RAMP - INCREMENTAL T14860 DISTRIBUTED ENERGY RESOURCE MGMT (DERMS)
In-Service Date:	12/31/2019

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	708	0	0
Non-Labor	1,535	0	0
NSE	0	0	0
Total	**2,243**	**0**	**0**
FTE	6.2	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	14860.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	14860A - RAMP - INCREMENTAL T14860 DISTRIBUTED ENERGY RESOURCE MGMT (DERMS)
Workpaper Detail:	14860A.001 - RAMP - INCREMENTAL T14860 DISTRIBUTED ENERGY RESOURCE MGMT (DERMS)

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	14860.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	14860A - RAMP - INCREMENTAL T14860 DISTRIBUTED ENERGY RESOURCE MGMT (DERMS)
Workpaper Detail:	14860A.002 - RAMP - INCREMENTAL T14860 DISTRIBUTED ENERGY RESOURCE MGMT (DERMS)
In-Service Date:	12/31/2018

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	351	0
Non-Labor	0	3,276	0
NSE	0	0	0
Total	**0**	**3,627**	**0**
FTE	0.0	3.1	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	14860.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	14860A - RAMP - INCREMENTAL T14860 DISTRIBUTED ENERGY RESOURCE MGMT (DERMS)
Workpaper Detail:	14860A.002 - RAMP - INCREMENTAL T14860 DISTRIBUTED ENERGY RESOURCE MGMT (DERMS)

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	14860.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	14860A - RAMP - INCREMENTAL T14860 DISTRIBUTED ENERGY RESOURCE MGMT (DERMS)
Workpaper Detail:	14860A.003 - RAMP - INCREMENTAL T14860 DISTRIBUTED ENERGY RESOURCE MGMT (DERMS)
In-Service Date:	12/31/2019

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	663
Non-Labor	0	0	3,015
NSE	0	0	0
Total	**0**	**0**	**3,678**
FTE	0.0	0.0	5.8

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	14860.0
Category:	J. Electric Distribution
Category-Sub:	1. Technical Obsolescence
Workpaper Group:	14860A - RAMP - INCREMENTAL T14860 DISTRIBUTED ENERGY RESOURCE MGMT (DERMS)
Workpaper Detail:	14860A.003 - RAMP - INCREMENTAL T14860 DISTRIBUTED ENERGY RESOURCE MGMT (DERMS)

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Beginning of Workpaper Group

00813F - RAMP - INCREMENTAL T19011 Patrol Inspect Auto Corrective Maintenance Program (CMP)

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	J. Electric Distribution
Category-Sub:	3. Mandated
Workpaper Group:	00813F - RAMP - INCREMENTAL T19011 Patrol Inspect Auto Corrective Maintenance Program (CMP)

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	0	0	0
Non-Labor	Zero-Based	0	0	0	0	0	646	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**646**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Business Purpose:

Build systems and processes to automate patrol inspections and creation of follow up repair work. The current process involves many manual steps. These include the printing of patrol maps, manual highlighting and distributing to districts in binders. Inspectors conduct patrols and mark up maps with a pen. The work is manually scheduled and dispatched outside of the Click system. The district operations assistants then interpret and manually data enter the patrol findings into SAP.

Physical Description:

Automated creation of Patrol orders and notifications.
Integrated scheduling and dispatching of patrol orders to company crews.
Map-based work orders for navigation and patrol finding update capability.
Ability to submit updates at the structure level as well as the map page level as work is completed. Results should update in SAP daily.
Patrol requirements and completed status to originate in SAP PM and inspection findings will be uploaded automatically in to SAP PM.
Reporting of incomplete, completed and scheduled patrols.

Project Justification:

Regulatory Compliance , Saftey & Reliability - SDGE is required to inspect electric distribution systems according to CPUC General Order 165 (GO 165). The SDGE Corrective Maintenance Program (CMP) is designed to provide oversigt of the inspection and maintenance of electric distribution facilities to assure compliance with General Order 165.
Non-compliance can result in fines up to $50,000 per day per incident. This project Increase the integrity of the CMP program through a number of enhancements tthat all are interdependent with SAP PM. The in-scope SAP related system enhancements were identified as part of an overall CMP Assessment completed in December 2014.
Reduce compliance risk due to missed or late patrols, improper record keeping, lost visibility of required corrective action.
Timeliness around patrol results reporting.
Eliminate the potential failures due to hand written documentation and transposing of patrol results on maps.
Reduce manual effort by Ops Assistants, Program Management, ESS & GBS to assign work and process results.
Increase field efficiencies through the use of scheduling and dispatching processes and systems.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	J. Electric Distribution
Category-Sub:	3. Mandated
Workpaper Group:	00813F - RAMP - INCREMENTAL T19011 Patrol Inspect Auto Corrective Maintenance Program (CMP)

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00813F

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	J. Electric Distribution
Category-Sub:	3. Mandated
Workpaper Group:	00813F - RAMP - INCREMENTAL T19011 Patrol Inspect Auto Corrective Maintenance Program (CMP)
Workpaper Detail:	00813F.001 - RAMP - INCREMENTAL T19011 Patrol Inspect Auto Corrective Maintenance Program (CMP)
In-Service Date:	09/30/2017

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	646	0	0
NSE	0	0	0
Total	**646**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00813.0
Category:	J. Electric Distribution
Category-Sub:	3. Mandated
Workpaper Group:	00813F - RAMP - INCREMENTAL T19011 Patrol Inspect Auto Corrective Maintenance Program (CMP)
Workpaper Detail:	00813F.001 - RAMP - INCREMENTAL T19011 Patrol Inspect Auto Corrective Maintenance Program (CMP)

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Beginning of Workpaper Group
00833M - T17003 FoF - ET & Substation Project Lifecycle

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833M - T17003 FoF - ET & Substation Project Lifecycle

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	646	723	60
Non-Labor	Zero-Based	0	0	0	0	0	2,418	4,220	4,029
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**3,064**	**4,943**	**4,089**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	5.6	6.3	0.5

Business Purpose:

Fueling our Future Idea 151 is a comprehensive program of 12 individual initiatives that target increasing efficiency of the project lifecycle in Electric Transmission and Substation. Initiatives span different areas but are highly interdependent and will be managed as a single improvement program. The full program cost will be confirmed following the high level design phase in Q1 2017.

People: assess existing organization for alignment to process, establish project management COE, establish QA/QC function within the organization, establish work and resource management function.
Process: formalize stage gate process, implement consistent scheduling / WBS, implement 2 year capital planning process, implement work and resource management processes, finalize and deploy project management guide
Technology: continue in flight efforts of TSPI initiative (iTwo estimating tool deployment, IMD design tool), design and implement integrated technology platform to enable end to end process.

Physical Description:

New functions or groups established to support end to end process (project management COE, QA/QC, work and resource management)
Existing organization redesigned to support end to end processes (per output from up front organizational assessment)
Improved control using formalized project stage gates
Standardized Work Breakdown Structure (WBS) for capital work
Capital planning extended further into the future to allow increased visibility
Defined work and resource management processes and procedures to balance supply and demand of project work
Project management best practices are formalized and tracked
Tools integrated to support end to end process
Consistent data sources and defined “sources of truth” to ensure clear visibility into costs, resources, and project information

Project Justification:

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833M - T17003 FoF - ET & Substation Project Lifecycle

Single system of record for initiate to energize
Transparency and detail of costing in standard formats
Ability to move to forecasting in 2019/2020
Lower TCO via further leveraging of existing tools/infrastructure (SAP)
Improved capital plan execution
Adaptable standard processes
Predictive indicators (know whether process is being followed)
Full asset lifecycle visibility for regulatory, financial, and operation
Improved resource balancing
Streamlined coordination between organizations

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833M - T17003 FoF - ET & Substation Project Lifecycle

Forecast Methodology:

Labor - Zero-Based

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

Non-Labor - Zero-Based

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

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00833M

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833M - T17003 FoF - ET & Substation Project Lifecycle
Workpaper Detail:	00833M.001 - T17003 FoF - ET & Substation Project Lifecycle
In-Service Date:	12/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	646	0	0
Non-Labor	2,418	0	0
NSE	0	0	0
Total	**3,064**	**0**	**0**
FTE	5.6	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833M - T17003 FoF - ET & Substation Project Lifecycle
Workpaper Detail:	00833M.002 - T17003 FoF - ET & Substation Project Lifecycle
In-Service Date:	12/31/2018

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	723	0
Non-Labor	0	4,220	0
NSE	0	0	0
Total	**0**	**4,943**	**0**
FTE	0.0	6.3	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	00833.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	00833M - T17003 FoF - ET & Substation Project Lifecycle
Workpaper Detail:	00833M.003 - T17003 FoF - ET & Substation Project Lifecycle
In-Service Date:	06/30/2019

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	60
Non-Labor	0	0	4,029
NSE	0	0	0
Total	**0**	**0**	**4,089**
FTE	0.0	0.0	0.5

Note: Totals may include rounding differences.

Beginning of Workpaper Group
03851A - T19035 FoF - Business Process Management (BPM) Automation

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 03851.0
Category: J. Electric Distribution
Category-Sub: 4. Business Optimization
Workpaper Group: 03851A - T19035 FoF - Business Process Management (BPM) Automation

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	601	0	0
Non-Labor	Zero-Based	0	0	0	0	0	1,658	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**2,259**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	5.2	0.0	0.0

Business Purpose:

Implement automated business process management (BPM)/workflow/case management tool across the enterprise. Automate currently manual business processes - anything that requires a wet signature or email approval, routing work across multiple business groups, etc. Provide core IT tool/capability to enable retirement of legacy/home grown systems - Access DBs, Cold Fusion, WOT, etc. Develop/implement joint IT-business competency center, responsible for developing/maintaining workflows.

Physical Description:

Install system for SDGE only. Note 1: SCG concept doc exists for entire enterprise - this one needed for SDGE if SCG doc is not approved. Note 2: if PegaSystems is selected solution, potentially migrate from cloud instance to on premise). Integrate with HR Repository and SAP to synchronize various approval hierarchies. Develop APIs (if not already pre-built) to facilitate BPM integration with major systems, depending on prioritized use cases - SAP (ECC, CPD, etc.), CISCO, GIS, Click, SORT, etc.. Develop core set of workflows to address various business use cases. Design/implement organizational support model to sustain and grow capability.

Project Justification:

Increase efficiency and transparency of multiple business processes across the organization.
Enable centralized process management and control.
Improve process compliance and simplify audit capabilities.
Enable retirement of home-grown Access DBs and similar end of life or unsupported work management solutions.
Increase agility and 'time to market' to develop new solutions.
Labor savings from reduced development time.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03851.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	03851A - T19035 FoF - Business Process Management (BPM) Automation

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 03851A

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03851.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	03851A - T19035 FoF - Business Process Management (BPM) Automation
Workpaper Detail:	03851A.001 - T19035 FoF - Business Process Management (BPM) Automation
In-Service Date:	05/31/2017
Description:	

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	1,184	0	0
NSE	0	0	0
Total	**1,184**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03851.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	03851A - T19035 FoF - Business Process Management (BPM) Automation
Workpaper Detail:	03851A.002 - T19035 FoF - Business Process Management (BPM) Automation
In-Service Date:	05/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	601	0	0
Non-Labor	474	0	0
NSE	0	0	0
Total	**1,075**	**0**	**0**
FTE	5.2	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
03851C - RAMP - INCREMENTAL T19033 FoF - Engineering Project Lifecycle

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03851.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	03851C - RAMP - INCREMENTAL T19033 FoF - Engineering Project Lifecycle

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	0	0	0
Non-Labor	Zero-Based	0	0	0	0	0	2,064	1,965	491
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**2,064**	**1,965**	**491**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Business Purpose:

Streamline the engineering project lifecycle (provides capital funding capacity). This concept document provides the cost difference between the in flight TSPI Phase 3 cost of $1.9M and the Fueling Our Future project concept cost of $7.5M. It is assumed this is a 3 year project.

Physical Description:

People: assess existing organization for alignment to process, establish project management COE, establish QA/QC function within the organization, establish work and resource management function.
Process: formalize stage gate process, implement consistent scheduling / WBS, implement 2 year capital planning process, implement work and resource management processes, finalize and deploy project management guide
Technology: continue in flight efforts of TSPI initiative (iTwo estimating tool deployment, IMD design tool), design and implement integrated technology platform to enable end to end process.

Project Justification:

Streamline the engineering project lifecycle (provides capital funding capacity).

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03851.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	03851C - RAMP - INCREMENTAL T19033 FoF - Engineering Project Lifecycle

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 03851C

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03851.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	03851C - RAMP - INCREMENTAL T19033 FoF - Engineering Project Lifecycle
Workpaper Detail:	03851C.001 - RAMP - INCREMENTAL T19033 FoF - Engineering Project Lifecycle
In-Service Date:	12/31/2017

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	2,064	0	0
NSE	0	0	0
Total	**2,064**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03851.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	03851C - RAMP - INCREMENTAL T19033 FoF - Engineering Project Lifecycle
Workpaper Detail:	03851C.001 - RAMP - INCREMENTAL T19033 FoF - Engineering Project Lifecycle

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03851.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	03851C - RAMP - INCREMENTAL T19033 FoF - Engineering Project Lifecycle
Workpaper Detail:	03851C.002 - RAMP - INCREMENTAL T19033 FoF - Engineering Project Lifecycle
In-Service Date:	12/31/2018

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	0	1,965	0
NSE	0	0	0
Total	**0**	**1,965**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03851.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	03851C - RAMP - INCREMENTAL T19033 FoF - Engineering Project Lifecycle
Workpaper Detail:	03851C.002 - RAMP - INCREMENTAL T19033 FoF - Engineering Project Lifecycle

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03851.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	03851C - RAMP - INCREMENTAL T19033 FoF - Engineering Project Lifecycle
Workpaper Detail:	03851C.003 - RAMP - INCREMENTAL T19033 FoF - Engineering Project Lifecycle
In-Service Date:	11/30/2019

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	0
Non-Labor	0	0	491
NSE	0	0	0
Total	**0**	**0**	**491**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03851.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	03851C - RAMP - INCREMENTAL T19033 FoF - Engineering Project Lifecycle
Workpaper Detail:	03851C.003 - RAMP - INCREMENTAL T19033 FoF - Engineering Project Lifecycle

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Beginning of Workpaper Group
03851E - RAMP - INCREMENTAL T19002 FoF - TSPI Phase 3

Area: INFORMATION TECHNOLOGY
Witness: Christopher R. Olmsted
Budget Code: 03851.0
Category: J. Electric Distribution
Category-Sub: 4. Business Optimization
Workpaper Group: 03851E - RAMP - INCREMENTAL T19002 FoF - TSPI Phase 3

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	254	46	91
Non-Labor	Zero-Based	0	0	0	0	0	1,594	249	487
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,848**	**295**	**578**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	2.2	0.4	0.8

Business Purpose:

TSPI Phase 3 continues enhancing the platform established by the first two phases of TSPI. This phase will continue to integrate external systems into the TSPI platform (iTwo) and improve inefficient work processes.

Physical Description:

Phase 3 will focus on Work Order processing, work flow improvements and enhancements required as a result of Phase 1 and Phase 2.

Project Justification:

Work Order processing, work flow improvements and enhancements required as a result of Phase 1 and Phase 2.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03851.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	03851E - RAMP - INCREMENTAL T19002 FoF - TSPI Phase 3

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 03851E

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03851.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	03851E - RAMP - INCREMENTAL T19002 FoF - TSPI Phase 3
Workpaper Detail:	03851E.001 - RAMP - INCREMENTAL T19002 FoF - TSPI Phase 3
In-Service Date:	12/31/2017

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	254	0	0
Non-Labor	1,594	0	0
NSE	0	0	0
Total	**1,848**	**0**	**0**
FTE	2.2	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03851.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	03851E - RAMP - INCREMENTAL T19002 FoF - TSPI Phase 3
Workpaper Detail:	03851E.001 - RAMP - INCREMENTAL T19002 FoF - TSPI Phase 3

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03851.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	03851E - RAMP - INCREMENTAL T19002 FoF - TSPI Phase 3
Workpaper Detail:	03851E.002 - RAMP - INCREMENTAL T19002 FoF - TSPI Phase 3
In-Service Date:	12/31/2018

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	46	0
Non-Labor	0	249	0
NSE	0	0	0
Total	**0**	**295**	**0**
FTE	0.0	0.4	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03851.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	03851E - RAMP - INCREMENTAL T19002 FoF - TSPI Phase 3
Workpaper Detail:	03851E.002 - RAMP - INCREMENTAL T19002 FoF - TSPI Phase 3

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03851.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	03851E - RAMP - INCREMENTAL T19002 FoF - TSPI Phase 3
Workpaper Detail:	03851E.003 - RAMP - INCREMENTAL T19002 FoF - TSPI Phase 3
In-Service Date:	05/31/2019

Description:

RAMP

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	91
Non-Labor	0	0	487
NSE	0	0	0
Total	**0**	**0**	**578**
FTE	0.0	0.0	0.8

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03851.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	03851E - RAMP - INCREMENTAL T19002 FoF - TSPI Phase 3
Workpaper Detail:	03851E.003 - RAMP - INCREMENTAL T19002 FoF - TSPI Phase 3

RAMP Item # 1

RAMP Chapter: SDG&E-13

Program Name: IT

Program Description: IT

Risk/Mitigation:

Risk: Electric

Mitigation: IT

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: O

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Beginning of Workpaper Group
03852A - T19032 FoF - Unmanned Aerial System (UAS) Analytics

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03852.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	03852A - T19032 FoF - Unmanned Aerial System (UAS) Analytics

Summary of Results (Constant 2016 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Labor	Zero-Based	0	0	0	0	0	190	254	0
Non-Labor	Zero-Based	0	0	0	0	0	1,172	1,430	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,362**	**1,684**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.7	2.2	0.0

Business Purpose:

Unmanned aerial systems (UAS or "drones") provide a safer, lower cost, more environmentally friendly method to capture image data on SDGE assets than deploying helicopters or ground inspection crews. Currently, SDGE captures image, video and LIDAR data via helicopters and UAVs (R&D only), after which the data must then be processed (LIDAR), stored, analyzed and distributed to various systems/users. The limited imagery data that is collected today is stored either on local computers (distribution) or in file shares (transmission), and is available only to small numbers of users. Aviation Services has over 20 use cases for UAV applications. Operationalizing these services requires IT applications and infrastructure to manage, secure and distribute imagery data for the enterprise so that it can be used by engineers, inspectors, emergency services and many roles.

Physical Description:

Design, develop and implement IT application and infrastructure solution to support growing UAS requirements and demand. Scope encompasses the "lifecycle" of UAS imagery data:
- Architecture: reference architecture (capabilities), data architecture, applications/systems architecture
- Capture: How data will be initially captured from UAV and uploaded into SDGE systems
- Storage: Most likely in "data lake"; make imagery data searchable and available for consumption by multiple applications, users; requires ingest process, metadata tagging, integration, retention rules, etc.
- Analytics: Applications to analyze imagery data (images, video, LIDAR). May be multiple tools, and could be insourced or outsourced
- Integration: With core systems as needed/prioritized: GIS, SAP, PowerWorks, etc.
- Distribution: Providing potentially large volume of imagery data either real time or post-capture via video stream or similar bandwidth intensive channel. Impacts could be to wired and wireless networks, and may include satellite communications in field.

Project Justification:

Safety - reduction in helicopter flights, deploying crews to hazardous area (hiking in back country).
Environmental - reduction in hiking in backcountry.
Cost - reduction in flights.
Inspection quality - can get close; more frequently.
Legal - can provide before/after imagery; broader set of "evidence" than eyes/documentation of inspecting crew.

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03852.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	03852A - T19032 FoF - Unmanned Aerial System (UAS) Analytics

Forecast Methodology:

Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

Non-Labor - Zero-Based

Based on Project Manager and Subject Matter Expert estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 03852A

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03852.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	03852A - T19032 FoF - Unmanned Aerial System (UAS) Analytics
Workpaper Detail:	03852A.001 - T19032 FoF - Unmanned Aerial System (UAS) Analytics
In-Service Date:	12/31/2017

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	190	0	0
Non-Labor	1,172	0	0
NSE	0	0	0
Total	**1,362**	**0**	**0**
FTE	1.7	0.0	0.0

Note: Totals may include rounding differences.

Area:	INFORMATION TECHNOLOGY
Witness:	Christopher R. Olmsted
Budget Code:	03852.0
Category:	J. Electric Distribution
Category-Sub:	4. Business Optimization
Workpaper Group:	03852A - T19032 FoF - Unmanned Aerial System (UAS) Analytics
Workpaper Detail:	03852A.002 - T19032 FoF - Unmanned Aerial System (UAS) Analytics
In-Service Date:	10/31/2018

Description:

See workpaper description

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	254	0
Non-Labor	0	1,430	0
NSE	0	0	0
Total	**0**	**1,684**	**0**
FTE	0.0	2.2	0.0

Note: Totals may include rounding differences.