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

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

CAPITAL WORKPAPERS TO
PREPARED DIRECT TESTIMONY
OF CARL S. LA PETER
ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

NOVEMBER 2014

2016 General Rate Case - APP

INDEX OF WORKPAPERS

Exhibit SDG&E-11-CWP - NEW GENERATION

Overall Summary For Exhibit No. SDG&E-11-CWP

Area: NEW GENERATION

Witness: Carl S. La Peter

	In 2013 $ (000)		
	Adjusted-Forecast		
	2014	2015	2016
A. Generation Capital	21,736	8,408	8,347
Total	**21,736**	**8,408**	**8,347**

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Category: A. Generation Capital
Workpaper: VARIOUS

Summary for Category: A. Generation Capital

	In 2013$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2013	2014	2015	2016
Labor	0	135	54	67
Non-Labor	0	21,601	8,354	8,280
NSE	0	0	0	0
Total	**0**	**21,736**	**8,408**	**8,347**
FTE	0.0	1.5	0.6	0.8
00006A Capital Tools & Test Equipment				
Labor	0	0	0	0
Non-Labor	0	471	471	471
NSE	0	0	0	0
Total	**0**	**471**	**471**	**471**
FTE	0.0	0.0	0.0	0.0
00008A MEF Operational Enhancements				
Labor	0	0	0	0
Non-Labor	0	2,223	430	300
NSE	0	0	0	0
Total	**0**	**2,223**	**430**	**300**
FTE	0.0	0.0	0.0	0.0
00009A PEC Operational Enhancements				
Labor	0	90	45	22
Non-Labor	0	6,639	4,116	2,774
NSE	0	0	0	0
Total	**0**	**6,729**	**4,161**	**2,796**
FTE	0.0	1.0	0.5	0.3
00010A DSEC Operational Enhancements				
Labor	0	45	9	45
Non-Labor	0	10,840	1,725	4,435
NSE	0	0	0	0
Total	**0**	**10,885**	**1,734**	**4,480**
FTE	0.0	0.5	0.1	0.5
00011A CPEP Operational Enhancements				
Labor	0	0	0	0
Non-Labor	0	1,428	1,612	300
NSE	0	0	0	0
Total	**0**	**1,428**	**1,612**	**300**
FTE	0.0	0.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00006A - Capital Tools & Test Equipment

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00006.0
Category: A. Generation Capital
Category-Sub: 1. Capital Tools & Test Equipment
Workpaper Group: 00006A - Capital Tools & Test Equipment

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

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	0	0
Non-Labor	Zero-Based	0	0	0	0	0	471	471	471
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**471**	**471**	**471**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Business Purpose:

Purchase of capital tools and test equipment for the generating facilities.

Physical Description:

Mechanical tools and electronic test equipment.

Project Justification:

Necessary to replace or upgrade tools for power plant inspections, maintenance and repairs. New and improved tools have the potential to increase employee safety and productivity.

Note: Totals may include rounding differences.

Area:	NEW GENERATION
Witness:	Carl S. La Peter
Budget Code:	00006.0
Category:	A. Generation Capital
Category-Sub:	1. Capital Tools & Test Equipment
Workpaper Group:	00006A - Capital Tools & Test Equipment

Forecast Methodology:

Labor - Zero-Based

N/A

Non-Labor - Zero-Based

The Zero-Based forecast method was selected because each year is unique and has no relation to previous years.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00006A

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00006.0
Category: A. Generation Capital
Category-Sub: 1. Capital Tools & Test Equipment
Workpaper Group: 00006A - Capital Tools & Test Equipment
Workpaper Detail: 00006A.001 - DSEC Capital Tool & Test Equipment Purchases

In-Service Date: Not Applicable

Description:

Purchase of capital tools and test equipment for Desert Star Energy Center. Purchases will be made to replace or upgrade tools for power plant inspections, maintenance and repairs. New and/or improved tools are selected based on need and ability to increase employee safety and productivity.

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

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00006.0
Category: A. Generation Capital
Category-Sub: 1. Capital Tools & Test Equipment
Workpaper Group: 00006A - Capital Tools & Test Equipment
Workpaper Detail: 00006A.002 - PEC/MEF/CPEP Capital Tool & Test Equipment Purchases

In-Service Date: Not Applicable

Description:

Purchase of capital tools and test equipment for Palomar Energy Center/Miramar Energy Facility/Cuyamaca Peak Energy Plant. Purchases will be made to replace or upgrade tools for power plant inspections, maintenance and repairs. New and/or improved tools are selected based on need and ability to increase employee safety and productivity.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	259	259	259
NSE	0	0	0
Total	**259**	**259**	**259**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00008A - MEF Operational Enhancements

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00008.0
Category: A. Generation Capital
Category-Sub: 2. Miramar Energy Facility
Workpaper Group: 00008A - MEF Operational Enhancements

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

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	0	0
Non-Labor	Zero-Based	0	0	0	0	0	2,223	430	300
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**2,223**	**430**	**300**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Business Purpose:

The purpose of MEF Operational Enhancements is to provide for capital additions and improvements at the Miramar Energy Facility.

Physical Description:

Several projects are being considered for Miramar. Please see sub-work papers for specific project details.

Project Justification:

Improvements and additions are continuous at the facility and are selected based on their ability to increase the overall reliability, operability and safety of the facility.

Note: Totals may include rounding differences.

Area:	NEW GENERATION
Witness:	Carl S. La Peter
Budget Code:	00008.0
Category:	A. Generation Capital
Category-Sub:	2. Miramar Energy Facility
Workpaper Group:	00008A - MEF Operational Enhancements

Forecast Methodology:

Labor - Zero-Based

N/A

Non-Labor - Zero-Based

The Zero-Based forecast method was selected because each year is unique and has no relation to previous years.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00008A

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00008.0
Category: A. Generation Capital
Category-Sub: 2. Miramar Energy Facility
Workpaper Group: 00008A - MEF Operational Enhancements
Workpaper Detail: 00008A.001 - MEF Alternate Power Supply ATS Project

In-Service Date: 04/30/2015

Description:

This project will provide an alternate supply to each turbine generator's essential electrical power system. The system upgrade is arranged in a manner to allow that, during a blackstart situation, or certain maintenance activities, power is maintained to all site critical battery chargers. In addition this upgrade will maintain power to the Black Start Generator battery charger under various plant electrical configurations.

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

Note: Totals may include rounding differences.

Area:	NEW GENERATION
Witness:	Carl S. La Peter
Budget Code:	00008.0
Category:	A. Generation Capital
Category-Sub:	2. Miramar Energy Facility
Workpaper Group:	00008A - MEF Operational Enhancements
Workpaper Detail:	00008A.002 - MEF Mechanical Improvements
In-Service Date:	Not Applicable

Description:

This project will be used to capture multiple small mechanical projects to be completed at Miramar Energy Facility.
The projects are of a mechanical, structural, or civil nature and are intended to improve plant performance, or address operational, maintenance, safety or environmental issues.
For example: Upgrade the drain tank pump system by relocating the pump and modifying the pump controls and level monitoring instrumentation. This will provide for improved low level monitoring and pumping, keeping the tanks dry and minimizing the potential for mixed waste.

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

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00008.0
Category: A. Generation Capital
Category-Sub: 2. Miramar Energy Facility
Workpaper Group: 00008A - MEF Operational Enhancements
Workpaper Detail: 00008A.003 - MEF Instrumentation Improvements

In-Service Date: Not Applicable

Description:

This project will be used to capture multiple small instrumentation projects to be completed at Miramar Energy Facility. The projects are intended to improve the monitoring devices at the plant by replacing outdated equipment or upgrading to better technology.
For example: Add real time current monitoring to the selective catalytic reduction (SCR) system to provide trending data for analysis and troubleshooting. This will enhance ability to diagnose problems and identify power quality issues.

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

Note: Totals may include rounding differences.

Area:	NEW GENERATION
Witness:	Carl S. La Peter
Budget Code:	00008.0
Category:	A. Generation Capital
Category-Sub:	2. Miramar Energy Facility
Workpaper Group:	00008A - MEF Operational Enhancements
Workpaper Detail:	00008A.004 - MEF Turbine Controls Upgrade
In-Service Date:	12/31/2014

Description:

Upgrade the current turbine control system and auxiliary control systems with an alternate control system, as well as upgrading existing HMI's (Human Machine Interface – specialized computer workstation for plant control) to HMI's with current operating systems and security software. This control system upgrade provides improvements to the following: system security, operator graphical and functional interface, ability to customize the operator interface, ability to make improvements to control functions, data collection and storage, trending and analysis, plant and system troubleshooting, and simplified network architecture.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	1,923	0	0
NSE	0	0	0
Total	**1,923**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00008.0
Category: A. Generation Capital
Category-Sub: 2. Miramar Energy Facility
Workpaper Group: 00008A - MEF Operational Enhancements
Workpaper Detail: 00008A.005 - MEF Electrical Improvements

In-Service Date: Not Applicable

Description:

This project will be used to capture multiple small electrical projects to be completed at Miramar Energy Facility. The projects will address improvements in control devices that provide power solutions for operation of the plant and modifications to existing electrical distribution systems to provide ease of access to power for welding, heat treating and other ancillary power needs.
For example: An additional protection device will be added to the generator circuit breaker control system that will prevent inadvertent closure of the circuit breaker due to a control system failure.

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

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00009A - PEC Operational Enhancements

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements

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

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	90	45	22
Non-Labor	Zero-Based	0	0	0	0	0	6,639	4,116	2,774
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**6,729**	**4,161**	**2,796**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.0	0.5	0.3

Business Purpose:

The purpose of PEC Operational Enhancements is to provide for capital additions and improvements at the Palomar Energy Center.

Physical Description:

Several projects are being considered for Palomar. Please see sub-work papers for specific project details.

Project Justification:

Improvements and additions are continuous at the facility and are selected based on their ability to increase the overall reliability, operability and safety of the facility.

Note: Totals may include rounding differences.

Area:	NEW GENERATION
Witness:	Carl S. La Peter
Budget Code:	00009.0
Category:	A. Generation Capital
Category-Sub:	3. Palomar Energy Center
Workpaper Group:	00009A - PEC Operational Enhancements

Forecast Methodology:

Labor - Zero-Based

The Zero-Based forecast method was selected because each year is unique and has no relation to previous years.

Non-Labor - Zero-Based

The Zero-Based forecast method was selected because each year is unique and has no relation to previous years.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00009A

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.001 - Engineering & Supervision Labor for Operational Enhancements

In-Service Date: Not Applicable

Description:

Engineering and supervision costs related to capital additions and improvements at Palomar Energy Center.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	90	45	22
Non-Labor	0	0	0
NSE	0	0	0
Total	**90**	**45**	**22**
FTE	1.0	0.5	0.3

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.002 - PEC GSU Bushing Seismic Upgrade

In-Service Date: 07/31/2015

Description:

Replace the current generator step-up (GSU) transformer bushings at PEC with seismically rated bushings that are of the design and configuration to maximize reliability and life.

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	0
Non-Labor	0	1,535	0
NSE	0	0	0
Total	**0**	**1,535**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.003 - PEC Hot Reheat Drain Pot Drains to Condenser Upgrade

In-Service Date: 07/31/2014

Description:

Install a new HRH steam line condensate drain pot valve control and piping to reroute water away from the blow down tank and send it to the condenser. This will reduce visual pluming and increase water usage efficiency at the plant.

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

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.004 - PEC Desuperheater Isolation Valves and Controls

In-Service Date: 07/31/2015

Description:

Installation of additional isolation valves and pressure transmitters to prevent damage to the high energy pipes and boiler tubes, due to valve leakage.

Forecast In 2013 $(000)

Years	2014	2015	2016
Labor	0	0	0
Non-Labor	0	220	0
NSE	0	0	0
Total	**0**	**220**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.005 - PEC Exhaust Frame Flex Seal Upgrade

In-Service Date: 04/30/2014

Description:

Replace the currently installed seals with Inconel 718 seals which have a better wear characteristic and higher yield strength at the temperatures that exist in the exhaust frame.

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

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.006 - PEC Steam Turbine Upgraded N2 Packing

In-Service Date: 06/30/2014

Description:

Replace the N2 Case and Packing with a new design that is superior to the original design and will withstand the temperatures and pressures encountered with an acceptable lifetime.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	312	0	0
NSE	0	0	0
Total	**312**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.007 - PEC Remote Racking Devices

In-Service Date: 03/31/2014

Description:

Installation of racking devices to allow for the remote disconnect of circuit breakers from switchgear. Installation of this equipment will keep plant personnel outside of the potential arc flash boundary when racking a breaker in/out of service, providing an improvement to safety.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	140	0	0
NSE	0	0	0
Total	**140**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.008 - PEC LP Drum Level Control Valves LVDT s

In-Service Date: 04/30/2014

Description:

Upgrade the control valve position sensing and controls to the latest technology using linear variable displacement transformer (LVDT). This type of sensor is more reliable, more accurate and more durable than the original design. This technology has been installed on other drum level control valves at PEC with excellent results.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	51	0	0
NSE	0	0	0
Total	**51**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.009 - PEC Move Air Lines Above Ground

In-Service Date: 10/31/2016

Description:

The underground instrument air piping system will be abandoned in place and replaced with an above ground piping system. This will greatly improve reliability for the critical system by allowing piping to be visibly monitored for leaks and allowing for quick repair.

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

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.010 - PEC Steam Turbine Condenser Water Box Coating

In-Service Date: 06/30/2014

Description:

Application of protective coating to the inside of the water box to minimize future required repairs due to corrosion. This will reduce potential plant outages due to a water leak, and help to avoid equipment degradation.

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

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.011 - PEC Relocate Sample Panels to New Water Lab

In-Service Date: 07/31/2014

Description:

Relocate the sample panels from their current location to the new water lab building and incorporate new sample coolers and chillers to improve the process and accuracy of the sample analysis results. This new location also improves maintenance access to the sample panels.

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

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.012 - PEC HRH Desuperheater Upgrade

In-Service Date: 07/31/2014

Description:

Replace the current hot reheat (HRH) steam desuperheater pipe assembly (with damaged internals) with an upgraded version with improved internal diffuser structural design. The new design provides greater durability for plant cycling operation.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	245	0	0
NSE	0	0	0
Total	**245**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.013 - PEC HP Bypass Quick Change Trim Upgrade

In-Service Date: 06/30/2014

Description:

Upgrade the current steam by-pass valves to quick change trim. This upgrade will allow for easier maintenance during outage periods.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	390	0	0
NSE	0	0	0
Total	**390**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.014 - PEC Emerson Ovation HMI and Controller Upgrade

In-Service Date: 10/31/2014

Description:

Upgrade the current turbine control system with an alternate control system, as well as upgrading existing HMI's to HMI's with current operating systems and security software. This control system upgrade provides improvements to the following: system security, operator graphical and functional interface, ability to customize the operator interface, ability to make improvements to control functions, data collection and storage, trending and analysis, plant and system troubleshooting, and simplified network architecture.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	2,720	0	0
NSE	0	0	0
Total	**2,720**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.015 - PEC Mechanical Improvements

In-Service Date: Not Applicable

Description:

This project will be used to capture multiple small mechanical projects to be completed at Palomar Energy Center. The projects are of a mechanical, structural, or civil nature and are intended to improve plant performance, or address operational, maintenance, safety or environmental issues.
For example: The cooling tower scale inhibitor pump skid was replaced with a new design that provides improved corrosion resistance, electronic pump speed adjustment for improved flow control and better availability of replacement parts.

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

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.016 - PEC Instrumentation Improvements

In-Service Date: Not Applicable

Description:

This project will be used to capture multiple small instrumentation projects to be completed at Palomar Energy Center. The projects are intended to improve the monitoring devices at the plant by replacing outdated equipment or upgrading to better technology.
For Example: Add pressure transmitters to the Combustion Turbine Exhaust Frame Blowers discharge pipe. This will provide trending data for improved diagnostics and alarms to identify potential system problems.

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

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.017 - PEC Revenue Meter Upgrade

In-Service Date: 06/30/2014

Description:

Installation of upgraded revenue meters that are of a style and brand that supports Ethernet communications, which has been demonstrated to be a more reliable method of data transfer.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	58	0	0
NSE	0	0	0
Total	**58**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.018 - PEC Combustion Turbine Inlet Air Filter Upgrade

In-Service Date: 04/30/2014

Description:

Replace the current combustion turbine inlet air filters with a new generation of high efficiency filters that are designed to provide significantly better filtration to minimize fouling in the gas turbine.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	741	0	0
NSE	0	0	0
Total	**741**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.019 - PEC Remote Emissions Monitoring Upgrade

In-Service Date: 03/31/2014

Description:

Upgrade of the remote emissions monitoring system that will be used by the Ovation system to control turbine combustion dynamics and tuning.

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	0
Non-Labor	185	0	0
NSE	0	0	0
Total	**185**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	NEW GENERATION
Witness:	Carl S. La Peter
Budget Code:	00009.0
Category:	A. Generation Capital
Category-Sub:	3. Palomar Energy Center
Workpaper Group:	00009A - PEC Operational Enhancements
Workpaper Detail:	00009A.020 - PEC Electrical Improvements
In-Service Date:	Not Applicable

Description:

This project will be used to capture multiple small electrical projects to be completed at Palomar Energy Center. The projects will address improvements in control devices that provide power solutions for operation of the plant and modifications to existing electrical distribution systems to provide ease of access to power for welding, heat treating and other ancillary power needs.
For example: A power transfer and isolation switch was installed on the plant Uninterruptible Power Supply system to allow for maintenance to be performed without shutting down the entire system.

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

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.021 - PEC Site Security Improvements

In-Service Date: 12/31/2014

Description:

This project will make improvements to the security system at Palomar Energy Center that will enhance the current system. Improvements will include installation of UV camera systems, window glass tamper systems, and additional HDVR recorders.

Forecast In 2013 $(000)			
Years	2014	2015	2016
Labor	0	0	0
Non-Labor	211	0	0
NSE	0	0	0
Total	**211**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	NEW GENERATION
Witness:	Carl S. La Peter
Budget Code:	00009.0
Category:	A. Generation Capital
Category-Sub:	3. Palomar Energy Center
Workpaper Group:	00009A - PEC Operational Enhancements
Workpaper Detail:	00009A.022 - PEC Upgrade Programmable Logic Controllers
In-Service Date:	07/31/2015

Description:

Upgrade the programmable logic controllers (PLC) for the gas compressors, duct burners, water wash system and water purification system to Ovation controls. This control system upgrade provides improvements to the following: system security, operator graphical and functional interface, ability to customize the operator interface, ability to make improvements to control functions, data collection and storage, trending and analysis, plant and system troubleshooting, and simplified network architecture.

Forecast In 2013 $(000)

Years	2014	2015	2016
Labor	0	0	0
Non-Labor	0	800	0
NSE	0	0	0
Total	**0**	**800**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.023 - PEC Upgrade Chiller MKVIe to Ovation

In-Service Date: 05/31/2015

Description:

Upgrade the chiller GE MKVIe control system to Ovation controls. This control system upgrade provides improvements to the following: system security, operator graphical and functional interface, ability to customize the operator interface, ability to make improvements to control functions, data collection and storage, trending and analysis, plant and system troubleshooting, and simplified network architecture.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	0	303	0
NSE	0	0	0
Total	**0**	**303**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.024 - PEC Inlet Guide Vane and Gas Control Valve Upgrade

In-Service Date: 03/31/2015

Description:

Upgrade the current hydraulic actuators that are used for gas valve and inlet guide cane controls to electric actuators.
The electric actuator provides easier isolation for system lockouts.

Forecast In 2013 $(000)

Years	2014	2015	2016
Labor	0	0	0
Non-Labor	0	553	0
NSE	0	0	0
Total	**0**	**553**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.025 - PEC Chiller Triple Duty Valve Replacement

In-Service Date: 05/31/2015

Description:

Replace existing triple duty valve which is prone to leak-by problems, with two valves, to improve system line-up and isolation capability. One valve that will automatically open and close based on pump configuration, and the other will be used to isolate the pump and system for lockout tag out.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	0	105	0
NSE	0	0	0
Total	**0**	**105**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.026 - PEC Exciter Upgrade to Ovation

In-Service Date: 05/31/2016

Description:

Upgrade the exciter controls to Ovation to allow for a consistent control system throughout the plant. This control system upgrade provides improvements to the following: system security, operator graphical and functional interface, ability to customize the operator interface, ability to make improvements to control functions, data collection and storage, trending and analysis, plant and system troubleshooting, and simplified network architecture.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	0	0	845
NSE	0	0	0
Total	**0**	**0**	**845**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.027 - PEC LCI Upgrade to Ovation

In-Service Date: 08/31/2016

Description:

Upgrade the LCI controls to Ovation to allow for a consistent control system throughout the plant. This control system upgrade provides improvements to the following: system security, operator graphical and functional interface, ability to customize the operator interface, ability to make improvements to control functions, data collection and storage, trending and analysis, plant and system troubleshooting, simplified network architecture.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	0	0	575
NSE	0	0	0
Total	**0**	**0**	**575**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 3. Palomar Energy Center
Workpaper Group: 00009A - PEC Operational Enhancements
Workpaper Detail: 00009A.028 - PEC Ovation Training and Testing Lab

In-Service Date: 03/31/2016

Description:

Create an Ovation training and testing lab to provide the maintenance and operations staff with a simulator where they can learn plant startup and shutdown procedures and test alternate procedures, without affecting plant operations.

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

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00010A - DSEC Operational Enhancements

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00010.0
Category: A. Generation Capital
Category-Sub: 4. Desert Star Energy Center
Workpaper Group: 00010A - DSEC Operational Enhancements

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

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	45	9	45
Non-Labor	Zero-Based	0	0	0	0	0	10,840	1,725	4,435
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**10,885**	**1,734**	**4,480**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.5	0.1	0.5

Business Purpose:

The purpose of DSEC Operational Enhancements is to provide for capital additions and improvements at the Desert Star Energy Center.

Physical Description:

Several projects are being considered for Desert Star. Please see sub-work papers for specific project details.

Project Justification:

Improvements and additions are continuous at the facility and are selected based on their ability to increase the overall reliability, operability and safety of the facility.

Note: Totals may include rounding differences.

Area:	NEW GENERATION
Witness:	Carl S. La Peter
Budget Code:	00010.0
Category:	A. Generation Capital
Category-Sub:	4. Desert Star Energy Center
Workpaper Group:	00010A - DSEC Operational Enhancements

Forecast Methodology:

Labor - Zero-Based

The Zero-Based forecast method was selected because each year is unique and has no relation to previous years.

Non-Labor - Zero-Based

The Zero-Based forecast method was selected because each year is unique and has no relation to previous years.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00010A

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00010.0
Category: A. Generation Capital
Category-Sub: 4. Desert Star Energy Center
Workpaper Group: 00010A - DSEC Operational Enhancements
Workpaper Detail: 00010A.001 - Engineering and Supervision for DSEC Operational Enhancements

In-Service Date: Not Applicable

Description:

Engineering and supervision costs related to capital additions and improvements at Desert Star Energy Center.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	45	9	45
Non-Labor	0	0	0
NSE	0	0	0
Total	**45**	**9**	**45**
FTE	0.5	0.1	0.5

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00010.0
Category: A. Generation Capital
Category-Sub: 4. Desert Star Energy Center
Workpaper Group: 00010A - DSEC Operational Enhancements
Workpaper Detail: 00010A.002 - DSEC Spare 250MVA GSU Transformer

In-Service Date: 06/30/2014

Description:

This transformer is designed as a spare for any of the GSU s at DSEC or PEC, thus eliminating the need to have multiple spares for specific applications. The spare will be stored at DSEC.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	3,911	0	0
NSE	0	0	0
Total	**3,911**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00010.0
Category: A. Generation Capital
Category-Sub: 4. Desert Star Energy Center
Workpaper Group: 00010A - DSEC Operational Enhancements
Workpaper Detail: 00010A.003 - DSEC Steam Turbine L-0R Blades

In-Service Date: 05/31/2014

Description:

These turbine blades will be taken out of inventory at DSEC and placed in the steam turbine during the 2014 major inspection. The improved blades will eliminate a known cracking issue with the existing blades and also remove the current operating limitations (avoidance zone) associated with the existing blades.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	3,941	0	0
NSE	0	0	0
Total	**3,941**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00010.0
Category: A. Generation Capital
Category-Sub: 4. Desert Star Energy Center
Workpaper Group: 00010A - DSEC Operational Enhancements
Workpaper Detail: 00010A.004 - DSEC Upgrade Vibration Monitoring System

In-Service Date: 11/30/2014

Description:

The current Bently 3300 system is obsolete and difficult to maintain. The upgrade to the Bently 3500 will improve the machinery vibration monitoring capabilities by replacing outdated equipment and upgrading to better technology. Vibration monitoring is used as part of a predictive maintenance and machinery reliability process.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	441	0	0
NSE	0	0	0
Total	**441**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00010.0
Category: A. Generation Capital
Category-Sub: 4. Desert Star Energy Center
Workpaper Group: 00010A - DSEC Operational Enhancements
Workpaper Detail: 00010A.005 - DSEC Ammonia Dilution Blower Upgrade

In-Service Date: 06/30/2014

Description:

The current dilution blowers are 13 years old and made of carbon steel, which are subject to internal corrosion and difficult to maintain. The new blowers are made of stainless steel which will eliminate the internal corrosion. Also, the new blower has an improved heavy duty bearing design providing longer life and better reliability.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	161	0	0
NSE	0	0	0
Total	**161**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00010.0
Category: A. Generation Capital
Category-Sub: 4. Desert Star Energy Center
Workpaper Group: 00010A - DSEC Operational Enhancements
Workpaper Detail: 00010A.006 - DSEC HP Startup Vent Valve Upgrade

In-Service Date: 06/30/2014

Description:

The current valves are leaking which wastes purified water. The valves are thirteen years old and in need of costly repair. The replacement valves are an improved design that is not prone to leakage and provides for easier maintenance.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	624	0	0
NSE	0	0	0
Total	**624**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00010.0
Category: A. Generation Capital
Category-Sub: 4. Desert Star Energy Center
Workpaper Group: 00010A - DSEC Operational Enhancements
Workpaper Detail: 00010A.007 - DSEC SCE Interconnection Upgrades

In-Service Date: Not Applicable

Description:

This project will be used to capture DSEC s portion of SCE s capital expenditures for the miscellaneous upgrades to the SCE Eldorado substation, as per section 9.7 of the EDE (DSEC)/SCE Eldorado Substation Additional Facilities and Interconnection Agreement.

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

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00010.0
Category: A. Generation Capital
Category-Sub: 4. Desert Star Energy Center
Workpaper Group: 00010A - DSEC Operational Enhancements
Workpaper Detail: 00010A.008 - DSEC CT2 Inlet Filter Media Upgrade

In-Service Date: 06/30/2014

Description:

The DSEC CT #2 inlet air filters and evaporative cooling media will be replaced with upgraded components. The new design provides an improved prefilter mounting solution to reduce the labor necessary to perform filter changes.

Forecast In 2013 $(000)

Years	2014	2015	2016
Labor	0	0	0
Non-Labor	182	0	0
NSE	0	0	0
Total	**182**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00010.0
Category: A. Generation Capital
Category-Sub: 4. Desert Star Energy Center
Workpaper Group: 00010A - DSEC Operational Enhancements
Workpaper Detail: 00010A.009 - DSEC HRSG Penetration Seal Upgrades

In-Service Date: 06/30/2014

Description:

The current Heat Recovery Steam Generator (HRSG) penetrations seals have a history of leaking and require maintenance often. This is a safety issue as well as a maintenance problem. The upgraded design provides greater longevity and less costly upkeep.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	294	0	0
NSE	0	0	0
Total	**294**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	NEW GENERATION
Witness:	Carl S. La Peter
Budget Code:	00010.0
Category:	A. Generation Capital
Category-Sub:	4. Desert Star Energy Center
Workpaper Group:	00010A - DSEC Operational Enhancements
Workpaper Detail:	00010A.010 - DSEC HRSG Superheater Condensate Detection and Drain
In-Service Date:	11/30/2016

Description:

Install thermocouples to detect condensation in HRSG superheater drains and use the signal to automate the drain valves. The project will increase efficiency by limiting excessive blowdown during plant startup and decrease the risk of HRSG piping damage due to incomplete draining.

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

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00010.0
Category: A. Generation Capital
Category-Sub: 4. Desert Star Energy Center
Workpaper Group: 00010A - DSEC Operational Enhancements
Workpaper Detail: 00010A.011 - DSEC Desuperheater Upgrades

In-Service Date: 10/31/2014

Description:

Steam system desuperheaters (High Pressure Exhaust Vent Steam Jet Air Ejector, Gland Seal, and Condenser Hood Spray) are currently a welded design. These desuperheaters will be upgraded to a bolted flange design that will allow easier removal for required maintenance on this critical equipment.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	161	0	0
NSE	0	0	0
Total	**161**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00010.0
Category: A. Generation Capital
Category-Sub: 4. Desert Star Energy Center
Workpaper Group: 00010A - DSEC Operational Enhancements
Workpaper Detail: 00010A.012 - DSEC CT1 Air Inlet Personnel Access Improvements

In-Service Date: 06/30/2014

Description:

Install access doors ladders and platforms at each level of the CT1 Air Inlet. The improved access reduces the chance that an occupant could become trapped in an emergency and reduce the time and labor required to perform filter and media replacement.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
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: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00010.0
Category: A. Generation Capital
Category-Sub: 4. Desert Star Energy Center
Workpaper Group: 00010A - DSEC Operational Enhancements
Workpaper Detail: 00010A.013 - DSEC IP & LP Start-up Vent Valve Upgrade

In-Service Date: 11/30/2015

Description:

The currently installed DSEC Intermediate Pressure and Low Pressure Start-Up Vent Valves leak by, reducing steam plant efficiency. The valves are aging, and if any of them were to stick, it could result in a forced outage for repair.

Forecast In 2013 $(000)

Years	2014	2015	2016
Labor	0	0	0
Non-Labor	0	750	0
NSE	0	0	0
Total	**0**	**750**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00010.0
Category: A. Generation Capital
Category-Sub: 4. Desert Star Energy Center
Workpaper Group: 00010A - DSEC Operational Enhancements
Workpaper Detail: 00010A.014 - DSEC Mechanical Improvements

In-Service Date: Not Applicable

Description:

This project will be used to capture multiple small mechanical projects to be completed at Desert Star Energy Center. The projects are of a mechanical, structural, or civil nature and are intended to improve plant performance, or address operational, maintenance, safety or environmental issues.
For example: Service water piping and low pressure piping material upgrade in order to provide longer service life.

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

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00010.0
Category: A. Generation Capital
Category-Sub: 4. Desert Star Energy Center
Workpaper Group: 00010A - DSEC Operational Enhancements
Workpaper Detail: 00010A.015 - DSEC Instrumentation Improvements

In-Service Date: Not Applicable

Description:

This project will be used to capture multiple small instrumentation projects to be completed at Desert Star Energy Center. The projects are intended to improve the monitoring devices at the plant by replacing outdated equipment or upgrading to better technology.
For example: Adding differential pressure instrumentation to various stages of the HRSG in order to more accurately predict fouling, and schedule maintenance.

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

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00010.0
Category: A. Generation Capital
Category-Sub: 4. Desert Star Energy Center
Workpaper Group: 00010A - DSEC Operational Enhancements
Workpaper Detail: 00010A.016 - DSEC Electrical Improvements

In-Service Date: Not Applicable

Description:

This project will be used to capture multiple small Electrical projects to be completed at Desert Star Energy Center.
The projects are intended to improve the Electrical devices at the plant by replacing outdated equipment or upgrading to better technology.
For example: Upgrading components of the plant low and medium voltage systems to create a more reliable electrical service to plant equipment, including upgrading starters for our air cooled condenser fans, and installing new 480V receptacles and power distribution panels.

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

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00010.0
Category: A. Generation Capital
Category-Sub: 4. Desert Star Energy Center
Workpaper Group: 00010A - DSEC Operational Enhancements
Workpaper Detail: 00010A.017 - DSEC Motor Operator Valve Improvements

In-Service Date: Not Applicable

Description:

Upgrade the aging valve motor operators throughout the plant to valves with new technology. The new design provides greater reliability.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	127	127	127
NSE	0	0	0
Total	**127**	**127**	**127**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00010.0
Category: A. Generation Capital
Category-Sub: 4. Desert Star Energy Center
Workpaper Group: 00010A - DSEC Operational Enhancements
Workpaper Detail: 00010A.019 - DSEC HRSG CO Catalyst Upgrade

In-Service Date: 06/30/2016

Description:

HRSG CO Catalyst degrades over time and when the ability of the catalyst degrades to the point that emissions limits cannot be met, the catalyst must be replaced to maintain air permit conditions

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	0	0	1,775
NSE	0	0	0
Total	**0**	**0**	**1,775**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00010.0
Category: A. Generation Capital
Category-Sub: 4. Desert Star Energy Center
Workpaper Group: 00010A - DSEC Operational Enhancements
Workpaper Detail: 00010A.020 - DSEC CT Insulation System Upgrade

In-Service Date: 11/30/2016

Description:

The CT casing insulation is at the end of its useful life. This upgrade will replace the insulation.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	0	0	660
NSE	0	0	0
Total	**0**	**0**	**660**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00010.0
Category: A. Generation Capital
Category-Sub: 4. Desert Star Energy Center
Workpaper Group: 00010A - DSEC Operational Enhancements
Workpaper Detail: 00010A.022 - DSEC ACC Fan Bay Lifting Beam/Hoist Upgrade

In-Service Date: 11/30/2016

Description:

The Air Cooled Condenser (ACC) periodically requires fan motors and gearboxes to be removed and replaced for maintenance. The current maintenance lift design of the ACC requires multiple load transfers from beam to beam to accomplish these activities. Multiple load transfers increases the safety risk when handling these heavy loads and is also very time consuming. This upgrade will install lifting beams with sufficient span to allow fan motor and gearboxes to be moved in one lift, thus improving safety and productivity.

Forecast In 2013 $(000)

Years	2014	2015	2016
Labor	0	0	0
Non-Labor	0	0	825
NSE	0	0	0
Total	**0**	**0**	**825**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00011A - CPEP Operational Enhancements

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00011.0
Category: A. Generation Capital
Category-Sub: 5. Cuyamaca Peak Energy Plant
Workpaper Group: 00011A - CPEP Operational Enhancements

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

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2009	2010	2011	2012	2013	2014	2015	2016
Labor	Zero-Based	0	0	0	0	0	0	0	0
Non-Labor	Zero-Based	0	0	0	0	0	1,428	1,612	300
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,428**	**1,612**	**300**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Business Purpose:

The purpose of CPEP Operational Enhancements is to provide for capital additions and improvements at the Cuyamaca Peak Energy Plant.

Physical Description:

Several projects are being considered for Cuyamaca Peak. Please see sub-work papers for specific project details.

Project Justification:

Improvements and additions are continuous at the facility and are selected based on their ability to increase the overall reliability, operability and safety of the facility.

Note: Totals may include rounding differences.

Area:	NEW GENERATION
Witness:	Carl S. La Peter
Budget Code:	00011.0
Category:	A. Generation Capital
Category-Sub:	5. Cuyamaca Peak Energy Plant
Workpaper Group:	00011A - CPEP Operational Enhancements

Forecast Methodology:

Labor - Zero-Based

N/A

Non-Labor - Zero-Based

The Zero-Based forecast method was selected because each year is unique and has no relation to previous years.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00011A

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00011.0
Category: A. Generation Capital
Category-Sub: 5. Cuyamaca Peak Energy Plant
Workpaper Group: 00011A - CPEP Operational Enhancements
Workpaper Detail: 00011A.001 - CPEP New Fuel Flow Metering

In-Service Date: 10/31/2015

Description:

Installation of gas flow monitoring equipment in order to provide accurate measurement of gas flow to the turbines, and enable plant personnel to accurately monitor gas usage for emissions monitoring regulatory purposes.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	0	229	0
NSE	0	0	0
Total	**0**	**229**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00011.0
Category: A. Generation Capital
Category-Sub: 5. Cuyamaca Peak Energy Plant
Workpaper Group: 00011A - CPEP Operational Enhancements
Workpaper Detail: 00011A.002 - CPEP Black Start Generator

In-Service Date: 11/30/2014

Description:

A black start generator is needed at CPEP to provide for power restoration to the grid in the event of a blackout. This engine will provide SDG&E Grid Operations with a cranking path to the Otay Mesa Energy Center to aid in the restoration of power to the Grid.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	1,128	0	0
NSE	0	0	0
Total	**1,128**	**0**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	NEW GENERATION
Witness:	Carl S. La Peter
Budget Code:	00011.0
Category:	A. Generation Capital
Category-Sub:	5. Cuyamaca Peak Energy Plant
Workpaper Group:	00011A - CPEP Operational Enhancements
Workpaper Detail:	00011A.003 - CPEP Mechanical Improvements
In-Service Date:	Not Applicable

Description:

This project will be used to capture multiple small mechanical projects to be completed at Cuyamaca Peak Energy Plant. The projects are of a mechanical, structural, or civil nature and are intended to improve plant performance, or address operational, maintenance, safety or environmental issues.
For example: Install permanent handrails, ladder and platforms on the turbine roof and air inlet structures. This will provide safe access for maintenance and operations activities, and eliminate the need for temporary scaffolding.

Forecast In 2013 $(000)

Years	2014	2015	2016
Labor	0	0	0
Non-Labor	100	100	100
NSE	0	0	0
Total	**100**	**100**	**100**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00011.0
Category: A. Generation Capital
Category-Sub: 5. Cuyamaca Peak Energy Plant
Workpaper Group: 00011A - CPEP Operational Enhancements
Workpaper Detail: 00011A.004 - CPEP Instrumentation Improvements

In-Service Date: Not Applicable

Description:

This project will be used to capture multiple small instrumentation projects to be completed at Cuyamaca Peak Energy Plant. The projects are intended to improve the monitoring devices at the plant by replacing outdated equipment or upgrading to better technology.
For example: Upgrade the existing obsolete weather station to one that will provide easy access to data, improved trending and fully integrate with the control network. This will improve weather monitoring to better assist plant operators and allow improved analysis for engineering.

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

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00011.0
Category: A. Generation Capital
Category-Sub: 5. Cuyamaca Peak Energy Plant
Workpaper Group: 00011A - CPEP Operational Enhancements
Workpaper Detail: 00011A.005 - CPEP Electrical Improvements

In-Service Date: Not Applicable

Description:

This project will be used to capture multiple small electrical projects to be completed at Cuyamaca Peak Energy Plant. The projects will address improvements in control devices that provide power solutions for operation of the plant and modifications to existing electrical distribution systems to provide ease of access to power for welding, heat treating and other ancillary power needs.
For example: Add welding outlets at strategic locations in the plant. Welding outlets are used as a source of temporary power for maintenance activities, as well as providing power for welding.

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

Note: Totals may include rounding differences.

Area: NEW GENERATION
Witness: Carl S. La Peter
Budget Code: 00011.0
Category: A. Generation Capital
Category-Sub: 5. Cuyamaca Peak Energy Plant
Workpaper Group: 00011A - CPEP Operational Enhancements
Workpaper Detail: 00011A.006 - CPEP Micronet Control System Upgrade to Ovation

In-Service Date: 10/31/2015

Description:

Upgrade the current turbine control system with an alternate control system, as well as upgrading existing HMI's to HMI's with current operating systems and security software. This control system upgrade provides improvements to the following: system security, operator graphical and functional interface, ability to customize the operator interface, ability to make improvements to control functions, data collection and storage, trending and analysis, plant and system troubleshooting, and simplified network architecture.

Forecast In 2013 $(000)			
Years	**2014**	**2015**	**2016**
Labor	0	0	0
Non-Labor	0	1,083	0
NSE	0	0	0
Total	**0**	**1,083**	**0**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.