Application of SAN DIEGO GAS & ELECTRIC COMPANY for authority to update its gas and electric revenue requirement and base rates effective January 1, 2024 (U 902-M)	))))

Application No. 22-05-___

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

CAPITAL WORKPAPERS TO
PREPARED DIRECT TESTIMONY
OF DANIEL S. BAERMAN
ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

May 2022

2024 General Rate Case - APP

INDEX OF WORKPAPERS

Exhibit SDG&E-14-CWP - ELECTRIC GENERATION

Overall Summary For Exhibit No. SDG&E-14-CWP

Area:	**ELECTRIC GENERATION**	
Witness:	**Daniel S. Baerman**	

	In 2021 $ (000)		
	Adjusted-Forecast		
	2022	2023	2024
A. Generation Capital	37,388	45,419	43,867
Total	**37,388**	**45,419**	**43,867**

Note: Totals may include rounding differences.

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Category: A. Generation Capital
Workpaper: VARIOUS

Summary for Category: A. Generation Capital

	In 2021$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2021	2022	2023	2024
Labor	18	107	250	1,261
Non-Labor	21,287	37,281	45,169	42,606
NSE	0	0	0	0
Total	**21,305**	**37,388**	**45,419**	**43,867**
FTE	0.1	1.0	1.9	9.0
000060 GENERATION CAPITAL TOOLS & TEST EQPT.				
Labor	0	0	0	0
Non-Labor	50	86	86	86
NSE	0	0	0	0
Total	**50**	**86**	**86**	**86**
FTE	0.0	0.0	0.0	0.0
000090 PALOMAR PLANT OPERATIONAL ENHANCEMENTS				
Labor	2	39	39	39
Non-Labor	8,860	19,212	18,712	8,462
NSE	0	0	0	0
Total	**8,862**	**19,251**	**18,751**	**8,501**
FTE	0.0	0.3	0.3	0.3
000100 DESERT STAR ENERGY CTR OPER. ENHANCE				
Labor	0	4	4	4
Non-Labor	9,879	6,860	6,860	6,860
NSE	0	0	0	0
Total	**9,879**	**6,864**	**6,864**	**6,864**
FTE	0.0	0.1	0.1	0.1
000080 MIRAMAR PLANT OPERATIONAL ENHANCEMENTS				
Labor	2	11	163	1,185
Non-Labor	1,007	2,190	11,137	26,668
NSE	0	0	0	0
Total	**1,009**	**2,201**	**11,300**	**27,853**
FTE	0.0	0.1	1.1	8.3
000110 CUYAMACA PEAK ENERGY PLANT OPER ENHANCE				
Labor	0	24	24	24
Non-Labor	281	484	484	484
NSE	0	0	0	0
Total	**281**	**508**	**508**	**508**
FTE	0.0	0.2	0.2	0.2

Note: Totals may include rounding differences.

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Category: A. Generation Capital
Workpaper: VARIOUS

	In 2021$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2021	2022	2023	2024
000140 RAMONA SOLAR PLANT OPER ENHANCE				
Labor	0	9	9	9
Non-Labor	0	46	46	46
NSE	0	0	0	0
Total	**0**	**55**	**55**	**55**
FTE	0.0	0.1	0.1	0.1
210390 PALOMAR HYDROGEN SYSTEMS				
Labor	14	20	11	0
Non-Labor	1,210	8,403	7,844	0
NSE	0	0	0	0
Total	**1,224**	**8,423**	**7,855**	**0**
FTE	0.1	0.2	0.1	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
000060 - GENERATION CAPITAL TOOLS & TEST EQPT.

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 00006.0
Category: A. Generation Capital
Category-Sub: 1. Capital Tools & Test Equipment
Workpaper Group: 000060 - GENERATION CAPITAL TOOLS & TEST EQPT.

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	5-YR Average	0	0	0	0	0	0	0	0
Non-Labor	5-YR Average	134	92	63	92	50	86	86	86
NSE	5-YR Average	0	0	0	0	0	0	0	0
Total		**134**	**92**	**63**	**92**	**50**	**86**	**86**	**86**
FTE	5-YR Average	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:	ELECTRIC GENERATION
Witness:	Daniel S. Baerman
Budget Code:	00006.0
Category:	A. Generation Capital
Category-Sub:	1. Capital Tools & Test Equipment
Workpaper Group:	000060 - GENERATION CAPITAL TOOLS & TEST EQPT.

Forecast Methodology:

Labor - 5-YR Average

n/a

Non-Labor - 5-YR Average

The 5 year average forecast method was selected for Capital Tools & Test Equipment because there are many types of equipment purchased in this activity that individually consist of different tools , test equipment, and machinery. As such, a 5 year average accurately represents the base funding needed for projecting capital project needs.

NSE - 5-YR Average

N/A

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 00006.0
Category: A. Generation Capital
Category-Sub: 1. Capital Tools & Test Equipment
Workpaper Group: 000060 - GENERATION CAPITAL TOOLS & TEST EQPT.

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	5-YR Average	0	0	0	0	0	0	0	0	0
Non-Labor	5-YR Average	86	86	86	0	0	0	86	86	86
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
Total		**86**	**86**	**86**	**0**	**0**	**0**	**86**	**86**	**86**
FTE	5-YR Average	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022 Total	0	0	0	0	0.0
2023 Total	0	0	0	0	0.0
2024 Total	0	0	0	0	0.0

Note: Totals may include rounding differences.

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 00006.0
Category: A. Generation Capital
Category-Sub: 1. Capital Tools & Test Equipment
Workpaper Group: 000060 - GENERATION CAPITAL TOOLS & TEST EQPT.

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	0	0	0	0	0
Non-Labor	111	79	55	83	50
NSE	0	0	0	0	0
Total	**111**	**79**	**55**	**83**	**50**
FTE	0.0	0.0	0.0	0.0	0.0
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	0	0	0	0	0
Non-Labor	111	79	55	83	50
NSE	0	0	0	0	0
Total	**111**	**79**	**55**	**83**	**50**
FTE	0.0	0.0	0.0	0.0	0.0
Vacation & Sick (Nominal $)					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Escalation to 2021$					
Labor	0	0	0	0	0
Non-Labor	23	14	8	9	0
NSE	0	0	0	0	0
Total	**23**	**14**	**8**	**9**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	0	0	0	0	0
Non-Labor	134	92	63	92	50
NSE	0	0	0	0	0
Total	**134**	**92**	**63**	**92**	**50**
FTE	0.0	0.0	0.0	0.0	0.0

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 00006.0
Category: A. Generation Capital
Category-Sub: 1. Capital Tools & Test Equipment
Workpaper Group: 000060 - GENERATION CAPITAL TOOLS & TEST EQPT.

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0

Year	Labor	NLbr	NSE	Total	FTE

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 000060

Area:	ELECTRIC GENERATION
Witness:	Daniel S. Baerman
Budget Code:	00006.0
Category:	A. Generation Capital
Category-Sub:	1. Capital Tools & Test Equipment
Workpaper Group:	000060 - GENERATION CAPITAL TOOLS & TEST EQPT.
Workpaper Detail:	000060.001 - 000060 - Generation Capital Tools & Test Equipment
In-Service Date:	Not Applicable

Description:

000060 - Generation Capital Tools & Test Equipment

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	0	0	0
Non-Labor	86	86	86
NSE	0	0	0
Total	**86**	**86**	**86**
FTE	0.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
000090 - PALOMAR PLANT OPERATIONAL ENHANCEMENTS

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 2. Palomar Energy Center
Workpaper Group: 000090 - PALOMAR PLANT OPERATIONAL ENHANCEMENTS

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	5-YR Average	16	154	8	13	2	39	39	39
Non-Labor	5-YR Average	6,342	3,973	6,853	6,280	8,860	19,212	18,712	8,462
NSE	5-YR Average	0	0	0	0	0	0	0	0
Total		**6,358**	**4,127**	**6,861**	**6,294**	**8,862**	**19,251**	**18,751**	**8,501**
FTE	5-YR Average	0.1	1.0	0.1	0.1	0.0	0.3	0.3	0.3

Business Purpose:

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

Physical Description:

The Palomar Energy Center (PEC) is a 588 megawatt gas-fired combined-cycle plant with 2 GE 7 FA model combustion turbines and a GE steam turbine. Specific projects are not identified. Representative capital projects are based on projects that increase the overall reliability, operability and safety of the facility.

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:	ELECTRIC GENERATION
Witness:	Daniel S. Baerman
Budget Code:	00009.0
Category:	A. Generation Capital
Category-Sub:	2. Palomar Energy Center
Workpaper Group:	000090 - PALOMAR PLANT OPERATIONAL ENHANCEMENTS

Forecast Methodology:

Labor - 5-YR Average

Projecting capital projects years in advance is difficult for a variety of reasons , such as changes in costs and technology from the time of planning to the time of implementation. Most importantly, power plant needs may change, resulting in different or unexpected priorities . Resources are then reallocated to accommodate the new priorities. However, the 5-YR average method and adjustments for PEC Operational Enhancements was selected because it represents a reasonable foundation for projecting capital project needs as it includes a variety of planned and unplanned capital projects, and provides the longest history of recorded spend.

Non-Labor - 5-YR Average

Projecting capital projects years in advance is difficult for a variety of reasons , such as changes in costs and technology from the time of planning to the time of implementation. Most importantly, power plant needs may change, resulting in different or unexpected priorities . Resources are then reallocated to accommodate the new priorities. However, the 5-YR average method and adjustments for PEC Operational Enhancements was selected because it represents a reasonable foundation for projecting capital project needs as it includes a variety of planned and unplanned capital projects, and provides the longest history of recorded spend. The forecast was adjusted to include costs to develop and implement industrial control systems (ICS) cybersecurity compliance, and significant enhancements and/or replacements not previously performed and not expected to reoccur in the lifetime of the plant.

NSE - 5-YR Average

N/A

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 2. Palomar Energy Center
Workpaper Group: 000090 - PALOMAR PLANT OPERATIONAL ENHANCEMENTS

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	5-YR Average	39	39	39	0	0	0	39	39	39
Non-Labor	5-YR Average	6,462	6,462	6,462	12,750	12,250	2,000	19,212	18,712	8,462
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
Total		**6,501**	**6,501**	**6,501**	**12,750**	**12,250**	**2,000**	**19,251**	**18,751**	**8,501**
FTE	5-YR Average	0.3	0.3	0.3	0.0	0.0	0.0	0.3	0.3	0.3

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022	0	2,000	0	2,000	0.0
Explanation:	Costs to develop and implement cybersecurity compliance for industrial control systems (ICS) that strengthen cybersecurity of its computer-controlled systems and increase reliability and safety against malicious attacks, equipment failure and other threats. Cost include enhanced software applications and distributed control systems to prevent such malicious attacks or equipment failure of the systems that are critical to the infrastructure.				
2022	0	10,750	0	10,750	0.0
Explanation:	Additional significant enhancements and/or replacements not previously included [FlameSheet Combustor ($6 million), Infinite Cooling ($1 million), STG Warming Blanket ($1.25 million, CO/SCR Catalyst ($1.5 million), HRSG Diffuser & Round Duct ($1 million)] and not expected to reoccur in the lifetime of the plant.				
2022 Total	0	12,750	0	12,750	0.0
2023	0	2,000	0	2,000	0.0
Explanation:	Costs to develop and implement cybersecurity compliance for industrial control systems (ICS) that strengthen cybersecurity of its computer-controlled systems and increase reliability and safety against malicious attacks, equipment failure and other threats. Cost include enhanced software applications and distributed control systems to prevent such malicious attacks or equipment failure of the systems that are critical to the infrastructure.				
2023	0	10,250	0	10,250	0.0
Explanation:	Additional significant enhancements and/or replacements not previously included [FlameSheet Combustor ($6 million), Infinite Cooling ($1.5 million), STG Warming Blanket ($0.75 million), CO/SCR Catalyst ($1 million), HRSG Diffuser & Round Duct ($1 million)] and not expected to reoccur in the lifetime of the plant.				
2023 Total	0	12,250	0	12,250	0.0
2024	0	2,000	0	2,000	0.0
Explanation:	Costs to develop and implement cybersecurity compliance for industrial control systems (ICS) that strengthen cybersecurity of its computer-controlled systems and increase reliability and safety against malicious attacks, equipment failure and other threats. Cost include enhanced software applications and distributed control systems to prevent such malicious attacks or equipment failure of the systems that are critical to the infrastructure.				
2024 Total	0	2,000	0	2,000	0.0

Note: Totals may include rounding differences.

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 2. Palomar Energy Center
Workpaper Group: 000090 - PALOMAR PLANT OPERATIONAL ENHANCEMENTS

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	12	114	6	10	2
Non-Labor	5,232	3,387	5,983	5,664	8,860
NSE	0	0	0	0	0
Total	**5,243**	**3,501**	**5,989**	**5,675**	**8,862**
FTE	0.1	0.9	0.1	0.1	0.0
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	12	114	6	10	2
Non-Labor	5,232	3,387	5,983	5,664	8,860
NSE	0	0	0	0	0
Total	**5,243**	**3,501**	**5,989**	**5,675**	**8,862**
FTE	0.1	0.9	0.1	0.1	0.0
Vacation & Sick (Nominal $)					
Labor	2	17	1	1	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**2**	**17**	**1**	**1**	**0**
FTE	0.0	0.1	0.0	0.0	0.0
Escalation to 2021$					
Labor	3	23	1	1	0
Non-Labor	1,110	586	870	616	0
NSE	0	0	0	0	0
Total	**1,113**	**608**	**871**	**617**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	16	154	8	13	2
Non-Labor	6,342	3,973	6,853	6,280	8,860
NSE	0	0	0	0	0
Total	**6,358**	**4,127**	**6,861**	**6,294**	**8,862**
FTE	0.1	1.0	0.1	0.1	0.0

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 00009.0
Category: A. Generation Capital
Category-Sub: 2. Palomar Energy Center
Workpaper Group: 000090 - PALOMAR PLANT OPERATIONAL ENHANCEMENTS

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0

Year	Labor	NLbr	NSE	Total	FTE

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 000090

Area:	ELECTRIC GENERATION
Witness:	Daniel S. Baerman
Budget Code:	00009.0
Category:	A. Generation Capital
Category-Sub:	2. Palomar Energy Center
Workpaper Group:	000090 - PALOMAR PLANT OPERATIONAL ENHANCEMENTS
Workpaper Detail:	000090.001 - 000090 - Palomar Plant Operational Enhancements
In-Service Date:	Not Applicable

Description:

000090 - Palomar Plant Operational Enhancements

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	39	39	39
Non-Labor	19,212	18,712	8,462
NSE	0	0	0
Total	**19,251**	**18,751**	**8,501**
FTE	0.3	0.3	0.3

Note: Totals may include rounding differences.

Beginning of Workpaper Group
000100 - DESERT STAR ENERGY CTR OPER. ENHANCE

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 00010.0
Category: A. Generation Capital
Category-Sub: 3. Desert Star Energy Center
Workpaper Group: 000100 - DESERT STAR ENERGY CTR OPER. ENHANCE

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	5-YR Average	14	-1	0	1	0	4	4	4
Non-Labor	5-YR Average	4,745	1,268	4,117	4,292	9,879	6,860	6,860	6,860
NSE	5-YR Average	0	0	0	0	0	0	0	0
Total		**4,759**	**1,267**	**4,117**	**4,293**	**9,879**	**6,864**	**6,864**	**6,864**
FTE	5-YR Average	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1

Business Purpose:

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

Physical Description:

The Desert Star Energy Center (DSEC), located in Boulder City, NV, is a 480 megawatt gas-fired combined-cycle plant with 2 Siemens 501-FC model combustion turbines and a Westinghouse steam turbine. Specific projects are not identified. Representative capital projects are based on projects that increase the overall reliability, operability and safety of the facility.

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:	ELECTRIC GENERATION
Witness:	Daniel S. Baerman
Budget Code:	00010.0
Category:	A. Generation Capital
Category-Sub:	3. Desert Star Energy Center
Workpaper Group:	000100 - DESERT STAR ENERGY CTR OPER. ENHANCE

Forecast Methodology:

Labor - 5-YR Average

Projecting capital projects years in advance is difficult for a variety of reasons , such as changes in costs and technology from the time of planning to the time of implementation. Most importantly, power plant needs may change, resulting in different or unexpected priorities . Resources are then reallocated to accommodate the new priorities. However, the 5-YR average method for DSEC Operational Enhancements was selected because it represents a reasonable foundation for projecting capital project needs as it includes a variety of planned and unplanned capital projects, and provides the longest history of recorded spend.

Non-Labor - 5-YR Average

Projecting capital projects years in advance is difficult for a variety of reasons , such as changes in costs and technology from the time of planning to the time of implementation. Most importantly, power plant needs may change, resulting in different or unexpected priorities . Resources are then reallocated to accommodate the new priorities. However, the 5-YR average method for DSEC Operational Enhancements was selected because it represents a reasonable foundation for projecting capital project needs as it includes a variety of planned and unplanned capital projects, and provides the longest history of recorded spend. The forecast was adjusted to include costs to develop and implement industrial control systems (ICS) cybersecurity compliance.

NSE - 5-YR Average

N/A

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 00010.0
Category: A. Generation Capital
Category-Sub: 3. Desert Star Energy Center
Workpaper Group: 000100 - DESERT STAR ENERGY CTR OPER. ENHANCE

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	5-YR Average	3	3	3	1	1	1	4	4	4
Non-Labor	5-YR Average	4,860	4,860	4,860	2,000	2,000	2,000	6,860	6,860	6,860
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
Total		**4,863**	**4,863**	**4,863**	**2,001**	**2,001**	**2,001**	**6,864**	**6,864**	**6,864**
FTE	5-YR Average	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022	0	2,000	0	2,000	0.0
Explanation:	Costs to develop and implement cybersecurity compliance for industrial control systems (ICS) that strengthen cybersecurity of its computer-controlled systems and increase reliability and safety against malicious attacks, equipment failure and other threats. Cost include enhanced software applications and distributed control systems to prevent such malicious attacks or equipment failure of the systems that are critical to the infrastructure.				
2022	1	0	0	1	0.1
Explanation:	Adding FTE to align with the forecasted labor dollars.				
2022 Total	1	2,000	0	2,001	0.1
2023	0	2,000	0	2,000	0.0
Explanation:	Costs to develop and implement cybersecurity compliance for industrial control systems (ICS) that strengthen cybersecurity of its computer-controlled systems and increase reliability and safety against malicious attacks, equipment failure and other threats. Cost include enhanced software applications and distributed control systems to prevent such malicious attacks or equipment failure of the systems that are critical to the infrastructure.				
2023	1	0	0	1	0.1
Explanation:	Adding FTE to align with the forecasted labor dollars.				
2023 Total	1	2,000	0	2,001	0.1
2024	0	2,000	0	2,000	0.0
Explanation:	Costs to develop and implement cybersecurity compliance for industrial control systems (ICS) that strengthen cybersecurity of its computer-controlled systems and increase reliability and safety against malicious attacks, equipment failure and other threats. Cost include enhanced software applications and distributed control systems to prevent such malicious attacks or equipment failure of the systems that are critical to the infrastructure.				
2024	1	0	0	1	0.1
Explanation:	Adding FTE to align with the forecasted labor dollars.				
2024 Total	1	2,000	0	2,001	0.1

Note: Totals may include rounding differences.

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 00010.0
Category: A. Generation Capital
Category-Sub: 3. Desert Star Energy Center
Workpaper Group: 000100 - DESERT STAR ENERGY CTR OPER. ENHANCE

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	10	-1	0	0	0
Non-Labor	3,914	1,081	3,594	3,871	9,879
NSE	0	0	0	0	0
Total	**3,924**	**1,080**	**3,594**	**3,871**	**9,879**
FTE	0.1	0.0	0.0	0.0	0.0
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	10	-1	0	0	0
Non-Labor	3,914	1,081	3,594	3,871	9,879
NSE	0	0	0	0	0
Total	**3,924**	**1,080**	**3,594**	**3,871**	**9,879**
FTE	0.1	0.0	0.0	0.0	0.0
Vacation & Sick (Nominal $)					
Labor	2	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**2**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Escalation to 2021$					
Labor	3	0	0	0	0
Non-Labor	831	187	522	421	0
NSE	0	0	0	0	0
Total	**833**	**187**	**522**	**421**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	14	-1	0	1	0
Non-Labor	4,745	1,268	4,117	4,292	9,879
NSE	0	0	0	0	0
Total	**4,759**	**1,267**	**4,117**	**4,293**	**9,879**
FTE	0.1	0.0	0.0	0.0	0.0

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 00010.0
Category: A. Generation Capital
Category-Sub: 3. Desert Star Energy Center
Workpaper Group: 000100 - DESERT STAR ENERGY CTR OPER. ENHANCE

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0

Year	Labor	NLbr	NSE	Total	FTE

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 000100

Area:	ELECTRIC GENERATION
Witness:	Daniel S. Baerman
Budget Code:	00010.0
Category:	A. Generation Capital
Category-Sub:	3. Desert Star Energy Center
Workpaper Group:	000100 - DESERT STAR ENERGY CTR OPER. ENHANCE
Workpaper Detail:	000100.001 - 000100 - Desert Star Energy Center Operational Enhancements
In-Service Date:	Not Applicable

Description:

000100 - Desert Star Energy Center Operational Enhancements

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	4	4	4
Non-Labor	6,860	6,860	6,860
NSE	0	0	0
Total	**6,864**	**6,864**	**6,864**
FTE	0.1	0.1	0.1

Note: Totals may include rounding differences.

Beginning of Workpaper Group
000080 - MIRAMAR PLANT OPERATIONAL ENHANCEMENTS

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 00008.0
Category: A. Generation Capital
Category-Sub: 4. Miramar Energy Facility
Workpaper Group: 000080 - MIRAMAR PLANT OPERATIONAL ENHANCEMENTS

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	5-YR Average	5	21	0	21	2	11	163	1,185
Non-Labor	5-YR Average	913	1,153	1,117	6,758	1,007	2,190	11,137	26,668
NSE	5-YR Average	0	0	0	0	0	0	0	0
Total		**918**	**1,174**	**1,117**	**6,779**	**1,009**	**2,201**	**11,300**	**27,853**
FTE	5-YR Average	0.0	0.1	0.0	0.1	0.0	0.1	1.1	8.3

Business Purpose:

The purpose of the Miramar Plant Operational Enhancements is to provide for capital additions and improvements at the Miramar Energy Facility (MEF). Years 2023 and 2023 include adjustments to the forecast to add the Hybrid project at Miramar Energy Facility, a capital enhancement. Please refer to the Clean Energy Innovations testimony for complete description. For more details on the Hybrid project, refer to Fernando Valero's Clean Energy Innovations testimony (Exhibit SDG&E-15).

Physical Description:

The Miramar Energy Facility (MEF) is a peaking plant with two GE LM6000 turbines that together produce 92 megawatts (MEF-1 and MEF-2). This site also provides black start services used for restoration of the electric grid. Specific projects are not identified. Representative capital projects are based on projects that increase the overall reliability, operability and safety of the facility.

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:	ELECTRIC GENERATION
Witness:	Daniel S. Baerman
Budget Code:	00008.0
Category:	A. Generation Capital
Category-Sub:	4. Miramar Energy Facility
Workpaper Group:	000080 - MIRAMAR PLANT OPERATIONAL ENHANCEMENTS

Forecast Methodology:

Labor - 5-YR Average

Projecting capital projects years in advance is difficult for a variety of reasons , such as changes in costs and technology from the time of planning to the time of implementation. Most importantly, power plant needs may change, resulting in different or unexpected priorities . Resources are then reallocated to accommodate the new priorities. However, the 5-YR average method for Miramar Plant Operational Enhancements was selected because it represents a reasonable foundation for projecting capital project needs as it includes a variety of planned and unplanned capital projects, and provides the longest history of recorded spend. Years 2023 and 2023 include adjustments to the forecast to add the Hybrid project at Miramar Energy Facility, a capital enhancement. For more details on the Hybrid project, refer to Fernando Valero's Clean Energy Innovations testimony (Exhibit SDG&E-15).

Non-Labor - 5-YR Average

Projecting capital projects years in advance is difficult for a variety of reasons , such as changes in costs and technology from the time of planning to the time of implementation. Most importantly, power plant needs may change, resulting in different or unexpected priorities . Resources are then reallocated to accommodate the new priorities. However, the 5-YR average method for Miramar Plant Operational Enhancements was selected because it represents a reasonable foundation for projecting capital project needs as it includes a variety of planned and unplanned capital projects, and provides the longest history of recorded spend. Years 2023 and 2023 include adjustments to the forecast to add the Hybrid project at Miramar Energy Facility, a capital enhancement. For more details on the Hybrid project, refer to Fernando Valero's Clean Energy Innovations testimony (Exhibit SDG&E-15).

NSE - 5-YR Average

N/A

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 00008.0
Category: A. Generation Capital
Category-Sub: 4. Miramar Energy Facility
Workpaper Group: 000080 - MIRAMAR PLANT OPERATIONAL ENHANCEMENTS

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	5-YR Average	10	10	10	1	153	1,175	11	163	1,185
Non-Labor	5-YR Average	2,190	2,190	2,190	0	8,947	24,478	2,190	11,137	26,668
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
Total		**2,200**	**2,200**	**2,200**	**1**	**9,100**	**25,653**	**2,201**	**11,300**	**27,853**
FTE	5-YR Average	0.0	0.0	0.0	0.1	1.1	8.3	0.1	1.1	8.3

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022	1	0	0	1	0.1
Explanation:	Adding FTE to align with the forecasted labor dollars.				
2022 Total	1	0	0	1	0.1
2023	153	8,947	0	9,100	1.1
Explanation:	To include the Hybrid at Miramar Energy Facility, a capital enhancement to the Miramar Energy Facility. For more details, refer to Fernando Valero's Clean Energy Innovations testimony (Exhibit SDG&E-15).				
2023 Total	153	8,947	0	9,100	1.1
2024	1,175	24,478	0	25,653	8.3
Explanation:	To include the Hybrid at Miramar Energy Facility, a capital enhancement to the Miramar Energy Facility. For more details, refer to Fernando Valero's Clean Energy Innovations testimony (Exhibit SDG&E-15).				
2024 Total	1,175	24,478	0	25,653	8.3

Note: Totals may include rounding differences.

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 00008.0
Category: A. Generation Capital
Category-Sub: 4. Miramar Energy Facility
Workpaper Group: 000080 - MIRAMAR PLANT OPERATIONAL ENHANCEMENTS

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	3	15	0	16	2
Non-Labor	753	983	975	6,095	1,007
NSE	0	0	0	0	0
Total	**756**	**999**	**975**	**6,111**	**1,009**
FTE	0.0	0.1	0.0	0.1	0.0
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	3	15	0	16	2
Non-Labor	753	983	975	6,095	1,007
NSE	0	0	0	0	0
Total	**756**	**999**	**975**	**6,111**	**1,009**
FTE	0.0	0.1	0.0	0.1	0.0
Vacation & Sick (Nominal $)					
Labor	1	2	0	2	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**1**	**2**	**0**	**2**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Escalation to 2021$					
Labor	1	3	0	2	0
Non-Labor	160	170	142	663	0
NSE	0	0	0	0	0
Total	**161**	**173**	**142**	**665**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	5	21	0	21	2
Non-Labor	913	1,153	1,117	6,758	1,007
NSE	0	0	0	0	0
Total	**918**	**1,174**	**1,117**	**6,779**	**1,009**
FTE	0.0	0.1	0.0	0.1	0.0

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 00008.0
Category: A. Generation Capital
Category-Sub: 4. Miramar Energy Facility
Workpaper Group: 000080 - MIRAMAR PLANT OPERATIONAL ENHANCEMENTS

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0

Year	Labor	NLbr	NSE	Total	FTE

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 000080

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 00008.0
Category: A. Generation Capital
Category-Sub: 4. Miramar Energy Facility
Workpaper Group: 000080 - MIRAMAR PLANT OPERATIONAL ENHANCEMENTS
Workpaper Detail: 000080.001 - 000080 - Miramar Plant Operational Enhancements

In-Service Date: Not Applicable

Description:

000080 - Miramar Plant Operational Enhancements, includes capital dollars for Hybrid Miramar Energy Facility.

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	11	163	1,185
Non-Labor	2,190	11,137	26,668
NSE	0	0	0
Total	**2,201**	**11,300**	**27,853**
FTE	0.1	1.1	8.3

Note: Totals may include rounding differences.

Beginning of Workpaper Group
000110 - CUYAMACA PEAK ENERGY PLANT OPER ENHANCE

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 00011.0
Category: A. Generation Capital
Category-Sub: 5. Cuyamaca Peak Energy Plant
Workpaper Group: 000110 - CUYAMACA PEAK ENERGY PLANT OPER ENHANCE

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	5-YR Average	92	11	1	15	0	24	24	24
Non-Labor	5-YR Average	745	208	88	1,099	281	484	484	484
NSE	5-YR Average	0	0	0	0	0	0	0	0
Total		**837**	**219**	**89**	**1,115**	**281**	**508**	**508**	**508**
FTE	5-YR Average	0.6	0.1	0.0	0.1	0.0	0.2	0.2	0.2

Business Purpose:

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

Physical Description:

The Cuyamaca Peak Energy Plant (CPEP) is a peaking plant with a Pratt & Whitney FT8 turbine generator set that produces 45 megawatts. Specific projects are not identified. Representative capital projects are based on projects that increase the overall reliability, operability and safety of the facility.

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:	ELECTRIC GENERATION
Witness:	Daniel S. Baerman
Budget Code:	00011.0
Category:	A. Generation Capital
Category-Sub:	5. Cuyamaca Peak Energy Plant
Workpaper Group:	000110 - CUYAMACA PEAK ENERGY PLANT OPER ENHANCE

Forecast Methodology:

Labor - 5-YR Average

Projecting capital projects years in advance is difficult for a variety of reasons , such as changes in costs and technology from the time of planning to the time of implementation. Most importantly, power plant needs may change, resulting in different or unexpected priorities . Resources are then reallocated to accommodate the new priorities. However, the 5-YR average method and adjustments for CPEP Plant Operational Enhancements was selected because it represents a reasonable foundation for projecting capital project needs as it includes a variety of planned and unplanned capital projects, and provides the longest history of recorded spend.

Non-Labor - 5-YR Average

Projecting capital projects years in advance is difficult for a variety of reasons , such as changes in costs and technology from the time of planning to the time of implementation. Most importantly, power plant needs may change, resulting in different or unexpected priorities . Resources are then reallocated to accommodate the new priorities. However, the 5-YR average method and adjustments for CPEP Plant Operational Enhancements was selected because it represents a reasonable foundation for projecting capital project needs as it includes a variety of planned and unplanned capital projects, and provides the longest history of recorded spend.

NSE - 5-YR Average

N/A

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 00011.0
Category: A. Generation Capital
Category-Sub: 5. Cuyamaca Peak Energy Plant
Workpaper Group: 000110 - CUYAMACA PEAK ENERGY PLANT OPER ENHANCE

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	5-YR Average	24	24	24	0	0	0	24	24	24
Non-Labor	5-YR Average	484	484	484	0	0	0	484	484	484
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
Total		**508**	**508**	**508**	**0**	**0**	**0**	**508**	**508**	**508**
FTE	5-YR Average	0.2	0.2	0.2	0.0	0.0	0.0	0.2	0.2	0.2

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022 Total	0	0	0	0	0.0
2023 Total	0	0	0	0	0.0
2024 Total	0	0	0	0	0.0

Note: Totals may include rounding differences.

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 00011.0
Category: A. Generation Capital
Category-Sub: 5. Cuyamaca Peak Energy Plant
Workpaper Group: 000110 - CUYAMACA PEAK ENERGY PLANT OPER ENHANCE

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	66	8	0	12	0
Non-Labor	3,819	463	1,951	2,388	315
NSE	0	0	0	0	0
Total	**3,885**	**471**	**1,951**	**2,400**	**315**
FTE	0.5	0.1	0.0	0.1	0.0
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	-3,205	-285	-1,874	-1,397	-34
NSE	0	0	0	0	0
Total	**-3,205**	**-285**	**-1,874**	**-1,397**	**-34**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	66	8	0	12	0
Non-Labor	615	178	77	991	281
NSE	0	0	0	0	0
Total	**681**	**186**	**78**	**1,004**	**281**
FTE	0.5	0.1	0.0	0.1	0.0
Vacation & Sick (Nominal $)					
Labor	10	1	0	2	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**10**	**1**	**0**	**2**	**0**
FTE	0.1	0.0	0.0	0.0	0.0
Escalation to 2021$					
Labor	16	2	0	2	0
Non-Labor	130	31	11	108	0
NSE	0	0	0	0	0
Total	**147**	**32**	**11**	**109**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	92	11	1	15	0
Non-Labor	745	208	88	1,099	281
NSE	0	0	0	0	0
Total	**837**	**219**	**89**	**1,115**	**281**
FTE	0.6	0.1	0.0	0.1	0.0

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 00011.0
Category: A. Generation Capital
Category-Sub: 5. Cuyamaca Peak Energy Plant
Workpaper Group: 000110 - CUYAMACA PEAK ENERGY PLANT OPER ENHANCE

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	0	0	0	0	0
Non-Labor	-3,205	-285	-1,874	-1,397	-34
NSE	0	0	0	0	0
Total	**-3,205**	**-285**	**-1,874**	**-1,397**	**-34**
FTE	0.0	0.0	0.0	0.0	0.0

Detail of Adjustments to Recorded in Nominal $:

Year	Labor	NLbr	NSE	Total	FTE
2017	0	-3,205	0	-3,205	0.0
Explanation:	To remove one-time capital expenditures (Engine turbine enhancement and South Grid Black Start) which are not indicative of future planned expenditures for this plant.				
2017 Total	0	-3,205	0	-3,205	0.0
2018	0	-285	0	-285	0.0
Explanation:	To remove one-time capital expenditures (Engine turbine enhancement and South Grid Black Start) which are not indicative of future planned expenditures for this plant.				
2018 Total	0	-285	0	-285	0.0
2019	0	-1,874	0	-1,874	0.0
Explanation:	To remove one-time capital expenditures (Engine turbine enhancement and South Grid Black Start) which are not indicative of future planned expenditures for this plant.				
2019 Total	0	-1,874	0	-1,874	0.0
2020	0	-1,397	0	-1,397	0.0
Explanation:	To remove one-time capital expenditures (Engine turbine enhancement and South Grid Black Start) which are not indicative of future planned expenditures for this plant.				
2020 Total	0	-1,397	0	-1,397	0.0
2021	0	-34	0	-34	0.0
Explanation:	To remove one-time capital expenditures (Engine turbine enhancement and South Grid Black Start) which are not indicative of future planned expenditures for this plant.				
2021 Total	0	-34	0	-34	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 000110

Area:	ELECTRIC GENERATION
Witness:	Daniel S. Baerman
Budget Code:	00011.0
Category:	A. Generation Capital
Category-Sub:	5. Cuyamaca Peak Energy Plant
Workpaper Group:	000110 - CUYAMACA PEAK ENERGY PLANT OPER ENHANCE
Workpaper Detail:	000110.001 - 000110 - Cuyamaca Peak Energy Plant Operational Enhancements
In-Service Date:	Not Applicable

Description:

000110 - Cuyamaca Peak Energy Plant Operational Enhancements

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	24	24	24
Non-Labor	484	484	484
NSE	0	0	0
Total	**508**	**508**	**508**
FTE	0.2	0.2	0.2

Note: Totals may include rounding differences.

Beginning of Workpaper Group
000140 - RAMONA SOLAR PLANT OPER ENHANCE

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 00014.0
Category: A. Generation Capital
Category-Sub: 6. Ramona Solar Plant
Workpaper Group: 000140 - RAMONA SOLAR PLANT OPER ENHANCE

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	5-YR Average	7	26	14	0	0	9	9	9
Non-Labor	5-YR Average	16	89	-7	131	0	46	46	46
NSE	5-YR Average	0	0	0	0	0	0	0	0
Total		**23**	**115**	**7**	**131**	**0**	**55**	**55**	**55**
FTE	5-YR Average	0.0	0.2	0.1	0.0	0.0	0.1	0.1	0.1

Business Purpose:

The purpose of this facility was to enhance internal expertise while contributing to SDG&E's renewable energy goals.

Physical Description:

The Ramona Solar Plant (RSP) is a utility owned 4.95 MWdc solar photovoltaic facility that was developed under the CPUC approved Solar Energy Project program. Specific projects are not identified. Representative capital projects are based on projects that increase the overall reliability, operability and safety of the facility.

Project Justification:

This facility enabled SDG&E to develop experience with delivery logistics and requirements of renewable energy under a PPA. 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:	ELECTRIC GENERATION
Witness:	Daniel S. Baerman
Budget Code:	00014.0
Category:	A. Generation Capital
Category-Sub:	6. Ramona Solar Plant
Workpaper Group:	000140 - RAMONA SOLAR PLANT OPER ENHANCE

Forecast Methodology:

Labor - 5-YR Average

Projecting capital projects years in advance is difficult for a variety of reasons , such as changes in costs and technology from the time of planning to the time of implementation. Most importantly, power plant needs may change, resulting in different or unexpected priorities . Resources are then reallocated to accommodate the new priorities. However, the 5-YR average method and adjustments for RSP Plant Operational Enhancements was selected because it represents a reasonable foundation for projecting capital project needs as it includes a variety of planned and unplanned capital projects, and provides the longest history of recorded spend.

Non-Labor - 5-YR Average

Projecting capital projects years in advance is difficult for a variety of reasons , such as changes in costs and technology from the time of planning to the time of implementation. Most importantly, power plant needs may change, resulting in different or unexpected priorities . Resources are then reallocated to accommodate the new priorities. However, the 5-YR average method and adjustments for RSP Plant Operational Enhancements was selected because it represents a reasonable foundation for projecting capital project needs as it includes a variety of planned and unplanned capital projects, and provides the longest history of recorded spend.

NSE - 5-YR Average

N/A

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 00014.0
Category: A. Generation Capital
Category-Sub: 6. Ramona Solar Plant
Workpaper Group: 000140 - RAMONA SOLAR PLANT OPER ENHANCE

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	5-YR Average	9	9	9	0	0	0	9	9	9
Non-Labor	5-YR Average	46	46	46	0	0	0	46	46	46
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
Total		**55**	**55**	**55**	**0**	**0**	**0**	**55**	**55**	**55**
FTE	5-YR Average	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022 Total	0	0	0	0	0.0
2023 Total	0	0	0	0	0.0
2024 Total	0	0	0	0	0.0

Note: Totals may include rounding differences.

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 00014.0
Category: A. Generation Capital
Category-Sub: 6. Ramona Solar Plant
Workpaper Group: 000140 - RAMONA SOLAR PLANT OPER ENHANCE

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	5	19	11	0	0
Non-Labor	13	76	-6	118	0
NSE	0	0	0	0	0
Total	**18**	**95**	**4**	**118**	**0**
FTE	0.0	0.2	0.1	0.0	0.0
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	5	19	11	0	0
Non-Labor	13	76	-6	118	0
NSE	0	0	0	0	0
Total	**18**	**95**	**4**	**118**	**0**
FTE	0.0	0.2	0.1	0.0	0.0
Vacation & Sick (Nominal $)					
Labor	1	3	2	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**1**	**3**	**2**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Escalation to 2021$					
Labor	1	4	2	0	0
Non-Labor	3	13	-1	13	0
NSE	0	0	0	0	0
Total	**4**	**17**	**1**	**13**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	7	26	14	0	0
Non-Labor	16	89	-7	131	0
NSE	0	0	0	0	0
Total	**23**	**115**	**7**	**131**	**0**
FTE	0.0	0.2	0.1	0.0	0.0

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 00014.0
Category: A. Generation Capital
Category-Sub: 6. Ramona Solar Plant
Workpaper Group: 000140 - RAMONA SOLAR PLANT OPER ENHANCE

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0

Year	Labor	NLbr	NSE	Total	FTE

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 000140

Area:	ELECTRIC GENERATION
Witness:	Daniel S. Baerman
Budget Code:	00014.0
Category:	A. Generation Capital
Category-Sub:	6. Ramona Solar Plant
Workpaper Group:	000140 - RAMONA SOLAR PLANT OPER ENHANCE
Workpaper Detail:	000140.001 - 000140 - Ramona Solar Plant Operational Enhancements
In-Service Date:	Not Applicable

Description:

000140 - Ramona Solar Plant Operational Enhancements

Forecast In 2021 $(000)			
Years	**2022**	**2023**	**2024**
Labor	9	9	9
Non-Labor	46	46	46
NSE	0	0	0
Total	**55**	**55**	**55**
FTE	0.1	0.1	0.1

Note: Totals may include rounding differences.

Beginning of Workpaper Group
210390 - PALOMAR HYDROGEN SYSTEMS

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 21039.0
Category: A. Generation Capital
Category-Sub: 7. Palomar Hydrogen Systems
Workpaper Group: 210390 - PALOMAR HYDROGEN SYSTEMS

Summary of Results (Constant 2021 $ in 000s):

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2017	2018	2019	2020	2021	2022	2023	2024
Labor	Zero-Based	0	0	0	0	14	20	11	0
Non-Labor	Zero-Based	0	0	-141	0	1,210	8,403	7,844	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**-141**	**0**	**1,224**	**8,423**	**7,855**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0

Business Purpose:

A multi-use hydrogen pilot project will be installed at the Palomar facility to gain operational experience with fuel blending for electric generation, hydrogen fuel cell vehicles and generator cooling for the electric generation maintenance and operations crews. For more details, refer to Fernando Valero's Clean Energy Innovations testimony (Exhibit SDG&E-15).

Physical Description:

A multi-use hydrogen pilot project will be installed at the Palomar facility to gain operational experience with fuel blending for electric generation, hydrogen fuel cell vehicles and generator cooling for the electric generation maintenance and operations crews. For more details, refer to Fernando Valero's Clean Energy Innovations testimony (Exhibit SDG&E-15).

Project Justification:

A multi-use hydrogen pilot project will be installed at the Palomar facility to gain operational experience with fuel blending for electric generation, hydrogen fuel cell vehicles and generator cooling for the electric generation maintenance and operations crews. For more details, refer to Fernando Valero's Clean Energy Innovations testimony (Exhibit SDG&E-15).

Note: Totals may include rounding differences.

Area:	ELECTRIC GENERATION
Witness:	Daniel S. Baerman
Budget Code:	21039.0
Category:	A. Generation Capital
Category-Sub:	7. Palomar Hydrogen Systems
Workpaper Group:	210390 - PALOMAR HYDROGEN SYSTEMS

Forecast Methodology:

Labor - Zero-Based

The forecast method used for load research sub metering is zero-based. The forecast is based on the most recently available labor costs.

Non-Labor - Zero-Based

The forecast method used for load research sub metering is zero-based. The forecast is based on general project construction costs (e.g. quotes on machinery) and construction costs at the Palomar power plant.

NSE - Zero-Based

N/a

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 21039.0
Category: A. Generation Capital
Category-Sub: 7. Palomar Hydrogen Systems
Workpaper Group: 210390 - PALOMAR HYDROGEN SYSTEMS

Summary of Adjustments to Forecast

In 2021 $ (000)										
Forecast Method		**Base Forecast**			**Forecast Adjustments**			**Adjusted-Forecast**		
Years		**2022**	**2023**	**2024**	**2022**	**2023**	**2024**	**2022**	**2023**	**2024**
Labor	Zero-Based	20	11	0	0	0	0	20	11	0
Non-Labor	Zero-Based	8,403	7,844	0	0	0	0	8,403	7,844	0
NSE	Zero-Based	0	0	0	0	0	0	0	0	0
Total		**8,423**	**7,855**	**0**	**0**	**0**	**0**	**8,423**	**7,855**	**0**
FTE	Zero-Based	0.2	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.0

Forecast Adjustment Details

Year	Labor	NLbr	NSE	Total	FTE
2022 Total	0	0	0	0	0.0
2023 Total	0	0	0	0	0.0
2024 Total	0	0	0	0	0.0

Note: Totals may include rounding differences.

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 21039.0
Category: A. Generation Capital
Category-Sub: 7. Palomar Hydrogen Systems
Workpaper Group: 210390 - PALOMAR HYDROGEN SYSTEMS

Determination of Adjusted-Recorded:

	2017 ($000)	2018 ($000)	2019 ($000)	2020 ($000)	2021 ($000)
Recorded (Nominal $)*					
Labor	0	0	0	0	12
Non-Labor	0	0	0	0	1,210
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**1,222**
FTE	0.0	0.0	0.0	0.0	0.1
Adjustments (Nominal $) **					
Labor	0	0	0	0	0
Non-Labor	0	0	-123	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**-123**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nominal $)					
Labor	0	0	0	0	12
Non-Labor	0	0	-123	0	1,210
NSE	0	0	0	0	0
Total	**0**	**0**	**-123**	**0**	**1,222**
FTE	0.0	0.0	0.0	0.0	0.1
Vacation & Sick (Nominal $)					
Labor	0	0	0	0	2
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**2**
FTE	0.0	0.0	0.0	0.0	0.0
Escalation to 2021$					
Labor	0	0	0	0	0
Non-Labor	0	0	-18	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**-18**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Constant 2021$)					
Labor	0	0	0	0	14
Non-Labor	0	0	-141	0	1,210
NSE	0	0	0	0	0
Total	**0**	**0**	**-141**	**0**	**1,224**
FTE	0.0	0.0	0.0	0.0	0.1

* After company-wide exclusions of Non-GRC costs
** Refer to "Detail of Adjustments to Recorded" page for line item adjustments
Note: Totals may include rounding differences.

Area: ELECTRIC GENERATION
Witness: Daniel S. Baerman
Budget Code: 21039.0
Category: A. Generation Capital
Category-Sub: 7. Palomar Hydrogen Systems
Workpaper Group: 210390 - PALOMAR HYDROGEN SYSTEMS

Summary of Adjustments to Recorded:

In Nominal $(000)					
Years	**2017**	**2018**	**2019**	**2020**	**2021**
Labor	0	0	0	0	0
Non-Labor	0	0	-123	0	0
NSE	0	0	0	0	0
Total	**0**	**0**	**-123**	**0**	**0**
FTE	0.0	0.0	0.0	0.0	0.0

Detail of Adjustments to Recorded in Nominal $:

Year	Labor	NLbr	NSE	Total	FTE
2017 Total	0	0	0	0	0.0
2018 Total	0	0	0	0	0.0
2019	0	-123	0	-123	0.0
Explanation:	This workpaper initially used as a placeholder for Budget Code 210390. This adjustment is to transfer costs to correct workpaper.				
2019 Total	0	-123	0	-123	0.0
2020 Total	0	0	0	0	0.0
2021 Total	0	0	0	0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Sub Details for
Workpaper Group 210390

Area:	ELECTRIC GENERATION
Witness:	Daniel S. Baerman
Budget Code:	21039.0
Category:	A. Generation Capital
Category-Sub:	7. Palomar Hydrogen Systems
Workpaper Group:	210390 - PALOMAR HYDROGEN SYSTEMS
Workpaper Detail:	210390.001 - 210390 - PALOMAR HYDROGEN SYSTEMS
In-Service Date:	Not Applicable

Description:

A multi-use hydrogen pilot project will be installed at the Palomar facility to gain operational experience with fuel blending for electric generation, hydrogen fuel cell vehicles and generator cooling for the electric generation maintenance and operations crews.

Forecast In 2021 $(000)

Years	2022	2023	2024
Labor	20	11	0
Non-Labor	8,403	7,844	0
NSE	0	0	0
Total	**8,423**	**7,855**	**0**
FTE	0.2	0.1	0.0

Note: Totals may include rounding differences.

Supplemental Workpapers for Workpaper Group 210390

1.02

			Notes	Estimate (2021 - July 2023)	2021	2022	2023
CPUC	**Mgmt & Non-Union Labor**		**Internal Labor** - $1500 in directs per month for entire project	$ 42,997	$ 12,456	$ 19,838	$ 10,703
	Union Labor				$ -	$ -	$ -
	Material Issuances				$ -	$ -	$ -
		Nel Contract	**Nel Hydrogen** - Compensation Schedule, freight included in the Feb 2023 amount ($	$ 4,995,000	$ -	$ 3,496,500	$ 1,498,500
		PSM Hydrogen Gas Train	**PSM** - Blending Skid Proposal	$ 610,000	$ -	$ 183,000	$ 427,000
		Remaining Materials	**B&V Cost Estimate** - Materials	$ 4,079,080	$ -	$ 1,000,000	$ 3,079,080
	Material Other Total		**B&V Cost Estimate** - Mechanical Equiopment, Piping, Electrical	$ 9,684,080	$ -	$ 4,679,500	$ 5,004,580
		Services - Baker	**Baker Electric Estimate** - PEC PV System Project	$ 1,488,639	$ 595,456	$ 893,183	$ -
		Services B&V	**B&V Cost Esimate** - Services Engineering	$ 1,348,000	$ 303,308	$ 807,691	$ 237,001
		Services - Burns & McDonnell	B&M forecast based on project 3-month burn rate	$ 30,898	$ 11,699	$ 12,066	$ 7,133
		Pride Resource	Pride forecast based on project 3-month burn rate	$ 94,037	$ 16,920	$ 48,585	$ 28,533
		Estimate Services	**B&V Cost Estimate** - Total Union Labor directs, subcontractor indirects, and CM/CI total	$ 3,834,000	$ -	$ 1,643,143	$ 2,190,857
		Additional Construction Services	**B&V Cost Estimate** - additional services using total union labor as estimate	$ 657,000	$ -	$ 292,000	$ 365,000
		No Vendor	Additional vendors not included in above services	$ 30,212	$ 22,730	$ 7,482	$ -
	Services Total			$ 7,743,157	$ 1,210,484	$ 3,704,150	$ 2,828,524
	CIAC				$ -	$ -	$ -
	All Other			$ (812)	$ (770)	$ (42)	$ -
	Adjustments				$ -	$ -	$ -
	Vehicle Utilization				$ -	$ -	$ -
	All Direct Costs			$ 17,469,422	$ 1,222,170	$ 8,403,446	$ 7,843,807

	$ 9,684,080	Materials - includes $1.3M in contingency & $277k in freight	
	$ 1,348,000	Services Engineering	
	$ 2,520,000	Services / Construction	
	$ 1,508,000	Services	
	$ 1,289,000	Contingency Services - built into services forecast	
Cost Estimate Total	**$ 16,349,080**	$	-
Internal Labor	$ 42,997	Labor	
	$ 16,392,077		
Additional Contingnecy	**$ 1,077,345.00**	built into Services forecast	
Directs Total	**$ 17,469,422**		

Total Directs

2021	**$**	**1,222,170**
2022	**$**	**8,403,446**
2023	**$**	**7,843,807**
	$	**17,469,422**