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. 22-05-016

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

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

ERRATA

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

MAY 2023



2024 General Rate Case - APPLICATION ERRATA INDEX OF WORKPAPERS

Exhibit SDG&E-14-CWP-E - ELECTRIC GENERATION

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

Area:	ELECTRIC GENERATION
Witness:	Daniel S. Baerman

A. Generation Capital

Tota

In 2021 \$ (000)				
Adjusted-Forecast				
2022	2023	2024		
37,375	45,406	43,854		
37.375	45.406	43.854		

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	37,268	45,156	42,593		
NSE	0	0	0	0		
Total	21,305	37,375	45,406	43,854		
FTE	0.1	1.0	1.9	9.0		
000060 GENERATION	CAPITAL TOOLS & TEST EQP	т.				
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 PLA	ANT OPERATIONAL ENHANCE	MENTS				
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	R ENERGY CTR OPER. ENHAN	CE				
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 PLA	ANT OPERATIONAL ENHANCE	MENTS				
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 P	EAK ENERGY PLANT OPER E	NHANCE				
Labor	0	24	24	24		
Non-Labor	281	471	471	471		
NSE	0	0	0	0		
Total	281	495	495	495		
FTE	0.0	0.2	0.2	0.2		

Area: ELECTRIC GENERATION

Witness: Daniel S. Baerman
Category: A. Generation Capital

Workpaper: VARIOUS

	In 2021\$ (000)						
	Adjusted-Recorded	Adjusted-Recorded Adjusted-Forecast					
	2021	2022	2023	2024			
000140 RAMONA SO	LAR PLANT OPER ENHANCE	=					
Labor	0	9	9	9			
Non-Labor	0	46	46	46			
NSE	0	0	0	0			
Total	<u>_</u>	55	<u></u>	55			
FTE	0.0	0.1	0.1	0.1			
210390 PALOMAR H	YDROGEN 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				
FTE	0.1	0.2	0.1	0.0			

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 I	Method	Adjusted Recorded				Adju	sted Forec	ast	
Years	S	2017	2018	2019	2020	2021	2022	2023	2024
Labor	5-YR Average	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
Tota	ıl	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.

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 I	Method	Е	Base Fore	cast	For	ecast Adju	ıstments	A	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	<u> </u>	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

<u>Year</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>Total</u>	<u>FTE</u>
2022 Total	0	0	0	0	0.0
2023 Total	0	0	0	0	0.0
2024 Total	0	0	0	0	0.0

0040 (0000)

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 (Nom	ninal \$)				
Labor	0	0	0	0	0
Non-Labor	111	79	55	83	50
NSE	0	0	0	0	0
Total	111	79	<u></u>	83	50
FTE	0.0	0.0	0.0	0.0	0.0
Vacation & Sick (Nominal	l \$)				
Labor	0	0	0	0	0
Non-Labor	0	0	0	0	0
NSE	0	0	0	0	0
Total	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	
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Con-	stant 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

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 \$(00	00)		
	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

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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 202	21 \$(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

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 I	Method		Adjusted Recorded				Adjusted Forecast			
Years	5	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	
Tota	I	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.

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

ELECTRIC GENERATION Area:

Daniel S. Baerman Witness:

00009.0 **Budget Code:**

Category: A. Generation Capital 2. Palomar Energy Center Category-Sub:

000090 - PALOMAR PLANT OPERATIONAL ENHANCEMENTS Workpaper Group:

Summary of Adjustments to Forecast

In 2021 \$ (000)										
Forecast	t Method Base Forecast			ast	Fore	cast Adjus	stments	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

<u>Year</u>		<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>Total</u>	<u>FTE</u>					
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. 0 10,750 0 10,750 0.0										
2022		0	10,750	0	10,750	0.0					
Explanation:	million), Infinite Coo	ling (\$1 million),	and/or replacements STG Warming Blanke illion)] and not expecte	t (\$1.25 million, C	O/SCR Catalyst (\$1.5	,					
2022 To	otal	0	12,750	0	12,750	0.0					
2023		0	2,000	0	2,000	0.0					
Explanation:	cybersecurity of its	computer-control	persecurity compliance lled systems and incre threats. Cost include	ase reliability and	safety against malicio	ous					

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 **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.

10,250

0.0

2023 Total	0	12,250	0	12,250	0.0
2024	0	2 000	Λ	2 000	0.0

10,250

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

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 (Nomi	nal \$)				
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 (Cons	tant 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

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

<u>Year</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>Total</u>	<u>FTE</u>

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 2	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

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 I	Method		Adjusted Recorded				Adjusted Forecast			
Years	5	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	
Tota	I	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.

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	d Base Forecast			Fore	ecast Adju	stments	Adjusted-Forecast		
Years	;	2022	2023	2024	2022	2023	2024	2022	2023	2024
Labor	5-YR Average	3	3	3	1	_ <u></u>	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

rorecast Aujt	ustment Details									
<u>Year</u>		<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>Total</u>	<u>FTE</u>				
2022		0	2,000	0	2,000	0.0				
Explanation:	cybersecurity of its attacks, equipmen	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 infractructure.								
2022		1	0	0	1	0.1				
xplanation:	Adding FTE to alig	n with the forecaste	ed labor dollars.							
2022 To	otal	1	2,000	0	2,001	0.1				
2023		0	2,000	0	2,000	0.0				
xplanation:					rol systems (ICS) that safety against malicio					
	cybersecurity of its attacks, equipmen	computer-controlle t failure and other th	ed systems and incre nreats. Cost include ious attacks or equip	ase reliability and enhanced softwar ment failure of the		ous stributed ical to the				
2023	cybersecurity of its attacks, equipmen control systems to infrastructure.	computer-controlle t failure and other the prevent such malice	ed systems and incre nreats. Cost include ious attacks or equip 0	ase reliability and enhanced softwar	safety against malicio e applications and dis	ous stributed				
2023 xplanation:	cybersecurity of its attacks, equipmen control systems to infrastructure. Adding FTE to alig	computer-controlle t failure and other th	ed systems and incre nreats. Cost include ious attacks or equip 0 ed labor dollars.	ase reliability and enhanced softwar ment failure of the	safety against malicione applications and disessystems that are critical	ous stributed ical to the				
2023	cybersecurity of its attacks, equipmen control systems to infrastructure. Adding FTE to alig	computer-controlle t failure and other the prevent such malice	ed systems and incre nreats. Cost include ious attacks or equip 0	ase reliability and enhanced softwar ment failure of the 0	safety against malicio e applications and dis	ous stributed ical to the 0.1				
Explanation: 2023 To	cybersecurity of its attacks, equipmen control systems to infrastructure. Adding FTE to aligotal Costs to develop a cybersecurity of its attacks, equipmen control systems to	t failure and other the prevent such malice of the prevent of the	ed systems and incre reats. Cost include ious attacks or equip 0 ed labor dollars. 2,000 2,000 rsecurity compliance ed systems and incre nreats. Cost include	ase reliability and enhanced softwar ment failure of the 0 0 0 for industrial contase reliability and enhanced softwar	safety against malicione applications and disconsisted applications and disconsisted are critical applications. The second applications are critical applications. The second applications are critical applications and the second applications are critical applications. The second applications are critical applications are critical applications. The second applications are critical applications are critical applications and disconsistency applications are critical applications. The second applications are critical applications are critical applications are critical applications are critical applications. The second applications are critical applications are critical applications are critical applications are critical applications. The second applications are critical applications are critical applications. The second applications are critical applications are critical applications. The second applications are critical applications are critical applications are critical applications are critical applications. The second applications are critical applications are critical applications are critical applications. The second applications are critical applications are critical applications are critical applications. The second applications are critical applications are critical applications are critical applications are critical applications. The second applications are critical applications are critical applications are critical applications are critical applications. The second applications are critical appl	ous stributed ical to the 0.1 0.1 0.0 t strengthen ous stributed				
2023 Explanation: 2023 T o 2024	cybersecurity of its attacks, equipmen control systems to infrastructure. Adding FTE to aligotal Costs to develop a cybersecurity of its attacks, equipmen	t failure and other the prevent such malice of the prevent of the	ed systems and incre reats. Cost include ious attacks or equip 0 ed labor dollars. 2,000 2,000 rsecurity compliance ed systems and incre nreats. Cost include	ase reliability and enhanced softwar ment failure of the 0 0 0 for industrial contase reliability and enhanced softwar	safety against malicione applications and discussive systems that are critical systems (ICS) that safety against malicione applications and discussive against malicione applications and discussive a	ous stributed ical to the 0.1 0.1 0.0 t strengthen ous stributed				

Note: Totals may include rounding differences.

2024 Total

2,000

0

2,001

0.1

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:

Recorded (Nominal \$)* Labor 10		2017 (\$000)	2018 (\$000)	2019 (\$000)	2020 (\$000)	2021 (\$000)
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 3,594 3,871 9,879 FTE 0.1 0.0 0.0 0.0 0.0 0.0 Non-Labor 0 0 0 0 0 0 NSE 0 0 0 0 0 0 FTE 0.0 0.0 0 0 0 0 FTE 0.0 0.1 1 0 0 0 0 Recorded-Adjusted (Nominal \$) 1 1,081 3,594 3,871 9,879 RE 0 <td>Recorded (Nominal \$)*</td> <td></td> <td></td> <td></td> <td></td> <td></td>	Recorded (Nominal \$)*					
NSE		10	-1	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 \$) ** Value Value Value 0 0 0 0 Labor 0 0 0 0 0 0 0 Total 0 0 0 0 0 0 0 FTE 0.0 0.0 0.0 0.0 0 0 0 Recorded-Adjusted (Nominal \$) Value Value 0		3,914	1,081	3,594	3,871	9,879
FTE 0.1 0.0 0.0 0.0 0.0 Adjustments (Nominal \$) *** Labor 0	NSE	0	0	0	0	0
Adjustments (Nominal \$) ** Labor		3,924	1,080	3,594	3,871	9,879
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 Recorded-Adjusted (Nominal \$) Use 0 0 0 0 Labor 10 -1 0 0 0 0 NSE 0 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 FTE 0.1 0.0 0.0 0.0 0	FTE	0.1	0.0	0.0	0.0	0.0
Non-Labor 0	Adjustments (Nominal \$)	**				
NSE	Labor	0	0	0	0	0
Total 0 0 0 0 0 0 FTE 0.0 0.0 0.0 0.0 0.0 0.0 Recorded-Adjusted (Nominal \$\\$) Labor 10 -1 0 0 0 0 NOn-Labor 3,914 1,081 3,594 3,871 9,879 NSE 0 0 0 0 0 0 0 Total 3,924 1,080 3,594 3,871 9,879 9		0	0	0	0	0
Total FTE 0 0 0 0 0 FTE 0.0 0.0 0.0 0.0 0.0 FTE 0.0 0 0 0 0 Non-Labor 3,914 1,081 3,594 3,871 9,879 NSE 0 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 FTE 0.1 0.0 0.0 0.0 0.0 Non-Labor 2 0 0 0 0 0 NSE 0 0 0 0 0 0 0 FTE 0.0 0	NSE	0	0	0	0	0
Recorded-Adjusted (Nominal \$)		0	0	0	0	0
Labor 10 -1 0 0 0 Non-Labor 3,914 1,081 3,594 3,871 9,879 NSE 0 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 0.0 FTE 0.1 0.0 <td>FTE</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td> <td>0.0</td>	FTE	0.0	0.0	0.0	0.0	0.0
Non-Labor 3,914 1,081 3,594 3,871 9,879 NSE 0 <t< td=""><td>Recorded-Adjusted (Nom</td><td>inal \$)</td><td></td><td></td><td></td><td></td></t<>	Recorded-Adjusted (Nom	inal \$)				
NSE 0	Labor	10	-1	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 FTE 0.0 0.0 0.0 0.0 0.0 FTE 0.0 0.0 0.0 0.0 0.0 Escalation to 2021\$ 2 0 0 0 0 0 Labor 3 0 0 0 0 0 0 NSE 0 0 0 0 0 0 0 FTE 0.0 0 0 0 0 0 0 NSE 0 0 0 0 0 0 0 Recorded-Adjusted (Constant 2021\$) 2 4 <td></td> <td>3,914</td> <td>1,081</td> <td>3,594</td> <td>3,871</td> <td>9,879</td>		3,914	1,081	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 FTE 0.0 0.0 0.0 0.0 0.0 FTE 0.0 0.0 0 0 0 Labor 3 0 0 0 0 0 Non-Labor 831 187 522 421 0 NSE 0 0 0 0 0 0 FTE 0.0 0 0 0 0 0 FTE 0.0 0 0 0 0 0 FTE 0.0 0 0 0 0 0 Recorded-Adjusted (Constant 2021\$) 0 1 0 1 0 Non-Labor <td>NSE</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>	NSE	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 FTE 0.0 0.0 0.0 0.0 0.0 Escalation to 2021\$ Eabor 3 0 0 0 0 Non-Labor 831 187 522 421 0 NSE 0 0 0 0 0 0 Total 833 187 522 421 0 0 FTE 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Recorded-Adjusted (Constant 2021\$) Eabor 1 0 1 0		3,924	1,080	3,594	3,871	9,879
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 0 FTE 0.0 0.0 0.0 0.0 0.0 0 0 Labor 3 0 0 0 0 0 0 NSE 0 0 0 0 0 0 0 Total 833 187 522 421 0 0 FTE 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Recorded-Adjusted (Constant 2021\$* 2 421 0 1 0 Non-Labor 1,4745 1,268 4,117 4,292 9,879 NSE 0 0 0 0 0 0 0 Total 4,759 1,267	FTE	0.1	0.0	0.0	0.0	0.0
Non-Labor 0	Vacation & Sick (Nominal	\$)				
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\$ Use of the color of the		2	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 0 Total 833 187 522 421 0 0 FTE 0.0 0.0 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 0 0 Total 4,759 1,267 4,117 4,293 9,879		0	0	0	0	0
FTE 0.0 0.0 0.0 0.0 0.0 Escalation to 2021\$ Labor 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	NSE	0	0	0	0	0
Escalation to 2021\$ Labor		2	0	0	0	0
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 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 0 Total 4,759 1,267 4,117 4,293 9,879	FTE	0.0	0.0	0.0	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 0 Total 4,759 1,267 4,117 4,293 9,879	Escalation to 2021\$					
NSE 0 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		3	0	0	0	0
Total 833 187 522 421 0 FTE 0.0 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 0 Total 4,759 1,267 4,117 4,293 9,879		831	187	522	421	0
FTE 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Recorded-Adjusted (Constant 2021\$) Labor 14 -1 0 1 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0	NSE	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		833	187	522	421	0
Labor 14 -1 0 1 0 Non-Labor 4,745 1,268 4,117 4,292 9,879 NSE 0 0 0 0 0 0 Total 4,759 1,267 4,117 4,293 9,879	FTE	0.0	0.0	0.0	0.0	0.0
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	•	stant 2021\$)				
NSE 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Labor	14	-1	0	1	0
Total 4,759 1,267 4,117 4,293 9,879		4,745	1,268	4,117	4,292	9,879
	NSE	0	0	0	0	0
FTE 0.1 0.0 0.0 0.0 0.0		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

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		

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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					

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 I	Method	Adjusted Recorded					Adjusted Forecast			
Years	S	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	
Tota	ıl	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.

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 N	/lethod	В	Base Fored	ast	For	ecast Adju	stments	Ad	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

<u>Year</u>		<u>Labor</u>	NLbr	<u>NSE</u>	<u>Total</u>	FTE				
2022		1	0	0	1	0.1				
Explanation:	Adding FTE to alig	n with the forecas	ted labor dollars.							
2022 To	otal	1	0	0	1	0.1				
2023		153	8,947	0	9,100	1.1				
Explanation:	•		ergy Facility, a capital ro's Clean Energy Inno		• • • • • • • • • • • • • • • • • • • •	•				
2023 To	otal	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 To	otal	1,175	24,478	0	25,653	8.3				

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
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nom	ninal \$)				
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 (Con-	stant 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

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			

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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				

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 I	Method		Adjusted Forecast						
Years	S	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	41	1,081	281	471	471	471
NSE	5-YR Average	0	0	0	0	0	0	0	0
Tota	I	837	219	41	1,097	281	495	495	495
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.

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			For	ecast Adju	ıstments	A	djusted-Fo	recast		
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	471	471	471	0	0	0	471	471	471
NSE	5-YR Average	0	0	0	0	0	0	0	0	0
Total		495	495	495	0	0	_ 0	495	495	495
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

<u>Year</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>Total</u>	<u>FTE</u>
2022 Total	0	0	0	0	0.0
2023 Total	0	0	0	0	0.0
2024 Total	0	0	0	0	0.0

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	-1,915	-1,413	-34
NSE	0	0	0	0	0
Total	-3,205	-285	-1,915	-1,413	-34
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Non	ninal \$)				
Labor	66	8	0	12	0
Non-Labor	615	178	36	975	281
NSE	0	0	0	0	0
Total	681	186	36	987	281
FTE	0.5	0.1	0.0	0.1	0.0
Vacation & Sick (Nomina	I \$)				
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	5	106	0
NSE	0	0	0	0	0
Total	147	32	5	108	0
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Con	stant 2021\$)				
Labor	92	11	1	15	0
Non-Labor	745	208	41	1,081	281
NSE	0	0	0	0	0
Total	837	219	41	1,097	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

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	-1,915	-1,413	-34				
NSE		0	0	0	0	0				
	Total	-3,205	-285	-1,915	-1,413	-34				
FTE		0.0	0.0	0.0	0.0	0.0				

Detail of Adjustments to Recorded in Nominal \$:

<u>Year</u>	<u>Labor</u>	<u>NLbr</u>	NSE	<u>Total</u>	<u>FTE</u>				
2017 Explanation:	0 To remove one-time capital expanse not indicative of future plan	, -		-3,205 d South Grid Black Sta	0.0 art) which				
2017 Total	0	-3,205	0	-3,205	0.0				
2018 Explanation:	0 -285 0 -285 0.0 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 Explanation:	0 To remove one-time capital expans not indicative of future plan	, -		-1,915 d South Grid Black Sta	0.0 art) which				
2019 Total	0	-1,915	0	-1,915	0.0				
2020 Explanation:	0 To remove one-time capital expanse not indicative of future plan	, -		-1,413 d South Grid Black Sta	0.0 art) which				
2020 Total	0	-1,413	0	-1,413	0.0				
2021 Explanation:	0 -34 0 -34 0.0 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				

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		471	471	471				
NSE		0	0	0				
	Total	495	495	495				
FTE		0.2	0.2	0.2				

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 I	Method		Adjusted Forecast						
Years	S	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		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.

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		cast	For	ecast Adju	stments	A	djusted-Fo	recast			
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			0	0	<u> </u>	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

<u>Year</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>Total</u>	<u>FTE</u>
2022 Total	0	0	0	0	0.0
2023 Total	0	0	0	0	0.0
2024 Total	0	0	0	0	0.0

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 (Nom	ninal \$)				
Labor	5	19	11	0	0
Non-Labor	13	76	-6	118	0
NSE	0	0	0	0	0
Total	18	95	4	118	
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 (Cons	stant 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	
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

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			

<u>Year</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>Total</u>	<u>FTE</u>

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				

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 I	Method		Adjusted Recorded						Adjusted Forecast		
Years	S	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).

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 I	Method	В	ase Fored	ast	For	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	<u> </u>	8,423	7,855	<u> </u>	
FTE	Zero-Based	0.2	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.0	

Forecast Adjustment Details

<u>Year</u>	<u>Labor</u>	<u>NLbr</u>	<u>NSE</u>	<u>Total</u>	<u>FTE</u>
2022 Total	0	0	0	0	0.0
2023 Total	0	0	0	0	0.0
2024 Total	0	0	0	0	0.0

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	
FTE	0.0	0.0	0.0	0.0	0.0
Recorded-Adjusted (Nom	ninal \$)				
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 (Nomina	I \$)				
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 (Con	stant 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

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 \$:

<u>Year</u>	<u>Labor</u>	<u>NLbr</u>	NSE	<u>Total</u>	<u>FTE</u>
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 costs to correct workpaper.	a placeholder for Bu	dget Code 210390. T	his adjustment is to tra	nsfer
2019 Total	0	-123	0	-123	0.0
2020 Total	0	0	0	0	0.0
2021 Total	0	0	0	0	0.0

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			

Supplemental Workpapers for Workpaper Group 210390

Major R. Non-Union Labor: Union			Notes	Estimate (2021 - July 2023)	2021	1.02 2022	2023
Net Contract Material Neuroscot S			Notes	Estimate (2021 - July 2023)	2021	2022	2023
Meterial Insuances			Internal Labor - \$1500 in directs per month for entire project	\$ 42,997			10,703
Net Contract Net Hydrogen Corporation Schedule, freight included in the Feb 2023 amount (5: 5 4,995,000 5 - 5 3,466,500 5 1,498,500							-
P564 Hydrogen Gis Train P564 - Blending Skid Proposal \$ 610,000 \$. \$ 183,000 \$ 427,000 \$ 42		Material issuances			\$ - \$	- \$	-
P5M Hydrogen Gis Train P5M - Benning Skid Proposal \$ 610,000 \$. \$ 183,000 \$ 427,000							
Material Other Total		Nel Contract	Nel Hydrogen - Compensation Schedule, freight included in the Feb 2023 amount (\$. \$ 4,995,000	\$ - \$	3,496,500 \$	1,498,500
Material Other Total							
Material Other Total		PSM Hydrogen Gas Train	- Blending Skid Proposal	\$ 610,000	\$ - \$	183,000 \$	427,000
Material Other Total		Domaining Makayida	DR.V Cost Estimate Materials	¢ 4.070.090		1 000 000 6	2 070 000
Services - Burns & McCommel B&M forecast based on project 3-month burn rate \$ 0.0898 \$ 11,699 \$ 12,066 \$ 7,133 \$ 16,520 \$ 48,555 \$ 28,253 \$ 28,25		kemaning waterials	DOV COST ESTIMATE - INICIPIAIS	\$ 4,079,080	3 - 3	1,000,000 \$	3,079,080
Services - Burns & McCommel B&M forecast based on project 3-month burn rate \$ 0.0898 \$ 11,699 \$ 12,066 \$ 7,133 \$ 16,520 \$ 48,555 \$ 28,253 \$ 28,25	O	Material Other Tatal	PRV Cost Estimate Machanical Equipment Rining Floatrical	¢ 0.694.090		4.670.F00 ¢	E 004 E90
Services - Burns & McCommel B&M forecast based on project 3-month burn rate \$ 0.0898 \$ 11,699 \$ 12,066 \$ 7,133 \$ 16,520 \$ 48,555 \$ 28,253 \$ 28,25	Ž						5,004,580
Services - Burns & McCommel B&M forecast based on project 3-month burn rate \$ 0.0898 \$ 11,699 \$ 12,066 \$ 7,133 \$ 16,520 \$ 48,555 \$ 28,253 \$ 28,25	5						237,001
Ref				\$ 30,898	\$ 11,699 \$	12,066 \$	7,133
Estimate Services Total S 3,834,000 S S 1,643,143 S 2,190,857		Pride Resource	Pride forecast based on project 3-month burn rate	\$ 94,037	\$ 16,920 \$	48,585 \$	28,533
No Vendor Additional Construction Services Services Total No Vendor Additional vendors not included in above services Services Total Services Tot							
No Vendor Additional vendors not included in above services \$ 30,212 \$ 22,730 \$ 7,482 \$ - \$		Estimate Services	total	\$ 3,834,000	\$ - \$	1,643,143 \$	2,190,857
No Vendor Additional vendors not included in above services \$ 30,212 \$ 22,730 \$ 7,482 \$ - \$		Additional Construction Services	B&V Cost Estimate - additional services using total union labor as estimate	\$ 657,000	\$ - \$	292,000 \$	365,000
Services Total				·			·
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