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

Application No. 17-10-___

Exhibit No.: (SDG&E-22-CWP)

CAPITAL WORKPAPERS TO
PREPARED DIRECT TESTIMONY
OF RICHARD D. TATTERSALL
ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

OCTOBER 2017

SDGE

A Sempra Energy utility®

2019 General Rate Case - APP

INDEX OF WORKPAPERS

Exhibit SDG&E-22-CWP - FACILITIES/OTHER

Overall Summary For Exhibit No. SDG&E-22-CWP

Area: FACILITIES/OTHER

Witness: Richard D. Tattersall

	In 2016 $ (000) Adjusted-Forecast		
	2017	2018	2019
A. LAND BLANKET	302	302	302
B. STRUCTURES & IMPROVEMENTS	1,935	4,861	4,822
C. SAFETY/ENVIRONMENTAL	909	1,504	2,146
D. MISC EQUIPMENT	1,956	3,475	2,065
E. SECURITY SYSTEMS	1,760	3,401	4,047
F. INFRASTRUCTURE & RELIABILITY	1,560	1,947	6,651
G. REMODELS/RECONFIGURATIONS/RELOCATIONS	5,605	12,984	24,155
H. BUSINESS UNIT EXPANSIONS	10,446	19,068	16,623
I. ALTERNATIVE ENERGY SYSTEMS	2,625	2,814	5,724
J. ARCHIBUS BUSINESS SYSTEMS IMPROVEMENTS	756	1,008	504
K. CP6 CUSTOMER CALL CENTER IMPROVEMENTS	2,592	0	0
L. RBDC SERVER RM #1 CRAC UNIT REPLACEMENTS	1,528	0	0
M. TRANSMISSION ENERGY MGT SYSTEM IMPROVEMENTS	5,199	11,062	0
N. MISSION CONTROL CRITICAL ASSET SECURITY HARDE	2,793	70	0
O. CP EAST TENANT IMPROVEMENTS	10,943	4,494	4,947
P. MORENO VALLEY IMPROVEMENTS	586	0	0
Q. RBDC POWER RELIABILIITY IMPROVEMENTS	3,204	1,512	8,263
Total	**54,699**	**68,502**	**80,249**

Note: Totals may include rounding differences.

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Category: A. LAND BLANKET
Workpaper: 00700A

Summary for Category: A. LAND BLANKET

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	17	17	17
Non-Labor	0	285	285	285
NSE	0	0	0	0
Total	**0**	**302**	**302**	**302**
FTE	0.0	0.2	0.2	0.2

00700A Land Blanket

Labor	0	17	17	17
Non-Labor	0	285	285	285
NSE	0	0	0	0
Total	**0**	**302**	**302**	**302**
FTE	0.0	0.2	0.2	0.2

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00700A - Land Blanket

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 00700.0
Category: A. LAND BLANKET
Category-Sub: 2. Land Blanket 2017 - 2019
Workpaper Group: 00700A - Land Blanket

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

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	17	17	17
Non-Labor	Zero-Based	0	0	0	0	0	285	285	285
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**302**	**302**	**302**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2

Business Purpose:

This budget funds minor maintenance and landscape projects on fee owned unoccupied property in order to adequately support Company Operations, manage and protect Company property, and maintain or improve the value of Company real property. The funding provides the opportunity to maintain and/or improve the highest rate of return on rental, lease or sale of Company property, thereby increasing revenue and reducing customer rates.

Physical Description:

Work includes installation of new landscaping or renovation of existing landscape and irrigation systems and other improvements on existing Company property and various Company property works (i.e. Substations, transmission line right-of-way) including but not limited to fencing, masonry screening or retaining walls, access gates, signs, grading, paving, drainage improvements, landscaping and landscape irrigation.

Project Justification:

Various improvements and site work (such as fencing and gates) are necessary to reduce potential vandalism, dumping, illegal trespassing and other unauthorized uses of Company property. Without these improvements, the Company would lose revenue (from sale, lease license or rent) due to lower property value, resulting from inadequate protection or maintenance of Company property. Renovation of existing landscape and irrigation systems is needed to protect company facilities, such as substations, from soil erosion or to conserve water.

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	00700.0
Category:	A. LAND BLANKET
Category-Sub:	2. Land Blanket 2017 - 2019
Workpaper Group:	00700A - Land Blanket

Forecast Methodology:

Labor - Zero-Based

The forecast method developed for this cost category is a combination of zero and historical-based. This method is most appropriate because it depends on evolving maintenance requirements, internal customer business requirements (planned and unplanned), changing conditions and reliability of equipment, new code requirements and vendor estimates.

Non-Labor - Zero-Based

The forecast method developed for this cost category is a combination of zero and historical-based. This method is most appropriate because it depends on evolving maintenance requirements, internal customer business requirements (planned and unplanned), changing conditions and reliability of equipment, new code requirements and vendor estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00700A

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 00700.0
Category: A. LAND BLANKET
Category-Sub: 2. Land Blanket 2017 - 2019
Workpaper Group: 00700A - Land Blanket
Workpaper Detail: 00700A.001 - Land Blanket 2017 - 2019

In-Service Date: Not Applicable

Description:

This budget funds minor maintenance and landscape projects on fee owned unoccupied property in order to adequately support Company Operations, manage and protect Company property, and maintain or improve the value of Company real property. The funding provides the opportunity to maintain and/or improve the opportunity to obtain highest rate of return on rental, lease or sale of Company property, thereby increasing revenue and reducing customer rates.

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	17	17	17
Non-Labor	285	285	285
NSE	0	0	0
Total	**302**	**302**	**302**
FTE	0.2	0.2	0.2

Note: Totals may include rounding differences.

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Category: B. STRUCTURES & IMPROVEMENTS
Workpaper: 00701A

Summary for Category: B. STRUCTURES & IMPROVEMENTS

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	111	279	273
Non-Labor	0	1,824	4,582	4,549
NSE	0	0	0	0
Total	**0**	**1,935**	**4,861**	**4,822**
FTE	0.0	1.2	0.8	2.3

00701A Structures & Improvement Blanket

Labor	0	111	279	273
Non-Labor	0	1,824	4,582	4,549
NSE	0	0	0	0
Total	**0**	**1,935**	**4,861**	**4,822**
FTE	0.0	1.2	0.8	2.3

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00701A - Structures & Improvement Blanket

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 00701.0
Category: B. STRUCTURES & IMPROVEMENTS
Category-Sub: 2. Structures & Improvement Blanket 2017 - 2019
Workpaper Group: 00701A - Structures & Improvement Blanket

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

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	111	279	273
Non-Labor	Zero-Based	0	0	0	0	0	1,824	4,582	4,549
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,935**	**4,861**	**4,822**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.2	0.8	2.3

Business Purpose:

This budget funds minor building modifications, upgrades and facility improvements to adequately support corporate business initiatives, to extend the life of the asset, or increase the functionality of a building or site. Small projects under $1 million are bundled when possible for economies of scale in sourcing. These projects vary year to year based on need, but address the capital replacement or addition of basic, individual interior and exterior facilities construction components, including site lighting, fencing, gates, paving, roofing, flooring, windows and storage racking or sheds. Each year's requirements are prioritized to manage and protect the facility assets, keep the employees safe and optimize real estate value. Scope of work may include modernization projects and/or offer best alternatives for cost avoidance compared to other scenarios.

Physical Description:

Small project types covered in this budget code: Exterior Lighting; Fence; Paving; Roofing; Flooring; Storage Racking or Sheds.

Project Justification:

Facilities Operations and the business units identify requirements based on criticality of the facility, the age of the asset, and the implications for failure to complete the replacement or modification. Failure to implement these projects could translate into reduced safety, disruption to the business unit, inability to meet business unit operational needs, higher costs to maintain and repair, and asset devaluation. Projects are planned according to the availability of resources, in some cases weather, lead times and priorities. Like projects are bundled for economies of scale for better pricing in sourcing. Construction calculations are supported by industry professionals, including licensed architects and designers, and construction industry professionals.

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	00701.0
Category:	B. STRUCTURES & IMPROVEMENTS
Category-Sub:	2. Structures & Improvement Blanket 2017 - 2019
Workpaper Group:	00701A - Structures & Improvement Blanket

Forecast Methodology:

Labor - Zero-Based

The forecast method developed for this cost category is combination of zero and historical-based. This method is most appropriate because it depends on evolving maintenance requirements or changing conditions such as leaking roofs, cracked or settling paving, frayed or torn carpet, failing gate motors or need for increased storage capacity, new code requirements such as lighting efficiency, and vendor estimates.

Non-Labor - Zero-Based

The forecast method developed for this cost category is combination of zero and historical-based. This method is most appropriate because it depends on evolving maintenance requirements or changing conditions such as leaking roofs, cracked or settling paving, frayed or torn carpet, failing gate motors or need for increased storage capacity, new code requirements such as lighting efficiency, and vendor estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00701A

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	00701.0
Category:	B. STRUCTURES & IMPROVEMENTS
Category-Sub:	2. Structures & Improvement Blanket 2017 - 2019
Workpaper Group:	00701A - Structures & Improvement Blanket
Workpaper Detail:	00701A.001 - Structures & Improvement Blanket 2017 - 2019
In-Service Date:	Not Applicable

Description:

This budget funds minor building modifications upgrades and facility improvements to adequately support corporate business initiatives, to extend the life of the asset, or increase the functionality of a building or site. Small projects under $1 million are bundled when possible for economies of scale in sourcing. These projects vary year to year based on need, but address the capital replacement or addition of basic, individual interior and exterior facilities construction components, including lighting, fencing, gates, paving, roofing, flooring, windows and storage racking or sheds. Each year's requirements are prioritized to manage and protect the facility assets, keep the employees safe and optimize real estate value. Scope of work may include modernization projects and/or offer best alternatives for cost avoidance compared to other scenarios.

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	88	244	190
Non-Labor	1,444	4,012	3,120
NSE	0	0	0
Total	**1,532**	**4,256**	**3,310**
FTE	1.0	0.5	1.5

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	00701.0
Category:	B. STRUCTURES & IMPROVEMENTS
Category-Sub:	2. Structures & Improvement Blanket 2017 - 2019
Workpaper Group:	00701A - Structures & Improvement Blanket
Workpaper Detail:	00701A.003 - Cuyamaca Peak Energy Plant Building Installation
In-Service Date:	09/30/2019

Description:

SDG&E owns and operates the Cuyamaca Peak Energy Plant which is located at its Eastern Construction & Operations property in El Cajon, CA, and is capable of producing 45MW to meet immediate demand on the grid. SDG&E purchased the plant in 2012. Existing plant controls are located in various equipment and electrical rooms that were not originally designed for centralized, 24/7 manning by the original plant owner. This project will construct a small control house to consolidate the operable control equipment and accommodate 24/7 manning in the event of a sustained emergency demand response activity. Wet utilities and an ergonomic operator console, not currently existing, will be provided.

Forecast In 2016 $(000)

Years	2017	2018	2019
Labor	0	0	54
Non-Labor	0	0	954
NSE	0	0	0
Total	**0**	**0**	**1,008**
FTE	0.0	0.0	0.5

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	00701.0
Category:	B. STRUCTURES & IMPROVEMENTS
Category-Sub:	2. Structures & Improvement Blanket 2017 - 2019
Workpaper Group:	00701A - Structures & Improvement Blanket
Workpaper Detail:	00701A.004 - Mission Skills Training Site Upgrades
In-Service Date:	09/30/2019

Description:

SDG&E Skills Training Center is a combined site and classroom based facility that provides training of electric, gas, customer service, project planning and inspection resources. The objective and focus of this project is to improve the site training facilities needed to develop the skills of current and future electric field employees (e.g. lineman, electric troubleshooter, fault finder, substation electrician, etc.). The current site training facilities were originally designed to primarily meet apprenticeship and journeyman training requirements and need to be improved to incorporate training for new technologies and equipment. More efficient space planning and increased infrastructure flexibility is necessary to allow employees to train on new equipment standards before encountering in the field, receive periodic refresher training for reinforcement of safe work methods and compliance with electric standard practices, and concurrently serve a greater mix of employee groups.

The project scope will therefore include a redesign of the existing training yard utilization, new training and testing locations, upgrades to existing training equipment, and expanded equipment storage and accessibility.

Forecast In 2016 $(000)

Years	2017	2018	2019
Labor	23	35	29
Non-Labor	380	570	475
NSE	0	0	0
Total	**403**	**605**	**504**
FTE	0.2	0.3	0.3

Note: Totals may include rounding differences.

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Category: C. SAFETY/ENVIRONMENTAL
Workpaper: 00703A

Summary for Category: C. SAFETY/ENVIRONMENTAL

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	51	84	120
Non-Labor	0	858	1,420	2,026
NSE	0	0	0	0
Total	**0**	**909**	**1,504**	**2,146**
FTE	0.0	0.5	0.8	1.2

00703A RAMP - Environmental/Safety Blanket

Labor	0	51	84	120
Non-Labor	0	858	1,420	2,026
NSE	0	0	0	0
Total	**0**	**909**	**1,504**	**2,146**
FTE	0.0	0.5	0.8	1.2

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00703A - RAMP - Environmental/Safety Blanket

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 00703.0
Category: C. SAFETY/ENVIRONMENTAL
Category-Sub: 2. Environmental/Safety Blanket 2017 - 2019
Workpaper Group: 00703A - RAMP - Environmental/Safety Blanket

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

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	51	84	120
Non-Labor	Zero-Based	0	0	0	0	0	858	1,420	2,026
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**909**	**1,504**	**2,146**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.5	0.8	1.2

Business Purpose:

This budget funds building and system modifications, site upgrades, and other facility improvements necessary to comply with safety and environmental code or regulations, or implement best practices towards mitigating risk to either the environment or safety of employees or the public. Small projects under $1 million are bundled when possible for economies of scale in sourcing. These projects vary year to year based on changes to existing or proposed new regulations. Common project types covered in this budget code include improvements to meet storm water management regulations. Storm water compliance includes physical changes to the site including drainage control, curbs and berms, coverings to manage the flow of storm water and other best management practices. Concrete pads and hazardous waste storage are examples of other projects covered in this blanket. Safety projects vary in nature, but can include communication systems, fall protection, or other improvements to reduce employee risk. Underground storage tank compliance issues and enhanced vapor recovery system upgrades to the fueling systems would also be included.

Physical Description:

Common project types covered in this budget code are improvements to meet stormwater management regulations. Stormwater compliance includes physical changes to the site including drainage control, curbs and berms, coverings to manage the flow of stormwater and other best management practices. Concrete pads, hazardous waste storage and other requirements to mitigate environmental risk are covered in this blanket. Safety projects vary in nature, but can include communication systems, fall protection, or other improvements to reduce employee risk. Underground storage tank compliance issues and enhanced vapor recovery system upgrades to the fueling systems are included.

Project Justification:

Facilities Operations and the business units identify requirements based on codes, regulations, and best management practices for environmental and safety. Failure to complete can result in increased risk, NOVs and fines.

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	00703.0
Category:	C. SAFETY/ENVIRONMENTAL
Category-Sub:	2. Environmental/Safety Blanket 2017 - 2019
Workpaper Group:	00703A - RAMP - Environmental/Safety Blanket

Forecast Methodology:

Labor - Zero-Based

The forecast method developed for this cost category is combination of zero and historical-based. This method is most appropriate because it depends on evolving maintenance requirements, internal risk assessments, changing site conditions, new code requirements and vendor estimates.

Non-Labor - Zero-Based

The forecast method developed for this cost category is combination of zero and historical-based. This method is most appropriate because it depends on evolving maintenance requirements, internal risk assessments, changing site conditions, new code requirements and vendor estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00703A

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	00703.0
Category:	C. SAFETY/ENVIRONMENTAL
Category-Sub:	2. Environmental/Safety Blanket 2017 - 2019
Workpaper Group:	00703A - RAMP - Environmental/Safety Blanket
Workpaper Detail:	00703A.001 - RAMP - Incremental Environmental/Safety Blanket 2017 - 2019
In-Service Date:	Not Applicable

Description:

This budget funds building and system modifications site upgrades, and other facility improvements necessary to comply with safety and environmental code or regulations, or implement best practices towards mitigating risk to either the environment or safety of employees or the public. Small projects under $1 million are bundled when possible for economies of scale in sourcing. These projects vary year to year based on changes to existing or proposed new regulations. Common project types covered in this budget code are improvements to meet storm water management regulations. Storm water compliance includes physical changes to the site including drainage control, curbs and berms, coverings to manage the flow of storm water and other best management practices. Concrete pads, hazardous waste storage and other requirements to mitigate environmental risk are covered in this blanket. Safety projects vary in nature, but can include communication systems, fall protection, or other improvements to reduce employee risk. Underground storage tank compliance issues and enhanced vapor recovery system upgrades to the fueling systems are included.

Forecast In 2016 $(000)

Years	2017	2018	2019
Labor	24	84	120
Non-Labor	432	1,420	2,026
NSE	0	0	0
Total	**456**	**1,504**	**2,146**
FTE	0.2	0.8	1.2

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	00703.0
Category:	C. SAFETY/ENVIRONMENTAL
Category-Sub:	2. Environmental/Safety Blanket 2017 - 2019
Workpaper Group:	00703A - RAMP - Environmental/Safety Blanket
Workpaper Detail:	00703A.001 - RAMP - Incremental Environmental/Safety Blanket 2017 - 2019

RAMP Item # 1

RAMP Chapter: SDG&E-3

Program Name: Faciities

Program Description: Facilities Capital Safety Projects - Forecast methodology = 5 yr ave

Risk/Mitigation:

Risk: Employee, Contractor and Public Safety.

Mitigation: "A comprehensive Health & Safety risk management framework is in place at SDG&E.

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	1,895	1,895	1,895
High	2,274	2,274	2,274

Funding Source: CPUC-GRC

Forecast Method: Average

Work Type: Non-Mandated

Work Type Citation: na

Historical Embedded Cost Estimates ($000)

Embedded Costs: 1895

Explanation:

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	00703.0
Category:	C. SAFETY/ENVIRONMENTAL
Category-Sub:	2. Environmental/Safety Blanket 2017 - 2019
Workpaper Group:	00703A - RAMP - Environmental/Safety Blanket
Workpaper Detail:	00703A.001 - RAMP - Incremental Environmental/Safety Blanket 2017 - 2019

RAMP Item # 2

RAMP Chapter: SDG&E-3

Program Name: AsbestosLeadMold inspectionsabatement outside of Safety

Program Description: Asbestos/Lead/Mold inspections/abatement outside of Safety

Risk/Mitigation:

Risk: Employee, Contractor and Public Safety.

Mitigation: 'A comprehensive Health & Safety risk management framework is in place at SDG&E.

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	401	401	401
High	481	481	481

Funding Source: CPUC-GRC

Forecast Method: Average

Work Type: Non-Mandated

Work Type Citation: na

Historical Embedded Cost Estimates ($000)

Embedded Costs: 401

Explanation:

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 00703.0
Category: C. SAFETY/ENVIRONMENTAL
Category-Sub: 2. Environmental/Safety Blanket 2017 - 2019
Workpaper Group: 00703A - RAMP - Environmental/Safety Blanket
Workpaper Detail: 00703A.002 - Caspian - Demolition & Stormwater Repair Design

In-Service Date: 09/30/2017

Description:

This project is a continuation of the facilities geographic consolidation strategy within the Kearny Mesa geographic area and in support and proximity to the Kearny Electric Construction facility, which is the headquarters for SDG&E's electric transmission construction and maintenance operations. The Caspian property was leased to relocate and consolidate existing, disparate transmission related material and equipment storage areas. The project will also provide temporary swing space to allow for redevelopment of the Kearny property under the Kearny Master Plan. Both interior and exterior storage needs will be accommodated. The project involves 2 phases; the first was completed in 2016 and included demolition of roughly 7,500 sf of building structure and 800 sf of infill paving, resulting from the demolition. The second phase is covered by this work paper and includes improvements to site storm water drainage systems impacted by the demolition. Reconstruction of storm water conveyances is necessary for capacity and re-routing purposes.

Forecast In 2016 $(000)

Years	2017	2018	2019
Labor	27	0	0
Non-Labor	426	0	0
NSE	0	0	0
Total	**453**	**0**	**0**
FTE	0.3	0.0	0.0

Note: Totals may include rounding differences.

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Category: D. MISC EQUIPMENT
Workpaper: 00705A

Summary for Category: D. MISC EQUIPMENT

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	112	199	118
Non-Labor	0	1,844	3,276	1,947
NSE	0	0	0	0
Total	**0**	**1,956**	**3,475**	**2,065**
FTE	0.0	1.0	2.0	1.0

00705A Misc. Equipment Blanket

Labor	0	112	199	118
Non-Labor	0	1,844	3,276	1,947
NSE	0	0	0	0
Total	**0**	**1,956**	**3,475**	**2,065**
FTE	0.0	1.0	2.0	1.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00705A - Misc. Equipment Blanket

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 00705.0
Category: D. MISC EQUIPMENT
Category-Sub: 2. Misc. Equipment Blanket 2017 - 2019
Workpaper Group: 00705A - Misc. Equipment Blanket

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

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	112	199	118
Non-Labor	Zero-Based	0	0	0	0	0	1,844	3,276	1,947
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,956**	**3,475**	**2,065**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.0	2.0	1.0

Business Purpose:

This budget funds the purchase and installation of miscellaneous equipment, which does not fall under the scope of any other capital project. This equipment supports the effective operations of the requesting department. The blanket benefits numerous departments throughout the company by funding equipment purchases, both planned and unplanned due to breakdowns or changing business needs, which enable employees to work more efficiently and effectively. Included in this budget code are replacements of small equipment such as kitchen, audio visual, specialized mechanical equipment used in the fleet garages (reels, jacks or hoists), and lab equipment for sampling of soils and wastewater, and the like.

Physical Description:

Small project types covered in this budget code are replacements of small equipment in the food preparation and kitchen services areas, machines (jacks or hoists) or other specialized mechanical equipment used in the fleet garages (attached to the building), or lab equipment for sampling of soils and wastewater, and the like.

Project Justification:

Facilities Operations and the business units identify requirements based on criticality of the facility, the age of the equipment and life cycle, and the implications for failure to complete the replacement or modification. Equipment is replaced at the end of the life cycle, if system failure occurs, for accuracy or reliability of operations, or if excessive maintenance and repair costs point to replacement, and to address technology obsolescence. Equipment keeps day to day operations functional. Failure to implement these projects could translate into reduced safety, disruption to the business unit, inability to meet business unit operational needs, higher costs to maintain and repair, and asset devaluation.

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	00705.0
Category:	D. MISC EQUIPMENT
Category-Sub:	2. Misc. Equipment Blanket 2017 - 2019
Workpaper Group:	00705A - Misc. Equipment Blanket

Forecast Methodology:

Labor - Zero-Based

The forecast method developed for this cost category is combination of zero and historical-based. This method is most appropriate because it depends on evolving maintenance requirements, internal customer business requirements (planned and unplanned), changing conditions and reliability of equipment, new code requirements and vendor estimates.

Non-Labor - Zero-Based

The forecast method developed for this cost category is combination of zero and historical-based. This method is most appropriate because it depends on evolving maintenance requirements, internal customer business requirements (planned and unplanned), changing conditions and reliability of equipment, new code requirements and vendor estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00705A

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 00705.0
Category: D. MISC EQUIPMENT
Category-Sub: 2. Misc. Equipment Blanket 2017 - 2019
Workpaper Group: 00705A - Misc. Equipment Blanket
Workpaper Detail: 00705A.001 - Misc. Equipment Blanket 2017 - 2019

In-Service Date: Not Applicable

Description:

This budget funds the purchase and installation of miscellaneous equipment, which does not fall under the scope of any other capital project. This equipment supports the effective operations of the requesting department. The blanket benefits numerous departments throughout the company by funding equipment purchases, both planned and unplanned due to breakdowns, which enable employees to work efficiently and effectively. Included in this budget code are replacements of small equipment such as kitchen, audio visual, specialized mechanical equipment used in the fleet garages (reels, jacks or hoists, lab equipment for sampling of soils and wastewater, and the like.

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	112	199	118
Non-Labor	1,844	3,276	1,947
NSE	0	0	0
Total	**1,956**	**3,475**	**2,065**
FTE	1.0	2.0	1.0

Note: Totals may include rounding differences.

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Category: E. SECURITY SYSTEMS
Workpaper: 00707A

Summary for Category: E. SECURITY SYSTEMS

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	96	192	228
Non-Labor	0	1,664	3,209	3,819
NSE	0	0	0	0
Total	**0**	**1,760**	**3,401**	**4,047**
FTE	0.0	1.0	2.0	2.2

00707A RAMP - Security Blanket

Labor	0	96	192	228
Non-Labor	0	1,664	3,209	3,819
NSE	0	0	0	0
Total	**0**	**1,760**	**3,401**	**4,047**
FTE	0.0	1.0	2.0	2.2

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00707A - RAMP - Security Blanket

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 00707.0
Category: E. SECURITY SYSTEMS
Category-Sub: 2. Security Blanket 2017 - 2019
Workpaper Group: 00707A - RAMP - Security Blanket

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

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	96	192	228
Non-Labor	Zero-Based	0	0	0	0	0	1,664	3,209	3,819
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,760**	**3,401**	**4,047**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.0	2.0	2.2

Business Purpose:

This budget funds minor building modifications, upgrades, and facility improvements to safeguard SDG&E occupied facilities and sites, protect employees and company property, and reduce corporate liability. Small projects under $1M are bundled when possible for economies of scale in sourcing. Project requirements are prioritized based on corporate security recommendations. Scope of work may vary year to year, based on identification of risks, but all address the security of the company employees, operations, and assets. Common project types covered in this budget code are card readers, cameras, video recorders, physical barriers, and controlled automated gates and turnstiles.

Physical Description:

Common project types covered in this budget code are: card readers, cameras, video recorders, physical barriers and controlled automated gates and turnstiles; enhancements that increase security or lengthen life cycle of security systems.

Project Justification:

Facilities Operations, Audit, Security, and the business units identify requirements and prioritize based on risk assessments and consequences of not completing the project. The safety and security of the employees is a primary focus. Failure to implement these projects could translate into increased risk and exposure. Projects proposed improve safeguards at company locations and are designed to protect company materials and assets. Projects are planned according to the level of risk, availability of resources. Like projects are bundled for economies of scale for better pricing in sourcing if possible. Individual work orders and project plans are developed for execution of individual projects.

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	00707.0
Category:	E. SECURITY SYSTEMS
Category-Sub:	2. Security Blanket 2017 - 2019
Workpaper Group:	00707A - RAMP - Security Blanket

Forecast Methodology:

Labor - Zero-Based

The forecast method developed for this cost category is combination of zero and historical-based. This method is most appropriate because it depends on evolving maintenance requirements, internal customer business requirements (planned and unplanned), changing conditions and reliability of equipment and vendor estimates.

Non-Labor - Zero-Based

The forecast method developed for this cost category is combination of zero and historical-based. This method is most appropriate because it depends on evolving maintenance requirements, internal customer business requirements (planned and unplanned), changing conditions and reliability of equipment and vendor estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00707A

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	00707.0
Category:	E. SECURITY SYSTEMS
Category-Sub:	2. Security Blanket 2017 - 2019
Workpaper Group:	00707A - RAMP - Security Blanket
Workpaper Detail:	00707A.001 - RAMP - Incremental Security Blanket 2017 - 2019
In-Service Date:	Not Applicable

Description:

This budget funds minor building modifications upgrades and facility improvements to safeguard SDG&E occupied facilities and sites, protect employees and company property, and reduce corporate liability. Small projects under $1M are bundled when possible for economies of scale in sourcing. Project requirements are prioritized based on corporate security recommendations. Scope of work may vary year to year, based on identification of risks, but all address the security of the company employees, operations, and assets. Common project types covered in this budget code are card readers, cameras, video recorders, and controlled automated gates.

Forecast In 2016 $(000)

Years	2017	2018	2019
Labor	96	192	228
Non-Labor	1,664	3,209	3,819
NSE	0	0	0
Total	**1,760**	**3,401**	**4,047**
FTE	1.0	2.0	2.2

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	00707.0
Category:	E. SECURITY SYSTEMS
Category-Sub:	2. Security Blanket 2017 - 2019
Workpaper Group:	00707A - RAMP - Security Blanket
Workpaper Detail:	00707A.001 - RAMP - Incremental Security Blanket 2017 - 2019

RAMP Item # 1

RAMP Chapter: SDG&E-9

Program Name: Physical Security Systems

Program Description: Physical security measures put in place for the security/safety of employees and infrastructure

Risk/Mitigation:

Risk: Workplace Violence

Mitigation: Physical Security Systems

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	2,425	3,001	3,091
High	2,425	3,001	3,091

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: na

Historical Embedded Cost Estimates ($000)

Embedded Costs: 2816

Explanation:

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Category: F. INFRASTRUCTURE & RELIABILITY
Workpaper: 00708A

Summary for Category: F. INFRASTRUCTURE & RELIABILITY

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	84	108	382
Non-Labor	0	1,476	1,839	6,269
NSE	0	0	0	0
Total	**0**	**1,560**	**1,947**	**6,651**
FTE	0.0	0.8	1.0	3.7

00708A Infrastructure/Reliability Blanket

Labor	0	84	108	382
Non-Labor	0	1,476	1,839	6,269
NSE	0	0	0	0
Total	**0**	**1,560**	**1,947**	**6,651**
FTE	0.0	0.8	1.0	3.7

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00708A - Infrastructure/Reliability Blanket

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 00708.0
Category: F. INFRASTRUCTURE & RELIABILITY
Category-Sub: 2. Infrastructure/Reliability Blanket 2017 - 2019
Workpaper Group: 00708A - Infrastructure/Reliability Blanket

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

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	84	108	382
Non-Labor	Zero-Based	0	0	0	0	0	1,476	1,839	6,269
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,560**	**1,947**	**6,651**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.8	1.0	3.7

Business Purpose:

This budget funds building facility infrastructure to support basic building operations, as well as requirements specific to the business unit operations and initiatives. Projects include replacement of systems and major equipment affecting reliability, comfort and safety of employees at numerous sites throughout the portfolio. Small projects under $1 million are bundled when possible for economies of scale in sourcing. These projects vary year to year based on need, but address replacement of basic building infrastructure and systems. Each year requirements are prioritized to manage the facility assets, keep the employees safe and optimize real estate value. Common project types covered in this budget code are: Chillers, Boilers, Air Handlers, HVAC Replacements, Generators, UPS systems, Electrical Distribution Systems and Computer Room Infrastructure. Scope of work may include modernization projects, improvements to implement best practices, and/or offer best alternatives for cost avoidance compared to other scenarios.

Physical Description:

Common project types covered in this budget code are: Chillers, Boilers, Air Handlers, HVAC Replacements, Generators, UPS systems, Electrical Distribution Systems and Computer Room Infrastructure.

Project Justification:

Facilities Operations identify requirements based on criticality of the facility, the age of the asset, and the implications for failure to complete the replacement or modification. Failure to implement these projects could translate into reduced safety, disruption to the business unit, inability to meet business unit operational needs, higher costs to maintain and repair, and asset devaluation. Projects are planned according to the availability of resources, in some cases weather, lead times and priorities. Like projects are bundled for economies of scale for better pricing in sourcing. Construction calculations are supported by industry professionals, including licensed architects and designers, construction industry professionals.

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	00708.0
Category:	F. INFRASTRUCTURE & RELIABILITY
Category-Sub:	2. Infrastructure/Reliability Blanket 2017 - 2019
Workpaper Group:	00708A - Infrastructure/Reliability Blanket

Forecast Methodology:

Labor - Zero-Based

The forecast method developed for this cost category is combination of zero and historical-based. This method is most appropriate because it depends on evolving maintenance requirements, internal customer business requirements (planned and unplanned), changing conditions and reliability of equipment, new code requirements and vendor estimates.

Non-Labor - Zero-Based

The forecast method developed for this cost category is combination of zero and historical-based. This method is most appropriate because it depends on evolving maintenance requirements, internal customer business requirements (planned and unplanned), changing conditions and reliability of equipment, new code requirements and vendor estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00708A

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	00708.0
Category:	F. INFRASTRUCTURE & RELIABILITY
Category-Sub:	2. Infrastructure/Reliability Blanket 2017 - 2019
Workpaper Group:	00708A - Infrastructure/Reliability Blanket
Workpaper Detail:	00708A.001 - Infrastructure/Reliability Blanket 2017 - 2019
In-Service Date:	Not Applicable

Description:

This budget funds building facility infrastructure to support basic building operations, as well as requirements specific to the business unit operations and initiatives. Projects include replacement of systems and major equipment affecting reliability, comfort and safety of employees at numerous sites throughout the portfolio. Small projects under $1 million are bundled when possible for economies of scale in sourcing. These projects vary year to year based on need, but address replacement of basic building infrastructure and systems. Each year requirements are prioritized to manage the facility assets, keep the employees safe and optimize real estate value. Common project types covered in this budget code are: Chillers, Boilers, Air Handlers, HVAC Replacements, Generators, UPS systems, Electrical Distribution Systems and Computer Room Infrastructure. Scope of work may include modernization projects, improvements to implement best practices, and/or offer best alternatives for cost avoidance compared to other scenarios.

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	84	108	266
Non-Labor	1,476	1,839	4,370
NSE	0	0	0
Total	**1,560**	**1,947**	**4,636**
FTE	0.8	1.0	2.6

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	00708.0
Category:	F. INFRASTRUCTURE & RELIABILITY
Category-Sub:	2. Infrastructure/Reliability Blanket 2017 - 2019
Workpaper Group:	00708A - Infrastructure/Reliability Blanket
Workpaper Detail:	00708A.003 - Network Operations Center (NOC) Equipment Improvement
In-Service Date:	09/30/2019

Description:

The Network Operations Center is a 24/7 critical function located within the company's primary information management facility in Rancho Bernardo. It is responsible for monitoring and managing the performance and changes thereto of information systems for Sempra Energy and its regulated utilities, SDG&E and SoCalGas. This project will provide a comprehensive remodel of the Network Operations Center, including upgraded audio visual technologies, reorganization of the space for improved sightlines to visual displays, functional flexibility, conferencing and collaboration, replacement of operator consoles to meet current company ergonomic standards, provision of energy efficient lighting, and replacement of raised floor and sub-floor electrical distribution components, ceilings, carpet and paint.

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	116
Non-Labor	0	0	1,899
NSE	0	0	0
Total	**0**	**0**	**2,015**
FTE	0.0	0.0	1.1

Note: Totals may include rounding differences.

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Category: G. REMODELS/RECONFIGURATIONS/RELOCATIONS
Workpaper: 00709A

Summary for Category: G. REMODELS/RECONFIGURATIONS/RELOCATIONS

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	312	744	1,389
Non-Labor	0	5,293	12,240	22,766
NSE	0	0	0	0
Total	**0**	**5,605**	**12,984**	**24,155**
FTE	0.0	2.7	7.5	13.7

00709A Remodel/Relocate/Reconfig Blanket

Labor	0	312	744	1,389
Non-Labor	0	5,293	12,240	22,766
NSE	0	0	0	0
Total	**0**	**5,605**	**12,984**	**24,155**
FTE	0.0	2.7	7.5	13.7

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00709A - Remodel/Relocate/Reconfig Blanket

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 00709.0
Category: G. REMODELS/RECONFIGURATIONS/RELOCATIONS
Category-Sub: 2. Remodel/Relocate/Reconfig Blanket 2017 - 2019
Workpaper Group: 00709A - Remodel/Relocate/Reconfig Blanket

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

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	312	744	1,389
Non-Labor	Zero-Based	0	0	0	0	0	5,293	12,240	22,766
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**5,605**	**12,984**	**24,155**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	2.7	7.5	13.7

Business Purpose:

This budget funds tenant improvement construction, spatial remodels and associated work station moves and changes needed to provide adequate and efficient office space and work environments for employees. Requirements are based on business needs and functionality needed to meet business and resource objectives. Space standards and guidelines are used to manage space allocations and modifications effectively in reconfigurations. Ergonomics are considered in the upgrades to provide improved working conditions and safety for employees.

Physical Description:

Typical categories include: Branch office ergonomic refurbishments; Room Modifications and Tenant Improvements to increase capacity, functionality or density; Reorganization to collocate work groups, add capacity for offices and workstations, technical lab space and resource areas.

Project Justification:

These projects are needed to provide adequate office space and environments for employees. Requirements are based on business criticality, functionality needed to meet objectives. Space standards and guidelines are used to manage space allocations and modifications effectively in reconfigurations. Ergonomics are considered in the upgrades to provide improved working conditions and safety for employees. Increasing functionality and density of the workplace at existing facilities is a lower cost alternative to acquiring new space and fitting up (leased or owned), provided the overall requirements can be met. Failure to fund these modifications results in fractured workgroups, productivity decline, lack of adjacencies, non-standard workspace environments for employees, negative impacts to employee morale, adverse effects on working conditions and processes, inability to meet business unit goals, and inability to improve ergonomics and working conditions. Construction calculations are supported by industry professionals, including licensed architects and designers, construction industry professionals, and IT domain experts using standard construction estimation practices.

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	00709.0
Category:	G. REMODELS/RECONFIGURATIONS/RELOCATIONS
Category-Sub:	2. Remodel/Relocate/Reconfig Blanket 2017 - 2019
Workpaper Group:	00709A - Remodel/Relocate/Reconfig Blanket

Forecast Methodology:

Labor - Zero-Based

The forecast method developed for this cost category is combination of zero and historical-based. This method is most appropriate because it depends on internal customer business requirements (planned and unplanned), changing employment conditions and vendor estimates.

Non-Labor - Zero-Based

The forecast method developed for this cost category is combination of zero and historical-based. This method is most appropriate because it depends on internal customer business requirements (planned and unplanned), changing employment conditions and vendor estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00709A

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 00709.0
Category: G. REMODELS/RECONFIGURATIONS/RELOCATIONS
Category-Sub: 2. Remodel/Relocate/Reconfig Blanket 2017 - 2019
Workpaper Group: 00709A - Remodel/Relocate/Reconfig Blanket
Workpaper Detail: 00709A.001 - Remodel/Relocate/Reconfig Blanket 2017 - 2019

In-Service Date: Not Applicable

Description:

This budget funds work station moves and changes needed to provide adequate and efficient office space and work environments for employees. Requirements are based on business needs and functionality needed to meet business and resource objectives. Space standards and guidelines are used to manage space allocations and modifications effectively in reconfigurations. Ergonomics are considered in the upgrades to provide improved working conditions and safety for employees.

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	72	132	168
Non-Labor	1,188	2,148	2,700
NSE	0	0	0
Total	**1,260**	**2,280**	**2,868**
FTE	0.7	1.3	1.7

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	00709.0
Category:	G. REMODELS/RECONFIGURATIONS/RELOCATIONS
Category-Sub:	2. Remodel/Relocate/Reconfig Blanket 2017 - 2019
Workpaper Group:	00709A - Remodel/Relocate/Reconfig Blanket
Workpaper Detail:	00709A.002 - CP Annex Plus Tenant Improvements
In-Service Date:	12/31/2017

Description:

This project is a continuation of the facilities geographic consolidation strategy around SDG&E's Century Park corporate headquarters campus. The project will contribute to centralizing and maximizing adjacencies amongst IT department operations and support infrastructure between their CP Annex and Century Park East work groups. The project includes technology infrastructure upgrades and a complete demolition and remodel of the existing office space, roughly 10,000 sf. Tenant improvement construction will include prefabricated modular walls and raised floor for flexibility of space utilization, a new HVAC distribution system and lighting, information systems distribution (routers, switches, wireless access points and cabling), audio visual technologies, security and surveillance systems and furniture to meet current company ergonomic standards.

Forecast In 2016 $(000)

Years	2017	2018	2019
Labor	156	0	0
Non-Labor	2,665	0	0
NSE	0	0	0
Total	**2,821**	**0**	**0**
FTE	1.2	0.0	0.0

Note: Totals may include rounding differences.

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 00709.0
Category: G. REMODELS/RECONFIGURATIONS/RELOCATIONS
Category-Sub: 2. Remodel/Relocate/Reconfig Blanket 2017 - 2019
Workpaper Group: 00709A - Remodel/Relocate/Reconfig Blanket
Workpaper Detail: 00709A.003 - CP4 Refresh

In-Service Date: 09/30/2019

Description:

The project will remodel the existing 20+ year old first and second floors of Century Park, Building 4, comprising roughly 68,000 sf. It will create more efficient space utilization through the densification of work stations and the creation of collaborative project team areas. The cost and flexibility of spatial reconfiguration within the building center will be significantly enhanced through the introduction of demountable wall and raised floor systems. Motorized, sit/stand adjustable work surfaces will be provided to allow for employee movement and stretching while working, thereby reducing the risk of muscle fatigue and stiffness. It will also produce a healthier, safer environment for the employees as the project will be designed for LEED certification. State of the art audio visual technology will be provided in conference areas.

Forecast In 2016 $(000)

Years	2017	2018	2019
Labor	0	0	918
Non-Labor	0	0	15,075
NSE	0	0	0
Total	**0**	**0**	**15,993**
FTE	0.0	0.0	9.0

Note: Totals may include rounding differences.

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 00709.0
Category: G. REMODELS/RECONFIGURATIONS/RELOCATIONS
Category-Sub: 2. Remodel/Relocate/Reconfig Blanket 2017 - 2019
Workpaper Group: 00709A - Remodel/Relocate/Reconfig Blanket
Workpaper Detail: 00709A.004 - CP6 EOC Tenant Improvements

In-Service Date: 09/30/2019

Description:

The existing Emergency Operations Center at SDG&E Century Park corporate headquarters campus was last remodeled more than 17 years ago. The existing workstations and peripheral equipment (phones, keyboards, storage, etc.) for the emergency responders in the situation room do not meet current company ergonomic standards and in an effort to make the work environment more appropriate for extended shift work (12 hours on / 12 hours off) during emergency activations, the project will reconfigure the raised floor to provide more space between rows of furniture, provide new adjustable work surfaces to allow sit/stand functionality, revise existing electrical work to accommodate the new equipment and reconfigurations, and install new carpet and stair nosing for better wear and visibility. The spatial layout of the Situation and Executive conference rooms will also be reconfigured and upgraded with new audio visual technologies to allow for improved presentation and awareness of increased real-time information (news, weather, field reports, etc.), and enhanced exchange of information between subject matter experts monitoring evolving conditions and strategic decision makers.

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	0	162
Non-Labor	0	0	2,664
NSE	0	0	0
Total	**0**	**0**	**2,826**
FTE	0.0	0.0	1.6

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	00709.0
Category:	G. REMODELS/RECONFIGURATIONS/RELOCATIONS
Category-Sub:	2. Remodel/Relocate/Reconfig Blanket 2017 - 2019
Workpaper Group:	00709A - Remodel/Relocate/Reconfig Blanket
Workpaper Detail:	00709A.005 - Mission Skills Training Interior Improvements
In-Service Date:	12/31/2018

Description:

SDG&E Skills Training Center is a combined site and classroom based facility that provides training of electric, gas, customer service, project planning and inspection resources. The objective of this project is to modernize the training facility for creation of a safer and more productive learning environment. The proposed scope will include upgrades to aging classroom audio-visual technologies, replacement of lighting, furniture and finishes, and improved adjacencies between classrooms and instructor office areas.

Forecast In 2016 $(000)

Years	2017	2018	2019
Labor	24	24	0
Non-Labor	480	480	0
NSE	0	0	0
Total	**504**	**504**	**0**
FTE	0.2	0.2	0.0

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	00709.0
Category:	G. REMODELS/RECONFIGURATIONS/RELOCATIONS
Category-Sub:	2. Remodel/Relocate/Reconfig Blanket 2017 - 2019
Workpaper Group:	00709A - Remodel/Relocate/Reconfig Blanket
Workpaper Detail:	00709A.006 - Northeast Warehouse Locker Room Improvement
In-Service Date:	09/30/2019

Description:

SDG&E Northeast Construction & Operations center in Escondido is the headquarters for gas distribution, electric distribution and customer service construction and maintenance crews serving northeastern San Diego County. Organizations that exist on site in support of these crews include fleet maintenance, logistics and warehousing functions. Fleet, logistics and warehousing personnel share the same locker, restroom and shower facilities with customer service field employees, and these facilities have not been upgraded or refreshed in more than 20 years. The project will demolish the existing men's and women's locker rooms and replace all plumbing and lighting fixtures, HVAC supply and exhaust fans, flooring, toilet partitions and accessories, floor and wall tile, lockers and paint.

Forecast In 2016 $(000)

Years	2017	2018	2019
Labor	0	0	69
Non-Labor	0	0	1,140
NSE	0	0	0
Total	**0**	**0**	**1,209**
FTE	0.0	0.0	0.7

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	00709.0
Category:	G. REMODELS/RECONFIGURATIONS/RELOCATIONS
Category-Sub:	2. Remodel/Relocate/Reconfig Blanket 2017 - 2019
Workpaper Group:	00709A - Remodel/Relocate/Reconfig Blanket
Workpaper Detail:	00709A.007 - OCCO 2nd Floor Improvements
In-Service Date:	09/30/2019

Description:

The second floor of SDG&E Orange County Construction & Operations Center houses management and administrative personnel that support gas & electric construction and maintenance operations in the southern Orange Country service territory. The floor has not been improved since 2000 and is in need of various upgrades including replacement of restroom fixtures and finishes, replacement of furniture to meet current company ergonomic standards, reorganization of the space for enhanced functional flexibility, collaboration and efficiency, upgraded audio visual technologies, provision of energy efficient lighting, and replacement of carpet, paint and window coverings. This project will provide a comprehensive remodel with the objective of bringing enhanced productivity, health and teamwork to the employees working in this area.

Forecast In 2016 $(000)

Years	2017	2018	2019
Labor	0	0	72
Non-Labor	0	0	1,187
NSE	0	0	0
Total	**0**	**0**	**1,259**
FTE	0.0	0.0	0.7

Note: Totals may include rounding differences.

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 00709.0
Category: G. REMODELS/RECONFIGURATIONS/RELOCATIONS
Category-Sub: 2. Remodel/Relocate/Reconfig Blanket 2017 - 2019
Workpaper Group: 00709A - Remodel/Relocate/Reconfig Blanket
Workpaper Detail: 00709A.008 - CP5 Refresh

In-Service Date: 12/31/2018

Description:

The project will remodel the existing 20+ year old first and second floors of Century Park, Building 5, comprising roughly 43,000 sf. It will create more efficient space utilization through the densification of work stations and the creation of collaborative project team areas. The cost and flexibility of spatial reconfiguration within the building center will be significantly enhanced through the introduction of demountable wall and raised floor systems. Motorized, sit/stand adjustable work surfaces will be provided to allow for employee movement and stretching while working, thereby reducing the risk of muscle fatigue and stiffness. It will also produce a healthier, safer environment for the employees as the project will be designed for LEED certification. State of the art audio visual technology will be provided in conference areas.

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	588	0
Non-Labor	0	9,612	0
NSE	0	0	0
Total	**0**	**10,200**	**0**
FTE	0.0	6.0	0.0

Note: Totals may include rounding differences.

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 00709.0
Category: G. REMODELS/RECONFIGURATIONS/RELOCATIONS
Category-Sub: 2. Remodel/Relocate/Reconfig Blanket 2017 - 2019
Workpaper Group: 00709A - Remodel/Relocate/Reconfig Blanket
Workpaper Detail: 00709A.009 - Mission Telecom Tenant Improvement

In-Service Date: 12/31/2017

Description:

The project will remodel the existing 20+ year old Mission Telecom Facility, repurposing the interior space from general office use by information technology staff to a training facility for Grid Operations. As such, a classroom environment with supporting general office space for instructors will be constructed. In addition to interior improvements, a complete replacement of the HVAC and plumbing systems that support the training and accompanying office environment will be completed.

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	60	0	0
Non-Labor	960	0	0
NSE	0	0	0
Total	**1,020**	**0**	**0**
FTE	0.6	0.0	0.0

Note: Totals may include rounding differences.

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Category: H. BUSINESS UNIT EXPANSIONS
Workpaper: 00710A

Summary for Category: H. BUSINESS UNIT EXPANSIONS

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	597	1,085	944
Non-Labor	0	9,849	17,983	15,679
NSE	0	0	0	0
Total	**0**	**10,446**	**19,068**	**16,623**
FTE	0.0	7.8	8.1	8.9

00710A Business Unit Expansion Blanket

Labor	0	597	1,085	944
Non-Labor	0	9,849	17,983	15,679
NSE	0	0	0	0
Total	**0**	**10,446**	**19,068**	**16,623**
FTE	0.0	7.8	8.1	8.9

Note: Totals may include rounding differences.

Beginning of Workpaper Group
00710A - Business Unit Expansion Blanket

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 00710.0
Category: H. BUSINESS UNIT EXPANSIONS
Category-Sub: 2. Business Unit Expansion Blanket 2017 - 2019
Workpaper Group: 00710A - Business Unit Expansion Blanket

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

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	597	1,085	944
Non-Labor	Zero-Based	0	0	0	0	0	9,849	17,983	15,679
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**10,446**	**19,068**	**16,623**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	7.8	8.1	8.9

Business Purpose:

The purpose of this blanket is to fund building and facility expansions and improvements that adequately support corporate business objectives and initiatives. The projects identified include Master Planning, Expansion, Relocation and Facility Consolidation projects at various existing company buildings/facilities or those newly acquired or leased. These projects would satisfy current and future space requirements to appropriately house employees and provide expanded workspace and storage capacities to keep pace with company growth.

Physical Description:

The purpose of this blanket is to fund building and facility expansions and improvements that adequately support corporate business objectives and initiatives. The projects identified include Master Planning, Expansion, Relocation and Facility Consolidation projects at various company buildings/facilities. These projects would satisfy current and future space requirements to appropriately house employees and provide expanded workspace and storage capacities to keep pace with company growth.

Project Justification:

Corporate Real Estate, Real Estate Planning and the business units identify requirements based on criticality of the facility, the age of the asset, lease terms and strategies, acquisition or disposition opportunities, and business growth or consolidation plans. Failure to implement these projects could translate into disruption to the business unit, inability to meet business unit operational needs, higher costs to lease, and asset devaluation. Construction calculations are supported by industry professionals, including licensed architects and designers, construction industry professionals, and IT domain experts using standard construction estimation practices.

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	00710.0
Category:	H. BUSINESS UNIT EXPANSIONS
Category-Sub:	2. Business Unit Expansion Blanket 2017 - 2019
Workpaper Group:	00710A - Business Unit Expansion Blanket

Forecast Methodology:

Labor - Zero-Based

The forecast method developed for this cost category is combination of zero and historical-based. This method is most appropriate because it depends oninternal customer business requirements (planned and unplanned), changing employment conditions and vendor estimates.

Non-Labor - Zero-Based

The forecast method developed for this cost category is combination of zero and historical-based. This method is most appropriate because it depends oninternal customer business requirements (planned and unplanned), changing employment conditions and vendor estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 00710A

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	00710.0
Category:	H. BUSINESS UNIT EXPANSIONS
Category-Sub:	2. Business Unit Expansion Blanket 2017 - 2019
Workpaper Group:	00710A - Business Unit Expansion Blanket
Workpaper Detail:	00710A.001 - Business Unit Expansion Blanket 2017 - 2019
In-Service Date:	Not Applicable

Description:

The purpose of this blanket is to fund building and facility expansions and improvements that adequately support corporate business objectives and initiatives. The projects identified include Master Planning, Expansion, Relocation and Facility Consolidation projects at various company buildings/facilities. These projects would satisfy current and future space requirements to appropriately house employees and provide expanded workspace and storage capacities to keep pace with company growth.

Forecast In 2016 $(000)

Years	2017	2018	2019
Labor	82	63	440
Non-Labor	1,296	1,045	7,267
NSE	0	0	0
Total	**1,378**	**1,108**	**7,707**
FTE	0.6	0.6	4.0

Note: Totals may include rounding differences.

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 00710.0
Category: H. BUSINESS UNIT EXPANSIONS
Category-Sub: 2. Business Unit Expansion Blanket 2017 - 2019
Workpaper Group: 00710A - Business Unit Expansion Blanket
Workpaper Detail: 00710A.002 - Greencraig II Tenant Improvements

In-Service Date: 06/30/2018

Description:

This project is a continuation of the facilities geographic consolidation strategy within the Kearny Mesa geographic area and in support and proximity to the Kearny Electric Construction facility, which is the headquarters for SDG&E's electric transmission construction and maintenance operations. The Greencraig II facility was leased to centralize existing, disparate transmission related operations, provide temporary swing space to allow for redevelopment of the Kearny property under the Kearny Master Plan, and consolidate other groups located in separate facilities with expiring leases. Phase 1 of the project will create tenant improvement space for Smart Meter operations. Phase 2 of the project will create lab space for organizations housed at various sites. Phase 3 of the project includes additional lab space for functions currently housed at Kearny C&O, and additional lab and office space for the Smart Meter group.

The scope of the project will be implemented in phases: Phase 1 of this project includes expansion of an existing 2nd floor mezzanine area and tenant improvement construction across the entire, expanded area. Expansion of the mezzanine will increase the 2nd floor area to roughly 31,000 sf, and raise the existing size of the total building floor area from approximately 75,000 square feet to roughly 91,000 square feet. Phase 2 of project will provide demolition and tenant improvement construction to the first floor, including single story lab areas and office space below the mezzanine, and warehouse space adjacent to the mezzanine that spans the full two-story-height of the facility. New electrical, HVAC, modular walls and raised flooring for spatial flexibility, finishes, furniture consistent with company ergonomic standards, audio visual and security systems, and IT equipment, infrastructure and cabling are included in the scope for a complete redevelopment of the building's interior space.

Forecast In 2016 $(000)

Years	2017	2018	2019
Labor	491	798	0
Non-Labor	8,073	13,146	0
NSE	0	0	0
Total	**8,564**	**13,944**	**0**
FTE	7.0	5.3	0.0

Note: Totals may include rounding differences.

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 00710.0
Category: H. BUSINESS UNIT EXPANSIONS
Category-Sub: 2. Business Unit Expansion Blanket 2017 - 2019
Workpaper Group: 00710A - Business Unit Expansion Blanket
Workpaper Detail: 00710A.003 - Miramar Welding Room Expansion

In-Service Date: 06/30/2019

Description:

This project will construct a new facility to replace an existing aged and inadequate facility, thereby creating a safer, more efficient environment for employees and contractors to participate in welding qualification and training, and allowing for increased throughput of qualified and certified welders necessary to maintain compliance with governing regulations and standards. The existing facility is comprised of a 3-sided metal building structure that is protected by the elements only by retractable tarp. Only 8 hands-on welding training booths are available and they alternate between each of arc and oxy-acetylene welding training. Wind poses a risk to training safety as well as the spread of particulates outside of the welding environment. There is no classroom or office space for instructors. The project scope will increase welding booths up to 24, split between dedication to arc and oxy-acetylene welding training, provide classroom space for operator qualification and welding training classes, and office space for the welding instructors to organize instruction materials and maintain training records. These new areas will allow arc and oxy-acetylene welding training to be conducted concurrently, and classroom training to be conducted at the same time as hands-on training, thereby yielding an increased number of welders qualifying at the same time.

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	60	173
Non-Labor	0	948	2,850
NSE	0	0	0
Total	**0**	**1,008**	**3,023**
FTE	0.0	0.6	1.7

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	00710.0
Category:	H. BUSINESS UNIT EXPANSIONS
Category-Sub:	2. Business Unit Expansion Blanket 2017 - 2019
Workpaper Group:	00710A - Business Unit Expansion Blanket
Workpaper Detail:	00710A.004 - Mission Critical Facility Consolidation & Expansion
In-Service Date:	09/30/2019

Description:

The objective of the project is to unify critical 24/7 operations control functions into a singular facility, constructed with high level seismic resistivity and physical security measures to increase the hardening and protection of these facilities and internal assets. Functions to be housed at this facility would include, but not be limited to, Grid Control, Distribution Operations, IT Network operations and Emergency Operations Control. The existing facilities providing these functions would be redeployed as back-up operations, thereby improving the capabilities of back-up functions, as well. Costs proposed in this rate case submittal would be to initiate design and permitting processes, only.

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	80	201
Non-Labor	0	1,416	3,339
NSE	0	0	0
Total	**0**	**1,496**	**3,540**
FTE	0.0	0.8	2.0

Note: Totals may include rounding differences.

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 00710.0
Category: H. BUSINESS UNIT EXPANSIONS
Category-Sub: 2. Business Unit Expansion Blanket 2017 - 2019
Workpaper Group: 00710A - Business Unit Expansion Blanket
Workpaper Detail: 00710A.006 - Ramona C&O Expansion Construction

In-Service Date: 12/31/2019

Description:

Due to growth in the greater Ramona and back country areas (i.e. Julian, Santa Ysabel, Warner Springs, Borrego Springs, Ranchita, Oak Grove, Aguanga, Shelter Valley, and Canebrake), the Ramona Construction & Operations Center was established as a satellite office of the Northeast Construction & Operations Center in November, 1993, to meet the electric construction and maintenance needs of the customers in these communities. Aging structures and infrastructure, expanding customer base, continuing and expanding system maintenance requirements, additional staff requirements and elimination of ongoing rental and maintenance costs provide reasonable justification for the construction of a new, modern, efficient facility at the existing Ramona site. The objective of the project is to improve and/or expand the existing administrative office building, warehouse, garage facilities and exterior material laydown and parking areas to address current and future operational needs and functions. It is proposed within this document that the existing facilities would be expanded or replaced within the existing site footprint, resulting in improved efficiencies and increased productivity. Costs proposed in this rate case submittal would be to initiate design and permitting processes, only.

Forecast In 2016 $(000)

Years	2017	2018	2019
Labor	0	0	22
Non-Labor	0	0	356
NSE	0	0	0
Total	**0**	**0**	**378**
FTE	0.0	0.0	0.2

Note: Totals may include rounding differences.

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 00710.0
Category: H. BUSINESS UNIT EXPANSIONS
Category-Sub: 2. Business Unit Expansion Blanket 2017 - 2019
Workpaper Group: 00710A - Business Unit Expansion Blanket
Workpaper Detail: 00710A.007 - Kearny Master Plan Phase 1

In-Service Date: 12/31/2019

Description:

SDG&E's relocation and expansion of its existing substation on its Kearny Construction & Operations property creates an opportunity to optimize existing operations on the site, accommodate future growth and consolidate employees from other locations. SDG&E therefore commissioned development of a master plan study to create and evaluate feasible options for the future redevelopment of the property. The plan yielded a 3-phased approach to redeveloping the property, and costs are included in this rate case submittal to launch the design and permitting processes, only, for Phase 1.
The first phase includes reconstruction of existing operations support facilities, covering the fleet maintenance garage, materials warehouse, maintenance shop and weighing station. Relocation of existing oil/water separator and fueling equipment are also included in this phase. Future phases would include reconstruction of the Construction & Operations Administrative office building, a new general office building and conference center, and parking structure.

Forecast In 2016 $(000)

Years	2017	2018	2019
Labor	24	84	108
Non-Labor	480	1,428	1,867
NSE	0	0	0
Total	**504**	**1,512**	**1,975**
FTE	0.2	0.8	1.0

Note: Totals may include rounding differences.

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Category: I. ALTERNATIVE ENERGY SYSTEMS
Workpaper: 08729A

Summary for Category: I. ALTERNATIVE ENERGY SYSTEMS

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	150	160	324
Non-Labor	0	2,475	2,654	5,400
NSE	0	0	0	0
Total	**0**	**2,625**	**2,814**	**5,724**
FTE	0.0	1.2	1.0	3.0

08729A Alternative Energy Systems

Labor	0	150	160	324
Non-Labor	0	2,475	2,654	5,400
NSE	0	0	0	0
Total	**0**	**2,625**	**2,814**	**5,724**
FTE	0.0	1.2	1.0	3.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
08729A - Alternative Energy Systems

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 08729.0
Category: I. ALTERNATIVE ENERGY SYSTEMS
Category-Sub: 2. Alternative Energy Program
Workpaper Group: 08729A - Alternative Energy Systems

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

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	150	160	324
Non-Labor	Zero-Based	0	0	0	0	0	2,475	2,654	5,400
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**2,625**	**2,814**	**5,724**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.2	1.0	3.0

Business Purpose:

The program objective is to promote and model the reduction of carbon emissions through the conversion of fossil-fuel powered Fleet vehicles to alternative fuel vehicles, and encourage employees to consider the purchase of personal electric vehicles by providing convenient charging infrastructure apparatus at company facilities (energy cost at employee expense). The program also has an energy conservation objective and on occasion has and will be used to fund photo-voltaic energy systems.

Physical Description:

Implement program-based installations of electric vehicle chargers and plug-in receptacles at occupied facilities across the SDG&E territory, both fee owned and leased, for charging of fleet and employee electric and hybrid vehicles (energy cost at employee expense). Provide engineering and construction to install a photo-voltaic energy systems.

Project Justification:

In the spirit of its environmental stewardship values and support of the State's zero-emission vehicle goals, the company seeks to minimize negative impact to the environment by reducing carbon emissions from its own vehicle fleet and also that of its employees. Photo-voltaic systems will not only improve the various sites operational characteristics (while reducing costs), but will also reduce system-wide power demand at the most critical periods, which will alleviate grid congestion and increase system reliability.

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	08729.0
Category:	I. ALTERNATIVE ENERGY SYSTEMS
Category-Sub:	2. Alternative Energy Program
Workpaper Group:	08729A - Alternative Energy Systems

Forecast Methodology:

Labor - Zero-Based

The forecast method developed for this cost category is combination of zero and historical-based. This method is most appropriate because it depends on evolving maintenance and operational requirements and vendor estimates.

Non-Labor - Zero-Based

The forecast method developed for this cost category is combination of zero and historical-based. This method is most appropriate because it depends on evolving maintenance and operational requirements and vendor estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 08729A

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 08729.0
Category: I. ALTERNATIVE ENERGY SYSTEMS
Category-Sub: 2. Alternative Energy Program
Workpaper Group: 08729A - Alternative Energy Systems
Workpaper Detail: 08729A.001 - Alternative Energy Systems

In-Service Date: Not Applicable

Description:

Implement installations of electric vehicle chargers and plug-in receptacles at occupied facilities across the SDG&E territory, both fee owned and leased, for charging of both fleet and employee electric and hybrid vehicles (energy cost at employee expense).

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	150	160	324
Non-Labor	2,475	2,654	5,400
NSE	0	0	0
Total	**2,625**	**2,814**	**5,724**
FTE	1.2	1.0	3.0

Note: Totals may include rounding differences.

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Category: J. ARCHIBUS BUSINESS SYSTEMS IMPROVEMENTS
Workpaper: 13746A

Summary for Category: J. ARCHIBUS BUSINESS SYSTEMS IMPROVEMENTS

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	48	60	27
Non-Labor	0	708	948	477
NSE	0	0	0	0
Total	**0**	**756**	**1,008**	**504**
FTE	0.0	0.2	0.5	0.2

13746A Archibus Business Systems Improvements

Labor	0	48	60	27
Non-Labor	0	708	948	477
NSE	0	0	0	0
Total	**0**	**756**	**1,008**	**504**
FTE	0.0	0.2	0.5	0.2

Note: Totals may include rounding differences.

Beginning of Workpaper Group
13746A - Archibus Business Systems Improvements

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 13746.0
Category: J. ARCHIBUS BUSINESS SYSTEMS IMPROVEMENTS
Category-Sub: 1. ARCHIBUS BUSINESS SYSTEMS IMPROVEMENTS
Workpaper Group: 13746A - Archibus Business Systems Improvements

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

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	48	60	27
Non-Labor	Zero-Based	0	0	0	0	0	708	948	477
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**756**	**1,008**	**504**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.2

Business Purpose:

Archibus is an integrated work management system used by Real Estate & Facilities employees to capture support requests and manage real estate assets and facilities preventative maintenance. The Archibus Project automates and develops best management practices around several of the shared services support systems used within the Corporate Real Estate & Planning and Facilities departments.

Physical Description:

Project activities include document scanning of legacy information, and updating, revision or development of new work tracking systems, including document management, financial, scheduling and work flow processes to identify project specifics. The design of each operating module within the system includes the ability to prepare extracts and reports used for metrics and other key performance indicators as necessary. The project has completed implementation of modules in support of Capital Project Management, Land Management & Entitlements, Move Management and Lease Administration. The project will continue with the development of operating modules for Real Estate Planning, Facilities Operations and Furniture Services.

Project Justification:

Integrated systems such as Archibus facilitate cost avoidance returns in the long term. Legacy systems need to be updated and processes need to be re-engineered to meet increased demand on existing and new information. Data increases knowledge, which drives efficiency and allows for better management of tools and resources. New systems enhance best practices and compliment “good work habits” which supports such change. Engineering new business tools and controls supports our customer needs, but we must also manage real property assets and commodities. The project’s primary focus on design and requirements was to support the processes of the Real Estate & Facilities staff, but also to share the new systems and relevant information with our customers. By creating systems that allow our customers access to the information empowers them to make more informed decisions and work at their own pace.

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	13746.0
Category:	J. ARCHIBUS BUSINESS SYSTEMS IMPROVEMENTS
Category-Sub:	1. ARCHIBUS BUSINESS SYSTEMS IMPROVEMENTS
Workpaper Group:	13746A - Archibus Business Systems Improvements

Forecast Methodology:

Labor - Zero-Based

The forecast method developed for this cost category is zero-based. This method is most appropriate because it depends on equipment, software requirements and vendor estimates.

Non-Labor - Zero-Based

The forecast method developed for this cost category is zero-based. This method is most appropriate because it depends on equipment, software requirements and vendor estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 13746A

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 13746.0
Category: J. ARCHIBUS BUSINESS SYSTEMS IMPROVEMENTS
Category-Sub: 1. ARCHIBUS BUSINESS SYSTEMS IMPROVEMENTS
Workpaper Group: 13746A - Archibus Business Systems Improvements
Workpaper Detail: 13746A.001 - Archibus Business Systems Improvements - 2017

In-Service Date: 12/31/2017

Description:

Work on the 2017 phase of the Archibus Business Systems Improvements project includes design and implementation of a space and occupancy planning module, a version upgrade of the Archibus software, improvements to the move management and lease administration modules, and system changes necessary to accommodate new guidance from the Financial Accounting Standards Board Interpretations (FASBI) concerning lease accounting.

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	48	0	0
Non-Labor	708	0	0
NSE	0	0	0
Total	**756**	**0**	**0**
FTE	0.2	0.0	0.0

Note: Totals may include rounding differences.

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 13746.0
Category: J. ARCHIBUS BUSINESS SYSTEMS IMPROVEMENTS
Category-Sub: 1. ARCHIBUS BUSINESS SYSTEMS IMPROVEMENTS
Workpaper Group: 13746A - Archibus Business Systems Improvements
Workpaper Detail: 13746A.002 - Archibus Business Systems Improvements - 2018

In-Service Date: 12/31/2018

Description:

Work on the 2018 phase of the Archibus Business Systems Improvements project includes design and implementation of the Facilities Operations module and related, interfacing improvements to the Capital Programs module.

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	60	0
Non-Labor	0	948	0
NSE	0	0	0
Total	**0**	**1,008**	**0**
FTE	0.0	0.5	0.0

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	13746.0
Category:	J. ARCHIBUS BUSINESS SYSTEMS IMPROVEMENTS
Category-Sub:	1. ARCHIBUS BUSINESS SYSTEMS IMPROVEMENTS
Workpaper Group:	13746A - Archibus Business Systems Improvements
Workpaper Detail:	13746A.003 - Archibus Business Systems Improvements - 2019
In-Service Date:	09/30/2019

Description:

Work on the 2019 phase of the Archibus Business Systems Improvements project includes adapting the Facilities Operations and Capital programs module to receive, store and view REVIT based facilities drawings, specifications and other record information. Improvements to the Land Services module will also be undertaken in this phase.

Forecast In 2016 $(000)

Years	2017	2018	2019
Labor	0	0	27
Non-Labor	0	0	477
NSE	0	0	0
Total	**0**	**0**	**504**
FTE	0.0	0.0	0.2

Note: Totals may include rounding differences.

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Category: K. CP6 CUSTOMER CALL CENTER IMPROVEMENTS
Workpaper: 14753A

Summary for Category: K. CP6 CUSTOMER CALL CENTER IMPROVEMENTS

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	148	0	0
Non-Labor	0	2,444	0	0
NSE	0	0	0	0
Total	**0**	**2,592**	**0**	**0**
FTE	0.0	1.4	0.0	0.0

14753A CP6-2 Customer Call Ctr TI

Labor	0	148	0	0
Non-Labor	0	2,444	0	0
NSE	0	0	0	0
Total	**0**	**2,592**	**0**	**0**
FTE	0.0	1.4	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
14753A - CP6-2 Customer Call Ctr TI

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 14753.0
Category: K. CP6 CUSTOMER CALL CENTER IMPROVEMENTS
Category-Sub: 2. CP 6-2 Remodel
Workpaper Group: 14753A - CP6-2 Customer Call Ctr TI

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

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	148	0	0
Non-Labor	Zero-Based	0	0	0	0	0	2,444	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**2,592**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0

Business Purpose:

The project will improve the existing 20+ year old Customer Call Center on the second floor of Century Park Building 6, creating more efficient space utilization through the densification of work stations and the creation of collaborative project team areas. It will also produce a healthier, safer environment for the employees, particularly those working on shift, in the call center.

Physical Description:

The project is designed to achieve LEED certification and will implement roughly 35,000 sf of tenant improvement construction and new ergonomic furniture systems. State of the art audio visual technology will be provided in conference areas.

Project Justification:

The cost and flexibility of spatial reconfiguration within the call center will be significantly enhanced through the introduction of demountable wall and raised floor systems. Motorized, adjustable work surfaces will be provided to allow for employee movement and stretching while working, thereby reducing the risk of muscle fatigue and stiffness during the work days and nights. Improved daylighting within the space will reduce the risk of eye strain in this monitor intensive environment.

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	14753.0
Category:	K. CP6 CUSTOMER CALL CENTER IMPROVEMENTS
Category-Sub:	2. CP 6-2 Remodel
Workpaper Group:	14753A - CP6-2 Customer Call Ctr TI

Forecast Methodology:

Labor - Zero-Based

The forecast method developed for this cost category is zero-based. This method is most appropriate because it depends on equipment requirements, associated historical costs of implementation and vendor estimates.

Non-Labor - Zero-Based

The forecast method developed for this cost category is zero-based. This method is most appropriate because it depends on equipment requirements, associated historical costs of implementation and vendor estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 14753A

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 14753.0
Category: K. CP6 CUSTOMER CALL CENTER IMPROVEMENTS
Category-Sub: 2. CP 6-2 Remodel
Workpaper Group: 14753A - CP6-2 Customer Call Ctr TI
Workpaper Detail: 14753A.001 - CP6-2 Customer Call Center Tenant Improvements

In-Service Date: 04/30/2017

Description:

The project will design and implement roughly 35,000 sf of tenant improvement construction and new ergonomic furniture systems. State of the art audio visual technology will be provided in conference areas. This workpaper includes the 2017 cost component, only, of the project, which has an overall estimated cost of $8.5M and commenced in 2016.

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	148	0	0
Non-Labor	2,444	0	0
NSE	0	0	0
Total	**2,592**	**0**	**0**
FTE	1.4	0.0	0.0

Note: Totals may include rounding differences.

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Category: L. RBDC SERVER RM #1 CRAC UNIT REPLACEMENTS
Workpaper: 14758A

Summary for Category: L. RBDC SERVER RM #1 CRAC UNIT REPLACEMENTS

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	88	0	0
Non-Labor	0	1,440	0	0
NSE	0	0	0	0
Total	**0**	**1,528**	**0**	**0**
FTE	0.0	0.5	0.0	0.0

14758A RBDC Server Room #1 CRAC Replacement

Labor	0	88	0	0
Non-Labor	0	1,440	0	0
NSE	0	0	0	0
Total	**0**	**1,528**	**0**	**0**
FTE	0.0	0.5	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
14758A - RBDC Server Room #1 CRAC Replacement

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 14758.0
Category: L. RBDC SERVER RM #1 CRAC UNIT REPLACEMENTS
Category-Sub: 2. RBDC CRAC Replacements Phase 1
Workpaper Group: 14758A - RBDC Server Room #1 CRAC Replacement

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

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	88	0	0
Non-Labor	Zero-Based	0	0	0	0	0	1,440	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**1,528**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0

Business Purpose:

The Rancho Bernardo Data Center is the primary electronic information processing facility, supporting various uninterruptable functions critical to customer service and safety. This project will mitigate the risk of cooling system failure in the main server room, which could cause the overheating of server equipment and unplanned curtailment of critical information processing.

Physical Description:

This project will replace ten aged, direct expansion-type computer room air conditioning units (CRACs) with ten computer room air handling-type units (CRAHs) to support the main server room at the Rancho Bernardo Data Center.

Project Justification:

The existing units are roughly 14-19 years old and beyond their expected useful life. They pose risk to maintaining proper temperature environments for critical information systems in the event of their failure or extended maintenance. Reductions in server size and densification of racks has placed additional pressure on the cooling capacities of the existing units, as well. The new CRAH units will greatly reduce the risk of inadequate cooling conditions and critical business interruptions, and operate more efficiently, consuming less power than the existing CRACs when implemented in conjunction with the Center's chilled water plant.

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	14758.0
Category:	L. RBDC SERVER RM #1 CRAC UNIT REPLACEMENTS
Category-Sub:	2. RBDC CRAC Replacements Phase 1
Workpaper Group:	14758A - RBDC Server Room #1 CRAC Replacement

Forecast Methodology:

Labor - Zero-Based

The forecast method developed for this cost category is zero-based. This method is most appropriate because it depends on equipment requirements, associated historical costs of implementation and vendor estimates.

Non-Labor - Zero-Based

The forecast method developed for this cost category is zero-based. This method is most appropriate because it depends on equipment requirements, associated historical costs of implementation and vendor estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 14758A

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 14758.0
Category: L. RBDC SERVER RM #1 CRAC UNIT REPLACEMENTS
Category-Sub: 2. RBDC CRAC Replacements Phase 1
Workpaper Group: 14758A - RBDC Server Room #1 CRAC Replacement
Workpaper Detail: 14758A.001 - RBDC Server Room #1 CRAC Replacement

In-Service Date: 06/30/2017

Description:

This project will replace ten aged direct expansion-type computer room air conditioning units (CRACs) with ten computer room air handling-type units (CRAHs) to support the main server room at the Rancho Bernardo Data Center.

Forecast In 2016 $(000)

Years	2017	2018	2019
Labor	88	0	0
Non-Labor	1,440	0	0
NSE	0	0	0
Total	**1,528**	**0**	**0**
FTE	0.5	0.0	0.0

Note: Totals may include rounding differences.

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Category: M. TRANSMISSION ENERGY MGT SYSTEM IMPROVEMENTS
Workpaper: 16766A

Summary for Category: M. TRANSMISSION ENERGY MGT SYSTEM IMPROVEMENTS

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	297	630	0
Non-Labor	0	4,902	10,432	0
NSE	0	0	0	0
Total	**0**	**5,199**	**11,062**	**0**
FTE	0.0	3.0	6.3	0.0

16766A RAMP - Mission Control Modernization

Labor	0	297	630	0
Non-Labor	0	4,902	10,432	0
NSE	0	0	0	0
Total	**0**	**5,199**	**11,062**	**0**
FTE	0.0	3.0	6.3	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
16766A - RAMP - Mission Control Modernization

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 16766.0
Category: M. TRANSMISSION ENERGY MGT SYSTEM IMPROVEMENTS
Category-Sub: 2. Mission Control Modernization
Workpaper Group: 16766A - RAMP - Mission Control Modernization

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

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	297	630	0
Non-Labor	Zero-Based	0	0	0	0	0	4,902	10,432	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**5,199**	**11,062**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	3.0	6.3	0.0

Business Purpose:

The objective of the project is to improve the reliability and safety of the electric grid by enhancing situational awareness in the Grid Control Center.

Physical Description:

This project will modernize the Electric Transmission Energy Management System by updating the Grid Control Center's primary control board and surrounding components, as well as the spatial configuration, security provisions and supporting mechanical and electrical infrastructure. The scope consists of implementing new video display systems, operator consoles, tenant improvement construction and access control and surveillance systems.

Project Justification:

The project will increase grid operators' situational awareness by reducing time to identify abnormal or adverse system conditions, and enable them to make better and faster decisions. The remodeled space will enhance data visualization, analysis, and collaboration. The audio-visual technology intended for implementation will more easily adapt to display changes necessary to coincide with changes to the grid system configuration, enhancing accuracy of interpretive and responding actions. It is also anticipated that a significant reduction in the man-hours required to maintain dynamic system content will be realized.

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	16766.0
Category:	M. TRANSMISSION ENERGY MGT SYSTEM IMPROVEMENTS
Category-Sub:	2. Mission Control Modernization
Workpaper Group:	16766A - RAMP - Mission Control Modernization

Forecast Methodology:

Labor - Zero-Based

The forecast method developed for this cost category is zero-based. This method is most appropriate because it depends on equipment requirements, associated historical costs of implementation and vendor estimates.

Non-Labor - Zero-Based

The forecast method developed for this cost category is zero-based. This method is most appropriate because it depends on equipment requirements, associated historical costs of implementation and vendor estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 16766A

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	16766.0
Category:	M. TRANSMISSION ENERGY MGT SYSTEM IMPROVEMENTS
Category-Sub:	2. Mission Control Modernization
Workpaper Group:	16766A - RAMP - Mission Control Modernization
Workpaper Detail:	16766A.001 - RAMP - Incremental Mission Control Modernization
In-Service Date:	09/30/2018

Description:

This project will modernize the Electric Transmission Energy Management System by updating the control board and surrounding components. The scope consists of tenant improvement construction and installation of new video display systems, operator consoles, furniture and accessories. This is a 2-year project that commenced in 2016, with a total estimated cost of roughly $18M.

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	297	630	0
Non-Labor	4,902	10,432	0
NSE	0	0	0
Total	**5,199**	**11,062**	**0**
FTE	3.0	6.3	0.0

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	16766.0
Category:	M. TRANSMISSION ENERGY MGT SYSTEM IMPROVEMENTS
Category-Sub:	2. Mission Control Modernization
Workpaper Group:	16766A - RAMP - Mission Control Modernization
Workpaper Detail:	16766A.001 - RAMP - Incremental Mission Control Modernization

RAMP Item # 1

RAMP Chapter: SDG&E-5

Program Name: Transmission Energy Management System Modernization Project

Program Description: Upgrade antiquated EMS visualization tool and control room. Tool will help improve situational awareness and prevent potential human errors.

Risk/Mitigation:

Risk: Major Disturbance to Electric Service

Mitigation: Modernization of Grid Control Centers

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	8,401	3,412	0
High	9,285	3,772	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: na

Historical Embedded Cost Estimates ($000)

Embedded Costs: 647

Explanation:

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	16766.0
Category:	M. TRANSMISSION ENERGY MGT SYSTEM IMPROVEMENTS
Category-Sub:	2. Mission Control Modernization
Workpaper Group:	16766A - RAMP - Mission Control Modernization
Workpaper Detail:	16766A.001 - RAMP - Incremental Mission Control Modernization

RAMP Item # 2

RAMP Chapter: SDG&E-6

Program Name: Transmission Energy Management System Modernization Project

Program Description: Upgrade antiquated EMS visualization tool and control room. Addresses potential scenarios where tools and/or systems our operators utilize are not adequate for blackstart situation

Risk/Mitigation:

Risk: Fail to Blackstart — Fail to Blackstart

Mitigation: Modernization of Grid Control Centers

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	0	0	0
High	0	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: na

Historical Embedded Cost Estimates ($000)

Embedded Costs: 0

Explanation:

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Category: N. MISSION CONTROL CRITICAL ASSET SECURITY HARDENING
Workpaper: 16767A

Summary for Category: N. MISSION CONTROL CRITICAL ASSET SECURITY HARDENING

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	156	0	0
Non-Labor	0	2,637	70	0
NSE	0	0	0	0
Total	**0**	**2,793**	**70**	**0**
FTE	0.0	1.0	0.0	0.0

16767A RAMP - Mission Control Critical Asset Security Hardening

Labor	0	156	0	0
Non-Labor	0	2,637	70	0
NSE	0	0	0	0
Total	**0**	**2,793**	**70**	**0**
FTE	0.0	1.0	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
16767A - RAMP - Mission Control Critical Asset Security Hardening

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 16767.0
Category: N. MISSION CONTROL CRITICAL ASSET SECURITY HARDENING
Category-Sub: 2. Mission Control Critical Asset Security Hardening
Workpaper Group: 16767A - RAMP - Mission Control Critical Asset Security Hardening

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

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	156	0	0
Non-Labor	Zero-Based	0	0	0	0	0	2,637	70	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**2,793**	**70**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0

Business Purpose:

The purpose of these projects is to ensure compliance with NERC CIP requirements and protect this most critical facility, which controls the flow of electric energy to, from and within the service territory, from security breaches and violent attack.

Physical Description:

The project will provide upgraded physical security systems and detection devices around the perimeter of the Mission Control facility.

Project Justification:

SDG&E's primary facility for controlling the electric transmission grid cannot be susceptible to physical intrusion by unauthorized vehicles or personnel.

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	16767.0
Category:	N. MISSION CONTROL CRITICAL ASSET SECURITY HARDENING
Category-Sub:	2. Mission Control Critical Asset Security Hardening
Workpaper Group:	16767A - RAMP - Mission Control Critical Asset Security Hardening

Forecast Methodology:

Labor - Zero-Based

The forecast method developed for this cost category is zero-based. This method is most appropriate because it depends on equipment requirements, associated historical costs of implementation and vendor estimates.

Non-Labor - Zero-Based

The forecast method developed for this cost category is zero-based. This method is most appropriate because it depends on equipment requirements, associated historical costs of implementation and vendor estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 16767A

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 16767.0
Category: N. MISSION CONTROL CRITICAL ASSET SECURITY HARDENING
Category-Sub: 2. Mission Control Critical Asset Security Hardening
Workpaper Group: 16767A - RAMP - Mission Control Critical Asset Security Hardening
Workpaper Detail: 16767A.001 - RAMP - Incremental Mission Control Critical Asset Security Hardening

In-Service Date: 12/31/2018

Description:

The scope of the project includes replacing the existing chain link and barbed wire fence with high security fencing resistant to vehicle penetration, upgrading the perimeter surveillance and intrusion detection systems, replacing and fortifying the entry security guard shelter, and installing anti-ram cables, wedge barriers and drop arms at potential threat avenues.

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	156	0	0
Non-Labor	2,637	70	0
NSE	0	0	0
Total	**2,793**	**70**	**0**
FTE	1.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	16767.0
Category:	N. MISSION CONTROL CRITICAL ASSET SECURITY HARDENI
Category-Sub:	2. Mission Control Critical Asset Security Hardening
Workpaper Group:	16767A - RAMP - Mission Control Critical Asset Security Hardening
Workpaper Detail:	16767A.001 - RAMP - Incremental Mission Control Critical Asset Security Hardening

RAMP Item # 1

RAMP Chapter: SDG&E-9

Program Name: Physical Security Systems

Program Description: Physical security measures put in place for the security/safety of employees and infrastructure

Risk/Mitigation:

Risk: Workplace Violence

Mitigation: Physical Security Systems

Forecast CPUC Cost Estimates ($000)

	2017	2018	2019
Low	4,864	0	0
High	4,864	0	0

Funding Source: CPUC-GRC

Forecast Method: Zero-Based

Work Type: Non-Mandated

Work Type Citation: na

Historical Embedded Cost Estimates ($000)

Embedded Costs: 5298

Explanation:

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Category: O. CP EAST TENANT IMPROVEMENTS
Workpaper: 16768A

Summary for Category: O. CP EAST TENANT IMPROVEMENTS

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	627	252	279
Non-Labor	0	10,316	4,242	4,668
NSE	0	0	0	0
Total	**0**	**10,943**	**4,494**	**4,947**
FTE	0.0	6.0	2.5	2.7

16768A CP East Tenant Improvements

Labor	0	627	252	279
Non-Labor	0	10,316	4,242	4,668
NSE	0	0	0	0
Total	**0**	**10,943**	**4,494**	**4,947**
FTE	0.0	6.0	2.5	2.7

Note: Totals may include rounding differences.

Beginning of Workpaper Group
16768A - CP East Tenant Improvements

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 16768.0
Category: O. CP EAST TENANT IMPROVEMENTS
Category-Sub: 2. CP East Tenant Improvements
Workpaper Group: 16768A - CP East Tenant Improvements

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

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	627	252	279
Non-Labor	Zero-Based	0	0	0	0	0	10,316	4,242	4,668
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**10,943**	**4,494**	**4,947**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	6.0	2.5	2.7

Business Purpose:

This project is a part of the facilities geographic consolidation strategy around SDG&E Century Park corporate headquarters campus in the Kearny Mesa area, and will house employees relocating expiring leaseholds at the Lightwave and RB Annex facilities.

Physical Description:

The project will provide tenant improvements to roughly 92,000 square feet of newly leased office space for the primary beneficial use of departments involved in information technology support and functions. It will also implement site improvements and comprehensive information technology infrastructure and equipment upgrades to serve the combined CP East, CP Annex and CP Annex Plus facilities.

Project Justification:

The project allows for the vacating of two leases in separate areas, each housing predominantly IT employees, and enables centralization of infrastructure and optimization of adjacencies between the relocated IT operations and other IT operations already existing at the CP Annex facility, an soon to exist at the CP Annex Plus facility.

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	16768.0
Category:	O. CP EAST TENANT IMPROVEMENTS
Category-Sub:	2. CP East Tenant Improvements
Workpaper Group:	16768A - CP East Tenant Improvements

Forecast Methodology:

Labor - Zero-Based

The forecast method developed for this cost category is zero-based. This method is most appropriate because it depends on equipment requirements, associated historical costs of implementation and vendor estimates.

Non-Labor - Zero-Based

The forecast method developed for this cost category is zero-based. This method is most appropriate because it depends on equipment requirements, associated historical costs of implementation and vendor estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 16768A

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	16768.0
Category:	O. CP EAST TENANT IMPROVEMENTS
Category-Sub:	2. CP East Tenant Improvements
Workpaper Group:	16768A - CP East Tenant Improvements
Workpaper Detail:	16768A.001 - CP East Tenant Improvements
In-Service Date:	03/31/2017

Description:

The project includes technology infrastructure upgrades and a complete demolition and remodel of the existing office space. Tenant improvement construction will include prefabricated modular walls and raised floor for flexibility of space utilization, a new HVAC distribution system and lighting, information systems distribution (routers, switches, wireless access points and cabling), audio visual technologies, security and surveillance systems, and furniture to meet current company ergonomic standards. This workpaper includes the 2017 cost component, only, of the project, which has an overall estimated cost of $24.5M and commenced in 2016.

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	627	0	0
Non-Labor	10,316	0	0
NSE	0	0	0
Total	**10,943**	**0**	**0**
FTE	6.0	0.0	0.0

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	16768.0
Category:	O. CP EAST TENANT IMPROVEMENTS
Category-Sub:	2. CP East Tenant Improvements
Workpaper Group:	16768A - CP East Tenant Improvements
Workpaper Detail:	16768A.002 - CP East Site Improvements
In-Service Date:	12/31/2018

Description:

This project represents a secondary sequential phase to the CP East Tenant Improvements project, and would implement improvements to the exterior site surrounding the CP East, CP Annex and CP Annex Plus facilities. The scope includes construction of a gate-controlled interior driveway and pedestrian pathway between the leased Century Park Headquarters campus and the CP East, CP Annex and CP Annex Plus facilities, secured perimeter fencing and gates with controlled access and surveillance cameras, signage (monument and wayfinding), outdoor conference rooms, outdoor dining & activity area, and improved landscaping.

Forecast In 2016 $(000)

Years	2017	2018	2019
Labor	0	252	0
Non-Labor	0	4,242	0
NSE	0	0	0
Total	**0**	**4,494**	**0**
FTE	0.0	2.5	0.0

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	16768.0
Category:	O. CP EAST TENANT IMPROVEMENTS
Category-Sub:	2. CP East Tenant Improvements
Workpaper Group:	16768A - CP East Tenant Improvements
Workpaper Detail:	16768A.003 - CP East IT Improvements
In-Service Date:	09/30/2019

Description:

This project represents a secondary sequential phase to the CP East Tenant Improvements project, and would implement new or improved IT system related equipment or operating platforms. The scope includes an automated ordering and payment system at the CP East cafeteria, a comprehensive workstation reservation and usage tracking system for visiting employees and contractors, electronic wayfinding displays across the CP East, CP Annex and CP Annex Plus facilities, a new underground fiber communications loop from the Century Park, Building 6, MDF room to accommodate increased bandwidth requirements at CP East, CP Annex and CP Annex Plus facilities, and a new emergency generator to preserve continuation of IT activities in the event of power service loss.

Forecast In 2016 $(000)

Years	2017	2018	2019
Labor	0	0	279
Non-Labor	0	0	4,668
NSE	0	0	0
Total	**0**	**0**	**4,947**
FTE	0.0	0.0	2.7

Note: Totals may include rounding differences.

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Category: P. MORENO VALLEY IMPROVEMENTS
Workpaper: 16770A

Summary for Category: P. MORENO VALLEY IMPROVEMENTS

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	33	0	0
Non-Labor	0	553	0	0
NSE	0	0	0	0
Total	**0**	**586**	**0**	**0**
FTE	0.0	0.3	0.0	0.0

16770A Moreno Admin Bldg Tenant Improvements

Labor	0	33	0	0
Non-Labor	0	553	0	0
NSE	0	0	0	0
Total	**0**	**586**	**0**	**0**
FTE	0.0	0.3	0.0	0.0

Note: Totals may include rounding differences.

Beginning of Workpaper Group
16770A - Moreno Admin Bldg Tenant Improvements

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 16770.0
Category: P. MORENO VALLEY IMPROVEMENTS
Category-Sub: 3. Moreno Admin Bldg Back-up Power Improvements
Workpaper Group: 16770A - Moreno Admin Bldg Tenant Improvements

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

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	33	0	0
Non-Labor	Zero-Based	0	0	0	0	0	553	0	0
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**586**	**0**	**0**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0

Business Purpose:

The purpose of the project is to remodel and rehabilitate the facility for reliability, compliance safety and improved maintenance purposes.

Physical Description:

The project will provide tenant improvements to roughly 7,300 square feet of this critical Administrative Office building, which houses the operations control room and supporting office functions that oversee the flow of high pressure natural gas to the service territory from northern sources.

Project Justification:

This facility operates on a 24/7 basis and has not been remodeled or refreshed since its original construction in the 1980's. The project will improve employee health and safety through the introduction of ergonomic furniture, new ductwork and HVAC system, and new restroom finishes and plumbing fixtures. The new environment will be refreshing and motivating to employees and the new HVAC system will ensure a comfortable, sustained temperature in the building.

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	16770.0
Category:	P. MORENO VALLEY IMPROVEMENTS
Category-Sub:	3. Moreno Admin Bldg Back-up Power Improvements
Workpaper Group:	16770A - Moreno Admin Bldg Tenant Improvements

Forecast Methodology:

Labor - Zero-Based

The forecast method developed for this cost category is zero-based. This method is most appropriate because it depends on equipment requirements, associated historical costs of implementation and vendor estimates.

Non-Labor - Zero-Based

The forecast method developed for this cost category is zero-based. This method is most appropriate because it depends on equipment requirements, associated historical costs of implementation and vendor estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 16770A

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	16770.0
Category:	P. MORENO VALLEY IMPROVEMENTS
Category-Sub:	3. Moreno Admin Bldg Back-up Power Improvements
Workpaper Group:	16770A - Moreno Admin Bldg Tenant Improvements
Workpaper Detail:	16770A.002 - Moreno Admin Bldg Tenant Improvements
In-Service Date:	03/31/2017

Description:

The Operations Control Room and surrounding office support functions, restrooms and locker rooms will be improved. HVAC systems will be replaced and the surrounding office space furniture will be upgraded to current ergonomic standards. Restrooms and shower facilities will also be brought to compliance with current ADA requirements. This workpaper includes the 2017 cost component, only, of the project, which has an overall estimated cost of $1.3M and commenced in 2016.

Forecast In 2016 $(000)

Years	2017	2018	2019
Labor	33	0	0
Non-Labor	553	0	0
NSE	0	0	0
Total	**586**	**0**	**0**
FTE	0.3	0.0	0.0

Note: Totals may include rounding differences.

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Category: Q. RBDC POWER RELIABILIITY IMPROVEMENTS
Workpaper: 16771A

Summary for Category: Q. RBDC POWER RELIABILIITY IMPROVEMENTS

	In 2016$ (000)			
	Adjusted-Recorded	Adjusted-Forecast		
	2016	2017	2018	2019
Labor	0	180	84	454
Non-Labor	0	3,024	1,428	7,809
NSE	0	0	0	0
Total	**0**	**3,204**	**1,512**	**8,263**
FTE	0.0	1.3	0.8	4.4

16771A RBDC Power Reliability Improvements

Labor	0	180	84	454
Non-Labor	0	3,024	1,428	7,809
NSE	0	0	0	0
Total	**0**	**3,204**	**1,512**	**8,263**
FTE	0.0	1.3	0.8	4.4

Note: Totals may include rounding differences.

Beginning of Workpaper Group
16771A - RBDC Power Reliability Improvements

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 16771.0
Category: Q. RBDC POWER RELIABILIITY IMPROVEMENTS
Category-Sub: 2. RBDC Power Reliablity Improvements
Workpaper Group: 16771A - RBDC Power Reliability Improvements

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

Forecast Method		Adjusted Recorded					Adjusted Forecast		
Years		2012	2013	2014	2015	2016	2017	2018	2019
Labor	Zero-Based	0	0	0	0	0	180	84	454
Non-Labor	Zero-Based	0	0	0	0	0	3,024	1,428	7,809
NSE	Zero-Based	0	0	0	0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**	**3,204**	**1,512**	**8,263**
FTE	Zero-Based	0.0	0.0	0.0	0.0	0.0	1.3	0.8	4.4

Business Purpose:

The objective of the Plan and the project is to mitigate the risk of power loss to critical information systems housed at the Rancho Bernardo Data Center.

Physical Description:

The project will replace existing electrical equipment at the Rancho Bernardo Data Center, consisting of Static Transfer Switches and Automatic Transfer Switches, which are necessary, critical components in transferring system to emergency power sources and beyond their useful lives. In addition, the project will re-circuit emergency power distribution from existing, 30+ year old generators to new generators provided through a separate project and already in place. It will also involve installation of a new switchboard to facilitate the transfer of loads from the old generator plant to the new generator plant.

Project Justification:

Information systems operating at the Rancho Bernardo data center support critical business functions that support utility operations and customer services, and are therefore intolerable to interruption or loss of data.

Note: Totals may include rounding differences.

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	16771.0
Category:	Q. RBDC POWER RELIABILIITY IMPROVEMENTS
Category-Sub:	2. RBDC Power Reliablity Improvements
Workpaper Group:	16771A - RBDC Power Reliability Improvements

Forecast Methodology:

Labor - Zero-Based

The forecast method developed for this cost category is zero-based. This method is most appropriate because it depends on equipment requirements, associated historical costs of implementation and vendor estimates.

Non-Labor - Zero-Based

The forecast method developed for this cost category is zero-based. This method is most appropriate because it depends on equipment requirements, associated historical costs of implementation and vendor estimates.

NSE - Zero-Based

N/A

Beginning of Workpaper Sub Details for
Workpaper Group 16771A

Area:	FACILITIES/OTHER
Witness:	Richard D. Tattersall
Budget Code:	16771.0
Category:	Q. RBDC POWER RELIABILIITY IMPROVEMENTS
Category-Sub:	2. RBDC Power Reliablity Improvements
Workpaper Group:	16771A - RBDC Power Reliability Improvements
Workpaper Detail:	16771A.001 - RBDC Power Reliability Improvements
In-Service Date:	12/31/2017

Description:

This project represents the first of two phases. The first phase will connect one of two redundant UPS systems and related transfer switches to the new generation plant, and will add a mobile generator connection terminal to the exterior of the building to enhance existing reliability and capacity while preparing for cutover to the new generation plant.

Forecast In 2016 $(000)

Years	2017	2018	2019
Labor	180	0	0
Non-Labor	3,024	0	0
NSE	0	0	0
Total	**3,204**	**0**	**0**
FTE	1.3	0.0	0.0

Note: Totals may include rounding differences.

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 16771.0
Category: Q. RBDC POWER RELIABILIITY IMPROVEMENTS
Category-Sub: 2. RBDC Power Reliablity Improvements
Workpaper Group: 16771A - RBDC Power Reliability Improvements
Workpaper Detail: 16771A.002 - RBDC Power Reliability Improvements Ph2

In-Service Date: 06/30/2019

Description:

This project represents the second of two phases necessary to fulfill the project objective. The second phase will connect the second of two redundant UPS systems and related transfer switches to the new generation plant.

Forecast In 2016 $(000)

Years	2017	2018	2019
Labor	0	24	108
Non-Labor	0	480	2,109
NSE	0	0	0
Total	**0**	**504**	**2,217**
FTE	0.0	0.2	1.0

Note: Totals may include rounding differences.

Area: FACILITIES/OTHER
Witness: Richard D. Tattersall
Budget Code: 16771.0
Category: Q. RBDC POWER RELIABILIITY IMPROVEMENTS
Category-Sub: 2. RBDC Power Reliablity Improvements
Workpaper Group: 16771A - RBDC Power Reliability Improvements
Workpaper Detail: 16771A.003 - RBDC - C&D UPS Expansion

In-Service Date: 12/31/2019

Description:

The project will add a second set of redundant UPS systems necessary to safeguard against critical system interruption and information loss at the Rancho Bernardo Data Center. The improvement is necessary to keep pace with anticipated IT equipment power load growth at the facility. The project also includes new transfer switches, conduit and wire, etc., distribution panels, etc. necessary to connect the new UPS modules to the facility's emergency generation plant.

Forecast In 2016 $(000)			
Years	**2017**	**2018**	**2019**
Labor	0	60	346
Non-Labor	0	948	5,700
NSE	0	0	0
Total	**0**	**1,008**	**6,046**
FTE	0.0	0.6	3.4

Note: Totals may include rounding differences.