

Application No: A.15-07-
Exhibit No.: _____
Witness: Marjorie Schmidt-Pines

Application of Southern California Gas Company
(U 904 G) and San Diego Gas & Electric Company
(U 902 G) for Authority to Revise their Natural Gas
Rates Effective January 1, 2017 in this Triennial
Cost Allocation Proceeding Phase 2

A.15-07-_____
(Filed July 8, 2015)

PREPARED DIRECT TESTIMONY OF
MARJORIE SCHMIDT-PINES
SOUTHERN CALIFORNIA GAS COMPANY
AND
SAN DIEGO GAS & ELECTRIC COMPANY

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

July 8, 2015

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1 Customer-related costs reflect the capital-related as well as the operations and
2 maintenance (O&M) expenses incurred by SDG&E to provide customer access to the gas supply
3 system. Medium-pressure and high-pressure distribution costs are associated with building and
4 maintaining systems that deliver gas to customer load centers from the gas transmission system.
5 Transmission costs are those required to deliver gas from non-local receipt points to distribution
6 centers inside SDG&E's service territory. The ECS for SDG&E transmission costs is provided
7 in the direct testimony of Ms. Fung.

8 Marginal costs are based on the incremental costs incurred by SDG&E to provide an
9 additional unit of output and, for the purposes of this LRMC study, include both capital-related
10 and O&M expense-related costs. Marginal customer costs are derived using engineering-based
11 calculations of customer connection equipment costs, including meters, regulators, and service
12 lines, as well as corresponding marginal O&M expenses. For the reasons presented in the direct
13 testimony of Dr. Chaudhury, the "Rental" methodology is used to determine marginal customer
14 costs per customer and results in one effective marginal unit cost for all customers in each rate
15 class.

16 Distribution marginal costs are calculated by taking a linear regression of 15 years of
17 demand and investment data. Cumulative marginal investment serves as the dependent variable,
18 while cumulative marginal peak-day demand is the independent variable. This analysis is
19 completed separately for both the medium-pressure and high-pressure distribution systems. The
20 resulting regression coefficient of the independent variable represents unit marginal capital cost.

21 SDG&E's authorized margin is allocated to customer classes using marginal demand
22 measures applied to the marginal unit costs. These demand measures were established in the
23 LRMC Decision, D.92-15-058, and have been updated in the subsequent cost allocation

1 proceedings since, most recently in D.14-06-007. This includes allocating distribution costs
2 using peak-day demand and customer costs using the total number of customers per class.
3 SDG&E allocates costs to three core customer classes and three noncore customer classes. The
4 three core classes are residential, core commercial and industrial (C&I), and NGV. The noncore
5 customer classes are C&I, small electric generation (EG) (< 3 million therms per year), and large
6 EG (> 3 million therms per year).

7 **III. CUSTOMER-RELATED MARGINAL COSTS**

8 Customer-related marginal costs include both marginal capital-related costs as well as
9 marginal O&M costs. SDG&E calculates marginal capital-related customer costs using the
10 Rental method, as discussed in Section III of the direct testimony of Dr. Chaudhury, to determine
11 the annualized cost of service lines, regulators, and meters (SRM) for each customer class. The
12 derivation of O&M loaders are described in Section V below.

13 **A. Marginal Capital Costs**

14 SRM costs reflect the capital expense associated with providing customer access to the
15 gas supply system. These costs include gas meters, regulators, pipes, and installation labor. The
16 SDG&E Gas Distribution Engineering Department provides updated customer data, including:

- 17 • Meter size, type, regulator, fitting costs and installation costs;
- 18 • Updated service footages;
- 19 • Updated service costs for new hook-ups and replacements;
- 20 • Updated costs of service line installations; and
- 21 • Updated series of flow ranges, and corresponding equipment profiles, at each range.

22 Twenty-four flow ranges are identified for which SRM costs are summarized. These
23 total capital costs are annualized using corresponding Real Economic Carrying Charge (RECC)

1 factors, which are presented in Section V below. The annualized costs are multiplied by the
 2 number of meters for each customer class represented within each flow range to determine the
 3 total annual capital cost associated with serving each class. Finally, the total annualized capital
 4 cost is divided by the forecast number of customers in each class to determine each class'
 5 average marginal SRM cost. Table 1 shows the resulting annualized marginal capital-related
 6 costs.

TABLE 1 CUSTOMER-RELATED LRMC - CAPITAL COSTS	
Customer Class	Rental-Method Customer Cost (2017 \$/customer)
Residential	\$181
Core Commercial/Industrial	\$311
Natural Gas Vehicle	\$3,496
Noncore Commercial/Industrial	\$4,690
Small Electric Generation	\$2,517
Large Electric Generation	\$3,394

7
 8 **B. Fully Loaded Customer-Related LRMC**

9 Table 2 provides the total marginal customer costs for the six SDG&E customer classes.
 10 These costs are the result of combining the “fully-loaded” O&M costs, which are discussed in
 11 Section V, with the capital related costs from Table 1. The fully-loaded O&M costs include
 12 direct O&M and O&M loaders. The O&M loaders are Administrative and General (A&G)
 13 expenses, Materials and Supplies (M&S), and General Plant, as discussed in Section V below.
 14 The noncore customer classes post significantly higher marginal costs per customer than the core
 15 customer classes because noncore customers have much higher gas service demands and require
 16 larger and more specialized metering and service facilities compared to core customers.
 17

TABLE 2
CUSTOMER-RELATED LONG RUN MARGINAL COSTS
(2017 \$/customer)

Customer Class	Annualized Capital Cost	Expense-Related O&M				Total \$/Customer
		Direct	M&S	A&G	General Plant	
Residential	\$181	\$42	\$0.2	\$12	\$6	\$240
Core Commercial/Industrial	\$311	\$106	\$0.4	\$30	\$14	\$462
Natural Gas Vehicle	\$3,496	\$671	\$3	\$191	\$89	\$4,450
Noncore Commercial/Industrial	\$4,690	\$3,856	\$16	\$1,096	\$510	\$10,168
Small Electric Generation	\$2,517	\$3,115	\$13	\$885	\$412	\$6,941
Large Electric Generation	\$3,394	\$3,583	\$15	\$1,019	\$474	\$8,485

IV. DISTRIBUTION DEMAND-RELATED MARGINAL COSTS

Demand-related marginal costs are calculated for both the medium pressure (MPD) and high pressure distribution (HPD) systems. Separate marginal costs are calculated for the MPD and HPD systems because the two systems perform different functions. HPD investments are generally in pipelines that supply gas at a maximum allowable operating pressure of greater than 60 pounds per square inch gauge (psig) and are generally up to 10 inches in diameter. The MPD pipeline investments are generally in those pipelines at maximum allowable operating pressures up to 60 psig.

A. Marginal Capital Costs

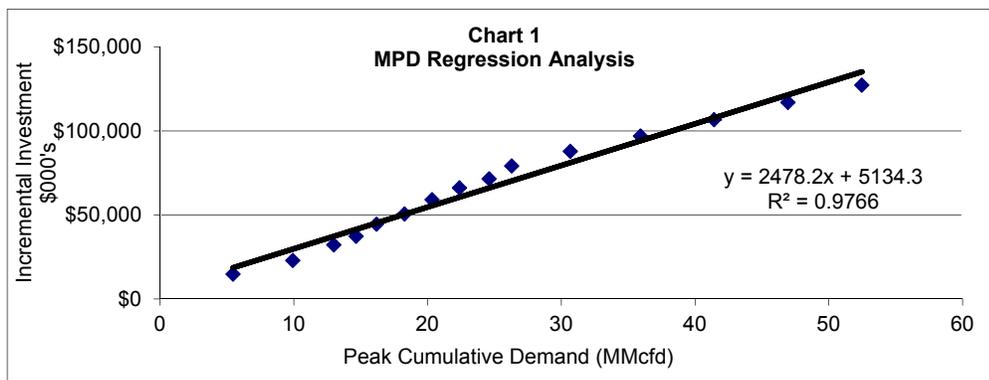
This LRMC study utilizes nine years of historical (2005-2013) and six years of forecast (2014-2019) distribution plant investments and marginal demand measures. The SDG&E Gas Distribution Engineering Department provides the historical period investments from an analysis of accounting data for MPD and HPD capital investments. The forecast investments are from the same department's capital budget forecast. The marginal demand measures are based on an analysis of peak-day throughput on the MPD and HPD distribution systems. The direct

1 testimony and workpapers of Dr. Wetzel address the consolidated Demand Forecast, including
2 peak-day load by market segment.

3 Linear regression is used to determine the marginal capital costs of the MPD and HPD
4 systems. This method plots the cumulative incremental investment as the dependent variable
5 against the cumulative incremental changes in peak-day demand, which is the independent
6 variable. The slope of the best-fit line is taken to be the marginal capital cost. This capital cost
7 is then annualized by using a weighted-average RECC factor applicable to demand-related
8 distribution pipeline investments. Charts 1 and 2 on the following pages depict the linear
9 regression analysis in graphical form.

10 **B. Fully Loaded Distribution LRMC**

11 Fully-loaded O&M costs are added to distribution marginal capital costs to determine the
12 total marginal costs for the MPD and HPD systems. Section V below develops the O&M
13 expenses and indirect cost loaders. Table 3 and Table 4 present the total marginal costs for the
14 medium-pressure and high-pressure distribution systems.



15

TABLE 3	
MEDIUM-PRESSURE DISTRIBUTION LRMIC	
(2017 \$/MCF MPD peak day)	
Marginal Investment Cost	\$2,478.15
x <u>RECC Factor</u>	<u>8.32%</u>
= Annualized Investment Cost	\$206.31
<u>Expense-Related</u>	
+ O&M Cost	\$26.15
+ A&G Cost	\$7.43
+ General / Common Plant Cost	\$3.46
+ <u>M&S Cost</u>	<u>\$0.54</u>
= Total Marginal Cost	\$243.90

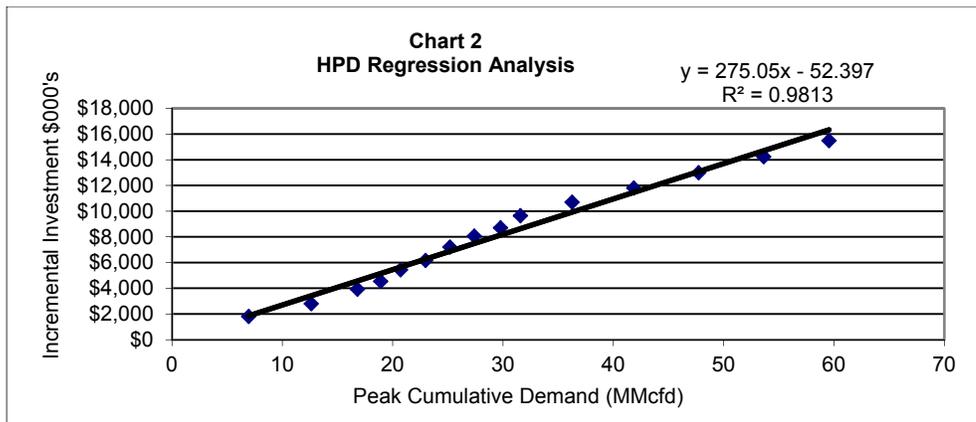


TABLE 4	
HIGH-PRESSURE DISTRIBUTION LRMIC	
(2017 \$/MCF HPD peak day)	
Marginal Investment Cost	\$275.05
x <u>RECC Factor</u>	<u>8.32%</u>
= Annualized Investment Cost	\$22.90
<u>Expense-Related</u>	
+ O&M Cost	\$1.06
+ A&G Cost	\$0.30
+ General / Common Plant Cost	\$0.14
+ <u>M&S Cost</u>	<u>\$0.06</u>
= Total Marginal Cost	\$24.46

1 **V. MARGINAL COST ESTIMATION FACTORS**

2 **A. Real Economic Carrying Charges**

3 In D.92-12-058, the Commission adopted the use of Real Economic Carrying Charges in
4 LRMC studies. Section V of the testimony of Dr. Chaudhury discusses their purpose and
5 usefulness. Table 5 summarizes RECC factors used in this LRMC study for SDG&E.

Cost Type	RECC %
Meters and Regulators	8.69%
Meter/Regulator Installation	8.98%
Service Line Pipe	8.50%
Weighted-Average Distribution	8.32%
Materials and Supplies	12.95%
Weighted-Average General/Common Plant	11.50%

6 **B. Marginal Direct O&M Costs**

7 Marginal direct O&M costs are derived for both distribution and customer-related
8 functions. Distribution O&M expenses are accounted for in Federal Energy Regulatory
9 Commission (FERC) Accounts 870-894 of SDG&E's Annual Report (Annual Report) to the
10 Commission. They are allocated to the customer-related, as well as the MPD and HPD,
11 functions. The direct O&M reflects costs associated with the maintenance of customers' meters,
12 regulators, and service lines, as well as distribution main. Customer services expenses are
13 accounted for in the Annual Report in FERC Accounts 901-905 and 907-910. They are allocated
14 entirely to the customer-related function. These expenses are associated with responding to
15 customer service field orders and generally operating and maintaining service lines, meters, and
16 house regulators.

1 **1. Distribution O&M Expenses**

2 Distribution O&M costs are assigned to market segments by classifying the costs as
3 either customer-related or demand-related. Customer-related expenses are allocated entirely to
4 the customer-related function. The demand-related expenses are allocated between the HPD,
5 MPD, and customer-related functions predominantly based on pipeline mileage as of December
6 31, 2013. The SDG&E Gas Distribution Engineering Department identifies the marginal portion
7 of each of FERC Accounts 870-894.

8 Once the distribution O&M expenses are functionalized, they are then allocated in two
9 ways. Customer-related distribution O&M is allocated to the customer classes using the
10 effective percentage of total annualized SRM investment costs. The resulting allocation of
11 distribution O&M expenses to customer classes is combined with customer services O&M
12 expenses discussed in the next section, and then divided by the number of customers in each
13 class to determine a per-customer direct O&M expense. MPD and HPD O&M expenses are
14 divided by the peak-day demand of each system to determine their respective direct O&M
15 expenses. Table 6 below presents a summary of direct distribution O&M expenses by market
16 segment.

17 **2. Customer Services O&M Expenses**

18 Customer Services expenses in FERC Accounts 901-905 and 907-910 are functionalized
19 entirely as customer-related cost. These costs include meter reading, customer services, credit
20 collections, and billing services, and are allocated to customer classes in three steps. First,
21 Customer Services marginal O&M expenses are classified into customer operational activities.
22 Expenses by customer services department are then assigned to one of these operational

1 activities. Finally, these expenses are allocated to customer classes based on either the
 2 operational activity performed or the market segment supported.

3 Once customer services costs are allocated to the customer classes, they are combined
 4 with the portion of Distribution O&M costs allocated to customer-related function (as described
 5 in the previous section) in order to develop total customer-related O&M costs. Table 6 shows
 6 the updated customer-related direct O&M costs.

TABLE 6				
CUSTOMER-RELATED DIRECT MARGINAL O&M EXPENSES				
(2017 \$)				
Customer Class	870- 894 \$000	901- 910 \$000	Customers per Class	Direct O&M \$/Customer
Residential	\$33,982	\$1,083	839,369	\$42
Core Commercial/Industrial	\$3,584	\$55	34,335	\$106
Natural Gas Vehicle	\$36	\$0.1	53	\$671
Noncore Commercial/Industrial	\$69	\$124	50	\$3,856
Small Electric Generation	\$36	\$139	56	\$3,115
Large Electric Generation	\$18	\$40	16	\$3,583
Distribution Function	870- 894 \$000	901- 910 \$000	Peak-day Load (mcf)	Direct O&M \$/mcf
Medium-Pressure	\$9,695	\$0	370,694	\$26.15
High-Pressure	\$422	\$0	397,907	\$1.06

7 **C. Marginal Loading Factors**

8 SDG&E derives loading factors for marginal cost investments using the same
 9 methodology included in the 2013 TCAP application, A.11-11-002. The loading factors are for
 10 costs related to A&G expenses, General Plant (GP), and Materials and Supplies (M&S).

11 **1. A&G Loading Factor**

12 Marginal A&G expenses and payroll taxes are combined into a single loading factor.
 13 The recorded year 2013 A&G expenses from the Annual Report are classified as marginal and

1 non-marginal by account. As shown below in Table 7, the A&G expenses and payroll tax loader
 2 is 28.43%. The A&G loading factor is calculated as a percentage of total O&M (less A&G) and
 3 then multiplied by the direct O&M unit cost for each function.
 4

TABLE 7 A&G LOADING FACTOR	
Account Description	Marginal Costs \$ 000s
A&G Expenses	\$24,586
+ <u>Payroll Taxes</u>	<u>\$4,654</u>
= Total A&G with Payroll Taxes	\$29,240
/ <u>Total O&M Expenses excluding A&G</u>	<u>\$102,863</u>
= A&G Loading Factor	28.43%

2. General Plant Loading Factor

7 General plant includes structures and improvements, office furniture and equipment,
 8 computer applications and equipment, shop and garage equipment, and communication
 9 equipment, as well as plant shared between SDG&E electric and gas operations allocated to the
 10 gas function. The recorded year 2013 General Plant total is multiplied by the weighted-average
 11 RECC factor of 11.50% to obtain an annualized general plant of \$24.8 million. The general
 12 plant loading factor is then determined by dividing annualized general plant by total O&M
 13 expenses. Table 8 shows the derivation of the General Plant Loading Factor to be 13.22%.
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TABLE 8 GENERAL PLANT LOADING FACTOR	
Account Description	2013 Recorded Costs \$ 000s
Total General Plant	\$215,973
+ <u>Average General Plant RECC</u>	<u>11.50%</u>
= Annualized General Plant	\$24,844
/ <u>Total O&M Expenses</u>	<u>\$187,881</u>
= General Plant Loading Factor	13.22%

3. M&S Loading Factor

M&S includes those materials in stock for use in company operations. Examples of M&S items include pipe, valves, fittings, and safety equipment. Recorded year 2013 M&S costs of \$3.5 million are allocated to the functions based on percentage of gross plant in each functional category and then multiplied by an RECC factor of 12.95% to obtain annualized M&S costs. M&S costs allocated to the customer cost function are further allocated to the customer classes at the same relative percentage as direct O&M. M&S loaders are then derived by dividing allocated M&S costs by the number of customers in each class. For the distribution functions, allocated M&S costs are divided by peak-day load in order to determine the loader amounts. Table 9 presents the resulting M&S loading costs by customer class and function.

TABLE 9			
M&S LOADING FACTORS			
(2017 \$)			
Customer Class	Allocated M&S	Customers per Class	M&S Loader \$/Customer
Residential	\$147,877	839,369	\$0.18
Core Commercial/Industrial	\$15,346	34,335	\$0.45
Natural Gas Vehicle	\$150	53	\$2.83
Noncore Commercial/Industrial	\$813	50	\$16.26
Small Electric Generation	\$736	56	\$13.13
Large Electric Generation	\$242	16	\$15.11
Distribution Function	Allocated M&S	Peak-day Load (mcf/d)	M&S Loader \$/mcf/d
Medium-Pressure	\$201,388	370,694	\$0.54
High-Pressure	\$24,504	397,907	\$0.06

1 **VI. ALLOCATED BASE MARGIN**

2 Upon completing the LRMC unit cost studies, SDG&E allocates costs to each function
3 using the appropriate Marginal Demand Measure (MDM). Each MDM reflects the forecast
4 annual average for the 2017 – 2019 TCAP period, as presented in the direct testimony of Dr.
5 Wetzel. Total customer-related costs are determined by multiplying each class’ LRMC by the
6 number of customers in each class. MPD and HPD costs are determined by multiplying each
7 function’s LRMC by the corresponding peak-day demand. Tables 10a and 10b detail this
8 process.

1

TABLE 10a			
UNSCALED LONG RUN MARGINAL COST			
CUSTOMER COST			
Customer Class	Customer LRM \$/customer	Customer Count	Customer Cost \$000
Residential	\$240	884,624	\$212,544
Core C/I	\$462	30,265	\$13,980
NGV	\$4,450	38	\$171
Total Core			\$226,694
Noncore C/I	\$10,168	52	\$529
Small EG	\$6,941	51	\$355
Large EG	\$8,485	20	\$168
Total Noncore			\$1,051
Total SDG&E			\$227,746

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TABLE 10b						
UNSCALED LONG RUN MARGINAL COST						
DISTRIBUTION COSTS						
Customer Class	MPD LRM \$/mcf	MPD Peak-Day (Mcf)	MPD Costs \$000	HPD LRM \$/mcf	HPD Peak-Day (Mcf)	HPD Costs \$000
Residential	\$244	281,218	\$68,588	\$24	281,300	\$6,881
Core C/I	\$244	84,891	\$20,705	\$24	86,516	\$2,116
NGV	\$244	1,937	\$472	\$24	5,004	\$122
Total Core			\$89,765			\$9,120
Noncore C/I	\$244	5,551	\$1,354	\$24	7,651	\$187
Small EG	\$244	3,749	\$914	\$24	5,852	\$143
Large EG	\$244	2,182	\$532	\$24	20,084	\$491
Total Noncore			\$2,800			\$822
Total SDG&E			\$92,565			\$9,941

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In D.92-12-058, the Commission stated that “marginal cost revenues need to be scaled to the embedded-based authorized revenue requirement under our ratemaking procedures.” The

1 current SDG&E gas base margin for transportation rates effective January 1, 2015, is \$306
2 million, and this is the revenue requirement used to determine the scalar. The scalar adjusts
3 allocated marginal costs to the authorized base margin, excluding costs directly assigned to the
4 Transmission (\$38 million) and NGV Public Access (\$0.5 million) functions. The embedded
5 cost of transmission is from the direct testimony of Ms. Fung, and the NGV public access station
6 cost is from the workpapers of Mr. Bonnett. In this TCAP, marginal costs are scaled at a rate of
7 81% in order to reconcile to the adjusted base margin of \$267 million, which is added the
8 Transmission of \$38 million and the NGV Public Access of \$0.5 million to derive the base
9 margin of \$306 million. Table 11 shows this process. Finally, scaled LRMC costs are added to
10 the Transmission and NGV Public Access costs to determine the fully cost-based allocation of
11 authorized gas base margin.¹ This is presented in Table 12.

TABLE 11						
LONG RUN MARGINAL COST SCALED CUSTOMER AND DISTRIBUTION COSTS						
\$ 000						
Customer Class	Customer Cost	+ MPD	+ HPD	= Unscaled LRMC	x Scalar	= Scaled LRMC
Residential	\$212,544	\$68,588	\$6,881	\$288,013	81%	\$232,998
Core C/I	\$13,980	\$20,705	\$2,116	\$36,801	81%	\$29,771
NGV	\$171	\$472	\$122	\$765	81%	\$619
Total Core	\$226,694	\$89,765	\$9,120	\$325,579	81%	\$263,389
Noncore C/I	\$529	\$1,354	\$187	\$2,070	81%	\$1,674
Small EG	\$355	\$914	\$143	\$1,412	81%	\$1,142
Large EG	\$168	\$532	\$491	\$1,191	81%	\$964
Total Noncore	\$1,051	\$2,800	\$822	\$4,673	81%	\$3,781
Total SDG&E	\$227,746	\$92,565	\$9,941	\$330,252	81%	\$267,169

¹ Per the direct testimony of Ms. Fung, the SDG&E transmission system is 100% backbone. For the purposes of this testimony, SDG&E's \$38 million in backbone transmission costs are allocated to the Backbone Transmission Service rate class. These costs will be incorporated in System Integration in the direct testimony of Mr. Bonnett, which unbundles part of the combined SoCalGas/SDG&E transmission system into the Backbone Transportation Service tariff, with the remaining transmission costs being allocated to the local transmission function and, ultimately, back to the customer classes.

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TABLE 12							
ALLOCATION OF BASE MARGIN							
\$ 000							
Customer Class	Scaled LRMC	+	Backbone Transmission	+	NGV Public Access	=	Unadjusted Allocated Base Margin
Residential	\$232,998		\$0		\$0		\$232,998
Core C/I	\$29,771		\$0		\$0		\$29,771
NGV	\$619		\$0		\$494		\$1,114
Total Core	\$263,389		\$0		\$494		\$263,883
Noncore C/I	\$1,674		\$0		\$0		\$1,674
Small EG	\$1,142		\$0		\$0		\$1,142
Large EG	\$964		\$0		\$0		\$964
Total Noncore	\$3,781		\$0		\$0		\$3,781
Backbone Transmission	\$0		\$38,229		\$0		\$38,229
Total SDG&E	\$267,169		\$38,229		\$494		\$305,893

1 **VII. COMPARISON OF PROPOSED COST ALLOCATION TO CURRENT COST**
2 **ALLOCATION**

3 Table 13 shows a comparison of the proposed cost allocation to the current allocation.
4 This comparison is pre-System Integration and pre-BTS unbundling, discussed in the direct
5 testimony of Mr. Bonnett. The results are very similar to the 2013 TCAP.
6

Customer Class	Adjusted Allocation of Base Margin	% Total	Current Allocation of Base Margin	% Total
Residential	\$232,998	76.2%	\$233,081	76.2%
Core C/I	\$29,771	9.7%	\$35,290	11.5%
NGV	\$1,114	0.4%	\$1,220	0.4%
Total Core	\$263,883	86.3%	\$269,591	88.1%
Noncore C/I - D	\$1,594	0.5%	\$2,174	0.7%
EG - D	\$2,001	0.7%	\$1,061	0.3%
TLS	\$186	0.1%	\$1,593	0.5%
Total Noncore	\$3,781	1.2%	\$4,828	1.6%
Backbone Transmission	\$38,229	12.5%	\$31,473	10.3%
Total SDG&E	\$305,893		\$305,893	

7
8 This concludes my prepared direct testimony.

9 **VIII. QUALIFICATIONS**

10 My name is Marjorie A. Schmidt-Pines. My business address is 555 West Fifth Street,
11 Los Angeles, California, 90013-1011. I am employed by the Southern California Gas Company
12 (SoCalGas) as a Principal Regulatory Economic Advisor in the CPUC/FERC Gas Regulatory
13 Affairs Department for SoCalGas and SDG&E.

1 I hold a Bachelor of Science degree in Business Administration and Accounting from
2 California State University at Northridge, California. I have been employed by SoCalGas since
3 1981, and have held positions of responsibilities as an Accountant and Senior Accountant in the
4 Accounting & Finance department, as an Analyst and a Budget Coordinator in the Gas Supply
5 department, and as a Market Advisor for the Marketing and Customer Services departments. I
6 have been in my current position since September 2009.

7 As Principal Regulatory Economic Advisor, I support the gas transportation rates for both
8 SoCalGas and for SDG&E. This includes allocating authorized revenue requirements to
9 customer rate classes, developing the design of the rate for each class, and computing the impact
10 on customers' monthly bills.

11