

SoCalGas
2016 TCAP Phase II

**Workpapers to the Prepared Written Testimony of Sharim
Chaudhury**

SoCalGas 2016 TCAP Phase II

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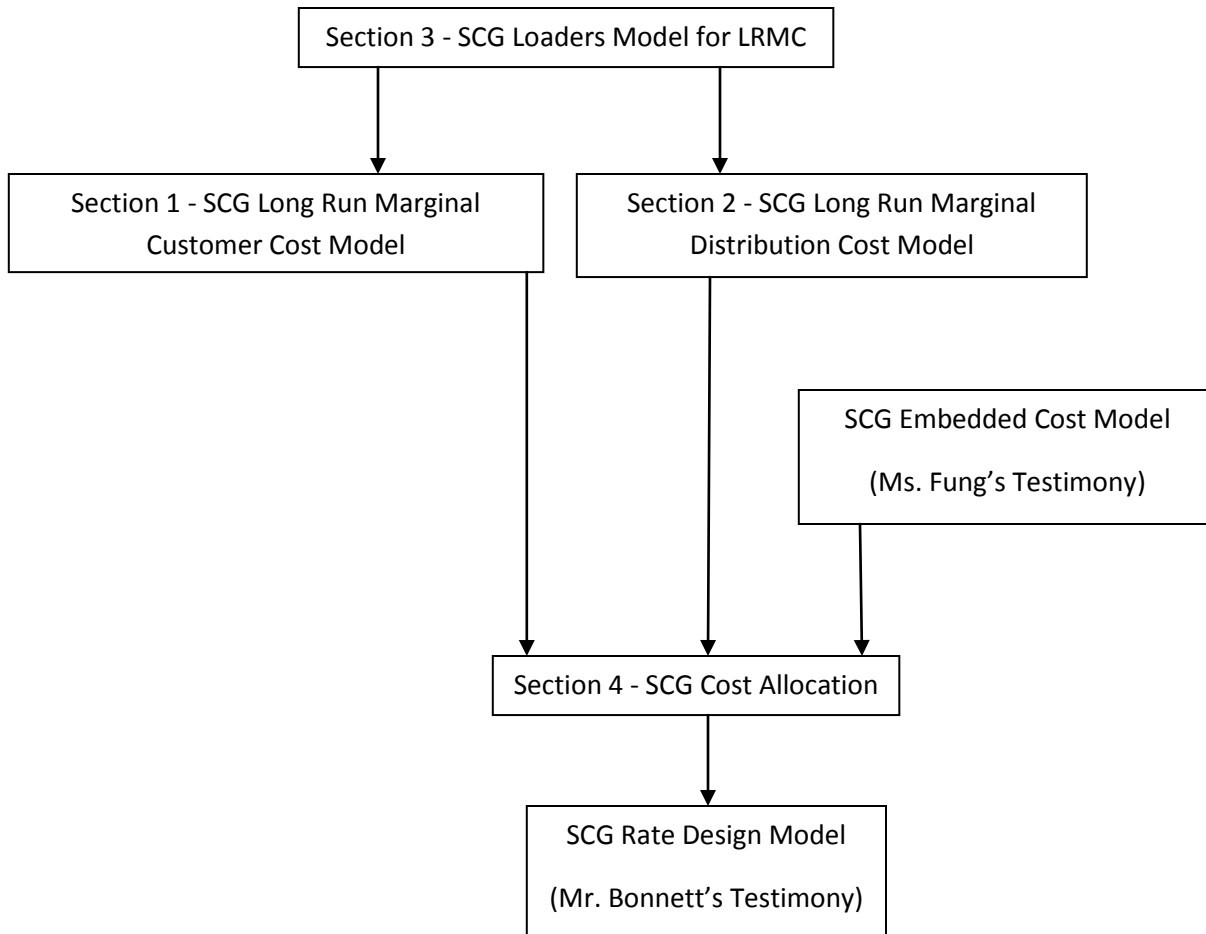
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Workpapers to the Prepared Written Testimony of Sharim Chaudhury

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2016 TCAP Phase II

Section 1
Long Run Marginal Customer Cost Model

**Workpapers to the Prepared Written Testimony of Sharim
Chaudhury**

SCG 2016 TCAP Phase II
 LRMC Customer Cost/Rental Method
 RD Format

	Residential	CCI	G-AC	G-GEN	NGV	Total Core
Marginal Customer Unit Cost @ various LRMC Allocation Methods						
1	Customer Cust \$/Cust/Year Rental Method	\$223.60	\$711.30	\$5,865.16	\$5,084.52	\$22,281.38
2	Customer Cost \$/Cust/Year NCO Method	\$109.97	\$388.34	\$4,620.40	\$1,963.38	\$18,822.93
3	Customer Cost \$/Cust/Year NCO Method w/Replacement Cost	\$215.84	\$631.78	\$5,290.08	\$4,834.30	\$21,514.94

1						
2	Input from O&M Loader Model:					
3	Marginal A&G/Payroll Taxes Loading Factor as a % of O&M expenses	41.79%	SCG LRMC O&M Loaders			
4	General Plant Loading Factor as a % of O&M expenses	30.21%	SCG LRMC O&M Loaders			
5	Annualized Distribution Customer Related Costs \$000/yr	\$1,252,283	SCG LRMC O&M Loaders			
6						
7	2013-17 Factor: Capital	1.0876	SCG LRMC O&M Loaders			
8	2013-17 Factor: O&M	1.0762	SCG LRMC O&M Loaders			

SCG 2016 TCAP Phase II
 LRMC Customer Cost/Rental Method
 RD Format

	NCCI	EG Tier 1	EG Tier 2	EOR	Total Retail NonCore	Long Beach	SDG&E	South West Gas	Vernon		
<u>Marginal Customer Unit Cost @ various LRMC Allocation Methods</u>											
1	Customer Cust \$/Cust/Year	Rental Method	\$30,178.82	\$25,258.28	\$128,643.87	\$83,028.54		\$886,337.07	\$1,513,038.54	\$797,252.41	\$539,223.46
2	Customer Cost \$/Cust/Year	NCO Method	\$14,580.37	\$36,486.92	\$60,188.28	\$51,972.43		\$402,400.06	\$376,829.08	\$488,768.27	\$297,880.00
3	Customer Cost \$/Cust/Year	NCO Method w/Replacement Cost	\$22,121.47	\$41,582.67	\$96,336.47	\$65,573.35		\$606,697.41	\$856,487.74	\$618,996.98	\$399,764.81

- 1
- 2 **Input from O&M Loader Model:**
- 3 Marginal A&G/Payroll Taxes Loading Factor as a % of O&M expenses
- 4 General Plant Loading Factor as a % of O&M expenses
- 5 Annualized Distribution Customer Related Costs \$000/yr
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- 7 2013-17 Factor: Capital
- 8 2013-17 Factor: O&M

SCG 2016 TCAP Phase II
 LRMC Customer Cost/Rental Method
 RD Format

	Total Whole sale	DGN	UBS	Total Noncore	SYSTEM TOTAL Sources
<u>Marginal Customer Unit Cost @ various LRMC Allocation Methods</u>					
1	Customer Cust \$/Cust/Year Rental Method	\$216,430.37	\$0.00		Cust MC
2	Customer Cost \$/Cust/Year NCO Method	\$166,266.45	\$0.00		Cust MC
3	Customer Cost \$/Cust/Year NCO Method w/Replacement Cost	\$187,443.49	\$0.00		Cust MC

- 1
- 2 **Input from O&M Loader Model:**
- 3 Marginal A&G/Payroll Taxes Loading Factor as a % of O&M expenses
- 4 General Plant Loading Factor as a % of O&M expenses
- 5 Annualized Distribution Customer Related Costs \$000/yr
- 6
- 7 2013-17 Factor: Capital
- 8 2013-17 Factor: O&M

SCG 2016 TCAP Phase II
LRMC Customer Cost/Rental Method
Marginal Unit Costs

	Noncore Wholesale						Total O&M Cost for All Customers	
	EOR	Wholesale				International		
		G-40	LB	SDG&E	SWG	Vernon		
2013 Number of Customers	32	1	1	1	1	1	5,631,108	cust 2
Marginal Investment: 2013 \$/Customer								
Meter & House Reg	\$262,289.12	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		cust 5
Service Lines	\$54,610.45	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		cust 5
Exclusive Use Facilities	\$16,429.22	\$5,071,825.51	\$11,907,864.24	\$3,233,019.45	\$2,529,362.03	\$525,735.12		cust 6
Total	\$333,328.79	\$5,071,825.51	\$11,907,864.24	\$3,233,019.45	\$2,529,362.03	\$525,735.12		
Weighted RECC factors used to annualize SRM capital costs								
Meter & House Reg	9.46%	0	0	0	0	0		cust 10
Service Lines	8.57%	8.57%	8.57%	8.57%	8.57%	8.57%		cust 10
Exclusive Use	9.54%	9.54%	9.54%	9.54%	9.54%	9.54%		cust 10
Annualized Marginal Investment: \$/Cust.								
Meter & House Reg	\$24,811.05	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		
Service Lines	\$4,677.43	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		
Exclusive Use Facilities	\$1,567.62	\$483,937.00	\$1,136,209.46	\$308,484.14	\$241,343.45	\$50,163.93		
Total Annualized Marginal Investment: 2013 \$/Cust.	\$31,056.11	\$483,937.00	\$1,136,209.46	\$308,484.14	\$241,343.45	\$50,163.93		
O&M: \$/Customer								
Customer Services O&M Cost 2013's \$000/year	\$2.72	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$130,661.86	cust 8
2013 Number of Customers	32	1	1	1	1	1	5,631,108	cust 2
Customer Services O&M \$/Customer 2013\$	\$84.85	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$23.20	
escalator 2013's to 2017's	1.0762	1.0762	1.0762	1.0762	1.0762	1.0762	1.0762	Loader Model
Customer Services O&M \$/Customer 2017\$	\$91.32	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$24.97	
Customer Accounts O&M 2013's \$000/yr	\$127.41	\$14.93	\$10.97	\$26.80	\$7.96	\$5.04	\$170,865.41	cust 8
2013 Number of Customers	32	1	1	1	1	1	5,631,108	cust 2
Customer Services O&M \$/Customer 2013\$	\$3,981.42	\$14,930.74	\$10,973.04	\$26,803.84	\$7,962.87	\$5,036.49	\$30.34	
escalator 2013's to 2017's	1.0762	1.0762	1.0762	1.0762	1.0762	1.0762	1.0762	Loader Model
Customer Accounts O&M \$/Customer 2017\$	\$4,284.93	\$16,068.91	\$11,809.51	\$28,847.09	\$8,569.88	\$5,420.42	\$32.66	
Meter & House Reg O&M Total Cost	\$98.00	\$17.00	\$17.00	\$34.00	\$3.00	\$3.00	\$10,347.00	cust 8
2013 Number of Customers	32	1	1	1	1	1	5,631,108	cust 2
Customer Services O&M \$/Customer 2017\$	\$3,062.50	\$17,000.00	\$17,000.00	\$34,000.00	\$3,000.00	\$3,000.00	\$1.84	
escalator 2013's to 2017's	1.0762	1.0762	1.0762	1.0762	1.0762	1.0762	1.0762	Loader Model
Meter & House Reg O&M \$/Customer 2017\$	\$3,295.95	\$18,295.91	\$18,295.91	\$36,591.81	\$3,228.69	\$3,228.69	\$1.98	
Total Service Line Footage	11,876	0	0	0	0	0	317,139,587	cust 8
Percent of Total Footage	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
Allocated SL O&M Costs \$000	\$1	\$0	\$0	\$0	\$0	\$0	\$38,998	cust 8
escalator 2013's to 2017's	1.0762	1.0762	1.0762	1.0762	1.0762	1.0762	1.0762	Loader Model
Allocated SL O&M Costs 2017's	\$2	\$0	\$0	\$0	\$0	\$0	\$41,971	
2013 Number of Customers	32	1	1	1	1	1	5,631,108	cust 2
Service Lines O&M \$/Customer 2017\$	\$0.05	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.01	
Customer Service & Information Cost (CSI) Costs Accounts								
2013 Number of Customers	32	1	1	1	1	1	5,631,108	
Customer Services & Information O&M \$/Customer 2013\$	\$20,891.73	\$185,020.22	\$175,191.51	\$202,711.89	\$149,636.88	\$81,604.81	\$6.28	\$0.00 \$0.00
escalator 2013's to 2017's	1.0762	1.0762	1.0762	1.0762	1.0762	1.0762	1.0762	Loader Model
Customer Accounts O&M \$/Customer 2017\$ (formerly in Cost Allocation tab)	\$22,484.30	\$199,124.27	\$188,546.33	\$218,164.57	\$161,043.67	\$87,825.53	\$6.76	
Total Direct O&M \$/customer/yr	\$30,156.55	\$233,489.09	\$218,651.75	\$283,603.48	\$172,842.24	\$96,474.64	\$66.37	
O&M Loaders: \$/Customer								
Administrative & General as % of O&M	41.79%	41.79%	41.79%	41.79%	41.79%	41.79%	41.79%	cust 4, a&g
Administrative & General \$/customer/yr 2017's	\$12,603.66	\$97,584.66	\$91,383.52	\$118,529.51	\$72,237.86	\$40,320.70	\$27.74	
General Plant as % of O&M	30.21%	30.21%	30.21%	30.21%	30.21%	30.21%	30.21%	cust 4, gen plant
General Plant \$/customer/yr 2017's	\$9,111.19	\$70,544.00	\$66,061.20	\$85,685.05	\$52,220.78	\$29,147.86	\$20.05	
Materials & Supplies Loader:								
Per Customer Direct+A&G+GP O&M \$/customer/yr	\$51,871.39	\$401,617.74	\$376,096.47	\$487,818.04	\$297,300.88	\$165,943.20		
2013 Number of Customers	32	1	1	1	1	1	5,631,108	cust 2
Total Direct+A&G+GP O&M \$000/yr	\$1,660	\$402	\$376	\$488	\$297	\$166	\$642,880.44	
Percent of Total	0.26%	0.06%	0.06%	0.08%	0.05%	0.03%	100.00%	
Allocated M&S Costs (2017\$)	\$3,233	\$782	\$733	\$950	\$579	\$323	\$1,252,282.87	Loader Model
2013 Number of Customers	32	1	1	1	1	1	5,631,108	cust 2
M&S Loader \$/customer/yr 2017\$	\$101.04	\$782.32	\$732.61	\$950.23	\$579.12	\$323.24	\$0.22	
Total O&M Loaders \$/customer/yr	\$21,815.89	\$168,910.98	\$158,177.33	\$205,164.79	\$125,037.76	\$69,791.81	\$48.02	
LRMC Rental Customer Cost \$/customer/year	\$83,028.54	\$886,337.07	\$1,513,038.54	\$797,252.41	\$539,223.46	\$216,430.37	\$114.39	

	Core										Core			Noncore Retail					
	Residential					Non-Residential					Non-Residential			G-30 - Noncore C&I			Small EG	Large EG	
	Single Family (Detached homes)	Multi Family	Master Meter (up to 100,000 therms/year)	(100,001 therms per year and over)	Total or Avg.	Very Small - up to 300 therms/year	Small - 301 to 3,000 therms/year	3,001 to 50,000 therms/year	50,001 to 250,000 therms/year	Very Large - Over 250,000 therms/year	Average	Air Conditioning	Natural Gas Vehicle	Gas Engine	Distribution	Transmission	Total	< 3million	> 3million
NCO Method:																			
2013 Number of Customers	3,622,567	1,679,697	120,655	56	5,422,975	82,065	71,031	50,432	2,409	355	206,292	9	289	709	545	32	577	161	59
New Hookups Rate	0.41%	0.60%	0.20%	0.00%	0.47%	1.05%	0.65%	0.57%	0.37%	0.56%	0.79%	0.00%	2.88%	1.69%	0.36%	0.00%	0.34%	14.20%	2.27%
No of New Customer Hookups /year	14,927	10,050	247	0	25,224	865	463	285	9	2	1,624	0	8	12	2	0	2	23	1
Marginal Investment: \$/Customer																			
Meter & House Reg	\$389.12	\$266.41	\$1,645.50	\$16,562.72	\$379.23	\$617.19	\$1,426.72	\$3,394.90	\$7,760.03	\$9,802.97	\$1,674.21	\$7,860.93	\$45,321.48	\$4,609.46	\$96,009.44	\$230,511.32	\$103,468.81	\$74,881.13	\$522,512.56
Service Lines	\$889.47	\$1,213.40	\$2,009.70	\$31,036.06	\$1,015.04	\$2,154.62	\$2,465.09	\$2,555.96	\$7,160.14	\$6,211.01	\$2,425.07	\$5,873.43	\$17,613.91	\$43,713.78	\$65,527.95	\$118,306.51	\$68,455.01	\$47,055.13	\$59,463.43
Exclusive Use Facilities	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$6,805.86	\$16,340.35	\$7,334.63	\$0.00	\$324,741.64
Total Marginal Investment \$/customer	\$1,278.58	\$1,479.81	\$3,655.21	\$47,598.78	\$1,394.27	\$2,771.81	\$3,891.81	\$5,950.85	\$14,920.17	\$16,013.98	\$4,099.28	\$13,734.35	\$62,935.38	\$48,323.24	\$168,343.24	\$365,158.18	\$0.00	\$121,936.26	\$906,717.62
Weighted PVRR for Meter & House Reg	129.09%	129.14%	129.01%	128.96%	129.09%	129.05%	129.01%	129.00%	128.97%	128.95%	129.01%	128.97%	128.95%	129.00%	128.95%	128.95%	128.95%	128.95%	128.95%
PVCC for Service Lines	129.08%	129.08%	129.08%	129.08%	129.08%	129.08%	129.08%	129.08%	129.08%	129.08%	129.08%	129.08%	129.08%	129.08%	129.08%	129.08%	129.08%	129.08%	129.08%
PVRR:																			
Meter & House Reg \$/customer	\$502.31	\$344.03	\$2,122.93	\$21,359.13	\$489.56	\$796.48	\$1,840.67	\$4,379.50	\$10,007.89	\$12,641.38	\$2,159.91	\$10,138.10	\$58,444.00	\$5,946.22	\$123,806.58	\$297,250.76	\$133,425.88	\$96,560.37	\$673,787.99
Service Lines \$/customer	\$1,148.09	\$1,566.21	\$2,594.06	\$40,060.25	\$1,310.17	\$2,781.10	\$3,181.85	\$3,299.14	\$9,242.05	\$8,016.95	\$3,130.19	\$7,581.21	\$22,735.41	\$56,424.21	\$84,581.17	\$152,705.88	\$88,359.32	\$60,737.11	\$76,753.30
PVRR of Hookup Cost \$/customer	\$1,650.40	\$1,910.24	\$4,716.98	\$61,419.38	\$1,799.73	\$3,577.58	\$5,022.52	\$7,678.64	\$19,249.94	\$20,658.33	\$5,290.10	\$17,719.31	\$81,179.41	\$62,370.43	\$208,387.75	\$449,956.64	\$221,785.19	\$157,297.48	\$750,541.29
Total PVRR of Hookup Cost for Class \$'s	\$24,635,263	\$19,197,954	\$1,164,902	\$0	\$45,395,841	\$3,094,573	\$2,325,363	\$2,188,413	\$173,178	\$41,317	\$8,590,961	\$0	\$675,132	\$748,445	\$408,530	\$0	\$433,797	\$3,597,286	\$1,006,408
PVRR of Hookup Cost \$/customer	\$6.80	\$11.43	\$9.65	\$0.00	\$8.37	\$37.71	\$32.74	\$43.39	\$71.89	\$116.38	\$41.64	\$0.00	\$2,336.10	\$1,055.63	\$749.60	\$0.00	\$751.81	\$22,343.39	\$17,057.76
O&M Cost w/Loaders \$/Cust.																			
Total Direct O&M	\$58.99	\$58.52	\$63.73	\$120.04	\$58.95	\$137.46	\$144.26	\$333.75	\$1,016.72	\$1,945.76	\$201.17	\$2,680.94	\$9,566.34	\$526.71	\$8,023.89	\$8,023.95	\$8,023.89	\$8,206.66	\$25,026.10
Total O&M Loaders \$/customer/yr	\$42.67	\$42.34	\$46.11	\$86.84	\$42.65	\$99.44	\$104.36	\$241.44	\$735.52	\$1,407.60	\$145.53	\$1,939.45	\$6,920.49	\$381.03	\$5,804.65	\$5,804.70	\$5,804.66	\$5,936.87	\$18,104.42
LRMC NCO Customer Cost \$/customer/year	\$108.47	\$112.29	\$119.50	\$206.88	\$109.97	\$274.61	\$281.36	\$618.59	\$1,824.13	\$3,469.75	\$388.34	\$4,620.40	\$18,822.93	\$1,963.38	\$14,578.14	\$13,828.65	\$14,580.37	\$36,486.92	\$60,188.28
NCO w/ Replacement Cost Adder																			
Marginal Investment: Meter & House Reg \$/Customer	\$389.12	\$266.41	\$1,645.50	\$16,562.72	\$379.23	\$617.19	\$1,426.72	\$3,394.90	\$7,760.03	\$9,802.97	\$1,674.21	\$7,860.93	\$45,321.48	\$4,609.46	\$96,009.44	\$230,511.32	\$103,468.81	\$74,881.13	\$522,512.56
Service Lines Replacement Cost	\$3,314.12	\$3,530.07	\$5,452.03	\$56,691.87	\$3,429.12	\$6,218.76	\$6,870.37	\$6,715.71	\$16,406.09	\$14,790.58	\$6,698.33	\$13,576.94	\$34,284.81	\$100,241.20	\$113,618.44	\$211,346.64	\$119,038.37	\$80,571.77	\$97,741.87
Exclusive Use Facilities	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$6,805.86	\$16,340.35	\$7,334.63	\$0.00	\$324,741.64
Total	\$1,278.58	\$1,479.81	\$3,655.21	\$47,598.78	\$1,394.27	\$2,771.81	\$3,891.81	\$5,950.85	\$14,920.17	\$16,013.98	\$4,099.28	\$13,734.35	\$62,935.38	\$48,323.24	\$168,343.24	\$365,158.18	\$0.00	\$121,936.26	\$906,717.62
Weighted PVRR for Meter & House Reg	129.09%	129.14%	129.01%	128.96%	129.09%	129.05%	129.01%	129.00%	128.97%	128.95%	129.01%	128.97%	128.95%	129.00%	128.95%	128.95%	128.95%	128.95%	128.95%
PVCC for Service Lines	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%	129%
PVCC for Exclusive Use Facilities (Meters)																			
Weighted Replacement Factor for Meter & House Reg	2.80%	2.71%	2.93%	3.02%	2.79%	2.86%	2.93%	2.95%	3.01%	3.03%	2.93%	3.00%	3.03%	2.95%	3.03%	3.03%	3.03%	3.03%	3.03%
Replacement Factor for Service Lines	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%
Replacement Factor for Exclusive Use Facilities															3.13%	3.13%	3.13%	3.13%	3.13%
Meter & House Reg, Replacement	\$14.04	\$9.33	\$62.10	\$645.14	\$13.66	\$22.81	\$53.85	\$128.99	\$300.89	\$382.82	\$63.31	\$304.59	\$1,770.06	\$175.34	\$3,752.94	\$9,011.93	\$4,044.60	\$2,929.10	\$20,438.96
Service Lines, Replacement	\$89.12	\$94.93	\$146.61	\$1,524.50	\$92.21	\$167.23	\$184.75	\$180.59	\$441.18	\$397.73	\$180.12	\$365.10	\$921.95	\$2,695.58	\$3,055.31	\$5,683.31	\$3,201.05	\$2,166.65	\$2,628.37
Exclusive Use Facilities, Replace															\$274.15	\$658.20	\$295.45	\$0.00	\$13,080.86
Replacement Adder \$/Customer	\$103.16	\$104.25	\$208.71	\$2,169.64	\$105.87	\$190.04	\$238.60	\$309.58	\$742.07	\$780.55	\$243.44	\$669.69	\$2,692.01	\$2,870.92	\$7,082.39	\$15,353.44	\$7,541.10	\$5,095.75	\$36,148.19
NCO w/o Repl Cost \$/Cust/yr	\$108.47	\$112.29	\$119.50	\$206.88	\$109.97	\$274.61	\$281.36	\$618.59	\$1,824.13	\$3,469.75	\$388.34	\$4,620.40	\$18,822.93	\$1,963.38	\$14,578.14	\$13,828.65	\$14,580.37	\$36,486.92	\$60,188.28
NCO w/ Repl Cost: \$/Cust/yr.	\$211.63	\$216.54	\$328.21	\$2,376.52	\$215.84	\$464.65	\$519.96	\$928.16	\$2,566.19	\$4,250.30	\$631.78	\$5,290.08	\$21,514.94	\$4,834.30	\$21,660.53	\$29,182.09	\$22,121.47	\$41,582.67	\$96,336.47

	Noncore Wholesale						Total O&M Cost for All Customers
	EOR	Wholesale				International	
	G-40	LB	SDG&E	SWG	Vernon	DGN	
NCO Method:							
2013 Number of Customers	32	1	1	1	1	1	5,631,108
New Hookups Rate	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
No of New Customer Hookups /year	0	0	0	0	0	0	26,894
Marginal Investment: \$/Customer							
Meter & House Reg	\$262,289.12	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Service Lines	\$54,610.45	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Exclusive Use Facilities	\$16,429.22	\$5,071,825.51	\$11,907,864.24	\$3,233,019.45	\$2,529,362.03	\$525,735.12	
Total Marginal Investment \$/customer	\$333,328.79	\$5,071,825.51	\$11,907,864.24	\$3,233,019.45	\$2,529,362.03	\$525,735.12	
Weighted PVRR for Meter & House Reg	128.95%						
PVCC for Service Lines	129.08%	129.08%	129.08%	129.08%	129.08%	129.08%	
PVRR:							
Meter & House Reg \$/customer	\$338,228.41	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Service Lines \$/customer	\$70,489.25	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
PVRR of Hookup Cost \$/customer	\$408,717.65	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Total PVRR of Hookup Cost for Class \$'s	\$0	\$0	\$0	\$0	\$0	\$0	
PVRR of Hookup Cost \$/customer	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
O&M Cost w/Loaders \$/Cust.							
Total Direct O&M	\$30,156.55	\$233,489.09	\$218,651.75	\$283,603.48	\$172,842.24	\$96,474.64	
Total O&M Loaders \$/customer/yr	\$21,815.89	\$168,910.98	\$158,177.33	\$205,164.79	\$125,037.76	\$69,791.81	
LRMC NCO Customer Cost \$/customer/year	\$51,972.43	\$402,400.06	\$376,829.08	\$488,768.27	\$297,880.00	\$166,266.45	
NCO w/ Replacement Cost Adder							
Marginal Investment: Meter & House Reg \$/Customer	\$262,289.12	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Service Lines Replacement Cost	\$99,843.07	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Exclusive Use Facilities	\$16,429.22	\$5,071,825.51	\$11,907,864.24	\$3,233,019.45	\$2,529,362.03	\$525,735.12	
Total	\$333,328.79	\$5,071,825.51	\$11,907,864.24	\$3,233,019.45	\$2,529,362.03	\$525,735.12	
Weighted PVRR for Meter & House Reg	128.95%						
PVCC for Service Lines	129%						
PVCC for Exclusive Use Facilities (Meters)	129%	129%	129%	129%	129%	129%	
Weighted Replacement Factor for Meter & House Reg	3.03%						
Replacement Factor for Service Lines	2.1%						
Replacement Factor for Exclusive Use Facilities	3.13%	3.13%	3.13%	3.13%	3.13%	3.13%	
Meter & House Reg, Replacement	\$10,254.26						
Service Lines, Replacement	\$2,684.87						
Exclusive Use Facilities, Replace	\$661.78	\$204,297.34	\$479,658.66	\$130,228.71	\$101,884.80	\$21,177.05	
Replacement Adder \$/Customer	\$13,600.92	\$204,297.34	\$479,658.66	\$130,228.71	\$101,884.80	\$21,177.05	
NCO w/o Repl Cost \$/Cust/yr	\$51,972.43	\$402,400.06	\$376,829.08	\$488,768.27	\$297,880.00	\$166,266.45	
NCO w/ Repl Cost: \$/Cust/yr.	\$65,573.35	\$606,697.41	\$856,487.74	\$618,996.98	\$399,764.81	\$187,443.49	

SCG 2016 TCAP Phase II
 LRMC Customer Cost
 Number of Customers by Customer Class

	Core													
	Residential					Non-Residential								
	Single Family	Multi Family	Master Meter		Residential Total	G-10					Gas Air Conditioning	Natural Gas Vehicle	Gas Engine	
			Small	Large		Very Small	Small	Medium	Large	Very Large				Total
2013 Number of Customers	3,622,567	1,679,697	120,655	56	5,422,975	82,065	71,031	50,432	2,409	355	206,292	9	289	709

SCG 2016 TCAP Phase II
 LRMC Customer Cost
 Number of Customers by Custom

	Noncore											Total Over All Customers	
	Non-Residential												
	G-30			Small EG	Large EG	EOR G-40	Wholesale				International		
	Distribution	Transmission	Total				LB	SDG&E	SWG	Vernon	DGN		Rosarito
2013 Number of Customers	545	32	577	161	59	32	1	1	1	1	1	0	5,631,108

SCG 2016 TCAP Phase II
 LRMC Customer Cost
 Number of Customers by Customer Class

1) Residential Segmentation

1a) Segmentation of Residential Total Customer Counts into Bands

	Residential				
	Single Family	Multi Family	Master Meter		Total
			Small	Large	
2013 Number of Customers	3,622,567	1,679,697	120,655	56	5,422,975
Percent of Total	67%	31%	2%	0%	100%

values from 'Number of Customers', cust 2 tab

1b) Segmentation of Residential Meter, Regulator & MSA Investment Costs into Bands

	Residential				
	Single Family	Multi Family	Master Meter		Total
			Small	Large	
Per Cust. Meter, Reg. & MSA Investment	\$389.12	\$266.41	\$1,645.50	\$16,562.72	
2013 Number of Customers	3,622,567	1,679,697	120,655	56	5,422,975
Total Meter, Reg. & MSA Investment	\$1,409,605,725	\$447,482,336	\$198,538,072	\$927,513	\$2,056,553,646
Percent of Total Meter, Reg. & MSA Investment	69%	22%	10%	0%	100%

note: used to segment Meters, Regulators & MSAs O&M Costs
 values from 'Investment Meters, REGs', cust 5 tab

SCG 2016 TCAP Phase II
LRMC Customer Cost
Number of Customers by Customer Class

2) G10 Segmentation

2a) Segmentation of G-10 Total Customer Counts into Bands

	G-10					
	Very Small	Small	Medium	Large	Very Large	Total
2013 Number of Customers	82,065	71,031	50,432	2,409	355	206,292
Percent of Total	40%	34%	24%	1%	0%	100%

values from 'Number of Customers', cust 2 tab

2b) Segmentation of G-10 Meter, Regulator & MSA Investment Costs into Bands

	G-10					
	Very Small	Small	Medium	Large	Very Large	Total
Per Cust. Meter, Reg & MSA Investment	\$617.19	\$1,426.72	\$3,394.90	\$7,760.03	\$9,802.97	
2013 Number of Customers	82,065	71,031	50,432	2,409	355	206,292
Total Meter, Reg & MSA Investment	\$50,649,744	\$101,341,442	\$171,211,505	\$18,693,917	\$3,480,056	\$345,376,663
Percent of Total Meter, Reg & MSA Investment	15%	29%	50%	5%	1%	100%

note: used to segment Meters, Regulators & MSAs O&M Costs
values from 'Investment Meters, REGs', cust 5 tab

SCG 2016 TCAP Phase II
 LRMC Customer Cost
 Number of Customers by Customer Class

3) G 30 Segmentation

3a) Segmentation of G-30 total customer counts by Service Level

	G-30		
	Distribution	Transmission	Total
2013 Number of Customers	545	32	577
Percent of Total	94%	6%	100%

values from 'cust 2' tab

3b) Allocation of G-30 Total Big GEMS Costs by Service Level

		G-30		
		Distribution	Transmission	Total
Meter/Reg Investment Cost Per Customer	2013 \$s	\$96,009.44	\$230,511.32	
2013 Number of Customers		545	32	577
Total Cost	2013 \$s	\$52,325,143	\$7,376,362	\$59,701,505
Percent of Total Cost		88%	12%	100%

note: used to segment Meters, Regulators & MSAs O&M Costs
 values from 'Investment Meters, REGs', cust 5 tab

SCG 2016 TCAP Phase II
LRMC Customer Cost
Average Per Customer Investment in Meters & Regulators by Customer Class

Investment Per Customer:		Core												
		Residential					Non-Residential							
		Single Family	Multi Family	Master Meter		Residential Average	G-10					Gas Air Conditioning	Natural Gas Vehicle	Gas Engine
				Small	Large		Very Small	Small	Medium	Large	Very Large			
Meter, Reg. 2013 \$s	\$357.79	\$244.96	\$1,513.01	\$15,229.09	\$348.69	\$567.49	\$1,311.84	\$3,121.54	\$7,135.19	\$9,013.64	\$1,539.41	\$7,227.96	\$41,672.19	\$4,238.31
Meter, Reg. 2017 \$s	\$389.12	\$266.41	\$1,645.50	\$16,562.72	\$379.23	\$617.19	\$1,426.72	\$3,394.90	\$7,760.03	\$9,802.97	\$1,674.21	\$7,860.93	\$45,321.48	\$4,609.46
Total	\$389.12	\$266.41	\$1,645.50	\$16,562.72	\$379.23	\$617.19	\$1,426.72	\$3,394.90	\$7,760.03	\$9,802.97	\$1,674.21	\$7,860.93	\$45,321.48	\$4,609.46

For other classes we multiply average meter size and pressure type combination for all customers per class times unit cost for each associated combination.

Average Per Customer Investment in
Service Lines by Customer Class

Investment Per Customer:		Core												
		Residential					Non-Residential							
		Single Family	Multi Family	Master Meter		Residential Average	G-10					Gas Air Conditioning	Natural Gas Vehicle	Gas Engine
				Small	Large		Very Small	Small	Medium	Large	Very Large			
Service Lines 2013 \$s	\$817.85	\$1,115.70	\$1,847.88	\$28,537.04	\$933.31	\$1,981.13	\$2,266.60	\$2,350.15	\$6,583.60	\$5,710.90	\$2,229.80	\$5,400.50	\$16,195.64	\$40,193.95
Service Lines 2017 \$s	889.47	1,213.40	2,009.70	31,036.06	1,015.04	2,154.62	2,465.09	2,555.96	7,160.14	6,211.01	2,425.07	5,873.43	17,613.91	43,713.78
Total	889.47	1,213.40	2,009.70	31,036.06	1,015.04	2,154.62	2,465.09	2,555.96	7,160.14	6,211.01	2,425.07	5,873.43	17,613.91	43,713.78

For other classes we multiply average footage, pipe type and pipe size combination for all customers per class times unit cost for each associated combination.

Service Lines Replacement Costs

Investment Per Customer:		Core												
		Residential					Non-Residential							
		Single Family	Multi Family	Master Meter		Residential Average	G-10					Gas Air Conditioning	Natural Gas Vehicle	Gas Engine
				Small	Large		Very Small	Small	Medium	Large	Very Large			
Service Lines Replacement 2013 \$s	3,047.27	3,245.83	5,013.03	52,127.05	3,153.01	5,718.03	6,317.17	6,174.96	15,085.07	13,599.65	6,158.98	12,483.72	31,524.20	92,169.78
Service Lines 2017 \$s	3,314.12	3,530.07	5,452.03	56,691.87	3,429.12	6,218.76	6,870.37	6,715.71	16,406.09	14,790.58	6,698.33	13,576.94	34,284.81	100,241.20
Total	3,314.12	3,530.07	5,452.03	56,691.87	3,429.12	6,218.76	6,870.37	6,715.71	16,406.09	14,790.58	6,698.33	13,576.94	34,284.81	100,241.20

For other classes we multiply average footage, pipe type and pipe size combination for all customers per class times unit cost for each associated combination.

SCG 2016 TCAP Phase II
LRMC Customer Cost
Average Per Customer Investment in I

Noncore														Total Over All Customers
Non-Residential														
G-30			<3 Million SM. COGEN G-50	>3 Million EG G-50	EOR G-40	Wholesale				International				
<u>Investment Per Customer:</u>	Distribution	Transmission	Average				LB	SDG&E	SWG	Vernon	DGN	Rosarito		
Meter, Reg. 2013 \$s	\$88,278.76	\$211,950.56	\$95,137.51	\$68,851.70	\$480,439.86	\$241,169.60	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Meter, Reg. 2017 \$s	\$96,009.44	\$230,511.32	\$103,468.81	\$74,881.13	\$522,512.56	\$262,289.12	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Total	\$96,009.44	\$230,511.32	\$103,468.81	\$74,881.13	\$522,512.56	\$262,289.12	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	

Average Per Customer Investment in
Service Lines by Customer Class

Noncore														Total Over All Customers
Non-Residential														
G-30			SM. COGEN G-50	EG G-50	EOR G-40	Wholesale				International				
<u>Investment Per Customer:</u>	Distribution	Transmission	Average				LB	SDG&E	SWG	Vernon	DGN	Rosarito		
Service Lines 2013 \$s	\$60,251.64	\$108,780.48	\$62,943.01	\$43,266.26	\$54,675.43	\$50,213.22	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Service Lines 2017 \$s	65,527.95	118,306.51	68,455.01	47,055.13	59,463.43	54,610.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Total	65,527.95	118,306.51	68,455.01	47,055.13	59,463.43	54,610.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Service Lines Replacement Costs

Noncore														Total Over All Customers
Non-Residential														
G-30			SM. COGEN G-50	EG G-50	EOR G-40	Wholesale				International				
<u>Investment Per Customer:</u>	Distribution	Transmission	Average				LB	SDG&E	SWG	Vernon	DGN	Rosarito		
Service Lines Replacement 2013 \$s	104,469.88	194,329.02	109,453.41	74,084.14	89,871.70	91,803.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Service Lines 2017 \$s	113,618.44	211,346.64	119,038.37	80,571.77	97,741.87	99,843.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Total	113,618.44	211,346.64	119,038.37	80,571.77	97,741.87	99,843.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Meter Cost Detail

Code	Element	Meter Size	Above Std	avg labor \$/meter	avg \$/meter	avg \$/regulator
S10	SGL	1	0	\$146.51	\$75.57	\$18.31
M10	MULT	1	0	\$109.88	\$75.57	\$4.58
S20	SGL	2	0	\$201.52	\$141.69	\$16.31
M20	MULT	2	0	\$171.29	\$141.69	\$4.08
30	AG	3	0	\$188.67	\$142.86	\$18.31
	CMB	3		\$293.02	\$530.48	\$113.98
31	LBS	3	1	\$183.14	\$384.71	\$275.00
S40	SZ	4	0	\$178.21	\$648.17	\$215.60
S50	SZ	5	0	\$178.21	\$648.17	\$215.60
	CMB	4		\$178.21	\$818.90	\$246.90
	CMB	5		\$178.21	\$818.90	\$246.90
41	@LBS	4	1	\$178.21	\$2,327.46	\$260.17
51	@LBS	5	1	\$178.21	\$2,327.46	\$260.17
S60	STD	6	0	\$1,270.50	\$2,101.37	\$215.60
S70	STD	7	0	\$1,270.50	\$2,101.37	\$215.60
61	LBS	6	1	\$1,270.50	\$3,810.20	\$255.46
71	LBS	7	1	\$1,270.50	\$3,810.20	\$255.46
S80	STD	8	0	\$1,270.50	\$2,143.01	\$257.66
S90	STD	9	0	\$1,270.50	\$2,143.01	\$257.66
81	LBS	8	1	\$1,270.50	\$3,851.84	\$636.94
91	LBS	9	1	\$1,270.50	\$3,851.84	\$636.94
99	TURBINE METERS	10		\$60,092.00	\$380,193.00	\$3,100.00
100	ROTARY METERS	10		\$1,270.50	\$4,493.89	\$3,927.24
110	ULTRASONIC METERS	12		\$123,995	\$901,370	\$0.00

Obsolete
Obsolete

Code	Rate	Meter			avg labor \$/meter	avg \$/meter	avg \$/regulator	tot lab	tot met	tot reg	tot cost	Average Meter & Regulator CAPEX/ Customer
		Size	Above Std	Sample Size								
S10	SF	1	0	48,499	\$146.51	\$75.57	\$18.31	\$7,105,504	\$3,665,069	\$888,036	\$11,658,610	\$240.39
30	SF	3	0	9,907	\$188.67	\$142.86	\$18.31	\$1,869,187	\$1,415,314	\$181,401	\$3,465,902	\$349.84
31	SF	3	1	33	\$183.14	\$384.71	\$275.00	\$6,043	\$12,695	\$9,075	\$27,814	\$842.85
S40	SF	4	0	3,525	\$178.21	\$648.17	\$215.60	\$628,201	\$2,284,799	\$759,990	\$3,672,990	\$1,041.98
41	SF	4	1	51	\$178.21	\$2,327.46	\$260.17	\$9,089	\$118,700	\$13,268	\$141,058	\$2,765.84
S50	SF	5	0	17	\$178.21	\$648.17	\$215.60	\$3,030	\$11,019	\$3,665	\$17,714	\$1,041.98
S60	SF	6	0	790	\$1,270.50	\$2,101.37	\$215.60	\$1,003,696	\$1,660,082	\$170,324	\$2,834,102	\$3,587.47
61	SF	6	1	31	\$1,270.50	\$3,810.20	\$255.46	\$39,386	\$118,116	\$7,919	\$165,421	\$5,336.16
S70	SF	7	0	3	\$1,270.50	\$2,101.37	\$215.60	\$3,812	\$6,304	\$647	\$10,762	\$3,587.47
S80	SF	8	0	91	\$1,270.50	\$2,143.01	\$257.66	\$115,616	\$195,014	\$23,447	\$334,076	\$3,671.17
81	SF	8	1	22	\$1,270.50	\$3,851.84	\$636.94	\$27,951	\$84,740	\$14,013	\$126,704	\$5,759.28
S90	SF	9	0	3	\$1,270.50	\$2,143.01	\$257.66	\$3,812	\$6,429	\$773	\$11,014	\$3,671.17
91	SF	9	1	5	\$1,270.50	\$3,851.84	\$636.94	\$6,353	\$19,259	\$3,185	\$28,796	\$5,759.28
100	SF	10	1	4	\$1,270.50	\$4,493.89	\$3,927.24	\$5,082	\$17,976	\$15,709	\$38,767	\$9,691.63
tot SF				62,981				\$10,826,760	\$9,615,518	\$2,091,452	\$22,533,730	\$357.79
S10	MF	1	0	51,825	\$146.51	\$75.57	\$18.31	\$7,592,791	\$3,916,415	\$948,937	\$12,458,142	\$240.39
30	MF	3	0	1,380	\$188.67	\$142.86	\$18.31	\$260,369	\$197,147	\$25,268	\$482,784	\$349.84
31	MF	3	1	3	\$183.14	\$384.71	\$275.00	\$549	\$1,154	\$825	\$2,529	\$842.85
S40	MF	4	0	48	\$178.21	\$648.17	\$215.60	\$8,554	\$31,112	\$10,349	\$50,015	\$1,041.98
41	MF	4	1	1	\$178.21	\$2,327.46	\$260.17	\$178	\$2,327	\$260	\$2,766	\$2,765.84
S60	MF	6	0	6	\$1,270.50	\$2,101.37	\$215.60	\$7,623	\$12,608	\$1,294	\$21,525	\$3,587.47
61	MF	6	1	4	\$1,270.50	\$3,810.20	\$255.46	\$5,082	\$15,241	\$1,022	\$21,345	\$5,336.16
S80	MF	8	0	1	\$1,270.50	\$2,143.01	\$257.66	\$1,271	\$2,143	\$258	\$3,671	\$3,671.17
81	MF	8	1	1	\$1,270.50	\$3,851.84	\$636.94	\$1,271	\$3,852	\$637	\$5,759	\$5,759.28
tot MF				53,269				\$7,877,688	\$4,182,000	\$988,849	\$13,048,536	\$244.96
S10	MM Band 1	1	0	502	\$146.51	\$75.57	\$18.31	\$73,547	\$37,936	\$9,192	\$120,675	\$240.39
30	MM Band 1	3	0	187	\$188.67	\$142.86	\$18.31	\$35,282	\$26,715	\$3,424	\$65,421	\$349.84
31	MM Band 1	3	1	7	\$183.14	\$384.71	\$275.00	\$1,282	\$2,693	\$1,925	\$5,900	\$842.85
S40	MM Band 1	4	0	305	\$178.21	\$648.17	\$215.60	\$54,355	\$197,692	\$65,758	\$317,805	\$1,041.98
41	MM Band 1	4	1	10	\$178.21	\$2,327.46	\$260.17	\$1,782	\$23,275	\$2,602	\$27,658	\$2,765.84
S50	MM Band 1	5	0	7	\$178.21	\$648.17	\$215.60	\$1,247	\$4,537	\$1,509	\$7,294	\$1,041.98
S60	MM Band 1	6	0	174	\$1,270.50	\$2,101.37	\$215.60	\$221,067	\$365,638	\$37,514	\$624,220	\$3,587.47
61	MM Band 1	6	1	21	\$1,270.50	\$3,810.20	\$255.46	\$26,681	\$80,014	\$5,365	\$112,059	\$5,336.16
S70	MM Band 1	7	0	4	\$1,270.50	\$2,101.37	\$215.60	\$5,082	\$8,405	\$862	\$14,350	\$3,587.47
71	MM Band 1	7	1	2	\$1,270.50	\$3,810.20	\$255.46	\$2,541	\$7,620	\$511	\$10,672	\$5,336.16
S80	MM Band 1	8	0	58	\$1,270.50	\$2,143.01	\$257.66	\$73,689	\$124,295	\$14,944	\$212,928	\$3,671.17
81	MM Band 1	8	1	26	\$1,270.50	\$3,851.84	\$636.94	\$33,033	\$100,148	\$16,560	\$149,741	\$5,759.28
S90	MM Band 1	9	0	8	\$1,270.50	\$2,143.01	\$257.66	\$10,164	\$17,144	\$2,061	\$29,369	\$3,671.17
91	MM Band 1	9	1	21	\$1,270.50	\$3,851.84	\$636.94	\$26,681	\$80,889	\$13,376	\$120,945	\$5,759.28
100	MM Band 1	10	1	24	\$1,270.50	\$4,493.89	\$3,927.24	\$30,492	\$107,853	\$94,254	\$232,599	\$9,691.63
tot MM 1				1,356				\$596,925	\$1,184,855	\$269,857	\$2,051,637	\$1,513.01
61	MM Band 2	6	1	3	\$1,270.50	\$3,810.20	\$255.46	\$3,812	\$11,431	\$766	\$16,008	\$5,336.16
71	MM Band 2	7	1	1	\$1,270.50	\$3,810.20	\$255.46	\$1,271	\$3,810	\$255	\$5,336	\$5,336.16
81	MM Band 2	8	1	9	\$1,270.50	\$3,851.84	\$636.94	\$11,435	\$34,667	\$5,732	\$51,834	\$5,759.28
91	MM Band 2	9	1	18	\$1,270.50	\$3,851.84	\$636.94	\$22,869	\$69,333	\$11,465	\$103,667	\$5,759.28
99	MM Band 2	10	1	1	\$60,092.00	\$380,193.00	\$3,100.00	\$60,092	\$380,193	\$3,100	\$443,385	\$443,385.00
100	MM Band 2	10	1	24	\$1,270.50	\$4,493.89	\$3,927.24	\$30,492	\$107,853	\$94,254	\$232,599	\$9,691.63
tot MM 2				56				\$129,970	\$607,287	\$115,573	\$852,829	\$15,229.09

Code	Rate	Meter		Sample Size	avg labor \$/meter	avg \$/meter	avg \$/regulator	tot lab	tot met	tot reg	tot cost	Average Meter & Regulator CAPEX/
		Size	Above Std									Customer
S10	G10 Band 1	1	0	2,199	\$146.51	\$75.57	\$18.31	\$322,172	\$166,178	\$40,265	\$528,615	\$240.39
30	G10 Band 1	3	0	391	\$188.67	\$142.86	\$18.31	\$73,771	\$55,858	\$7,159	\$136,789	\$349.84
31	G10 Band 1	3	1	12	\$183.14	\$384.71	\$275.00	\$2,198	\$4,617	\$3,300	\$10,114	\$842.85
S40	G10 Band 1	4	0	249	\$178.21	\$648.17	\$215.60	\$44,375	\$161,394	\$53,684	\$259,454	\$1,041.98
41	G10 Band 1	4	1	28	\$178.21	\$2,327.46	\$260.17	\$4,990	\$65,169	\$7,285	\$77,443	\$2,765.84
S50	G10 Band 1	5	0	3	\$178.21	\$648.17	\$215.60	\$535	\$1,945	\$647	\$3,126	\$1,041.98
51	G10 Band 1	5	1	1	\$178.21	\$2,327.46	\$260.17	\$178	\$2,327	\$260	\$2,766	\$2,765.84
S60	G10 Band 1	6	0	88	\$1,270.50	\$2,101.37	\$215.60	\$111,804	\$184,921	\$18,973	\$315,697	\$3,587.47
61	G10 Band 1	6	1	31	\$1,270.50	\$3,810.20	\$255.46	\$39,386	\$118,116	\$7,919	\$165,421	\$5,336.16
S80	G10 Band 1	8	0	25	\$1,270.50	\$2,143.01	\$257.66	\$31,763	\$53,575	\$6,441	\$91,779	\$3,671.17
81	G10 Band 1	8	1	11	\$1,270.50	\$3,851.84	\$636.94	\$13,976	\$42,370	\$7,006	\$63,352	\$5,759.28
S90	G10 Band 1	9	0	1	\$1,270.50	\$2,143.01	\$257.66	\$1,271	\$2,143	\$258	\$3,671	\$3,671.17
91	G10 Band 1	9	1	4	\$1,270.50	\$3,851.84	\$636.94	\$5,082	\$15,407	\$2,548	\$23,037	\$5,759.28
100	G10 Band 1	10	1	5	\$1,270.50	\$4,493.89	\$3,927.24	\$6,353	\$22,469	\$19,636	\$48,458	\$9,691.63
tot Band 1				3,048				\$657,851	\$896,490	\$175,381	\$1,729,723	\$567.49
S10	G10 Band 2	1	0	720	\$146.51	\$75.57	\$18.31	\$105,486	\$54,410	\$13,183	\$173,080	\$240.39
30	G10 Band 2	3	0	575	\$188.67	\$142.86	\$18.31	\$108,487	\$82,145	\$10,528	\$201,160	\$349.84
31	G10 Band 2	3	1	36	\$183.14	\$384.71	\$275.00	\$6,593	\$13,850	\$9,900	\$30,342	\$842.85
S40	G10 Band 2	4	0	613	\$178.21	\$648.17	\$215.60	\$109,245	\$397,328	\$132,163	\$638,736	\$1,041.98
41	G10 Band 2	4	1	49	\$178.21	\$2,327.46	\$260.17	\$8,732	\$114,046	\$12,748	\$135,526	\$2,765.84
S50	G10 Band 2	5	0	15	\$178.21	\$648.17	\$215.60	\$2,673	\$9,723	\$3,234	\$15,630	\$1,041.98
S60	G10 Band 2	6	0	264	\$1,270.50	\$2,101.37	\$215.60	\$335,412	\$554,762	\$56,918	\$947,092	\$3,587.47
61	G10 Band 2	6	1	66	\$1,270.50	\$3,810.20	\$255.46	\$83,853	\$251,473	\$16,860	\$352,187	\$5,336.16
S70	G10 Band 2	7	0	6	\$1,270.50	\$2,101.37	\$215.60	\$7,623	\$12,608	\$1,294	\$21,525	\$3,587.47
71	G10 Band 2	7	1	3	\$1,270.50	\$3,810.20	\$255.46	\$3,812	\$11,431	\$766	\$16,008	\$5,336.16
S80	G10 Band 2	8	0	44	\$1,270.50	\$2,143.01	\$257.66	\$55,902	\$94,292	\$11,337	\$161,531	\$3,671.17
81	G10 Band 2	8	1	66	\$1,270.50	\$3,851.84	\$636.94	\$83,853	\$254,221	\$42,038	\$380,112	\$5,759.28
S90	G10 Band 2	9	0	7	\$1,270.50	\$2,143.01	\$257.66	\$8,894	\$15,001	\$1,804	\$25,698	\$3,671.17
91	G10 Band 2	9	1	15	\$1,270.50	\$3,851.84	\$636.94	\$19,058	\$57,778	\$9,554	\$86,389	\$5,759.28
100	G10 Band 2	10	1	8	\$1,270.50	\$4,493.89	\$3,927.24	\$10,164	\$35,951	\$31,418	\$77,533	\$9,691.63
tot Band 2				2,487				\$949,786	\$1,959,018	\$353,746	\$3,262,550	\$1,311.84
S10	G10 Band 3	1	0	34	\$146.51	\$75.57	\$18.31	\$4,981	\$2,569	\$623	\$8,173	\$240.39
30	G10 Band 3	3	0	168	\$188.67	\$142.86	\$18.31	\$31,697	\$24,000	\$3,076	\$58,774	\$349.84
31	G10 Band 3	3	1	62	\$183.14	\$384.71	\$275.00	\$11,354	\$23,852	\$17,050	\$52,256	\$842.85
S40	G10 Band 3	4	0	666	\$178.21	\$648.17	\$215.60	\$118,690	\$431,681	\$143,590	\$693,961	\$1,041.98
41	G10 Band 3	4	1	69	\$178.21	\$2,327.46	\$260.17	\$12,297	\$160,595	\$17,951	\$190,843	\$2,765.84
S50	G10 Band 3	5	0	21	\$178.21	\$648.17	\$215.60	\$3,742	\$13,612	\$4,528	\$21,882	\$1,041.98
S60	G10 Band 3	6	0	602	\$1,270.50	\$2,101.37	\$215.60	\$764,842	\$1,265,025	\$129,791	\$2,159,658	\$3,587.47
61	G10 Band 3	6	1	118	\$1,270.50	\$3,810.20	\$255.46	\$149,919	\$449,604	\$30,144	\$629,667	\$5,336.16
S70	G10 Band 3	7	0	14	\$1,270.50	\$2,101.37	\$215.60	\$17,787	\$29,419	\$3,018	\$50,225	\$3,587.47
71	G10 Band 3	7	1	3	\$1,270.50	\$3,810.20	\$255.46	\$3,812	\$11,431	\$766	\$16,008	\$5,336.16
S80	G10 Band 3	8	0	233	\$1,270.50	\$2,143.01	\$257.66	\$296,027	\$499,321	\$60,034	\$855,382	\$3,671.17
81	G10 Band 3	8	1	213	\$1,270.50	\$3,851.84	\$636.94	\$270,617	\$820,442	\$135,668	\$1,226,726	\$5,759.28
S90	G10 Band 3	9	0	43	\$1,270.50	\$2,143.01	\$257.66	\$54,632	\$92,149	\$11,079	\$157,860	\$3,671.17
91	G10 Band 3	9	1	133	\$1,270.50	\$3,851.84	\$636.94	\$168,977	\$512,295	\$84,713	\$765,984	\$5,759.28
100	G10 Band 3	10	1	82	\$1,270.50	\$4,493.89	\$3,927.24	\$104,181	\$368,499	\$322,033	\$794,714	\$9,691.63
tot Band 3				2,461				\$2,013,554	\$4,704,494	\$964,065	\$7,682,113	\$3,121.54
31	G10 Band 4	3	1	1	\$183.14	\$384.71	\$275.00	\$183	\$385	\$275	\$843	\$842.85
41	G10 Band 4	4	1	3	\$178.21	\$2,327.46	\$260.17	\$535	\$6,982	\$780	\$8,298	\$2,765.84
61	G10 Band 4	6	1	8	\$1,270.50	\$3,810.20	\$255.46	\$10,164	\$30,482	\$2,044	\$42,689	\$5,336.16
S80	G10 Band 4	8	0	4	\$1,270.50	\$2,143.01	\$257.66	\$5,082	\$8,572	\$1,031	\$14,685	\$3,671.17
81	G10 Band 4	8	1	16	\$1,270.50	\$3,851.84	\$636.94	\$20,328	\$61,629	\$10,191	\$92,148	\$5,759.28
S90	G10 Band 4	9	0	3	\$1,270.50	\$2,143.01	\$257.66	\$3,812	\$6,429	\$773	\$11,014	\$3,671.17
91	G10 Band 4	9	1	31	\$1,270.50	\$3,851.84	\$636.94	\$39,386	\$119,407	\$19,745	\$178,538	\$5,759.28
100	G10 Band 4	10	0	48	\$1,270.50	\$4,493.89	\$3,927.24	\$60,984	\$215,707	\$188,507	\$465,198	\$9,691.63
tot Band 4				114				\$140,473	\$449,593	\$223,346	\$813,412	\$7,135.19

Code	Rate	Meter			avg labor \$/meter	avg \$/meter	avg \$/regulator	tot lab	tot met	tot reg	tot cost	Average Meter & Regulator CAPEX/
		Size	Above Std	Sample Size								Customer
81	G10 Band 5	8	1	1	\$1,270.50	\$3,851.84	\$636.94	\$1,271	\$3,852	\$637	\$5,759	\$5,759.28
91	G10 Band 5	9	1	4	\$1,270.50	\$3,851.84	\$636.94	\$5,082	\$15,407	\$2,548	\$23,037	\$5,759.28
100	G10 Band 5	10	1	24	\$1,270.50	\$4,493.89	\$3,927.24	\$30,492	\$107,853	\$94,254	\$232,599	\$9,691.63
	tot Band 5			29				\$36,845	\$127,113	\$97,438	\$261,396	\$9,013.64
61	GAC	6	1	1	\$1,270.50	\$3,810.20	\$255.46	\$1,271	\$3,810	\$255	\$5,336	\$5,336.16
S80	GAC	8	0	1	\$1,270.50	\$2,143.01	\$257.66	\$1,271	\$2,143	\$258	\$3,671	\$3,671.17
81	GAC	8	1	3	\$1,270.50	\$3,851.84	\$636.94	\$3,812	\$11,556	\$1,911	\$17,278	\$5,759.28
100	GAC	10	1	4	\$1,270.50	\$4,493.89	\$3,927.24	\$5,082	\$17,976	\$15,709	\$38,767	\$9,691.63
	tot GAC			9				\$11,435	\$35,484	\$18,133	\$65,052	\$7,227.96
S10	NGV	1	0	13	\$146.51	\$75.57	\$18.31	\$1,905	\$982	\$238	\$3,125	\$240.39
30	NGV	3	0	2	\$188.67	\$142.86	\$18.31	\$377	\$286	\$37	\$700	\$349.84
31	NGV	3	1	23	\$183.14	\$384.71	\$275.00	\$4,212	\$8,848	\$6,325	\$19,385	\$842.85
41	NGV	4	1	12	\$178.21	\$2,327.46	\$260.17	\$2,139	\$27,930	\$3,122	\$33,190	\$2,765.84
51	NGV	5	1	5	\$178.21	\$2,327.46	\$260.17	\$891	\$11,637	\$1,301	\$13,829	\$2,765.84
61	NGV	6	1	23	\$1,270.50	\$3,810.20	\$255.46	\$29,222	\$87,635	\$5,876	\$122,732	\$5,336.16
71	NGV	7	1	5	\$1,270.50	\$3,810.20	\$255.46	\$6,353	\$19,051	\$1,277	\$26,681	\$5,336.16
81	NGV	8	1	38	\$1,270.50	\$3,851.84	\$636.94	\$48,279	\$146,370	\$24,204	\$218,853	\$5,759.28
91	NGV	9	1	21	\$1,270.50	\$3,851.84	\$636.94	\$26,681	\$80,889	\$13,376	\$120,945	\$5,759.28
99	NGV	10	1	17	\$60,092.00	\$380,193.00	\$3,100.00	\$1,021,564	\$6,463,281	\$52,700	\$7,537,545	\$443,385.00
100	NGV	10	1	46	\$1,270.50	\$4,493.89	\$3,927.24	\$58,443	\$206,719	\$180,653	\$445,815	\$9,691.63
	tot NGV			205				\$1,200,064	\$7,053,627	\$289,108	\$8,542,799	\$41,672.19
S10	GEN	1	0	1	\$146.51	\$75.57	\$18.31	\$147	\$76	\$18	\$240	\$240.39
30	GEN	3	0	17	\$188.67	\$142.86	\$18.31	\$3,207	\$2,429	\$311	\$5,947	\$349.84
31	GEN	3	1	6	\$183.14	\$384.71	\$275.00	\$1,099	\$2,308	\$1,650	\$5,057	\$842.85
S40	GEN	4	0	54	\$178.21	\$648.17	\$215.60	\$9,624	\$35,001	\$11,642	\$56,267	\$1,041.98
41	GEN	4	1	23	\$178.21	\$2,327.46	\$260.17	\$4,099	\$53,532	\$5,984	\$63,614	\$2,765.84
S50	GEN	5	0	8	\$178.21	\$648.17	\$215.60	\$1,426	\$5,185	\$1,725	\$8,336	\$1,041.98
41	GEN	5	1	9	\$178.21	\$2,327.46	\$260.17	\$1,604	\$20,947	\$2,341	\$24,893	\$2,765.84
S60	GEN	6	0	124	\$1,270.50	\$2,101.37	\$215.60	\$157,542	\$260,570	\$26,734	\$444,846	\$3,587.47
61	GEN	6	1	101	\$1,270.50	\$3,810.20	\$255.46	\$128,321	\$384,830	\$25,802	\$538,952	\$5,336.16
S70	GEN	7	0	7	\$1,270.50	\$2,101.37	\$215.60	\$8,894	\$14,710	\$1,509	\$25,112	\$3,587.47
71	GEN	7	1	9	\$1,270.50	\$3,810.20	\$255.46	\$11,435	\$34,292	\$2,299	\$48,025	\$5,336.16
S80	GEN	8	0	136	\$1,270.50	\$2,143.01	\$257.66	\$172,788	\$291,449	\$35,041	\$499,279	\$3,671.17
81	GEN	8	1	120	\$1,270.50	\$3,851.84	\$636.94	\$152,460	\$462,221	\$76,432	\$691,113	\$5,759.28
S90	GEN	9	0	17	\$1,270.50	\$2,143.01	\$257.66	\$21,599	\$36,431	\$4,380	\$62,410	\$3,671.17
91	GEN	9	1	52	\$1,270.50	\$3,851.84	\$636.94	\$66,066	\$200,296	\$33,121	\$299,482	\$5,759.28
100	GEN	10	1	23	\$1,270.50	\$4,493.89	\$3,927.24	\$29,222	\$103,359	\$90,326	\$222,907	\$9,691.63
	tot GEN			707				\$769,530	\$1,907,636	\$319,317	\$2,996,483	\$4,238.31
51	G30 Tran	5	1	1	\$178.21	\$2,327.46	\$260.17	\$178	\$2,327	\$260	\$2,766	\$2,765.84
S60	G30 Tran	6	0	1	\$1,270.50	\$2,101.37	\$215.60	\$1,271	\$2,101	\$216	\$3,587	\$3,587.47
71	G30 Tran	7	1	1	\$1,270.50	\$3,810.20	\$255.46	\$1,271	\$3,810	\$255	\$5,336	\$5,336.16
81	G30 Tran	8	1	1	\$1,270.50	\$3,851.84	\$636.94	\$1,271	\$3,852	\$637	\$5,759	\$5,759.28
91	G30 Tran	9	1	3	\$1,270.50	\$3,851.84	\$636.94	\$3,812	\$11,556	\$1,911	\$17,278	\$5,759.28
99	G30 Tran	10	1	15	\$60,092.00	\$380,193.00	\$3,100.00	\$901,380	\$5,702,895	\$46,500	\$6,650,775	\$443,385.00
100	G30 Tran	10	1	10	\$1,270.50	\$4,493.89	\$3,927.24	\$12,705	\$44,939	\$39,272	\$66,916	\$9,691.63
	tot G30 Tran			32				\$921,886	\$5,771,480	\$89,051	\$6,782,418	\$211,950.56
31	G30 Dist	3	1	1	\$183.14	\$384.71	\$275.00	\$183	\$385	\$275	\$843	\$842.85
S40	G30 Dist	4	0	1	\$178.21	\$648.17	\$215.60	\$178	\$648	\$216	\$1,042	\$1,041.98
61	G30 Dist	6	1	5	\$1,270.50	\$3,810.20	\$255.46	\$6,353	\$19,051	\$1,277	\$26,681	\$5,336.16
71	G30 Dist	7	1	1	\$1,270.50	\$3,810.20	\$255.46	\$1,271	\$3,810	\$255	\$5,336	\$5,336.16
81	G30 Dist	8	1	40	\$1,270.50	\$3,851.84	\$636.94	\$50,820	\$154,074	\$25,477	\$230,371	\$5,759.28
S90	G30 Dist	9	0	2	\$1,270.50	\$2,143.01	\$257.66	\$2,541	\$4,286	\$515	\$7,342	\$3,671.17
91	G30 Dist	9	1	83	\$1,270.50	\$3,851.84	\$636.94	\$105,452	\$319,703	\$52,866	\$478,020	\$5,759.28
99	G30 Dist	10	1	100	\$60,092.00	\$380,193.00	\$3,100.00	\$6,009,200	\$38,019,300	\$310,000	\$44,338,500	\$443,385.00
100	G30 Dist	10	1	312	\$1,270.50	\$4,493.89	\$3,927.24	\$396,396	\$1,402,094	\$1,225,298	\$3,023,789	\$9,691.63
	tot G30 Dist			545				\$6,572,393	\$39,923,350	\$1,616,180	\$48,111,924	\$88,278.76

Code	Rate	Meter Size	Above Std	Sample Size	avg labor \$/meter	avg \$/meter	avg \$/regulator	tot lab	tot met	tot reg	tot cost	Average Meter & Regulator CAPEX/ Customer
51	G50	5	1	3	\$178.21	\$2,327.46	\$260.17	\$535	\$6,982	\$780	\$8,298	\$2,765.84
61	G50	6	1	38	\$1,270.50	\$3,810.20	\$255.46	\$48,279	\$144,788	\$9,708	\$202,774	\$5,336.16
71	G50	7	1	1	\$1,270.50	\$3,810.20	\$255.46	\$1,271	\$3,810	\$255	\$5,336	\$5,336.16
81	G50	8	1	38	\$1,270.50	\$3,851.84	\$636.94	\$48,279	\$146,370	\$24,204	\$218,853	\$5,759.28
91	G50	9	1	32	\$1,270.50	\$3,851.84	\$636.94	\$40,656	\$123,259	\$20,382	\$184,297	\$5,759.28
99	G50	10	1	66	\$60,092.00	\$380,193.00	\$3,100.00	\$3,966,072	\$25,092,738	\$204,600	\$29,263,410	\$443,385.00
100	G50	10	1	33	\$1,270.50	\$4,493.89	\$3,927.24	\$41,927	\$148,298	\$129,599	\$319,824	\$9,691.63
110	G50	12	1	9	\$123,995.00	\$901,370.00	\$0.00	\$1,115,955	\$8,112,330	\$0	\$9,228,285	\$1,025,365.00
tot G50				220				\$5,262,973	\$33,778,575	\$389,528	\$39,431,076	\$179,232.16
71	G40	7	1	1	\$1,270.50	\$3,810.20	\$255.46	\$1,271	\$3,810	\$255	\$5,336	\$5,336.16
81	G40	8	1	2	\$1,270.50	\$3,851.84	\$636.94	\$2,541	\$7,704	\$1,274	\$11,519	\$5,759.28
91	G40	9	1	3	\$1,270.50	\$3,851.84	\$636.94	\$3,812	\$11,556	\$1,911	\$17,278	\$5,759.28
99	G40	10	1	15	\$60,092.00	\$380,193.00	\$3,100.00	\$901,380	\$5,702,895	\$46,500	\$6,650,775	\$443,385.00
100	G40	10	1	7	\$1,270.50	\$4,493.89	\$3,927.24	\$8,894	\$31,457	\$27,491	\$67,841	\$9,691.63
tot G40				28				\$917,897	\$5,757,422	\$77,431	\$6,752,749	\$241,169.60

Service Cost Detail

Code	Pipe Diameter Inches	Pipe Type	New Business \$/ft	Replacement \$/ft
0.5P	0.5	P	\$15.45	\$61.16
1P	1	P	\$29.72	\$88.83
2P	2	P	\$31.10	\$79.98
3P	3	P	\$38.75	\$102.73
4P	4	P	\$46.76	\$131.83
6P	6	P	\$54.53	\$141.60
3P	8	P	\$62.30	\$161.27
0.5	0.5	S	\$88.01	\$120.74
0.75	0.75	S	\$117.05	\$176.35
1S	1	S	\$127.41	\$228.95
1.25	1.25	S	\$137.76	\$228.23
2S	2	S	\$148.12	\$272.39
3S	3	S	\$170.70	\$296.56
4S	4	S	\$193.29	\$320.75
6S	6	S	\$215.87	\$344.92
8S	8	S	\$226.82	\$369.10
10S	10	S	\$237.77	\$393.27
12S	12	S	\$248.72	\$417.44
16S	16	S	\$259.67	\$441.62
20S	20	S	\$270.62	\$465.79

Calculation of Weighted Average Service Line and Service Line Replacement Cost \$/customer

Code	Rate	Pipe			# New Customers last 5 years	Avg Length feet	New Business \$/ft	Replacement \$/ft	Service Line CAPEX \$/customer	Replacement Service Line		Replacement Service Line CAPEX \$'s
		Diameter Inches	Pipe frac	Pipe Type						CAPEX \$/customer	Service Line CAPEX \$'s	
0.5P	SF	0	12	P	34,195	44.7	\$15.45	\$61.16	\$691	\$2,734	\$23,619,241	\$93,498,519
0.75	SF	0	34	S	32	90.4	\$117.05	\$176.35	\$10,582	\$15,943	\$338,619	\$510,175
1P	SF	1	0	P	2,791	74.9	\$29.72	\$88.83	\$2,227	\$6,654	\$6,214,806	\$18,572,560
1S	SF	1	0	S	3	74.0	\$127.41	\$228.95	\$9,428	\$16,942	\$28,284	\$50,826
2P	SF	2	0	P	17	171.1	\$31.10	\$79.98	\$5,321	\$13,685	\$90,465	\$232,653
Tot SF					37,038				\$818	\$3,047	\$30,291,415	\$112,864,733
0.5P	MF	0	12	P	2,700	31.4	\$15.45	\$61.16	\$485	\$1,918	\$1,308,259	\$5,178,842
0.75	MF	0	34	S	51	10.6	\$117.05	\$176.35	\$1,239	\$1,867	\$63,205	\$95,226
1P	MF	1	0	P	2,904	42.3	\$29.72	\$88.83	\$1,258	\$3,758	\$3,652,066	\$10,913,971
1S	MF	1	0	S	98	25.9	\$127.41	\$228.95	\$3,297	\$5,925	\$323,105	\$580,622
1.25	MF	1	25	S	5	10.2	\$137.76	\$228.23	\$1,405	\$2,328	\$7,026	\$11,640
2P	MF	2	0	P	154	84.1	\$31.10	\$79.98	\$2,616	\$6,727	\$402,848	\$1,036,019
2S	MF	2	0	S	129	44.5	\$148.12	\$272.39	\$6,587	\$12,114	\$849,761	\$1,562,733
3P	MF	2	0	P	1	20.0	\$38.75	\$102.73	\$775	\$2,055	\$775	\$2,055
3S	MF	2	0	S	2	399.0	\$170.70	\$296.56	\$68,111	\$118,329	\$136,222	\$236,659
Tot MF					6,044				\$1,116	\$3,245.83	\$6,743,267	\$19,617,767
0.5P	MM Band 1	0	12	P	58	51.7	\$15.45	\$61.16	\$798	\$3,160	\$46,300	\$183,282
0.75	MM Band 1	0	34	S	57	4.1	\$117.05	\$176.35	\$476	\$718	\$27,154	\$40,911
1P	MM Band 1	1	0	P	455	68.5	\$29.72	\$88.83	\$2,036	\$6,084	\$926,270	\$2,768,100
1S	MM Band 1	1	0	S	103	5.6	\$127.41	\$228.95	\$712	\$1,280	\$73,382	\$131,869
1.25	MM Band 1	1	25	S	5	1.8	\$137.76	\$228.23	\$248	\$411	\$1,240	\$2,054
2P	MM Band 1	2	0	P	49	71.7	\$31.10	\$79.98	\$2,231	\$5,737	\$109,311	\$281,119
2S	MM Band 1	2	0	S	33	42.4	\$148.12	\$272.39	\$6,284	\$11,556	\$207,365	\$381,350
3P	MM Band 1	3	0	P	1	96.0	\$38.75	\$102.73	\$3,720	\$9,862	\$3,720	\$9,862
3S	MM Band 1	3	0	S	2	44.5	\$170.70	\$296.56	\$7,596	\$13,197	\$15,193	\$26,394
Tot MM 1					763				\$1,848	\$5,013	\$1,409,935	\$3,824,942
0.5P	MM Band 2	0	12	P	1	222.0	\$15.45	\$61.16	\$3,430	\$13,577	\$3,430	\$13,577
0.75	MM Band 2	0	34	S	2	7.0	\$117.05	\$176.35	\$819	\$1,234	\$1,639	\$2,469
1P	MM Band 2	1	0	P	1	19.0	\$29.72	\$88.83	\$565	\$1,688	\$565	\$1,688
1S	MM Band 2	1	0	S	2	114.0	\$127.41	\$228.95	\$14,524	\$26,100	\$29,048	\$52,200
1.25	MM Band 2	1	25	S	3	96.3	\$137.76	\$228.23	\$13,271	\$21,985	\$39,812	\$65,956
2P	MM Band 2	2	0	P	4	736.8	\$31.10	\$79.98	\$22,912	\$58,923	\$91,647	\$235,691
2S	MM Band 2	2	0	S	15	162.1	\$148.12	\$272.39	\$24,006	\$44,147	\$360,085	\$662,205
3S	MM Band 2	3	0	S	8	246.9	\$170.70	\$296.56	\$42,143	\$73,216	\$337,147	\$585,727
4S	MM Band 2	4	0	S	2	616.0	\$193.29	\$320.75	\$119,066	\$197,581	\$238,132	\$395,161
6S	MM Band 2	6	0	S	1	53.0	\$215.87	\$344.92	\$11,441	\$18,281	\$11,441	\$18,281
Tot MM 2					39				\$28,537	\$52,127	\$1,112,944	\$2,032,955
0.5P	G10 Band 1	0	12	P	129	59.3	\$15.45	\$61.16	\$916	\$3,625	\$118,122	\$467,595
0.75	G10 Band 1	0	34	S	146	4.2	\$117.05	\$176.35	\$487	\$734	\$71,159	\$107,210
1P	G10 Band 1	1	0	P	419	99.6	\$29.72	\$88.83	\$2,960	\$8,846	\$1,240,206	\$3,706,278
1S	G10 Band 1	1	0	S	143	2.0	\$127.41	\$228.95	\$257	\$461	\$36,693	\$65,938
1.25	G10 Band 1	1	25	S	7	1.4	\$137.76	\$228.23	\$197	\$326	\$1,378	\$2,283
2P	G10 Band 1	2	0	P	43	183.7	\$31.10	\$79.98	\$5,712	\$14,689	\$245,605	\$631,630
2S	G10 Band 1	2	0	S	7	27.3	\$148.12	\$272.39	\$4,042	\$7,433	\$28,291	\$52,028
3P	G10 Band 1	3	0	P	1	681.0	\$38.75	\$102.73	\$26,389	\$69,959	\$26,389	\$69,959
4P	G10 Band 1	4	0	P	1	155.0	\$46.76	\$131.83	\$7,248	\$20,433	\$7,248	\$20,433
tot Band 1					896				\$1,981	\$5,718	\$1,775,090	\$5,123,353
0.5P	G10 Band 2	0	12	P	114	64.9	\$15.45	\$61.16	\$1,002	\$3,966	\$114,214	\$452,125

Code	Rate	Pipe		Pipe Type	# New Customers last 5 years	Avg Length feet	New Business \$/ft	Replacement \$/ft	Replacement		Replacement	
		Diameter Inches	Pipe frac						Service Line CAPEX \$/customer	Service Line CAPEX \$/customer	Service Line CAPEX \$'s	Service Line CAPEX \$'s
0.75	G10 Band 2	0	34	S	253	4.5	\$117.05	\$176.35	\$524	\$789	\$132,489	\$199,613
1P	G10 Band 2	1	0	P	659	98.5	\$29.72	\$88.83	\$2,928	\$8,750	\$1,929,549	\$5,766,338
1S	G10 Band 2	1	0	S	201	6.4	\$127.41	\$228.95	\$821	\$1,475	\$164,995	\$296,498
1.25	G10 Band 2	1	25	S	3	2.7	\$137.76	\$228.23	\$367	\$609	\$1,102	\$1,826
2P	G10 Band 2	2	0	P	85	232.0	\$31.10	\$79.98	\$7,216	\$18,558	\$613,383	\$1,577,459
2S	G10 Band 2	2	0	S	27	13.6	\$148.12	\$272.39	\$2,008	\$3,693	\$54,213	\$99,700
3P	G10 Band 2	3	0	P	1	880.0	\$38.75	\$102.73	\$34,100	\$90,402	\$34,100	\$90,402
tot Band 2					1,343				\$2,267	\$6,317	\$3,044,047	\$8,483,960
0.5P	G10 Band 3	0	12	P	47	54.6	\$15.45	\$61.16	\$843	\$3,339	\$39,642	\$156,926
0.75	G10 Band 3	0	34	S	334	5.4	\$117.05	\$176.35	\$635	\$956	\$211,968	\$319,358
1P	G10 Band 3	1	0	P	693	93.3	\$29.72	\$88.83	\$2,773	\$8,287	\$1,921,804	\$5,743,193
1S	G10 Band 3	1	0	S	386	3.7	\$127.41	\$228.95	\$470	\$844	\$181,321	\$325,835
1.25	G10 Band 3	1	25	S	15	5.0	\$137.76	\$228.23	\$689	\$1,141	\$10,332	\$17,117
2P	G10 Band 3	2	0	P	253	180.1	\$31.10	\$79.98	\$5,602	\$14,407	\$1,417,343	\$3,645,030
2S	G10 Band 3	2	0	S	62	30.8	\$148.12	\$272.39	\$4,558	\$8,383	\$282,609	\$519,726
3P	G10 Band 3	3	0	P	5	232.5	\$38.75	\$102.73	\$9,009	\$23,885	\$45,047	\$119,423
3S	G10 Band 3	3	0	S	1	223.0	\$170.70	\$296.56	\$38,067	\$66,134	\$38,067	\$66,134
4P	G10 Band 3	4	0	P	2	607.5	\$46.76	\$131.83	\$28,408	\$80,084	\$56,817	\$160,168
4S	G10 Band 3	4	0	P	2	65.5	\$193.29	\$320.75	\$12,660	\$21,009	\$25,321	\$42,018
tot Band 3					1,800				\$2,350	\$6,175	\$4,230,271	\$11,114,927
0.75	G10 Band 4	0	34	S	2	24.0	\$117.05	\$176.35	\$2,809	\$4,232	\$5,618	\$8,465
1P	G10 Band 4	1	0	P	19	89.3	\$29.72	\$88.83	\$2,655	\$7,934	\$50,441	\$150,739
1S	G10 Band 4	1	0	S	7	3.7	\$127.41	\$228.95	\$473	\$850	\$3,312	\$5,952
2P	G10 Band 4	2	0	P	46	122.9	\$31.10	\$79.98	\$3,822	\$9,828	\$175,798	\$452,107
2S	G10 Band 4	2	0	S	12	93.3	\$148.12	\$272.39	\$13,824	\$25,423	\$165,893	\$305,081
3P	G10 Band 4	3	0	P	1	130.0	\$38.75	\$102.73	\$5,037	\$13,355	\$5,037	\$13,355
3S	G10 Band 4	3	0	S	1	655.0	\$170.70	\$296.56	\$111,811	\$194,250	\$111,811	\$194,250
4P	G10 Band 4	4	0	P	7	328.5	\$46.76	\$131.83	\$15,362	\$43,305	\$107,531	\$303,133
tot Band 4					95				\$6,584	\$15,085	\$625,442	\$1,433,082
1P	G10 Band 5	1	0	P	1	13.0	\$29.72	\$88.83	\$386	\$1,155	\$386	\$1,155
2P	G10 Band 5	2	0	P	9	234.4	\$31.10	\$79.98	\$7,291	\$18,750	\$65,617	\$168,750
2S	G10 Band 5	2	0	S	4	47.8	\$148.12	\$272.39	\$7,073	\$13,007	\$28,291	\$52,027
3P	G10 Band 5	3	0	P	3	123.3	\$38.75	\$102.73	\$4,779	\$12,670	\$14,337	\$38,010
3S	G10 Band 5	3	0	S	1	5.0	\$170.70	\$296.56	\$854	\$1,483	\$854	\$1,483
4P	G10 Band 5	4	0	P	2	65.5	\$46.76	\$131.83	\$3,063	\$8,635	\$6,126	\$17,269
6S	G10 Band 5	6	0	S	1	20.0	\$215.87	\$344.92	\$4,317	\$6,898	\$4,317	\$6,898
tot Band 5					21				\$5,711	\$13,600	\$119,929	\$285,593
1P	GAC	1	0	P	1	10.0	\$29.72	\$88.83	\$297	\$888	\$297	\$888
1S	GAC	1	0	S	1	34.0	\$127.41	\$228.95	\$4,332	\$7,784	\$4,332	\$7,784
2P	GAC	2	0	P	1	441.0	\$31.10	\$79.98	\$13,714	\$35,270	\$13,714	\$35,270
2S	GAC	2	0	S	1	22.0	\$148.12	\$272.39	\$3,259	\$5,993	\$3,259	\$5,993
tot GAC					4				\$5,400	\$12,484	\$21,602	\$49,935

Code	Rate	Pipe			# New Customers last 5 years	Avg Length feet	New Business \$/ft	Replacement \$/ft	Service Line CAPEX \$/customer	Replacement Service Line		Replacement Service Line CAPEX \$'s
		Diameter Inches	Pipe frac	Pipe Type						Service Line CAPEX \$/customer	Service Line CAPEX \$'s	
0.5P	NGV	0	12	P	2	61.5	\$15.45	\$61.16	\$950	\$3,761	\$1,900	\$7,522
0.75	NGV	0	34	S	5	87.6	\$117.05	\$176.35	\$10,253	\$15,448	\$51,267	\$77,241
1P	NGV	1	0	P	6	112.0	\$29.72	\$88.83	\$3,329	\$9,949	\$19,974	\$59,691
1S	NGV	1	0	S	5	119.0	\$127.41	\$228.95	\$15,161	\$27,245	\$75,806	\$136,224
1.25	NGV	1	25	S	1	330.0	\$137.76	\$228.23	\$45,461	\$75,315	\$45,461	\$75,315
2P	NGV	2	0	P	27	187.8	\$31.10	\$79.98	\$5,840	\$15,018	\$157,670	\$405,486
2S	NGV	2	0	S	5	71.8	\$148.12	\$272.39	\$10,635	\$19,558	\$53,175	\$97,790
3P	NGV	3	0	P	2	760.5	\$38.75	\$102.73	\$29,469	\$78,126	\$58,939	\$156,251
3S	NGV	3	0	S	3	617.3	\$170.70	\$296.56	\$105,381	\$183,078	\$316,142	\$549,235
4P	NGV	4	0	P	1	740.0	\$46.76	\$131.83	\$34,605	\$97,551	\$34,605	\$97,551
4S	NGV	4	0	S	3	33.7	\$193.29	\$320.75	\$6,508	\$10,800	\$19,524	\$32,399
6S	NGV	6	0	S	4	234.0	\$215.87	\$344.92	\$50,514	\$80,711	\$202,058	\$322,843
tot NGV					64				\$16,196	\$31,524	\$1,036,521	\$2,017,549
0.5P	GEN	0	12	P	20	161.7	\$15.45	\$61.16	\$2,498	\$9,889	\$49,962	\$197,778
0.75	GEN	0	34	S	163	228.9	\$117.05	\$176.35	\$26,792	\$40,366	\$4,367,145	\$6,579,684
1P	GEN	1	0	P	177	357.5	\$29.72	\$88.83	\$10,626	\$31,754	\$1,880,719	\$5,620,412
1S	GEN	1	0	S	17	820.7	\$127.41	\$228.95	\$104,563	\$187,900	\$1,777,564	\$3,194,300
1S	GEN	1	25	S	5	1,551.8	\$127.41	\$228.95	\$197,707	\$355,282	\$988,536	\$1,776,408
2P	GEN	2	0	P	161	1,786.3	\$31.10	\$79.98	\$55,550	\$142,859	\$8,943,503	\$23,000,313
2S	GEN	2	0	S	27	453.6	\$148.12	\$272.39	\$67,191	\$123,566	\$1,814,163	\$3,336,293
3P	GEN	3	0	P	20	3,051.9	\$38.75	\$102.73	\$118,261	\$313,519	\$2,365,218	\$6,270,383
3S	GEN	3	0	S	4	259.5	\$170.70	\$296.56	\$44,298	\$76,959	\$177,191	\$307,834
4P	GEN	4	0	P	9	4,533.3	\$46.76	\$131.83	\$211,992	\$597,609	\$1,907,925	\$5,378,482
4S	GEN	4	0	S	1	27.0	\$193.29	\$320.75	\$5,219	\$8,660	\$5,219	\$8,660
tot GEN					604				\$40,194	\$92,170	\$24,277,145	\$55,670,548
0.5P	G30 Dist	0	12	P	7	155.6	\$15.45	\$61.16	\$2,403	\$9,514	\$16,824	\$66,598
0.75	G30 Dist	0	34	S	23	78.0	\$117.05	\$176.35	\$9,134	\$13,762	\$210,092	\$316,531
1P	G30 Dist	1	0	P	7	331.1	\$29.72	\$88.83	\$9,843	\$29,414	\$68,898	\$205,898
1S	G30 Dist	1	0	S	15	41.6	\$127.41	\$228.95	\$5,296	\$9,517	\$79,443	\$142,761
1.25	G30 Dist	1	25	S	19	104.4	\$137.76	\$228.23	\$14,385	\$23,832	\$273,317	\$452,800
2P	G30 Dist	2	0	P	46	263.0	\$31.10	\$79.98	\$8,179	\$21,034	\$376,228	\$967,557
2S	G30 Dist	2	0	S	112	221.9	\$148.12	\$272.39	\$32,868	\$60,444	\$3,681,171	\$6,769,772
3P	G30 Dist	3	0	P	46	365.8	\$38.75	\$102.73	\$14,175	\$37,578	\$652,037	\$1,728,603
3S	G30 Dist	3	0	S	68	342.9	\$170.70	\$296.56	\$58,529	\$101,683	\$3,979,987	\$6,914,455
4P	G30 Dist	4	0	P	10	500.6	\$46.76	\$131.83	\$23,410	\$65,992	\$234,095	\$659,919
4S	G30 Dist	4	0	S	73	803.4	\$193.29	\$320.75	\$155,292	\$257,695	\$11,336,315	\$18,811,759
6P	G30 Dist	6	0	P	1	1,173.0	\$54.53	\$141.60	\$63,965	\$166,096	\$63,965	\$166,096
6S	G30 Dist	6	0	S	25	837.0	\$215.87	\$344.92	\$180,678	\$288,683	\$4,516,938	\$7,217,064
8S	G30 Dist	8	0	S	5	1,841.6	\$226.82	\$369.10	\$417,717	\$679,737	\$2,088,585	\$3,398,684
10S	G30 Dist	10	0	S	1	73.0	\$237.77	\$393.27	\$17,357	\$28,709	\$17,357	\$28,709
tot G30 Dist					458				\$60,252	\$104,470	\$27,595,251	\$47,847,206
2P	G30 Tran	2	0	P	3	1,363.0	\$31.10	\$79.98	\$42,387	\$109,008	\$127,161	\$327,025
2S	G30 Tran	2	0	S	8	919.5	\$148.12	\$272.39	\$136,195	\$250,467	\$1,089,563	\$2,003,736
3S	G30 Tran	3	0	S	1	520.0	\$170.70	\$296.56	\$88,766	\$154,214	\$88,766	\$154,214
4S	G30 Tran	4	0	S	2	96.0	\$193.29	\$320.75	\$18,556	\$30,792	\$37,111	\$61,584
6S	G30 Tran	6	0	S	3	1,062.0	\$215.87	\$344.92	\$229,258	\$366,303	\$687,773	\$1,098,909
8S	G30 Tran	8	0	S	1	42.0	\$226.82	\$369.10	\$9,527	\$15,502	\$9,527	\$15,502
10S	G30 Tran	10	0	S	1	467.0	\$237.77	\$393.27	\$111,040	\$183,658	\$111,040	\$183,658
16S	G30 Tran	16	0	S	1	95.0	\$259.67	\$441.62	\$24,669	\$41,954	\$24,669	\$41,954
tot G30 Tran					20				\$108,780	\$194,329	\$2,175,610	\$3,886,580

Code	Rate	Pipe	Pipe frac	Pipe Type	# New Customers last 5 years	Avg Length feet	New Business \$/ft	Replacement \$/ft	Service Line CAPEX \$/customer	Replacement	Service Line CAPEX \$/customer	Service Line CAPEX \$'s	Replacement
		Diameter Inches								Service Line CAPEX \$/customer			Service Line CAPEX \$'s
0.75	Sml G50	0	34	S	1	1.0	\$117.05	\$176.35	\$117	\$176	\$117	\$176	
1P	Sml G50	1	0	P	4	116.3	\$29.72	\$88.83	\$3,455	\$10,326	\$13,821	\$41,304	
1S	Sml G50	1	0	S	1	68.0	\$127.41	\$228.95	\$8,664	\$15,568	\$8,664	\$15,568	
1.25	Sml G50	1	25	S	1	415.0	\$137.76	\$228.23	\$57,171	\$94,715	\$57,171	\$94,715	
2P	Sml G50	2	0	P	2	318.5	\$31.10	\$79.98	\$9,905	\$25,473	\$19,810	\$50,945	
2S	Sml G50	2	0	S	6	152.0	\$148.12	\$272.39	\$22,514	\$41,404	\$135,084	\$248,424	
3P	Sml G50	3	0	P	1	562.0	\$38.75	\$102.73	\$21,777	\$57,734	\$21,777	\$57,734	
3S	Sml G50	3	0	S	1	61.0	\$170.70	\$296.56	\$10,413	\$18,090	\$10,413	\$18,090	
4S	Sml G50	4	0	S	7	524.6	\$193.29	\$320.75	\$101,393	\$168,255	\$709,754	\$1,177,783	
6S	Sml G50	6	0	S	4	59.0	\$215.87	\$344.92	\$12,737	\$20,350	\$50,946	\$81,401	
8S	Sml G50	8	0	S	3	461.0	\$226.82	\$369.10	\$104,565	\$170,156	\$313,696	\$510,467	
tot Sml G50					31				\$43,266	\$74,084	\$1,341,254	\$2,296,608	
1.25	G50 EG	1	25	S	1	6.0	\$137.76	\$228.23	\$827	\$1,369	\$827	\$1,369	
2S	G50 EG	2	0	S	1	1.0	\$148.12	\$272.39	\$148	\$272	\$148	\$272	
3S	G50 EG	3	0	S	1	61.0	\$170.70	\$296.56	\$10,413	\$18,090	\$10,413	\$18,090	
4S	G50 EG	4	0	S	3	662.0	\$193.29	\$320.75	\$127,957	\$212,335	\$383,871	\$637,005	
6S	G50 EG	6	0	S	4	144.8	\$215.87	\$344.92	\$31,248	\$49,927	\$124,991	\$199,708	
8S	G50 EG	8	0	S	2	268.0	\$226.82	\$369.10	\$60,789	\$98,919	\$121,577	\$197,838	
10S	G50 EG	10	0	S	1	290.0	\$237.77	\$393.27	\$68,954	\$114,049	\$68,954	\$114,049	
tot G50 EG					13				\$54,675	\$89,872	\$710,781	\$1,168,332	
2S	G40	2	0	S	4	72.0	\$148.12	\$272.39	\$10,665	\$19,612	\$42,658	\$78,450	
3S	G40	3	0	S	3	169.0	\$170.70	\$296.56	\$28,849	\$50,119	\$86,547	\$150,358	
4P	G40	4	0	P	1	2,378.0	\$46.76	\$131.83	\$111,202	\$313,481	\$111,202	\$313,481	
4S	G40	4	0	S	5	597.0	\$193.29	\$320.75	\$115,393	\$191,487	\$576,967	\$957,433	
6S	G40	6	0	S	2	8.5	\$215.87	\$344.92	\$1,835	\$2,932	\$3,670	\$5,864	
8S	G40	8	0	S	1	20.0	\$226.82	\$369.10	\$4,536	\$7,382	\$4,536	\$7,382	
16S	G40	16	0	S	1	108.0	\$259.67	\$441.62	\$28,044	\$47,695	\$28,044	\$47,695	
tot G40					17				\$50,213	\$91,804	\$853,625	\$1,560,663	

SCG 2016 TCAP Phase II
LRMC Customer Cost
Big GEMS Investment by Customer Class for Retail Noncore (exclusive use on Cust MC)

	NonCore C&I Distribution G30	NonCore C&I Transmission G30	Total NonCore C&I G30	EG G-50	EOR G-40	LB	SDG&E	SWG	Vernon	DGN	Source
# of Meters											
ROTARY 11M & LARGER: (*)			2	8	0	1	0	6	0	0	
TURBINE MSA'S (*)			8	17	1	0	1	6	0	1	
ORIFICE METERS (ultra sonic)			0	8	0	4	9	0	2	0	
Total # meters			10	33	1	5	10	12	2	1	

	Exclusive Use Meter Cost \$/meter										
Investment in Meters:											
ROTARY 11M & LARGER: (*)	\$12,047	\$21,116	\$2,977	\$24,093	\$96,372	\$0	\$12,047	\$0	\$72,279	\$0	\$0
TURBINE MSA'S (*)	\$483,403	\$3,389,412	\$477,811	\$3,867,224	\$8,217,850	\$483,403	\$0	\$483,403	\$2,900,418	\$0	\$483,403
ORIFICE METERS (ultra sonic)	\$1,162,849	\$0	\$0	\$0	\$9,302,791	\$0	\$4,651,396	\$10,465,640	\$0	\$2,325,698	\$0
Total Investment \$'s	2013 \$s	\$3,410,529	\$480,788	\$3,891,317	\$17,617,014	\$483,403	\$4,663,442	\$10,949,043	\$2,972,697	\$2,325,698	\$483,403
allocation of Total NonCore C&I to Distribution & Transmission		88%	12%								
Total Investment \$'s	2013 \$s	\$3,709,193	\$522,891.07	\$4,232,084	\$19,159,757	\$525,735	\$5,071,826	\$11,907,864	\$3,233,019	\$2,529,362	\$525,735
2013 Number of Customers		545	32	577	59	32	1	1	1	1	1
Exclusive Use Cost Per Customer	2013 \$s	\$6,805.86	\$16,340.35	\$7,334.63	\$324,741.64	\$16,429.22	\$5,071,825.51	\$11,907,864.24	\$3,233,019.45	\$2,529,362.03	\$525,735.12

Note : This is part of Exclusive Use Facilities Costs

Exclusive Use Meter Cost \$/meter	2013 \$s	TURBINE METERS 4"-12"	ROTARY METERS 4" - 6"	ULTRASONIC METERS 4" - 16"
Avg. Meter Cost		\$17,118	\$4,433	\$119,284
Avg. Labor Cost		\$60,092	\$1,648	\$123,995
Avg. Contract Cost		\$170,500	\$0	\$247,500
Materials		\$212,793	\$1,280	\$653,870
Regulator Cost		\$3,100	\$3,100	\$0
GEMS Device Cost		\$19,800	\$1,585	\$18,200
TOTAL		\$483,403	\$12,047	\$1,162,849

SCG 2016 TCAP Phase II
LRMC Customer Cost
Allocation of Customer-Related Distribution O&M

		Residential				Core							Non-Residential		
		Single Family	Multi Family	Master Meter		Residential Total	G-10					Gas Air Conditioning	Natural Gas Vehicle	Gas Engine	
				Small	Large		Very Small	Small	Medium	Large	Very Large				Total
1	2013 Number of Customers	3,622,567	1,679,697	120,655	56	5,422,975	82,065	71,031	50,432	2,409	355	206,292	9	289	709

Customer Services O&M Costs

2	Total Cost	2013 M\$	\$73,678	\$34,163	\$2,454	\$1	\$110,296	\$3,401	\$3,881	\$10,999	\$1,316	\$218	\$19,815	\$1	\$37	\$114
3	Cost Per Customer:	2013 \$	20.34	20.34	20.34	20.34	20.34	41.44	54.64	218.09	546.42	614.99	96.05	115.36	126.84	161.23
4		2017 \$	21.89	21.89	21.89	21.89	21.89	44.60	58.81	234.72	588.08	661.87	103.38	124.15	136.50	173.52

Customer Accounts O&M Costs

5	Total Cost:	2013 M\$	\$105,456	\$48,898	\$3,512	\$2	\$157,868	\$3,506	\$2,423	\$2,143	\$818	\$401	\$9,290	\$21	\$309	\$233	
6	Cost Per Customer:	2013 \$	29.11	29.11	29.11	29.11	29.11	42.72	34.11	42.50	339.38	1,129.65	45.03	2,375.68	1,068.40	328.06	
7		2017 \$	31.33	31.33	31.33	31.33	31.33	45.98	36.71	45.74	365.25	1,215.77	48.47	2,556.78	1,149.84	353.07	
8	segmentation by number of customers																
9			66.80%	30.97%	2.22%	0.001%											

Meters, Reg & MSAs O&M Costs

10	Total Cost	2013 M\$	\$4,942	\$1,569	\$696	\$3	\$7,210	\$109	\$217	\$367	\$40	\$7	\$741	\$0	\$0	\$0
11	Cost Per Customer:	2013 \$	1.36	0.93	5.77	58.07	1.33	1.32	3.06	7.28	16.65	21.03	3.59			
12		2017 \$	1.47	1.01	6.21	62.49	1.43	1.43	3.29	7.84	17.92	22.64	3.87	22.64	22.64	22.64

Service Lines O&M Costs

13	Total Costs	2013 \$	\$38,998													
14		2017 \$	\$41,971													
15	Total Service Line Footage		223,676,731	55,161,113	11,168,746	13,539	290,020,129	11,453,293	7,342,457	6,646,137	586,904	111,511	26,140,303	1,030	47,237	647,411
16	Percent of Total Footage		70.53%	17.39%	3.52%	0.00%	91.45%	3.61%	2.32%	2.10%	0.19%	0.04%	8.24%	0.00%	0.01%	0.20%
17	Allocated SL O&M Costs	2017 \$	\$29,602	\$7,300	\$1,478	\$2	\$38,382	\$1,516	\$972	\$880	\$78	\$15	\$3,459	\$0	\$6	\$86
18	Cost Per Customer	2017 \$	\$0.01	\$0.00	\$0.01	\$0.03	\$0.01	\$0.02	\$0.01	\$0.02	\$0.03	\$0.04	\$0.02	\$0.02	\$0.02	\$0.12

Calculation of Customer Service & Information Cost (CSI) Costs Accounts (FERC Accounts 907 to 910):

5	Total Cost:	2013 M\$	\$14,455	\$6,703	\$481	\$0	\$21,640	\$3,465	\$2,999	\$2,129	\$102	\$15	\$8,710	\$0	\$2,223	\$0
3	Cost Per Customer:	2013 \$	3.99	3.99	3.99	3.99	3.99	42.22	42.22	42.22	42.22	42.22	42.22	0.00	7,693.50	0.00
4		2017 \$	4.29	4.29	4.29	4.29	4.29	45.44	45.44	45.44	45.44	45.44	45.44	0.00	8,279.97	0.00

Calculation of Customer Service & Information Cost (CSI) Costs Accounts (FERC Accounts 907 to 910):

		2013 Costs	PBR Exclusion Items	Other Adjustments	2013 Costs in Transport Rates		Exclusions	2013
139	Calculation of Customer Service & Information Costs (CSI Costs):							
140	907 Cus Svc-Supervision + Payroll Taxes	NON-DSM CUST. INFO	\$638	\$0	\$0	\$638	FERC Form 2	
141	908 Cus Svc-Cust Assist Exp (PBR Ex DAP, DSM & Self-Gen)	NON-DSM CUST. INFO	\$199,628	(\$167,610)	\$0	\$32,018	FERC Form 2	\$14,328,729
142	909 Cus Svc-Info & Instruction Exp	NON-DSM CUST. INFO	\$935	\$0	\$0	\$935	FERC Form 2	\$57,429,006
143	910 Cus Svc-Misc CSI Exp	NON-DSM CUST. INFO	\$1,775	\$0	\$0	\$1,775	FERC Form 2	\$95,852,610
144			\$202,976	(\$167,610)	\$0	\$35,366		\$167,610,345
147								
148	CS&I O&M, 2013 \$000's					\$35,366		

		Residential	CCI	G-AC	G-GEN	NGV	Total Core	NCCI	EG Tier 1	EG Tier 2	EOR	Total Retail NonCore	Long Beach
1	Calculation of CSI Cost Allocator:												
2	Energy Markets Costs:												
3	Major Markets Staff FTE by Class (mgmnt estimate)		0.4	0.0	0.0	0.0	0	1.1	0.4	5.2	3.4	10.1	0.9
4	Energy Markets	0.0%	2.8%	0.0%	0.0%	0.0%	2.8%	7.3%	2.4%	36.1%	23.5%	69.3%	6.5%
5	Energy Markets	\$0	\$51	\$0	\$0	\$0	\$51	\$134	\$44	\$662	\$430	\$1,271	\$119
6	Large C&I:												
7	# Large C&I Customers	0	206,292	0	0	0	206,292	577	0	0	0	577	0
8	% Large C&I only	0.0%	99.7%	0.0%	0.0%	0.0%	99.7%	0.3%	0.0%	0.0%	0.0%	0.3%	0.0%
9	Large C&I	\$0	\$5,144	\$0	\$0	\$0	\$5,144	\$14	\$0	\$0	\$0	\$14	\$0
10	NGV	\$0	\$0	\$0	\$0	\$1,430	\$1,430	\$0	\$0	\$0	\$0	\$0	\$0
11	Residential	\$10,148	\$0	\$0	\$0	\$0	\$10,148	\$0	\$0	\$0	\$0	\$0	\$0
12	Small Business												
13	# G10, G-AC, G-GE Customers only	0	206,292	0	0	0	206,292	0	0	0	0	0	0
14	Small Business	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
15	Small Business	\$0	\$408	\$0	\$0	\$0	\$408	\$0	\$0	\$0	\$0	\$0	\$0
16	Econ Development												
17	# Large C&I Customers	0	206,292	0	0	0	206,292	577	0	0	0	577	0
18	% Large C&I only	0.0%	99.7%	0.0%	0.0%	0.0%	99.7%	0.3%	0.0%	0.0%	0.0%	0.3%	0.0%
19	Econ Development	\$0	(\$2)	\$0	\$0	(\$2)	(\$2)	(\$0)	\$0	\$0	\$0	(\$0)	\$0
20	Other Residential	\$3,769	\$0	\$0	\$0	\$0	\$3,769	\$0	\$0	\$0	\$0	\$0	\$0
21	Total	\$22,744	\$13,917	\$5,602	\$0	\$0	\$14,300	\$20,948	\$149	\$44	\$662	\$430	\$1,285
22	Allocator %		61.2%	24.6%	0.0%	0.0%	6.3%	92.1%	0.7%	0.2%	2.9%	1.9%	5.7%

SCG 2016 TCAP Phase II
LRMC Customer Cost
Allocation of Customer-Related Distribution O&M

		Noncore											Total Over All Customers
		Non-Residential											
		G-30			Small EG	EG G-50	EOR G-40	Wholesale				Intl	
		Distribution	Transmission	Total			LB	SDG&E	SWG	Vernon	DGN		
1	2013 Number of Customers	545	32	577	161	59	32	1	1	1	1	1	5,631,108

Customer Services O&M Costs

2	Total Cost	2013 M\$\$			\$343	\$39	\$14	\$3	\$0	\$0	\$0	\$0	\$0	\$130,662
3	Cost Per Customer:	2013 \$\$			593.65	243.99	243.99	84.85	0.00	0.00	0.00	0.00	0.00	
4		2017 \$\$			638.91	262.59	262.59	91.32	0.00	0.00	0.00	0.00	0.00	
					Total EG		\$54							

Customer Accounts O&M Costs

5	Total Cost:	2013 M\$\$			\$2,187	\$559	\$205	\$127	\$15	\$11	\$27	\$8	\$5	\$170,865
6	Cost Per Customer:	2013 \$\$			3,790.79	3,474.06	3,474.06	3,981.42	14,930.74	10,973.04	26,803.84	7,962.87	5,036.49	
7		2017 \$\$			4,079.76	3,738.89	3,738.89	4,284.93	16,068.91	11,809.51	28,847.09	8,569.88	5,420.42	

segmentation by number of customers
EG O&M cost \$764
73% 27% note: split EG costs by # of customers

Meters, Reg & MSAs O&M Costs

10	Total Cost	2013 M\$\$			\$1,541	\$560	\$123	\$98	\$17	\$17	\$34	\$3	\$3	\$10,347
11	Cost Per Customer:	2013 \$\$			2,670.71	3,478.26	2,084.75	3,062.50	17,000.00	17,000.00	34,000.00	3,000.00	3,000.00	
12		2017 \$\$	2,874.30	2,874.30	2,874.30	3,743.41	2,243.67	3,295.95	18,295.91	18,295.91	36,591.81	3,228.69	3,228.69	

Service Lines O&M Costs

13	Total Costs	2013 \$\$												
14		2017 \$\$												
15	Total Service Line Footage		217,973	27,015	244,987	32,325	26,613	11,876	0	0	0	0	0	317,139,587
16	Percent of Total Footage		0.07%	0.01%	0.08%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
17	Allocated SL O&M Costs	2017 \$\$	\$29	\$4	\$32	\$4	\$4	\$2	\$0	\$0	\$0	\$0	\$0	\$41,971
18	Cost Per Customer	2017 \$\$	\$0.05	\$0.11	\$0.06	\$0.03	\$0.06	\$0.05	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.01

Calculation of Customer Service & Information C

5	Total Cost:	2013 M\$\$			\$231	\$69	\$1,030	\$669	\$185	\$175	\$203	\$150	\$82	\$35,366
3	Cost Per Customer:	2013 \$\$			400.35	429.04	17,450.65	20,891.73	185,020.22	175,191.51	202,711.89	149,636.88	81,604.81	6.28
4		2017 \$\$			430.87	461.75	18,780.91	22,484.30	199,124.27	188,546.33	218,164.57	161,043.67	87,825.53	

Calculation of Customer Service & Information C

139 Calculation of Customer Service & Information C
 140 907 Cus Svc-Supervision + Payroll Taxes
 141 908 Cus Svc-Cust Assist Exp (PBR Ex DAP, DSM &
 142 909 Cus Svc-Info & Instruction Exp
 143 910 Cus Svc-Misc CSI Exp
 144
 147
 148 CS&I O&M, 2013 \$000's
 149

	SDG&E	South West Gas	Vernon	Total Whole sale	DGN	UBS	Total Noncore	SYSTEM TOTAL	Sources
1 <u>Calculation of CSI Cost Allocator:</u>									
2 Energy Markets Costs:									
3 Major Markets Staff FTE by Class (mgmnt estima	0.9	1.0	0.8	3.6	0.4	0.0	14.1	14.5	
4 Energy Markets	6.1%	7.1%	5.3%	25.0%	2.9%	0.0%	97.2%	100.0%	
5 Energy Markets	\$113	\$130	\$96	\$458	\$52	\$0	\$1,781	\$1,833	
6 Large C&I:									
7 # Large C&I Customers	0	0	0	0	0	0	577	206,869	2013 Customer Count
8 % Large C&I only	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	100.0%	
9 Large C&I	\$0	\$0	\$0	\$0	\$0	\$0	\$14	\$5,158	
10 NGV	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,430	
11 Residential	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$10,148	
12 Small Business									
13 # G10, G-AC, G-GE Customers only	0	0	0	0	0	0	0	206,292	2013 Customer Count from SCG Cust Cost model "cust 2"
14 Small Business	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	
15 Small Business	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$408	
16 Econ Development									
17 # Large C&I Customers	0	0	0	0	0	0	577	206,869	2013 Customer Count from SCG Cust Cost model "cust 2"
18 % Large C&I only	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	100.0%	
19 Econ Development	\$0	\$0	\$0	\$0	\$0	\$0	(\$0)	(\$2)	
20 Other Residential	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,769	
21 Total	\$113	\$130	\$96	\$458	\$52	\$0	\$1,796	\$22,744	
22 Allocator %	0.5%	0.6%	0.4%	2.0%	0.2%	0.0%	7.9%	100.0%	

102.0%

Weighted Average Meter and House Regulator RECC and Replacement Factors

<u>Line</u>			AVERAGE	AVERAGE	AVERAGE	AVERAGE	WEIGHTED	WEIGHTED	WEIGHTED
	<u>CUSTOMER CLASS</u>	<u>RATE</u>	<u>LABOR COST</u>	<u>METER COST</u>	<u>REGULATOR COST</u>	<u>TOTAL COST</u>	<u>REPLACEMENT</u>	<u>RECC</u>	<u>PVRR</u>
					Dollars		Percent	Percent	
3.	SINGLE FAMILY	GR	171.91	152.67	33.21	357.79	2.80%	9.25%	129.09%
4.	MULTIPLE FAMILY	GR	147.89	78.51	18.56	244.96	2.71%	9.18%	129.14%
5.	MASTER METERED BAND 1	GM,GS	440.21	873.79	199.01	1513.01	2.93%	9.37%	129.01%
6.	MASTER METERED BAND 2	GM,GS	2320.89	10844.41	2063.80	15229.09	3.02%	9.45%	128.96%
7.	RESIDENTIAL WEIGHTED AVERAGE		170.67	146.45	32.51	349.62	2.79%	9.25%	129.09%
8.	SMALL CORE BAND 1	G-10	215.83	294.12	57.54	567.49	2.86%	9.31%	129.05%
9.	SMALL CORE BAND 2	G-10	381.90	787.70	142.24	1311.84	2.93%	9.37%	129.01%
10.	SMALL CORE BAND 3	G-10	818.19	1911.62	391.74	3121.54	2.95%	9.38%	129.00%
11.	SMALL CORE BAND 4	G-10	1232.22	3943.80	1959.18	7135.19	3.01%	9.44%	128.97%
12.	SMALL CORE BAND 5	G-10	1270.50	4383.19	3359.94	9013.64	3.03%	9.46%	128.95%
13.	G10 AVERAGE		430.93	901.17	194.53	1,526.63	2.93%	9.37%	129.01%
14.	GAS COOLING	GAC	1270.50	3942.70	2014.76	7227.96	3.00%	9.44%	128.97%
15.	Natural Gas Vehicles	NGV	5853.97	34407.94	1410.28	41672.19	3.03%	9.46%	128.95%
16.	GAS ENGINES	GENG	1088.44	2698.21	451.65	4238.31	2.95%	9.39%	129.00%
17.	NONCORE COMM/IND TRANSMISSION	G-30	28808.94	180358.76	2782.85	211950.56	3.03%	9.46%	128.95%
18.	NONCORE COMM/IND DISTRIBUTION	G-30	12059.44	73253.85	2965.47	88278.76	3.03%	9.46%	128.95%
19.	NONCORE COMM/IND TOTAL	G-30	12,988.35	79,193.81	2,955.34	95137.51	3.03%	9.46%	128.95%
20.	COGENERATION	G-50	23922.60	153538.98	1770.58	179232.16	3.03%	9.46%	128.95%
21.	EOR	G-40	32782.02	205622.20	2765.38	241169.60	3.03%	9.46%	128.95%
22.	SYSTEM AVERAGE		182.36	187.06	38.91	408.32	2.82%	9.27%	129.08%
22.	INVERSE OF BOOK LIFE		2.44%	3.13%	3.13%				
23.	RECC		8.94%	9.54%	9.54%				
23.	PVRR		129.29%	128.90%	128.90%				

Weighted Average RECC and Replacement Factor for Exclusive Use Facilities

<u>Line</u>			GEMs	AVERAGE TOTAL COST	WEIGHTED REPLACEMENT	WEIGHTED RECC
1.	<u>CUSTOMER CLASS</u>	<u>RATE</u>	Dollars	Dollars	Percent	
3.	NONCORE COMM/IND TRANSMISSION	G-30	522,891	522,891	3.13%	9.54%
4.	NONCORE COMM/IND DISTRIBUTION	G-30	3,709,193	3,709,193	3.13%	9.54%
5.	NONCORE COMM/IND TOTAL	G-30	4,232,084	4,232,084	3.13%	9.54%
6.	COGENERATION	G-50	19,159,757	19,159,757	3.13%	9.54%
7.	EOR	G-40	525,735	525,735	3.13%	9.54%
8.	LONG BEACH		5,071,826	5,071,826	3.13%	9.54%
9.	SAN DIEGO GAS & ELECTRIC		11,907,864	11,907,864	3.13%	9.54%
10.	SOUTHWEST GAS		3,233,019	3,233,019	3.13%	9.54%
11.	VERNON		2,529,362	2,529,362	3.13%	9.54%
12.	DGN		525,735	525,735	3.13%	9.54%
13.	SYSTEM TOTAL		51,417,466	51,417,466	3.13%	9.54%
14.	INVERSE OF BOOK LIFE		3.13%			
15.	RECC factors		9.54%			

SOUTHERN CALIFORNIA GAS

2013 Economic Assumptions Update LEVELIZED ANNUAL CAPITAL COST AND RECC FACTORS

utility social

Auth ROR ==> 8.03%

Fed Tax Rate ==> 35.00%

State Tax Rate ==> 8.84% (d Valorum Rate ==>

1.236%

FERC Account	Account Name
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Book Life	Tax Life	State Tax Life	Percent Salvage	Federal Taxes ?	State Taxes ?	Depreciation Method				LACC Components (in percent)					RECC Factors	PVCC Factors	Sum of Rev Req
						Federal Tax	State Tax	Depr	Capital	Taxes	Taxes	LACC					

GAS UNDERGROUND STORAGE

	9	10	11	12	13	14	15	16	19	20	21	22	23	25	26	27		
G-352 Wells	29	15	22	-45%	TRUE	FALSE	db/sl	150%	db/sl	200%	5.00	3.98	1.61	0.62	11.21	9.55	124.72	216.67
G-353 Lines	45	15	22	-40%	TRUE	FALSE	db/sl	150%	db/sl	200%	3.11	4.50	1.91	0.77	10.29	8.42	124.22	263.83
G-354 Compressor Station Equipment	45	15	22	-5%	TRUE	FALSE	db/sl	150%	db/sl	200%	2.33	4.97	2.10	0.89	10.30	8.42	124.28	320.86
G-356 Purification Equipment	37	15	22	-20%	TRUE	FALSE	db/sl	150%	db/sl	200%	3.24	4.59	1.95	0.79	10.57	8.80	124.15	268.05

GAS TRANSMISSION PLANT

G-365.1 Land	0	0	0	0%	FALSE	FALSE	none	0%	none	0%	0.00	8.03	3.75	1.24	13.01	n/a	162.04	1336.72
G-365.2 Land Rights	0	40	40	0%	FALSE	FALSE	none	0%	sl	0%	0.00	8.03	2.09	1.24	11.35	n/a	141.41	1267.96
G-366 Structures & Improvements	51	39	45	-20%	TRUE	FALSE	sl	0%	db/sl	0%	2.35	5.71	2.66	0.87	11.60	9.40	141.67	367.64
G-367 Mains	57	15	22	-30%	TRUE	FALSE	db/sl	150%	db/sl	200%	2.28	4.89	2.06	0.88	10.11	8.13	124.38	317.36
G-368 Compressor Station Equipment	43	15	22	-10%	TRUE	FALSE	db/sl	150%	db/sl	200%	2.56	4.86	2.06	0.86	10.35	8.50	124.23	304.74
G-369 Measuring & Regulating Equipment	40	15	22	-15%	TRUE	FALSE	db/sl	150%	db/sl	200%	2.88	4.73	2.01	0.83	10.44	8.63	124.17	285.73
G-371 Other Equipment	20	15	22	-5%	TRUE	FALSE	db/sl	150%	db/sl	200%	5.25	4.57	2.05	0.71	12.59	11.14	123.33	215.59

GAS DISTRIBUTION PLANT

G-374.1 Land	0	0	0	0%	FALSE	FALSE	none	0%	db/sl	0%	0.00	8.03	3.75	1.24	13.01	n/a	162.04	1336.72
G-374.2 Land Rights	0	40	40	0%	FALSE	FALSE	none	0%	db/sl	0%	0.00	8.03	2.09	1.24	11.35	n/a	141.41	1267.96
G-375 Structures & Improvements	31	39	45	0%	TRUE	FALSE	sl	0%	db/sl	150%	3.23	5.66	2.69	0.82	12.40	10.50	140.37	313.11
G-376 Mains	55	20	35	-55%	TRUE	FALSE	db/sl	150%	db/sl	200%	2.82	4.78	2.14	0.79	10.53	8.49	129.30	268.88
G-378 Measuring & Regulating Equipment	31	20	35	-85%	TRUE	FALSE	db/sl	150%	db/sl	200%	5.97	3.60	1.48	0.47	11.52	9.76	130.42	190.73
G-380 Services	51	20	35	-95%	TRUE	FALSE	db/sl	150%	db/sl	200%	3.82	4.19	1.91	0.65	10.57	8.57	129.08	185.08
G-381 Meters	32	20	35	0%	TRUE	FALSE	db/sl	150%	db/sl	200%	3.13	5.04	2.30	0.83	11.30	9.54	128.90	280.94
G-382 Meter & Regulator Installations	41	20	35	-10%	TRUE	FALSE	db/sl	150%	db/sl	200%	2.68	5.05	2.26	0.85	10.84	8.94	129.29	306.31
G-383 House Regulators	32	20	35	0%	TRUE	FALSE	db/sl	150%	db/sl	200%	3.13	5.04	2.30	0.83	11.30	9.54	128.90	280.94
G-387 Other Equipment	12	20	35	15%	TRUE	FALSE	db/sl	150%	db/sl	200%	7.08	5.35	3.02	0.75	16.20	14.97	121.90	187.37

GAS GENERAL PLANT

G-390 Structures & Improvements	20	39	45	-25%	TRUE	FALSE	sl	0%	db/sl	0%	6.25	5.00	2.27	0.62	14.14	12.51	138.51	235.09
G-391.1 Office Furniture & Equipment	14	7	10	0%	TRUE	FALSE	db/sl	200%	db/sl	200%	7.14	3.93	1.69	0.68	13.45	12.28	110.72	174.26
G-391.2 Computer Equipment	5	5	6	0%	TRUE	FALSE	db/sl	200%	db/sl	200%	20.00	4.12	1.92	0.53	26.57	25.75	106.02	130.75
G-393 Stores Equipment	20	20	35	0%	TRUE	FALSE	db/sl	150%	db/sl	200%	5.00	4.95	2.36	0.74	13.05	11.54	127.83	227.66
G-394.1 Shop & Garage Equipment	29	20	35	0%	TRUE	FALSE	db/sl	150%	db/sl	200%	3.45	5.00	2.31	0.81	11.56	9.86	128.72	267.64
G-394.3 Large Portable Tools	24	20	35	0%	TRUE	FALSE	db/sl	150%	db/sl	200%	4.17	4.95	2.32	0.77	12.21	10.61	128.31	245.48
G-395 Laboratory Equipment	25	20	35	0%	TRUE	FALSE	db/sl	150%	db/sl	200%	4.00	4.96	2.32	0.78	12.06	10.43	128.41	249.91
G-397 Communications Equipment	15	7	10	0%	TRUE	FALSE	db/sl	150%	db/sl	200%	6.67	4.06	1.73	0.69	13.15	11.94	112.34	180.76
G-398 Miscellaneous Equipment	20	20	35	0%	TRUE	FALSE	db/sl	150%	db/sl	200%	5.00	4.95	2.36	0.74	13.05	11.54	127.83	227.66
G-391.5 Software Programs - 10yr ASL	10	3	3	0%	TRUE	FALSE	sl	0%	db/sl	0%	10.00	3.50	1.35	0.63	15.48	14.49	103.73	149.87
G-391.55 Software Programs - 15yr ASL	15	3	3	0%	TRUE	FALSE	sl	0%	db/sl	0%	6.67	3.54	1.31	0.69	12.21	11.08	104.30	172.03
G-391.6 Software Programs - 20yr ASL	20	3	3	0%	TRUE	FALSE	sl	0%	db/sl	0%	5.00	3.64	1.32	0.74	10.69	9.46	104.75	194.20
G-391.3 Software Programs - 3yr ASL	3	3	3	0%	TRUE	FALSE	sl	0%	db/sl	0%	33.33	4.15	1.94	0.43	39.85	39.22	102.66	118.84
G-391.4 Software Programs - 6yr ASL	6	3	3	0%	TRUE	FALSE	sl	0%	db/sl	0%	16.67	3.61	1.49	0.56	22.33	21.49	103.16	132.14

Table 1
Calculation of Marginal Customer Costs
\$/Customer

Customer Class	CAPEX \$/customer	RECC %	Annualized CAPEX \$/customer	O&M and Loaders \$/customer/ year	Marginal Unit Cost \$/custmer/ year
Residential	\$1,394.27	8.75%	\$122.00	\$101.60	\$223.60
Core C/I	\$4,099.28	8.89%	\$364.60	\$346.70	\$711.30
Gas A/C	\$13,734.35	9.06%	\$1,244.77	\$4,620.40	\$5,865.16
Gas Engine	\$48,323.24	8.64%	\$4,176.78	\$907.74	\$5,084.52
NGV	\$62,935.38	9.21%	\$5,794.55	\$16,486.83	\$22,281.38
Noncore C/I	\$179,258.46	9.12%	\$16,350.27	\$13,828.55	\$30,178.82
Small EG	\$121,936.26	9.12%	\$11,114.75	\$14,143.52	\$25,258.28
Large EG	\$906,717.62	9.43%	\$85,513.35	\$43,130.52	\$128,643.87
EOR	\$333,328.79	9.32%	\$31,056.11	\$51,972.43	\$83,028.54
Long Beach	\$5,071,825.51	9.54%	\$483,937.00	\$402,400.06	\$886,337.07
SDG&E	\$11,907,864.24	9.54%	\$1,136,209.46	\$376,829.08	\$1,513,038.54
Southwest Gas	\$3,233,019.45	9.54%	\$308,484.14	\$488,768.27	\$797,252.41
Vernon	\$2,529,362.03	9.54%	\$241,343.45	\$297,880.00	\$539,223.46
DGN	\$525,735.12	9.54%	\$50,163.93	\$166,266.45	\$216,430.37

SoCalGas
2016 TCAP Phase II

Section 2
Long Run Marginal Distribution Cost Model

**Workpapers to the Prepared Written Testimony of Sharim
Chaudhury**

General Information about the Distribution Model

This model estimates Demand-related Long Run Marginal Costs (LRMC) for SoCalGas' Distribution

Systems, separately for High Pressure and Medium Pressure Distribution Systems.

This workbook contains multiples sheets. These sheets are categorized into:

- a) **Input/Calculations Sheets,**
- b) **Output/Calculation Sheets, and**

Below is a description of each of these sheets

Input/Calculation Sheets:

HPD_Peak_Month_Demand: Cost Driver for High Pressure Distribution Mains. It contains 3 Tables:

- 1: Peak Month Demand by Customer Class: Historical Data,
- 2: Peak Month Demand by Customer Class: Forecast Data,
- 3: Number of customers by class: Historical Data,
- 4: Number of customers by class: Forecasted Data, and
- 5: Level of usage of High Pressure Distribution Service by Customer Class.

MPD_Peak_Day_Demand: Cost Driver for Medium Pressure Distribution Mains. It contains 3 Tables:

- 1: Peak Day Demand by Customer Class: Historical Data,
- 2: Peak Day Demand by Customer Class: Forecast Data, and
- 3: Level of Usage of Medium Pressure Distribution Services by Customer Class.

IN_Investment_History: It contains Historical inputs needed to estimate Annualized Investment-related LRMC. It includes 9 Tables:

- 1: High Pressure Distribution (HPD) Mains Footage Investment: New Business & Replacement Combined,
- 2: Total Plastic Distribution Mains Footage Investment: New Business & Replacement Combined,
(Note: no HP Plastic Distribution Mains)
- 3: Total Steel Distribution Mains (including HP) Footage Investment: New Business & Replacement Combined,
(Medium Pressure (MP) Steel Distribution Mains Footage is calculated as the residual)
- 4: Plastic New Business Vs. Replacement Distribution Mains Footage: Based on a Sample Survey,
- 5: Steel New Business Vs. Replacement Distribution Mains Footage: Based on a Sample Survey,
- 6: Plastic Mains Pressure Betterment Investment as a Fraction of Total Plastic Mains Investment,
- 7: Steel Mains Pressure Betterment Investment as a Fraction of Total Steel Mains Investment,
- 8: Contribution in Aid of Construction as a Fraction of Total Distribution Mains Cost, and
- 9: Account 378 (Meters & Regulator Stations) Investment Info.

OUT_Investment_Forecast: It contains Forecasted inputs needed to estimate Annualized Investment-related LRMC. It includes 1 Table:

- 1: Forecasted Distribution-related Investment Costs:

Intermediate Output/Calculation Sheets:

HPD_Peak_Month_Demand: It calculates 4 Tables:

- 1: Peak Month Demand for Additional Customers Served by Customer Class,
- 2: Average Coincident Peak Month Demand per Customer,
- 3: Coincident Peak Month Demand for additional Customer served, and
- 4: High Pressure Distribution-Service-Usage-Weighted Coincident Peak Month Demand for Additional Customers Served.

Peak_Day_Demand: It calculates 5 Tables:

- 1: Number of Customers by Class,
- 2: Number of Additional Customers Served,
- 3: Average Peak Day Demand per Customer,
- 4: Peak Day Demand for Additional Customer served, and
- 5: Medium Pressure Distribution-Service-Usage-Weighted Peak Day Demand for Additional Customers Served.

OUT_Investment_History: It contains 4 Tables:

- 1: Plastic Distribution Mains: New Business, Pressure Betterment & Contribution in Aid of New Construction,
- 2: Steel Distribution Mains: New Business, Pressure Betterment & Contribution in Aid of New Construction,
- 3: High Pressure Distribution Mains: New Business, Pressure Betterment & Contribution in Aid of New Construction, and
- 4: Load-Growth-related HP & MP Distribution Investments by Components & Total

OUT_Investment_Forecast: It contains 1 Table:

- 1: Allocation Factor, High & Medium Pressure Distribution Mains Forecasted Investments.

OUT_MP_LRMC: It contains 4 Table:

- 1: System Demand Determinate, it estimates the distribution LRMC,
- 2: Regression of Distribution Investment, it estimates Regression Coefficients for MP and HP Investment,
- 3: Calculate Weighted Average RECC Factor, it estimates Regression Coefficients for HP Investment, and
- 4: % Share of investment between MPD and HPD.

HPD Peak Month Demand
2016 TCAP Phase II

Year	Residential	Core C&I G10	Gas AC	NGV	Gas Eng	Total Core	NonCore C&I G-30	EOR G-40	EG G-50	Total Noncore	Wholesale	Total System	Cumulative Total
Table 1: Coincident Peak Month Demand by Customer Class (Mcf): Analysis Period													
2004	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	40,810,307	12,723,677	8,444	583,156	76,352	54,201,936	11,980,210	2,078,548	17,278,102	31,336,860	0	85,538,796	
2006	41,263,872	12,763,939	8,515	639,125	90,669	54,766,119	11,575,421	3,016,162	18,231,651	32,823,233	0	87,589,353	
2007	39,022,717	13,277,285	5,570	693,775	93,888	53,093,235	12,491,875	2,927,457	21,156,118	36,575,450	0	89,668,684	
2008	39,537,199	12,346,790	6,027	712,390	68,184	52,670,589	11,578,320	2,678,949	28,081,864	42,339,133	0	95,009,723	
2009	40,233,192	12,098,234	5,564	770,923	80,495	53,188,408	10,909,986	1,261,164	19,759,387	31,930,537	0	85,118,945	
2010	39,291,380	11,899,955	6,228	817,970	60,432	52,075,964	12,624,707	1,197,599	26,180,912	40,003,218	0	92,079,182	
2011	39,529,368	11,759,555	4,780	821,302	61,959	52,176,963	12,462,498	1,100,192	18,800,168	32,362,858	0	84,539,821	
2012	40,549,961	12,540,601	4,488	887,719	80,223	54,062,991	12,336,990	574,786	23,602,690	36,514,465	0	90,577,457	
2013	41,530,097	12,605,015	4,643	914,448	119,725	55,173,927	12,035,985	2,017,821	23,384,401	37,438,207	0	92,612,133	
2014	39,828,552	11,675,462	5,237	1,005,988	90,102	52,605,341	13,004,717	1,413,592	22,173,357	36,591,666	0	89,197,007	
2015	39,621,475	11,752,879	3,630	1,064,033	135,446	52,577,465	12,440,860	1,909,475	26,774,069	41,124,403	0	93,701,868	
2016	39,298,145	11,699,796	3,630	1,125,428	136,801	52,263,800	12,401,532	1,909,475	22,166,959	36,477,965	0	88,741,765	
2017	39,229,659	11,616,515	3,630	1,190,365	138,169	52,178,339	12,263,624	1,909,475	22,519,353	36,692,452	0	88,870,791	
2018	39,090,991	11,520,793	3,630	1,259,049	139,551	52,014,014	12,136,785	1,909,475	22,715,411	36,761,671	0	88,775,685	
2019	38,913,306	11,390,963	3,630	1,331,696	140,946	51,780,542	11,963,667	1,909,475	22,923,687	36,796,829	0	88,577,370	
2020	38,571,779	11,182,510	2,017	1,408,535	140,946	51,305,787	11,743,837	1,909,475	22,967,365	36,620,676	0	87,926,463	

Table 1': Number of Customers by Class

2004	4,987,210	208,860	22	164	982	5,197,238	839	55	222	1,116	0	5,198,354	
2005	5,054,210	210,063	21	169	957	5,265,420	766	51	187	1,004	0	5,266,424	
2006	5,115,570	210,956	19	177	924	5,327,646	739	49	192	980	0	5,328,626	
2007	5,179,346	210,784	17	216	878	5,391,241	731	42	242	1,015	0	5,392,256	
2008	5,248,551	211,449	15	293	843	5,461,151	674	41	222	937	0	5,462,088	
2009	5,257,766	209,301	15	341	819	5,468,242	649	40	213	902	0	5,469,144	
2010	5,282,743	207,368	12	397	734	5,491,254	637	34	205	876	0	5,492,130	
2011	5,355,438	205,300	12	198	699	5,561,647	615	33	189	837	0	5,562,484	
2012	5,380,407	204,351	10	199	695	5,585,662	607	38	199	844	0	5,586,506	
2013	5,439,624	206,292	9	205	709	5,646,839	577	32	220	829	0	5,647,668	
2014	5,432,625	204,498	9	298	718	5,638,148	606	29	282	917	0	5,639,065	
2015	5,457,810	206,092	9	310	723	5,664,944	611	29	284	924	0	5,665,868	
2016	5,504,197	206,676	9	326	730	5,711,938	616	29	285	930	0	5,712,868	
2017	5,558,410	207,146	9	351	738	5,766,654	619	29	285	933	0	5,767,587	
2018	5,617,329	207,377	9	355	745	5,825,815	621	29	285	935	0	5,826,750	
2019	5,677,687	207,429	9	370	753	5,886,248	624	29	284	937	0	5,887,185	
2020	5,738,021	207,403	5	386	753	5,946,567	627	29	283	939	0	5,947,506	

Table 2': Number of Additional Customers Served by Customer Class = change in # customers each year

2004	0	0	0	0	0	0	0	0	0	0	0	0
2005	67,000	1,203	0	5	0	68,208	0	0	0	0	0	68,208
2006	61,360	893	0	8	0	62,261	0	0	5	5	0	62,266
2007	63,776	0	0	39	0	63,815	0	0	50	50	0	63,865
2008	69,205	665	0	77	0	69,947	0	0	0	0	0	69,947
2009	9,215	0	0	48	0	9,263	0	0	0	0	0	9,263
2010	24,977	0	0	56	0	25,033	0	0	0	0	0	25,033
2011	72,695	0	0	0	0	72,695	0	0	0	0	0	72,695
2012	24,969	0	0	1	0	24,970	0	5	10	15	0	24,985
2013	59,217	1,941	0	6	14	61,178	0	0	21	21	0	61,199
2014	0	0	0	93	9	102	29	0	62	91	0	193
2015	25,185	1,594	0	12	5	26,796	5	0	2	7	0	26,803
2016	46,387	584	0	16	7	46,994	5	0	1	6	0	46,999
2017	54,213	471	0	25	7	54,716	3	0	0	4	0	54,720
2018	58,919	231	0	4	7	59,161	2	0	0	2	0	59,163
2019	60,359	51	0	15	7	60,433	3	0	0	3	0	60,435
2020	60,333	0	0	16	0	60,349	3	0	0	3	0	60,352

Table 2: Average Coincident Peak Month Demand Per Customer (Mcf) = Total Demand by class / total # customers in class

2004	0	0	0	0	0	0	0	0	0	0	0	0
2005	8.1	60.6	402.1	3,450.6	79.8	10.3	15,640.0	40,755.8	92,396.3	31,212.0	0.0	16.2
2006	8.1	60.5	448.2	3,610.9	98.1	10.3	15,663.6	61,554.3	94,956.5	33,493.1	0.0	16.4
2007	7.5	63.0	327.6	3,211.9	106.9	9.8	17,088.7	69,701.4	87,422.0	36,034.9	0.0	16.6
2008	7.5	58.4	401.8	2,431.4	80.9	9.6	17,178.5	65,340.2	126,494.9	45,185.8	0.0	17.4
2009	7.7	57.8	370.9	2,260.8	98.3	9.7	16,810.5	31,529.1	92,767.1	35,399.7	0.0	15.6
2010	7.4	57.4	519.0	2,060.4	82.3	9.5	19,819.0	35,223.5	127,711.8	45,665.8	0.0	16.8
2011	7.4	57.3	398.3	4,148.0	88.6	9.4	20,264.2	33,339.2	99,471.8	38,665.3	0.0	15.2
2012	7.5	61.4	448.8	4,460.9	115.4	9.7	20,324.5	15,125.9	118,606.5	43,263.6	0.0	16.2
2013	7.6	61.1	515.9	4,460.7	168.9	9.8	20,859.6	63,056.9	106,292.7	45,160.7	0.0	16.4
2014	7.3	57.1	581.9	3,375.8	125.5	9.3	21,459.9	48,744.6	78,554.2	39,892.0	0.0	15.8
2015	7.3	57.0	403.4	3,435.4	187.3	9.3	20,363.2	65,844.0	94,137.0	44,489.4	0.0	16.5
2016	7.1	56.6	403.4	3,454.3	187.3	9.1	20,144.0	65,844.0	77,710.7	39,228.1	0.0	15.5
2017	7.1	56.1	403.4	3,391.2	187.3	9.0	19,808.4	65,844.0	78,928.9	39,309.5	0.0	15.4
2018	7.0	55.6	403.4	3,546.5	187.3	8.9	19,529.1	65,844.0	79,763.3	39,306.5	0.0	15.2
2019	6.9	54.9	403.4	3,597.5	187.3	8.8	19,170.0	65,844.0	80,685.2	39,262.6	0.0	15.0
2020	6.7	53.9	403.4	3,651.6	187.3	8.6	18,720.5	65,844.0	81,127.4	38,981.9	0.0	14.8

Table 3: Coincident Peak Month Demand For Additional Customers Served (Mcf) = # additional customers * average demand per customers

2004	0	0	0	0	0	0	0	0	0	0	0	0
2005	540,993	72,867	0	17,253	0	631,112	0	0	0	0	0	631,112
2006	494,950	54,031	0	28,887	0	577,868	0	0	474,783	474,783	0	1,052,651
2007	480,507	0	0	125,265	0	605,772	0	0	4,371,099	4,371,099	0	4,976,871
2008	521,319	38,840	0	187,215	0	747,375	0	0	0	0	0	747,375
2009	70,515	0	0	108,517	0	179,032	0	0	0	0	0	179,032
2010	185,771	0	0	115,381	0	301,152	0	0	0	0	0	301,152
2011	536,574	0	0	0	0	536,574	0	0	0	0	0	536,574
2012	188,181	0	0	4,461	0	192,642	0	75,630	1,186,065	1,261,695	0	1,454,337
2013	452,106	118,600	0	26,764	2,364	599,835	0	0	2,232,147	2,232,147	0	2,831,982
2014	0	0	0	313,949	1,098	315,048	622,338	0	4,891,444	5,513,782	0	5,828,829
2015	182,835	90,897	0	40,297	1,013	315,041	100,753	0	202,161	302,915	0	617,956
2016	331,185	33,052	0	55,513	1,354	421,104	94,615	0	64,788	159,403	0	580,507
2017	382,621	26,393	0	85,496	1,368	495,878	68,703	0	4,899	73,601	0	569,479
2018	410,015	12,829	0	14,186	1,382	438,411	46,051	0	0	46,051	0	484,462
2019	413,684	2,818	0	54,557	1,396	472,454	50,096	0	0	50,096	0	522,550
2020	405,567	0	0	56,805	0	462,372	60,660	0	0	60,660	0	523,032

Table 1: Level of Usage of High Pressure Distribution Service by Customer Class

all years	100.00%	99.28%	100.00%	74.26%	95.89%	56.72%	59.43%	10.65%
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Table 4: High Pressure Distribution-Service-Usage-Weighted Coincident Peak Month Demand For Additional Customers Served (Mcf) = total demand for additional customers * % of customers that use HPD system.

2004	0	0	0	0	0	0	0	0	0	0	0	0
2005	540,966	72,342	0	12,813	0	613,307	0	0	0	0	0	613,307
2006	494,925	53,642	0	21,452	0	548,567	0	0	50,548	50,548	0	599,116
2007	480,483	0	0	93,025	0	480,483	0	0	465,376	465,376	0	945,859
2008	521,293	38,560	0	139,030	0	559,854	0	0	0	0	0	559,854
2009	70,511	0	0	80,587	0	70,511	0	0	0	0	0	70,511
2010	185,762	0	0	85,685	0	185,762	0	0	0	0	0	185,762
2011	536,547	0	0	0	0	536,547	0	0	0	0	0	536,547
2012	188,172	0	0	3,313	0	188,172	0	44,946	126,276	171,222	0	359,394
2013	452,084	117,746	0	19,876	2,267	572,097	0	0	237,649	237,649	0	809,746
2014	0	0	0	233,146	1,053	1,053	352,961	0	520,775	873,736	0	874,790
2015	182,826	90,242	0	29,925	972	274,039	57,143	0	21,523	78,666	0	352,705
2016	331,169	32,814	0	41,225	1,299	365,281	53,661	0	6,898	60,559	0	425,840
2017	382,602	26,203	0	63,491	1,312	410,116	38,965	0	522	39,487	0	449,603
2018	409,994	12,737	0	10,535	1,325	424,056	26,118	0	0	26,118	0	450,174
2019	413,663	2,797	0	40,515	1,338	417,798	28,412	0	0	28,412	0	446,211

MPD Peak Day Demand
2016 TCAP Phase II

Year	Residential	Core C&I G10	Gas AC	NGV	Gas Eng	Total Core	NonCore C&I G-30	EOR G-40	EG G-50	Total Noncore	Wholesale	Total System	Cummulative Total
Table 1: Peak Day Demand by Customer Class (Mcf): Analysis Period													
2004	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	2,388,076	655,975	272	18,811	2,463	3,065,598	405,956	67,000	686,406	1,159,362	0	4,224,960	
2006	2,411,263	656,552	275	20,617	2,925	3,091,632	392,240	97,223	724,288	1,213,751	0	4,305,383	
2007	2,357,847	675,769	180	22,380	3,029	3,059,203	423,295	94,364	840,468	1,358,126	0	4,417,329	
2008	2,377,627	643,516	194	22,980	2,199	3,046,517	392,338	86,353	1,115,606	1,594,298	0	4,640,815	
2009	2,411,219	634,527	179	24,868	2,597	3,073,391	369,691	40,652	784,980	1,195,324	0	4,268,715	
2010	2,395,458	627,698	201	26,386	1,949	3,051,693	427,796	38,603	1,040,087	1,506,486	0	4,558,179	
2011	2,404,928	621,413	154	26,494	1,999	3,054,988	422,299	35,464	746,873	1,204,636	0	4,259,623	
2012	2,430,608	642,834	145	28,636	2,588	3,104,811	418,046	18,528	937,662	1,374,236	0	4,479,047	
2013	2,482,105	648,740	150	29,498	3,862	3,164,356	407,846	65,043	928,990	1,401,879	0	4,566,235	
2014	2,378,395	573,089	169	32,451	2,907	2,987,010	436,406	61,596	875,981	1,373,983	0	4,360,993	
2015	2,370,313	577,980	117	34,324	4,369	2,987,103	418,218	61,596	1,107,427	1,587,240	0	4,574,343	
2016	2,358,177	575,608	117	36,304	4,413	2,974,619	416,949	61,596	882,902	1,361,447	0	4,336,066	
2017	2,359,183	571,769	117	38,399	4,457	2,973,925	412,500	61,596	891,588	1,365,684	0	4,339,609	
2018	2,357,101	567,354	117	40,614	4,502	2,969,687	408,409	61,596	878,500	1,348,505	0	4,318,192	
2019	2,353,225	561,435	117	42,958	4,547	2,962,282	402,824	61,596	914,718	1,379,138	0	4,341,420	
2020	2,341,235	551,718	65	45,437	4,547	2,943,001	395,733	61,596	910,839	1,368,168	0	4,311,169	

Table 1': Number of Customers by Class

2004	4,987,210	208,860	22	164	982	5,197,238	839	55	222	1,116	0	5,198,354
2005	5,054,210	210,063	21	169	957	5,265,420	766	51	187	1,004	0	5,266,424
2006	5,115,570	210,956	19	177	924	5,327,646	739	49	192	980	0	5,328,626
2007	5,179,346	210,784	17	216	878	5,391,241	731	42	242	1,015	0	5,392,256
2008	5,248,551	211,449	15	293	843	5,461,151	674	41	222	937	0	5,462,088
2009	5,257,766	209,301	15	341	819	5,468,242	649	40	213	902	0	5,469,144
2010	5,282,743	207,368	12	397	734	5,491,254	637	34	205	876	0	5,492,130
2011	5,355,438	205,300	12	198	699	5,561,647	615	33	189	837	0	5,562,484
2012	5,380,407	204,351	10	199	695	5,585,662	607	38	199	844	0	5,586,506
2013	5,439,624	206,292	9	205	709	5,646,839	577	32	220	829	0	5,647,668
2014	5,432,625	204,498	9	298	718	5,638,148	606	29	282	917	0	5,639,065
2015	5,457,810	206,092	9	310	723	5,664,944	611	29	284	924	0	5,665,868
2016	5,504,197	206,676	9	326	730	5,711,938	616	29	285	930	0	5,712,868
2017	5,558,410	207,146	9	351	738	5,766,654	619	29	285	933	0	5,767,587
2018	5,617,329	207,377	9	355	745	5,825,815	621	29	285	935	0	5,826,750
2019	5,677,687	207,429	9	370	753	5,886,248	624	29	284	937	0	5,887,185

Table 2': Number of Additional Customers Served by Customer Class = change in # customers each year

2004	0	0	0	0	0	0	0	0	0	0	0	0
2005	67,000	1,203	0	5	0	68,208	0	0	0	0	0	68,208
2006	61,360	893	0	8	0	62,261	0	0	5	5	0	62,266
2007	63,776	0	0	39	0	63,815	0	0	50	50	0	63,865
2008	69,205	665	0	77	0	69,947	0	0	0	0	0	69,947
2009	9,215	0	0	48	0	9,263	0	0	0	0	0	9,263
2010	24,977	0	0	56	0	25,033	0	0	0	0	0	25,033
2011	72,695	0	0	0	0	72,695	0	0	0	0	0	72,695
2012	24,969	0	0	1	0	24,970	0	5	10	15	0	24,985
2013	59,217	1,941	0	6	14	61,178	0	0	21	21	0	61,199
2014	0	0	0	93	9	102	29	0	62	91	0	193
2015	25,185	1,594	0	12	5	26,796	5	0	2	7	0	26,803
2016	46,387	584	0	16	7	46,994	5	0	1	6	0	46,999
2017	54,213	471	0	25	7	54,716	3	0	0	4	0	54,720
2018	58,919	231	0	4	7	59,161	2	0	0	2	0	59,163
2019	60,359	51	0	15	7	60,433	3	0	0	3	0	60,435

Table 2: Average Peak Day Demand Per Customer (Mcf/d) = Total Demand by class / total # customers in class

2004	0	0	0	0	0	0	0	0	0	0	0	0
2005	0.47	3.12	12.97	111.31	2.57	0.58	529.97	1313.73	3670.62	1154.74	0.00	0.80
2006	0.47	3.11	14.46	116.48	3.17	0.58	530.77	1984.14	3772.33	1238.52	0.00	0.81
2007	0.46	3.21	10.57	103.61	3.45	0.57	579.06	2246.76	3473.01	1338.06	0.00	0.82
2008	0.45	3.04	12.96	78.43	2.61	0.56	582.10	2106.18	5025.25	1701.49	0.00	0.85
2009	0.46	3.03	11.97	72.93	3.17	0.56	569.63	1016.31	3685.35	1325.19	0.00	0.78
2010	0.45	3.03	16.74	66.46	2.66	0.56	671.58	1135.40	5073.60	1719.73	0.00	0.83
2011	0.45	3.03	12.85	133.81	2.86	0.55	686.67	1074.66	3951.71	1439.23	0.00	0.77
2012	0.45	3.15	14.48	143.90	3.72	0.56	688.71	487.57	4711.87	1628.24	0.00	0.80
2013	0.46	3.14	16.64	143.89	5.45	0.56	706.84	2032.58	4222.68	1691.05	0.00	0.81
2014	0.44	2.80	18.77	108.90	4.05	0.53	720.14	2124.00	3103.96	1497.91	0.00	0.77
2015	0.43	2.80	13.01	110.82	6.04	0.53	684.54	2124.00	3893.69	1717.12	0.00	0.81
2016	0.43	2.79	13.01	111.43	6.04	0.52	677.26	2124.00	3095.19	1464.09	0.00	0.76
2017	0.42	2.76	13.01	109.39	6.04	0.52	666.28	2124.00	3124.96	1463.09	0.00	0.75
2018	0.42	2.74	13.01	114.40	6.04	0.51	657.16	2124.00	3084.78	1441.86	0.00	0.74
2019	0.41	2.71	13.01	116.05	6.04	0.50	645.46	2124.00	3219.56	1471.56	0.00	0.74

Table 3: Peak Day Demand For Additional Customers Served (Mcf/d) = # additional customers * average demand per customers

2004	0	0	0	0	0	0	0	0	0	0	0	0
2005	31,657	3,757	0	557	0	35,970	0	0	0	0	0	35,970
2006	28,923	2,779	0	932	0	32,634	0	0	18,862	18,862	0	51,495
2007	29,033	0	0	4,041	0	33,074	0	0	173,650	173,650	0	206,725
2008	31,350	2,024	0	6,039	0	39,414	0	0	0	0	0	39,414
2009	4,226	0	0	3,501	0	7,727	0	0	0	0	0	7,727
2010	11,326	0	0	3,722	0	15,048	0	0	0	0	0	15,048
2011	32,645	0	0	0	0	32,645	0	0	0	0	0	32,645
2012	11,280	0	0	144	0	11,424	0	2,438	47,119	49,557	0	60,980
2013	27,021	6,104	0	863	76	34,064	0	0	88,676	88,676	0	122,741
2014	0	0	0	10,127	35	10,163	20,884	0	193,241	214,125	0	224,288
2015	10,938	4,470	0	1,300	33	16,741	3,387	0	8,362	11,749	0	28,489
2016	19,874	1,626	0	1,791	44	23,334	3,181	0	2,580	5,761	0	29,096
2017	23,010	1,299	0	2,758	44	27,111	2,311	0	194	2,505	0	29,616
2018	24,723	632	0	458	45	25,857	1,550	0	0	1,550	0	27,407
2019	25,017	139	0	1,760	45	26,961	1,687	0	0	1,687	0	28,647

Table 1: Level of Usage of Medium Pressure Distribution Service by Customer Class

all years	99.52%	93.33%	50.29%	31.26%	79.48%	19.24%	0.49%	3.47%
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Table 4: Medium Pressure Distribution-Service-Usage-Weighted Peak Day Demand For Additional Customers Served (Mcf/d) = total demand for additional customers * % of customers that use HPD system.

2004	0	0	0	0	0	0	0	0	0	0	0	0
2005	31,506	3,506	0	174	0	35,187	0	0	0	0	0	35,187
2006	28,785	2,594	0	291	0	31,670	0	0	655	655	0	32,326
2007	28,895	0	0	1,263	0	30,158	0	0	6,034	6,034	0	36,192
2008	31,201	1,889	0	1,888	0	34,978	0	0	0	0	0	34,978
2009	4,206	0	0	1,094	0	5,300	0	0	0	0	0	5,300
2010	11,272	0	0	1,163	0	12,435	0	0	0	0	0	12,435
2011	32,489	0	0	0	0	32,489	0	0	0	0	0	32,489
2012	11,226	0	0	45	0	11,271	0	12	1,637	1,649	0	12,920
2013	26,892	5,697	0	270	61	32,920	0	0	3,081	3,081	0	36,001
2014	0	0	0	3,165	28	3,194	4,019	0	6,715	10,734	0	13,927
2015	10,886	4,172	0	406	26	15,490	652	0	291	942	0	16,433
2016	19,779	1,518	0	560	35	21,891	612	0	90	702	0	22,593
2017	22,900	1,212	0	862	35	25,010	445	0	7	451	0	25,461
2018	24,605	590	0	143	35	25,373	298	0	0	298	0	25,672
2019	24,898	130	0	550	36	25,613	325	0	0	325	0	25,938

2016 TCAP Phase II

Table 1: High Pressure Distribution Mains Footage Investment: New Business & Replacement Combined

Col. 1 Year	2 1/2"	3 3/4"	4 1"	5 1 1/4"	6 2"	7 3"	8 4"	9 6"	10 8"	11 10"	12 12"	13 16"	14 20"	15 24"	16 26"	17 30"	Total
2004	0	3	24	0	6,935	1,161	17,916	35,977	68,553	13,775	2,205	0	0	0	0	0	146,549
2005	0	0	0	0	5,258	330	17,752	15,989	25,904	29,614	1,763	0	0	0	0	0	96,610
2006	0	13	246	0	8,442	605	3,454	2,891	103,361	107	14,204	47	0	0	0	0	133,370
2007	0	0	3	0	2,370	101	2,591	22,884	34,680	5,056	11,962	0	0	1,848	0	0	81,495
2008	0	0	1	0	2,620	85	2,350	35,124	55,730	5,724	513	0	0	0	0	0	102,147
2009	0	0	4	0	353	1,194	7,848	30,932	26,534	95	61	422	0	0	0	0	67,443
2010	0	0	0	0	2,507	676	4,995	5,655	6,721	10,583	2,781	0	0	0	0	0	33,918
2011	0	0	55	0	1,361	2,385	6,065	13,131	15,731	8,276	365	2	1,426	0	0	0	48,797
2012	0	19	0	0	371	105	14,080	29,528	37,001	19,713	3,013	3,808	0	0	0	0	107,638
2013	0	0	195	0	517	2,514	13,519	3,911	5,746	11,493	1,802	0	0	0	0	0	39,697

Table 2: Total Plastic Distribution Mains Footage Investment: New Business & Replacement Combine

Col. 1 Year	Southern California Gas Company							SoCal Total
	2 1/2"	3 1"	4 2"	5 3"	6 4"	7 6"	8 8"	
2004	489	12,482	2,999,028	176,138	420,528	179,673	64,088	3,852,426
2005	0	13,684	3,496,903	147,423	431,732	231,395	270,515	4,591,652
2006	128	9,161	3,433,117	123,327	529,345	222,375	104,925	4,422,378
2007	0	8,877	2,673,915	157,539	532,221	158,092	113,116	3,643,760
2008	0	4,723	1,002,332	85,915	256,664	97,567	39,213	1,486,414
2009	0	2,956	553,274	43,539	131,875	48,693	58,183	838,520
2010	0	2,348	451,121	38,869	118,911	53,496	31,821	696,566
2011	0	2,101	682,633	50,570	93,241	20,597	8,638	857,780
2012	0	2,355	430,616	50,330	111,985	19,577	12,759	627,622
2013	0	1,829	549,059	51,136	97,404	23,010	14,218	736,656

Table 3: Total Steel Distribution Mains (including HP) Footage Investment: New Business & Replacement Combined

Col. 1 Year	Southern California Gas Company															SoCal Total	
	2 1/2"	3 3/4"	4 1"	5 1 1/4"	6 2"	7 3"	8 4"	9 6"	10 8"	11 10"	12 12"	13 16"	14 20"	15 24"	16 26"		17 30"
2004	0	3	31	13	16,188	4,854	25,536	38,201	70,423	14,015	2,273	1	0	0	0	0	171,538
2005	0	0	15	2	11,404	4,122	23,396	21,233	26,487	29,614	2,392	0	0	0	0	0	118,665
2006	0	13	977	0	12,105	2,655	8,420	5,111	104,281	1,104	14,351	47	0	0	0	0	149,064
2007	0	0	0	0	4,752	3,149	6,430	25,172	42,315	6,175	12,540	42	0	0	0	0	100,575
2008	0	20	0	0	6,486	4,708	6,318	33,877	55,426	5,729	410	0	0	0	0	0	112,974
2009	0	0	0	0	9,184	2,412	12,817	34,678	34,501	2,028	967	2,203	1,768	0	0	0	100,558
2010	0	0	0	0	5,234	791	6,985	9,992	9,340	11,962	2,376	0	0	0	0	0	46,680
2011	0	0	50	0	1,925	3,496	4,347	15,451	12,124	3,947	1,523	643	1,426	0	0	0	44,932
2012	0	0	2	0	1,815	672	12,021	21,002	15,241	11,103	3,146	0	0	0	0	0	65,002
2013	0	68	195	0	2,157	562	14,031	4,798	5,104	1,403	5,332	331	0	0	0	0	33,981

Table 4: Plastic New Business Vs. Replacement Distribution Mains Footage: Based on a Sample Survey

Year	Col. 1 Unique Row Identifier	Col. 2 Investment Type	Col. 3 1/2"	Col. 4 1"	Col. 5 2"	Col. 6 3"	Col. 7 4"	Col. 8 6"	Col. 9 8"	Total
2004	2004.1	New Business	352	9,986	2,750,360	137,941	351,748	115,295	41501	3,407,183
	2004.2	Replacement	137	2,496	248,668	38,197	68,780	67,656	19309	445,243
	2004.3	New Business %	71.98%	80.00%	91.71%	78.31%	83.64%	63.02%	68.25%	88.44%
2005	2005.1	New Business	0	10,539	3,228,164	102,822	386,760	173,390	72234	3,973,909
	2005.2	Replacement	0	3,145	268,739	44,541	44,972	52,388	19646	433,431
	2005.3	New Business %	0.00%	77.02%	92.31%	69.77%	89.58%	76.80%	78.62%	90.17%
2006	2006.1	New Business	0	7,599	3,227,106	91,227	476,786	202,137	98434	4,103,289
	2006.2	Replacement	0	1,690	206,011	32,100	52,559	20,238	6491	319,089
	2006.3	New Business %	0.00%	81.81%	94.00%	73.97%	90.07%	90.90%	93.81%	92.78%
2007	2007.1	New Business	0	5,567	2,410,968	92,756	430,855	113,127	91433	3,144,706
	2007.2	Replacement	0	3,310	262,947	64,783	101,366	44,965	21683	499,054
	2007.3	New Business %	0.00%	62.71%	90.17%	58.88%	80.95%	71.56%	80.83%	86.30%
2008	2008.1	New Business	0	3,308	739,710	38,466	144,960	29,107	8467	964,018
	2008.2	Replacement	0	1,413	262,622	47,449	111,704	66,322	30746	520,256
	2008.3	New Business %	0.00%	70.07%	73.80%	44.77%	56.48%	30.50%	21.59%	64.95%
2009	2009.1	New Business	0	600	313,948	9,304	77,995	9,030	29731	440,608
	2009.2	Replacement	0	2,356	239,324	34,235	53,880	39,663	28452	397,910
	2009.3	New Business %	0.00%	20.30%	56.74%	21.37%	59.14%	18.54%	51.10%	52.55%
2010	2010.1	New Business	0	810	242,438	14,007	42,301	13,723	8560	321,839
	2010.2	Replacement	0	1,538	208,683	24,862	76,610	39,773	23261	374,727
	2010.3	New Business %	0.00%	34.50%	53.74%	36.04%	35.57%	25.65%	26.90%	46.20%
2011	2011.1	New Business	0	369	375,921	7,921	38,565	4,392	7698	434,866
	2011.2	Replacement	0	1,732	306,712	42,649	54,676	16,205	940	422,914
	2011.3	New Business %	0.00%	17.56%	55.07%	15.66%	41.36%	21.32%	89.12%	50.70%
2012	2012.1	New Business	0	1,180	272,025	24,169	71,556	12,395	3147	384,472
	2012.2	Replacement	0	1,175	158,591	26,161	40,429	7,182	9612	243,150
	2012.3	New Business %	0.00%	50.11%	63.17%	48.02%	63.90%	63.31%	24.66%	61.26%
2013	2013.1	New Business	0	514	440,182	36,157	67,319	13,548	9260	566,980
	2013.2	Replacement	0	1,315	108,877	14,979	30,085	9,462	4958	169,676
	2013.3	New Business %	0.00%	28.10%	80.17%	70.71%	69.11%	58.88%	65.13%	76.97%

Table 5: Steel New Business Vs. Replacement Distribution Mains Footage: Based on a Sample Survey

Year	Unique Row Identifier	Investment Type	Col. 1 1/2"	2 3/4"	3 1"	4 1 1/4"	5 2"	6 3"	7 4"	8 6"	9 8"	10 10"	11 12"	12 16"	13 20"	14 24"	15 26"	16 30"	17 Total	18
2004	2004.1	New Business	0	0	0	13	6286	868	3946	25186	40665	0	0	0	0	0	0	0	76,964	
	2004.2	Replacement	0	3	0	31	9902	3986	21590	13015	29758	14015	2273	1	0	0	0	0	94,574	
	2004.3	New Business %	0.00%	0.00%	0.00%	29.55%	38.83%	17.88%	15.45%	65.93%	57.74%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	44.87%	
2005	2005.1	New Business	0	0	0	0	4685	943	14273	15775	5199	0	19	0	0	0	0	0	40,894	
	2005.2	Replacement	0	0	15	2	6719	3175	8950	5458	21288	29614	2373	0	0	0	0	0	77,594	
	2005.3	New Business %	0.00%	0.00%	0.00%	0.00%	41.08%	22.90%	61.46%	74.29%	19.63%	0.00%	0.79%	0.00%	0.00%	0.00%	0.00%	0.00%	34.51%	
2006	2006.1	New Business	0	0	246	0	7362	1	3588	2019	35856	0	0	0	0	0	0	0	49,072	
	2006.2	Replacement	0	13	731	0	4185	1952	2247	2780	2471	1074	9001	47	0	0	0	0	24,501	
	2006.3	New Business %	0.00%	0.00%	25.18%	0.00%	63.76%	0.05%	61.49%	42.07%	93.55%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	66.70%	
2007	2007.1	New Business	0	0	0	0	244	0	262	131	0	5052	0	0	0	0	0	0	5,689	
	2007.2	Replacement	0	0	0	0	4508	3147	6168	25041	42311	1123	12540	42	0	1848	0	0	96,728	
	2007.3	New Business %	0.00%	0.00%	0.00%	0.00%	5.13%	0.00%	4.07%	0.52%	0.00%	81.81%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.55%	
2008	2008.1	New Business	0	0	0	0	1888	0	1491	2727	0	0	0	0	0	0	0	0	6,106	
	2008.2	Replacement	0	20	0	0	4596	4710	4827	33288	55426	5729	410	0	0	0	0	0	109,006	
	2008.3	New Business %	0.00%	0.00%	0.00%	0.00%	29.12%	0.00%	23.60%	7.57%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.30%	
2009	2009.1	New Business	0	0	0	0	1433	1154	9534	4	30	0	0	0	0	0	0	0	12,155	
	2009.2	Replacement	0	0	0	0	7751	1258	3283	34674	34471	2028	967	2203	1768	0	0	0	88,403	
	2009.3	New Business %	0.00%	0.00%	0.00%	0.00%	15.60%	47.84%	74.39%	0.01%	0.09%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	12.09%	
2010	2010.1	New Business	0	0	0	0	743	0	37	5	0	0	0	0	0	0	0	0	785	
	2010.2	Replacement	0	0	0	0	4491	791	6948	9987	9340	11962	2376	0	0	0	0	0	45,895	
	2010.3	New Business %	0.00%	0.00%	0.00%	0.00%	14.20%	0.00%	0.53%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.68%	
2011	2011.1	New Business	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3	
	2011.2	Replacement	0	0	50	0	1928	3494	597	5453	7590	761	1523	643	1426	0	0	0	23,465	
	2011.3	New Business %	0.00%	0.00%	0.00%	0.00%	0.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	
2012	2012.1	New Business	0	0	0	0	293	43	353	88	0	0	0	0	0	0	0	0	777	
	2012.2	Replacement	0	0	2	0	1522	629	542	250	4412	1334	3146	0	0	0	0	0	11,837	
	2012.3	New Business %	0.00%	0.00%	0.00%	0.00%	16.14%	6.40%	39.44%	26.04%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	6.16%	
2013	2013.1	New Business	0	0	0	0	47	0	1025	0	0	0	0	0	0	0	0	0	1,072	
	2013.2	Replacement	0	68	195	0	2110	562	9047	4798	5104	1403	5332	331	0	0	0	0	28,950	
	2013.3	New Business %	0.00%	0.00%	0.00%	0.00%	2.18%	0.00%	10.18%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.57%	

Table 6: Plastic Mains Pressure Betterment Investment as a Fraction of Total Plastic Mains Investment

Col. 1 Year	2 1/2"	3 1"	4 2"	5 3"	6 4"	7 6"	8 8"
2004	0.0000	0.0048	0.0047	0.0379	0.0576	0.1423	0.0352
2005	0.0000	0.0000	0.0051	0.0301	0.0926	0.1890	0.1627
2006	0.0000	0.0000	0.0029	0.0316	0.1286	0.1828	0.1533
2007	0.0000	0.0000	0.0044	0.0261	0.0759	0.1249	0.0631
2008	0.0000	0.0000	0.0087	0.0183	0.1731	0.2858	0.5753
2009	0.0000	0.0000	0.0041	0.0134	0.0781	0.4198	0.3594
2010	0.0000	0.0000	0.0047	0.0177	0.2192	0.5388	0.5579
2011	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2012	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2013	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Table 7: Steel Mains Pressure Betterment Investment as a Fraction of Total Steel Mains Investment

Col. 1 Year	2 1/2"	3 3/4"	4 1"	5 1 1/4"	6 2"	7 3"	8 4"	9 6"	10 8"	11 10"	12 12"	13 16"	14 20"	15 24"	16 26"	17 30"
2004	0.0000	0.0000	0.0000	1.0000	0.0270	0.0105	0.1544	0.6433	0.3665	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2005	0.0000	0.0000	0.0000	0.0000	0.0975	0.0010	0.6133	0.7359	0.1962	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2006	0.0000	0.0000	0.0000	0.0000	0.0013	0.0005	0.4459	0.0183	0.7715	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2007	0.0000	0.0000	0.0000	0.0000	0.0093	0.0013	0.4054	0.4276	0.8082	0.0000	0.8459	0.0000	0.0000	0.0000	0.0000	0.0000
2008	0.0000	0.0000	0.0000	0.0000	0.0293	0.0008	0.1839	0.2522	0.2611	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2009	0.0000	0.0000	0.0000	0.0000	0.0531	0.2384	0.0289	0.9024	0.5802	0.9467	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2010	0.0000	0.0000	0.0000	0.0000	0.3422	0.6839	0.6251	0.5794	0.4908	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2011	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	0.8627	0.6471	0.3740	0.8072	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2012	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.9255	0.9839	0.7105	0.8799	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2013	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2822	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Table 8: Contribution in Aid of Constr

Year	Plastic Mains	Steel Mains
	SoCal	SoCal
2004	0.0778	0.3571
2005	0.0151	0.0984
2006	0.1121	0.0418
2007	0.0010	0.0038
2008	0.0027	0.0173
2009	0.0030	0.0168
2010	0.0063	0.0895
2011	0.0000	0.0000
2012	0.0000	0.0000
2013	(0.0001)	(0.0003)

Table 9: Account 378 (Meters & Regulator Stations) Investment Info.

Year	Total Book Investment in Account 378 in Nominal \$'s	High Pressure Book Investment in Act 378 as a Fraction of Total	Handy-Whittman Index
2004	4,466,667	0.1283	0.634
2005	2,834,217	0.1291	0.715
2006	6,875,135	0.1286	0.745
2007	4,440,822	0.1284	0.749
2008	5,206,724	0.1293	0.834
2009	3,628,108	0.1282	0.826
2010	4,745,677	0.1296	0.846
2011	6,284,162	0.1284	0.957
2012	7,793,152	0.1272	1.014
2013	8,059,322	0.1318	1.000

Table 1: Plastic Distribution Mains: New Business (NB), Pressure Betterment (PB) & Contribution in Aid of New Construction (CANC)
Distribution Main Unit costs for New Business vs. Replacement Investments:

Plastic	1/2"	1"	2"	3"	4"	6"	8"
New Business 2013\$'s	\$0.00	\$24.71	\$24.11	\$35.66	\$40.97	\$46.77	\$52.11
Replacement 2013\$'s	\$76.56	\$109.13	\$301.50	\$390.54	\$348.39	\$376.07	\$400.01
escalate to 2017\$'s	2017 \$s	1.07623	1.07623	1.07623	1.07623	1.07623	1.07623
New Business 2017\$'s	\$0.00	\$26.59	\$25.95	\$38.38	\$44.09	\$50.34	\$56.08
Replacement 2017\$'s	\$82.40	\$117.45	\$324.48	\$420.31	\$374.94	\$404.74	\$430.50

Year	Unique Row Identifier	Investment Type	1/2"	1"	2"	3"	4"	6"	8"	Total
2005	2005.1	NB	0	280,245	83,762,897	3,947,947	17,053,774	8,944,762	11,926,911	125,916,535
	2005.2	PB	0	0	5,730,288	1,862,835	14,990,199	17,705,055	18,950,331	59,238,709
	2005.3	CANC	0	(5,500)	(1,371,490)	(85,524)	(287,744)	(176,051)	(229,309)	(2,155,618)
2006	2006.1	NB	0	199,282	83,735,445	3,501,321	21,023,375	10,174,620	5,520,280	124,154,322
	2006.2	PB	0	0	3,187,508	1,636,769	25,514,213	16,453,618	6,922,478	53,714,586
	2006.3	CANC	0	(27,299)	(9,982,586)	(530,426)	(2,615,629)	(1,254,344)	(659,407)	(15,069,690)
2007	2007.1	NB	0	148,033	62,558,676	3,560,004	18,998,096	5,694,278	5,127,696	96,086,743
	2007.2	PB	0	0	3,840,526	1,729,175	15,148,800	7,991,640	3,074,649	31,784,791
	2007.3	CANC	0	(237)	(69,750)	(6,079)	(23,592)	(8,000)	(6,377)	(114,035)
2008	2008.1	NB	0	88,001	19,193,651	1,476,337	6,391,858	1,497,933	474,838	29,122,618
	2008.2	PB	0	0	2,845,027	661,996	16,654,569	11,285,022	9,712,568	41,159,181
	2008.3	CANC	0	(336)	(69,562)	(8,819)	(30,270)	(13,135)	(5,882)	(128,004)
2009	2009.1	NB	0	15,955	8,146,206	357,090	3,439,107	454,527	1,667,345	14,080,231
	2009.2	PB	0	0	737,539	244,623	3,859,283	8,272,936	9,002,238	22,116,620
	2009.3	CANC	0	(237)	(43,329)	(5,043)	(17,550)	(7,397)	(9,848)	(83,406)
2010	2010.1	NB	0	21,539	6,290,668	537,593	1,865,218	690,751	480,054	9,885,823
	2010.2	PB	0	0	681,080	288,756	9,773,250	11,667,107	7,642,711	30,052,904
	2010.3	CANC	0	(393)	(73,743)	(9,398)	(33,032)	(16,964)	(11,242)	(144,773)
2011	2011.1	NB	0	9,812	9,754,223	304,010	1,700,483	221,072	431,712	12,421,313
	2011.2	PB	0	0	0	0	0	0	0	0
	2011.3	CANC	0	0	0	0	0	0	0	0
2012	2012.1	NB	0	31,378	7,058,378	927,614	3,155,186	623,906	176,487	11,972,948
	2012.2	PB	0	0	0	0	0	0	0	0
	2012.3	CANC	0	0	0	0	0	0	0	0
2013	2013.1	NB	0	13,668	11,421,638	1,387,717	2,968,360	681,942	519,310	16,992,635
	2013.2	PB	0	0	0	0	0	0	0	0
	2013.3	CANC	0	4	1,044	144	315	85	58	1,649

Table 1: Plastic Distribution Mains: New Business (NB), Pressure Betterment (PB) & Contribution in Aid of New Construction (CANC)

- NB** Table 2 Plastic Feet NB & R
 * Table 4 Plastic feet NB as % total plastic
 * NB cost \$/foot
 = Plastic NB \$'s
- PB** Table 2 Plastic Feet NB & R
 * Table 4 Plastic feet PB as % total plastic
 * Replace cost \$/foot
 = Plastic PB \$'s
- CANC** Table 2 Plastic Feet NB & R
 * Table 8 CANC as % total Mains
 * NB cost \$/foot
 = Plastic CANC \$'s

Table 2: Steel Distribution Mains: New Business (NB), Pressure Betterment (PB) & Contribution in Aid of New Construction (CANC)

Distribution Main Unit costs for New Business vs. Replacement Investments:

Steel	1/2"	3/4"	1"	1 1/4"	2"	3"	4"	6"	8"	10"	12"	16"	20"	24"	26"	30"
New Business 2013's	\$0.00	\$61.92	\$61.06	\$67.36	\$73.66	\$85.87	\$98.08	\$113.02	\$140.18	\$167.33	\$229.88	\$292.44	\$355.00	\$417.55	\$480.11	\$542.66
Replacement 2013's	\$0.00	\$130.39	\$129.53	\$167.38	\$205.25	\$220.92	\$236.60	\$241.16	\$245.70	\$276.99	\$308.28	\$394.54	\$480.81	\$567.07	\$653.34	\$739.60
escalate to 2017's	2017 \$\$	1.07623	1.07623	1.07623	1.07623	1.07623	1.07623	1.07623	1.07623	1.07623	1.07623	1.07623	1.07623	1.07623	1.07623	1.07623
New Business 2017's	\$0.00	\$66.64	\$65.71	\$72.49	\$79.27	\$92.41	\$105.55	\$121.64	\$150.86	\$180.08	\$247.41	\$314.73	\$382.06	\$449.38	\$516.71	\$584.03
Replacement 2017's	\$0.00	\$140.33	\$139.40	\$180.14	\$220.89	\$237.77	\$254.64	\$259.54	\$264.43	\$298.11	\$331.78	\$424.61	\$517.46	\$610.30	\$703.15	\$795.98

Year	Unique Row Identifier	Investment Type	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total
2005	2005.1	NB	0	0	0	0	371,398	87,230	1,517,756	1,918,882	784,331	0	4,701	0	0	0	0	0	4,684,298
	2005.2	PB	0	0	0	0	245,633	951	3,653,802	4,055,605	1,374,517	0	0	0	0	0	0	0	9,330,508
	2005.3	CANC	0	0	(97)	(14)	(88,955)	(37,482)	(242,990)	(254,140)	(393,184)	(524,752)	(58,232)	0	0	0	0	0	(1,599,846)
2006	2006.1	NB	0	0	16,166	0	611,816	126	546,496	261,559	14,717,766	0	0	0	0	0	0	0	16,153,929
	2006.2	PB	0	0	0	0	3,474	323	956,097	24,325	21,275,520	0	0	0	0	0	0	0	22,259,738
	2006.3	CANC	0	(36)	(2,687)	0	(40,158)	(10,268)	(37,192)	(26,017)	(658,354)	(8,320)	(148,583)	(619)	0	0	0	0	(932,234)
2007	2007.1	NB	0	0	0	0	19,343	0	27,654	15,935	0	909,780	0	0	0	0	0	0	972,712
	2007.2	PB	0	0	0	0	9,719	951	663,842	2,793,711	9,042,777	0	3,519,523	0	0	0	0	0	16,030,523
	2007.3	CANC	0	0	0	0	(1,418)	(1,095)	(2,554)	(11,524)	(24,026)	(4,185)	(11,677)	(50)	0	0	0	0	(56,529)
2008	2008.1	NB	0	0	0	0	149,715	0	157,377	312,022	0	0	0	0	0	0	0	0	619,114
	2008.2	PB	0	0	0	0	41,983	951	295,889	2,217,719	3,826,329	0	0	0	0	0	0	0	6,382,871
	2008.3	CANC	0	(23)	0	0	(8,896)	(7,527)	(11,537)	(71,294)	(144,664)	(17,849)	(1,755)	0	0	0	0	0	(263,545)
2009	2009.1	NB	0	0	0	0	113,599	106,644	1,006,326	487	4,526	0	0	0	0	0	0	0	1,231,582
	2009.2	PB	0	0	0	0	107,796	136,715	94,216	8,122,370	5,293,397	572,363	0	0	0	0	0	0	14,326,858
	2009.3	CANC	0	0	0	0	(12,227)	(3,744)	(22,721)	(70,845)	(87,415)	(6,134)	(4,018)	(11,645)	(11,344)	0	0	0	(230,092)
2010	2010.1	NB	0	0	0	0	58,900	0	3,905	608	0	0	0	0	0	0	0	0	63,414
	2010.2	PB	0	0	0	0	395,619	128,631	1,111,750	1,502,489	1,212,156	0	0	0	0	0	0	0	4,350,645
	2010.3	CANC	0	0	0	0	(37,129)	(6,541)	(65,974)	(108,762)	(126,087)	(192,762)	(52,602)	0	0	0	0	0	(589,857)
2011	2011.1	NB	0	0	0	0	237	0	0	0	0	0	0	0	0	0	0	0	237
	2011.2	PB	0	0	0	0	0	476	954,893	2,594,902	1,198,934	949,766	0	0	0	0	0	0	5,698,970
	2011.3	CANC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	2012.1	NB	0	0	0	0	23,227	3,974	500,444	665,129	0	0	0	0	0	0	0	0	1,192,774
	2012.2	PB	0	0	0	0	0	0	2,833,104	5,363,178	2,863,533	2,912,197	0	0	0	0	0	0	13,972,011
	2012.3	CANC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	2013.1	NB	0	0	0	0	3,726	0	150,716	0	0	0	0	0	0	0	0	0	154,442
	2013.2	PB	0	0	0	0	0	0	1,008,112	0	0	0	0	0	0	0	0	0	1,008,112
	2013.3	CANC	0	1	4	0	53	16	456	180	237	78	406	32	0	0	0	0	1,463

Table 2: Steel Distribution Mains: New Business (NB), Pressure Betterment (PB) & Contribution in Aid of New Construction (CANC)

NB
 Table 3 Steel Feet NB & R
 * Table 5 Steel feet NB as % total plastic
 * NB cost \$/foot
 = Steel NB \$'s

PB
 Table 3 Steel Feet NB & R
 * Table 7 Steel feet PB as % total plastic
 * Replace cost \$/foot
 = Steel PB \$'s

CANC
 Table 3 Steel Feet NB & R
 * Table 8 CANC as % total Mains
 * NB cost \$/foot
 = Steel CANC \$'s

Table 3: High Pressure Distribution Mains: New Business (NB), Pressure Betterment (PB) & Contribution in Aid of New Construction (CANC)

Distribution Main Unit costs for New Business vs. Replacement Investments:

Steel	1/2"	3/4"	1"	1 1/4"	2"	3"	4"	6"	8"	10"	12"	16"	20"	24"	26"	30"
New Business 2013's	\$0.00	\$61.92	\$61.06	\$67.36	\$73.66	\$85.87	\$98.08	\$113.02	\$140.18	\$167.33	\$229.88	\$292.44	\$355.00	\$417.55	\$480.11	\$542.66
Replacement 2013's	\$0.00	\$130.39	\$129.53	\$167.38	\$205.25	\$220.92	\$236.60	\$241.16	\$245.70	\$276.99	\$308.28	\$394.54	\$480.81	\$567.07	\$653.34	\$739.60
escalate to 2017's	1.07623	1.07623	1.07623	1.07623	1.07623	1.07623	1.07623	1.07623	1.07623	1.07623	1.07623	1.07623	1.07623	1.07623	1.07623	1.07623
New Business 2017's	\$0.00	\$66.64	\$65.71	\$72.49	\$79.27	\$92.41	\$105.55	\$121.64	\$150.86	\$180.08	\$247.41	\$314.73	\$382.06	\$449.38	\$516.71	\$584.03
Replacement 2017's	\$0.00	\$140.33	\$139.40	\$180.14	\$220.89	\$237.77	\$254.64	\$259.54	\$264.43	\$298.11	\$331.78	\$424.61	\$517.46	\$610.30	\$703.15	\$795.98

2017 \$s

Year	Unique Row Identifier	Investment Type	1/2"	3/4"	1"	1 1/4"	2"	3"	4"	6"	8"	10"	12"	16"	20"	24"	26"	30"	Total
2005	2005.1	NB	0	0	0	0	171,239	6,983	1,151,616	1,444,968	767,067	0	3,465	0	0	0	0	0	3,545,339
	2005.2	PB	0	0	0	0	113,253	76	2,772,367	3,053,976	1,344,263	0	0	0	0	0	0	0	7,283,934
	2005.3	CANC	0	0	0	0	(41,014)	(3,001)	(184,372)	(191,374)	(384,530)	(524,752)	(42,919)	0	0	0	0	0	(1,371,962)
2006	2006.1	NB	0	0	4,070	0	426,679	29	224,180	147,949	14,587,921	0	0	0	0	0	0	0	15,390,829
	2006.2	PB	0	0	0	0	2,422	74	392,204	13,759	21,087,820	0	0	0	0	0	0	0	21,496,280
	2006.3	CANC	0	(36)	(676)	0	(28,006)	(2,340)	(15,257)	(14,716)	(652,546)	(806)	(147,061)	(619)	0	0	0	0	(862,065)
2007	2007.1	NB	0	0	0	0	9,647	0	11,143	14,487	0	744,915	0	0	0	0	0	0	780,192
	2007.2	PB	0	0	0	0	4,847	31	267,498	2,539,778	7,411,166	0	3,357,299	0	0	0	0	0	13,580,619
	2007.3	CANC	0	0	0	0	(707)	(35)	(1,029)	(10,477)	(19,691)	(3,427)	(11,139)	0	0	0	0	0	(46,505)
2008	2008.1	NB	0	0	0	0	60,477	0	58,537	323,508	0	0	0	0	0	0	0	0	442,522
	2008.2	PB	0	0	0	0	16,959	17	110,057	2,299,352	3,847,316	0	0	0	0	0	0	0	6,273,701
	2008.3	CANC	0	0	0	0	(3,593)	(136)	(4,291)	(73,918)	(145,457)	(17,834)	(2,196)	0	0	0	0	0	(247,425)
2009	2009.1	NB	0	0	0	0	4,366	52,791	616,185	434	3,481	0	0	0	0	0	0	0	677,258
	2009.2	PB	0	0	0	0	4,143	67,677	57,690	7,244,972	4,071,042	26,812	0	0	0	0	0	0	11,472,336
	2009.3	CANC	0	0	0	0	(470)	(1,853)	(13,912)	(63,192)	(67,229)	(287)	(253)	(2,231)	0	0	0	0	(149,428)
2010	2010.1	NB	0	0	0	0	28,212	0	2,793	344	0	0	0	0	0	0	0	0	31,349
	2010.2	PB	0	0	0	0	189,495	109,930	795,017	850,338	872,259	0	0	0	0	0	0	0	2,817,039
	2010.3	CANC	0	0	0	0	(17,784)	(5,590)	(47,178)	(61,554)	(90,731)	(170,540)	(61,568)	0	0	0	0	0	(454,946)
2011	2011.1	NB	0	0	0	0	168	0	0	0	0	0	0	0	0	0	0	0	168
	2011.2	PB	0	0	0	0	0	324	1,332,281	2,205,272	1,555,628	1,991,452	0	0	0	0	0	0	7,084,957
	2011.3	CANC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	2012.1	NB	0	0	0	0	4,748	621	586,162	935,145	0	0	0	0	0	0	0	0	1,526,676
	2012.2	PB	0	0	0	0	0	0	3,318,368	7,540,421	6,951,878	5,170,507	0	0	0	0	0	0	22,981,174
	2012.3	CANC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	2013.1	NB	0	0	0	0	893	0	145,217	0	0	0	0	0	0	0	0	0	146,110
	2013.2	PB	0	0	0	0	0	0	971,326	0	0	0	0	0	0	0	0	0	971,326
	2013.3	CANC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 3: High Pressure Distribution Mains: New Business (NB), Pressure Betterment (PB) & Contribution in Aid of New Construction (CANC)

NB

Table 1 HPD Feet NB & R

* Table 5 Steel feet NB as % total plastic

* NB cost \$/foot

= HPD NB \$'s

PB

Table 1 HPD Feet NB & R

* Table 7 Steel feet PB as % total steel

* Replace cost \$/foot

= HPD PB \$'s

CANC

Table 2 (out-invest-history) Steel CANC \$'s

* Table 1 (in-invest-history) HPD feet NB & R

* 1/table 3 (in-invest-history) steel feet NB & R

= HPD CANC \$'s

**Table 4: Load-Growth-Related Total, High & Medium Pressure Distribution Mains Historical Investments
2017 \$\$**

Year	Total Distribution Mains						High Pressure Distribution Mains						Medium Pressure Distribution Mains					
	New Business	Pressure Betterment	Contrib. New Constr	ACT 378 Mtr. Reg Strn	Annual Total	Cumulative Total	New Business	Pressure Betterment	Contrib. New Constr	ACT 378 Mtr. Reg Strn	Annual Total	Cumulative Total	New Business	Pressure Betterment	Contrib. New Constr	ACT 378 Mtr. Reg Strn	Annual Total	Cumulative Total
2005	130,600,833	68,569,217	(3,755,464)	4,468,683	199,883,269	199,883,269	3,545,339	7,283,934	(1,371,962)	576,964	10,034,275	10,034,275	127,055,494	61,285,282	(2,383,503)	3,891,720	189,848,994	189,848,994
2006	140,308,251	75,974,323	(16,001,924)	9,609,107	209,889,757	409,773,026	15,390,829	21,496,280	(862,065)	1,235,251	37,260,296	47,294,571	124,917,422	54,478,044	(15,139,860)	8,373,855	172,629,462	362,478,456
2007	97,059,456	47,815,313	(170,565)	5,959,329	150,663,533	560,436,559	780,192	13,580,619	(46,505)	765,309	15,079,616	62,374,187	96,279,264	34,234,694	(124,060)	5,194,019	135,583,917	498,062,373
2008	29,741,732	47,542,052	(391,549)	6,948,113	83,840,348	644,276,907	442,522	6,273,701	(247,425)	898,103	7,366,900	69,741,087	29,299,211	41,268,351	(144,124)	6,050,010	76,473,448	574,535,820
2009	15,311,812	36,443,478	(313,498)	4,350,817	55,792,608	700,069,515	677,258	11,472,336	(149,428)	557,797	12,557,963	82,299,050	14,634,555	24,971,142	(164,070)	3,793,020	43,234,646	617,770,466
2010	9,949,237	34,403,550	(734,630)	5,742,870	49,361,027	749,430,542	31,349	2,817,039	(454,946)	744,016	3,137,457	85,436,507	9,917,887	31,586,511	(279,684)	4,998,854	46,223,569	663,994,035
2011	12,421,550	5,698,970	0	7,429,092	25,549,612	774,980,154	168	7,084,957	0	953,607	8,038,732	93,475,239	12,421,382	(1,385,987)	0	6,475,484	17,510,880	681,504,915
2012	13,165,722	13,972,011	0	8,139,388	35,277,122	810,257,275	1,526,676	22,981,174	0	1,035,472	25,543,322	119,018,561	11,639,046	(9,009,163)	0	7,103,916	9,733,800	691,238,715
2013	17,147,077	1,008,112	3,112	7,950,652	26,108,954	836,366,229	146,110	971,326	0	1,047,949	2,165,384	121,183,944	17,000,968	36,787	3,112	6,902,703	23,943,570	715,182,285
2014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	465,705,671	331,427,026	(21,364,518)	60,598,050	836,366,229		22,540,441	93,961,365	(3,132,330)	7,814,468	121,183,944		443,165,230	237,465,661	(18,232,188)	52,783,582	715,182,285	

2016 TCAP Phase II

Year	New Business	Pressure Betterment	Contribution in Aid of New Constr.	Acct 378 (Meter & Reg. Stns.)	Total	Cumulative Total	Source
Table 1: Forecasted Distribution-related Investment Costs: 2013 \$s							
2013	\$0	\$0	\$0	\$0	\$0	\$0	
2014	\$20,394,076	\$18,823,671	(\$64,120)	\$7,547,649	\$46,701,278	\$46,701,278	
2015	\$22,924,254	\$18,823,671	(\$64,120)	\$7,932,059	\$49,615,864	\$96,317,142	
2016	\$25,454,431	\$18,823,671	(\$64,120)	\$8,316,468	\$52,530,450	\$148,847,592	
2017	\$27,984,608	\$18,823,671	(\$64,120)	\$8,700,877	\$55,445,037	\$204,292,628	
2018	\$30,514,785	\$18,823,671	(\$64,120)	\$9,085,286	\$58,359,623	\$262,652,251	
2019	\$33,044,962	\$18,823,671	(\$64,120)	\$9,469,695	\$61,274,209	\$323,926,461	

Table 1: Forecasted Distribution-related Investment Costs escalated to 2017 \$'s:

Year	Escalation 2013\$'s to 2017\$'s	2013	2014	2015	2016	2017	2018	2019
	1.0762	1.07623	1.07623	1.07623	1.07623			
2013	\$0	\$0	\$0	\$0	\$0	\$836,366,229		
2014	\$21,948,713	\$20,258,596	(\$69,007)	\$8,123,005	\$50,261,307	\$886,627,536		
2015	\$24,671,765	\$20,258,596	(\$69,007)	\$8,536,718	\$53,398,071	\$940,025,607		
2016	\$27,394,817	\$20,258,596	(\$69,007)	\$8,950,430	\$56,534,836	\$996,560,443		
2017	\$30,117,869	\$20,258,596	(\$69,007)	\$9,364,143	\$59,671,601	\$1,056,232,044		
2018	\$32,840,921	\$20,258,596	(\$69,007)	\$9,777,856	\$62,808,365	\$1,119,040,409		
2019	\$35,563,973	\$20,258,596	(\$69,007)	\$10,191,568	\$65,945,130	\$1,184,985,539		

Allocation Factor = total historical HPD Invested as % total Distribution Investment

HPD \$	\$22,540,441	\$93,961,365	(\$3,132,330)	\$7,814,468	\$121,183,944
Total Dist \$'s	\$465,705,671	\$331,427,026	(\$21,364,518)	\$60,598,050	\$836,366,229
HPD \$ as % Distribution	5%	28%	15%	13%	14%

High Pressure Distribution Mains = Total Distribution * allocation factor

2013	\$0	\$0	\$0	\$0	\$0	\$121,183,944
2014	\$1,062,331	\$5,743,422	(\$10,117)	\$1,047,508	\$7,843,144	\$129,027,089
2015	\$1,194,129	\$5,743,422	(\$10,117)	\$1,100,859	\$8,028,292	\$137,055,381
2016	\$1,325,926	\$5,743,422	(\$10,117)	\$1,154,210	\$8,213,440	\$145,268,822
2017	\$1,457,723	\$5,743,422	(\$10,117)	\$1,207,560	\$8,398,588	\$153,667,410
2018	\$1,589,521	\$5,743,422	(\$10,117)	\$1,260,911	\$8,583,736	\$162,251,146
2019	\$1,721,318	\$5,743,422	(\$10,117)	\$1,314,261	\$8,768,884	\$171,020,031

Medium Pressure Distribution Mains = Total Distribution - HPD

2013	\$0	\$0	\$0	\$0	\$0	\$715,182,285
2014	\$20,886,382	\$14,515,174	(\$58,890)	\$7,075,497	\$42,418,162	\$757,600,447
2015	\$23,477,636	\$14,515,174	(\$58,890)	\$7,435,859	\$45,369,779	\$802,970,226
2016	\$26,068,891	\$14,515,174	(\$58,890)	\$7,796,221	\$48,321,396	\$851,291,622
2017	\$28,660,146	\$14,515,174	(\$58,890)	\$8,156,583	\$51,273,012	\$902,564,634
2018	\$31,251,400	\$14,515,174	(\$58,890)	\$8,516,945	\$54,224,629	\$956,789,263
2019	\$33,842,655	\$14,515,174	(\$58,890)	\$8,877,307	\$57,176,246	\$1,013,965,509

TABLE 8
Distribution Long Run Marginal Cost Estimate (2013\$\$)
SOUTHERN CALIFORNIA GAS COMPANY
2016 TCAP Phase II

System	MPD	HPD
Demand Determinate	mcf/d	mcf/month
Capital-related LRMIC:		
Medium Pressure Regression Coefficient =	\$2,135	\$20.39
Weighted RECC Factor =	8.57%	8.56%
Annualized Capital-related LRMIC	\$183.00	\$1.75
O&M-related LRMIC:		
Total Distribution O&M costs (2013 \$000's) =	\$47,052	\$47,052
escalation 2013 to 2017	1.0762	1.0762
Total Distribution O&M costs (2017 \$000's) =	\$50,639	\$50,639
% Share of Investment	86%	14%
Peak Day Demand	4,340	88,871
O&M-related LRMIC	\$9.98	\$0.08256
A&G-related LRMIC:		
A&G Factor, as a Percent of O&M-related LRMIC	41.79%	41.79%
A&G-related LRMIC	\$4.17	\$0.03451
General Plant (GP)-related LRMIC:		
GP Factor, as a Percent of O&M-related LRMIC	30.21%	30.21%
GP-related LRMIC	\$3.01	\$0.02494
Material & Supply (M&S)-related LRMIC:		
Total Distribution M&S costs (2013 \$000's) =	\$1,443	\$1,443
% Share of Investment	86%	14%
Demand Determinantes	5,768	5,768
M&S-related LRMIC	\$0.21	\$0.03625
Distribution LRMIC =	\$200.38 \$/Mcf/d	\$1.92 \$/Mcf/mo

TABLE 7
Regression of Distribution Investment
SOUTHERN CALIFORNIA GAS COMPANY
2016 TCAP Phase II

System Year	MPD	MPD	HPD	HPD
	Cumulative Investment \$000	Peak Day Cumulative Demand MMcf/d	Cumulative Investment \$000	Peak Month Cumulative Demand MMcf/ Month
2005	\$189,849	35	\$10,034	613
2006	\$362,478	68	\$47,295	1,212
2007	\$498,062	104	\$62,374	2,158
2008	\$574,536	139	\$69,741	2,718
2009	\$617,770	144	\$82,299	2,789
2010	\$663,994	156	\$85,437	2,974
2011	\$681,505	189	\$93,475	3,511
2012	\$691,239	202	\$119,019	3,870
2013	\$715,182	238	\$121,184	4,680
2014	\$757,600	252	\$129,027	5,555
2015	\$802,970	268	\$137,055	5,908
2016	\$851,292	291	\$145,269	6,333
2017	\$902,565	316	\$153,667	6,783
2018	\$956,789	342	\$162,251	7,233
2019	\$1,013,966	368	\$171,020	7,679
Regression Coefficient	\$2,135		\$20.39	

Calculate Weighted Average RECC Factor:

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System	MPD				HPD			
	New Business \$000's	Pressure Betterment \$000	Contribute in aid of Construction \$000	Account #378 Meter & Reg Stations \$000	New Business \$000's	Pressure Betterment \$000	Contribute in aid of Construction \$000	Account #378 Meter & Reg Stations \$000
2005	\$127,055	\$61,285	(\$2,384)	\$3,892	\$3,545	\$7,284	(\$1,372)	\$577
2006	\$124,917	\$54,478	(\$15,140)	\$8,374	\$15,391	\$21,496	(\$862)	\$1,235
2007	\$96,279	\$34,235	(\$124)	\$5,194	\$780	\$13,581	(\$47)	\$765
2008	\$29,299	\$41,268	(\$144)	\$6,050	\$443	\$6,274	(\$247)	\$898
2009	\$14,635	\$24,971	(\$164)	\$3,793	\$677	\$11,472	(\$149)	\$558
2010	\$9,918	\$31,587	(\$280)	\$4,999	\$31	\$2,817	(\$455)	\$744
2011	\$12,421	(\$1,386)	\$0	\$6,475	\$0	\$7,085	\$0	\$954
2012	\$11,639	(\$9,009)	\$0	\$7,104	\$1,527	\$22,981	\$0	\$1,035
2013	\$17,001	\$37	\$3	\$6,903	\$146	\$971	\$0	\$1,048
2014	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Invest \$000	\$443,165	\$237,466	(\$18,232)	\$52,784	\$22,540	\$93,961	(\$3,132)	\$7,814
	Total Invest \$000's	% of Total	RECC %	Weghted RECC%	Total Invest \$000's	% of Total	RECC %	Weghted RECC%
New Business \$000's	\$443,165	62%	8.49%	5.26%	\$22,540	19%	8.49%	1.58%
Pressure Betterment	\$237,466	33%	8.49%	2.82%	\$93,961	78%	8.49%	6.58%
CIAC	(\$18,232)	-3%	8.49%	-0.22%	(\$3,132)	-3%	8.49%	-0.22%
subtotal	\$662,399	93%		7.87%	\$113,369	94%		7.94%
Meter & Reg Stations #378	\$52,784	7%	9.54%	0.70%	\$7,814	6%	9.54%	0.62%
Total	\$715,182	100%		8.57%	\$121,184	100%		8.56%

% Share of Investment between MPD and HPD:

	Investment \$000's	% Share
MPD Investment	\$715,182	86%
HPD Investment	\$121,184	14%
Total	\$836,366	100%

TABLE 2 Marginal MPD Costs

Table 2		
Year	Cumulative MMCFD	Cumulative CAPEX \$000's
2005	35	\$189,849
2006	68	\$362,478
2007	104	\$498,062
2008	139	\$574,536
2009	144	\$617,770
2010	156	\$663,994
2011	189	\$681,505
2012	202	\$691,239
2013	238	\$715,182
2014	252	\$757,600
2015	268	\$802,970
2016	291	\$851,292
2017	316	\$902,565
2018	342	\$956,789
2019	368	\$1,013,966

TABLE 5 Marginal HPD Costs

Table 5		
Year	Cumulative MMCF/ month	Cumulative CAPEX \$000's
2005	613	\$10,034
2006	1,212	\$47,295
2007	2,158	\$62,374
2008	2,718	\$69,741
2009	2,789	\$82,299
2010	2,974	\$85,437
2011	3,511	\$93,475
2012	3,870	\$119,019
2013	4,680	\$121,184
2014	5,555	\$129,027
2015	5,908	\$137,055
2016	6,333	\$145,269
2017	6,783	\$153,667
2018	7,233	\$162,251
2019	7,679	\$171,020

TABLE 3 Marginal MPD Investment per MMCFD

Table 3

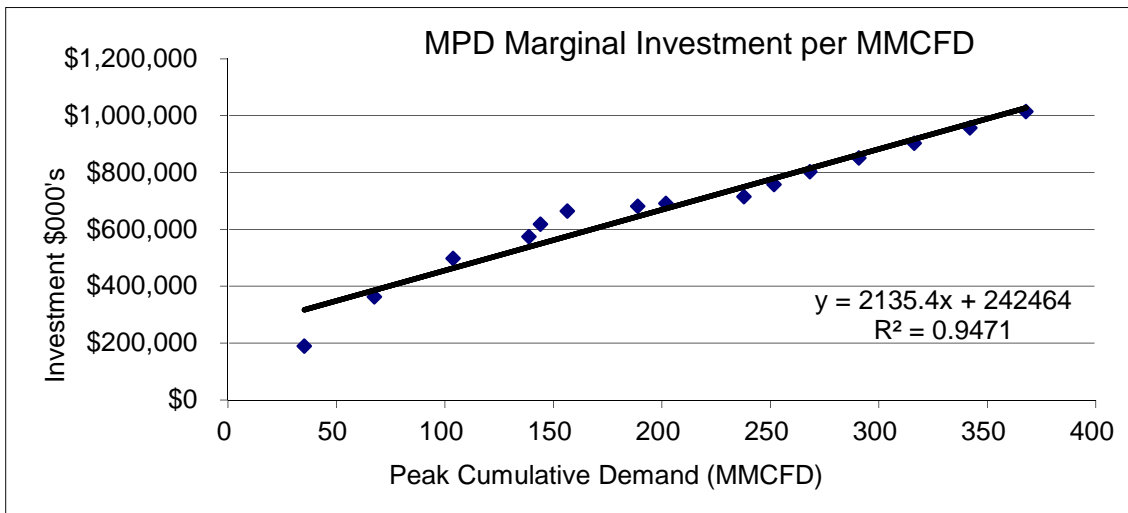


TABLE 6 Marginal HPD Investment per MMCF/month

Table 6

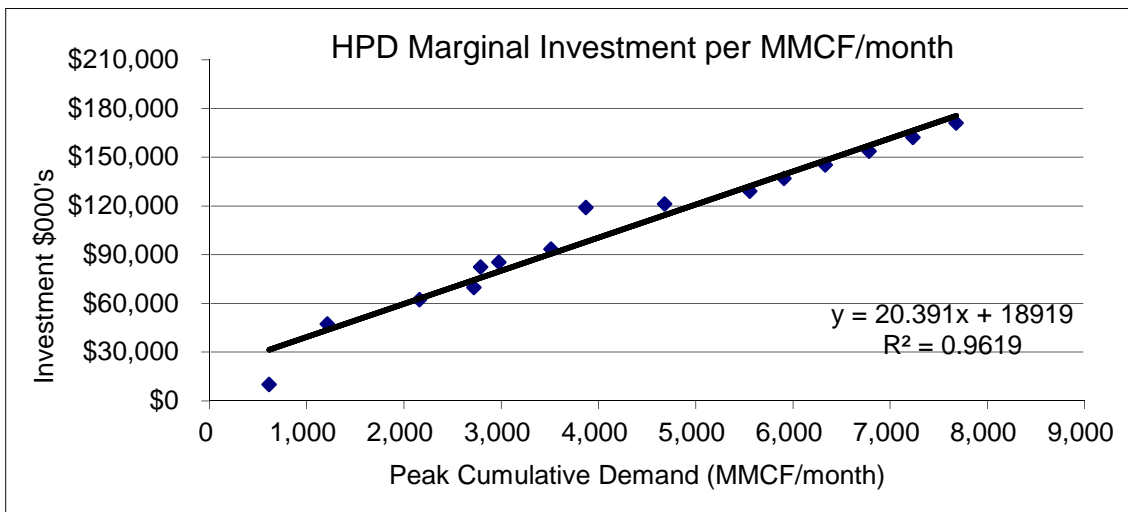


Table 4 Marginal MP Distribution Cost

Table 4	
Marginal MP Distribution Cost	
Capital-related Charge:	
MPD Regression Coefficient \$/MCFD	\$2,135.4
x RECC Factor	8.57%
= Annualized Capital-related Charge (\$/MCFD)	\$183.00
+ Direct O&M	\$9.98
+ A&G	\$4.17
+ GP	\$3.01
+ M&S	\$0.21
= Marginal MP Distribution Cost(\$/MCFD)	\$200.38

Table 7 Marginal HP Distribution Cost

Table 7	
Table Marginal HP Distribution Cost	
Capital-related Charge:	
HPD Regression Coefficient \$/MCF/month	\$20.391
x RECC Factor	8.56%
= Annualized Capital-related Charge (\$/MCF/month)	\$1.75
+ Direct O&M	\$0.08
+ A&G	\$0.03
+ GP	\$0.02
+ M&S	\$0.04
= Marginal HP Distribution Cost(\$/MCF/month)	\$1.92

SoCalGas
2016 TCAP Phase II

Section 3
O&M Loaders Model for LRMC Studies

**Workpapers to the Prepared Written Testimony of Sharim
Chaudhury**

**SCG 2016 TCAP Phase II
LRMC O&M Loader Model**

Output

	Output	Source
Marginal A&G/Payroll Taxes Loading Factor as a % of O&M expenses	41.79%	A&G
General Plant Loading Factor as a % of O&M expenses	30.21%	Gen Plant
Customer Related Distribution M&S Costs 2013 \$000/yr	\$1,252,283	M&S
Demand Related Distribution M&S Costs 2013 \$000/yr	\$1,442,960	M&S
2013-17 Factor: Capital	1.0876	Escalation Factors
2013-17 Factor: O&M	1.0762	Escalation Factors

Input from EC Model:

Transmission A&G	\$15.184
Storage A&G	\$7.613
Total A&G	\$365.432
Transmission General Plant Return	\$1.110
Transmission Gen Plant Dep	\$5.986
Transmission Gen Plant Taxes	\$0.046
Storage General Plant Return	\$0.557
Storage Gen Plant Dep	\$3.001
Storage Gen Plant Taxes	\$0.023
Total Gen Plant Return	\$26.715
Total Gen Plant Dep	\$144.061
Total Gen Plant Taxes	\$1.113

Input from EC Model:

PBR Exclusion Items

814 UndStr Op-Supervision & Engineering	\$0.021
854&855 Tran Op-Gas From Comp Sta Fuel (PBR Excluded)	\$0.347
859 Tran Op-Other Expenses (PBR excl Haz Waste)	\$0.000
880 Dist Op-Other Expenses (PBR Ex Haz Waste)	\$0.831
901 Cus Acct-Supervision (PBR Ex CARE) + Payroll Taxes	\$6.899
903100 AMI	\$29.091
904 Cus Acct-Uncollectible Accounts	\$7.719
908 Cus Svc-Cust Assist Exp (PBR Ex DAP, DSM &Self-Gen)	\$167.610
927 AdmGen Op-Franchise Requirements	\$45.292
	\$257.810

2017 TCAP A&G LOADER ANALYSIS
O&M Costs Used in A&G Loader

	2013 Recorded Costs (\$)	source:
1. Total O&M	2,725,015,373	FERC Form 2 line no 271, page 325
2. Total Production Expenses (incl Purchased Gas cost)	1,367,342,977	FERC Form 2 line no 97, page 320
3. Total Transmission Expenses	1/ 109,268,807	FERC Form 2 line no 201, page 323
4. Total Storage Expenses	1/ 53,148,480	FERC Form 2 line no 125, page 321
5. Total A&G Expenses	405,479,256	FERC Form 2 line no 270, page 325
6. Exclusions	2/ \$ 212,150,685	
7. Gas Used for Transmission Compressor Stations (this is part of Trans. Expenses) 3/		FERC Form 2 Acct 854, line no 184, page 323
8. Subtotal of Costs removed from O&M	2,147,390,205	
9. Net O&M	577,625,168	

Notes:

- 1/ Transmission and Storage expenses removed from A&G loader, because SoCalGas proposes to separately scale transmission and storage costs to embedded transmission and storage cost.
- 2/ Exclusions EE, LIEE, CARE admin, Self Generation, Hazardous Substance, AMI & Uncollectible costs that are not part of authorized base margin.
- 3/ Exclude Part of Transmission expenses

Rows (1) through (7) contain data from FERC Form 2 for 2013

Row (8) = Sum [Row (2) : Row (7)]

Row (9) = Row (1) - Row (8)

<u>Exclusions</u>	2013
Hazardous Substance costs (dist acct 880)	831,288
Uncollectible Acct (acct 904)	7,719,077
Self Generation (acct 908)	14,328,729
Energy Efficiency (acct 908)	57,429,006
Low Income Energy Efficiency (acct 908)	95,852,610
CARE (acct 901)	6,899,171
AMI (acct 903100)	29,090,804
	212,150,685
 <u>O&M Main categories</u>	2013
<u>DISTRIBUTION EXPENSES</u>	
870 Operation Supervision and Engineering	36,879,660
874 Mains and Services Expenses	25,597,541
875 Measuring and Regulating Station Expenses-General	1,751,723
878 Meter and House	62,728,978
879 Customer Installations Expense	67,070,852
880 Other Expenses	76,300,337
881 Rents	21,521
TOTAL Operation	270,350,612
885 Maintenance Supervision and Engineering	22,843,275
887 Maintenance of Mains	30,678,905
889 Maintenance of Mesuring and Regulating Station Equipment -General	2,101,196
892 Maintenance of Services	46,346,087
893 Maintenance of Meters and House Regulators	6,134,606
894 Maintenance of Other Equipment	17,805
TOTAL Maintenance	108,121,874
CUSTOMER ACCOUNTS EXPENSES	
901 Supervision	6,626,386
902 Meter Reading Expenses	45,931,320
903 Customer Records and Collection Expenses	148,049,588
904 Uncollectible Accounts	7,719,077
905 Miscellaneous Customer Accounts Expenses	633
TOTAL Customer Accounts Expenses	208,327,004
CUSTOMER SERVICE AND INFORMATILNAL EXPENSES	
907 Supervision	638,142
908 Customer Assistance Expenses	199,628,359
909 Informational and Instructional Expenses	934,864
910 Miscellaneous Customer Service and Informational Expenses	1,774,998
TOTAL Customer Service and Information expenses	202,976,363
Exclusions	(212,150,685)
Net O&M	577,625,168
Gas Used for Transmission Compressor Stations (this is part of Trans. Expenses)	577,625,168

TABLE 2
A&G and Payroll Taxes Loading Factor

SOUTHERN CALIFORNIA GAS COMPANY

DESCRIPTION	2017 TCAP	source
	(\$)	
1. Total Marginal A&G Costs	\$192,407,699	A&G 1 tab
2. Total Payroll Taxes	49,005,527	(SS + Fed&CA)
3. Marginal A&G and Payroll Taxes	241,413,226	Row 1 + Row 2
4. Net O&M Costs	577,625,168	O&M Costs tab
5. Marginal A&G/Payroll Taxes Loading Factor	41.79%	Row 3 / Row 4
6. Transmission and Storage adjustment	6.24%	EC study
Notes:		
Data Source: FERC Form 2		
Fed. Unemployment Insurance Tax	371,323	p. 263a (SS + Fed&CA Unempl taxes)
Social Security Tax	49,481,499	p. 263a (SS + Fed&CA Unempl taxes)
State Unemployment Insurance Tax	2,413,192	p. 263a (SS + Fed&CA Unempl taxes)
Total	52,266,014	

2016 TCAP Phase II A&G LOADER ANALYSIS
Marginal vs Non-marginal Summary

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
Account Title	PUC Account	Marginal Cost	Marginal Portion of Total	Non-Marginal Cost	Non-Marginal Portion of Total	Total Cost	2013 Recorded Total Cost Per FERC Form 2	Source
		(\$)	(%)	(\$)	(%)	(\$)	(\$)	
1. A&G Salaries	920	\$2,329	0.00%	\$46,089,125	12.80%	\$46,091,454	\$46,091,454	FERC Form 2 line no 254, page 325
2. Office Supplies and Exp	921	1,039,979	0.29%	13,479,727	3.74%	14,519,706	\$14,519,705	FERC Form 2 line no 255, page 325
3. Admin Expenses Transferred	922	0	0.00%	(6,349,039)	-1.76%	(6,349,039)	(\$6,349,039)	FERC Form 2 line no 256, page 325
4. Outside Services Employed	923	0	0.00%	72,629,634	20.16%	72,629,634	\$72,629,634	FERC Form 2 line no 257, page 325
5. Property Insurance	924	3,256,461	0.90%	0	0.00%	3,256,461	\$3,256,461	FERC Form 2 line no 258, page 325
6. Injuries and Damages	925	34,068,221	9.46%	0	0.00%	34,068,221	\$34,068,221	FERC Form 2 line no 259, page 325
7. Employee Pensions & Benefits	926	142,537,477	39.57%	0	0.00%	142,537,477	\$142,537,477	FERC Form 2 line no 260, page 325
8. Regulatory Commission Expenses	928	0	0.00%	5,315,629	1.48%	5,315,629	\$5,315,629	FERC Form 2 line no 262, page 325
9. Misc General Expenses	930	76,036	0.02%	9,315,330	2.59%	9,391,366	\$9,391,366	FERC Form 2 line no 265, page 325
10. Rents	931	2,985,666	0.83%	14,497,469	4.02%	17,483,135	\$17,483,135	FERC Form 2 line no 266, page 325
11. Maintenance of Gen Plant	932	21,242,999	5.90%	0	0.00%	21,242,999	\$21,242,999	FERC Form 2 line no 269, page 325
12. Total		205,209,167	56.97%	154,977,874	43.03%	360,187,042	360,187,042	
Franchise Requirements	927						\$45,292,214	

Updated: Reflects 2013 FERC Form 2 data.

Color Key: Input Data, Source Data from other tab, calculation
Col (1) & Col (2) account description
Col (3) contains data from 'Marginal - Nonmarginal' tab
Col (4) = Col (3) / Col (7)
Col (5) contains data from 'Marginal - Nonmarginal' tab
Col (6) = Col (5) / Col (7)
Col (7) = Col (3) + Col (5)
Col (8) data from FERC Form 2 for 2013

2016 TCAP Phase II A&G LOADER ANALYSIS
2013 RECORDED COSTS

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
FERC Cost Center Description	PUC Account Number	FERC Account No.	Marginal Y/N	2010 Recorded Costs Direct (\$)	Reassigned (\$)	Total (\$)	Marginal (\$)	Non-Marginal (\$)
1. BLDG OPER OTH THAN CLEANING SV	920	920.601	Y	\$ 1,182	\$ 236	\$ 1,418	\$ 1,418	\$ -
2. PROCUREMENT & LOGISTICS CONSULT	920	920.630	Y	-	-	-	-	-
3. REAL ESTATE	920	920.604	Y	-	-	-	-	-
4. BUILDING CLEANING SERVICES	920	920.600	Y	-	912	912	912	-
5. RETURN TO WORK EXAMINATIONS	920	920.212	Y	-	-	-	-	-
6. SUPPLIER MANAGEMENT	920	920.632	Y	-	-	-	-	-
ACCOUNT 920 MARGINAL TOTAL				1,182	1,148	2,329	2,329	-
7. ADMINISTRATIVE & GENERAL SALARIES	920	920.000	N	32,220,044	2,981,629	35,201,673	-	35,201,673
8. HUMAN RESOURCES OPER SALARIES	920	920.200	N	5,800,919	1,610,837	7,411,756	-	7,411,756
9. REGIONAL AFFAIRS	920	920.570	N	2,755,416	520,706	3,276,122	-	3,276,122
10. END USER SUPPORT COMM	920	920.372	N	-	-	-	-	-
11. COMPUTER END USER SUPPORT	920	920.371	N	-	15	15	-	15
12. REGION MANAGER SALARIES	920	920.047	N	-	-	-	-	-
13. PUBLIC AFFAIRS ADMINISTRATION	920	920.570	N	-	-	-	-	-
14. OPERATE MAINFRAME COMPUTERS GEN	920	920.360	N	-	-	-	-	-
15. STANDARD & CODES	920	920.561	N	87,961	28,021	115,982	-	115,982
16. INFORMATION SYS GENL SUPERVISION	920	920.301	N	(0)	5,948	5,948	-	5,948
17. INFORMATION SYS ADMIN SUPPORT	920	920.302	N	-	-	-	-	-
18. INFORMATION SYSTEMS	920	920.300	N	-	-	-	-	-
19. GOVERNMENTAL AFFAIRS SALARIES	920	920.560	N	-	-	-	-	-
20. PSEP - A&G SALARIES	920	920.850	N	54,788	22,840	77,628	-	77,628
21. Reassignment Only	920	920.010	N	-	-	-	-	-
ACCOUNT 920 NON-MARGINAL TOTAL				40,919,128	5,169,997	46,089,125	-	46,089,125
22. BLDG OPER OTH THAN CLEANING SV	921	921.601	Y	983,818	(18,350)	965,468	965,468	-
23. BUILDING CLEANING SERVICES	921	921.600	Y	68,881	2,777	71,658	71,658	-
24. PROCUREMENT & LOGISTICS CONSULT	921	921.630	Y	-	-	-	-	-
25. REAL ESTATE	921	921.604	Y	2,688	164	2,852	2,852	-
ACCOUNT 921 MARGINAL TOTAL				1,055,387	(15,408)	1,039,979	1,039,979	-
27. ADMINISTRATIVE & GENERAL SALARIES	921	921.000	N	10,951,501	(70,178)	10,881,323	-	10,881,323
28. HUMAN RESOURCES OPER SALARIES	921	921.200	N	4,206	(104)	4,101	-	4,101
29. COMPUTER END USER SUPPORT	921	921.371	N	11,491	65	11,556	-	11,556
30. REGIONAL AFFAIRS	921	921.571	N	956,632	(23,614)	933,018	-	933,018
31. PUBLIC AFFAIRS ADMINISTRATION	921	921.563	N	(2,854)	81	(2,773)	-	(2,773)
32. REGION MANAGER SALARIES	921	921.047	N	31	(1)	30	-	30
33. STANDARD & CODES	921	921.561	N	11,934	(335)	11,598	-	11,598
34. INFORMATION SYS GENL SUPERVISION	921	921.301	N	(18,573)	66,597	48,024	-	48,024
35. PSEP-A&G OFFICE SUPL	921	921.850	N	1,570,107	40,037	1,610,143	-	1,610,143
36. FERC B/S ERRORS	921	921.999	N	-	(17,294)	(17,294)	-	(17,294)
ACCOUNT 921 NON-MARGINAL TOTAL				13,484,474	(4,747)	13,479,727	-	13,479,727
37. ADMINISTRATIVE EXPENSES TRANSFERRED-CRED	922	922.000	N	-	(4,000,057)	(4,000,057)	-	(4,000,057)
38. HR-CAP A&G TRANS CR	922	922.200	N	-	(875,844)	(875,844)	-	(875,844)
39. IS GEN SUP-CAP AG CR	922	922.301	N	-	1,729	1,729	-	1,729
40. PA ADM-CAP A&G TR CR	922	922.563	N	-	1,111	1,111	-	1,111
41. REG AF-CAP A&G TR CR	922	922.570	N	-	(1,470,904)	(1,470,904)	-	(1,470,904)
42. BLD CLNG-CP AG TR CR	922	922.600	N	-	(4,590)	(4,590)	-	(4,590)
43. RE - CAP A&G TRN CR	922	922.604	N	-	(483)	(483)	-	(483)
ACCOUNT 922 NON-MARGINAL TOTAL				-	(6,349,039)	(6,349,039)	-	(6,349,039)
44. OUTSIDE SERVICES EMPLOYED	923	923.000	N	286,775	72,368,016	72,654,791	-	72,654,791
45. PSEP -OUTSIDE SERVICES	923	923.850	N	-	(25,158)	(25,158)	-	(25,158)
ACCOUNT 923 NON-MARGINAL TOTAL				286,775	72,342,859	72,629,634	-	72,629,634

2016 TCAP Phase II A&G LOADER ANALYSIS
2013 RECORDED COSTS

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	PUC Account Number	FERC Account No.	Marginal Y/N	2010 Recorded Costs Direct	Reassigned	(5) + (6) Total	Marginal	Non-Marginal
46. INSURANCE EXPENSE	924	924.000	Y	3,292,570	(36,109)	3,256,461	3,256,461	-
ACCOUNT 924 MARGINAL TOTAL				3,292,570	(36,109)	3,256,461	3,256,461	-
47. INJURIES AND DAMAGES	925	925.000	Y	(6,823,552)	(1,245,260)	(8,068,812)	(8,068,812)	-
48. ACCIDENT PREV & SAFE	925	925.160	Y	2,987,748	669,638	3,657,386	3,657,386	-
49. A&G EMERGENCY PREP	925	925.180	Y	1,277,896	346,769	1,624,665	1,624,665	-
50. COLL WORKERS COMP	925	925.300	Y	19,855,696	2,090,987	21,946,683	21,946,683	-
51. COLL PLPD	925	925.310	Y	14,725,446	(731,545)	13,993,901	13,993,901	-
52. PSEP - INJUR & DAMAG	925	925.850	Y	521,661	392,735	914,397	914,397	-
ACCOUNT 925 MARGINAL TOTAL				32,544,897	1,523,324	34,068,221	34,068,221	-
53. EMPLOYEE PENSIONS AND BENEFITS	926	926.000	Y	29,793,585	(936,786)	28,856,799	28,856,799	-
54. TRANSPORTATION PROGRAM	926	926.239	Y	162,063	(162,063)	(0)	(0)	-
55. EMPLOYEE RECOGNITION PROGRAM	926	926.200	Y	8,171,904	(8,171,547)	357	357	-
56.	926	926.207	Y	19,518	(23,800)	(4,281)	(4,281)	-
57. DISABILITY BENEFIT EXPENSE	926	926.300	Y	166,594,251	(52,909,649)	113,684,602	113,684,602	-
ACCOUNT 926 MARGINAL TOTAL				204,741,322	(62,203,845)	142,537,477	142,537,477	-
58. BLDG SUPPORT CANTEEN GASCO TWR	926	926.202	N	-	-	-	-	-
ACCOUNT 926 NON-MARGINAL TOTAL				-	-	-	-	-
59. INTERVENOR COMPENSATION	928	928.500	N	111,034	-	111,034	-	111,034
60. REGULATORY COMMISSION EXPENSES	928	928.000	N	3,022,420	2,182,175	5,204,595	-	5,204,595
ACCOUNT 928 NON-MARGINAL TOTAL				3,133,454	2,182,175	5,315,629	-	5,315,629
61. DIVISION STATIONERY EXPENSE	930	930.625	Y	19,632	183	19,816	19,816	-
62. DUPLICATING EQUIP DIST & TRANS	930	930.600	Y	55,697	523	56,220	56,220	-
ACCOUNT 930 MARGINAL TOTAL				75,330	706	76,036	76,036	-
63. MISCELLANEOUS GENERAL EXPENSES	930	930.200	N	10,965,473	(1,651,884)	9,313,589	-	9,313,589
64. MISC DIV OFFICE EXPENSES	930	930.046	N	1,730	11	1,741	-	1,741
ACCOUNT 930 NON-MARGINAL TOTAL				10,967,203	(1,651,873)	9,315,330	-	9,315,330
65. RENTS DISTRIB AND TRANSM REGIONS	931	931.602	Y	3,079,057	(93,391)	2,985,666	2,985,666	-
ACCOUNT 931 MARGINAL TOTAL				3,079,057	(93,391)	2,985,666	2,985,666	-
66. GAS COMPANY TOWER RENTS	931	931.600	N	15,335,034	(1,119,993)	14,215,041	-	14,215,041
67. RENTS GENERAL	931	931.000	N	-	282,428	282,428	-	282,428
ACCOUNT 931 NON-MARGINAL TOTAL				15,335,034	(837,565)	14,497,469	-	14,497,469
68. BLDG YARD & EQUIP MAINTENANCE	935	935.600	Y	15,505,641	537,128	16,042,769	16,042,769	-
69. MAINTENANCE FURN OFFICE EQUIP	935	935.601	Y	160,036	(5,828)	154,208	154,208	-
70. MEAS SHOP EQUIP	935	935.675	Y	342,106	11,543	353,649	353,649	-
71. GARAGE/FUEL ISLAND MAINTENANCE	935	935.606	Y	844,115	297,096	1,141,211	1,141,211	-
72. COMPR MTC CNG VEHICLES	935	935.605	Y	44,517	(84,929)	(40,412)	(40,412)	-
73. TESTRACK MAINTENANCE	935	935.680	Y	53,104	3,351	56,455	56,455	-
74. MAINTENANCE OF GENERAL PLANT	935	935.000	Y	1,288,176	2,246,943	3,535,119	3,535,119	-
ACCOUNT 935 MARGINAL TOTAL				18,237,695	3,005,304	21,242,999	21,242,999	-
TOTAL A&G				347,153,507	13,033,534	360,187,042	205,209,167	154,977,874

2016 TCAP Phase II A&G LOADER ANALYSIS
2013 RECORDED COSTS

FERC Account	LABOR	NON_LABOR	TOTAL DIRECT	REASSIGNMENTS	TOTAL COSTS
920.000 Total	\$32,220,044	\$0	\$32,220,044	\$ 2,981,629	\$35,201,673
920.010 Total	\$ 0	\$ 0	\$0	\$ 0	\$0
920.047 Total	\$0	\$0	\$0	\$ 0	\$0
920.200 Total	\$5,800,919	\$0	\$5,800,919	\$ 1,610,837	\$7,411,756
920.212 Total	\$0	\$0	\$0	\$ 0	\$0
920.300 Total	\$0	\$0	\$0	\$ 0	\$0
920.301 Total	\$0	\$0	\$0	\$ 5,948	\$ 5,948
920.302 Total	\$0	\$0	\$0	\$ 0	\$0
920.360 Total	\$0	\$0	\$0	\$ 0	\$0
920.371 Total	\$0	\$0	\$0	\$ 15	\$15
920.372 Total	\$0	\$0	\$0	\$ 0	\$0
920.560 Total	\$0	\$0	\$0	\$ 0	\$0
920.561 Total	\$87,961	\$0	\$87,961	\$ 28,021	\$115,982
920.563 Total	\$0	\$0	\$0	\$ 0	\$0
920.570 Total	\$2,755,416	\$0	\$2,755,416	\$ 520,706	\$3,276,122
920.600 Total	\$0	\$0	\$0	\$ 912	\$912
920.601 Total	\$1,182	\$0	\$1,182	\$ 236	\$1,418
920.604 Total	\$0	\$0	\$0	\$ 0	\$0
920.630 Total	\$0	\$0	\$0	\$ 0	\$0
920.632 Total	\$0	\$0	\$0	\$ 0	\$0
920.850 Total	\$54,788	\$0	\$54,788	\$ 22,840	\$ 77,628
	\$ 40,865,521	\$ 0	\$ 40,865,521	\$ 5,148,305	\$ 46,013,826
921.000 Total	\$0	\$10,951,501	\$10,951,501	-\$ 70,178	\$10,881,323
921.047 Total	\$0	\$ 31	\$31	-\$ 1	\$ 30
921.200 Total	\$0	\$ 4,206	\$4,206	-\$ 104	\$4,101
921.301 Total	\$0	-\$ 18,573	-\$18,573	\$ 66,597	\$48,024
921.371 Total	\$0	\$ 11,491	\$11,491	\$ 65	\$11,556
921.561 Total	\$0	\$ 11,934	\$11,934	-\$ 335	\$11,598
921.563 Total	\$0	-\$ 2,854	-\$2,854	\$ 81	(\$2,773)
921.570 Total	\$0	\$ 956,632	\$956,632	-\$ 23,614	\$933,018
921.600 Total	\$0	\$ 68,881	\$68,881	\$ 2,777	\$71,658
921.601 Total	\$0	\$ 983,818	\$983,818	-\$ 18,350	\$965,468
921.604 Total	\$0	\$ 2,688	\$2,688	\$ 164	\$2,852
921.630 Total	\$0	0	\$0	\$ 0	\$0
921.850 Total	\$0	\$ 1,570,107	\$1,570,107	\$ 40,037	\$1,610,143
921.999 Total	\$0	\$ 0	\$0	-\$ 17,294	(\$17,294)
	\$ 0	\$ 14,539,861	\$ 14,539,861	-\$ 20,155	\$ 14,519,706

2016 TCAP Phase II A&G LOADER ANALYSIS
2013 RECORDED COSTS

FERC Account	LABOR	NON_LABOR	TOTAL DIRECT	REASSIGNMENTS	TOTAL COSTS
922.000 Total	\$0	\$0	\$0	-\$ 4,000,057	(\$4,000,057)
922.200 Total	\$0	\$0	\$0	-\$ 875,844	(\$875,844)
922.301 Total	\$0	\$0	\$0	\$ 1,729	\$1,729
922.563 Total	\$0	\$0	\$0	\$ 1,111	\$1,111
922.570 Total	\$0	\$0	\$0	-\$ 1,470,904	(\$1,470,904)
922.600 Total	\$0	\$0	\$0	-\$ 4,590	(\$4,590)
922.604 Total	\$0	\$0	\$0	-\$ 483	(\$483)
	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$ 0</u>	<u>-\$ 6,349,039</u>	<u>(\$6,349,039)</u>
923.000 Total	\$338,717	(\$51,942)	\$286,775	\$ 72,368,016	\$72,654,791
923.850 Total	\$ 0		\$0	-\$ 25,158	(\$25,158)
	<u>\$ 338,717</u>	<u>(\$51,942)</u>	<u>\$ 286,775</u>	<u>\$ 72,342,859</u>	<u>\$72,629,634</u>
924.000 Total	\$0	\$3,292,570	\$3,292,570	-\$ 36,109	\$3,256,461
925.000 Total	\$1,206,824	(\$8,030,375)	(\$6,823,552)	(\$1,245,260)	(\$8,068,812)
925.160 Total	\$1,892,737	\$1,095,011	\$2,987,748	\$669,638	\$3,657,386
925.180 Total	\$536,674	\$741,222	\$1,277,896	\$346,769	\$1,624,665
925.300 Total		\$19,855,696	\$19,855,696	\$2,090,987	\$21,946,683
925.310 Total		\$14,725,446	\$14,725,446	(\$731,545)	\$13,993,901
925.850 Total		\$521,661	\$521,661	\$392,735	\$914,397
	<u>\$3,636,236</u>	<u>\$28,908,662</u>	<u>\$32,544,897</u>	<u>\$1,523,324</u>	<u>\$34,068,221</u>
926.000 Total	\$844,773	\$28,948,812	\$29,793,585	(\$936,786)	\$28,856,799
926.200 Total	\$3,000	\$8,168,904	\$8,171,904	(\$8,171,547)	\$357
926.202 Total	\$0	\$0	\$0	\$0	\$0
926.207 Total	\$19,434	\$84	\$19,518	(\$23,800)	(\$4,281)
926.239 Total		\$162,063	\$162,063	(\$162,063)	(\$0)
926.300 Total	\$17,308	\$166,576,943	\$166,594,251	(\$52,909,649)	\$113,684,602
	<u>\$884,515</u>	<u>\$203,856,807</u>	<u>\$204,741,322</u>	<u>(\$62,203,845)</u>	<u>\$142,537,477</u>

2016 TCAP Phase II A&G LOADER ANALYSIS
2013 RECORDED COSTS

FERC Account	LABOR	NON_LABOR	TOTAL DIRECT	REASSIGNMENTS	TOTAL COSTS
928.000 Total	\$2,681,744	\$340,677	\$3,022,420	\$2,182,175	\$5,204,595
928.500 Total		\$111,034	\$111,034	\$0	\$111,034
	<u>\$2,681,744</u>	<u>\$451,711</u>	<u>\$3,133,454</u>	<u>\$2,182,175</u>	<u>\$5,315,629</u>
930.046 Total		\$1,730	\$1,730	\$11	\$1,741
930.200 Total	\$1,048,086	\$9,917,387	\$10,965,473	(\$1,651,884)	\$9,313,589
930.600 Total		\$55,697	\$55,697	\$523	\$56,220
930.625 Total		\$19,632	\$19,632	\$183	\$19,816
	<u>\$1,048,086</u>	<u>\$9,994,447</u>	<u>\$11,042,533</u>	<u>(\$1,651,167)</u>	<u>\$9,391,366</u>
931.000 Total		\$0	\$0	\$282,428	\$282,428
931.600 Total		\$15,335,034	\$15,335,034	(\$1,119,993)	\$14,215,041
931.602 Total		\$3,079,057	\$3,079,057	(\$93,391)	\$2,985,666
	<u>\$0</u>	<u>\$18,414,091</u>	<u>\$18,414,091</u>	<u>(\$930,956)</u>	<u>\$17,483,135</u>
935.000 Total	(\$2,501)	\$1,290,678	\$1,288,176	\$2,246,943	\$3,535,119
935.600 Total	\$4,161,940	\$11,343,702	\$15,505,641	\$537,128	\$16,042,769
935.601 Total		\$160,036	\$160,036	(\$5,828)	\$154,208
935.605 Total	\$34,851	\$9,666	\$44,517	(\$84,929)	(\$40,412)
935.606 Total	\$400,517	\$443,598	\$844,115	\$297,096	\$1,141,211
935.675 Total	\$249,704	\$92,402	\$342,106	\$11,543	\$353,649
935.680 Total	\$53,104		\$53,104	\$3,351	\$56,455
	<u>\$4,897,614</u>	<u>\$13,340,081</u>	<u>\$18,237,695</u>	<u>\$3,005,304</u>	<u>\$21,242,999</u>
			<u>\$13,010,694</u>		<u>\$360,109,413</u>

Weighted Average RECC Calculation

Account No.	General Plant Accounts	Gas Plant In Service Year End 2010 Balance (\$)	Percent	RECC	Weighted Average RECC	Source
1.	390 Structures and Improvements	182,425,698	22.09%	12.506%	2.762%	FERC Form 2 line no 112, page 209
2.	391 Office Furniture and Equipment		0.00%		0.000%	
3.	391.1 Office Furniture and Equipment	12,178,664	1.47%	12.283%	0.181%	
4.	391.2 Computer Equipment	71,295,924	8.63%	25.752%	2.223%	
5.	391.3 Software Programs - 3yr ASL	11,667,250	1.41%	39.220%	0.554%	
6.	391.4 Software Programs - 6yr ASL	42,357,799	5.13%	21.486%	1.102%	
7.	391.5 Software Programs - 10yr ASL	280,682,742	33.98%	15.477%	5.259%	
8.	391.55 Software Programs - 15yr ASL	6,538,810	0.79%	12.205%	0.097%	
9.	391.6 Software Programs - 20yr ASL	6,767,828	0.82%	10.690%	0.088%	
10.	392 Transportation Equipment	574,058	0.07%	11.542%	0.008%	FERC Form 2 line no 114, page 209
11.	393 Stores Equipment	100,772	0.01%	11.542%	0.001%	FERC Form 2 line no 115, page 209
12.	394 Tools, Shop, and Garage Equipment	54,236,587	6.57%	10.614%	0.697%	FERC Form 2 line no 116, page 209
13.	394.2 Shop and Garage Equipment	5,498,120	0.67%	9.860%	0.066%	
14.	395 Laboratory Equipment	5,469,356	0.66%	10.435%	0.069%	FERC Form 2 line no 117, page 209
15.	396 Power Operated Equipment	11,957	0.00%	11.542%	0.000%	FERC Form 2 line no 118, page 209
16.	397 Communication Equipment	142,888,452	17.30%	11.937%	2.065%	FERC Form 2 line no 119, page 209
17.	398 Miscellaneous Equipment	3,305,056	0.40%	11.542%	0.046%	FERC Form 2 line no 120, page 209
18.		825,999,073	100.00%		15.218%	

Reflects 2013 FERC Form 2 data. RECC factors updated.

Gas Plant updated to 2013 FERC Form 2 data

RECC factors updated to 2014 values (note: reflects updates to property taxes and salvage values)

General Plant Loading Factor

	<u>2017 TCAP</u>
1. Total General Plant	\$1,223,112,252
Transmission and Storage adjustment	6.24%
Net Total General Plant after Storage adj.	<u>\$1,146,811,405</u>
1. Weighted Average RECC for General Plant	15.22%
2. Annualized General Plant Costs	\$174,517,748
3. Net Recorded O&M Costs	\$577,625,168
4. General Plant Loading Factor	30.21%
6. Transmission and Storage adjustment	6.24%

Notes:

1/ Total General Plant on Line 1 reflects removal of GP allocated to Transmission and Storage functions in EC study.

Reflects 2013 FERC Form 2 data for total General Plant.

**2013 FERC Form 2 data
M&S Annual Costs By Function**

I. Direct Plant Investment (To Allocate M&S Cost to Functions)

Line #	Function	Plant	Percent
1	Storage	\$801,151,032	7.94%
2	Transmission - Total	\$1,739,318,771	17.24%
3	Distribution - Total	\$7,548,301,124	74.82%
4	Customer Related	\$3,487,469,004	34.57%
5	Load Related	\$4,060,832,120	40.25%
6	General Plant	\$0	0.00%
7	Total	\$10,088,770,927	100.00%

FERC form 2, p. 207, line 57
 FERC form 2, p. 209, line 92
 from Allocation of Investment tab
 from Allocation of Investment tab
 from Allocation of Investment tab

II. Total M&S To Be Functionalized

8	Total Material and Supplies	\$27,215,623
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2013 FERC Year end M&S value from Selected Financial Data
 (from Net Plant Investment Page 1 of 2, Line 13)

III. Functional Allocation of M&S

9	Storage	\$2,161,197	7.94%
10	Transmission - Total	\$4,692,013	17.24%
11	Distribution - Total	\$20,362,413	74.82%
12	Customer Related	\$9,407,850	34.57%
13	Load Related	\$10,954,563	40.25%
14	General Plant	\$0	0.00%
15	Total	\$27,215,623	100.00%

16	IV. M&S Annual Cost factor	12.24%
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from Annual Cost Factor tab

V. M&S Annual Costs

	2013 \$		2017 \$	
17	Storage	\$264,514	7.94%	\$287,678
18	Transmission - Total	\$574,267	17.24%	\$624,556
19	Distribution - Total	\$2,492,204	74.82%	\$2,710,449
20	Customer Related	\$1,151,449	34.57%	\$1,252,283
21	Load Related	\$1,340,755	40.25%	\$1,458,167
22	General Plant	\$0	0.00%	\$0
23	Total	\$3,330,985	100.00%	\$3,622,683

@ O&M Escalation 2013 to 2017

1.076 \$1,442,960

*escalated by capital factor: 2013\$ to 2017\$ 1.088

Updated to FERC Form 2 data for 2013

2016 TCAP Phase II M&S Annual Costs By Function
Allocation of 2013 Distribution Plant Investment

Customer Related

	\$	Percent
1. 380 Services	2,210,344,367	
2. 381 Meters	560,594,850	
3. 382 Meter Installations	341,939,837	
4. 383 House Regulators	134,133,589	
5. 386 Other Property	0	
6. Sub-Total	3,247,012,643	46.20%
388 ARO - Customer Related	240,456,361	
Customer Related Total	3,487,469,004	

Load Related

	\$	Percent
7. 374 Land & Land Rights	31,685,415	
8. 375 Structures & Improvements	243,598,808	
9. 376 Mains	3,385,952,692	
10. 378 Measurement & Reg Stations	87,964,359	
11. 387 Other Equipment	31,641,858	
12. Sub-Total	3,780,843,132	53.80%
388 ARO - Load Related	279,988,988	
Load Related Total	4,060,832,120	

13. Total Distribution Plant	7,548,301,124	100.000%
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source: 2013 FERC Form 2, p. 208-9

2016 TCAP Phase II M&S Annual Costs By Function
Development of Material & Supplies Annual Cost Factor

	<u>Capital Structure</u>	<u>Cost</u>	<u>Weighted Cost</u>	<u>Tax Factor</u>	<u>After Tax Wt. Cost</u>
1. Long Term Debt	45.60%	5.77%	2.63%	1.0000	2.63%
2. Preferred Stock	2.40%	6.00%	0.14%	1.7806	0.26%
3. Common Equity	52.00%	10.10%	5.25%	1.7806	9.35%
4.			8.027%		12.24%

sources:

Cost of Capital ,AL 4442

Cost of Capital from Economic Assumptions model.

SOUTHERN CALIFORNIA GAS

2013 Economic Assumptions Update LEVELIZED ANNUAL CAPITAL COST AND RECC FACTORS

utility social

Auth ROR ==> 8.03%

Fed Tax Rate ==> 35.00%

State Tax Rate ==> 8.84% (d Valorum Rate ==>

1.236%

FERC Account	Account Name
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Book Life	Fed Tax Life	State Tax Life	Percent Salvage	Normlzd Federal Taxes ?	Normlzd State Taxes ?	Depreciation Method		LACC Components (in percent)					RECC Factors	PVCC Factors	Sum of Rev Req
						Federal Tax	State Tax	Book Depr	Return on Capital	Income Taxes	Property Taxes	Total LACC			

GAS GENERAL PLANT

G-391.5	Software Programs - 10yr ASL	10	3	3	0%	TRUE	FALSE	sl	0%	db/sl	0%	10.00	3.50	1.35	0.63	15.48	14.49	103.73	149.87
G-391.55	Software Programs - 15yr ASL	15	3	3	0%	TRUE	FALSE	sl	0%	db/sl	0%	6.67	3.54	1.31	0.69	12.21	11.08	104.30	172.03
G-391.6	Software Programs - 20yr ASL	20	3	3	0%	TRUE	FALSE	sl	0%	db/sl	0%	5.00	3.64	1.32	0.74	10.69	9.46	104.75	194.20
G-391.3	Software Programs - 3yr ASL	3	3	3	0%	TRUE	FALSE	sl	0%	db/sl	0%	33.33	4.15	1.94	0.43	39.85	39.22	102.66	118.84
G-391.4	Software Programs - 6yr ASL	6	3	3	0%	TRUE	FALSE	sl	0%	db/sl	0%	16.67	3.61	1.49	0.56	22.33	21.49	103.16	132.14

SOUTHERN CALIFORNIA GAS

2013 Economic Assumptions Update LEVELIZED ANNUAL CAPITAL COST AND RECC FACTORS

utility social Auth ROR ==> 8.03% Fed Tax Rate ==> 35.00% State Tax Rate ==> 8.84% d Valorum Rate ==> 1.236%

FERC Account	Account Name	Book Life	Fed Tax Life	State Tax Life	Percent Salvage	Normlzd Federal Taxes ?	Normlzd State Taxes ?	Depreciation Method		LACC Components (in percent)					RECC Factors	PVCC Factors	Sum of Rev Req		
								Federal Tax	State Tax	Book Depr	Return on Capital	Income Taxes	Property Taxes	Total LACC					
GAS UNDERGROUND STORAGE																			
		9	10	11	12	13	14	15	16	19	20	21	22	23	25	26	27		
G-352	Wells	29	15	22	-45%	TRUE	FALSE	db/sl	150%	db/sl	200%	5.00	3.98	1.61	0.62	11.21	9.55	124.72	216.67
G-353	Lines	45	15	22	-40%	TRUE	FALSE	db/sl	150%	db/sl	200%	3.11	4.50	1.91	0.77	10.29	8.42	124.22	263.83
G-354	Compressor Station Equipment	45	15	22	-5%	TRUE	FALSE	db/sl	150%	db/sl	200%	2.33	4.97	2.10	0.89	10.30	8.42	124.28	320.86
G-356	Purification Equipment	37	15	22	-20%	TRUE	FALSE	db/sl	150%	db/sl	200%	3.24	4.59	1.95	0.79	10.57	8.80	124.15	268.05
GAS TRANSMISSION PLANT																			
G-365.1	Land	0	0	0	0%	FALSE	FALSE	none	0%	none	0%	0.00	8.03	3.75	1.24	13.01	n/a	162.04	1336.72
G-365.2	Land Rights	0	40	40	0%	FALSE	FALSE	none	0%	sl	0%	0.00	8.03	2.09	1.24	11.35	n/a	141.41	1267.96
G-366	Structures & Improvements	51	39	45	-20%	TRUE	FALSE	sl	0%	db/sl	0%	2.35	5.71	2.66	0.87	11.60	9.40	141.67	367.64
G-367	Mains	57	15	22	-30%	TRUE	FALSE	db/sl	150%	db/sl	200%	2.28	4.89	2.06	0.88	10.11	8.13	124.38	317.36
G-368	Compressor Station Equipment	43	15	22	-10%	TRUE	FALSE	db/sl	150%	db/sl	200%	2.56	4.86	2.06	0.86	10.35	8.50	124.23	304.74
G-369	Measuring & Regulating Equipment	40	15	22	-15%	TRUE	FALSE	db/sl	150%	db/sl	200%	2.88	4.73	2.01	0.83	10.44	8.63	124.17	285.73
G-371	Other Equipment	20	15	22	-5%	TRUE	FALSE	db/sl	150%	db/sl	200%	5.25	4.57	2.05	0.71	12.59	11.14	123.33	215.59
GAS DISTRIBUTION PLANT																			
G-374.1	Land	0	0	0	0%	FALSE	FALSE	none	0%	db/sl	0%	0.00	8.03	3.75	1.24	13.01	n/a	162.04	1336.72
G-374.2	Land Rights	0	40	40	0%	FALSE	FALSE	none	0%	db/sl	0%	0.00	8.03	2.09	1.24	11.35	n/a	141.41	1267.96
G-375	Structures & Improvements	31	39	45	0%	TRUE	FALSE	sl	0%	db/sl	150%	3.23	5.66	2.69	0.82	12.40	10.50	140.37	313.11
G-376	Mains	55	20	35	-55%	TRUE	FALSE	db/sl	150%	db/sl	200%	2.82	4.78	2.14	0.79	10.53	8.49	129.30	268.88
G-378	Measuring & Regulating Equipment	31	20	35	-85%	TRUE	FALSE	db/sl	150%	db/sl	200%	5.97	3.60	1.48	0.47	11.52	9.76	130.42	190.73
G-380	Services	51	20	35	-95%	TRUE	FALSE	db/sl	150%	db/sl	200%	3.82	4.19	1.91	0.65	10.57	8.57	129.08	185.08
G-381	Meters	32	20	35	0%	TRUE	FALSE	db/sl	150%	db/sl	200%	3.13	5.04	2.30	0.83	11.30	9.54	128.90	280.94
G-382	Meter & Regulator Installations	41	20	35	-10%	TRUE	FALSE	db/sl	150%	db/sl	200%	2.68	5.05	2.26	0.85	10.84	8.94	129.29	306.31
G-383	House Regulators	32	20	35	0%	TRUE	FALSE	db/sl	150%	db/sl	200%	3.13	5.04	2.30	0.83	11.30	9.54	128.90	280.94
G-387	Other Equipment	12	20	35	15%	TRUE	FALSE	db/sl	150%	db/sl	200%	7.08	5.35	3.02	0.75	16.20	14.97	121.90	187.37
GAS GENERAL PLANT																			
G-390	Structures & Improvements	20	39	45	-25%	TRUE	FALSE	sl	0%	db/sl	0%	6.25	5.00	2.27	0.62	14.14	12.51	138.51	235.09
G-391.1	Office Furniture & Equipment	14	7	10	0%	TRUE	FALSE	db/sl	200%	db/sl	200%	7.14	3.93	1.69	0.68	13.45	12.28	110.72	174.26
G-391.2	Computer Equipment	5	5	6	0%	TRUE	FALSE	db/sl	200%	db/sl	200%	20.00	4.12	1.92	0.53	26.57	25.75	106.02	130.75
G-393	Stores Equipment	20	20	35	0%	TRUE	FALSE	db/sl	150%	db/sl	200%	5.00	4.95	2.36	0.74	13.05	11.54	127.83	227.66
G-394.1	Shop & Garage Equipment	29	20	35	0%	TRUE	FALSE	db/sl	150%	db/sl	200%	3.45	5.00	2.31	0.81	11.56	9.86	128.72	267.64
G-394.3	Large Portable Tools	24	20	35	0%	TRUE	FALSE	db/sl	150%	db/sl	200%	4.17	4.95	2.32	0.77	12.21	10.61	128.31	245.48
G-395	Laboratory Equipment	25	20	35	0%	TRUE	FALSE	db/sl	150%	db/sl	200%	4.00	4.96	2.32	0.78	12.06	10.43	128.41	249.91
G-397	Communications Equipment	15	7	10	0%	TRUE	FALSE	db/sl	150%	db/sl	200%	6.67	4.06	1.73	0.69	13.15	11.94	112.34	180.76
G-398	Miscellaneous Equipment	20	20	35	0%	TRUE	FALSE	db/sl	150%	db/sl	200%	5.00	4.95	2.36	0.74	13.05	11.54	127.83	227.66
G-391.5	Software Programs - 10yr ASL	10	3	3	0%	TRUE	FALSE	sl	0%	db/sl	0%	10.00	3.50	1.35	0.63	15.48	14.49	103.73	149.87
G-391.55	Software Programs - 15yr ASL	15	3	3	0%	TRUE	FALSE	sl	0%	db/sl	0%	6.67	3.54	1.31	0.69	12.21	11.08	104.30	172.03
G-391.6	Software Programs - 20yr ASL	20	3	3	0%	TRUE	FALSE	sl	0%	db/sl	0%	5.00	3.64	1.32	0.74	10.69	9.46	104.75	194.20
G-391.3	Software Programs - 3yr ASL	3	3	3	0%	TRUE	FALSE	sl	0%	db/sl	0%	33.33	4.15	1.94	0.43	39.85	39.22	102.66	118.84
G-391.4	Software Programs - 6yr ASL	6	3	3	0%	TRUE	FALSE	sl	0%	db/sl	0%	16.67	3.61	1.49	0.56	22.33	21.49	103.16	132.14

Capital and O&M Escalators				
2013 \$s	to	2017 \$s	2013-17 Factor: Capital	1.0876
2013 \$s	to	2017 \$s	2013-17 Factor: O&M	1.0762

factor used to escalate most capital forecasts (e.g., dis
factor used to escalate M&S\$
factor used to escalate transmission and storage capit:

factor used to escalate 2013 FERC Form 2 data to 201

Split Factors	<u>Labor</u>	<u>Nonlabor</u>
2013	27.89%	72.11%

	\$millions
	<u>2013</u>
Total Salaries & Wages	760
Total Gas O&M Exp.	2,725

Source: 2013 FERC Form 2, page 355, line 77
Source: 2013 FERC Form 2, page 325, line 271

Cost Escalators, for use in SoCalGas 2016 TCAP Phase II calculations

	Non-L O&M JGTOTALM	Labor O&M JAHE49NS	Gas Plant JUG@PCF
1997	0.6380677	0.6379513	0.462778
1998	0.6655134	0.6492513	0.468579
1999	0.6825024	0.6635053	0.479536
2000	0.7049392	0.6871605	0.496938
2001	0.7306292	0.706323	0.503706
2002	0.7422995	0.7202038	0.514019
2003	0.7673956	0.7426406	0.531099
2004	0.7934987	0.7704604	0.611666
2005	0.8271514	0.8051507	0.717693
2006	0.8489943	0.8359244	0.747019
2007	0.8634014	0.8650195	0.732839
2008	0.8934549	0.9092216	0.825395
2009	0.9133769	0.9058645	0.816371
2010	0.9306654	0.9293644	0.851434
2011	0.954956	0.9634951	0.932001
2012	0.9792414	0.9847569	1.005865
2013	1	1	1
2014	1.0186414	1.0155562	1.01386
2015	1.037446	1.0206129	1.034689
2016	1.0680248	1.0413145	1.058162
2017	1.1002594	1.0669359	1.087571
2018	1.1308902	1.09426	1.113044
2019	1.1617184	1.1185726	1.141873
2020	1.1926672	1.1431039	1.171979
2021	1.2232451	1.1675446	1.198564
2022	1.2541974	1.1910625	1.226486
2023	1.2859615	1.215779	1.255697
2024	1.3180467	1.2409887	1.282335

Values from EC study

Transmission and Storage			
EC study allocation of A&G and Gen Plant to transmission and storage function			
A&G			
	<u>Transmission</u>	<u>Storage</u>	<u>Total</u>
	15.2	7.6	365.4
	4.16%	2.08%	% A&G allocated to Tran/Storage
		4.34% Old	
Gen Plant			
	<u>Transmission</u>	<u>Storage</u>	<u>Total</u>
	1.110	0.557	26.715
	5.986	3.001	144.061
	0.046	0.023	1.113
	7.142	3.581	171.889
	4.16%	2.08%	% Gen Plant allocated to Tran/Storage
			Gen Plant Return
			Gen Plant Depreciation
			Gen Plant Taxes

Exclusions/ Adjustments			
	Exclusion Items		O&M excl in LRM study
Storage			
814 UndStr Op-Supervision & Engineering		0.021 \$	20,681
Transmission:			
854&855 Tran Op-Gas From Comp Sta Fuel (PBR Excluded)		0.347 \$	346,647
859 Tran Op-Other Expenses (PBR excl Haz Waste)		0.000 \$	-
		0.347	
Distribution			
880 Dist Op-Other Expenses (PBR Ex Haz Waste)		0.831 \$	831,288
Customer Accounts			
901 Cus Acct-Supervision (PBR Ex CARE) + Payroll Taxes		6.899 \$	6,899,171
903100 AMI		29.091 \$	29,090,804
904 Cus Acct-Uncollectible Accounts		7.719 \$	7,719,077
		43.709	
Customer Services & Information			
908 Cus Svc-Cust Assist Exp (PBR Ex DAP, DSM &Self-Gen)		167.610 \$	167,610,345
		167.610	
A&G			
927 AdmGen Op-Franchise Requirements		45.292 \$	45,292,214

Real Economic Carry Charge (RECC) Factors		
FERC Account	Account Name	RECC Factors
G-376	Mains	8.5%
G-378	Measuring & Regulating Equipment	9.8%
G-380	Services	8.6%
G-381	Meters	9.5%
G-382	Meter Installations	8.9%
G-383	House Regulators	9.5%

Table 8 A&G Factor	
Total Marginal A&G Costs \$000's	\$192,408
+ Total Payroll Taxes \$000	<u>\$49,006</u>
= Marginal A&G and Payroll Taxes \$000	\$241,413
/ Net O&M Costs \$000	\$577,625
= Marginal A&G Loading Factor as a % of O&M	41.79%

Table 9 General Plant Factor	
Total General Plant \$000	\$1,146,811
* Weighted Average RECC for General Plant	<u>15.22%</u>
= Annualized General Plant Costs	\$174,518
/ Net Recorded O&M Costs \$000	\$577,625
= General Plant Loading Factor as a % of O&M	30.21%

Table 10 M&S Annual Costs	
Function	
Customer Related \$000	\$1,252
Load Related \$000	\$1,443
Total	\$2,695

SoCalGas
2016 TCAP Phase II

Section 4
Cost Allocation Model

**Workpapers to the Prepared Written Testimony of Sharim
Chaudhury**

	Residential	CCI	G-AC	G-GEN
1 Customer Costs				
2 Per Unit LRM, \$/Cust/Year	\$223.60	\$711.30	\$5,865.16	\$5,084.52
3 Number of Customers	5,617,809	207,317	9	745
4 Customer Costs Rental Method \$000	\$1,454,838	\$1,256,152	\$53	\$3,788
5				
6 Medium Pressure Distribution costs				
7 Medium Pressure Distribution costs (MPD)				
8 Per Unit LRM, \$/mcf	\$200.38	\$200.38	\$200.38	\$200.38
9 MPD Peak Day Demand (mmcf)	2,345	529	0	4
10 Medium Pressure Distribution Costs \$000	\$601,252	\$469,949	\$12	\$717
11				
12 High Pressure Distribution costs				
13 High Pressure Distribution costs (HPD)				
14 Per Unit LRM, \$/mcf	\$1.92	\$1.92	\$1.92	\$1.92
15 HPD Peak Month Demand (mmcf)	39,076	11,426	4	134
16 High Pressure Distribution Costs \$000	\$118,480	\$75,171	\$7	\$257
17				
18 Customer Service & Information costs				
19 Customer Service & Information Allocator	58.0%	29.5%	0.0%	0.0%
20 Customer Service & Information \$000	\$0	\$0	\$0	\$0
21				
22 Unscaled LRM Based Costs \$000	\$2,174,570	\$1,801,273	\$72	\$4,763
23				
24 Calculation of Scalar:				
25 Authorized Revenue Requirement in Rates Base Margin \$000	\$1,975,458			
26 Adjustment to Storage for Honor Rancho \$000	\$0			
27 Target Base Margin \$000	\$1,975,458			
28 Less items not allocated per LRM method:				
29 Transmission Cost per EC \$000	\$214,896			
30 Storage Costs per EC \$000	\$83,585			
31 Uncollectibles	\$5,492			
32 NGV Compression Adder Costs per EC \$000	\$2,440			
33 Target Scaled Costs \$000	\$1,669,045			
34 Unscaled LRM Based Costs \$000	\$2,174,570			
35 amount to scale \$000	(\$505,526)			
36 Scalar (as a % of unscaled)	77%	77%	77%	77%
37 Scaled Customer Costs \$000 LRM/Rental Method	\$964,133	\$113,183	\$41	\$2,908
38 Scaled Medium Pressure Distribution Costs \$000 LRM	\$360,700	\$81,370	\$9	\$550
39 Scaled High Pressure Distribution Costs \$000 LRM	\$57,696	\$16,871	\$5	\$198
40 Scaled Customer Service & Information Costs \$000 LRM	\$0	\$0	\$0	\$0
41 Scaled LRM Based Costs \$000	\$1,669,045	\$1,382,528	\$55	\$3,656
42				
43 NGV Compression Costs:				
Compression Adder Costs \$000	\$2,440			

		Residential	CCI	G-AC	G-GEN	
44						
45	Uncollectibles:					
46	Target Base Margin \$000	\$1,975,458				
47	System Average Uncollectible Rate	0.27800%				
48	Uncollectibles	\$5,492				
49						
50	Allocation of Uncollectibles:					
51	All Costs excl. NGV Adder, EOR, Int, WS, and UBS	\$1,918,642	\$1,500,785	\$248,044	\$75	\$4,230
52	% All Costs excl. NGV Adder, EOR, Int, WS, and UBS		78.2%	12.9%	0.0%	0.2%
53	Uncollectibles	\$5,492	\$4,296	\$710	\$0	\$12
54						
55						
56						
57	Transmission Costs per Embedded Cost Method:					
58	Embedded Transmission Costs \$000	\$214,896				
59	Calculate BBT/Local-T Transmission Split:					
60	BBT \$	\$148,148				
61	LT \$	\$66,748				
62						
63	Allocation of BBT Costs:					
64	CYTP Mth	10,002,651	2,686,467	1,073,031	772	20,699
65	% CYTP		26.9%	10.7%	0.0%	0.2%
66	BBT Costs per EC method	\$148,148	\$39,789	\$15,893	\$11	\$307
67						
68	Allocation of LT Costs:					
69	CYPM Mth	1,091,535	402,503	118,547	37	1,437
70	% CYPM		36.87%	10.86%	0.00%	0.13%
71	LT Costs per EC method	\$66,748	\$24,613	\$7,249	\$2	\$88
72	Total Transmission Costs per EC method	\$214,896	\$64,402	\$23,142	\$14	\$394
73						
74	Storage Costs per EC Method (this includes HR RRQ, but does not include incremental HR INV capacity beyond that adopted in 2013TCAP)					
75	Embedded Storage Costs \$000	\$83,585				
76	Honor Rancho Revenue Requirement	\$0				
77		\$83,585				
78						
79	Core Storage	\$65,731	\$46,830	\$10,526	\$4	\$120
80	Load Balancing	\$27,834	\$7,025	\$2,952	\$2	\$60
81	Unbundled Storage	\$17,020	\$0	\$0	\$0	\$0
82	Total Storage Costs \$000	\$110,585	\$53,855	\$13,478	\$6	\$180
83						
84						
85	ALLOCATED BASE MARGIN (net of misc revenue & broker fee)	\$2,002,458	\$1,505,081	\$248,754	\$75	\$4,242
86	Percentage	100.0%	75.2%	12.4%	0.0%	0.2%
87	Average Year Throughput Mth	9,648,574	2,435,160	1,023,186	772	20,699
88	average rate \$/therm	\$0.208	\$0.618	\$0.243	\$0.097	\$0.205
89						
90						
91						
92	Calculation of Customer Service & Information Costs (CSI Costs):			2013 Costs	PBR Exclusion Items	Other Adjustments
93	907 Cus Svc-Supervision + Payroll Taxes	NON-DSM CUST. INFO		\$649	\$0	\$0
94	908 Cus Svc-Cust Assist Exp (PBR Ex DAP, DSM & Self-Gen)	NON-DSM CUST. INFO		\$156,687	(\$131,242)	\$0
95	909 Cus Svc-Info & Instruction Exp	NON-DSM CUST. INFO		\$2,147	\$0	\$0
96	910 Cus Svc-Misc CSI Exp (PBR Ex DSM & NGV)	NON-DSM CUST. INFO		\$2,049	(\$278)	\$0
97				\$161,532	(\$131,519)	\$0
98						
99	A&G loader					48.69%
100	Gen Plant Loader					24.46%
101	Total CS&I O&M, 2013 \$000's					

		Residential	CCI	G-AC	G-GEN
96					
97	Calculation of CSI Cost Allocator:				
98	Energy Markets Costs:				
99	Major Markets Staff FTE by Class (mgmnt estimate)				
100	Energy Markets	0.0%	2.8%	0.0%	0.0%
101	Energy Markets	\$0	\$45	\$0	\$0
102	Large C&I:				
103	# Large C&I Customers	0	206,028	0	0
104	% Large C&I only	0.0%	99.7%	0.0%	0.0%
105	Large C&I	\$6,410	\$6,391	\$0	\$0
106	NGV	\$1,385	\$0	\$0	\$0
107	Residential	\$11,964	\$0	\$0	\$0
108	Small Business				
109	# G10, G-AC, G-GE Customers only	0	206,028	12	708
110	Small Business	0.0%	99.7%	0.0%	0.3%
111	Small Business	\$548	\$546	\$0	\$2
112	Econ Development				
113	# Large C&I Customers	0	206,028	0	0
114	% Large C&I only	0.0%	99.7%	0.0%	0.0%
115	Econ Development	\$41	\$41	\$0	\$0
116	Other Residential	\$1,840	\$0	\$0	\$0
117	Total	\$23,788	\$13,803	\$7,022	\$2
118	Allocator %	58.0%	29.5%	0.0%	0.0%
119					
120					
121					
122					
123	Model Results RD Format for RD Models				
124	Customer Related Costs	\$964,133	\$113,183	\$41	\$2,908
125	Medium Pressure Distribution Costs	\$360,700	\$81,370	\$9	\$550
126	High Pressure Distribution Costs	\$57,696	\$16,871	\$5	\$198
127	Backbone Transmission Costs	\$39,789	\$15,893	\$11	\$307
128	Local Transmission Costs	\$24,613	\$7,249	\$2	\$88
129	Storage - Seasonal	\$46,830	\$10,526	\$4	\$120
130	Storage - Load Balancing	\$7,025	\$2,952	\$2	\$60
131	Storage - TBS	\$0	\$0	\$0	\$0
132	Non-DSM Related Marketing	\$0	\$0	\$0	\$0
133	Uncollectibles	\$4,296	\$710	\$0	\$12
134	NGV Compression Costs:	\$0	\$0	\$0	\$0
135	Total Margin Allocation pre-SI & Unbundle FAR	\$2,002,458	\$1,505,081	\$248,754	\$4,242
136	% Allocation	75.2%	12.4%	0.0%	0.2%
137					
138					

		Residential	CCI	G-AC	G-GEN		
138	Storage Costs per EC Method (this includes HR RRQ, but does not include incremental HR INV capacity beyond that adopted in 2013TCAP, however effective rate w/ this inventory is calculated)						
	Allocation of Storage Costs to Inventory/Inject/Withdrawal w/HR RRQ w/o incrementalHR Capacity						
139		% of Embedded Storage Costs	Honor Rancho RRQ \$000/yr	Total Storage Costs w/HR RRQ\$000/yr	Capacity MMcfd or MMCF	Rate w/HR RRQ \$/mcf or \$/mcf	
140	Injection as % storage costs	33.333%	\$27,862	\$0	770	\$36.18	
141	Inventory as % storage costs	33.333%	\$27,862	\$0	136,100	\$0.20	
142	Withdrawal as % storage costs	33.333%	\$27,862	\$0	3,175	\$8.78	
143		100.0%	\$83,585	\$0	\$83,585		
144	Core Storage Capacities:						
145	Number of Injection Days	<i>Allocation Method</i>	214	73.4%	13.3%	0.0%	
146	Injection MMcfd	<i>Inv per Inj Day</i>	388	285	51	0	
147						0.3%	
148						1	
149	% Excess Winter Demand			83.4%	15.1%	0.0%	
150	Inventory MMCF	<i>% Excess Wintk</i>	83,000	60,942	11,011	12	
151						0.4%	
152	MPD Peak Day (1-in-35 Core) Core Only MTH					269	
153	% Core MPD Peak Day			79.4%	19.1%	0.0%	
154	Withdrawal MMcfd	<i>% Core Peak L</i>	2,225	1,569	377	0	
155						0.2%	
156	Injection \$000		\$14,039	\$10,308	\$1,862	\$2	
157	Inventory \$000		\$16,991	\$12,476	\$2,254	\$2	
158	Withdrawal \$000		\$19,525	\$13,765	\$3,311	\$1	
159			\$50,556	\$36,549	\$7,428	\$5	
160						\$127	
160	Load Balancing Storage Capacities:						
161	Injection MMcfd	<i>%AYTP (incl EO)</i>	200	50	21	0	
162	Inventory MMCF	<i>%AYTP Noncore</i>	5,100	0	0	0	
163	Withdrawal MMcfd	<i>%AYTP (incl EO)</i>	525	133	56	0	
164	Injection \$000		\$7,237	\$1,826	\$767	\$1	
165	Inventory \$000		\$1,044	\$0	\$0	\$0	
166	Withdrawal \$000		\$4,607	\$1,163	\$489	\$0	
167			\$12,888	\$2,989	\$1,256	\$1	
168						\$25	
168	Unbundled Storage Capacities:						
169	Injection MMcfd	<i>100% UBS</i>	182	0	0	0	
170	Inventory MMCF	<i>100% UBS</i>	48,000	0	0	0	
171	Withdrawal MMcfd	<i>100% UBS</i>	425	0	0	0	
172	Injection \$000		\$6,585	\$0	\$0	\$0	
173	Inventory \$000		\$9,826	\$0	\$0	\$0	
174	Withdrawal \$000		\$3,730	\$0	\$0	\$0	
175			\$20,141	\$0	\$0	\$0	
176	Total Storage:						
177	Injection MMcfd		770	335	73	0	
178	Inventory MMCF		136,100	60,942	11,011	12	
179	Withdrawal MMcfd		3,175	1,701	433	0	
180	Injection \$000		\$27,862	\$12,135	\$2,630	\$3	
181	Inventory \$000		\$27,862	\$12,476	\$2,254	\$2	
182	Withdrawal \$000		\$27,862	\$14,927	\$3,800	\$1	
183	Total Storage Costs per EC Method w/HR RRQ		\$83,585	\$39,538	\$8,684	\$6	
184						\$152	
185	Calculation of HRSMA Allocator (allocated inventory Pre- Incremental HR & Aliso)						
186	Total allocated Inventory, pre-HR capacity and pre-Aliso MMCF		60,942	11,011	12	269	
187	TCAP HRSMA Allocator (based on total allocated inventory as % of total inventory)		44.8%	8.1%	0.0%	0.2%	
188	Calculate Effective Storage Rates w/ Incremental Honor Rancho Capacity (this does not determine allocated RRQ, just the effective rate with the incremental HR INV capacity)						
189		Total Storage Costs w/HR RRQ\$000/yr	Storage Capacities w/HR BCF & mmcfd	Units	Conversion Mbtu/cf	Storage Capacities Mdth	Effective Storage Rates w/HR \$/dth
190							
191	Injection	\$27,862	770	MMcfd	1.03	793	\$35.13
192	Inventory	\$27,862	138.1	Bcf	1.03	142,243	\$0.196
193	Withdrawal	\$27,862	3,175	MMcfd	1.03	3,270	\$8.52
194	Total	\$83,585					
195	Calculate Effective Storage Rates w/HR Capacity AND Aliso RRQ & Capacities						
196							
197							

	Embedded Costs w/ HR RRQ\$000 w/FFU	ACTR \$000's w/FFU	Residential Costs w/ HR RRQ and ACTR \$000 w/FFU	CCI Storage Capacities w/ HR & Aliso BCF & mmcf	G-AC Units	G-GEN Conversion Mbtu/cf
198						
199	Injection	\$27,862	\$27,862	915.0	MMcf	1.03
200	Inventory	\$27,862	\$27,862	138.1	Bcf	1.03
201	Withdrawal	\$27,862	\$27,862	3,175	MMcf	1.03
202	Total	\$83,585	\$83,585			
203						
204	Allocation of Aliso Canyon Injection Capacity & Costs to Storage Classes:					
205	Core	TCAP Injection mmcf	ACTR Injection mmcf	Post ACTR Injection mmcf	Post ACTR allocation	Pre ACTR Injection w/FFU \$000
206	SDGE	341.7	0.0	341.7	37.3%	\$12,364
207		46.3	0.0	46.3	5.1%	\$1,676
208		388.0	0.0	388.0	42.4%	\$14,039
209	Load Balancing	200.0	0.0	200.0	21.9%	\$7,237
210	UBS	182.0	145.0	327.0	35.7%	\$6,585
211		770.0	145.0	915.0	100.0%	\$27,862
212	Notes:					
213	(1) FFU Gross to Net Factor	98.2668%				
214	(2) Transportation rates are calculated on 12-month basis, while in-service date is 1/1/2016. Transport rates are calculated using ACTR amount on a Net-to-Gross basis					
215						
216	Calculation of ACTR Allocation% for allocation to Rate Classes	ACTR w/oFFU \$000	Residential	CCI	G-AC	G-GEN
217	SCG Core Storage:					
218	Core Injection Allocation adjusted for SCG Core only		83.4%	15.1%	0.0%	0.4%
219	SCG Core Storage \$000 w/o FFU	\$8,157	\$6,801	\$1,229	\$1	\$30
220	SDGE Core Storage \$000 w/o FFU	\$1,106				
221	total core storage w/o FFU	\$9,263				
222						
223	UBS \$000 w/oFFU	\$12,962				
224	Load Balancing:					
225	ECPT incl EOR		25.2%	10.6%	0.0%	0.2%
226	Load Balancing \$000 w/oFFU	\$4,775	\$1,205	\$506	\$0	\$10
227	ACTR w/o FFU \$000	\$27,000	\$8,006	\$1,735	\$2	\$40
228	ACTR allocation %		29.7%	6.4%	0.0%	0.1%
229						
	Summary of Storage Costs for RATE TABLES under old method:					
	Core \$000	\$59,819				
	Load Balancing \$000	\$17,663				
	Unbundled Storage \$000	\$33,104				
	total storage \$000	\$110,585				

	Residential	CCI	G-AC	G-GEN	
230					
231					
232	DIRECT (%s Load or Cust/Mtrs Sum to 100%)				
233	Transmission				
234	Average Year Throughput (MTh)	121	7,372	0	851
235	Cold Year Throughput (1-in-35) (MTh)	134	7,731	0	851
236	Cold Year Peak Month (December) (MTh)	20	854	0	59
237	Peak Day (1-in-35 Core; 1-in-10 Noncore) (MTh)	1	42	0	2
238	Number of Customers	23	70	0	19
239	High Pressure				
240	Average Year Throughput (MTh)	11,469	60,825	384	3,397
241	Cold Year Throughput (1-in-35) (MTh)	12,652	63,788	384	3,397
242	Cold Year Peak Month (December) (MTh)	1,896	7,047	19	236
243	Peak Day (1-in-35 Core; 1-in-10 Noncore) (MTh)	114	347	1	8
244	Number of Customers	7,148	2,582	3	160
245	Medium Pressure				
246	Average Year Throughput (MTh)	2,423,570	954,989	388	16,451
247	Cold Year Throughput (1-in-35) (MTh)	2,673,681	1,001,512	388	16,451
248	Cold Year Peak Month (December) (MTh)	400,588	110,646	19	1,142
249	Peak Day (1-in-35 Core; 1-in-10 Noncore) (MTh)	24,156	5,449	1	37
250	Number of Customers	5,610,637	204,666	6	566
251	CUMULATIVE (Calc'd from DIRECT %s)				
252	Transmission				
253	Average Year Throughput (MTh)	2,435,160	1,023,186	772	20,699
254	Cold Year Throughput (1-in-35) (MTh)	2,686,467	1,073,031	772	20,699
255	Cold Year Peak Month (December) (MTh)	402,503	118,547	37	1,437
256	Peak Day (1-in-35 Core; 1-in-10 Noncore) (MTh)	24,272	5,839	1	46
257	Number of Customers	5,617,809	207,317	9	745
258	High Pressure				
259	Average Year Throughput (MTh)	2,435,038	1,015,814	772	19,848
260	Cold Year Throughput (1-in-35) (MTh)	2,686,333	1,065,299	772	19,848
261	Cold Year Peak Month (December) (MTh)	402,483	117,693	37	1,378
262	Peak Day (1-in-35 Core; 1-in-10 Noncore) (MTh)	24,271	5,797	1	44
263	Number of Customers	5,617,785	207,248	9	726
264	Medium Pressure				
265	Average Year Throughput (MTh)	2,423,570	954,989	388	16,451
266	Cold Year Throughput (1-in-35) (MTh)	2,673,681	1,001,512	388	16,451
267	Cold Year Peak Month (December) (MTh)	400,588	110,646	19	1,142
268	Peak Day (1-in-35 Core; 1-in-10 Noncore) (MTh)	24,156	5,449	1	37
269	Number of Customers	5,610,637	204,666	6	566
270					

Toggle		2	(1=Old, 2=New)	Residential	CCI	G-AC	G-GEN
2017TCAP Phase 1 Storage Allocation Proposal							
1	<u>Core Storage Capacities:</u>			<u>Allocation Method</u>			
2	Number of Injection Days		214	73.4%	13.3%	0.0%	0.3%
3	Injection MMcf		388	285	51	0	1
4							
5	% Excess Winter Demand			83.4%	15.1%	0.0%	0.4%
6	Inventory MMCF		83,000	60,942	11,011	12	269
7							
8	MPD Peak Day (1-in-35 Core) Core Only MTH			1,569	377	0	3
9	% Excess Winter Demand			79.4%	19.1%	0.0%	0.2%
10	Withdrawal MMcf		2,225	1,569	377	0	3
11				70%	17%	0%	0%
12	Injection \$000		\$9,638	\$7,077	\$1,279	\$1	\$31
13	Inventory \$000		\$7,160	\$5,257	\$950	\$1	\$23
14	Withdrawal \$000		\$48,933	\$34,496	\$8,298	\$2	\$66
15		65731	\$65,731	\$46,830	\$10,526	\$4	\$120
16	<u>Load Balancing Storage Capacities:</u>	27834					
17	Injection MMcf	17020	100%	25%	11%	0%	0%
18	Inventory MMCF	110585	100%	25%	11%	0%	0%
19	Withdrawal MMcf		100%	25%	11%	0%	0%
20	Injection \$000		\$10,863	\$2,742	\$1,152	\$1	\$23
21	Inventory \$000		\$440	\$111	\$47	\$0	\$1
22	Withdrawal \$000		\$16,531	\$4,172	\$1,753	\$1	\$35
23			\$27,834	\$7,025	\$2,952	\$2	\$60
24	<u>Unbundled Storage Capacities:</u>						
25	Injection MMcf		100% UBS	1	0%	0%	0%
26	Inventory MMCF		100% UBS	1	0%	0%	0%
27	Withdrawal MMcf		100% UBS	1	0%	0%	0%
28	Injection \$000		\$3,360	\$0	\$0	\$0	\$0
29	Inventory \$000		\$4,313	\$0	\$0	\$0	\$0
30	Withdrawal \$000		\$9,347	\$0	\$0	\$0	\$0
31			\$17,020	\$0	\$0	\$0	\$0
32	<u>Total Storage:</u>						
33	Injection MMcf		390	285	52	0	1
34	Inventory MMCF		83,002	60,942	11,011	12	269
35	Withdrawal MMcf		2,227	1,569	377	0	3
36	Injection \$000		\$23,861	\$9,818	\$2,431	\$2	\$55
37	Inventory \$000		\$11,914	\$5,368	\$997	\$1	\$24
38	Withdrawal \$000		\$74,810	\$38,668	\$10,051	\$3	\$101
39	Total Storage Costs per EC Method w/HR RRQ		\$110,585	\$53,855	\$13,478	\$6	\$180
Summary of Storage Costs for RATE TABLES under new method:							
	Core \$000		\$65,731				
	Load Balancing \$000		\$27,834				
	Unbundled Storage \$000		\$17,020				
	total storage \$000		\$110,585				

Storage Core Allocation, per Bruce Wetzel's testimony

Present

Inventory %			84.0%	15.4%	0.0%	0.0%
Inventory MMCF	% Excess Wint	83,000	61,844	11,363	0	0
Peak Day (1-in-35 Core) Core Only MTh						
% Core MPD Peak Day			64.7%	34.2%	0.0%	0.0%
Withdrawal MMcf	% Core MPD P	2,225	1,288	680	0	0

Proposed

% Excess Winter Demand			83.4%	15.1%	0.0%	0.4%
Inventory MMCF	% Excess Wint	83,000	60,942	11,011	12	269
MPD Peak Day (1-in-35 Core) Core Only MTh						
% Core MPD Peak Day			79.4%	19.1%	0.0%	0.2%
Withdrawal MMcf	% Core Peak L	2,225	1,573	374	0	3

	NGV	Total Core
Customer Costs		
Per Unit LRM, \$/Cust/Year	\$22,281.38	\$242.94
Number of Customers	359	5,826,239
Customer Costs Rental Method \$000	\$7,993	\$1,415,451
Medium Pressure Distribution costs		
Medium Pressure Distribution costs (MPD)		
Per Unit LRM, \$/mcf	\$200.38	\$200.38
MPD Peak Day Demand (mmcf)	13	2,891
Medium Pressure Distribution Costs \$000	\$2,546	\$579,240
High Pressure Distribution costs		
High Pressure Distribution costs (HPD)		
Per Unit LRM, \$/mcf	\$1.92	\$1.92
HPD Peak Month Demand (mmcf)	936	51,576
High Pressure Distribution Costs \$000	\$1,801	\$99,217
Customer Service & Information costs		
Customer Service & Information Allocator	5.8%	93.4%
Customer Service & Information \$000	\$0	\$0
Unscaled LRM Based Costs \$000	\$12,340	\$2,093,908
Calculation of Scalar:		
Authorized Revenue Requirement in Rates Base Margin \$000		
Adjustment to Storage for Honor Rancho \$000		
Target Base Margin \$000		
Less items not allocated per LRM method:		
Transmission Cost per EC \$000		
Storage Costs per EC \$000		
Uncollectibles		
NGV Compression Adder Costs per EC \$000		
Target Scaled Costs \$000		
Unscaled LRM Based Costs \$000		
amount to scale \$000		
Scalar (as a % of unscaled)	77%	77%
Scaled Customer Costs \$000 LRM/Rental Method	\$6,135	\$1,086,399
Scaled Medium Pressure Distribution Costs \$000 LRM	\$1,954	\$444,583
Scaled High Pressure Distribution Costs \$000 LRM	\$1,382	\$76,152
Scaled Customer Service & Information Costs \$000 LRM	\$0	\$0
Scaled LRM Based Costs \$000	\$9,471	\$1,607,134
NGV Compression Costs:		
Compression Adder Costs \$000	\$2,440	\$2,440

	NGV	Total Core
<u>Uncollectibles:</u>		
Target Base Margin \$000		
System Average Uncollectible Rate		
Uncollectibles		
<u>Allocation of Uncollectibles:</u>		
All Costs excl. NGV Adder, EOR, Int, WS, and UBS	\$13,814	\$1,766,949
% All Costs excl. NGV Adder, EOR, Int, WS, and UBS	0.7%	92.1%
Uncollectibles	\$40	\$5,058

Transmission Costs per Embedded Cost Method:
Embedded Transmission Costs \$000
Calculate BBT/Local-T Transmission Split:

<u>Allocation of BBT Costs:</u>		
CYTP Mth	157,095	3,938,064
% CYTP	1.6%	39.4%
BBT Costs per EC method	\$2,327	\$58,326
<u>Allocation of LT Costs:</u>		
CYPM Mth	12,982	535,507
% CYPM	1.19%	49.06%
LT Costs per EC method	\$794	\$32,747
Total Transmission Costs per EC method	\$3,121	\$91,073

Storage Costs per EC Method (this includes HR RRQ, but does not include increments)
Embedded Storage Costs \$000
Honor Rancho Revenue Requirement

Core Storage	\$769	\$58,250
Load Balancing	\$453	\$10,492
Unbundled Storage	\$0	\$0
Total Storage Costs \$000	\$1,222	\$68,742
ALLOCATED BASE MARGIN (net of misc revenue & broker fee)	\$16,294	\$1,774,447
Percentage	0.8%	88.6%
Average Year Throughput Mth	157,095	3,636,911
average rate \$/therm	\$0.104	\$0.488

<u>Calculation of Customer Service & Information Costs (CSI Costs):</u>	2013 Costs in Transport Rates
907 Cus Svc-Supervision + Payroll Taxes	\$649
908 Cus Svc-Cust Assist Exp (PBR Ex DAP, DSM & Self-Gen)	\$25,445
909 Cus Svc-Info & Instruction Exp	\$2,147
910 Cus Svc-Misc CSI Exp (PBR Ex DSM & NGV)	\$1,772
	\$30,013
A&G loader	\$14,614
Gen Plant Loader	\$7,342
Total CS&I O&M, 2013 \$000's	\$51,969

	NGV	Total Core
Calculation of CSI Cost Allocator:		
Energy Markets Costs:		
Major Markets Staff FTE by Class (mgmnt estimate)	0.0	0
Energy Markets	0.0%	2.8%
Energy Markets	\$0	\$45
Large C&I:		
# Large C&I Customers	0	206,028
% Large C&I only	0.0%	99.7%
Large C&I	\$0	\$6,391
NGV	\$1,385	\$1,385
Residential	\$0	\$11,964
Small Business		
# G10, G-AC, G-GE Customers only	0	206,748
Small Business	0.0%	100.0%
Small Business	\$0	\$548
Econ Development		
# Large C&I Customers	0	206,028
% Large C&I only	0.0%	99.7%
Econ Development	\$0	\$41
Other Residential	\$0	\$1,840
Total	\$1,385	\$22,212
Allocator %	5.8%	93.4%

Model Results RD Format for RD Models

Customer Related Costs	\$6,135	\$1,086,399
Medium Pressure Distribution Costs	\$1,954	\$444,583
High Pressure Distribution Costs	\$1,382	\$76,152
Backbone Transmission Costs	\$2,327	\$58,326
Local Transmission Costs	\$794	\$32,747
Storage - Seasonal	\$769	\$58,250
Storage - Load Balancing	\$453	\$10,492
Storage - TBS	\$0	\$0
Non-DSM Related Marketing	\$0	\$0
Uncollectibles	\$40	\$5,058
NGV Compression Costs:	\$2,440	\$2,440
Total Margin Allocation pre-SI & Unbundle FAR	\$16,294	\$1,774,447
% Allocation	0.8%	88.6%

	NGV	Total Core
Storage Costs per EC Method (this includes HR RRQ, but does not include incre		
Allocation of Storage Costs to Inventory/Inject/Withdrawal w/HR RRQ w/o incrementa		
		Rate w/HR RRQ \$/dth or
	mbtu/cf	\$/dth/d
Injection as % storage costs	1.03	\$35.13
Inventory as % storage costs	1.03	\$0.199
Withdrawal as % storage costs	1.03	\$8.52
Core Storage Capacities:		
Number of Injection Days	1.0%	88.1%
Injection MMcf	4	342
% Excess Winter Demand	1.2%	100%
Inventory MMCF	860	73,093
MPD Peak Day (1-in-35 Core) Core Only MTh		
% Core MPD Peak Day	1.4%	100%
Withdrawal MMcf	27	1,976
Injection \$000	\$145	\$12,364
Inventory \$000	\$176	\$14,963
Withdrawal \$000	\$237	\$17,340
	\$559	\$44,667
Load Balancing Storage Capacities:		
Injection MMcf	3	75
Inventory MMCF	0	0
Withdrawal MMcf	9	198
Injection \$000	\$118	\$2,728
Inventory \$000	\$0	\$0
Withdrawal \$000	\$75	\$1,737
	\$193	\$4,464
Unbundled Storage Capacities:		
Injection MMcf	0	0
Inventory MMCF	0	0
Withdrawal MMcf	0	0
Injection \$000	\$0	\$0
Inventory \$000	\$0	\$0
Withdrawal \$000	\$0	\$0
	\$0	\$0
Total Storage:		
Injection MMcf	7	417
Inventory MMCF	860	73,093
Withdrawal MMcf	36	2,174
Injection \$000	\$263	\$15,091
Inventory \$000	\$176	\$14,963
Withdrawal \$000	\$312	\$19,077
Total Storage Costs per EC Method w/HR RRQ	\$752	\$49,131
Calculation of HRSMA Allocator (allocated inventory Pre- Incremental HR & Aliso		
Total allocated inventory, pre-HR capacity and pre-Aliso MMCF		
	860	73,093
TCAP HRSMA Allocator (based on total allocated inventory as % of total invento	0.6%	53.7%
Calculate Effective Storage Rates w/ Incremental Honor Rancho Capacity (this d		
Injection		
Inventory		
Withdrawal		
Total		
Calculate Effective Storage Rates w/HR Capacity AND Aliso RRQ & Capacities		

	NGV	Total Core
	Storage Capacities Mdth	Effective Storage Rates w/HR & Aliso \$/dth
Injection	942	\$29.56
Inventory	142,243	\$0.196
Withdrawal	3,270	\$8.52
Total		

	Pre ACTR Injection w/o FFU \$000 (1)	Post ACTR Injection \$000 w/o FFU
Allocation of Aliso Canyon Injection Capacity & Costs to Storage Classes:		
Core	\$12,149	\$20,307
SDGE	\$1,647	\$2,752
	\$13,796	\$23,059
Load Balancing	\$7,111	\$11,886
UBS	\$6,471	\$19,434
	\$27,379	\$54,379

Notes:

- (1) FFU Gross to Net Factor
(2) Transportation rates are calculated on 12-month basis, while in-service date is 1/

Calculation of ACTR Allocation% for allocation to Rate Classes	NGV	Total Core
SCG Core Storage:		
Core Injection Allocation adjusted for SCG Core only	1.2%	100.0%
SCG Core Storage \$000 w/o FFU	\$96	\$8,157
SDGE Core Storage \$000 w/o FFU		\$0
total core storage w/o FFU		
UBS \$000 w/oFFU		\$0
Load Balancing:		
ECPT incl EOR	1.6%	37.7%
Load Balancing \$000 w/oFFU	\$78	\$1,800
ACTR w/o FFU \$000	\$174	\$9,957
ACTR allocation %	0.6%	36.9%

Summary of Storage Costs for RATE TABLES under old method:

Core \$000	
Load Balancing \$000	
Unbundled Storage \$000	
total storage \$000	

	NGV	Total Core
DIRECT (%'s Load or Cust/Mtrs Sum to 100%)		
Transmission		
Average Year Throughput (MTh)	40,433	48,777
Cold Year Throughput (1-in-35) (MTh)	40,433	49,148
Cold Year Peak Month (December) (MTh)	3,341	4,274
Peak Day (1-in-35 Core; 1-in-10 Noncore) (MTh)	108	153
Number of Customers	15	127
High Pressure		
Average Year Throughput (MTh)	67,562	143,636
Cold Year Throughput (1-in-35) (MTh)	67,562	147,783
Cold Year Peak Month (December) (MTh)	5,583	14,780
Peak Day (1-in-35 Core; 1-in-10 Noncore) (MTh)	180	650
Number of Customers	59	9,952
Medium Pressure		
Average Year Throughput (MTh)	49,101	3,444,499
Cold Year Throughput (1-in-35) (MTh)	49,101	3,741,133
Cold Year Peak Month (December) (MTh)	4,058	516,452
Peak Day (1-in-35 Core; 1-in-10 Noncore) (MTh)	131	29,774
Number of Customers	285	5,816,160
CUMULATIVE (Calc'd from DIRECT %'s)		
Transmission		
Average Year Throughput (MTh)	157,095	3,636,911
Cold Year Throughput (1-in-35) (MTh)	157,095	3,938,064
Cold Year Peak Month (December) (MTh)	12,982	535,507
Peak Day (1-in-35 Core; 1-in-10 Noncore) (MTh)	419	30,577
Number of Customers	359	5,826,239
High Pressure		
Average Year Throughput (MTh)	116,663	3,588,135
Cold Year Throughput (1-in-35) (MTh)	116,663	3,888,915
Cold Year Peak Month (December) (MTh)	9,641	531,232
Peak Day (1-in-35 Core; 1-in-10 Noncore) (MTh)	311	30,424
Number of Customers	344	5,826,112
Medium Pressure		
Average Year Throughput (MTh)	49,101	3,444,499
Cold Year Throughput (1-in-35) (MTh)	49,101	3,741,133
Cold Year Peak Month (December) (MTh)	4,058	516,452
Peak Day (1-in-35 Core; 1-in-10 Noncore) (MTh)	131	29,774
	285	5,816,160

	NGV	Total Core
2017TCAP Phase 1 Storage Allocation Proposal		
Core Storage Capacities:		
Number of Injection Days	1.0%	88.1%
Injection MMcf	4	342
% Excess Winter Demand	1.2%	100%
Inventory MMCF	860	73,093
MPD Peak Day (1-in-35 Core) Core Only MTh	27	
% Excess Winter Demand	1.4%	100%
Withdrawal MMcf	27	1,976
	1%	89%
Injection \$000	\$100	\$8,488
Inventory \$000	\$74	\$6,306
Withdrawal \$000	\$595	\$43,457
	\$769	\$58,250
Load Balancing Storage Capacities:		
Injection MMcf	2%	38%
Inventory MMCF	2%	38%
Withdrawal MMcf	2%	38%
Injection \$000	\$177	\$4,095
Inventory \$000	\$7	\$166
Withdrawal \$000	\$269	\$6,231
	\$453	\$10,492
Unbundled Storage Capacities:		
Injection MMcf	0%	0%
Inventory MMCF	0%	0%
Withdrawal MMcf	0%	0%
Injection \$000	\$0	\$0
Inventory \$000	\$0	\$0
Withdrawal \$000	\$0	\$0
	\$0	\$0
Total Storage:		
Injection MMcf	4	342
Inventory MMCF	860	73,094
Withdrawal MMcf	27	1,976
Injection \$000	\$277	\$12,582
Inventory \$000	\$81	\$6,471
Withdrawal \$000	\$864	\$49,688
Total Storage Costs per EC Method w/HR RRQ	\$1,222	\$68,742
Summary of Storage Costs for RATE TABLES under new method:		
Core \$000		
Load Balancing \$000		
Unbundled Storage \$000		
total storage \$000		

	NGV	Total Core
Storage Core Allocation, per Bruce Wetzel's testimony		
<u>Present</u>		
Inventory %	0.6%	100%
Inventory MMCF	459	73,666
Peak Day (1-in-35 Core) Core Only MTh		
% Core MPD Peak Day	1.1%	100%
Withdrawal MMcf	22	1,990
<u>Proposed</u>		
% Excess Winter Demand	1.2%	100%
Inventory MMCF	860	73,093
MPD Peak Day (1-in-35 Core) Core Only MTh		
% Core MPD Peak Day	1.4%	100%
Withdrawal MMcf	27	1,976

	NCCI	EG Tier 1	EG Tier 2	EOR	Total Retail NonCore	Long Beach	SDG&E	South West Gas	Vernon	Total Whole sale
Customer Costs										
Per Unit LRM, \$/Cust/Year	\$30,178.82	\$25,258.28	\$128,643.87	\$83,028.54	\$37,886.45	\$886,337.07	\$1,513,038.54	\$797,252.41	\$539,223.46	\$933,962.87
Number of Customers	622	216	68	29	935	1	1	1	1	4
Customer Costs Rental Method \$000	\$18,758	\$5,463	\$8,806	\$2,408	\$35,435	\$886	\$1,513	\$797	\$539	\$3,736
Medium Pressure Distribution costs										
Medium Pressure Distribution costs (MPD)										
Per Unit LRM, \$/mcf	\$200.38	\$200.38	\$200.38	\$200.38	\$200.38	\$200.38	\$200.38	\$200.38	\$200.38	\$200.38
MPD Peak Day Demand (mmcf)	86	14	9	0	113	0	0	0	0	0
Medium Pressure Distribution Costs \$000	\$17,273	\$2,816	\$1,863	\$60	\$22,012	\$0	\$0	\$0	\$0	\$0
High Pressure Distribution costs										
High Pressure Distribution costs (HPD)										
Per Unit LRM, \$/mcf	\$1.92	\$1.92	\$1.92	\$1.92	\$1.92	\$1.92	\$1.92	\$1.92	\$1.92	\$1.92
HPD Peak Month Demand (mmcf)	6,643	597	1,639	1,135	10,314	0	0	0	0	0
High Pressure Distribution Costs \$000	\$12,779	\$1,148	\$3,152	\$2,183	\$19,263	\$0	\$0	\$0	\$0	\$0
Customer Service & Information costs										
Customer Service & Information Allocator										
Customer Service & Information \$000	0.6%	0.2%	2.4%	1.6%	4.7%	0.4%	0.4%	0.5%	0.4%	1.7%
Customer Service & Information \$000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Unscaled LRM Based Costs \$000	\$48,810	\$9,427	\$13,821	\$4,651	\$76,710	\$886	\$1,513	\$797	\$539	\$3,736
Calculation of Scalar:										
Authorized Revenue Requirement in Rates Base Margin \$000										
Adjustment to Storage for Honor Rancho \$000										
Target Base Margin \$000										
Less items not allocated per LRM method:										
Transmission Cost per EC \$000										
Storage Costs per EC \$000										
Uncollectibles										
NGV Compression Adder Costs per EC \$000										
Target Scaled Costs \$000										
Unscaled LRM Based Costs \$000										
amount to scale \$000										
Scalar (as a % of unscaled)	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%
Scaled Customer Costs \$000 LRM/Rental Method	\$14,397	\$4,193	\$6,759	\$1,848	\$27,197	\$680	\$1,161	\$612	\$414	\$2,867
Scaled Medium Pressure Distribution Costs \$000 LRM	\$13,258	\$2,162	\$1,430	\$46	\$16,895	\$0	\$0	\$0	\$0	\$0
Scaled High Pressure Distribution Costs \$000 LRM	\$9,808	\$881	\$2,419	\$1,676	\$14,785	\$0	\$0	\$0	\$0	\$0
Scaled Customer Service & Information Costs \$000 LRM	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Scaled LRM Based Costs \$000	\$37,463	\$7,236	\$10,608	\$3,570	\$58,877	\$680	\$1,161	\$612	\$414	\$2,867
NGV Compression Costs:										
Compression Adder Costs \$000										

	NCCI	EG Tier 1	EG Tier 2	EOR	Total Retail NonCore	Long Beach	SDG&E	South West Gas	Vernon	Total Whole sale
Uncollectibles:										
Target Base Margin \$000										
System Average Uncollectible Rate										
Uncollectibles										
Allocation of Uncollectibles:										
All Costs excl. NGV Adder, EOR, Int, WS, and UBS	\$72,154	\$9,428	\$70,112	\$0	\$151,693	\$0	\$0	\$0	\$0	\$0
% All Costs excl. NGV Adder, EOR, Int, WS, and UBS	3.8%	0.5%	3.7%	0.0%	7.9%	0.0%	0.0%	0.0%	0.0%	0.0%
Uncollectibles	\$207	\$27	\$201	\$0	\$434	\$0	\$0	\$0	\$0	\$0

Transmission Costs per Embedded Cost Method:
 Embedded Transmission Costs \$000
 Calculate BBT/Local-T Transmission Split:

Allocation of BBT Costs:										
CYTP Mth	1,529,668	97,212	2,580,583	231,570	4,439,033	80,110	1,293,181	65,748	95,137	1,534,176
% CYTP	15.3%	1.0%	25.8%	2.3%	44.4%	0.8%	12.9%	0.7%	1.0%	15.3%
BBT Costs per EC method	\$22,656	\$1,440	\$38,221	\$3,430	\$65,746	\$1,186	\$19,153	\$974	\$1,409	\$22,722
Allocation of LT Costs:										
CYPM Mth	124,850	7,715	226,295	19,668	378,528	10,024	141,015	10,598	8,180	169,818
% CYPM	11.44%	0.71%	20.73%	1.80%	34.68%	0.92%	12.92%	0.97%	0.75%	15.56%
LT Costs per EC method	\$7,635	\$472	\$13,838	\$1,203	\$23,147	\$613	\$8,623	\$648	\$500	\$10,384
Total Transmission Costs per EC method	\$30,290	\$1,912	\$52,059	\$4,632	\$88,893	\$1,799	\$27,776	\$1,622	\$1,909	\$33,107

Storage Costs per EC Method (this includes HR RRQ, but does not include increments)
 Embedded Storage Costs \$000
 Honor Rancho Revenue Requirement

Core Storage	\$0	\$0	\$0	\$0	\$0	\$0	\$7,481	\$0	\$0	\$7,481
Load Balancing	\$4,400	\$280	\$7,444	\$668	\$12,793	\$212	\$3,610	\$189	\$274	\$4,286
Unbundled Storage	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Storage Costs \$000	\$4,400	\$280	\$7,444	\$668	\$12,793	\$212	\$11,092	\$189	\$274	\$11,767
ALLOCATED BASE MARGIN (net of misc revenue & broker fee)	\$72,360	\$9,455	\$70,312	\$8,870	\$160,998	\$2,692	\$40,029	\$2,422	\$2,598	\$47,741
Percentage	3.6%	0.5%	3.5%	0.4%	8.0%	0.1%	2.0%	0.1%	0.1%	2.4%
Average Year Throughput Mth	1,525,339	97,212	2,580,583	231,570	4,434,704	73,520	1,251,556	65,367	95,137	1,485,580
average rate \$/therm	\$0.047	\$0.097	\$0.027	\$0.038	\$0.036	\$0.037	\$0.032	\$0.037	\$0.027	\$0.032

Calculation of Customer Service & Information Costs (CSI Costs):

907 Cus Svc-Supervision + Payroll Taxes
 908 Cus Svc-Cust Assist Exp (PBR Ex DAP, DSM & Self-Gen)
 909 Cus Svc-Info & Instruction Exp
 910 Cus Svc-Misc CSI Exp (PBR Ex DSM & NGV)

A&G loader
 Gen Plant Loader
Total CS&I O&M, 2013 \$000's

	NCCI	EG Tier 1	EG Tier 2	EOR	Total Retail NonCore	Long Beach	SDG&E	South West Gas	Vernon	Total Whole sale
Calculation of CSI Cost Allocator:										
Energy Markets Costs:										
Major Markets Staff FTE by Class (mgmnt estimate)	1.1	0.4	5.2	3.4	10.1	0.9	0.9	1.0	0.8	3.6
Energy Markets	7.3%	2.4%	36.1%	23.5%	69.3%	6.5%	6.1%	7.1%	5.3%	25.0%
Energy Markets	\$117	\$39	\$578	\$376	\$1,110	\$104	\$98	\$114	\$84	\$400
Large C&I:										
# Large C&I Customers	624	0	0	0	624	0	0	0	0	0
% Large C&I only	0.3%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%
Large C&I	\$19	\$0	\$0	\$0	\$19	\$0	\$0	\$0	\$0	\$0
NGV	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Residential	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Small Business										
# G10, G-AC, G-GE Customers only	0	0	0	0	0	0	0	0	0	0
Small Business	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Small Business	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Econ Development										
# Large C&I Customers	624	0	0	0	624	0	0	0	0	0
% Large C&I only	0.3%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%
Econ Development	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other Residential	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$137	\$39	\$578	\$376	\$1,129	\$104	\$98	\$114	\$84	\$400
Allocator %	0.6%	0.2%	2.4%	1.6%	4.7%	0.4%	0.4%	0.5%	0.4%	1.7%

Model Results RD Format for RD Models

Customer Related Costs	\$14,397	\$4,193	\$6,759	\$1,848	\$27,197	\$680	\$1,161	\$612	\$414	\$2,867
Medium Pressure Distribution Costs	\$13,258	\$2,162	\$1,430	\$46	\$16,895	\$0	\$0	\$0	\$0	\$0
High Pressure Distribution Costs	\$9,808	\$881	\$2,419	\$1,676	\$14,785	\$0	\$0	\$0	\$0	\$0
Backbone Transmission Costs	\$22,656	\$1,440	\$38,221	\$3,430	\$65,746	\$1,186	\$19,153	\$974	\$1,409	\$22,722
Local Transmission Costs	\$7,635	\$472	\$13,838	\$1,203	\$23,147	\$613	\$8,623	\$648	\$500	\$10,384
Storage - Seasonal	\$0	\$0	\$0	\$0	\$0	\$0	\$7,481	\$0	\$0	\$7,481
Storage - Load Balancing	\$4,400	\$280	\$7,444	\$668	\$12,793	\$212	\$3,610	\$189	\$274	\$4,286
Storage - TBS	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-DSM Related Marketing	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Uncollectibles	\$207	\$27	\$201	\$0	\$434	\$0	\$0	\$0	\$0	\$0
NGV Compression Costs:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Margin Allocation pre-SI & Unbundle FAR	\$72,360	\$9,455	\$70,312	\$8,870	\$160,998	\$2,692	\$40,029	\$2,422	\$2,598	\$47,741
% Allocation	3.6%	0.5%	3.5%	0.4%	8.0%	0.1%	2.0%	0.1%	0.1%	2.4%

	NCCI	EG Tier 1	EG Tier 2	EOR	Total Retail			South West Gas	Vernon	Total Whole sale
					NonCore	Long Beach	SDG&E			
Storage Costs per EC Method (this includes HR RRQ, but does not include incre										
Allocation of Storage Costs to Inventory/Inject/Withdrawal w/HR RRQ w/o incrementa										
	<u>Source</u>									
Injection as % storage costs	2016TCAP Phase I									
Inventory as % storage costs	2016TCAP Phase I									
Withdrawal as % storage costs	2016TCAP Phase I									
Core Storage Capacities:										
Number of Injection Days	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	11.9%	0.0%	0.0%	11.9%
Injection MMcf	0	0	0	0	0	0	46	0	0	46
% Excess Winter Demand										
Inventory MMCF	0	0	0	0	0	0	9,907	0	0	9,907
MPD Peak Day (1-in-35 Core) Core Only MTh										
% Core MPD Peak Day										
Withdrawal MMcf	0	0		0	0	0	249	0	0	249
Injection \$000	\$0	\$0	\$0	\$0	\$0	\$0	\$1,676	\$0	\$0	\$1,676
Inventory \$000	\$0	\$0	\$0	\$0	\$0	\$0	\$2,028	\$0	\$0	\$2,028
Withdrawal \$000	\$0	\$0	\$0	\$0	\$0	\$0	\$2,185	\$0	\$0	\$2,185
	\$0	\$0	\$0	\$0	\$0	\$0	\$5,889	\$0	\$0	\$5,889
Load Balancing Storage Capacities:										
Injection MMcf	32	2	53	5	92	2	26	1	2	31
Inventory MMCF	1,294	82	2,189	196	3,762	62	1,062	55	81	1,260
Withdrawal MMcf	83	5	140	13	241	4	68	4	5	81
Injection \$000	\$1,144	\$73	\$1,936	\$174	\$3,326	\$55	\$939	\$49	\$71	\$1,114
Inventory \$000	\$265	\$17	\$448	\$40	\$770	\$13	\$217	\$11	\$17	\$258
Withdrawal \$000	\$728	\$46	\$1,232	\$111	\$2,118	\$35	\$598	\$31	\$45	\$709
	\$2,137	\$136	\$3,616	\$324	\$6,214	\$103	\$1,754	\$92	\$133	\$2,082
Unbundled Storage Capacities:										
Injection MMcf	0	0	0	0	0	0	0	0	0	0
Inventory MMCF	0	0	0	0	0	0	0	0	0	0
Withdrawal MMcf	0	0	0	0	0	0	0	0	0	0
Injection \$000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Inventory \$000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Withdrawal \$000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Storage:										
Injection MMcf	32	2	53	5	92	2	72	1	2	77
Inventory MMCF	1,294	82	2,189	196	3,762	62	10,969	55	81	11,167
Withdrawal MMcf	83	5	140	13	241	4	317	4	5	330
Injection \$000	\$1,144	\$73	\$1,936	\$174	\$3,326	\$55	\$2,614	\$49	\$71	\$2,790
Inventory \$000	\$265	\$17	\$448	\$40	\$770	\$13	\$2,245	\$11	\$17	\$2,286
Withdrawal \$000	\$728	\$46	\$1,232	\$111	\$2,118	\$35	\$2,783	\$31	\$45	\$2,894
Total Storage Costs per EC Method w/HR RRQ	\$2,137	\$136	\$3,616	\$324	\$6,214	\$103	\$7,643	\$92	\$133	\$7,970
Calculation of HRSMA Allocator (allocated inventory Pre- Incremental HR & Alisc										
Total allocated Inventory, pre-HR capacity and pre-Aliso MMCF										
	NCCI	EG Tier 1	EG Tier 2	EOR	Total Retail NonCore	Long Beach	SDG&E	South West Gas	Vernon	Total Whole sale
	1,294	82	2,189	196	3,762	62	10,969	55	81	11,167
TCAP HRSMA Allocator (based on total allocated inventory as % of total invento	1.0%	0.1%	1.6%	0.1%	2.8%	0.0%	8.1%	0.0%	0.1%	8.2%
Calculate Effective Storage Rates w/ Incremental Honor Rancho Capacity (this d										
Injection										
Inventory										
Withdrawal										
Total										
Calculate Effective Storage Rates w/HR Capacity AND Aliso RRQ & Capacities										

	NCCI	EG Tier 1	EG Tier 2	EOR	Total Retail NonCore	Long Beach	SDG&E	South West Gas	Vernon	Total Whole sale
Injection										
Inventory										
Withdrawal										
Total										

Allocation of Aliso Canyon Injection Capacity & Costs to Storage Classes:	ACTR \$000 w/o FFU	Transport Rate Gross-to-Net factor	Net-to-Gross ACTR \$000 w/o FFU (2)
Core	\$8,157	100%	\$8,157
SDGE	\$1,106	100%	\$1,106
	<u>\$9,263</u>		<u>\$9,263</u>
Load Balancing	\$4,775	100%	\$4,775
UBS	\$12,962	100%	\$12,962
	<u>\$27,000</u>		<u>\$27,000</u>

Notes:
(1) FFU Gross to Net Factor
(2) Transportation rates are calculated on 12-month basis, while in-service date is 1.

Calculation of ACTR Allocation% for allocation to Rate Classes	NCCI	EG Tier 1	EG Tier 2	EOR	Total Retail NonCore	Long Beach	SDG&E	South West Gas	Vernon	Total Whole sale
SCG Core Storage:										
Core Injection Allocation adjusted for SCG Core only										0.0%
SCG Core Storage \$000 w/o FFU	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
SDGE Core Storage \$000 w/o FFU					\$0		\$1,106			\$1,106
total core storage w/o FFU										
UBS \$000 w/oFFU					\$0					\$0
Load Balancing:										
ECPT incl EOR	15.8%	1.0%	26.7%	2.4%	46.0%	0.8%	13.0%	0.7%	1.0%	15.4%
Load Balancing \$000 w/oFFU	\$755	\$48	\$1,277	\$115	\$2,195	\$36	\$619	\$32	\$47	\$735
ACTR w/o FFU \$000	\$755	\$48	\$1,277	\$115	\$2,195	\$36	\$1,725	\$32	\$47	\$1,841
ACTR allocation %	2.8%	0.2%	4.7%	0.4%	8.1%	0.1%	6.4%	0.1%	0.2%	6.8%

Summary of Storage Costs for RATE TABLES under old method:

Core \$000	
Load Balancing \$000	
Unbundled Storage \$000	
<u>total storage \$000</u>	

	NCCI	EG Tier 1	EG Tier 2	EOR	Total Retail NonCore	Long Beach	SDG&E	South West Gas	Vernon	Total Whole sale
DIRECT (%'s Load or Cust/Mtrs Sum to 100%)										
Transmission										
Average Year Throughput (MTh)	660,238	20,005	2,372,694	93,950	3,146,887	73,520	1,251,556	65,367	95,137	1,485,580
Cold Year Throughput (1-in-35) (MTh)	660,388	20,005	2,372,694	93,950	3,147,037	80,110	1,293,181	65,748	95,137	1,534,176
Cold Year Peak Month (December) (MTh)	56,427	1,567	209,418	7,979	275,391	10,024	141,015	10,598	8,180	169,818
Peak Day (1-in-35 Core; 1-in-10 Noncore) (MTh)	1,826	81	8,381	257	10,546	530	6,308	516	264	7,618
Number of Customers	38	15	41	12	106	1	1	1	1	4
High Pressure										
Average Year Throughput (MTh)	571,574	21,258	170,790	136,497	900,119	0	0	0	0	0
Cold Year Throughput (1-in-35) (MTh)	572,981	21,258	170,790	136,497	901,525	0	0	0	0	0
Cold Year Peak Month (December) (MTh)	44,354	1,661	13,909	11,593	71,517	0	0	0	0	0
Peak Day (1-in-35 Core; 1-in-10 Noncore) (MTh)	1,487	65	450	374	2,377	0	0	0	0	0
Number of Customers	225	37	22	15	299	0	0	0	0	0
Medium Pressure										
Average Year Throughput (MTh)	293,527	55,949	37,099	1,124	387,699	0	0	0	0	0
Cold Year Throughput (1-in-35) (MTh)	296,299	55,949	37,099	1,124	390,471	0	0	0	0	0
Cold Year Peak Month (December) (MTh)	24,069	4,488	2,968	95	31,620	0	0	0	0	0
Peak Day (1-in-35 Core; 1-in-10 Noncore) (MTh)	888	145	96	3	1,131	0	0	0	0	0
Number of Customers	358	164	6	2	530	0	0	0	0	0
CUMULATIVE (Calc'd from DIRECT %'s)										
Transmission										
Average Year Throughput (MTh)	1,525,339	97,212	2,580,583	231,570	4,434,704	73,520	1,251,556	65,367	95,137	1,485,580
Cold Year Throughput (1-in-35) (MTh)	1,529,668	97,212	2,580,583	231,570	4,439,033	80,110	1,293,181	65,748	95,137	1,534,176
Cold Year Peak Month (December) (MTh)	124,850	7,715	226,295	19,668	378,528	10,024	141,015	10,598	8,180	169,818
Peak Day (1-in-35 Core; 1-in-10 Noncore) (MTh)	4,201	291	8,927	634	14,054	530	6,308	516	264	7,618
Number of Customers	622	216	66	29	935	1	1	1	1	4
High Pressure										
Average Year Throughput (MTh)	865,102	77,207	207,889	137,620	1,287,818	0	0	0	0	0
Cold Year Throughput (1-in-35) (MTh)	869,280	77,207	207,889	137,620	1,291,996	0	0	0	0	0
Cold Year Peak Month (December) (MTh)	68,423	6,149	16,877	11,688	103,137	0	0	0	0	0
Peak Day (1-in-35 Core; 1-in-10 Noncore) (MTh)	2,375	210	546	377	3,508	0	0	0	0	0
Number of Customers	584	201	28	17	830	0	0	0	0	0
Medium Pressure										
Average Year Throughput (MTh)	293,527	55,949	37,099	1,124	387,699	0	0	0	0	0
Cold Year Throughput (1-in-35) (MTh)	296,299	55,949	37,099	1,124	390,471	0	0	0	0	0
Cold Year Peak Month (December) (MTh)	24,069	4,488	2,968	95	31,620	0	0	0	0	0
Peak Day (1-in-35 Core; 1-in-10 Noncore) (MTh)	888	145	96	3	1,131	0	0	0	0	0
Number of Customers	358	164	6	2	530	0	0	0	0	0

	NCCI	EG Tier 1	EG Tier 2	EOR	Total Retail NonCore	Long Beach	SDG&E	South West Gas	Vernon	Total Whole sale
2017TCAP Phase 1 Storage Allocation Proposal										
Core Storage Capacities:										
Number of Injection Days	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	11.9%	0.0%	0.0%	11.9%
Injection MMcf	0	0	0	0	0	0	46	0	0	46
% Excess Winter Demand										
Inventory MMCF	0	0	0	0	0	0	9,907	0	0	9,907
MPD Peak Day (1-in-35 Core) Only MTh										
% Excess Winter Demand										
Withdrawal MMcf	0	0	0	0	0	0	249	0	0	249
	0%	0%	0%	0%	0%	0%	11%	0%	0%	11%
Injection \$000	\$0	\$0	\$0	\$0	\$0	\$0	\$1,150	\$0	\$0	\$1,150
Inventory \$000	\$0	\$0	\$0	\$0	\$0	\$0	\$855	\$0	\$0	\$855
Withdrawal \$000	\$0	\$0	\$0	\$0	\$0	\$0	\$5,476	\$0	\$0	\$5,476
	\$0	\$0	\$0	\$0	\$0	\$0	\$7,481	\$0	\$0	\$7,481
Load Balancing Storage Capacities:										
Injection MMcf	16%	1%	27%	2%	46%	1%	13%	1%	1%	15%
Inventory MMCF	16%	1%	27%	2%	46%	1%	13%	1%	1%	15%
Withdrawal MMcf	16%	1%	27%	2%	46%	1%	13%	1%	1%	15%
Injection \$000	\$1,717	\$109	\$2,905	\$261	\$4,993	\$83	\$1,409	\$74	\$107	\$1,673
Inventory \$000	\$70	\$4	\$118	\$11	\$202	\$3	\$57	\$3	\$4	\$68
Withdrawal \$000	\$2,613	\$167	\$4,421	\$397	\$7,598	\$126	\$2,144	\$112	\$163	\$2,545
	\$4,400	\$280	\$7,444	\$668	\$12,793	\$212	\$3,610	\$189	\$274	\$4,286
Unbundled Storage Capacities:										
Injection MMcf	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Inventory MMCF	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Withdrawal MMcf	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Injection \$000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Inventory \$000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Withdrawal \$000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Storage:										
Injection MMcf	0	0	0	0	0	0	46	0	0	46
Inventory MMCF	0	0	0	0	0	0	9,907	0	0	9,907
Withdrawal MMcf	0	0	0	0	0	0	249	0	0	249
Injection \$000	\$1,717	\$109	\$2,905	\$261	\$4,993	\$83	\$2,559	\$74	\$107	\$2,823
Inventory \$000	\$70	\$4	\$118	\$11	\$202	\$3	\$912	\$3	\$4	\$922
Withdrawal \$000	\$2,613	\$167	\$4,421	\$397	\$7,598	\$126	\$7,620	\$112	\$163	\$8,021
Total Storage Costs per EC Method w/HR RRQ	\$4,400	\$280	\$7,444	\$668	\$12,793	\$212	\$11,092	\$189	\$274	\$11,767
Summary of Storage Costs for RATE TABLES under new method:										
Core \$000										
Load Balancing \$000										
Unbundled Storage \$000										
total storage \$000										

	NCCI	EG Tier 1	EG Tier 2	EOR	Total Retail NonCore	Long Beach	SDG&E	South West Gas	Vernon	Total Whole sale
Storage Core Allocation, per Bruce Wetzel's testimony										
Present										
Inventory %										
Inventory MMCF	0	0	0	0	0	0	9,334	0	0	9,334
Peak Day (1-in-35 Core) Core Only MTh										
% Core MPD Peak Day										
Withdrawal MMcf	0	0	0	0	0	0	235	0	0	235
Proposed										
% Excess Winter Demand										
Inventory MMCF	0	0	0	0	0	0	9,907	0	0	9,907
MPD Peak Day (1-in-35 Core) Core Only MTh										
% Core MPD Peak Day										
Withdrawal MMcf	0	0	0	0	0	0	249	0	0	249

	DGN	UBS	Total Noncore	SYSTEM TOTAL	Sources
Customer Costs					
Per Unit LRM, \$/Cust/Year	\$216,430.37	\$0.00	\$41,888.23	\$249.66	SCG LRM Customer Cost
Number of Customers	1	0	940	5,827,179	New Allocation Factors
Customer Costs Rental Method \$000	\$216	\$0	\$39,387	\$1,454,838	
Medium Pressure Distribution costs					
Medium Pressure Distribution costs (MPD)					
Per Unit LRM, \$/mcf	\$200.38	\$200.38	\$200.38	\$200.38	SCG LRM Distribution Cost
MPD Peak Day Demand (mmcf)	0	0	113	3,091	New Allocation Factors
Medium Pressure Distribution Costs \$000	\$0	\$0	\$22,012	\$601,252	
High Pressure Distribution costs					
High Pressure Distribution costs (HPD)					
Per Unit LRM, \$/mcf	\$1.92	\$1.92	\$1.92	\$1.92	SCG LRM Distribution Cost
HPD Peak Month Demand (mmcf)	0	0	10,314	63,437	New Allocation Factors
High Pressure Distribution Costs \$000	\$0	\$0	\$19,263	\$118,480	
Customer Service & Information costs					
Customer Service & Information Allocator	0.2%	0.0%	6.6%	100.0%	
Customer Service & Information \$000	\$0	\$0	\$0	\$0	
Unscaled LRM Based Costs \$000	\$216	\$0	\$80,662	\$2,174,570	
Calculation of Scalar:					
Authorized Revenue Requirement in Rates Base Margin \$000					
Adjustment to Storage for Honor Rancho \$000					
Target Base Margin \$000					
Less items not allocated per LRM method:					
Transmission Cost per EC \$000					
Storage Costs per EC \$000					
Uncollectibles					
NGV Compression Adder Costs per EC \$000					
Target Scaled Costs \$000					
Unscaled LRM Based Costs \$000					
amount to scale \$000					
Scalar (as a % of unscaled)	77%	77%	77%	77%	
Scaled Customer Costs \$000 LRM/Rental Method	\$166	\$0	\$30,231	\$1,116,630	
Scaled Medium Pressure Distribution Costs \$000 LRM	\$0	\$0	\$16,895	\$461,478	
Scaled High Pressure Distribution Costs \$000 LRM	\$0	\$0	\$14,785	\$90,937	
Scaled Customer Service & Information Costs \$000 LRM	\$0	\$0	\$0	\$0	
Scaled LRM Based Costs \$000	\$166	\$0	\$61,910	\$1,669,045	
NGV Compression Costs:					
Compression Adder Costs \$000				\$2,440	

	DGN	UBS	Total Noncore	SYSTEM TOTAL	Sources
Uncollectibles:					
Target Base Margin \$000					
System Average Uncollectible Rate					
Uncollectibles					
Allocation of Uncollectibles:					
All Costs excl. NGV Adder, EOR, Int, WS, and UBS	\$0	\$0	\$151,693	\$1,918,642	
% All Costs excl. NGV Adder, EOR, Int, WS, and UBS	0.0%	0.0%	7.9%	100.0%	
Uncollectibles	\$0	\$0	\$434	\$5,492	

Transmission Costs per Embedded Cost Method:
 Embedded Transmission Costs \$000
 Calculate BBT/Local-T Transmission Split:

Allocation of BBT Costs:					
CYTP Mth	91,378	0	6,064,587	10,002,651	
% CYTP	0.9%	0.0%	60.6%	100.0%	
BBT Costs per EC method	\$1,353	\$0	\$89,822	\$148,148	
Allocation of LT Costs:					
CYPM Mth	7,682	0	556,028	1,091,535	
% CYPM	0.70%	0.00%	50.94%	100.00%	
LT Costs per EC method	\$470	\$0	\$34,002	\$66,748	
Total Transmission Costs per EC method	\$1,823	\$0	\$123,823	\$214,896	

Storage Costs per EC Method (this includes HR RRQ, but does not include increments)
 Embedded Storage Costs \$000
 Honor Rancho Revenue Requirement

Core Storage	\$0	\$0	\$7,481	\$65,731	
Load Balancing	\$264	\$0	\$17,342	\$27,834	
Unbundled Storage	\$0	\$17,020	\$17,020	\$17,020	
Total Storage Costs \$000	\$264	\$17,020	\$41,843	\$110,585	
ALLOCATED BASE MARGIN (net of misc revenue & broker fee)	\$2,253	\$17,020	\$228,012	\$2,002,458	
Percentage	0.1%	0.8%	11.4%	100.0%	
Average Year Throughput Mth	91,378	0	6,011,663	9,648,574	New Allocation Factors
average rate \$/therm	\$0.025		\$0.038	\$0.208	

Calculation of Customer Service & Information Costs (CSI Costs):

907 Cus Svc-Supervision + Payroll Taxes
 908 Cus Svc-Cust Assist Exp (PBR Ex DAP, DSM & Self-Gen)
 909 Cus Svc-Info & Instruction Exp
 910 Cus Svc-Misc CSI Exp (PBR Ex DSM & NGV)

[EC Study for 2016 TCAP Phase I](#)
[EC Study for 2016 TCAP Phase I](#)
[EC Study for 2016 TCAP Phase I](#)
[EC Study for 2016 TCAP Phase I](#)

A&G loader
 Gen Plant Loader
Total CS&I O&M, 2013 \$000's

2013#'s SCG O&M Loaders for 2
 2013#'s SCG O&M Loaders for 2

	DGN	UBS	Total Noncore	SYSTEM TOTAL	Sources
Calculation of CSI Cost Allocator:					
Energy Markets Costs:					
Major Markets Staff FTE by Class (mgmnt estimate)	0.4	0.0	14.1	14.5	
Energy Markets	2.9%	0.0%	97.2%	100.0%	
Energy Markets	\$46	\$0	\$1,556	\$1,601	
Large C&I:					
# Large C&I Customers	0	0	624	206,652	2013 Customer Count from SCG
% Large C&I only	0.0%	0.0%	0.3%	100.0%	
Large C&I	\$0	\$0	\$19	\$6,410	
NGV					
Residential	\$0	\$0	\$0	\$1,385	
Small Business					
# G10, G-AC, G-GE Customers only	0	0	0	206,748	2013 Customer Count from SCG
Small Business	0.0%	0.0%	0.0%	100.0%	
Small Business	\$0	\$0	\$0	\$548	
Econ Development					
# Large C&I Customers	0	0	624	206,652	2013 Customer Count from SCG
% Large C&I only	0.0%	0.0%	0.3%	100.0%	
Econ Development	\$0	\$0	\$0	\$41	
Other Residential	\$0	\$0	\$0	\$1,840	
Total	\$46	\$0	\$1,575	\$23,788	
Allocator %	0.2%	0.0%	6.6%	100.0%	

Model Results RD Format for RD Models

Customer Related Costs	\$166	\$0	\$30,231	\$1,116,630
Medium Pressure Distribution Costs	\$0	\$0	\$16,895	\$461,478
High Pressure Distribution Costs	\$0	\$0	\$14,785	\$90,937
Backbone Transmission Costs	\$1,353	\$0	\$89,822	\$148,148
Local Transmission Costs	\$470	\$0	\$34,002	\$66,748
Storage - Seasonal	\$0	\$0	\$7,481	\$65,731
Storage - Load Balancing	\$264	\$0	\$17,342	\$27,834
Storage - TBS	\$0	\$17,020	\$17,020	\$17,020
Non-DSM Related Marketing	\$0	\$0	\$0	\$0
Uncollectibles	\$0	\$0	\$434	\$5,492
NGV Compression Costs:	\$0	\$0	\$0	\$2,440
Total Margin Allocation pre-SI & Unbundle FAR	\$2,253	\$17,020	\$228,012	\$2,002,458
% Allocation	0.1%	0.8%	11.4%	100.0%

	DGN	UBS	Total Noncore	SYSTEM TOTAL	Sources
Storage Costs per EC Method (this includes HR RRQ, but does not include incre					
Allocation of Storage Costs to Inventory/Inject/Withdrawal w/HR RRQ w/o incrementa					
Injection as % storage costs					
Inventory as % storage costs					
Withdrawal as % storage costs					
Core Storage Capacities:					
Number of Injection Days	0.0%	0.0%	11.9%	100.0%	
Injection MMcf	0	0	46	388	
% Excess Winter Demand					Demand Forecast
Inventory MMCF	0	0	9,907	83,000	Demand Forecast
MPD Peak Day (1-in-35 Core) Core Only MTh					
% Core MPD Peak Day					
Withdrawal MMcf	0	0	249	2,225	Demand Forecast
Injection \$000	\$0	\$0	\$1,676	\$14,039	
Inventory \$000	\$0	\$0	\$2,028	\$16,991	
Withdrawal \$000	\$0	\$0	\$2,185	\$19,525	
	\$0	\$0	\$5,889	\$50,556	
Load Balancing Storage Capacities:					
Injection MMcf	2	0	125	200	
Inventory MMCF	78	0	5,100	5,100	
Withdrawal MMcf	5	0	327	525	
Injection \$000	\$69	\$0	\$4,509	\$7,237	
Inventory \$000	\$16	\$0	\$1,044	\$1,044	
Withdrawal \$000	\$44	\$0	\$2,870	\$4,607	
	\$128	\$0	\$8,423	\$12,888	
Unbundled Storage Capacities:					
Injection MMcf	0	182	182	182	
Inventory MMCF	0	48,000	48,000	48,000	
Withdrawal MMcf	0	425	425	425	
Injection \$000	\$0	\$6,585	\$6,585	\$6,585	
Inventory \$000	\$0	\$9,826	\$9,826	\$9,826	
Withdrawal \$000	\$0	\$3,730	\$3,730	\$3,730	
	\$0	\$20,141	\$20,141	\$20,141	
Total Storage:					
Injection MMcf	2	182	353	770	
Inventory MMCF	78	48,000	63,007	136,100	
Withdrawal MMcf	5	425	1,001	3,175	
Injection \$000	\$69	\$6,585	\$12,770	\$27,862	
Inventory \$000	\$16	\$9,826	\$12,898	\$27,862	
Withdrawal \$000	\$44	\$3,730	\$8,785	\$27,862	
Total Storage Costs per EC Method w/HR RRQ	\$128	\$20,141	\$34,454	\$83,585	
Calculation of HRSMA Allocator (allocated inventory Pre- Incremental HR & Alisc					
Total allocated Inventory, pre-HR capacity and pre-Aliso MMCF	78	48,000	63,007	136,100	
TCAP HRSMA Allocator (based on total allocated inventory as % of total inventor	0.1%	35.3%	46.3%	100.0%	
Calculate Effective Storage Rates w/ Incremental Honor Rancho Capacity (this d					
Injection					
Inventory					
Withdrawal					
Total					
Calculate Effective Storage Rates w/HR Capacity AND Aliso RRQ & Capacities					

	DGN	UBS	Total Noncore	SYSTEM TOTAL	Sources
Injection					
Inventory					
Withdrawal					
Total					
Allocation of Aliso Canyon Injection Capacity & Costs to Storage Classes:					
Core					
SDGE					
Load Balancing					
UBS					
Notes:					
(1) FFU Gross to Net Factor					
(2) Transportation rates are calculated on 12-month basis, while in-service date is 1/					
Calculation of ACTR Allocation% for allocation to Rate Classes					
	DGN	UBS	Total Noncore	SYSTEM TOTAL	Sources
SCG Core Storage:					
Core Injection Allocation adjusted for SCG Core only			0.0%	100.0%	
SCG Core Storage \$000 w/o FFU	\$0	\$0	\$0	\$8,157	
SDGE Core Storage \$000 w/o FFU			\$1,106	\$1,106	
total core storage w/o FFU					
UBS \$000 w/oFFU		\$12,962	\$12,962	\$12,962	
Load Balancing:					
ECPT incl EOR	0.9%	0.0%	62.3%	100.0%	Alloc Factors
Load Balancing \$000 w/oFFU	\$45	\$0	\$2,975	\$4,775	
ACTR w/o FFU \$000	\$45	\$12,962	\$17,043	\$27,000	
ACTR allocation %	0.2%	48.0%	63.1%	100.0%	
Summary of Storage Costs for RATE TABLES under old method:					
Core \$000					
Load Balancing \$000					
Unbundled Storage \$000					
total storage \$000					

	DGN	UBS	Total Noncore	SYSTEM TOTAL	Sources
DIRECT (%'s Load or Cust/Mtrs Sum to 100%)					
Transmission					
Average Year Throughput (MTh)	91,378		4,723,845	4,772,622	
Cold Year Throughput (1-in-35) (MTh)	91,378		4,772,591	4,821,740	
Cold Year Peak Month (December) (MTh)	7,682		452,891	457,165	
Peak Day (1-in-35 Core; 1-in-10 Noncore) (MTh)	248		18,412	18,565	
Number of Customers	1		111	238	
High Pressure					
Average Year Throughput (MTh)	0		900,119	1,043,755	
Cold Year Throughput (1-in-35) (MTh)	0		901,525	1,049,308	
Cold Year Peak Month (December) (MTh)	0		71,517	86,298	
Peak Day (1-in-35 Core; 1-in-10 Noncore) (MTh)	0		2,377	3,026	
Number of Customers	0		299	10,251	
Medium Pressure					
Average Year Throughput (MTh)	0		387,699	3,832,198	
Cold Year Throughput (1-in-35) (MTh)	0		390,471	4,131,603	
Cold Year Peak Month (December) (MTh)	0		31,620	548,072	
Peak Day (1-in-35 Core; 1-in-10 Noncore) (MTh)	0		1,131	30,906	
Number of Customers	0		530	5,816,690	
CUMULATIVE (Calc'd from DIRECT %'s)					
Transmission					
Average Year Throughput (MTh)	91,378		6,011,663	9,648,574	
Cold Year Throughput (1-in-35) (MTh)	91,378		6,064,587	10,002,651	
Cold Year Peak Month (December) (MTh)	7,682		556,028	1,091,535	
Peak Day (1-in-35 Core; 1-in-10 Noncore) (MTh)	248		21,920	52,497	
Number of Customers	1		940	5,827,179	
High Pressure					
Average Year Throughput (MTh)	0		1,287,818	4,875,953	
Cold Year Throughput (1-in-35) (MTh)	0		1,291,996	5,180,911	
Cold Year Peak Month (December) (MTh)	0		103,137	634,370	
Peak Day (1-in-35 Core; 1-in-10 Noncore) (MTh)	0		3,508	33,932	
Number of Customers	0		830	5,826,941	
Medium Pressure					
Average Year Throughput (MTh)	0		387,699	3,832,198	
Cold Year Throughput (1-in-35) (MTh)	0		390,471	4,131,603	
Cold Year Peak Month (December) (MTh)	0		31,620	548,072	
Peak Day (1-in-35 Core; 1-in-10 Noncore) (MTh)	0		1,131	30,906	
Number of Customers	0		530	5,816,690	

	DGN	UBS	Total Noncore	SYSTEM TOTAL	Sources
2017TCAP Phase 1 Storage Allocation Proposal					
Core Storage Capacities:					
Number of Injection Days	0.0%	0.0%	11.9%	100.0%	
Injection MMcf	0	0	46	388	
% Excess Winter Demand					Demand Forecast
Inventory MMCF	0	0	9,907	83,000	Demand Forecast
MPD Peak Day (1-in-35 Core) Core Only MTh					
% Excess Winter Demand					Demand Forecast
Withdrawal MMcf	0	0	249	2,225	Demand Forecast
	0%	0%	11%	100%	
Injection \$000	\$0	\$0	\$1,150	\$9,638	
Inventory \$000	\$0	\$0	\$855	\$7,160	
Withdrawal \$000	\$0	\$0	\$5,476	\$48,933	
	\$0	\$0	\$7,481	\$65,731	
Load Balancing Storage Capacities:					
Injection MMcf	1%	0%	62%	100%	TCAP 2016 Phase 1
Inventory MMCF	1%	0%	62%	100%	TCAP 2016 Phase 1
Withdrawal MMcf	1%	0%	62%	100%	TCAP 2016 Phase 1
Injection \$000	\$103	\$0	\$6,768	\$10,863	
Inventory \$000	\$4	\$0	\$274	\$440	
Withdrawal \$000	\$157	\$0	\$10,300	\$16,531	
	\$264	\$0	\$17,342	\$27,834	
Unbundled Storage Capacities:					
Injection MMcf	0%	100%	100%	100%	
Inventory MMCF	0%	100%	100%	100%	
Withdrawal MMcf	0%	100%	100%	100%	
Injection \$000	\$0	\$3,360	\$3,360	\$3,360	
Inventory \$000	\$0	\$4,313	\$4,313	\$4,313	
Withdrawal \$000	\$0	\$9,347	\$9,347	\$9,347	
	\$0	\$17,020	\$17,020	\$17,020	
Total Storage:					
Injection MMcf	0	1	48	390	
Inventory MMCF	0	1	9,908	83,002	
Withdrawal MMcf	0	1	251	2,227	
Injection \$000	\$103	\$3,360	\$11,279	\$23,861	
Inventory \$000	\$4	\$4,313	\$5,442	\$11,914	
Withdrawal \$000	\$157	\$9,347	\$25,123	\$74,810	
Total Storage Costs per EC Method w/HR RRQ	\$264	\$17,020	\$41,843	\$110,585	
Summary of Storage Costs for RATE TABLES under new method:					
Core \$000					
Load Balancing \$000					
Unbundled Storage \$000					
total storage \$000					

	DGN	UBS	Total Noncore	SYSTEM TOTAL	Sources
Storage Core Allocation, per Bruce Wetzel's testimony					
<u>Present</u>					
Inventory %					
Inventory MMCF	0	0	9,334	83,000	
Peak Day (1-in-35 Core) Core Only MTh					
% Core MPD Peak Day					
Withdrawal MMcf/d	0	0	235	2,225	
<u>Proposed</u>					
% Excess Winter Demand					
Inventory MMCF	0	0	9,824	83,000	
MPD Peak Day (1-in-35 Core) Core Only MTh					
% Core MPD Peak Day					
Withdrawal MMcf/d	0	0	248	2,225	

	NCCI-Total	NCCI-D	NCCI-T	EOR-Total	EOR-D	EOR-T	Total EG	EG Tier 1	EG Tier 1 Dist	EG Tier 1 Trans	EG Tier 2	EG Tier 2 Dist
Customer Costs												
Per Unit LRM, \$/Cust/Year												
Number of Customers	622	584	38	29	17	12	285	216,281,1238	201	15	68	28
Customer Costs Rental Method \$000	\$18,758	\$17,616	\$1,142	\$2,407.83	\$1,411.49	\$996.34	14269.261	5462.88865	\$5,082.26	\$380.63	8806.372349	\$3,545.32
Medium Pressure Distribution costs												
Medium Pressure Distribution costs (MPD)												
Per Unit LRM, \$/mcf												
MPD Peak Day Demand (mmcf)												
Medium Pressure Distribution Costs \$000	\$17,273	\$17,273	0	\$60	\$60	0	\$4,679	\$2,816	\$2,816	0	\$1,863	\$1,863
High Pressure Distribution costs												
High Pressure Distribution costs (HPD)												
Per Unit LRM, \$/mcf												
HPD Peak Month Demand (mmcf)												
High Pressure Distribution Costs \$000	\$12,779	\$12,779	0	\$2,183	\$2,183	0	\$4,301	\$1,148	\$1,148	0	\$3,152	\$3,152
Customer Service & Information costs												
Customer Service & Information Allocator	1,525,339	865,102	660,238	231,570	137,620	93,950	2,677,795	97,212	77,207	20,005	2,580,583	207,889
Customer Service & Information \$000	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0	\$0
Unscaled LRM Based Costs \$000	\$48,810	\$47,669	\$1,142	\$4,651	\$3,654	\$996	\$23,249	\$9,427	\$9,047	\$381	\$13,821	\$8,560
Calculation of Scalar:												
Authorized Revenue Requirement in Rates Base Margin \$000												
Adjustment to Storage for Honor Rancho \$000												
Target Base Margin \$000												
Less items not allocated per LRM method:												
Transmission Cost per EC \$000												
Storage Costs per EC \$000												
Uncollectibles												
NGV Compression Adder Costs per EC \$000												
Target Scaled Costs \$000												
Unscaled LRM Based Costs \$000												
amount to scale \$000												
Scalar (as a % of unscaled)	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%
Scaled Customer Costs \$000 LRM/Rental Method	\$14,397	\$13,521	\$876	\$1,848	\$1,083	\$765	\$10,952	\$4,193	\$3,901	\$292	\$6,759	\$2,721
Scaled Medium Pressure Distribution Costs \$000 LRM	\$13,258	\$13,258	\$0	\$46	\$46	\$0	\$3,591	\$2,162	\$2,162	\$0	\$1,430	\$1,430
Scaled High Pressure Distribution Costs \$000 LRM	\$9,808	\$9,808	\$0	\$1,676	\$1,676	\$0	\$3,301	\$881	\$881	\$0	\$2,419	\$2,419
Scaled Customer Service & Information Costs \$000 LRM	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Scaled LRM Based Costs \$000	\$37,463	\$36,587	\$876	\$3,570	\$2,805	\$765	\$17,844	\$7,236	\$6,944	\$292	\$10,608	\$6,570
NGV Compression Costs:												
Compression Adder Costs \$000												

	NCCI-Total	NCCI-D	NCCI-T	EOR-Total	EOR-D	EOR-T	Total EG	EG Tier 1	EG Tier 1 Dist	EG Tier 1 Trans	EG Tier 2	EG Tier 2 Dist
Uncollectibles:												
Target Base Margin \$000												
System Average Uncollectible Rate												
Uncollectibles												
Allocation of Uncollectibles:												
All Costs excl. NGV Adder, EOR, Int, WS, and UBS	\$72,154	\$56,142	\$16,012	\$8,870	\$0	\$0	\$79,539	\$9,428	\$8,686	\$742	\$70,112	\$10,734
% All Costs excl. NGV Adder, EOR, Int, WS, and UBS	3.8%	2.9%	0.8%	0.5%	0.0%	0.0%	4.1%	0.5%	0.5%	0.0%	3.7%	0.6%
Uncollectibles	\$207	\$161	\$46	\$25	\$0	\$0	\$228	\$27	\$25	\$2	\$201	\$31

Transmission Costs per Embedded Cost Method:
 Embedded Transmission Costs \$000
 Calculate BBT/Local-T Transmission Split:

Allocation of BBT Costs:												
CYTP Mth	1,529,668	869,280	660,388	231,570	137,620	93,950	2,677,795	97,212	77,207	20,005	2,580,583	207,889
% CYTP	15.3%	8.7%	6.6%	2.3%	1.4%	0.9%	26.8%	1.0%	0.8%	0.2%	25.8%	2.1%
BBT Costs per EC method	\$22,656	\$12,875	\$9,781	\$3,430	\$2,038	\$1,391	\$39,660	\$1,440	\$1,144	\$296	\$38,221	\$3,079
Allocation of LT Costs:												
CYPM Mth	124,850	68,423	56,427	19,668	11,688	7,979	234,011	7,715	6,149	1,567	226,295	16,877
% CYPM	11.44%	6.27%	5.17%	1.80%	1.07%	0.73%	21.44%	0.71%	0.56%	0.14%	20.73%	1.55%
LT Costs per EC method	\$7,635	\$4,184	\$3,451	\$1,203	\$715	\$488	\$14,310	\$472	\$376	\$96	\$13,838	\$1,032
Total Transmission Costs per EC method	\$30,290	\$17,059	\$13,231	\$4,632	\$2,753	\$1,879	\$53,970	\$1,912	\$1,519	\$392	\$52,059	\$4,111

Storage Costs per EC Method (this includes HR RRQ, but does not include increments)
 Embedded Storage Costs \$000
 Honor Rancho Revenue Requirement

Core Storage	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Load Balancing	\$4,400	\$2,496	\$1,905	\$668	\$397	\$271	\$0	\$7,725	\$280	\$223	\$58	\$7,444
Unbundled Storage	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Storage Costs \$000	\$4,400	\$2,496	\$1,905	\$668	\$397	\$271	\$7,725	\$280	\$223	\$58	\$7,444	\$53
ALLOCATED BASE MARGIN (net of misc revenue & broker fee)	\$70,097	\$55,019	\$15,079	\$8,552	\$5,751	\$2,776	\$75,794	\$9,311	\$8,596	\$714	\$66,484	\$11,003
Percentage	3.5%	2.7%	0.8%	0.4%	0.3%	0.1%	3.8%	0.5%	0.4%	0.0%	3.3%	0.5%
Average Year Throughput Mth												
average rate \$/therm												

Calculation of Customer Service & Information Costs (CSI Costs):

907 Cus Svc-Supervision + Payroll Taxes
 908 Cus Svc-Cust Assist Exp (PBR Ex DAP, DSM & Self-Gen)
 909 Cus Svc-Info & Instruction Exp
 910 Cus Svc-Misc CSI Exp (PBR Ex DSM & NGV)

A&G loader 016TCAP
 Gen Plant Loader 016TCAP
Total CS&I O&M, 2013 \$000's

	NCCI-Total	NCCI-D	NCCI-T	EOR-Total	EOR-D	EOR-T	Total EG	EG Tier 1	EG Tier 1 Dist	EG Tier 1 Trans	EG Tier 2	EG Tier 2 Dist
Calculation of CSI Cost Allocator:												
Energy Markets Costs:												
Major Markets Staff FTE by Class (mgmnt estimate)												
Energy Markets												
Energy Markets												
Large C&I:												
# Large C&I Customers												
% Large C&I only												
Large C&I												
NGV												
Residential												
Small Business												
# G10, G-AC, G-GE Customers only												
Small Business												
Small Business												
Econ Development												
# Large C&I Customers												
% Large C&I only												
Econ Development												
Other Residential												
Total												
Allocator %												

Model Results RD Format for RD Models

Customer Related Costs	\$14,397	\$13,521	\$876	\$1,848	\$1,083	\$765	\$10,952	\$4,193	\$3,901	\$292	\$6,759	\$2,721
Medium Pressure Distribution Costs	\$13,258	\$13,258	\$0	\$46	\$46	\$0	\$3,591	\$2,162	\$2,162	\$0	\$1,430	\$1,430
High Pressure Distribution Costs	\$9,808	\$9,808	\$0	\$1,676	\$1,676	\$0	\$3,301	\$881	\$881	\$0	\$2,419	\$2,419
Backbone Transmission Costs	\$22,656	\$12,875	\$9,781	\$3,430	\$2,038	\$1,391	\$39,660	\$1,440	\$1,144	\$296	\$38,221	\$3,079
Local Transmission Costs	\$7,635	\$4,184	\$3,451	\$1,203	\$715	\$488	\$14,310	\$472	\$376	\$96	\$13,838	\$1,032
Storage - Seasonal	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Storage - Load Balancing	\$4,400	\$2,496	\$1,905	\$668	\$397	\$271	\$0	\$7,725	\$280	\$223	\$58	\$7,444
Storage - TBS	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-DSM Related Marketing	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Uncollectibles	\$207	\$161	\$46	\$25	\$0	\$0	\$228	\$27	\$25	\$2	\$201	\$31
NGV Compression Costs:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Margin Allocation pre-SI & Unbundle FAR	\$72,360	\$56,302	\$16,058	\$8,895	\$5,955	\$2,915	\$79,767	\$9,455	\$8,711	\$744	\$70,312	\$10,765
% Allocation	3.5%	2.7%	0.8%	0.4%	0.3%	0.1%	3.8%	0.5%	0.4%	0.0%	3.3%	0.5%

	NCCI-Total	NCCI-D	NCCI-T	EOR-Total	EOR-D	EOR-T	Total EG	EG Tier 1	EG Tier 1 Dist	EG Tier 1 Trans	EG Tier 2	EG Tier 2 Dist
Storage Costs per EC Method (this includes HR RRQ, but does not include incre												
Allocation of Storage Costs to Inventory/Inject/Withdrawal w/HR RRQ w/o incrementa												
Injection as % storage costs												
Inventory as % storage costs												
Withdrawal as % storage costs												
Core Storage Capacities:												
Number of Injection Days												
Injection MMcf												
% Excess Winter Demand												
Inventory MMCF												
MPD Peak Day (1-in-35 Core) Core Only MTh												
% Core MPD Peak Day												
Withdrawal MMcf												
Injection \$000												
Inventory \$000												
Withdrawal \$000												
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Load Balancing Storage Capacities:												
Injection MMcf												
Inventory MMCF												
Withdrawal MMcf												
Injection \$000												
Inventory \$000	1,525,339	865,102	660,238	231,570	137,620	93,950	2,677,795	97,212	77,207	20,005	2,580,583	207,889
Withdrawal \$000	100.0%	56.7%	43.3%	100.0%	59.4%	40.6%		100.0%	79.4%	20.6%	100.0%	8.1%
	\$2,137.29	\$1,212.17	\$925.12	\$324.47	\$192.83	\$131.64	\$3,752.11	\$136.21	\$108.18	\$28.03	\$3,615.89	\$291.29
Unbundled Storage Capacities:												
Injection MMcf												
Inventory MMCF												
Withdrawal MMcf												
Injection \$000												
Inventory \$000												
Withdrawal \$000												
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Storage:												
Injection MMcf												
Inventory MMCF												
Withdrawal MMcf												
Injection \$000												
Inventory \$000												
Withdrawal \$000												
Total Storage Costs per EC Method w/HR RRQ	\$2,137	\$1,212	\$925	\$324	\$193	\$132	\$3,752	\$136	\$108	\$28	\$3,616	\$291
Calculation of HRSMA Allocator (allocated inventory Pre- Incremental HR & Aliso												
Total allocated Inventory, pre-HR capacity and pre-Aliso MMCF												
TCAP HRSMA Allocator (based on total allocated inventory as % of total invento												
Calculate Effective Storage Rates w/ Incremental Honor Rancho Capacity (this d												
Injection												
Inventory												
Withdrawal												
Total												
Calculate Effective Storage Rates w/HR Capacity AND Aliso RRQ & Capacities												

	EG Tier 2 Trans	<i>D/T Split Allocator</i>
Customer Costs		
Per Unit LRM, \$/Cust/Year		
Number of Customers	41	
Customer Costs Rental Method \$000	\$5,261.05	<i># of customers</i>
Medium Pressure Distribution costs		
Medium Pressure Distribution costs (MPD)		
Per Unit LRM, \$/mcf		
MPD Peak Day Demand (mmcf)		
Medium Pressure Distribution Costs \$000	0	<i>100% D</i>
High Pressure Distribution costs		
High Pressure Distribution costs (HPD)		
Per Unit LRM, \$/mcf		
HPD Peak Month Demand (mmcf)		
High Pressure Distribution Costs \$000	0	<i>100% D</i>
Customer Service & Information costs		
Customer Service & Information Allocator	2,372,694	
Customer Service & Information \$000	\$0	<i>AYTP</i>
Unscaled LRM Based Costs \$000	\$5,261	
Calculation of Scalar:		
Authorized Revenue Requirement in Rates Base Margin \$000		
Adjustment to Storage for Honor Rancho \$000		
Target Base Margin \$000		
Less items not allocated per LRM method:		
Transmission Cost per EC \$000		
Storage Costs per EC \$000		
Uncollectibles		
NGV Compression Adder Costs per EC \$000		
Target Scaled Costs \$000		
Unscaled LRM Based Costs \$000		
amount to scale \$000		
Scalar (as a % of unscaled)	77%	
Scaled Customer Costs \$000 LRM/Rental Method	\$4,038	
Scaled Medium Pressure Distribution Costs \$000 LRM	\$0	
Scaled High Pressure Distribution Costs \$000 LRM	\$0	
Scaled Customer Service & Information Costs \$000 LRM	\$0	
Scaled LRM Based Costs \$000	\$4,038	
NGV Compression Costs:		
Compression Adder Costs \$000		

EG Tier 2 Trans *D/T Split Allocator*

Uncollectibles:
 Target Base Margin \$000
 System Average Uncollectible Rate
 Uncollectibles

<u>Allocation of Uncollectibles:</u>	
All Costs excl. NGV Adder, EOR, Int, WS, and UBS	\$59,378
% All Costs excl. NGV Adder, EOR, Int, WS, and UBS	3.1%
Uncollectibles	\$170

Transmission Costs per Embedded Cost Method:
 Embedded Transmission Costs \$000
 Calculate BBT/Local-T Transmission Split:

2016TCAP Phase I

<u>Allocation of BBT Costs:</u>	
CYTP Mth	2,372,694
% CYTP	23.7%
BBT Costs per EC method	\$35,142 <i>CYTP</i>

<u>Allocation of LT Costs:</u>	
CYPM Mth	209,418
% CYPM	19.19%
LT Costs per EC method	\$12,806
Total Transmission Costs per EC method	\$47,948

Storage Costs per EC Method (this includes HR RRQ, but does not include increments)
 Embedded Storage Costs \$000
 Honor Rancho Revenue Requirement

Core Storage	\$0
Load Balancing	\$7,392
Unbundled Storage	\$0
Total Storage Costs \$000	\$7,392

ALLOCATED BASE MARGIN (net of misc revenue & broker fee)	\$55,480
Percentage	2.8%
Average Year Throughput Mth	
average rate \$/therm	

Calculation of Customer Service & Information Costs (CSI Costs):
 907 Cus Svc-Supervision + Payroll Taxes
 908 Cus Svc-Cust Assist Exp (PBR Ex DAP, DSM &Self-Gen)
 909 Cus Svc-Info & Instruction Exp
 910 Cus Svc-Misc CSI Exp (PBR Ex DSM & NGV)

A&G loader
 Gen Plant Loader
Total CS&I O&M, 2013 \$000's

Calculation of CSI Cost Allocator:

Energy Markets Costs:
 Major Markets Staff FTE by Class (mgmnt estimate)
 Energy Markets
Energy Markets
 Large C&I:
 # Large C&I Customers
 % Large C&I only
Large C&I
NGV
Residential
 Small Business
 # G10, G-AC, G-GE Customers only
 Small Business
Small Business
 Econ Development
 # Large C&I Customers
 % Large C&I only
Econ Development
Other Residential
 Total
Allocator %

Model Results RD Format for RD Models

Customer Related Costs	\$4,038
Medium Pressure Distribution Costs	\$0
High Pressure Distribution Costs	\$0
Backbone Transmission Costs	\$35,142
Local Transmission Costs	\$12,806
Storage - Seasonal	\$0
Storage - Load Balancing	\$7,392
Storage - TBS	\$0
Non-DSM Related Marketing	\$0
Uncollectibles	\$170
NGV Compression Costs:	\$0
Total Margin Allocation pre-SI & Unbundle FAR	\$59,548
% Allocation	2.8%

Storage Costs per EC Method (this includes HR RRQ, but does not include incre		
Allocation of Storage Costs to Inventory/Inject/Withdrawal w/HR RRQ w/o incrementa		
Injection as % storage costs		
Inventory as % storage costs		
Withdrawal as % storage costs		
<hr/>		
Core Storage Capacities:		
Number of Injection Days		
Injection MMcf		
% Excess Winter Demand		
Inventory MMCF		
MPD Peak Day (1-in-35 Core) Core Only MTh		
% Core MPD Peak Day		
Withdrawal MMcf		
Injection \$000		
Inventory \$000		
Withdrawal \$000		
		\$0
<hr/>		
Load Balancing Storage Capacities:		
Injection MMcf		
Inventory MMCF		
Withdrawal MMcf		
Injection \$000		
Inventory \$000	2,372,694	AYTP
Withdrawal \$000	91.9%	AYTP per class
		\$3,324.60
<hr/>		
Unbundled Storage Capacities:		
Injection MMcf		
Inventory MMCF		
Withdrawal MMcf		
Injection \$000		
Inventory \$000		
Withdrawal \$000		
		\$0
<hr/>		
Total Storage:		
Injection MMcf		
Inventory MMCF		
Withdrawal MMcf		
Injection \$000		
Inventory \$000		
Withdrawal \$000		
Total Storage Costs per EC Method w/HR RRQ		\$3,325
<hr/>		
Calculation of HRSMA Allocator (allocated inventory Pre- Incremental HR & Alisc		
Total allocated Inventory, pre-HR capacity and pre-Aliso MMCF		
TCAP HRSMA Allocator (based on total allocated inventory as % of total invento		
<hr/>		
Calculate Effective Storage Rates w/ Incremental Honor Rancho Capacity (this d		
<hr/>		
Injection		
Inventory		
Withdrawal		
Total		
<hr/>		
Calculate Effective Storage Rates w/HR Capacity AND Aliso RRQ & Capacities		

	NCCI-Total	NCCI-D	NCCI-T	EOR-Total	EOR-D	EOR-T	Total EG	EG Tier 1	EG Tier 1 Dist	EG Tier 1 Trans	EG Tier 2	EG Tier 2 Dist
2017TCAP Phase 1 Storage Allocation Proposal												
Core Storage Capacities:												
Number of Injection Days												
Injection MMcf												
% Excess Winter Demand												
Inventory MMCF												
MPD Peak Day (1-in-35 Core) Core Only MTh												
% Excess Winter Demand												
Withdrawal MMcf												
Injection \$000												
Inventory \$000												
Withdrawal \$000												
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Load Balancing Storage Capacities:												
Injection MMcf												
Inventory MMCF												
Withdrawal MMcf												
Injection \$000												
Inventory \$000	1,525,339	865,102	660,238	231,570	137,620	93,950	2,486,783	97,212	77,207	20,005	2,389,571	16,877
Withdrawal \$000	100.0%	56.7%	43.3%	100.0%	59.4%	40.6%		100.0%	79.4%	20.6%	100.0%	0.7%
	\$4,400	\$2,496	\$1,905	\$668	\$397	\$271	\$7,725	\$280	\$223	\$58	\$7,444	\$53
Unbundled Storage Capacities:												
Injection MMcf												
Inventory MMCF												
Withdrawal MMcf												
Injection \$000												
Inventory \$000												
Withdrawal \$000												
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Storage:												
Injection MMcf												
Inventory MMCF												
Withdrawal MMcf												
Injection \$000												
Inventory \$000												
Withdrawal \$000												
Total Storage Costs per EC Method w/HR RRQ	\$4,400	\$2,496	\$1,905	\$668	\$397	\$271	\$7,725	\$280	\$223	\$58	\$7,444	\$53
Summary of Storage Costs for RATE TABLES under new method:												
Core \$000												
Load Balancing \$000												
Unbundled Storage \$000												
total storage \$000												

2017TCAP Phase 1 Storage Allocation Proposal

Core Storage Capacities:		
Number of Injection Days		
Injection MMcf		
% Excess Winter Demand		
Inventory MMCF		
MPD Peak Day (1-in-35 Core) Core Only MTh		
% Excess Winter Demand		
Withdrawal MMcf		
Injection \$000		
Inventory \$000		
Withdrawal \$000		
		\$0
Load Balancing Storage Capacities:		
Injection MMcf		
Inventory MMCF		
Withdrawal MMcf		
Injection \$000		
Inventory \$000	2,372,694	AYTP
Withdrawal \$000	99.3%	AYTP per class
	\$7,392	
Unbundled Storage Capacities:		
Injection MMcf		
Inventory MMCF		
Withdrawal MMcf		
Injection \$000		
Inventory \$000		
Withdrawal \$000		
		\$0
Total Storage:		
Injection MMcf		
Inventory MMCF		
Withdrawal MMcf		
Injection \$000		
Inventory \$000		
Withdrawal \$000		
Total Storage Costs per EC Method w/HR RRQ		\$7,392
Summary of Storage Costs for RATE TABLES under new method:		
Core \$000		
Load Balancing \$000		
Unbundled Storage \$000		
total storage \$000		

**TABLE 11
UNSCALED LONG RUN MARGINAL COST REVENUES
CUSTOMER COST**

Customer Class	Customer	Customer	Customer Cost \$000
	LRMC	Count	
	\$/customer		
	A	B	C
Residential	\$224	5,617,809	\$1,256,152
Core C/I	\$711	207,317	\$147,464
Gas A/C	\$5,865	9	\$53
Gas Engine	\$5,085	745	\$3,788
NGV	\$22,281	359	\$7,993
Total Core			\$1,415,451
Noncore C/I	\$30,179	622	\$18,758
Small EG	\$25,258	216	\$5,463
Large EG	\$128,644	68	\$8,806
EOR	\$83,029	29	\$2,408
Total Retail Noncore			\$35,435
Long Beach	\$886,337	1	\$886
SDG&E	\$1,513,039	1	\$1,513
Southwest Gas	\$797,252	1	\$797
Vernon	\$539,223	1	\$539
DGN	\$216,430	1	\$216
Total Wholesale			\$3,952
UBS	\$0	0	\$0
BTS	\$0	0	\$0
Total Noncore			\$39,387
Total SoCalGas			\$1,454,838

**TABLE 12
UNSCALED LONG RUN MARGINAL COST REVENUES
DISTRIBUTION COSTS**

Customer Class	MPD LRMC	MPD Peak Day	MPD Costs	HPD LRMC	HPD Peak Month	HPD Costs \$000
	\$/mcf	(mcf)	\$000	\$/mcf	Demand (mcf)	
	A	B	C	D	E	
Residential	\$200.38	2,345,287	\$469,949	\$1.92	39,076,037	\$75,171
Core C/I	\$200.38	529,071	\$106,015	\$1.92	11,426,499	\$21,981
Gas A/C	\$200.38	59	\$12	\$1.92	3,630	\$7
Gas Engine	\$200.38	3,578	\$717	\$1.92	133,820	\$257
NGV	\$200.38	12,707	\$2,546	\$1.92	935,981	\$1,801
Total Core			\$579,240			\$99,217
Noncore C/I	\$200.38	86,202	\$17,273	\$1.92	6,643,003	\$12,779
Small EG	\$200.38	14,054	\$2,816	\$1.92	596,963	\$1,148
Large EG	\$200.38	9,296	\$1,863	\$1.92	1,638,566	\$3,152
EOR	\$200.38	299	\$60	\$1.92	1,134,788	\$2,183
Total Retail Noncore			\$22,012			\$19,263
Long Beach	\$200.38	0	\$0	\$1.92	0	\$0
SDG&E	\$200.38	0	\$0	\$1.92	0	\$0
Southwest Gas	\$200.38	0	\$0	\$1.92	0	\$0
Vernon	\$200.38	0	\$0	\$1.92	0	\$0
DGN	\$200.38	0	\$0	\$1.92	0	\$0
Total Wholesale			\$0			\$0
UBS	\$200.38	0	\$0	\$1.92	0	\$0
BTS	\$0.00	0	\$0	\$0.00	0	\$0
Total Noncore			\$22,012			\$19,263
Total SoCalGas			\$601,252			\$118,480

TABLE 13
LONG RUN MARGINAL COST SCALED REVENUES
SCALED CUSTOMER & DISTRIBUTION COSTS
 \$ 000

Customer Class	Customer Cost	MPD	HPD	Unscaled LRM Revenues	Scalar	Scaled LRM Revenues
	A	B	C	D=A+B+C	E	F=D*E
Residential	\$1,256,152	\$469,949	\$75,171	\$1,801,273	77%	\$1,382,528
Core C/I	\$147,464	\$106,015	\$21,981	\$275,461	77%	\$211,424
Gas A/C	\$53	\$12	\$7	\$72	77%	\$55
Gas Engine	\$3,788	\$717	\$257	\$4,763	77%	\$3,656
NGV	\$7,993	\$2,546	\$1,801	\$12,340	77%	\$9,471
Total Core	\$1,415,451	\$579,240	\$99,217	\$2,093,908	77%	\$1,607,134
Noncore C/I	\$18,758	\$17,273	\$12,779	\$48,810	77%	\$37,463
Small EG	\$5,463	\$2,816	\$1,148	\$9,427	77%	\$7,236
Large EG	\$8,806	\$1,863	\$3,152	\$13,821	77%	\$10,608
EOR	\$2,408	\$60	\$2,183	\$4,651	77%	\$3,570
Total Retail Noncore	\$35,435	\$22,012	\$19,263	\$76,710	77%	\$58,877
Long Beach	\$886	\$0	\$0	\$886	77%	\$680
SDG&E	\$1,513	\$0	\$0	\$1,513	77%	\$1,161
Southwest Gas	\$797	\$0	\$0	\$797	77%	\$612
Vernon	\$539	\$0	\$0	\$539	77%	\$414
DGN	\$216	\$0	\$0	\$216	77%	\$166
Total Wholesale	\$3,952	\$0	\$0	\$3,952	77%	\$3,033
UBS	\$0	\$0	\$0	\$0	77%	\$0
BTS	\$0	\$0	\$0	\$0	77%	\$0
Total Noncore	\$39,387	\$22,012	\$19,263	\$80,662	77%	\$61,910
Total SoCalGas	\$1,454,838	\$601,252	\$118,480	\$2,174,570	77%	\$1,669,045
Calculation of Scalar:						
Scalar = [Base Margin - Transmission - Storage] / [Unscaled Customer + Distribution]						
Scalar = \$1,669,045 divided by \$2,174,570						

**TABLE 14
ALLOCATION OF BASE MARGIN**

\$ 000

Customer Class	Scaled LRM C		BTS	Local Trans	NGV Public Access	Storage	Allocated Base Margin
	Revenues	Uncollect					
	A	B					
Residential	\$1,382,528	\$4,296	\$0	\$24,613	\$0	\$53,855	\$1,465,292
Core C/I	\$211,424	\$710	\$0	\$7,249	\$0	\$13,478	\$232,862
Gas A/C	\$55	\$0	\$0	\$2	\$0	\$6	\$64
Gas Engine	\$3,656	\$12	\$0	\$88	\$0	\$180	\$3,936
NGV	\$9,471	\$40	\$0	\$794	\$2,440	\$1,222	\$13,967
Total Core	\$1,607,134	\$5,058	\$0	\$32,747	\$2,440	\$68,742	\$1,716,121
Noncore C/I	\$37,463	\$207	\$0	\$7,635	\$0	\$4,400	\$49,705
Small EG	\$7,236	\$27	\$0	\$472	\$0	\$280	\$8,015
Large EG	\$10,608	\$201	\$0	\$13,838	\$0	\$7,444	\$32,092
EOR	\$3,570	\$0	\$0	\$1,203	\$0	\$668	\$5,440
Retail Noncore	\$58,877	\$434	\$0	\$23,147	\$0	\$12,793	\$95,252
Long Beach	\$680	\$0	\$0	\$613	\$0	\$212	\$1,505
SDG&E	\$1,161	\$0	\$0	\$8,623	\$0	\$11,092	\$20,876
Southwest Gas	\$612	\$0	\$0	\$648	\$0	\$189	\$1,449
Vernon	\$414	\$0	\$0	\$500	\$0	\$274	\$1,189
DGN	\$166	\$0	\$0	\$470	\$0	\$264	\$900
Total Wholesale	\$3,033	\$0	\$0	\$10,854	\$0	\$12,030	\$25,918
UBS	\$0	\$0	\$0	\$0	\$0	\$17,020	\$17,020
BTS			\$148,148				\$148,148
Total Noncore	\$61,910	\$434	\$148,148	\$34,002	\$0	\$41,843	\$286,338
Total SoCalGas	\$1,669,045	\$5,492	\$148,148	\$66,748	\$2,440	\$110,585	\$2,002,458

NCCI-D	\$36,587	\$161	\$0	\$4,184	\$0	\$2,496	\$43,427
EOR-D	\$2,805	\$0		\$715		\$397	\$3,917
EG-D T1	\$6,944	\$25	\$0	\$376	\$0	\$223	\$7,567
EG-D T2	\$6,570	\$31	\$0	\$1,032	\$0	\$53	\$7,686
TLS	\$9,005	\$218	\$0	\$27,695	\$0	\$21,656	\$58,573
Total	\$61,910	\$434	\$0	\$34,002	\$0	\$24,823	\$121,170

\$0 \$0 \$0 \$0 \$0 \$0 \$0

**TABLE 15
COST ALLOCATION COMPARISON**

\$ 000

Customer Class	Proposed Allocation of		Current Allocation of	
	Base Margin	% Total	Base Margin	% Total
	A	B	C	D
Residential	\$1,465,292	73.2%	\$1,435,087	72.3%
Core C/I	\$232,862	11.6%	\$277,662	14.0%
Gas A/C	\$64	0.0%	\$74	0.0%
Gas Engine	\$3,936	0.2%	\$2,071	0.1%
NGV	\$13,967	0.7%	\$9,940	0.5%
Total Core	\$1,716,121	85.7%	\$1,724,834	86.9%
Noncore C/I	\$49,705	2.5%	\$57,226	2.9%
Small EG	\$8,015	0.4%	\$4,577	0.2%
Large EG	\$32,092	1.6%	\$31,375	1.6%
EOR	\$5,440	0.3%	\$5,004	0.3%
Total Retail Noncore	\$95,252	4.8%	\$98,182	4.9%
Long Beach	\$1,505	0.1%	\$1,357	0.1%
SDG&E	\$20,876	1.0%	\$14,782	0.7%
Southwest Gas	\$1,449	0.1%	\$1,294	0.1%
Vernon	\$1,189	0.1%	\$974	0.0%
DGN	\$900	0.0%	\$611	0.0%
Total Wholesale	\$25,918	1.3%	\$19,017	1.0%
UBS	\$17,020	0.8%	\$26,476	1.3%
BTS	\$148,148	7.4%	\$116,052	5.8%
Total Noncore	\$286,338	14.3%	\$259,726	13.1%
Total SoCalGas	\$2,002,458	100.0%	\$1,984,561	100.0%

Note: Difference of \$18 million: Aliso Canyon \$27 million less Honor Rancho \$9 million