2008 California Gas Report Workpapers

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Prepared by

The Gas Company

A Sempra Energy utility℠

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SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND SENDOUT - MMCF/DAY
RECORDED YEARS 2003 TO 2007

Line	CAPACITY AVAILABLE		2003	2004	2005	2006	2007
1	California Source Gas						
	Out-of-State Gas						
2	California Offshore -POPCO / PIOC						
3	El Paso Natural Gas Co.						
4	Transwestern Pipeline Co.						
5	Kern / Mojave						
6	PGT / PG&E						
7	Other						
8	Total Out-of-State Gas						
9	TOTAL CAPACITY AVAILABLE						
	GAS SUPPLY TAKEN						
10	California Source Gas		241	291	274	242	232
	Out-of-State Gas						
11	Pacific Interstate Companies		-	-	-	-	-
12	Other Out-of-State		2,378	2,429	2,220	2,386	2,462
13	Total Out-of-State Gas		2,378	2,429	2,220	2,386	2,462
14	TOTAL SUPPLY TAKEN		2,619	2,720	2,494	2,628	2,694
15	Net Underground Storage Withdrawal		(11)	(22)	(11)	13	23
16	TOTAL THROUGHPUT (1)(2)		2,608	2,698	2,483	2,641	2,717
	DELIVERIES BY END-USE (3)						
17	Core	Residential	666	699	660	678	673
18		Commercial	200	215	211	215	224
19		Industrial	57	63	65	65	65
20		NGV	15	17	20	21	23
21		Subtotal	938	994	956	979	985
22	Noncore	Commercial	62	60	60	63	60
23		Industrial	349	356	344	347	345
24		EOR Steaming	42	35	34	39	39
25		Electric Generation	789	781	676	769	849
26		Subtotal	1,242	1,232	1,114	1,218	1,293
27	Wholesale/International		377	427	393	394	406
28	Co. Use & LUAF		51	45	20	50	33
29	SYSTEM TOTAL-THROUGHPUT (1)(2)		2,608	2,698	2,483	2,641	2,717
	TRANSPORTATION AND EXCHANGE						
30	Core	All End Uses	10	7	7	11	14
31	Noncore	Commercial/Industrial	403	414	404	410	405
32		EOR Steaming	42	35	34	39	39
33		Electric Generation	788	781	676	769	849
34		Subtotal-Retail	1,243	1,236	1,121	1,229	1,307
35	Wholesale/International		377	427	393	394	406
36	TOTAL TRANSPORTATION & EXCHANGE		1,620	1,663	1,514	1,623	1,713
	CURTAILMENT (RETAIL & WHOLESALE)						
37		Core					

2008 CALIFORNIA GAS REPORT

HISTORICAL DATA
JULY 2008

The Gas Company

A Sempra Energy utility™

2008 CALIFORNIA GAS REPORT

FORECAST OF REQUIREMENTS - SUMMARY
JULY 2008

The Gas Company

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2008 CALIFORNIA GAS REPORT

FORECAST OF REQUIREMENTS - AVERAGE TEMPERATURE YEAR
JULY 2008

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TABLE 1-SC

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED YEARS 2008 THRU 2012

AVERAGE TEMPERATURE with BASE HYDRO YEAR

LINE			2008	2009	2010	2011	2012	LINE
	FIRM CAPACITY AVAILABLE							
1	California Source Gas		310	310	310	310	310	1
	Out-of-State Gas							
2	Mojave (Hector Road)		50	50	50	50	50	2
3	El Paso Natural Gas Co. (Blythe)		1,210	1,210	1,210	1,210	1,210	3
4	El Paso Natural Gas Co. (Topock)		540	540	540	540	540	4
5	Transwestern Pipeline Co. (No. Needles)		800	800	800	800	800	5
6	Kern-Mojave, PG&E, Oxy (Wheeler Ridge)		765	765	765	765	765	6
7	Kern-Mojave (Kramer Junction)		200	200	200	200	200	7
8	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	8
9	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	9
	GAS SUPPLY TAKEN							
10	California Source Gas		310	310	310	310	310	10
11	Out-of-State		2,384	2,297	2,286	2,274	2,275	11
12	TOTAL SUPPLY TAKEN		2,694	2,607	2,596	2,584	2,585	12
13	Net Underground Storage Withdrawal		0	0	0	0	0	13
14	TOTAL THROUGHPUT 1/		2,694	2,607	2,596	2,584	2,585	14
	REQUIREMENTS FORECAST BY END-USE 2/							
15	CORE 3/	Residential	661	656	655	653	652	15
16		Commercial	217	217	217	216	215	16
17		Industrial	59	57	57	57	57	17
18		NGV	25	29	32	36	39	18
19		Subtotal-CORE	963	958	961	963	964	19
20	NONCORE	Commercial	54	54	55	55	55	20
21		Industrial	334	322	320	318	317	21
22		EOR Steaming	35	28	28	28	29	22
23		Electric Generation (EG)	854	794	763	779	780	23
24		Subtotal-NONCORE	1,278	1,199	1,166	1,179	1,179	24
25	WHOLESALE &	Core	171	169	170	171	172	25
26	INTERNATIONAL	Noncore Excl. EG	46	50	50	50	50	26
27		Electric Generation (EG)	200	196	214	186	185	27
28		Subtotal-WHOLESALE & INTL.	417	415	434	407	407	28
29		Co. Use & LUAF	37	35	35	35	35	29
30	SYSTEM TOTAL THROUGHPUT 1/		2,694	2,607	2,596	2,584	2,585	30
	TRANSPORTATION AND EXCHANGE							
31	CORE	All End Uses	13	13	13	13	13	31
32	NONCORE	Commercial/Industrial	388	376	374	372	371	32
33		EOR Steaming	35	28	28	28	29	33
34		Electric Generation (EG)	854	794	763	779	780	34
35		Subtotal-RETAIL	1,291	1,212	1,179	1,192	1,192	35
	WHOLESALE &							
36	INTERNATIONAL	All End Uses	417	415	434	407	407	36
37	TOTAL TRANSPORTATION & EXCHANGE		1,707	1,627	1,613	1,600	1,600	37
	CURTAILMENT (RETAIL & WHOLESALE)							
38		Core	0	0	0	0	0	38
39		Noncore	0	0	0	0	0	39
40		TOTAL - Curtailment	0	0	0	0	0	40

NOTES:

	2008	2009	2010	2011	2012
1/ Excludes own-source gas supply of gas procurement by the City of Long Beach	6	10	10	9	9
2/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.					
3/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	979	974	977	979	980

TABLE 2-SC

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED YEARS 2013 THRU 2030

AVERAGE TEMPERATURE with BASE HYDRO YEAR

LINE			2013	2015	2020	2025	2030	LINE
	FIRM CAPACITY AVAILABLE							
1	California Source Gas		310	310	310	310	310	1
	Out-of-State Gas							
2	Mojave (Hector Road)		50	50	50	50	50	2
3	El Paso Natural Gas Co. (Blythe)		1,210	1,210	1,210	1,210	1,210	3
4	El Paso Natural Gas Co. (Topock)		540	540	540	540	540	4
5	Transwestern Pipeline Co. (No. Needles)		800	800	800	800	800	5
6	Kern-Mojave, PG&E, Oxy (Wheeler Ridge)		765	765	765	765	765	6
7	Kern-Mojave (Kramer Junction)		200	200	200	200	200	7
8	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	8
9	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	9
	GAS SUPPLY TAKEN							
10	California Source Gas		310	310	310	310	310	10
11	Out-of-State		2,298	2,314	2,329	2,355	2,399	11
12	TOTAL SUPPLY TAKEN		2,608	2,624	2,639	2,665	2,709	12
13	Net Underground Storage Withdrawal		0	0	0	0	0	13
14	TOTAL THROUGHPUT [1/]		2,608	2,624	2,639	2,665	2,709	14
	REQUIREMENTS FORECAST BY END-USE [2/]							
15	CORE [3/]	Residential	655	654	642	644	654	15
16		Commercial	215	212	202	200	204	16
17		Industrial	57	56	53	50	49	17
18		NGV	42	47	64	86	108	18
19		Subtotal-CORE	969	969	960	980	1,014	19
20	NONCORE	Commercial	55	55	53	53	54	20
21		Industrial	316	311	293	283	278	21
22		EOR Steaming	28	28	29	28	28	22
23		Electric Generation (EG)	775	782	811	815	816	23
24		Subtotal-NONCORE	1,174	1,176	1,186	1,179	1,176	24
25	WHOLESALE &	Core	173	176	182	193	203	25
26	INTERNATIONAL	Noncore Excl. EG	50	50	50	50	50	26
27		Electric Generation (EG)	207	217	225	227	229	27
28		Subtotal-WHOLESALE & INTL.	430	443	457	470	482	28
29		Co. Use & LUAF	35	36	36	36	37	29
30	SYSTEM TOTAL THROUGHPUT [1/]		2,608	2,624	2,639	2,665	2,709	30
	TRANSPORTATION AND EXCHANGE							
31	CORE	All End Uses	13	13	12	12	12	31
32	NONCORE	Commercial/Industrial	371	366	347	336	332	32
33		EOR Steaming	28	28	29	28	28	33
34		Electric Generation (EG)	775	782	811	815	816	34
35		Subtotal-RETAIL	1,187	1,189	1,199	1,191	1,188	35
	WHOLESALE &							
36	INTERNATIONAL	All End Uses	430	443	457	470	482	36
37	TOTAL TRANSPORTATION & EXCHANGE		1,618	1,632	1,655	1,661	1,670	37
	CURTAILMENT (RETAIL & WHOLESALE)							
38		Core	0	0	0	0	0	38
39		Noncore	0	0	0	0	0	39
40		TOTAL - Curtailment	0	0	0	0	0	40

NOTES:

	2013	2015	2020	2025	2030
1/ Excludes own-source gas supply of gas procurement by the City of Long Beach	8	7	5	3	2
2/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.					
3/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	985	985	976	998	1,033

Work Paper: TABLE 1-SC

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2008

AVERAGE TEMPERATURE with BASE HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	FIRM CAPACITY AVAILABLE															
1	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	1
	Out-of-State Gas															
2	Mojave (Hector Road)		50	50	50	50	50	50	50	50	50	50	50	50	50	2
3	El Paso Natural Gas Co. (Blythe)		1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	3
4	El Paso Natural Gas Co. (Topock)		540	540	540	540	540	540	540	540	540	540	540	540	540	4
5	Transwestern Pipeline Co. (No. Needles)		800	800	800	800	800	800	800	800	800	800	800	800	800	5
6	Kern-Mojave, PG&E, Oxy (Wheeler Ridge)		765	765	765	765	765	765	765	765	765	765	765	765	765	6
7	Kern-Mojave (Kramer Junction)		200	200	200	200	200	200	200	200	200	200	200	200	200	7
8	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	8
9	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	9
	GAS SUPPLY TAKEN															
10	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	10
11	Out-of-State		3,033	2,720	2,404	2,082	1,919	2,020	2,329	2,394	2,266	2,036	2,492	2,910	2,384	11
12	TOTAL SUPPLY TAKEN		3,343	3,030	2,714	2,392	2,229	2,330	2,639	2,704	2,576	2,346	2,802	3,220	2,694	12
13	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	13
14	TOTAL THROUGHPUT [1/]		3,343	3,030	2,714	2,392	2,229	2,330	2,639	2,704	2,576	2,346	2,802	3,220	2,694	14
	REQUIREMENTS FORECAST BY END-USE [2/]															
15	CORE [3/]	Residential	1,115	990	856	671	487	396	360	359	366	445	757	1,139	661	15
16		Commercial	283	280	232	211	196	187	166	163	179	174	250	290	217	16
17		Industrial	69	67	60	59	57	56	52	53	58	57	60	61	59	17
18		NGV	25	27	25	26	25	26	25	25	26	25	26	25	25	18
19		Subtotal-CORE	1,492	1,364	1,173	967	765	665	603	600	629	701	1,094	1,515	963	19
20	NONCORE	Commercial	66	61	59	55	50	48	47	47	47	49	57	66	54	20
21		Industrial	344	332	334	333	333	333	331	331	332	333	334	337	334	21
22		EOR Steaming	38	38	38	38	38	38	35	35	35	35	25	25	35	22
23		Electric Generation (EG)	794	706	666	623	691	873	1,167	1,205	1,056	838	882	742	854	23
24		Subtotal-NONCORE	1,242	1,137	1,097	1,049	1,113	1,292	1,580	1,618	1,470	1,255	1,298	1,170	1,278	24
25	WHOLESALE &	Core	276	254	212	169	139	117	111	105	111	119	175	261	171	25
26	INTERNATIONAL	Noncore Excl. EG	49	46	46	46	42	49	44	44	44	45	46	45	46	26
27		Electric Generation (EG)	238	188	149	129	140	175	265	301	286	195	151	185	200	27
28		Subtotal-WHOLESALE & INT	563	488	407	344	321	341	420	449	442	359	372	491	417	28
29		Co. Use & LUAF	45	41	37	32	30	32	36	37	35	32	38	44	37	29
30	SYSTEM TOTAL THROUGHPUT [1/]		3,343	3,030	2,714	2,392	2,229	2,330	2,639	2,704	2,576	2,346	2,802	3,220	2,694	30
	TRANSPORTATION AND EXCHANGE															
31	CORE	All End Uses	18	18	15	13	11	11	9	9	10	10	15	19	13	31
32	NONCORE	Commercial/Industrial	410	393	393	388	384	381	378	378	379	382	391	403	388	32
33		EOR Steaming	38	38	38	38	38	38	35	35	35	35	25	25	35	33
34		Electric Generation (EG)	794	706	666	623	691	873	1,167	1,205	1,056	838	882	742	854	34
35		Subtotal-RETAIL	1,261	1,154	1,112	1,062	1,124	1,302	1,590	1,627	1,480	1,265	1,313	1,188	1,291	35
	WHOLESALE &															
36	INTERNATIONAL	All End Uses	563	488	407	344	321	341	420	449	442	359	372	491	417	36
37	TOTAL TRANSPORTATION & EXCHANGE		1,824	1,643	1,519	1,406	1,446	1,644	2,010	2,076	1,922	1,624	1,685	1,679	1,707	37
	CURTAILMENT (RETAIL & WHOLESALE)															
38		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	38
39		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	39
40		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	40
	NOTES:															
	1/ Excludes own-source gas supply of gas procurement by the City of Long Beach		6	6	6	6	6	6	6	6	6	6	6	6	6	
	2/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.															
	3/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:		1,519	1,388	1,193	983	777	674	612	609	638	712	1,111	1,542	979	

Work Paper: TABLE 1-SC

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2009

AVERAGE TEMPERATURE with BASE HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	FIRM CAPACITY AVAILABLE															
1	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	1
	Out-of-State Gas															
2	Mojave (Hector Road)		50	50	50	50	50	50	50	50	50	50	50	50	50	2
3	El Paso Natural Gas Co. (Blythe)		1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	3
4	El Paso Natural Gas Co. (Topock)		540	540	540	540	540	540	540	540	540	540	540	540	540	4
5	Transwestern Pipeline Co. (No. Needles)		800	800	800	800	800	800	800	800	800	800	800	800	800	5
6	Kern-Mojave, PG&E, Oxy (Wheeler Ridge)		765	765	765	765	765	765	765	765	765	765	765	765	765	6
7	Kern-Mojave (Kramer Junction)		200	200	200	200	200	200	200	200	200	200	200	200	200	7
8	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	8
9	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	9
	GAS SUPPLY TAKEN															
10	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	10
11	Out-of-State		2,809	2,696	2,319	2,027	1,899	1,966	2,213	2,240	2,142	1,981	2,414	2,887	2,297	11
12	TOTAL SUPPLY TAKEN		3,119	3,006	2,629	2,337	2,209	2,276	2,523	2,550	2,452	2,291	2,724	3,197	2,607	12
13	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	13
14	TOTAL THROUGHPUT [1/]		3,119	3,006	2,629	2,337	2,209	2,276	2,523	2,550	2,452	2,291	2,724	3,197	2,607	14
	REQUIREMENTS FORECAST BY END-USE [2/]															
15	CORE [3/]	Residential	1,103	1,014	846	663	482	391	356	355	362	440	749	1,127	656	15
16		Commercial	281	289	230	210	195	186	165	162	179	173	249	289	217	16
17		Industrial	67	67	58	57	54	54	50	51	56	55	58	59	57	17
18		NGV	28	31	28	29	28	29	28	28	29	28	29	28	29	18
19		Subtotal-CORE	1,479	1,401	1,163	959	760	660	599	596	625	697	1,085	1,502	958	19
20	NONCORE	Commercial	66	63	59	55	50	48	47	47	47	49	57	66	54	20
21		Industrial	327	322	320	319	321	321	320	320	321	322	323	326	322	21
22		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	22
23		Electric Generation (EG)	680	685	616	607	683	842	1,096	1,104	988	772	751	699	794	23
24		Subtotal-NONCORE	1,100	1,099	1,024	1,009	1,082	1,239	1,492	1,499	1,384	1,171	1,159	1,119	1,199	24
25	WHOLESALE &	Core	265	261	214	168	139	117	110	104	111	118	172	257	169	25
26	INTERNATIONAL	Noncore Excl. EG	50	52	50	51	46	53	49	48	49	50	50	48	50	26
27		Electric Generation (EG)	183	152	142	117	152	177	239	269	250	225	221	227	196	27
28		Subtotal-WHOLESALE & INT	498	466	406	337	337	346	398	421	409	392	443	532	415	28
29		Co. Use & LUAF	42	41	36	32	30	31	34	35	33	31	37	43	35	29
30	SYSTEM TOTAL THROUGHPUT [1/]		3,119	3,006	2,629	2,337	2,209	2,276	2,523	2,550	2,452	2,291	2,724	3,197	2,607	30
	TRANSPORTATION AND EXCHANGE															
31	CORE	All End Uses	18	18	15	13	11	10	9	9	10	10	15	18	13	31
32	NONCORE	Commercial/Industrial	392	385	379	374	371	368	367	366	368	371	379	392	376	32
33		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	33
34		Electric Generation (EG)	680	685	616	607	683	842	1,096	1,104	988	772	751	699	794	34
35		Subtotal-RETAIL	1,119	1,117	1,039	1,022	1,094	1,249	1,501	1,508	1,394	1,181	1,174	1,138	1,212	35
	WHOLESALE &															
36	INTERNATIONAL	All End Uses	498	466	406	337	337	346	398	421	409	392	443	532	415	36
37	TOTAL TRANSPORTATION & EXCHANGE		1,617	1,582	1,445	1,359	1,430	1,595	1,899	1,929	1,803	1,573	1,617	1,670	1,627	37
	CURTAILMENT (RETAIL & WHOLESALE)															
38		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	38
39		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	39
40		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	40

NOTES:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1/ Excludes own-source gas supply of gas procurement by the City of Long Beach	10	10	10	10	10	10	10	10	10	10	10	10	10

2/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
3/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,505	1,425	1,183	975	771	670	608	605	634	707	1,103	1,529	974

Work Paper: TABLE 1-SC

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2010

AVERAGE TEMPERATURE with BASE HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	FIRM CAPACITY AVAILABLE															
1	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	1
	Out-of-State Gas															
2	Mojave (Hector Road)		50	50	50	50	50	50	50	50	50	50	50	50	50	2
3	El Paso Natural Gas Co. (Blythe)		1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	3
4	El Paso Natural Gas Co. (Topock)		540	540	540	540	540	540	540	540	540	540	540	540	540	4
5	Transwestern Pipeline Co. (No. Needles)		800	800	800	800	800	800	800	800	800	800	800	800	800	5
6	Kern-Mojave, PG&E, Oxy (Wheeler Ridge)		765	765	765	765	765	765	765	765	765	765	765	765	765	6
7	Kern-Mojave (Kramer Junction)		200	200	200	200	200	200	200	200	200	200	200	200	200	7
8	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	8
9	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	9
	GAS SUPPLY TAKEN															
10	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	10
11	Out-of-State		2,808	2,672	2,350	2,061	1,850	1,917	2,240	2,258	2,170	1,908	2,355	2,859	2,286	11
12	TOTAL SUPPLY TAKEN		3,118	2,982	2,660	2,371	2,160	2,227	2,550	2,568	2,480	2,218	2,665	3,169	2,596	12
13	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	13
14	TOTAL THROUGHPUT [1/]		3,118	2,982	2,660	2,371	2,160	2,227	2,550	2,568	2,480	2,218	2,665	3,169	2,596	14
	REQUIREMENTS FORECAST BY END-USE [2/]															
15	CORE [3/]	Residential	1,101	1,012	845	662	481	391	355	354	361	439	748	1,125	655	15
16		Commercial	281	289	230	210	196	187	165	163	178	173	249	288	217	16
17		Industrial	66	66	58	56	54	53	50	51	57	56	59	59	57	17
18		NGV	32	35	32	33	32	33	32	32	33	32	33	32	32	18
19		Subtotal-CORE	1,480	1,403	1,165	962	762	664	602	599	629	700	1,088	1,504	961	19
20	NONCORE	Commercial	66	64	59	55	50	48	47	47	47	49	57	66	55	20
21		Industrial	325	321	319	318	319	318	318	317	318	319	320	324	320	21
22		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	22
23		Electric Generation (EG)	656	627	618	618	639	772	1,075	1,088	979	710	691	668	763	23
24		Subtotal-NONCORE	1,076	1,040	1,025	1,018	1,037	1,166	1,468	1,480	1,373	1,107	1,097	1,087	1,166	24
25	WHOLESALE &	Core	266	262	214	169	139	117	111	105	111	118	172	258	170	25
26	INTERNATIONAL	Noncore Excl. EG	50	52	50	52	47	54	49	49	50	50	51	49	50	26
27		Electric Generation (EG)	205	185	170	138	146	196	285	300	284	212	221	227	214	27
28		Subtotal-WHOLESALE & INT	521	500	435	359	332	367	445	453	444	381	444	534	434	28
29		Co. Use & LUAF	42	40	36	32	29	30	35	35	34	30	36	43	35	29
30	SYSTEM TOTAL THROUGHPUT [1/]		3,118	2,982	2,660	2,371	2,160	2,227	2,550	2,568	2,480	2,218	2,665	3,169	2,596	30
	TRANSPORTATION AND EXCHANGE															
31	CORE	All End Uses	18	18	15	13	11	10	9	9	10	10	15	18	13	31
32	NONCORE	Commercial/Industrial	391	384	378	372	369	366	365	364	365	368	377	390	374	32
33		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	33
34		Electric Generation (EG)	656	627	618	618	639	772	1,075	1,088	979	710	691	668	763	34
35		Subtotal-RETAIL	1,094	1,058	1,040	1,031	1,049	1,177	1,477	1,489	1,383	1,117	1,112	1,106	1,179	35
	WHOLESALE &															
36	INTERNATIONAL	All End Uses	521	500	435	359	332	367	445	453	444	381	444	534	434	36
37	TOTAL TRANSPORTATION & EXCHANGE		1,614	1,558	1,474	1,390	1,380	1,544	1,922	1,942	1,827	1,498	1,556	1,640	1,613	37
	CURTAILMENT (RETAIL & WHOLESALE)															
38		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	38
39		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	39
40		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	40

NOTES:

Note	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1/ Excludes own-source gas supply of gas procurement by the City of Long Beach	10	10	10	10	10	10	10	10	10	10	10	10	10

2/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.

Note	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
3/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,506	1,427	1,185	978	774	673	611	608	638	711	1,106	1,531	977

Work Paper: TABLE 1-SC

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2011

AVERAGE TEMPERATURE with BASE HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	FIRM CAPACITY AVAILABLE															
1	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	1
	Out-of-State Gas															
2	Mojave (Hector Road)		50	50	50	50	50	50	50	50	50	50	50	50	50	2
3	El Paso Natural Gas Co. (Blythe)		1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	3
4	El Paso Natural Gas Co. (Topock)		540	540	540	540	540	540	540	540	540	540	540	540	540	4
5	Transwestern Pipeline Co. (No. Needles)		800	800	800	800	800	800	800	800	800	800	800	800	800	5
6	Kern-Mojave, PG&E, Oxy (Wheeler Ridge)		765	765	765	765	765	765	765	765	765	765	765	765	765	6
7	Kern-Mojave (Kramer Junction)		200	200	200	200	200	200	200	200	200	200	200	200	200	7
8	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	8
9	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	9
	GAS SUPPLY TAKEN															
10	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	10
11	Out-of-State		2,770	2,655	2,359	2,063	1,859	1,922	2,173	2,192	2,116	1,955	2,399	2,848	2,274	11
12	TOTAL SUPPLY TAKEN		3,080	2,965	2,669	2,373	2,169	2,232	2,483	2,502	2,426	2,265	2,709	3,158	2,584	12
13	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	13
14	TOTAL THROUGHPUT [1/]		3,080	2,965	2,669	2,373	2,169	2,232	2,483	2,502	2,426	2,265	2,709	3,158	2,584	14
	REQUIREMENTS FORECAST BY END-USE [2/]															
15	CORE [3/]	Residential	1,099	1,010	843	660	480	390	355	353	360	438	746	1,122	653	15
16		Commercial	280	288	230	210	195	186	165	162	178	173	248	287	216	16
17		Industrial	67	67	58	57	54	54	50	51	56	55	58	59	57	17
18		NGV	36	40	36	37	36	37	36	36	37	36	37	36	36	18
19		Subtotal-CORE	1,481	1,404	1,166	964	765	666	605	602	631	702	1,089	1,504	963	19
20	NONCORE	Commercial	66	64	59	55	50	48	47	47	47	49	57	66	55	20
21		Industrial	323	318	317	315	317	316	316	315	316	318	319	322	318	21
22		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	22
23		Electric Generation (EG)	631	615	622	618	650	798	1,073	1,102	993	778	759	690	779	23
24		Subtotal-NONCORE	1,049	1,026	1,026	1,016	1,045	1,191	1,465	1,492	1,385	1,173	1,163	1,107	1,179	24
25	WHOLESALE &	Core	268	264	216	170	140	118	112	106	112	120	174	260	171	25
26	INTERNATIONAL	Noncore Excl. EG	50	53	51	52	47	54	49	49	49	50	51	49	50	26
27		Electric Generation (EG)	190	178	174	139	143	173	218	220	215	190	195	194	186	27
28		Subtotal-WHOLESALE & INT	508	495	441	361	330	344	379	374	377	359	420	503	407	28
29		Co. Use & LUAF	42	40	36	32	29	30	34	34	33	31	37	43	35	29
30	SYSTEM TOTAL THROUGHPUT [1/]		3,080	2,965	2,669	2,373	2,169	2,232	2,483	2,502	2,426	2,265	2,709	3,158	2,584	30
	TRANSPORTATION AND EXCHANGE															
31	CORE	All End Uses	18	18	15	13	11	10	9	9	10	10	15	18	13	31
32	NONCORE	Commercial/Industrial	389	382	376	370	367	364	363	362	363	367	375	388	372	32
33		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	33
34		Electric Generation (EG)	631	615	622	618	650	798	1,073	1,102	993	778	759	690	779	34
35		Subtotal-RETAIL	1,067	1,044	1,041	1,029	1,057	1,202	1,474	1,501	1,395	1,183	1,178	1,126	1,192	35
	WHOLESALE &															
36	INTERNATIONAL	All End Uses	508	495	441	361	330	344	379	374	377	359	420	503	407	36
37	TOTAL TRANSPORTATION & EXCHANGE		1,575	1,539	1,482	1,391	1,387	1,546	1,853	1,875	1,771	1,543	1,598	1,629	1,600	37
	CURTAILMENT (RETAIL & WHOLESALE)															
38		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	38
39		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	39
40		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	40

NOTES:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1/ Excludes own-source gas supply of gas procurement by the City of Long Beach	9	9	9	9	9	9	9	9	9	9	9	9	9

2/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
3/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,507	1,428	1,187	980	777	676	614	611	640	713	1,107	1,531	979

Work Paper: TABLE 1-SC

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2012

AVERAGE TEMPERATURE with BASE HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	FIRM CAPACITY AVAILABLE															
1	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	1
	Out-of-State Gas															
2	Mojave (Hector Road)		50	50	50	50	50	50	50	50	50	50	50	50	50	2
3	El Paso Natural Gas Co. (Blythe)		1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	3
4	El Paso Natural Gas Co. (Topock)		540	540	540	540	540	540	540	540	540	540	540	540	540	4
5	Transwestern Pipeline Co. (No. Needles)		800	800	800	800	800	800	800	800	800	800	800	800	800	5
6	Kern-Mojave, PG&E, Oxy (Wheeler Ridge)		765	765	765	765	765	765	765	765	765	765	765	765	765	6
7	Kern-Mojave (Kramer Junction)		200	200	200	200	200	200	200	200	200	200	200	200	200	7
8	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	8
9	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	9
	GAS SUPPLY TAKEN															
10	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	10
11	Out-of-State		2,789	2,632	2,389	2,107	1,889	1,936	2,143	2,160	2,104	1,927	2,389	2,845	2,275	11
12	TOTAL SUPPLY TAKEN		3,099	2,942	2,699	2,417	2,199	2,246	2,453	2,470	2,414	2,237	2,699	3,155	2,585	12
13	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	13
14	TOTAL THROUGHPUT [1/]		3,099	2,942	2,699	2,417	2,199	2,246	2,453	2,470	2,414	2,237	2,699	3,155	2,585	14
	REQUIREMENTS FORECAST BY END-USE [2/]															
15	CORE [3/]	Residential	1,101	977	844	662	481	390	355	354	361	439	747	1,124	652	15
16		Commercial	279	277	229	209	195	186	165	162	178	173	248	287	215	16
17		Industrial	67	65	58	57	54	54	50	51	56	55	58	59	57	17
18		NGV	38	41	38	39	38	39	38	38	39	38	39	38	39	18
19		Subtotal-CORE	1,485	1,360	1,170	967	768	670	608	605	634	705	1,093	1,508	964	19
20	NONCORE	Commercial	66	62	60	55	50	48	47	47	47	49	57	67	55	20
21		Industrial	322	313	316	315	316	316	315	315	316	317	318	321	317	21
22		EOR Steaming	28	29	28	29	29	28	28	28	28	28	28	28	29	22
23		Electric Generation (EG)	650	646	644	650	670	811	1,043	1,068	978	752	755	683	780	23
24		Subtotal-NONCORE	1,067	1,049	1,049	1,048	1,065	1,203	1,434	1,459	1,370	1,147	1,159	1,099	1,179	24
25	WHOLESALE &	Core	270	257	218	171	141	119	112	106	112	120	175	261	172	25
26	INTERNATIONAL	Noncore Excl. EG	50	51	51	52	47	54	49	49	50	50	51	49	50	26
27		Electric Generation (EG)	185	185	175	145	148	171	216	218	215	185	185	194	185	27
28		Subtotal-WHOLESALE & INT	505	493	443	369	336	343	377	373	377	356	411	505	407	28
29		Co. Use & LUAF	42	40	37	33	30	30	33	33	33	30	37	43	35	29
30	SYSTEM TOTAL THROUGHPUT [1/]		3,099	2,942	2,699	2,417	2,199	2,246	2,453	2,470	2,414	2,237	2,699	3,155	2,585	30
	TRANSPORTATION AND EXCHANGE															
31	CORE	All End Uses	18	17	15	13	11	10	9	9	10	10	15	18	13	31
32	NONCORE	Commercial/Industrial	388	375	376	370	367	364	362	362	363	366	375	388	371	32
33		EOR Steaming	28	29	28	29	29	28	28	28	28	28	28	28	29	33
34		Electric Generation (EG)	650	646	644	650	670	811	1,043	1,068	978	752	755	683	780	34
35		Subtotal-RETAIL	1,085	1,066	1,063	1,061	1,076	1,213	1,443	1,468	1,379	1,157	1,174	1,118	1,192	35
	WHOLESALE &															
36	INTERNATIONAL	All End Uses	505	493	443	369	336	343	377	373	377	356	411	505	407	36
37	TOTAL TRANSPORTATION & EXCHANGE		1,590	1,560	1,506	1,429	1,412	1,557	1,821	1,841	1,756	1,512	1,584	1,622	1,600	37
	CURTAILMENT (RETAIL & WHOLESALE)															
38		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	38
39		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	39
40		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	40

NOTES:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1/ Excludes own-source gas supply of gas procurement by the City of Long Beach	9	9	9	9	9	9	9	9	9	9	9	9	9
2/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.													
3/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,512	1,383	1,191	984	780	679	617	614	643	716	1,111	1,535	980

Work Paper: TABLE 2-SC

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2013

AVERAGE TEMPERATURE with BASE HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	FIRM CAPACITY AVAILABLE															
1	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	1
	Out-of-State Gas															
2	Mojave (Hector Road)		50	50	50	50	50	50	50	50	50	50	50	50	50	2
3	El Paso Natural Gas Co. (Blythe)		1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	3
4	El Paso Natural Gas Co. (Topock)		540	540	540	540	540	540	540	540	540	540	540	540	540	4
5	Transwestern Pipeline Co. (No. Needles)		800	800	800	800	800	800	800	800	800	800	800	800	800	5
6	Kern-Mojave, PG&E, Oxy (Wheeler Ridge)		765	765	765	765	765	765	765	765	765	765	765	765	765	6
7	Kern-Mojave (Kramer Junction)		200	200	200	200	200	200	200	200	200	200	200	200	200	7
8	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	8
9	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	9
	GAS SUPPLY TAKEN															
10	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	10
11	Out-of-State		2,783	2,700	2,364	2,073	1,891	1,968	2,174	2,193	2,114	2,010	2,455	2,879	2,298	11
12	TOTAL SUPPLY TAKEN		3,093	3,010	2,674	2,383	2,201	2,278	2,484	2,503	2,424	2,320	2,765	3,189	2,608	12
13	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	13
14	TOTAL THROUGHPUT 1/		3,093	3,010	2,674	2,383	2,201	2,278	2,484	2,503	2,424	2,320	2,765	3,189	2,608	14
	REQUIREMENTS FORECAST BY END-USE 2/															
15	CORE 3/	Residential	1,102	1,013	845	662	481	391	356	355	361	440	748	1,126	655	15
16		Commercial	278	286	228	208	194	185	164	161	177	172	247	286	215	16
17		Industrial	67	67	58	57	54	54	50	51	56	55	58	59	57	17
18		NGV	41	45	41	42	41	42	41	41	42	41	42	41	42	18
19		Subtotal-CORE	1,487	1,411	1,172	970	770	672	611	608	637	707	1,095	1,511	969	19
20	NONCORE	Commercial	66	64	60	55	50	48	47	47	47	49	57	67	55	20
21		Industrial	321	323	315	313	315	314	314	313	314	316	317	320	316	21
22		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	22
23		Electric Generation (EG)	628	631	615	618	650	807	1,050	1,083	976	783	768	676	775	23
24		Subtotal-NONCORE	1,043	1,046	1,018	1,015	1,044	1,198	1,439	1,472	1,366	1,177	1,170	1,092	1,174	24
25	WHOLESALE &	Core	272	268	219	173	142	119	113	107	113	121	176	263	173	25
26	INTERNATIONAL	Noncore Excl. EG	50	53	51	52	47	54	49	49	50	50	51	49	50	26
27		Electric Generation (EG)	198	191	178	141	168	204	238	234	226	234	236	231	207	27
28		Subtotal-WHOLESALE & INT	521	512	448	366	357	377	400	390	388	405	463	543	430	28
29		Co. Use & LUAF	42	41	36	32	30	31	34	34	33	31	37	43	35	29
30	SYSTEM TOTAL THROUGHPUT 1/		3,093	3,010	2,674	2,383	2,201	2,278	2,484	2,503	2,424	2,320	2,765	3,189	2,608	30
	TRANSPORTATION AND EXCHANGE															
31	CORE	All End Uses	18	18	15	13	11	10	9	9	10	10	15	18	13	31
32	NONCORE	Commercial/Industrial	387	387	375	368	365	362	361	360	361	365	374	387	371	32
33		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	33
34		Electric Generation (EG)	628	631	615	618	650	807	1,050	1,083	976	783	768	676	775	34
35		Subtotal-RETAIL	1,061	1,064	1,032	1,028	1,055	1,209	1,449	1,481	1,376	1,187	1,185	1,110	1,187	35
	WHOLESALE &															
36	INTERNATIONAL	All End Uses	521	512	448	366	357	377	400	390	388	405	463	543	430	36
37	TOTAL TRANSPORTATION & EXCHANGE		1,582	1,576	1,481	1,394	1,412	1,586	1,849	1,871	1,765	1,592	1,648	1,653	1,618	37
	CURTAILMENT (RETAIL & WHOLESALE)															
38		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	38
39		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	39
40		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	40

NOTES:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1/ Excludes own-source gas supply of gas procurement by the City of Long Beach	8	8	8	8	8	8	8	8	8	8	8	8	8
2/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.													
3/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,514	1,435	1,193	986	782	682	620	617	646	718	1,113	1,538	985

Work Paper: TABLE 2-SC

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2015

AVERAGE TEMPERATURE with BASE HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	FIRM CAPACITY AVAILABLE															
1	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	1
	Out-of-State Gas															
2	Mojave (Hector Road)		50	50	50	50	50	50	50	50	50	50	50	50	50	2
3	El Paso Natural Gas Co. (Blythe)		1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	3
4	El Paso Natural Gas Co. (Topock)		540	540	540	540	540	540	540	540	540	540	540	540	540	4
5	Transwestern Pipeline Co. (No. Needles)		800	800	800	800	800	800	800	800	800	800	800	800	800	5
6	Kern-Mojave, PG&E, Oxy (Wheeler Ridge)		765	765	765	765	765	765	765	765	765	765	765	765	765	6
7	Kern-Mojave (Kramer Junction)		200	200	200	200	200	200	200	200	200	200	200	200	200	7
8	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	8
9	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	9
	GAS SUPPLY TAKEN															
10	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	10
11	Out-of-State		2,834	2,757	2,410	2,106	1,918	1,980	2,180	2,181	2,119	2,001	2,403	2,896	2,314	11
12	TOTAL SUPPLY TAKEN		3,144	3,067	2,720	2,416	2,228	2,290	2,490	2,491	2,429	2,311	2,713	3,206	2,624	12
13	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	13
14	TOTAL THROUGHPUT [1/]		3,144	3,067	2,720	2,416	2,228	2,290	2,490	2,491	2,429	2,311	2,713	3,206	2,624	14
	REQUIREMENTS FORECAST BY END-USE [2/]															
15	CORE [3/]	Residential	1,099	1,011	843	661	480	390	355	354	361	439	746	1,123	654	15
16		Commercial	274	282	225	205	191	183	162	159	175	170	243	282	212	16
17		Industrial	66	66	57	56	54	53	50	50	55	54	57	58	56	17
18		NGV	46	51	46	48	46	48	46	46	48	46	48	46	47	18
19		Subtotal-CORE	1,485	1,409	1,172	970	771	673	612	609	638	708	1,095	1,509	969	19
20	NONCORE	Commercial	66	64	60	55	50	48	47	47	47	49	57	67	55	20
21		Industrial	317	318	310	308	310	309	308	308	309	311	312	315	311	21
22		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	22
23		Electric Generation (EG)	659	660	639	638	667	815	1,059	1,069	979	778	721	689	782	23
24		Subtotal-NONCORE	1,070	1,070	1,037	1,030	1,055	1,200	1,443	1,452	1,364	1,167	1,119	1,099	1,176	24
25	WHOLESALE &	Core	276	272	222	175	143	121	114	108	114	122	179	266	176	25
26	INTERNATIONAL	Noncore Excl. EG	50	53	51	52	47	54	49	49	49	50	51	49	50	26
27		Electric Generation (EG)	219	221	202	156	181	212	238	239	230	233	233	239	217	27
28		Subtotal-WHOLESALE & INT	546	545	475	383	371	386	401	396	394	405	462	555	443	28
29		Co. Use & LUAF	43	42	37	33	30	31	34	34	33	31	37	43	36	29
30	SYSTEM TOTAL THROUGHPUT [1/]		3,144	3,067	2,720	2,416	2,228	2,290	2,490	2,491	2,429	2,311	2,713	3,206	2,624	30
	TRANSPORTATION AND EXCHANGE															
31	CORE	All End Uses	18	18	14	13	11	10	9	9	10	10	15	18	13	31
32	NONCORE	Commercial/Industrial	383	381	370	363	360	357	355	355	356	360	369	382	366	32
33		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	33
34		Electric Generation (EG)	659	660	639	638	667	815	1,059	1,069	979	778	721	689	782	34
35		Subtotal-RETAIL	1,088	1,088	1,051	1,043	1,066	1,211	1,452	1,461	1,373	1,177	1,133	1,117	1,189	35
	WHOLESALE &															
36	INTERNATIONAL	All End Uses	546	545	475	383	371	386	401	396	394	405	462	555	443	36
37	TOTAL TRANSPORTATION & EXCHANGE		1,634	1,633	1,526	1,426	1,438	1,597	1,853	1,857	1,767	1,582	1,596	1,672	1,632	37
	CURTAILMENT (RETAIL & WHOLESALE)															
38		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	38
39		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	39
40		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	40

NOTES:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1/ Excludes own-source gas supply of gas procurement by the City of Long Beach	7	7	7	7	7	7	7	7	7	7	7	7	7
2/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.													
3/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,512	1,434	1,193	986	783	683	621	619	648	720	1,113	1,536	985

Work Paper: TABLE 2-SC

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2020

AVERAGE TEMPERATURE with BASE HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	FIRM CAPACITY AVAILABLE															
1	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	1
	Out-of-State Gas															
2	Mojave (Hector Road)		50	50	50	50	50	50	50	50	50	50	50	50	50	2
3	El Paso Natural Gas Co. (Blythe)		1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	3
4	El Paso Natural Gas Co. (Topock)		540	540	540	540	540	540	540	540	540	540	540	540	540	4
5	Transwestern Pipeline Co. (No. Needles)		800	800	800	800	800	800	800	800	800	800	800	800	800	5
6	Kern-Mojave, PG&E, Oxy (Wheeler Ridge)		765	765	765	765	765	765	765	765	765	765	765	765	765	6
7	Kern-Mojave (Kramer Junction)		200	200	200	200	200	200	200	200	200	200	200	200	200	7
8	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	8
9	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	9
	GAS SUPPLY TAKEN															
10	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	10
11	Out-of-State		2,844	2,664	2,423	2,119	1,934	2,007	2,220	2,222	2,154	2,028	2,420	2,907	2,329	11
12	TOTAL SUPPLY TAKEN		3,154	2,974	2,733	2,429	2,244	2,317	2,530	2,532	2,464	2,338	2,730	3,217	2,639	12
13	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	13
14	TOTAL THROUGHPUT [1/]		3,154	2,974	2,733	2,429	2,244	2,317	2,530	2,532	2,464	2,338	2,730	3,217	2,639	14
	REQUIREMENTS FORECAST BY END-USE [2/]															
15	CORE [3/]	Residential	1,083	961	830	651	473	384	349	348	355	432	735	1,106	642	15
16		Commercial	261	259	214	196	182	174	154	152	167	162	232	268	202	16
17		Industrial	62	59	54	52	50	50	46	47	52	51	54	54	53	17
18		NGV	63	67	63	65	63	65	63	63	65	63	65	63	64	18
19		Subtotal-CORE	1,468	1,347	1,161	964	768	673	613	610	639	707	1,086	1,491	960	19
20	NONCORE	Commercial	65	60	59	54	49	47	46	46	46	48	56	66	53	20
21		Industrial	299	290	293	291	293	292	291	291	292	294	295	298	293	21
22		EOR Steaming	28	29	28	29	29	28	28	28	28	28	28	28	29	22
23		Electric Generation (EG)	684	663	664	663	693	848	1,103	1,114	1,020	810	750	716	811	23
24		Subtotal-NONCORE	1,078	1,042	1,044	1,037	1,063	1,215	1,469	1,479	1,386	1,180	1,129	1,108	1,186	24
25	WHOLESALE &	Core	288	273	231	182	148	125	118	112	118	127	185	276	182	25
26	INTERNATIONAL	Noncore Excl. EG	50	51	50	52	47	53	49	48	49	50	51	49	50	26
27		Electric Generation (EG)	228	222	209	162	188	220	247	249	239	242	242	249	225	27
28		Subtotal-WHOLESALE & INT	565	546	491	396	383	398	414	409	407	419	478	573	457	28
29		Co. Use & LUAF	43	40	37	33	30	31	34	34	33	32	37	44	36	29
30	SYSTEM TOTAL THROUGHPUT [1/]		3,154	2,974	2,733	2,429	2,244	2,317	2,530	2,532	2,464	2,338	2,730	3,217	2,639	30
	TRANSPORTATION AND EXCHANGE															
31	CORE	All End Uses	17	16	14	12	11	10	9	9	9	10	14	17	12	31
32	NONCORE	Commercial/Industrial	365	350	352	345	342	338	337	337	337	341	350	364	347	32
33		EOR Steaming	28	29	28	29	29	28	28	28	28	28	28	28	29	33
34		Electric Generation (EG)	684	663	664	663	693	848	1,103	1,114	1,020	810	750	716	811	34
35		Subtotal-RETAIL	1,095	1,058	1,058	1,049	1,074	1,225	1,477	1,487	1,395	1,189	1,143	1,126	1,199	35
36	WHOLESALE & INTERNATIONAL	All End Uses	565	546	491	396	383	398	414	409	407	419	478	573	457	36
37	TOTAL TRANSPORTATION & EXCHANGE		1,660	1,604	1,549	1,444	1,457	1,623	1,892	1,897	1,802	1,608	1,621	1,699	1,655	37
	CURTAILMENT (RETAIL & WHOLESALE)															
38		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	38
39		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	39
40		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	40

NOTES:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1/ Excludes own-source gas supply of gas procurement by the City of Long Beach	5	5	5	5	5	5	5	5	5	5	5	5	5
2/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.													
3/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,495	1,371	1,182	981	781	683	623	620	648	719	1,104	1,519	976

Work Paper: TABLE 2-SC

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2025

AVERAGE TEMPERATURE with BASE HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	FIRM CAPACITY AVAILABLE															
1	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	1
	Out-of-State Gas															
2	Mojave (Hector Road)		50	50	50	50	50	50	50	50	50	50	50	50	50	2
3	El Paso Natural Gas Co. (Blythe)		1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	3
4	El Paso Natural Gas Co. (Topock)		540	540	540	540	540	540	540	540	540	540	540	540	540	4
5	Transwestern Pipeline Co. (No. Needles)		800	800	800	800	800	800	800	800	800	800	800	800	800	5
6	Kern-Mojave, PG&E, Oxy (Wheeler Ridge)		765	765	765	765	765	765	765	765	765	765	765	765	765	6
7	Kern-Mojave (Kramer Junction)		200	200	200	200	200	200	200	200	200	200	200	200	200	7
8	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	8
9	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	9
	GAS SUPPLY TAKEN															
10	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	10
11	Out-of-State		2,869	2,795	2,445	2,139	1,953	2,025	2,238	2,240	2,172	2,044	2,439	2,930	2,355	11
12	TOTAL SUPPLY TAKEN		3,179	3,105	2,755	2,449	2,263	2,335	2,548	2,550	2,482	2,354	2,749	3,240	2,665	12
13	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	13
14	TOTAL THROUGHPUT 1/		3,179	3,105	2,755	2,449	2,263	2,335	2,548	2,550	2,482	2,354	2,749	3,240	2,665	14
	REQUIREMENTS FORECAST BY END-USE 2/															
15	CORE 3/	Residential	1,083	996	831	651	473	384	350	349	355	432	735	1,106	644	15
16		Commercial	258	266	213	194	181	173	153	151	165	160	230	266	200	16
17		Industrial	58	58	51	50	48	47	44	45	49	48	51	51	50	17
18		NGV	85	94	85	87	85	87	85	85	87	85	87	85	86	18
19		Subtotal-CORE	1,485	1,414	1,179	982	786	691	631	628	657	725	1,104	1,509	980	19
20	NONCORE	Commercial	65	62	58	53	49	46	45	45	45	48	56	66	53	20
21		Industrial	288	289	282	280	281	280	280	280	280	282	283	287	283	21
22		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	22
23		Electric Generation (EG)	685	687	665	664	694	849	1,105	1,115	1,021	811	751	717	815	23
24		Subtotal-NONCORE	1,067	1,066	1,034	1,026	1,053	1,204	1,459	1,469	1,375	1,169	1,119	1,098	1,179	24
25	WHOLESALE &	Core	304	299	244	193	157	133	125	119	126	134	196	290	193	25
26	INTERNATIONAL	Noncore Excl. EG	50	53	51	52	47	54	49	49	49	50	51	49	50	26
27		Electric Generation (EG)	229	231	211	163	189	221	249	250	241	243	244	250	227	27
28		Subtotal-WHOLESALE & INT	584	583	506	408	393	408	423	418	416	428	490	590	470	28
29		Co. Use & LUAF	43	42	37	33	31	32	35	35	34	32	37	44	36	29
30	SYSTEM TOTAL THROUGHPUT 1/		3,179	3,105	2,755	2,449	2,263	2,335	2,548	2,550	2,482	2,354	2,749	3,240	2,665	30
	TRANSPORTATION AND EXCHANGE															
31	CORE	All End Uses	17	17	14	12	11	10	9	8	9	10	14	17	12	31
32	NONCORE	Commercial/Industrial	353	351	340	333	330	327	325	325	326	330	339	353	336	32
33		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	33
34		Electric Generation (EG)	685	687	665	664	694	849	1,105	1,115	1,021	811	751	717	815	34
35		Subtotal-RETAIL	1,084	1,083	1,047	1,038	1,063	1,214	1,467	1,477	1,385	1,179	1,133	1,115	1,191	35
	WHOLESALE &															
36	INTERNATIONAL	All End Uses	584	583	506	408	393	408	423	418	416	428	490	590	470	36
37	TOTAL TRANSPORTATION & EXCHANGE		1,668	1,666	1,553	1,446	1,456	1,622	1,890	1,895	1,800	1,607	1,623	1,705	1,661	37
	CURTAILMENT (RETAIL & WHOLESALE)															
38		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	38
39		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	39
40		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	40

NOTES:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1/ Excludes own-source gas supply of gas procurement by the City of Long Beach	3	3	3	3	3	3	3	3	3	3	3	3	3
2/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.													
3/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,512	1,440	1,201	1,000	799	702	642	639	668	738	1,123	1,537	998

Work Paper: TABLE 2-SC

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2030

AVERAGE TEMPERATURE with BASE HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	FIRM CAPACITY AVAILABLE															
1	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	1
	Out-of-State Gas															
2	Mojave (Hector Road)		50	50	50	50	50	50	50	50	50	50	50	50	50	2
3	El Paso Natural Gas Co. (Blythe)		1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	3
4	El Paso Natural Gas Co. (Topock)		540	540	540	540	540	540	540	540	540	540	540	540	540	4
5	Transwestern Pipeline Co. (No. Needles)		800	800	800	800	800	800	800	800	800	800	800	800	800	5
6	Kern-Mojave, PG&E, Oxy (Wheeler Ridge)		765	765	765	765	765	765	765	765	765	765	765	765	765	6
7	Kern-Mojave (Kramer Junction)		200	200	200	200	200	200	200	200	200	200	200	200	200	7
8	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	8
9	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	9
	GAS SUPPLY TAKEN															
10	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	10
11	Out-of-State		2,926	2,853	2,494	2,183	1,990	2,061	2,272	2,273	2,207	2,080	2,485	2,986	2,399	11
12	TOTAL SUPPLY TAKEN		3,236	3,163	2,804	2,493	2,300	2,371	2,582	2,583	2,517	2,390	2,795	3,296	2,709	12
13	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	13
14	TOTAL THROUGHPUT [1/]		3,236	3,163	2,804	2,493	2,300	2,371	2,582	2,583	2,517	2,390	2,795	3,296	2,709	14
	REQUIREMENTS FORECAST BY END-USE [2/]															
15	CORE [3/]	Residential	1,100	1,012	844	661	481	390	355	354	361	439	747	1,124	654	15
16		Commercial	263	271	216	197	184	176	156	153	168	163	234	271	204	16
17		Industrial	57	57	50	49	47	46	43	44	48	47	50	50	49	17
18		NGV	106	117	106	109	106	109	106	106	109	106	109	106	108	18
19		Subtotal-CORE	1,526	1,456	1,216	1,017	817	721	660	657	686	755	1,140	1,551	1,014	19
20	NONCORE	Commercial	66	63	59	54	49	47	46	46	46	48	57	67	54	20
21		Industrial	283	283	277	275	276	275	275	275	275	277	278	282	278	21
22		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	22
23		Electric Generation (EG)	686	688	666	665	695	850	1,106	1,116	1,022	812	752	718	816	23
24		Subtotal-NONCORE	1,064	1,063	1,030	1,023	1,049	1,201	1,455	1,465	1,372	1,166	1,115	1,095	1,176	24
25	WHOLESALE &	Core	321	315	257	203	165	140	132	125	132	142	206	304	203	25
26	INTERNATIONAL	Noncore Excl. EG	50	53	51	52	47	54	49	49	50	50	51	49	50	26
27		Electric Generation (EG)	231	233	213	165	191	223	250	252	243	245	245	252	229	27
28		Subtotal-WHOLESALE & INT	602	601	520	420	403	417	432	426	425	437	502	606	482	28
29		Co. Use & LUAF	44	43	38	34	31	32	35	35	34	32	38	45	37	29
30	SYSTEM TOTAL THROUGHPUT [1/]		3,236	3,163	2,804	2,493	2,300	2,371	2,582	2,583	2,517	2,390	2,795	3,296	2,709	30
	TRANSPORTATION AND EXCHANGE															
31	CORE	All End Uses	17	17	14	12	11	10	9	9	9	10	14	18	12	31
32	NONCORE	Commercial/Industrial	349	347	336	329	326	322	321	321	321	326	335	349	332	32
33		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	33
34		Electric Generation (EG)	686	688	666	665	695	850	1,106	1,116	1,022	812	752	718	816	34
35		Subtotal-RETAIL	1,081	1,080	1,044	1,035	1,060	1,211	1,464	1,474	1,381	1,176	1,130	1,112	1,188	35
	WHOLESALE &															
36	INTERNATIONAL	All End Uses	602	601	520	420	403	417	432	426	425	437	502	606	482	36
37	TOTAL TRANSPORTATION & EXCHANGE		1,683	1,681	1,564	1,455	1,463	1,628	1,896	1,900	1,806	1,613	1,632	1,718	1,670	37
	CURTAILMENT (RETAIL & WHOLESALE)															
38		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	38
39		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	39
40		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	40

NOTES:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1/ Excludes own-source gas supply of gas procurement by the City of Long Beach	2	2	2	2	2	2	2	2	2	2	2	2	2

2/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
3/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,555	1,483	1,238	1,035	831	733	671	668	697	768	1,160	1,580	1,033

2008 CALIFORNIA GAS REPORT

FORECAST OF REQUIREMENTS - COLD TEMPERATURE YEAR
JULY 2008

The Gas Company
A Sempra Energy utility™

TABLE 3-SC

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED YEARS 2008 THRU 2012

COLD TEMPERATURE YEAR & DRY HYDRO YEAR

LINE			2008	2009	2010	2011	2012	LINE
	FIRM CAPACITY AVAILABLE							
1	California Source Gas		310	310	310	310	310	1
	Out-of-State Gas							
2	Mojave (Hector Road)		50	50	50	50	50	2
3	El Paso Natural Gas Co. (Blythe)		1,210	1,210	1,210	1,210	1,210	3
4	El Paso Natural Gas Co. (Topock)		540	540	540	540	540	4
5	Transwestern Pipeline Co. (No. Needles)		800	800	800	800	800	5
6	Kern-Mojave, PG&E, Oxy (Wheeler Ridge)		765	765	765	765	765	6
7	Kern-Mojave (Kramer Junction)		200	200	200	200	200	7
8	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	8
9	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	9
	GAS SUPPLY TAKEN							
10	California Source Gas		310	310	310	310	310	10
11	Out-of-State		2,478	2,515	2,481	2,478	2,466	11
12	TOTAL SUPPLY TAKEN		2,788	2,825	2,791	2,788	2,776	12
13	Net Underground Storage Withdrawal		0	0	0	0	0	13
14	TOTAL THROUGHPUT [1/]		2,788	2,825	2,791	2,788	2,776	14
	REQUIREMENTS FORECAST BY END-USE [2/]							
15	CORE [3/]	Residential	725	719	718	716	715	15
16		Commercial	229	229	229	228	227	16
17		Industrial	60	58	58	58	58	17
18		NGV	25	29	32	36	39	18
19		Subtotal-CORE	1,040	1,034	1,037	1,039	1,039	19
20	NONCORE	Commercial	56	56	56	56	56	20
21		Industrial	334	322	320	318	317	21
22		EOR Steaming	35	28	28	28	29	22
23		Electric Generation (EG)	854	905	846	872	864	23
24		Subtotal-NONCORE	1,279	1,311	1,250	1,275	1,266	24
25	WHOLESALE &	Core	186	186	186	188	188	25
26	INTERNATIONAL	Noncore Excl. EG	46	50	50	50	50	26
27		Electric Generation (EG)	200	207	230	199	195	27
28		Subtotal-WHOLESALE & INTL.	432	442	466	437	433	28
29		Co. Use & LUAF	38	38	38	38	38	29
30	SYSTEM TOTAL THROUGHPUT [1/]		2,788	2,825	2,791	2,788	2,776	30
	TRANSPORTATION AND EXCHANGE							
31	CORE	All End Uses	14	14	14	14	14	31
32	NONCORE	Commercial/Industrial	390	378	376	374	373	32
33		EOR Steaming	35	28	28	28	29	33
34		Electric Generation (EG)	854	905	846	872	864	34
35		Subtotal-RETAIL	1,293	1,325	1,264	1,288	1,280	35
	WHOLESALE &							
36	INTERNATIONAL	All End Uses	432	442	466	437	433	36
37	TOTAL TRANSPORTATION & EXCHANGE		1,725	1,767	1,730	1,726	1,713	37
	CURTAILMENT (RETAIL & WHOLESALE)							
38		Core	0	0	0	0	0	38
39		Noncore	0	0	0	0	0	39
40		TOTAL - Curtailment	0	0	0	0	0	40

NOTES:

	2008	2009	2010	2011	2012
1/ Excludes own-source gas supply of gas procurement by the City of Long Beach	6	10	10	9	9
2/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.					
3/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,057	1,052	1,054	1,056	1,057

TABLE 4-SC

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED YEARS 2013 THRU 2030

COLD TEMPERATURE YEAR & DRY HYDRO YEAR

LINE			2013	2015	2020	2025	2030	LINE
	FIRM CAPACITY AVAILABLE							
1	California Source Gas		310	310	310	310	310	1
	Out-of-State Gas							
2	Mojave (Hector Road)		50	50	50	50	50	2
3	El Paso Natural Gas Co. (Blythe)		1,210	1,210	1,210	1,210	1,210	3
4	El Paso Natural Gas Co. (Topock)		540	540	540	540	540	4
5	Transwestern Pipeline Co. (No. Needles)		800	800	800	800	800	5
6	Kern-Mojave, PG&E, Oxy (Wheeler Ridge)		765	765	765	765	765	6
7	Kern-Mojave (Kramer Junction)		200	200	200	200	200	7
8	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	8
9	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	9
	GAS SUPPLY TAKEN							
10	California Source Gas		310	310	310	310	310	10
11	Out-of-State		2,489	2,486	2,503	2,531	2,576	11
12	TOTAL SUPPLY TAKEN		2,799	2,796	2,813	2,841	2,886	12
13	Net Underground Storage Withdrawal		0	0	0	0	0	13
14	TOTAL THROUGHPUT [1/]		2,799	2,796	2,813	2,841	2,886	14
	REQUIREMENTS FORECAST BY END-USE [2/]							
15	CORE [3/]	Residential	718	717	704	706	717	15
16		Commercial	227	224	212	211	215	16
17		Industrial	58	57	54	51	50	17
18		NGV	42	47	64	86	108	18
19		Subtotal-CORE	1,045	1,044	1,034	1,054	1,089	19
20	NONCORE	Commercial	56	56	55	55	56	20
21		Industrial	316	311	293	283	278	21
22		EOR Steaming	28	28	29	28	28	22
23		Electric Generation (EG)	853	843	875	879	880	23
24		Subtotal-NONCORE	1,254	1,239	1,252	1,245	1,242	24
25	WHOLESALE &	Core	190	192	198	210	221	25
26	INTERNATIONAL	Noncore Excl. EG	50	50	50	50	50	26
27		Electric Generation (EG)	222	232	241	243	245	27
28		Subtotal-WHOLESALE & INTL.	463	475	489	503	516	28
29		Co. Use & LUAF	38	38	38	39	39	29
30	SYSTEM TOTAL THROUGHPUT [1/]		2,799	2,796	2,813	2,841	2,886	30
	TRANSPORTATION AND EXCHANGE							
31	CORE	All End Uses	14	14	13	13	13	31
32	NONCORE	Commercial/Industrial	373	367	348	338	333	32
33		EOR Steaming	28	28	29	28	28	33
34		Electric Generation (EG)	853	843	875	879	880	34
35		Subtotal-RETAIL	1,268	1,253	1,265	1,258	1,255	35
	WHOLESALE &							
36	INTERNATIONAL	All End Uses	463	475	489	503	516	36
37	TOTAL TRANSPORTATION & EXCHANGE		1,731	1,728	1,754	1,761	1,771	37
	CURTAILMENT (RETAIL & WHOLESALE)							
38		Core	0	0	0	0	0	38
39		Noncore	0	0	0	0	0	39
40		TOTAL - Curtailment	0	0	0	0	0	40

NOTES:

	2013	2015	2020	2025	2030
1/ Excludes own-source gas supply of gas procurement by the City of Long Beach	8	7	5	3	2

2/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.

	2013	2015	2020	2025	2030
3/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,062	1,062	1,052	1,073	1,109

Work Paper: TABLE 3-SC

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2008

COLD TEMPERATURE with DRY HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	FIRM CAPACITY AVAILABLE															
1	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	1
	Out-of-State Gas															
2	Mojave (Hector Road)		50	50	50	50	50	50	50	50	50	50	50	50	50	2
3	El Paso Natural Gas Co. (Blythe)		1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	3
4	El Paso Natural Gas Co. (Topock)		540	540	540	540	540	540	540	540	540	540	540	540	540	4
5	Transwestern Pipeline Co. (No. Needles)		800	800	800	800	800	800	800	800	800	800	800	800	800	5
6	Kern-Mojave, PG&E, Oxy (Wheeler Ridge)		765	765	765	765	765	765	765	765	765	765	765	765	765	6
7	Kern-Mojave (Kramer Junction)		200	200	200	200	200	200	200	200	200	200	200	200	200	7
8	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	8
9	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	9
	GAS SUPPLY TAKEN															
10	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	10
11	Out-of-State		3,258	2,915	2,552	2,175	1,965	2,035	2,348	2,395	2,273	2,062	2,618	3,146	2,478	11
12	TOTAL SUPPLY TAKEN		3,568	3,225	2,862	2,485	2,275	2,345	2,658	2,705	2,583	2,372	2,928	3,456	2,788	12
13	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	13
14	TOTAL THROUGHPUT [1/]		3,568	3,225	2,862	2,485	2,275	2,345	2,658	2,705	2,583	2,372	2,928	3,456	2,788	14
	REQUIREMENTS FORECAST BY END-USE [2/]															
15	CORE [3/]	Residential	1,273	1,125	959	736	515	404	361	360	368	464	841	1,302	725	15
16		Commercial	309	304	247	221	204	192	167	163	182	177	268	317	229	16
17		Industrial	73	69	62	60	57	56	52	53	59	58	62	63	60	17
18		NGV	25	27	25	26	25	26	25	25	26	25	26	25	25	18
19		Subtotal-CORE	1,680	1,525	1,294	1,043	802	678	605	601	635	724	1,196	1,707	1,040	19
20	NONCORE	Commercial	70	65	62	56	51	48	47	47	47	50	59	70	56	20
21		Industrial	344	332	334	333	333	333	331	331	332	333	334	337	334	21
22		EOR Steaming	38	38	38	38	38	38	35	35	35	35	25	25	35	22
23		Electric Generation (EG)	794	706	666	623	691	873	1,167	1,205	1,056	838	882	742	854	23
24		Subtotal-NONCORE	1,246	1,140	1,100	1,051	1,114	1,292	1,580	1,618	1,470	1,255	1,300	1,174	1,279	24
25	WHOLESALE &	Core	306	282	235	182	147	119	127	105	112	121	194	298	186	25
26	INTERNATIONAL	Noncore Excl. EG	49	46	46	46	42	49	44	44	44	45	46	45	46	26
27		Electric Generation (EG)	238	188	149	129	140	175	265	301	286	195	151	185	200	27
28		Subtotal-WHOLESALE & INT	594	516	429	357	329	343	436	449	443	361	392	528	432	28
29		Co. Use & LUAF	48	44	39	34	31	32	36	37	35	32	40	47	38	29
30	SYSTEM TOTAL THROUGHPUT [1/]		3,568	3,225	2,862	2,485	2,275	2,345	2,658	2,705	2,583	2,372	2,928	3,456	2,788	30
	TRANSPORTATION AND EXCHANGE															
31	CORE	All End Uses	20	19	16	14	12	11	9	9	10	11	16	21	14	31
32	NONCORE	Commercial/Industrial	414	396	396	389	384	381	378	378	379	382	393	407	390	32
33		EOR Steaming	38	38	38	38	38	38	35	35	35	35	25	25	35	33
34		Electric Generation (EG)	794	706	666	623	691	873	1,167	1,205	1,056	838	882	742	854	34
35		Subtotal-RETAIL	1,266	1,159	1,116	1,065	1,126	1,303	1,590	1,627	1,480	1,266	1,316	1,194	1,293	35
	WHOLESALE &															
36	INTERNATIONAL	All End Uses	594	516	429	357	329	343	436	449	443	361	392	528	432	36
37	TOTAL TRANSPORTATION & EXCHANGE		1,860	1,676	1,545	1,422	1,454	1,646	2,026	2,076	1,924	1,627	1,708	1,723	1,725	37
	CURTAILMENT (RETAIL & WHOLESALE)															
38		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	38
39		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	39
40		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	40

NOTES:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1/ Excludes own-source gas supply of gas procurement by the City of Long Beach	6	6	6	6	6	6	6	6	6	6	6	6	6
2/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.													
3/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,710	1,551	1,317	1,061	814	687	614	610	644	735	1,216	1,738	1,057

Work Paper: TABLE 3-SC

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2009

COLD TEMPERATURE with DRY HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	FIRM CAPACITY AVAILABLE															
1	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	1
	Out-of-State Gas															
2	Mojave (Hector Road)		50	50	50	50	50	50	50	50	50	50	50	50	50	2
3	El Paso Natural Gas Co. (Blythe)		1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	3
4	El Paso Natural Gas Co. (Topock)		540	540	540	540	540	540	540	540	540	540	540	540	540	4
5	Transwestern Pipeline Co. (No. Needles)		800	800	800	800	800	800	800	800	800	800	800	800	800	5
6	Kern-Mojave, PG&E, Oxy (Wheeler Ridge)		765	765	765	765	765	765	765	765	765	765	765	765	765	6
7	Kern-Mojave (Kramer Junction)		200	200	200	200	200	200	200	200	200	200	200	200	200	7
8	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	8
9	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	9
	GAS SUPPLY TAKEN															
10	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	10
11	Out-of-State		3,118	2,996	2,565	2,221	2,061	2,147	2,478	2,442	2,249	2,105	2,624	3,203	2,515	11
12	TOTAL SUPPLY TAKEN		3,428	3,306	2,875	2,531	2,371	2,457	2,788	2,752	2,559	2,415	2,934	3,513	2,825	12
13	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	13
14	TOTAL THROUGHPUT 1/		3,428	3,306	2,875	2,531	2,371	2,457	2,788	2,752	2,559	2,415	2,934	3,513	2,825	14
	REQUIREMENTS FORECAST BY END-USE 2/															
15	CORE 3/	Residential	1,259	1,152	949	728	509	400	357	356	364	458	831	1,288	719	15
16		Commercial	307	313	246	220	203	191	166	162	181	177	267	316	229	16
17		Industrial	70	69	60	58	55	54	50	51	57	56	59	60	58	17
18		NGV	28	31	28	29	28	29	28	28	29	28	29	28	29	18
19		Subtotal-CORE	1,664	1,565	1,283	1,035	796	673	601	597	631	719	1,187	1,692	1,034	19
20	NONCORE	Commercial	70	67	62	56	51	48	47	47	47	49	59	70	56	20
21		Industrial	327	322	320	319	321	321	320	320	321	322	323	326	322	21
22		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	22
23		Electric Generation (EG)	754	775	706	691	795	992	1,315	1,287	1,070	861	829	767	905	23
24		Subtotal-NONCORE	1,179	1,192	1,116	1,095	1,195	1,389	1,711	1,682	1,466	1,261	1,239	1,192	1,311	24
25	WHOLESALE &	Core	301	296	240	183	146	119	126	105	112	120	191	295	186	25
26	INTERNATIONAL	Noncore Excl. EG	50	52	50	51	46	53	49	48	49	50	50	49	50	26
27		Electric Generation (EG)	188	156	147	133	156	190	262	283	265	232	226	237	207	27
28		Subtotal-WHOLESALE & INT	539	504	437	368	349	362	437	436	426	402	467	580	442	28
29		Co. Use & LUAF	46	45	39	34	32	33	38	37	35	33	40	48	38	29
30	SYSTEM TOTAL THROUGHPUT 1/		3,428	3,306	2,875	2,531	2,371	2,457	2,788	2,752	2,559	2,415	2,934	3,513	2,825	30
	TRANSPORTATION AND EXCHANGE															
31	CORE	All End Uses	20	20	16	14	12	11	9	9	10	10	16	20	14	31
32	NONCORE	Commercial/Industrial	396	388	382	375	372	369	367	367	368	371	382	396	378	32
33		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	33
34		Electric Generation (EG)	754	775	706	691	795	992	1,315	1,287	1,070	861	829	767	905	34
35		Subtotal-RETAIL	1,199	1,212	1,132	1,108	1,207	1,400	1,720	1,691	1,476	1,271	1,255	1,213	1,325	35
36	WHOLESALE & INTERNATIONAL	All End Uses	539	504	437	368	349	362	437	436	426	402	467	580	442	36
37	TOTAL TRANSPORTATION & EXCHANGE		1,738	1,716	1,569	1,476	1,556	1,761	2,157	2,127	1,902	1,674	1,723	1,793	1,767	37
	CURTAILMENT (RETAIL & WHOLESALE)															
38		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	38
39		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	39
40		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	40

NOTES:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1/ Excludes own-source gas supply of gas procurement by the City of Long Beach	10	10	10	10	10	10	10	10	10	10	10	10	10
2/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.													
3/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,694	1,593	1,306	1,052	808	683	610	606	640	730	1,207	1,723	1,052

Work Paper: TABLE 3-SC

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2010

COLD TEMPERATURE with DRY HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	FIRM CAPACITY AVAILABLE															
1	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	1
	Out-of-State Gas															
2	Mojave (Hector Road)		50	50	50	50	50	50	50	50	50	50	50	50	50	2
3	El Paso Natural Gas Co. (Blythe)		1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	3
4	El Paso Natural Gas Co. (Topock)		540	540	540	540	540	540	540	540	540	540	540	540	540	4
5	Transwestern Pipeline Co. (No. Needles)		800	800	800	800	800	800	800	800	800	800	800	800	800	5
6	Kern-Mojave, PG&E, Oxy (Wheeler Ridge)		765	765	765	765	765	765	765	765	765	765	765	765	765	6
7	Kern-Mojave (Kramer Junction)		200	200	200	200	200	200	200	200	200	200	200	200	200	7
8	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	8
9	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	9
	GAS SUPPLY TAKEN															
10	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	10
11	Out-of-State		3,106	2,961	2,576	2,241	2,011	2,065	2,412	2,435	2,275	1,998	2,541	3,172	2,481	11
12	TOTAL SUPPLY TAKEN		3,416	3,271	2,886	2,551	2,321	2,375	2,722	2,745	2,585	2,308	2,851	3,482	2,791	12
13	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	13
14	TOTAL THROUGHPUT 1/		3,416	3,271	2,886	2,551	2,321	2,375	2,722	2,745	2,585	2,308	2,851	3,482	2,791	14
	REQUIREMENTS FORECAST BY END-USE 2/															
15	CORE 3/	Residential	1,257	1,150	947	726	508	399	357	355	364	458	830	1,285	718	15
16		Commercial	307	313	246	220	203	191	166	163	181	176	267	316	229	16
17		Industrial	70	69	59	57	55	54	50	51	58	57	60	61	58	17
18		NGV	32	35	32	33	32	33	32	32	33	32	33	32	32	18
19		Subtotal-CORE	1,665	1,567	1,284	1,037	798	677	605	600	635	723	1,190	1,694	1,037	19
20	NONCORE	Commercial	70	67	62	56	51	48	47	47	47	50	59	70	56	20
21		Industrial	325	321	319	318	319	318	318	317	318	319	320	324	320	21
22		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	22
23		Electric Generation (EG)	722	693	672	671	724	878	1,212	1,245	1,066	767	745	742	846	23
24		Subtotal-NONCORE	1,146	1,109	1,081	1,073	1,122	1,273	1,605	1,637	1,460	1,165	1,153	1,164	1,250	24
25	WHOLESALE &	Core	302	297	241	183	147	119	127	105	112	121	192	295	186	25
26	INTERNATIONAL	Noncore Excl. EG	50	52	50	52	47	54	49	49	50	50	51	49	50	26
27		Electric Generation (EG)	207	203	191	171	176	221	299	317	294	219	226	231	230	27
28		Subtotal-WHOLESALE & INT	558	551	482	406	370	393	475	471	455	390	469	576	466	28
29		Co. Use & LUAF	46	44	39	35	31	32	37	37	35	31	39	47	38	29
30	SYSTEM TOTAL THROUGHPUT 1/		3,416	3,271	2,886	2,551	2,321	2,375	2,722	2,745	2,585	2,308	2,851	3,482	2,791	30
	TRANSPORTATION AND EXCHANGE															
31	CORE	All End Uses	20	20	16	14	12	11	9	9	10	10	16	20	14	31
32	NONCORE	Commercial/Industrial	395	388	381	374	370	366	365	364	365	369	379	394	376	32
33		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	33
34		Electric Generation (EG)	722	693	672	671	724	878	1,212	1,245	1,066	767	745	742	846	34
35		Subtotal-RETAIL	1,166	1,128	1,097	1,087	1,134	1,284	1,615	1,646	1,470	1,175	1,170	1,185	1,264	35
	WHOLESALE &															
36	INTERNATIONAL	All End Uses	558	551	482	406	370	393	475	471	455	390	469	576	466	36
37	TOTAL TRANSPORTATION & EXCHANGE		1,725	1,680	1,578	1,493	1,504	1,677	2,090	2,117	1,925	1,565	1,638	1,761	1,730	37
	CURTAILMENT (RETAIL & WHOLESALE)															
38		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	38
39		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	39
40		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	40

NOTES:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1/ Excludes own-source gas supply of gas procurement by the City of Long Beach	10	10	10	10	10	10	10	10	10	10	10	10	10
2/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.													
3/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,695	1,594	1,307	1,055	811	686	614	609	644	734	1,210	1,725	1,054

Work Paper: TABLE 3-SC

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2011

COLD TEMPERATURE with DRY HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	FIRM CAPACITY AVAILABLE															
1	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	1
	Out-of-State Gas															
2	Mojave (Hector Road)		50	50	50	50	50	50	50	50	50	50	50	50	50	2
3	El Paso Natural Gas Co. (Blythe)		1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	3
4	El Paso Natural Gas Co. (Topock)		540	540	540	540	540	540	540	540	540	540	540	540	540	4
5	Transwestern Pipeline Co. (No. Needles)		800	800	800	800	800	800	800	800	800	800	800	800	800	5
6	Kern-Mojave, PG&E, Oxy (Wheeler Ridge)		765	765	765	765	765	765	765	765	765	765	765	765	765	6
7	Kern-Mojave (Kramer Junction)		200	200	200	200	200	200	200	200	200	200	200	200	200	7
8	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	8
9	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	9
	GAS SUPPLY TAKEN															
10	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	10
11	Out-of-State		3,075	2,930	2,577	2,226	2,004	2,043	2,422	2,393	2,249	2,065	2,606	3,164	2,478	11
12	TOTAL SUPPLY TAKEN		3,385	3,240	2,887	2,536	2,314	2,353	2,732	2,703	2,559	2,375	2,916	3,474	2,788	12
13	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	13
14	TOTAL THROUGHPUT 1/		3,385	3,240	2,887	2,536	2,314	2,353	2,732	2,703	2,559	2,375	2,916	3,474	2,788	14
	REQUIREMENTS FORECAST BY END-USE 2/															
15	CORE 3/	Residential	1,254	1,147	945	725	507	398	356	354	363	457	828	1,282	716	15
16		Commercial	306	312	245	220	203	191	166	162	181	176	266	315	228	16
17		Industrial	70	69	60	58	55	54	50	51	57	56	59	60	58	17
18		NGV	36	40	36	37	36	37	36	36	37	36	37	36	36	18
19		Subtotal-CORE	1,666	1,568	1,286	1,039	801	680	608	603	637	724	1,191	1,693	1,039	19
20	NONCORE	Commercial	70	67	62	56	51	48	47	47	47	50	59	71	56	20
21		Industrial	323	318	317	315	317	316	316	315	316	318	319	322	318	21
22		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	22
23		Electric Generation (EG)	692	665	671	665	723	885	1,290	1,286	1,111	853	836	768	872	23
24		Subtotal-NONCORE	1,114	1,079	1,078	1,065	1,120	1,278	1,681	1,677	1,503	1,249	1,242	1,189	1,275	24
25	WHOLESALE &	Core	304	298	242	185	148	120	128	106	113	122	193	297	188	25
26	INTERNATIONAL	Noncore Excl. EG	50	53	51	52	47	54	49	49	49	50	51	49	50	26
27		Electric Generation (EG)	205	197	191	161	168	190	229	232	222	198	199	199	199	27
28		Subtotal-WHOLESALE & INT	560	549	484	398	363	364	406	387	385	370	443	545	437	28
29		Co. Use & LUAF	46	44	39	34	31	32	37	37	35	32	40	47	38	29
30	SYSTEM TOTAL THROUGHPUT 1/		3,385	3,240	2,887	2,536	2,314	2,353	2,732	2,703	2,559	2,375	2,916	3,474	2,788	30
	TRANSPORTATION AND EXCHANGE															
31	CORE	All End Uses	20	20	16	14	12	11	9	9	10	10	16	20	14	31
32	NONCORE	Commercial/Industrial	393	385	379	372	368	364	363	362	363	367	378	392	374	32
33		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	33
34		Electric Generation (EG)	692	665	671	665	723	885	1,290	1,286	1,111	853	836	768	872	34
35		Subtotal-RETAIL	1,134	1,099	1,094	1,079	1,132	1,289	1,690	1,686	1,513	1,259	1,259	1,209	1,288	35
	WHOLESALE &															
36	INTERNATIONAL	All End Uses	560	549	484	398	363	364	406	387	385	370	443	545	437	36
37	TOTAL TRANSPORTATION & EXCHANGE		1,694	1,648	1,578	1,477	1,494	1,652	2,096	2,072	1,897	1,629	1,702	1,754	1,726	37
	CURTAILMENT (RETAIL & WHOLESALE)															
38		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	38
39		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	39
40		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	40

NOTES:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1/ Excludes own-source gas supply of gas procurement by the City of Long Beach	9	9	9	9	9	9	9	9	9	9	9	9	9

2/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
3/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,696	1,595	1,309	1,057	813	689	617	612	646	736	1,210	1,724	1,056

Work Paper: TABLE 3-SC

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2012

COLD TEMPERATURE with DRY HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	FIRM CAPACITY AVAILABLE															
1	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	1
	Out-of-State Gas															
2	Mojave (Hector Road)		50	50	50	50	50	50	50	50	50	50	50	50	50	2
3	El Paso Natural Gas Co. (Blythe)		1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	3
4	El Paso Natural Gas Co. (Topock)		540	540	540	540	540	540	540	540	540	540	540	540	540	4
5	Transwestern Pipeline Co. (No. Needles)		800	800	800	800	800	800	800	800	800	800	800	800	800	5
6	Kern-Mojave, PG&E, Oxy (Wheeler Ridge)		765	765	765	765	765	765	765	765	765	765	765	765	765	6
7	Kern-Mojave (Kramer Junction)		200	200	200	200	200	200	200	200	200	200	200	200	200	7
8	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	8
9	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	9
	GAS SUPPLY TAKEN															
10	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	10
11	Out-of-State		3,083	2,903	2,615	2,275	2,052	2,059	2,335	2,324	2,191	2,020	2,578	3,162	2,466	11
12	TOTAL SUPPLY TAKEN		3,393	3,213	2,925	2,585	2,362	2,369	2,645	2,634	2,501	2,330	2,888	3,472	2,776	12
13	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	13
14	TOTAL THROUGHPUT 1/		3,393	3,213	2,925	2,585	2,362	2,369	2,645	2,634	2,501	2,330	2,888	3,472	2,776	14
	REQUIREMENTS FORECAST BY END-USE 2/															
15	CORE 3/	Residential	1,256	1,110	947	726	508	399	356	355	363	457	830	1,285	715	15
16		Commercial	305	301	245	219	203	190	166	162	180	176	266	314	227	16
17		Industrial	70	67	60	58	55	54	50	51	57	56	60	61	58	17
18		NGV	38	41	38	39	38	39	38	38	39	38	39	38	39	18
19		Subtotal-CORE	1,670	1,518	1,290	1,043	804	683	611	606	640	727	1,194	1,698	1,039	19
20	NONCORE	Commercial	70	65	62	56	51	48	47	47	47	50	59	71	56	20
21		Industrial	322	313	316	315	316	316	315	315	316	317	318	321	317	21
22		EOR Steaming	28	29	28	29	29	28	28	28	28	28	28	28	29	22
23		Electric Generation (EG)	711	715	706	707	766	897	1,204	1,221	1,053	813	808	763	864	23
24		Subtotal-NONCORE	1,132	1,121	1,113	1,107	1,161	1,289	1,595	1,611	1,444	1,208	1,214	1,184	1,266	24
25	WHOLESALE &	Core	306	291	244	186	148	121	128	107	114	122	194	299	188	25
26	INTERNATIONAL	Noncore Excl. EG	50	51	51	52	47	54	49	49	50	50	51	49	50	26
27		Electric Generation (EG)	189	188	188	162	170	190	226	225	219	189	196	195	195	27
28		Subtotal-WHOLESALE & INT	545	530	483	401	365	365	404	381	383	362	441	543	433	28
29		Co. Use & LUAF	46	44	40	35	32	32	36	36	34	32	39	47	38	29
30	SYSTEM TOTAL THROUGHPUT 1/		3,393	3,213	2,925	2,585	2,362	2,369	2,645	2,634	2,501	2,330	2,888	3,472	2,776	30
	TRANSPORTATION AND EXCHANGE															
31	CORE	All End Uses	20	19	16	14	12	11	9	9	10	10	16	20	14	31
32	NONCORE	Commercial/Industrial	392	378	378	371	367	364	362	362	363	367	377	392	373	32
33		EOR Steaming	28	29	28	29	29	28	28	28	28	28	28	28	29	33
34		Electric Generation (EG)	711	715	706	707	766	897	1,204	1,221	1,053	813	808	763	864	34
35		Subtotal-RETAIL	1,152	1,140	1,129	1,121	1,173	1,300	1,604	1,620	1,454	1,219	1,230	1,204	1,280	35
	WHOLESALE &															
36	INTERNATIONAL	All End Uses	545	530	483	401	365	365	404	381	383	362	441	543	433	36
37	TOTAL TRANSPORTATION & EXCHANGE		1,697	1,670	1,611	1,521	1,538	1,665	2,008	2,001	1,837	1,581	1,671	1,747	1,713	37
	CURTAILMENT (RETAIL & WHOLESALE)															
38		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	38
39		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	39
40		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	40

NOTES:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1/ Excludes own-source gas supply of gas procurement by the City of Long Beach	9	9	9	9	9	9	9	9	9	9	9	9	9
2/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.													
3/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,700	1,545	1,313	1,060	816	692	620	615	649	739	1,214	1,729	1,057

Work Paper: TABLE 4-SC

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2013

COLD TEMPERATURE with DRY HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	FIRM CAPACITY AVAILABLE															
1	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	1
	Out-of-State Gas															
2	Mojave (Hector Road)		50	50	50	50	50	50	50	50	50	50	50	50	50	2
3	El Paso Natural Gas Co. (Blythe)		1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	3
4	El Paso Natural Gas Co. (Topock)		540	540	540	540	540	540	540	540	540	540	540	540	540	4
5	Transwestern Pipeline Co. (No. Needles)		800	800	800	800	800	800	800	800	800	800	800	800	800	5
6	Kern-Mojave, PG&E, Oxy (Wheeler Ridge)		765	765	765	765	765	765	765	765	765	765	765	765	765	6
7	Kern-Mojave (Kramer Junction)		200	200	200	200	200	200	200	200	200	200	200	200	200	7
8	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	8
9	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	9
	GAS SUPPLY TAKEN															
10	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	10
11	Out-of-State		3,054	2,956	2,576	2,258	2,062	2,102	2,400	2,340	2,210	2,101	2,639	3,195	2,489	11
12	TOTAL SUPPLY TAKEN		3,364	3,266	2,886	2,568	2,372	2,412	2,710	2,650	2,520	2,411	2,949	3,505	2,799	12
13	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	13
14	TOTAL THROUGHPUT [1/]		3,364	3,266	2,886	2,568	2,372	2,412	2,710	2,650	2,520	2,411	2,949	3,505	2,799	14
	REQUIREMENTS FORECAST BY END-USE [2/]															
15	CORE [3/]	Residential	1,258	1,151	948	727	509	399	357	355	364	458	830	1,286	718	15
16		Commercial	304	310	244	218	202	189	165	161	180	175	265	313	227	16
17		Industrial	70	69	60	58	55	54	50	51	57	56	59	60	58	17
18		NGV	41	45	41	42	41	42	41	41	42	41	42	41	42	18
19		Subtotal-CORE	1,672	1,575	1,292	1,045	806	685	613	608	643	730	1,197	1,700	1,045	19
20	NONCORE	Commercial	70	67	62	57	51	48	47	47	47	50	59	71	56	20
21		Industrial	321	323	315	313	315	314	314	313	314	316	317	320	316	21
22		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	22
23		Electric Generation (EG)	664	667	658	682	743	902	1,242	1,206	1,049	843	821	744	853	23
24		Subtotal-NONCORE	1,084	1,086	1,063	1,081	1,137	1,293	1,632	1,595	1,439	1,237	1,226	1,164	1,254	24
25	WHOLESALE &	Core	308	303	246	188	149	122	129	107	115	123	196	301	190	25
26	INTERNATIONAL	Noncore Excl. EG	50	53	51	52	47	54	49	49	50	50	51	49	50	26
27		Electric Generation (EG)	203	206	195	168	200	226	250	255	241	238	240	242	222	27
28		Subtotal-WHOLESALE & INT	562	561	492	408	397	401	429	411	405	412	487	593	463	28
29		Co. Use & LUAF	46	44	39	35	32	33	37	36	34	33	40	48	38	29
30	SYSTEM TOTAL THROUGHPUT [1/]		3,364	3,266	2,886	2,568	2,372	2,412	2,710	2,650	2,520	2,411	2,949	3,505	2,799	30
	TRANSPORTATION AND EXCHANGE															
31	CORE	All End Uses	20	20	16	14	12	11	9	9	10	10	16	20	14	31
32	NONCORE	Commercial/Industrial	391	390	377	370	366	363	361	360	361	365	376	391	373	32
33		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	33
34		Electric Generation (EG)	664	667	658	682	743	902	1,242	1,206	1,049	843	821	744	853	34
35		Subtotal-RETAIL	1,104	1,106	1,079	1,094	1,149	1,304	1,641	1,604	1,449	1,247	1,242	1,184	1,268	35
	WHOLESALE &															
36	INTERNATIONAL	All End Uses	562	561	492	408	397	401	429	411	405	412	487	593	463	36
37	TOTAL TRANSPORTATION & EXCHANGE		1,666	1,667	1,571	1,502	1,546	1,705	2,069	2,015	1,854	1,659	1,729	1,777	1,731	37
	CURTAILMENT (RETAIL & WHOLESALE)															
38		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	38
39		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	39
40		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	40

NOTES:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1/ Excludes own-source gas supply of gas procurement by the City of Long Beach	8	8	8	8	8	8	8	8	8	8	8	8	8
2/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.													
3/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,703	1,603	1,315	1,063	819	695	622	618	652	741	1,217	1,731	1,062

Work Paper: TABLE 4-SC

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2015

COLD TEMPERATURE with DRY HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	FIRM CAPACITY AVAILABLE															
1	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	1
	Out-of-State Gas															
2	Mojave (Hector Road)		50	50	50	50	50	50	50	50	50	50	50	50	50	2
3	El Paso Natural Gas Co. (Blythe)		1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	3
4	El Paso Natural Gas Co. (Topock)		540	540	540	540	540	540	540	540	540	540	540	540	540	4
5	Transwestern Pipeline Co. (No. Needles)		800	800	800	800	800	800	800	800	800	800	800	800	800	5
6	Kern-Mojave, PG&E, Oxy (Wheeler Ridge)		765	765	765	765	765	765	765	765	765	765	765	765	765	6
7	Kern-Mojave (Kramer Junction)		200	200	200	200	200	200	200	200	200	200	200	200	200	7
8	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	8
9	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	9
	GAS SUPPLY TAKEN															
10	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	10
11	Out-of-State		3,110	3,022	2,620	2,280	2,057	2,103	2,316	2,318	2,185	2,071	2,591	3,188	2,486	11
12	TOTAL SUPPLY TAKEN		3,420	3,332	2,930	2,590	2,367	2,413	2,626	2,628	2,495	2,381	2,901	3,498	2,796	12
13	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	13
14	TOTAL THROUGHPUT 1/		3,420	3,332	2,930	2,590	2,367	2,413	2,626	2,628	2,495	2,381	2,901	3,498	2,796	14
	REQUIREMENTS FORECAST BY END-USE 2/															
15	CORE 3/	Residential	1,255	1,148	946	725	508	398	356	355	363	457	829	1,283	717	15
16		Commercial	300	306	240	215	199	187	163	159	177	173	261	309	224	16
17		Industrial	69	68	59	57	54	53	50	50	56	55	59	60	57	17
18		NGV	46	51	46	48	46	48	46	46	48	46	48	46	47	18
19		Subtotal-CORE	1,670	1,573	1,291	1,045	807	686	614	610	644	731	1,196	1,698	1,044	19
20	NONCORE	Commercial	70	67	62	56	51	48	47	47	47	49	59	71	56	20
21		Industrial	317	318	310	308	310	309	308	308	309	311	312	315	311	21
22		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	22
23		Electric Generation (EG)	697	708	683	684	735	901	1,157	1,182	1,026	814	779	740	843	23
24		Subtotal-NONCORE	1,112	1,122	1,084	1,077	1,124	1,287	1,541	1,565	1,410	1,202	1,178	1,155	1,239	24
25	WHOLESALE &	Core	312	306	248	190	151	123	130	108	116	125	198	304	192	25
26	INTERNATIONAL	Noncore Excl. EG	50	53	51	52	47	54	49	49	49	50	51	49	50	26
27		Electric Generation (EG)	229	233	216	191	207	230	255	259	242	241	239	245	232	27
28		Subtotal-WHOLESALE & INT	592	592	515	433	404	407	434	417	407	416	488	598	475	28
29		Co. Use & LUAF	46	45	40	35	32	33	36	36	34	32	39	47	38	29
30	SYSTEM TOTAL THROUGHPUT 1/		3,420	3,332	2,930	2,590	2,367	2,413	2,626	2,628	2,495	2,381	2,901	3,498	2,796	30
	TRANSPORTATION AND EXCHANGE															
31	CORE	All End Uses	20	19	16	13	12	11	9	9	10	10	16	20	14	31
32	NONCORE	Commercial/Industrial	387	385	372	365	360	357	355	355	356	360	371	386	367	32
33		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	33
34		Electric Generation (EG)	697	708	683	684	735	901	1,157	1,182	1,026	814	779	740	843	34
35		Subtotal-RETAIL	1,132	1,141	1,100	1,091	1,136	1,297	1,550	1,574	1,420	1,212	1,194	1,175	1,253	35
	WHOLESALE &															
36	INTERNATIONAL	All End Uses	592	592	515	433	404	407	434	417	407	416	488	598	475	36
37	TOTAL TRANSPORTATION & EXCHANGE		1,724	1,734	1,615	1,524	1,540	1,704	1,984	1,991	1,827	1,628	1,682	1,774	1,728	37
	CURTAILMENT (RETAIL & WHOLESALE)															
38		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	38
39		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	39
40		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	40

NOTES:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1/ Excludes own-source gas supply of gas procurement by the City of Long Beach	7	7	7	7	7	7	7	7	7	7	7	7	7
2/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.													
3/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,700	1,601	1,314	1,063	819	696	624	619	653	743	1,216	1,729	1,062

Work Paper: TABLE 4-SC

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2020

COLD TEMPERATURE with DRY HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	FIRM CAPACITY AVAILABLE															
1	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	1
	Out-of-State Gas															
2	Mojave (Hector Road)		50	50	50	50	50	50	50	50	50	50	50	50	50	2
3	El Paso Natural Gas Co. (Blythe)		1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	3
4	El Paso Natural Gas Co. (Topock)		540	540	540	540	540	540	540	540	540	540	540	540	540	4
5	Transwestern Pipeline Co. (No. Needles)		800	800	800	800	800	800	800	800	800	800	800	800	800	5
6	Kern-Mojave, PG&E, Oxy (Wheeler Ridge)		765	765	765	765	765	765	765	765	765	765	765	765	765	6
7	Kern-Mojave (Kramer Junction)		200	200	200	200	200	200	200	200	200	200	200	200	200	7
8	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	8
9	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	9
	GAS SUPPLY TAKEN															
10	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	10
11	Out-of-State		3,118	2,921	2,634	2,296	2,077	2,134	2,361	2,365	2,223	2,099	2,610	3,199	2,503	11
12	TOTAL SUPPLY TAKEN		3,428	3,231	2,944	2,606	2,387	2,444	2,671	2,675	2,533	2,409	2,920	3,509	2,813	12
13	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	13
14	TOTAL THROUGHPUT [1/]		3,428	3,231	2,944	2,606	2,387	2,444	2,671	2,675	2,533	2,409	2,920	3,509	2,813	14
	REQUIREMENTS FORECAST BY END-USE [2/]															
15	CORE [3/]	Residential	1,236	1,092	931	714	500	392	351	349	357	450	816	1,264	704	15
16		Commercial	285	281	229	205	189	178	155	152	169	165	249	294	212	16
17		Industrial	65	61	55	53	51	50	46	47	53	52	55	56	54	17
18		NGV	63	67	63	65	63	65	63	63	65	63	65	63	64	18
19		Subtotal-CORE	1,648	1,501	1,278	1,038	803	685	615	611	644	729	1,185	1,676	1,034	19
20	NONCORE	Commercial	69	64	61	55	50	47	46	46	46	48	58	70	55	20
21		Industrial	299	290	293	291	293	292	291	291	292	294	295	298	293	21
22		EOR Steaming	28	29	28	29	29	28	28	28	28	28	28	28	29	22
23		Electric Generation (EG)	724	711	710	711	764	938	1,206	1,232	1,069	846	810	770	875	23
24		Subtotal-NONCORE	1,122	1,094	1,093	1,086	1,135	1,305	1,571	1,597	1,435	1,217	1,192	1,167	1,252	24
25	WHOLESALE &	Core	324	307	257	197	156	127	134	112	120	129	205	313	198	25
26	INTERNATIONAL	Noncore Excl. EG	50	51	50	52	47	53	49	48	49	50	51	49	50	26
27		Electric Generation (EG)	238	234	225	198	215	239	265	270	251	251	249	255	241	27
28		Subtotal-WHOLESALE & INT	612	592	532	447	417	420	449	431	420	430	504	617	489	28
29		Co. Use & LUAF	46	44	40	35	32	33	36	36	34	33	40	48	38	29
30	SYSTEM TOTAL THROUGHPUT [1/]		3,428	3,231	2,944	2,606	2,387	2,444	2,671	2,675	2,533	2,409	2,920	3,509	2,813	30
	TRANSPORTATION AND EXCHANGE															
31	CORE	All End Uses	19	18	15	13	11	10	9	9	9	10	15	19	13	31
32	NONCORE	Commercial/Industrial	369	354	354	346	342	339	337	337	337	342	353	368	348	32
33		EOR Steaming	28	29	28	29	29	28	28	28	28	28	28	28	29	33
34		Electric Generation (EG)	724	711	710	711	764	938	1,206	1,232	1,069	846	810	770	875	34
35		Subtotal-RETAIL	1,140	1,112	1,108	1,099	1,146	1,315	1,580	1,606	1,444	1,227	1,207	1,186	1,265	35
	WHOLESALE &															
36	INTERNATIONAL	All End Uses	612	592	532	447	417	420	449	431	420	430	504	617	489	36
37	TOTAL TRANSPORTATION & EXCHANGE		1,753	1,704	1,640	1,546	1,563	1,736	2,029	2,037	1,864	1,656	1,711	1,804	1,754	37
	CURTAILMENT (RETAIL & WHOLESALE)															
38		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	38
39		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	39
40		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	40

NOTES:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1/ Excludes own-source gas supply of gas procurement by the City of Long Beach	5	5	5	5	5	5	5	5	5	5	5	5	5
2/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.													
3/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,679	1,528	1,302	1,056	816	696	625	621	654	741	1,205	1,708	1,052

Work Paper: TABLE 4-SC

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2025

COLD TEMPERATURE with DRY HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	FIRM CAPACITY AVAILABLE															
1	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	1
	Out-of-State Gas															
2	Mojave (Hector Road)		50	50	50	50	50	50	50	50	50	50	50	50	50	2
3	El Paso Natural Gas Co. (Blythe)		1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	3
4	El Paso Natural Gas Co. (Topock)		540	540	540	540	540	540	540	540	540	540	540	540	540	4
5	Transwestern Pipeline Co. (No. Needles)		800	800	800	800	800	800	800	800	800	800	800	800	800	5
6	Kern-Mojave, PG&E, Oxy (Wheeler Ridge)		765	765	765	765	765	765	765	765	765	765	765	765	765	6
7	Kern-Mojave (Kramer Junction)		200	200	200	200	200	200	200	200	200	200	200	200	200	7
8	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	8
9	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	9
	GAS SUPPLY TAKEN															
10	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	10
11	Out-of-State		3,145	3,062	2,656	2,317	2,096	2,151	2,379	2,383	2,241	2,116	2,631	3,223	2,531	11
12	TOTAL SUPPLY TAKEN		3,455	3,372	2,966	2,627	2,406	2,461	2,689	2,693	2,551	2,426	2,941	3,533	2,841	12
13	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	13
14	TOTAL THROUGHPUT 1/		3,455	3,372	2,966	2,627	2,406	2,461	2,689	2,693	2,551	2,426	2,941	3,533	2,841	14
	REQUIREMENTS FORECAST BY END-USE 2/															
15	CORE 3/	Residential	1,236	1,131	932	715	500	392	351	349	358	450	816	1,264	706	15
16		Commercial	283	289	227	203	188	177	154	151	168	163	247	292	211	16
17		Industrial	61	60	52	51	48	47	44	45	50	49	52	53	51	17
18		NGV	85	94	85	87	85	87	85	85	87	85	87	85	86	18
19		Subtotal-CORE	1,665	1,574	1,296	1,056	821	704	634	629	663	747	1,202	1,693	1,054	19
20	NONCORE	Commercial	70	66	61	55	49	46	45	45	45	48	58	70	55	20
21		Industrial	288	289	282	280	281	280	280	280	280	282	283	287	283	21
22		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	22
23		Electric Generation (EG)	725	737	711	712	765	939	1,207	1,233	1,070	848	811	771	879	23
24		Subtotal-NONCORE	1,111	1,120	1,083	1,076	1,125	1,295	1,561	1,587	1,424	1,207	1,181	1,157	1,245	24
25	WHOLESALE &	Core	342	335	271	208	164	135	142	119	127	137	216	329	210	25
26	INTERNATIONAL	Noncore Excl. EG	50	53	51	52	47	54	49	49	49	50	51	49	50	26
27		Electric Generation (EG)	240	244	226	199	216	241	266	271	253	252	250	256	243	27
28		Subtotal-WHOLESALE & INT	632	632	548	460	427	429	458	439	429	439	517	635	503	28
29		Co. Use & LUAF	47	46	40	36	33	33	36	37	35	33	40	48	39	29
30	SYSTEM TOTAL THROUGHPUT 1/		3,455	3,372	2,966	2,627	2,406	2,461	2,689	2,693	2,551	2,426	2,941	3,533	2,841	30
	TRANSPORTATION AND EXCHANGE															
31	CORE	All End Uses	19	19	15	13	11	10	9	8	9	10	15	19	13	31
32	NONCORE	Commercial/Industrial	358	355	343	335	331	327	326	325	326	330	341	357	338	32
33		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	33
34		Electric Generation (EG)	725	737	711	712	765	939	1,207	1,233	1,070	848	811	771	879	34
35		Subtotal-RETAIL	1,130	1,139	1,098	1,088	1,136	1,305	1,570	1,595	1,433	1,216	1,196	1,176	1,258	35
	WHOLESALE &															
36	INTERNATIONAL	All End Uses	632	632	548	460	427	429	458	439	429	439	517	635	503	36
37	TOTAL TRANSPORTATION & EXCHANGE		1,762	1,770	1,645	1,548	1,563	1,734	2,028	2,035	1,863	1,655	1,713	1,810	1,761	37
	CURTAILMENT (RETAIL & WHOLESALE)															
38		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	38
39		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	39
40		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	40

NOTES:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1/ Excludes own-source gas supply of gas procurement by the City of Long Beach	3	3	3	3	3	3	3	3	3	3	3	3	3
2/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.													
3/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,696	1,603	1,320	1,075	835	715	644	640	673	760	1,224	1,725	1,073

Work Paper: TABLE 4-SC

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2030

COLD TEMPERATURE with DRY HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	FIRM CAPACITY AVAILABLE															
1	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	1
	Out-of-State Gas															
2	Mojave (Hector Road)		50	50	50	50	50	50	50	50	50	50	50	50	50	2
3	El Paso Natural Gas Co. (Blythe)		1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	1,210	3
4	El Paso Natural Gas Co. (Topock)		540	540	540	540	540	540	540	540	540	540	540	540	540	4
5	Transwestern Pipeline Co. (No. Needles)		800	800	800	800	800	800	800	800	800	800	800	800	800	5
6	Kern-Mojave, PG&E, Oxy (Wheeler Ridge)		765	765	765	765	765	765	765	765	765	765	765	765	765	6
7	Kern-Mojave (Kramer Junction)		200	200	200	200	200	200	200	200	200	200	200	200	200	7
8	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	3,565	8
9	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	9
	GAS SUPPLY TAKEN															
10	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	10
11	Out-of-State		3,206	3,123	2,708	2,362	2,134	2,188	2,414	2,416	2,276	2,152	2,678	3,282	2,576	11
12	TOTAL SUPPLY TAKEN		3,516	3,433	3,018	2,672	2,444	2,498	2,724	2,726	2,586	2,462	2,988	3,592	2,886	12
13	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	13
14	TOTAL THROUGHPUT 1/		3,516	3,433	3,018	2,672	2,444	2,498	2,724	2,726	2,586	2,462	2,988	3,592	2,886	14
	REQUIREMENTS FORECAST BY END-USE 2/															
15	CORE 3/	Residential	1,256	1,149	946	726	508	399	356	355	363	457	829	1,284	717	15
16		Commercial	288	293	231	207	191	180	157	153	170	166	251	297	215	16
17		Industrial	60	59	51	50	47	46	43	44	49	48	51	52	50	17
18		NGV	106	117	106	109	106	109	106	106	109	106	109	106	108	18
19		Subtotal-CORE	1,709	1,619	1,334	1,091	852	734	662	657	692	777	1,240	1,738	1,089	19
20	NONCORE	Commercial	71	67	62	56	50	47	46	46	46	49	59	71	56	20
21		Industrial	283	283	277	275	276	275	275	275	275	277	278	282	278	21
22		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	22
23		Electric Generation (EG)	726	738	712	713	766	941	1,209	1,235	1,071	849	812	772	880	23
24		Subtotal-NONCORE	1,108	1,117	1,079	1,072	1,121	1,291	1,558	1,584	1,421	1,203	1,178	1,154	1,242	24
25	WHOLESALE &	Core	359	352	284	219	173	142	149	126	134	144	226	344	221	25
26	INTERNATIONAL	Noncore Excl. EG	50	53	51	52	47	54	49	49	50	50	51	49	50	26
27		Electric Generation (EG)	241	246	228	201	218	243	268	273	254	254	252	258	245	27
28		Subtotal-WHOLESALE & INT	651	650	563	472	438	439	467	448	438	448	529	652	516	28
29		Co. Use & LUAF	48	47	41	36	33	34	37	37	35	33	41	49	39	29
30	SYSTEM TOTAL THROUGHPUT 1/		3,516	3,433	3,018	2,672	2,444	2,498	2,724	2,726	2,586	2,462	2,988	3,592	2,886	30
	TRANSPORTATION AND EXCHANGE															
31	CORE	All End Uses	19	19	15	13	11	10	9	9	10	10	15	19	13	31
32	NONCORE	Commercial/Industrial	354	350	339	331	326	322	321	321	321	326	337	353	333	32
33		EOR Steaming	28	28	28	29	29	28	28	28	28	28	28	28	28	33
34		Electric Generation (EG)	726	738	712	713	766	941	1,209	1,235	1,071	849	812	772	880	34
35		Subtotal-RETAIL	1,127	1,136	1,094	1,085	1,132	1,302	1,567	1,592	1,430	1,213	1,193	1,173	1,255	35
	WHOLESALE &															
36	INTERNATIONAL	All End Uses	651	650	563	472	438	439	467	448	438	448	529	652	516	36
37	TOTAL TRANSPORTATION & EXCHANGE		1,778	1,786	1,658	1,557	1,570	1,740	2,034	2,040	1,869	1,662	1,723	1,825	1,771	37
	CURTAILMENT (RETAIL & WHOLESALE)															
38		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	38
39		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	39
40		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	40

NOTES:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1/ Excludes own-source gas supply of gas procurement by the City of Long Beach	2	2	2	2	2	2	2	2	2	2	2	2	2
2/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.													
3/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,742	1,649	1,359	1,111	866	746	673	669	703	791	1,262	1,771	1,109

2008 CALIFORNIA GAS REPORT

FORECAST OF REQUIREMENTS
JULY 2008

The Gas Company

A Sempra Energy utility℠

2008 CALIFORNIA GAS REPORT

CUSTOMER FORECAST
JULY 2008

The Gas Company

A Sempra Energy utility™

Updated July 11

SOUTHERN CALIFORNIA GAS COMPANY: CUSTOMER FORECAST
2008 CGR
(annual averages)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Residential												
Single-Family												
Active	3,524,381	3,540,513	3,563,512	3,599,545	3,639,455	3,683,294	3,728,503	3,774,431	3,820,827	3,867,467	3,914,059	3,960,355
Inactive	75,920	87,986	88,560	83,094	84,019	85,032	86,076	87,136	88,207	89,283	90,359	91,427
Connected	3,600,301	3,628,499	3,652,071	3,682,639	3,723,474	3,768,326	3,814,578	3,861,567	3,909,033	3,956,751	4,004,418	4,051,782
Multi-Family												
Active	1,665,905	1,684,928	1,701,579	1,719,129	1,740,599	1,764,958	1,790,750	1,817,556	1,845,443	1,874,185	1,903,572	1,933,504
Inactive	89,847	90,873	91,770	92,718	93,877	95,192	96,583	98,029	99,533	101,084	102,669	104,283
Connected	1,755,752	1,775,801	1,793,349	1,811,847	1,834,476	1,860,149	1,887,333	1,915,585	1,944,976	1,975,269	2,006,241	2,037,787
Master-Meter												
Active	42,386	42,068	41,753	41,440	41,129	40,821	40,514	40,210	39,909	39,610	39,313	39,018
Inactive	653	670	686	702	718	734	749	764	779	793	808	822
Connected	43,040	42,738	42,439	42,142	41,847	41,554	41,263	40,974	40,688	40,403	40,120	39,839
Total Residential												
Active	5,232,672	5,267,509	5,306,843	5,360,114	5,421,182	5,489,073	5,559,767	5,632,198	5,706,178	5,781,262	5,856,944	5,932,877
Inactive	166,421	179,529	181,016	176,514	178,614	180,957	183,407	185,929	188,519	191,160	193,835	196,532
Connected	5,399,093	5,447,038	5,487,859	5,536,628	5,599,797	5,670,030	5,743,174	5,818,127	5,894,697	5,972,423	6,050,779	6,129,409
Commercial												
Active	192,862	192,393	192,589	193,349	193,980	194,714	195,460	196,188	196,846	197,463	198,027	198,574
Inactive	48,085	49,170	49,223	49,417	49,578	49,766	49,957	50,143	50,311	50,468	50,612	50,752
Connected	240,947	241,563	241,812	242,766	243,558	244,479	245,417	246,331	247,156	247,931	248,640	249,326
Industrial												
Active	20,257	20,248	20,172	20,139	20,123	20,112	20,096	20,083	20,074	20,071	20,077	20,080
Inactive	8,072	8,068	8,038	8,025	8,019	8,014	8,008	8,002	7,999	7,998	8,000	8,001
Connected	28,330	28,316	28,210	28,164	28,142	28,126	28,104	28,085	28,073	28,069	28,076	28,082
TOTAL												
Active	5,445,791	5,480,150	5,519,605	5,573,602	5,635,286	5,703,898	5,775,323	5,848,469	5,923,098	5,998,797	6,075,048	6,151,531
Inactive	222,579	236,767	238,277	233,956	236,211	238,737	241,372	244,074	246,828	249,626	252,447	255,285
Connected	5,668,370	5,716,917	5,757,881	5,807,558	5,871,496	5,942,635	6,016,695	6,092,543	6,169,926	6,248,423	6,327,495	6,406,816
Net Active Gain	53,817	34,359	39,455	53,997	61,684	68,612	71,426	73,146	74,629	75,699	76,251	76,483

SOUTHERN CALIFORNIA GAS COMPANY: CUSTOMER FORECAST
(annual averages)

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Residential												
Single-Family												
Active	4,006,470	4,052,398	4,098,100	4,143,490	4,188,582	4,233,384	4,278,284	4,323,651	4,369,019	4,413,544	4,456,998	4,500,061
Inactive	92,491	93,551	94,606	95,653	96,694	97,728	98,764	99,811	100,858	101,885	102,888	103,881
Connected	4,098,962	4,145,949	4,192,706	4,239,143	4,285,275	4,331,111	4,377,048	4,423,463	4,469,877	4,515,429	4,559,885	4,603,942
Multi-Family												
Active	1,964,024	1,995,098	2,026,583	2,058,422	2,090,659	2,123,291	2,156,307	2,189,685	2,223,504	2,257,820	2,292,522	2,327,533
Inactive	105,929	107,605	109,303	111,020	112,759	114,519	116,300	118,100	119,924	121,775	123,646	125,534
Connected	2,069,953	2,102,703	2,135,886	2,169,442	2,203,418	2,237,810	2,272,606	2,307,784	2,343,428	2,379,595	2,416,168	2,453,068
Master-Meter												
Active	38,725	38,435	38,146	37,860	37,576	37,294	37,015	36,737	36,462	36,188	35,917	35,647
Inactive	835	849	862	875	888	900	913	925	937	949	960	971
Connected	39,560	39,283	39,008	38,735	38,464	38,195	37,928	37,662	37,398	37,137	36,877	36,619
Total Residential												
Active	6,009,219	6,085,930	6,162,829	6,239,772	6,316,817	6,393,969	6,471,605	6,550,073	6,628,985	6,707,552	6,785,437	6,863,242
Inactive	199,256	202,005	204,771	207,549	210,341	213,147	215,976	218,836	221,719	224,608	227,494	230,387
Connected	6,208,475	6,287,935	6,367,600	6,447,320	6,527,158	6,607,116	6,687,582	6,768,909	6,850,703	6,932,161	7,012,931	7,093,629
Commercial												
Active	199,158	199,786	200,358	201,004	201,708	202,437	203,157	203,850	204,565	205,275	205,961	206,671
Inactive	50,901	51,062	51,208	51,373	51,553	51,740	51,924	52,101	52,284	52,465	52,640	52,822
Connected	250,060	250,848	251,566	252,378	253,262	254,177	255,081	255,950	256,849	257,740	258,601	259,493
Industrial												
Active	20,072	20,059	20,042	20,023	20,008	19,996	19,987	19,982	19,980	19,978	19,976	19,973
Inactive	7,998	7,993	7,986	7,979	7,972	7,968	7,964	7,962	7,962	7,961	7,960	7,959
Connected	28,070	28,052	28,029	28,002	27,980	27,964	27,952	27,944	27,942	27,939	27,936	27,932
TOTAL												
Active	6,228,449	6,305,775	6,383,230	6,460,799	6,538,533	6,616,402	6,694,750	6,773,905	6,853,530	6,932,806	7,011,374	7,089,886
Inactive	258,155	261,060	263,965	266,901	269,867	272,855	275,865	278,899	281,964	285,034	288,094	291,168
Connected	6,486,605	6,566,835	6,647,195	6,727,700	6,808,400	6,889,257	6,970,614	7,052,804	7,135,494	7,217,840	7,299,468	7,381,054
Net Active Gain	76,918	77,326	77,455	77,569	77,734	77,869	78,348	79,155	79,625	79,276	78,568	78,512

2008 CALIFORNIA GAS REPORT

EUFORECASTER
JULY 2008

The Gas Company

A Sempra Energy utility℠

I. Introduction

End Use Forecaster is a market-segmentation and modeling framework that forecasts the impacts of competitive strategies and market scenarios on sales, revenues, and market shares. **EUForecaster is used to prepare the demand forecasts for the residential, core commercial and industrial, and noncore commercial and industrial markets.**

The object of this chapter is to familiarize you with the overall End Use Forecaster modeling structure and to describe how the system relates to common business issues concerning demand forecasting and market assessment. This chapter also serves to explain how the various modules within End Use Forecaster relate to one another. Subsequent chapters define the contents and features of each individual module.

End Use Forecaster: An Overview

End Use Forecaster, formerly known as Quant.sim, is a market segmentation, competitive assessment, and sales projection application developed to respond to market needs and overcome the limitations of existing demand forecasting and market planning tools. The application, originally developed in 1993, is constructed using SAS software.

We have found that each utility's market structure and competitive environment is unique and that a major shortcoming of other tools has been an inability to accurately capture this diversity. End Use Forecaster's Market Segmentation module provides the ability to update the model to reflect new strategies without writing SAS programming code. Unique market conditions translate into an inherently flexible, dynamic modeling framework that can rapidly adapt to new market conditions.

This flexibility is afforded through a model development approach that separates specific market issues from theoretical modeling constructs:

- ***Logic and theory***, the portion of the system comprised of the programming code and data structures, is stored and managed in one location
- ***Market data***, which are unique for every company and strategy, are stored in a separate location

This structure makes market segmentation and analyses relatively easy tasks compared to adapting spreadsheet models or rewriting "black box" programming code. As an example, consider the "DSM planning" and "competitive assessment" market dimensions in the Table 1 below. The DSM dimensions show a standard end-use forecast model design for the utility industry, while the competitive assessment dimensions illustrate another way to set up End Use Forecaster to analyze new retail competition if retail choice is present in the jurisdiction.

Table 1. Alternative Market Segmentation Designs – Utility Industry Example

Market Dimension	DSM Planning	Competitive Assessment
Dimension 1	Market sector (residential, commercial, industrial, agricultural)	Risk of switching
Dimension 2	Customer type (dwelling, building, industry segments)	Customer value (to energy provider)
Dimension 3	End uses	Products and services
Dimension 4	Fuel types	Provider choices
Dimension 5	Efficiency levels	Product choices

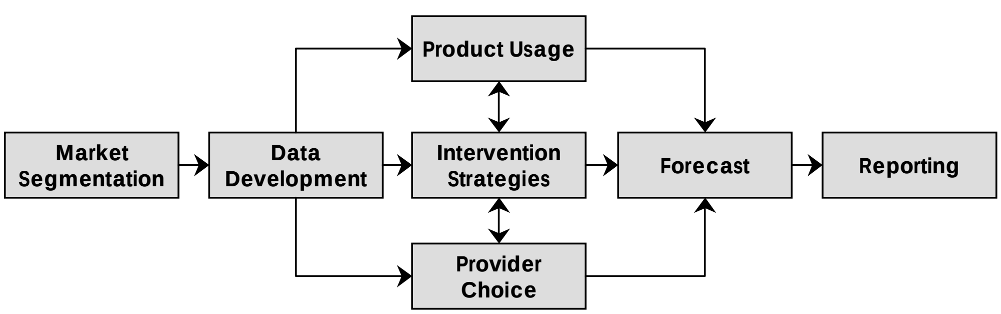
End Use Forecaster has other dimensions that capture factors affecting product demands. Perhaps the most important of these is End Use Forecaster's "vintaging" capability. Vintaging refers to product or service turnover that is a function of either physical lives or contract period. Accurate assessments of product turnover are crucial to obtaining accurate forecasts for any product where purchases are derived from a fraction of the population in the market at a moment of time. An example of vintaging would be accounting for energy-consuming equipment such as motors, boilers, water heaters, chillers, etc., where demand over a given time interval is the sum of demands from new customers plus those customers replacing existing equipment.

The effective use of the inherent multidimensionality of most business forecasting issues is a key strength of the End Use Forecaster framework. Critical dimensions of business issues (e.g., geography, customers, products, competitors, equipment lives, etc.) are included in every forecast, along with dimensions users can modify to resolve a variety of business issues. For example, forecasters may be interested in the price elasticity of demand, marketing staff may want to study market shares across various scenarios, and corporate finance may need the bottom line revenue forecast. All these (and more) are immediately available in every forecast due to the concentration of rich and flexible dimensionality.

Seven primary modules form the heart of the End Use Forecaster framework: Market Segmentation, Data Development, Product Usage, Provider Choice, Intervention Strategies, Forecasting, and Reporting. .

Figure 1 depicts the relationships between these modules. Each is summarized below and in the remaining chapters of this Reference Guide.

Figure 1. End Use Forecaster Modules and Structure



Interface Design

The user interface to the End Use Forecaster model is constructed using SAS/AF (Applications Facility). SAS/AF software provides dozens of predefined "classes" that enabled the development of End Use Forecaster. These classes include a wide selection of both visual and non-visual aspects. The visual classes, or widgets, define objects that are placed on the screen, including icons, push buttons, text boxes tables, etc. The non-visual classes use screen control language (SCL) that define the objects controlling End Use Forecaster behind the scenes. Figure 2 and Figure 3 show the first two screens users see after starting End Use Forecaster.

Figure 2. Welcome Screen

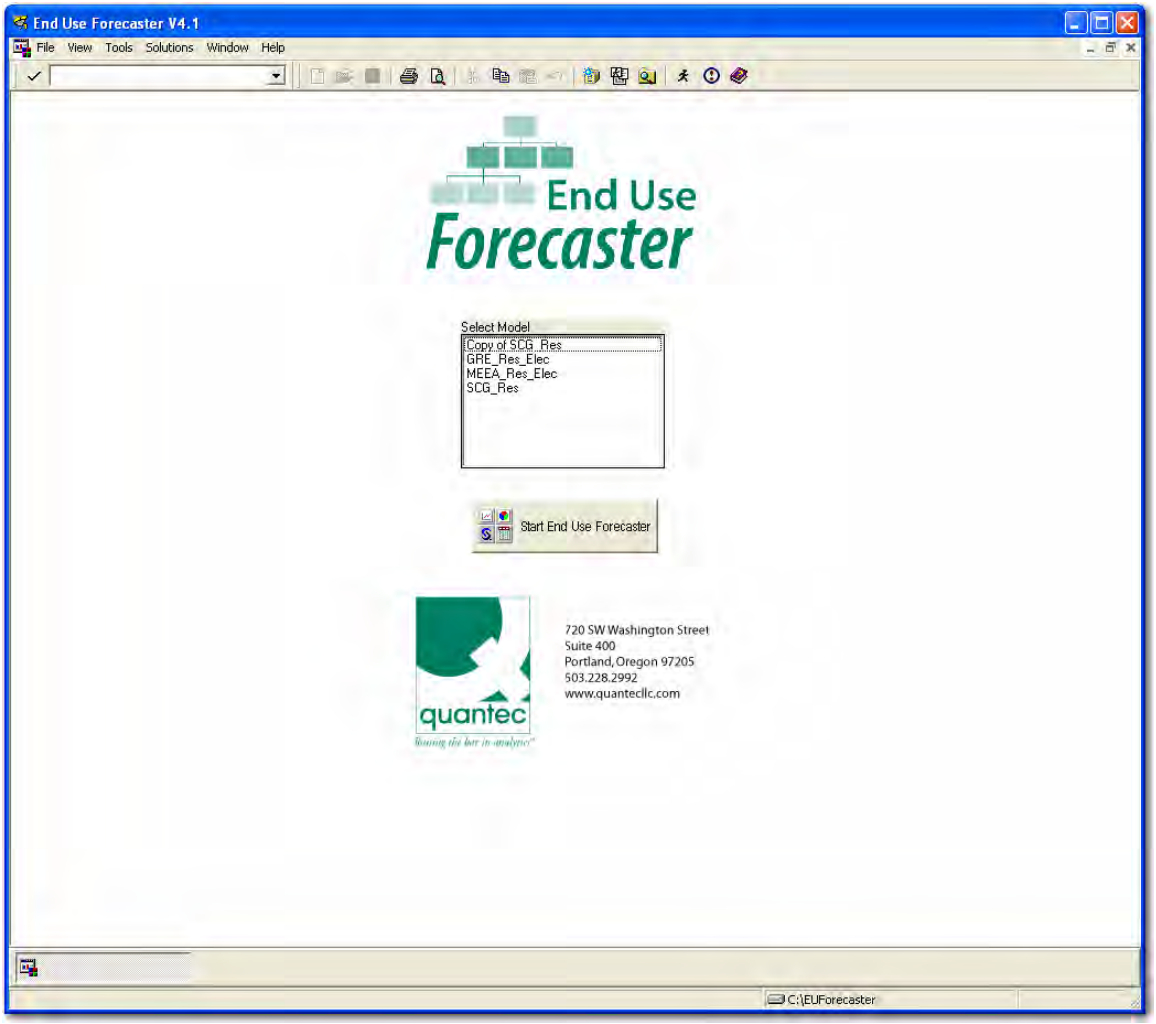
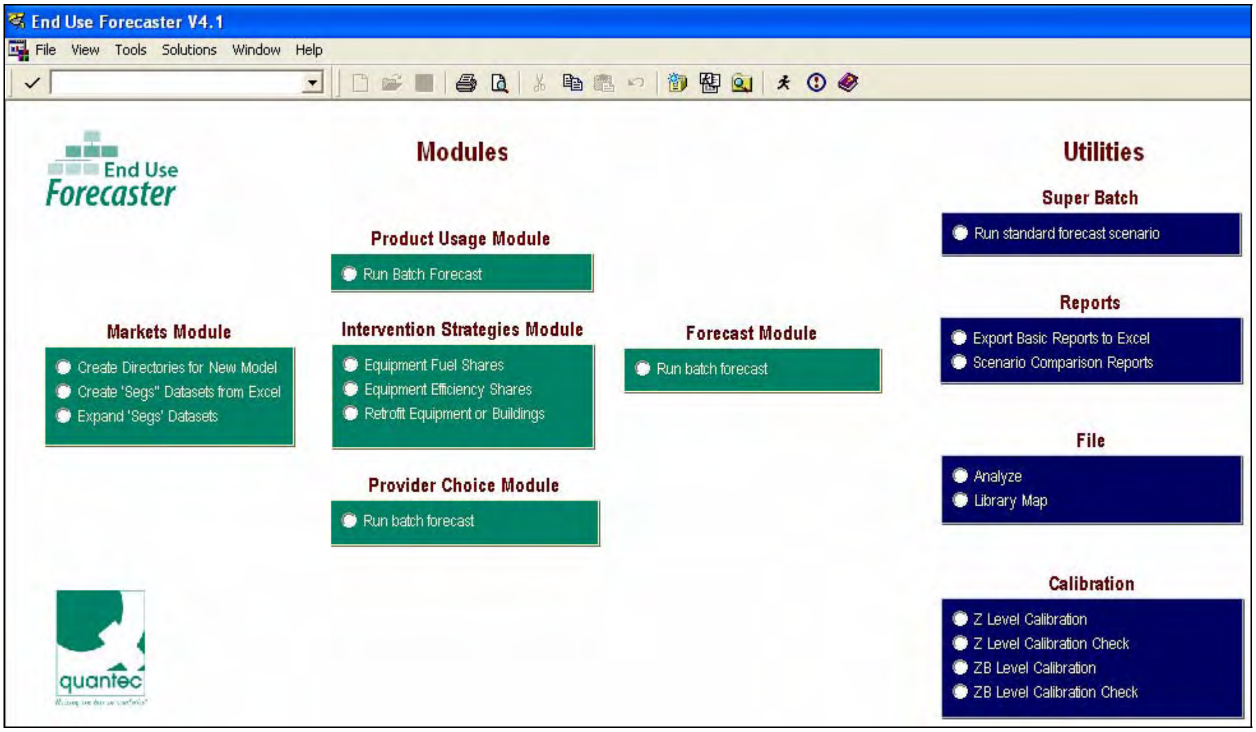


Figure 3. Main Dashboard



The interface is the only part of the End Use Forecaster framework that is compiled. All of the mathematical operations are in open SAS code, and End Use Forecaster's SAS/AF interface can also be edited and recompiled. This is a true "open architecture" design that allows users to modify and extend the End Use Forecaster framework.

In addition to End Use Forecaster's customized sets of tools, there is also a wide variety of data management, analysis, and reporting tools that are packaged with the SAS System.

Data Exchange

End Use Forecaster uses SAS/ACCESS software to provide direct and transparent access to various databases such as:

- DB2 Under UNIX and PC Hosts
- ORACLE
- SYBASE
- SQL/DS
- ODBC
- PC File Formats (Excel, Access)
- SYSTEM 2000 software

Since data access functions are separated from End Use Forecaster's logic, underlying data sources may change, but the model's capabilities will not be affected.

Market Segmentation

Market Segments

The primary goal of any market segmentation design in End Use Forecaster is to disaggregate the overall market into meaningful portions of customer types that behave similarly in terms of product demands and the set of choices they face. These disaggregations are arranged hierarchically, with Dimension 1 at the top of the “tree.” Each Dimension 1 class can have one or more Dimension 2 classes, each Dimension 2 class can have one or more Dimension 3 classes, and so on.

Strategic Information Needs

A secondary goal of the market segmentation design is to designate groups of customers and products for which sufficient data are available to be fed into End Use Forecaster’s forecasting framework. It may not be desirable to disaggregate the market into segments for which little or no data are available or where there is little distinction between two or more groups. Every new market segment requires additional disk storage space and more time to assemble the required End Use Forecaster data inputs. The objective should be to ***optimize*** the number of market segments: create enough market sectors to provide differentiation on answers to important questions but not so many that they become a burden to the overall process.

Data Development and Entry

Successful implementation of the End Use Forecaster model relies on highly integrated sets of information. Data entry is closely related to the market segmentation process, and both are addressed in this Reference Guide. Each set of input data uses different dimensions, so highly structured templates were designed to minimize redundancy and eliminate error at the same time.

End Use Forecaster uses market segmentation information and templates to set up all the required SAS datasets such that they are entirely consistent with the segmentation design.

Data Entry Formats

End Use Forecaster’s datasets can be populated in several ways. The most common methods are:

- Exporting/importing data using SAS/ACCESS for PC file formats
- Programmatic data entry through simple SAS programs

As users gradually increase the number of distinct market segments from dozens to hundreds to thousands, it is anticipated that they will take advantage of SAS/ACCESS links to other company databases. Such links would allow for real-time forecast updates as database information is updated.

Product Usage Module: Modeling Equipment Consumption

End Use Forecaster tracks consumption of resources (such as natural gas, electricity, water, minutes of telephone or Internet use, gasoline, etc.) through the Product Usage module. This module is only used when there are secondary, derived demands from customers' product choices. For example, a utility would be interested in the use of energy from appliances to generate natural gas or electricity forecasts, but other types of manufacturers may not need this information to develop sales forecasts. If certain parts of the model are not needed in a given application, you may assign default values (usually a 0 or 1) that essentially turn off that portion of the model.

Product usage can vary with a variety of factors such as weather, non-weather seasonal factors, customer characteristics, prices, and other product attributes. Several modeling techniques explain and predict product usage, including scalars (exogenous estimates), econometric functions, and other statistical models.

Regardless of the approach taken, the Product Usage module provides a forecast of the predicted consumption by combining (1) a forecast of consumption factors or drivers (i.e., independent or exogenous variables) and (2) a set of coefficients associated with each exogenous variable.

Provider Choice Module: Modeling Customer Service and Purchase Decisions

Types of Choices: The Provider Choice module analyzes customer choice decisions among competitors and product options. For example, a commercial building operator chooses between fuel (provider) types for HVAC systems, and then from various equipment efficiency levels (product options) within the fuel type. Purchase decisions are represented by a nested structure of provider and product option choices.

Modes of Choice Modeling

The Provider Choice module is designed for two types of modeling: (1) the estimation of choice parameters, and (2) the forecast of market shares given these choice parameters. More specifically, the Provider Choice Module:[1]

- ***Simulates parameter estimates*** relating to customer choice in markets where micro-(customer) level information is not available, but aggregate cost and market share figures are known, or
- ***Uses parameter estimates*** from the application of logistic regression, or other models of customer choice, to micro-level customer data.

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[1] The Provider Choice Module can be bypassed in some applications such as DSM potential analysis. In this type of framework, the base line fuel and efficiency shares are held constant and are determined outside the model. The Intervention Strategies Module is then used to view alternate market shares associated with, for example, technical and achievable DSM potential.

If primary market research is used to develop the micro data necessary for parameter estimates, the Provider Choice module essentially transforms a "static" market research report into a dynamic what-if analysis structure. This can significantly extend the usefulness and life of company market research resources.

After model parameters are simulated or input into the Provider Choice Module, it then forecasts the market share associated with each product and service alternative over the planning horizon.

Average versus Marginal Shares

The comparison of average versus marginal shares and associated trends is a key result of incorporating dynamic choice functions in the End Use Forecaster forecasting framework.

For example, the infusion of new energy consumption technologies (such as condensing furnaces) may be reaching 35% of new construction buildings, but if new construction in a given year only represents 2% of the total market, then the total impact on the market is merely 0.7%. As these rates of change accelerate and decelerate through the future, and as simulated what-if scenarios impact these forecasts of consumer choice, markedly different forecasts are possible over the longer term, while at the same time maintaining a realistic short-term profile.

Intervention Strategies Module: Analyzing Marketing Scenarios and DSM Potential

The Intervention Strategies module – a generic term to apply to activities typically associated with demand-side management (DSM) – is intended to capture the impacts of marketing, energy efficiency potential, and other programs designed to influence customer behavior. This module makes available a series of program designs that simulate the "what-if" impacts on the market shares, usage, and the resulting demand forecast. Three general types of program designs are available:

- ***Provider (fuel) substitution scenarios***. These scenarios modify the forecasted choices or market shares among provider (fuel) sources. Separate sets of assumptions apply to existing buildings and new construction buildings, permitting different types of programs to be designed.
- ***Product option (equipment efficiency) scenarios***. These scenarios modify efficiency or product option shares. For example, an efficiency program usually favors the highest available efficiency level for each market sector. These impacts affect choices at the point of new construction or replacement of existing end uses, and different assumptions can apply to each market. A technical potential scenario normally assigns a 100% share to the most efficient option. An achievable potential scenario assigns less than a 100% share to the most efficient option, with the level determined by experience with similar program designs or market research.
- ***Usage retrofit program scenarios***. These programs encourage consumers to change their product usage given the equipment they already have (e.g., improve the efficiency of existing equipment by installing efficiency measures or through better O&M procedures).

Examples include measures to tighten residential and commercial building envelopes, industrial process changes, and pipe and duct insulation.

Intervention strategies are incorporated directly into the relevant Product Usage or Provider Choice forecasts.

Forecast Module: Putting It All Together

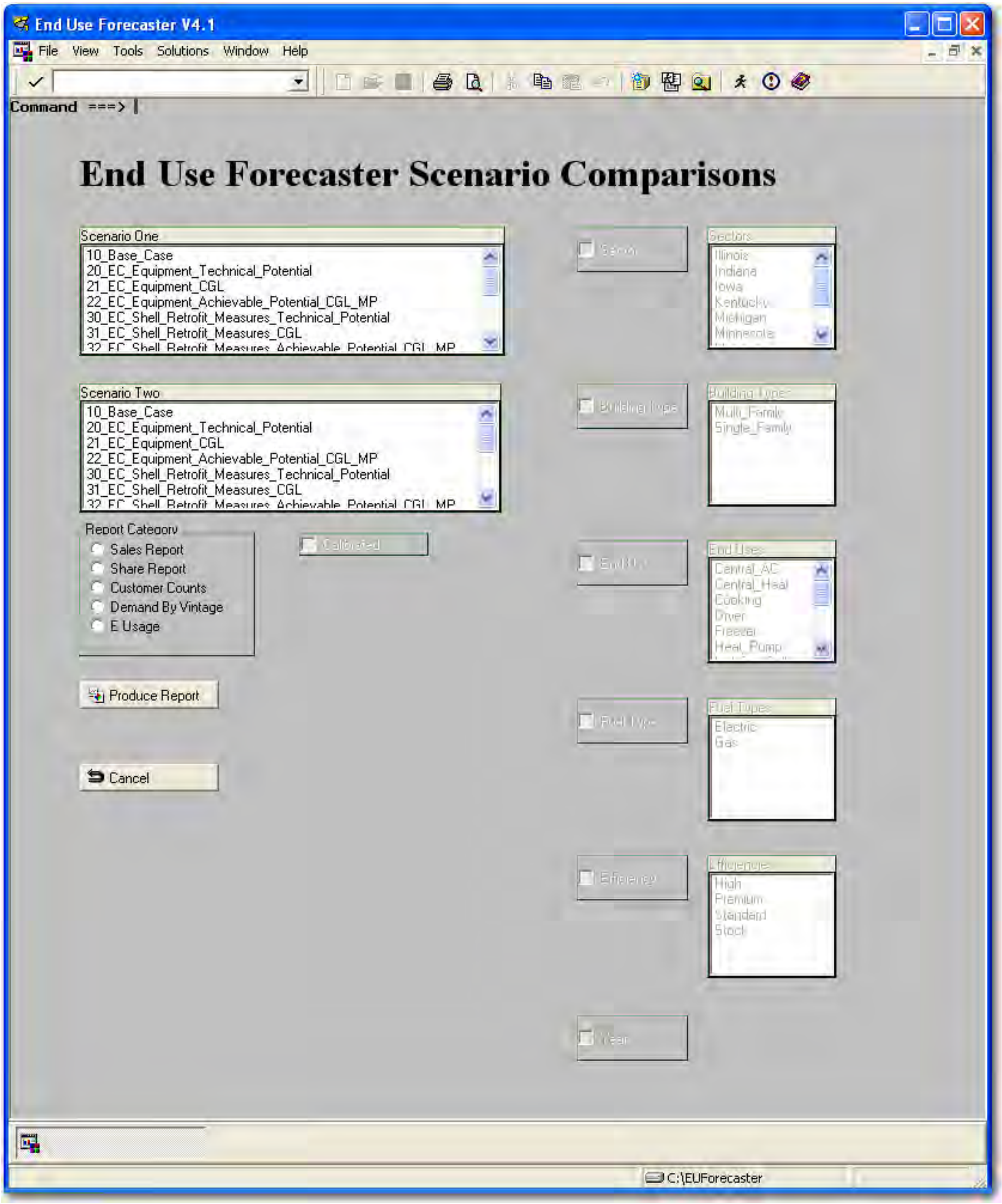
The Forecast Module incorporates all the information compiled from the other modules – Usage, Choice, and Intervention Strategies – related to the overall economic growth of the market segment and equipment lifetime (decay) functions to create the final forecast for a given scenario.

This module produces sales and market share reports that provide quick access to all forecast details. The reports produce forecast outputs in a “flat” matrix format, providing the ability to review the data for reasonability before pronouncing the forecast final.

Reporting: Getting the Projections Out to Decision-Makers

End Use Forecaster also produces reports that can be customized based upon the user’s choice of segmentation combinations to analyze. These reports summarize and/or compare forecasts for two forecast scenarios specified by the user in the Scenario Comparison interface, as shown in Figure 4.

Figure 4. Report Customization



The user specifies the Report Category (sales, market share, customer counts or demand by vintage) and, based on the category selected, the user is given the option of selecting different combinations of segments to summarize and/or compare. Additionally, the user is given the option of summarizing the forecast data across all years within the forecast horizon or generating results on a year-by-year basis.

II. Application Structure

A solid understanding of how End Use Forecaster is organized will help users to understand the logic of the model and greatly improve the efficiency with which they use the application. The latest revisions to End Use Forecaster focused almost exclusively on consolidating libraries and datasets to make the model easier to use; the model's logic, repeatedly validated over its history, was left intact. Underlying the updates was an emphasis on consistency in the naming and organization of datasets and variables so as to maximize the intuitiveness of the model. This Chapter describes the model's organization with the intent of helping the user be a more effective modeler.

Hardware and Software

End Use Forecaster is a Windows application developed in PC-SAS. The code and datasets can easily be migrated to other platforms (UNIX, etc.), should the user desire, but the interfaces will not provide the same functionality on other systems. If a user desires a non-PC hardware/software solution, The Cadmus Group, formerly known as Quantec, will work with the SAS Institute to ensure compatibility and develop a customized solution.

Hardware

The minimum recommended hardware configuration slightly exceeds SAS Institute requirements to ensure that forecast simulations can be performed in a timely manner. The vast majority of PCs purchased since 2000 exceed these recommendations:

- Pentium 866 MHZ CPU
- 512 MB RAM
- SVGA compatible color monitor
- 10 GB hard disk drive of free space
- CD-ROM drive (for installation purposed only)

End Use Forecaster's performance (i.e., speed) increases significantly if the system is equipped with more advanced processors (e.g., Pentium III or better), additional RAM (1 GB RAM or more), and additional disk space (for storage).

Software

End Use Forecaster is designed for the Microsoft Windows operating system (compatible with Windows 95 and 98, Windows NT Workstation 4.0, Windows XP, and Windows 2000 Professional). It is currently configured for SAS version 9.1 and version 8.2. Seven SAS software products are required:

- Base SAS

- Full Screen Product (SAS/FSP)
- Econometrics and Time Series (SAS/ETS)
- Statistics (SAS/STAT)
- High-Resolution Graphics (SAS/GRAPH)
- Interactive Data Analysis (SAS/INSIGHT)
- Direct Database Access (SAS/ACCESS)

An additional module, Applications Facility (SAS/AF), is used in developing End Use Forecaster's graphical user interface. These modules are based on a special SAS code subset called SAS Control Language (SCL). This portion of End Use Forecaster is stored (compiled) within the model and does not require user modification.

If any of the required SAS products are missing from the site license, the software can be added for little additional cost. For organizations that do not yet have SAS, The Cadmus Group (Quantec) will be happy to work with the SAS Institute to ensure that you obtain a solution that will allow End Use Forecaster to run smoothly and cost effectively.

Installation of End Use Forecaster is site-specific because it is dependent on the location of SAS on your PCs. However, there is minimal customization. For each user we only need to modify two files in the End Use Forecaster\Config directory: autoexec.sas and EUForecaster.cfg. These files 'point' End Use Forecaster to your SAS installation and take advantage of the hard drive on your computer with the most disk space. These customized files are developed during installation, consistent with the installation of SAS on individual workstations.

Conventions

The majority of the nomenclature in this documentation comes directly from the SAS application in which End Use Forecaster was developed. The various components of SAS and the conventions used in referring to them throughout the documentation are:

- ***SAS libraries***, the logical names that refer to the physical locations where SAS datasets are stored, are referred to using all uppercase letters (CONFIG, MODELCODE, etc.).
- ***SAS code***, which contain the routines for End Use Forecaster's modules, are referred to in normal text using the 'camelBack' syntax with the .sas suffix appended, such as choiceBatch.sas.
- ***SAS datasets*** are referred to using bold-face type using the 'camelBack' syntax, such as **equipmentAge_10**.
- ***SAS variables*** are referred to in italic type using the 'camelBack' syntax, such as *usageEquationStatus*.

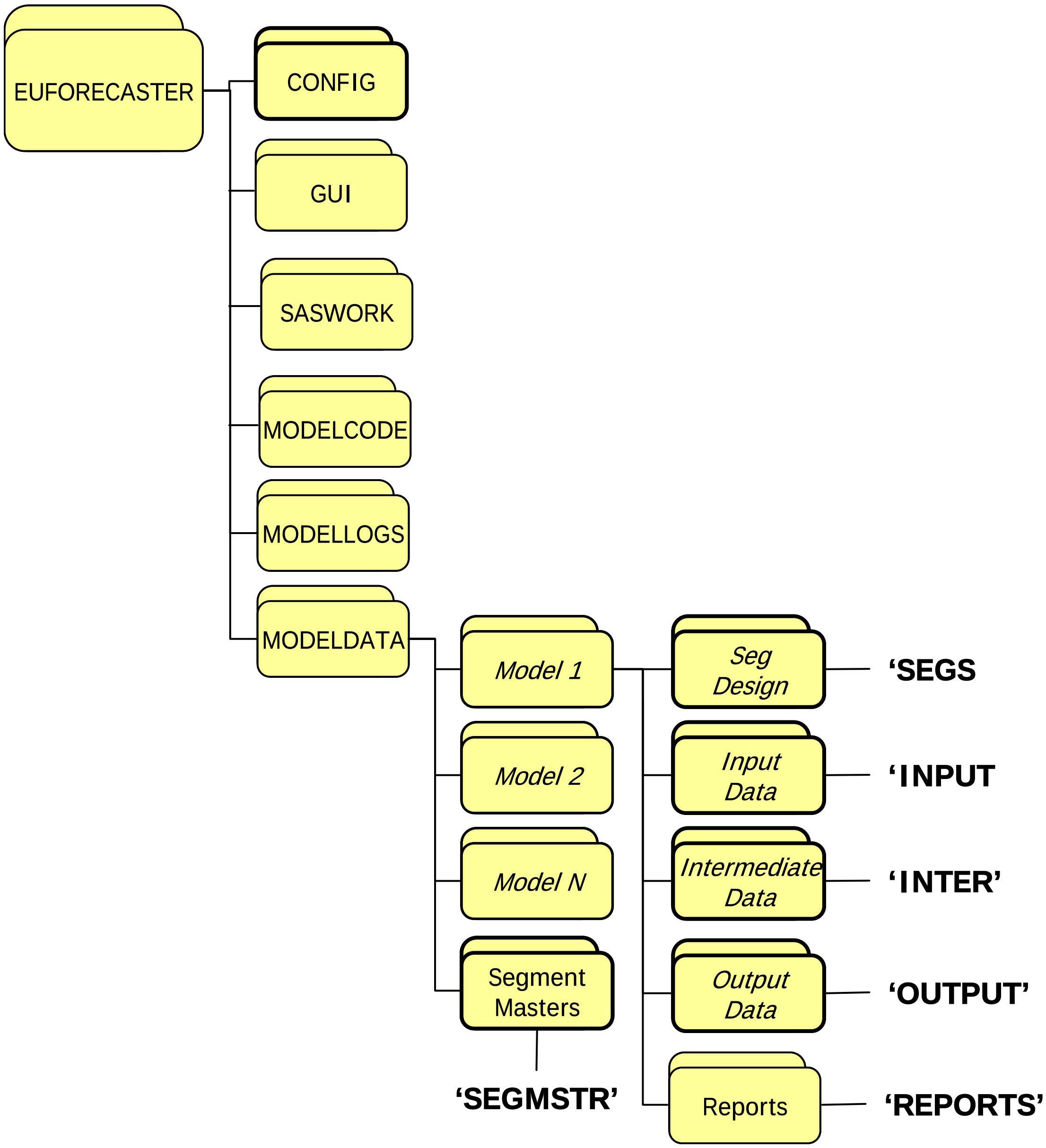
End Use Forecaster's modules run user-specified scenarios. To differentiate among these scenarios, scenario-specific datasets have a numeric suffix, such as **priceForecast_10**. In general cases, where the documentation does not refer to a specific scenario, datasets are referred to with an **"_xx**" suffix, such as **saturations_xx**.

Model Organization

The logic and theory underlying End Use Forecaster are separated from the data, which vary by individual segmentation design (model). This differentiation drives the structural organization of the model as well, and these two components are stored in different physical locations. The initial organization takes place in the underlying Windows folder structure, which serves as the basis for the SAS libraries that hold both the datasets and catalogs that dictate the model logic and data structure, as well as those datasets specific to individual segmentation designs.

As shown in Figure 5, the folder hierarchy begins with the folder 'EUFORECASTER.' With the exception of the SAS application itself, the entire model – all code, interfaces, and datasets – resides within this folder. Folders with bold outlines represent the physical locations of SAS libraries, the names of which are designated in single quotes. The folders with names in italics – note that they are all within the data folder – represent those libraries that will vary by individual model. The 'MODELDATA' folder will contain individual folders for every model created by a user. Each of these individual model folders will also contain the same set of subfolders as those shown within 'Model 1.' Because these folder serve as SAS libraries, the group of folders that will serve as 'Segs,' 'Input,' etc., will depend on which model the operator happens to be working with in a given session. The data for individual models will not be available at the same time.

Figure 5. End Use Forecaster Folder Structure



This organization can have implications for the user. For example, if a user has a data source that applies to more than one model, the 'MODELCODE' library can serve as a good place to store the raw data to avoid keeping copies in each of the model-specific libraries. Detailed descriptions of these folders and their contents are provided in Table 2.

Table 2. End Use Forecaster Folders

Folder	Full Path	SAS Library	Description
EUFORECASTER	EUFORECASTER	N/A	Root application folder.
GUI	EUFORECASTER\ GUI	App	Folder containing all the underlying application catalogs and GUIs.
MODELLOGS	EUFORECASTER\ MODELLOGS	N/A	Directory where logs of model operations are stored.
MODELCODE	EUFORECASTER\ MODELCODE	N/A	Contains all the SAS code underlying the different End Use Forecaster modules.
CONFIG	EUFORECASTER\ CONFIG	N/A	Contains SAS configuration files in which site-specific modifications are established.
MODELDATA	EUFORECASTER\ MODELDATA	N/A	Contains data for all of the user-created segmentation designs.
"Model_Name"	EUFORECASTER\ MODELDATA \ "Model_Name"	N/A	A folder with all data for a model based on a user-defined name.
SegDesign	EUFORECASTER\ MODELDATA \ "Model_Name" \ segDesign	SEGS	For each model, contains the SAS datasets that establish the specific segmentation design.
InputData	EUFORECASTER \MODELDATA\ "Model_Name"\ inputData	INPUT	For each model, contains all of the user-populated datasets that are necessary to run the different modules.
IntermediateData	EUFORECASTER\ MODELDATA \ "Model_Name"\ intermediateData	INTER	For each model, contains all of the intermediate, model-generated outputs from the usage and choice modules that are necessary to run other modules.
OutputData	EUFORECASTER\ MODELDATA \ "Model_Name"\ outputData	OUTPUT	For each model, contains the various final output sets generated by the forecast module.
Reports	EUFORECASTER\ MODELDATA \ "Model_Name"\ Reports	N/A	Contains the reports and excel files created by End Use Forecaster's Reporting Engine.
SegmentMasters	EUFORECASTER\ MODELDATA \ segmentMasters	SEGMSTR	Contains datasets with all of the necessary variables and structure for every model dataset. A SAS program combines these datasets with a specific segmentation design to generate all the datasets (unpopulated) necessary for a given model.

III. Market Segmentation and Data Entry Modules

End Use Forecaster's Market Segmentation module governs two distinct tasks: 1) the development of customized market segmentation designs; and 2) the population of the model with the necessary data. While the first consists of formal, specific steps, the nature of the second depends on a number of factors, including the complexity of the segmentation design, the format of the various data sources, as even as the technical skills of the operator. This chapter provides extensive detail on the first followed by a brief discussion of issues surrounding the second.

Development of Market Segmentation Design

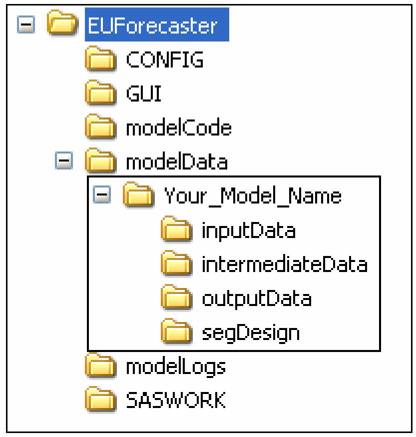
The execution of the first task – creation of a customized market segmentation design – is based on four steps, listed briefly below and then described in greater detail.

1) ***Creation of Model Data Folders*** – Creation of a specific directory structure for each model is necessary to perform subsequent steps.
2) ***Population of the Excel workbook*** **Seg_Design_Template.xls** – A step to define the various segments and their relationship with one another.
3) ***Creation of the Segs Library Datasets*** – This takes the Excel workbook and populates the "segs" library with the necessary segmentation design data sets.
4) ***Expansion of the Segmentation Design*** – This takes the segmentation design data sets in the "segs" library and merges them with the data set templates in the "segmstr" library, expanding them to create all the necessary – but still unpopulated! – data sets to run the basecase ("10") scenario in End Use Forecaster.

Creation of Model Data Folders

A prerequisite to setting up a new model is the creation of the necessary folders to contain the model-specific segmentation design and data. This means that within the c:\EUForecaster\modelData directory, you must have a folder with your model's name and within that folder you must have four folders called "inputData," "intermediateData," "outputData," and "segDesign," as shown in the interior boxed portion of Figure 6 below.

Figure 6. Data Folder Structure



There are multiple ways to create these folders. First, the user can manually create them in Windows Explorer. Alternately, one can copy the folder for an existing model and rename the root data folder to the preferred name, in which case subsequent steps will overwrite the existing datasets for the from model that was copied. Finally, the interface has an option in the Markets Module called “Create Directories for New Model.” Selection of this option will prompt the user to enter the name for the new model and End Use Forecaster will create the desired folders.

Population of Seg_Design_Template.xls

The file ***Seg_Design_Template.xls***, a read-only file located in the root directory for End Use Forecaster (generally C:\EUForecaster) is the starting point for creating a custom segmentation design. It is here where you define the levels for the five primary dimensions that must exist in every segmentation design. While the experienced user will be very familiar with these dimensions, they deserve detailed discussion here. Starting at the top of the hierarchy, Dimensions 1 through 3 identify unique market segments. Dimensions 4 and 5 refer to the available product/service suppliers competing in the marketplace and product/service options, respectively. Although the actual use of these dimensions can vary, in and energy model the general use is as follows:

- Dimension 1: geographic region or sector
- Dimension 2: customer segment (home type, business type, or SIC)
- Dimension 3: end use
- Dimension 4: fuel type
- Dimension 5: efficiency level

In all designs, the first three dimensions define the basic market segmentation structure.

Dimension 1 always refers to geography, customer size, customer behavior, customer class, and/or any other features that separate groups of customers. Note that all of the aforementioned factors can be used within Dimension 1 (e.g., north-residential, north-commercial, south-residential, south-commercial, etc.).

Dimension 2 is reserved for factors that affect a particular group of customers in a similar manner, such as an exogenous rate of economic growth, building lives, or contract lives. In an end-use model, for example, this dimension might include various types of residential (single family, duplexes, multifamily, etc.) and commercial (office buildings, restaurants, hospitals, etc.) customers.

Dimension 3 refers to the products and services being marketed to each customer type, such as heating, cooling, or water heating. In a telecom model, this dimension would refer to basic service, Internet service, custom calling features, etc. As with the second dimension, each third dimension level has an associated physical or contract life. In an end-use energy model, each equipment type has a life span.

Dimensions 4 and 5 describe the product/competitive options within the major market categories that are defined by Dimensions 1 – 3. In an end-use model, fuel types are typically represented as Dimension 4 and various efficiency levels are represented by Dimension 5. In a competitive energy market, the fifth dimension could be used to represent various levels of retail services such as power quality or equipment maintenance offered by a provider.

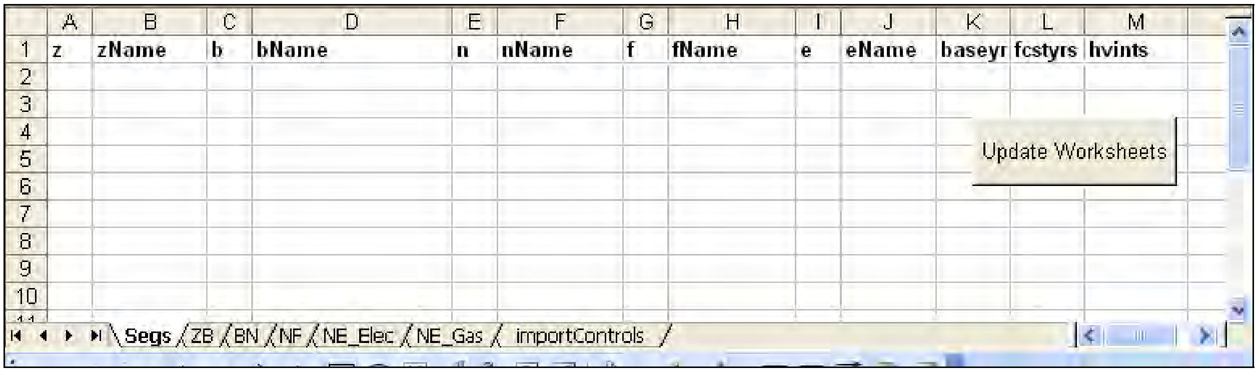
Table 3 summarizes the intended use of each of these dimensions. Note that while the model must include all five dimension, you are not required to use all of them. For example, suppose you want a design with alternative providers at Dimension 4 and do not wish to complicate the model with product/service options. In this case, you would assign only one alternative to Dimension 5, which effectively eliminates this dimension from the analysis. You could assign the same name to the single Dimension 5 alternative as that of the Dimension 4 to signify that in the design, this dimension has essentially been eliminated.

Table 3. End Use Forecaster Dimension Use Summary

Dimension	End Use Forecaster Dimension Name	End Use Forecaster Descriptive Name	End Use Forecaster Function	Special Features	No. Segment Levels in End Use Forecaster
One	z	zName	Factors that separate groups of customers		999
Two	b	bName	Additional factors that separate groups of customers	Building or contract life can be used to allow existing customers to decay over time	999
Three	n	nName	Equipment, products, services potentially purchased by Dimensions 1 – 2	Equipment or contract life can be used to allow existing equipment to decay over time	999
Four	f	fName	Providers of Dimension 3	Provider Choice module forecasts market shares	4
Five	e	eName	Service Options within Dimension 4	Provider Choice module forecasts product option shares	4

Open ***Seg_Design_Template.xls***. Excel will prompt you to either enable or disable macros and ***you will want to enable the macros***. Of the workbooks seven tabs, the first of interest is called “Segs,” which is used for the definition of the different dimensions (z, b, n, f, and e) as well as the base year and years in the forecast horizon. That sheet should look like the image below, with no values for any of the dimensions:

Figure 7. Empty “Segs” Tab in Seg_Design_Template.xls



On this tab, first establish the base year of the forecast, the number of forecast years, and the number of historical vintages in columns K, L, and M below the headers baseyr, fcstyrs, and hvints, respectively. Next, the recommended first step is to fill in the columns for zName, bName, nName, fName, and eName with whatever zones, segments, end uses, fuels, and efficiency levels (or however you want to define the dimensions) that you want to include in the segmentation design. Once you have filled in the desired descriptive names, they then need to have their corresponding model values. ***These format for these is critical***. For z, b, and n the format is three-character numeric values. That is, they are a numeric values from 1 to 999 with leading zeros for all values below 100. In Excel, it is necessary to type an apostrophe (“ ’ ”) prior to entering the value or else Excel will convert the cell to a numeric value and you will lose the leading zeros. For f and e, these are one-character numeric values. That is, they will have value of 1, 2, 3, or 4, but they must be in a character format. Again, a leading apostrophe will tell Excel to make these character. Figure 8 shows a fully populated “Segs” tab.

A Note on Naming Conventions – It is best to restrict the names of the different levels in each dimension used in the segmentation design to valid SAS variable names. According to SAS documentation, these names “can be up to 32 characters long. The first character must be a letter (A, B, C, . . . , Z) or underscore (_). Other characters can be letters, numbers (0, 1, . . . , 9), or underscores. Blanks cannot appear in SAS names, and special characters (for example, $, @, #), except underscores, are not allowed.” While it is not an explicit requirement, using these names will greatly facilitate the process of model population because it will allow for the import and manipulation of data using names that need no modification to be applied directly to the model.

Figure 8. Example of Populated "Segs" Tab in Seg_Design_Template.xls

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	z	zName	b	bName	n	nName	f	fName	e	eName	baseyr	fcstyrs	hvints
2	001	Residential	001	Single_Family	001	Space_Heat	1	Natural_Gas	1	Stock	2003	22	3
3			002	MF2_2_TO_4_Un	002	Water_Heat	2	Electric	2	Standard			
4			003	MF3_GE_5_Units	003	Cooking			3	High			
5			004	MM_Master_Mete	004	Drying			4	Premium			
6			005	SM_Sub_Meter	005	Pool							
7					006	Spa							
8					007	Fireplace							
9					008	Barbecue							
10					009	Other							
11													
12													

Update Worksheets

Segs / ZB / BN / NF / NE_Elec / NE_Gas / importControls

Once you have completed the "Segs" tab, selecting the Update Worksheets button will then populate the tabs "ZB," "BN," "NF," "NE_Elec," and "NE_Gas" with the desired segments in the correct format for the user to then fill out. For example, Figure 9 shows the "BN" tab as it will appear after activation of the Update Worksheets button.

Figure 9. Example of Unpopulated "BN" Tab in Seg_Design_Template.xls

Seg_Design_Template.xls [Read-Only]

	A	B	C	D	E	F
1	nName	Single_Family	MF2_2_TO_4_Units	MF3_GE_5_Units	MM_Master_Meter	SM_Sub_Meter
2	Space_Heat					
3	Water_Heat					
4	Cooking					
5	Drying					
6	Pool					
7	Spa					
8	Fireplace					
9	Barbecue					
10	Other					
11						

Segs / ZB / BN / NF / NE_Elec / NE_Gas / importControls

Again, the segmentation is hierarchical. The purpose of the newly-populated tabs ("ZB," "BN," "NF," "NE_Elec," and "NE_Gas") is to allow the specification of which dimensions belong together – starting at the top of the hierarchy and moving down – in the segmentation design. For example, with the ZB tab, the purpose might be to define which building belong in each geographic area. The key here is that the design need not be symmetrical. You might have Z represent two geographic areas, one extremely urban that would not have manufactured housing and rural that would need this home type.

The population of these tabs is based on filling the relevant cells with "TRUE" or "FALSE," with the former indicating where the dimensional relationship should exist in the segmentation design. The relationships defined in these tabs is as follows:

- **ZB –** Define which levels of the second (b) dimension belong in each level of the first (z) dimension.
- **BN –** Define which levels of the third (n) dimension belong in each level of the second (b) dimension.
- **NF –** Define which levels of the fourth (f) dimension belong in each level of the third (n) dimension.
- **NE_Elec –** Define which levels of the fifth (e) dimension belong in each level of the third (n) dimension for the electric fuel type.
- **NE_Gas –** Define which levels of the fifth (e) dimension belong in each level of the third (n) dimension for the gas fuel type.

Figure 10 presents a fully-populated "NE_Elec" tab. Note the pattern of "TRUE" and "FALSE" indicating which of the efficiency levels apply to the different end uses.

Figure 10. Example of Populated "NE_Elec" Tab in Seg_Design_Template.xls

	A	B	C	D	E
1	nName	Stock	Standard	High	Premium
2	Space_Heat	TRUE	FALSE	FALSE	FALSE
3	Water_Heat	TRUE	TRUE	TRUE	TRUE
4	Cooking	TRUE	TRUE	FALSE	FALSE
5	Drying	TRUE	TRUE	FALSE	FALSE
6	Pool	TRUE	FALSE	FALSE	FALSE
7	Spa	TRUE	FALSE	FALSE	FALSE
8	Fireplace	TRUE	FALSE	FALSE	FALSE
9	Barbecue	TRUE	FALSE	FALSE	FALSE
10	Other	TRUE	FALSE	FALSE	FALSE
11					

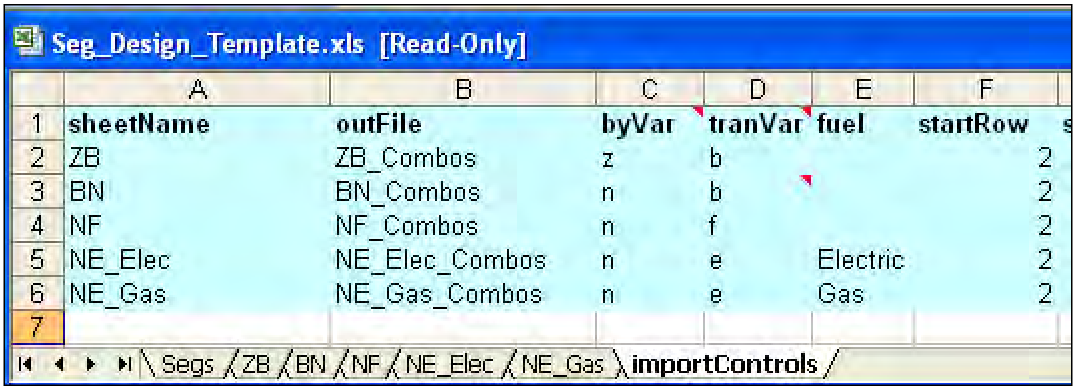
Segs / ZB / BN / NF / NE_Elec / NE_Gas / imp

Note that in filling in all of these sheets, make every effort to keep the data "clean." That is, there can be no data in adjoining rows or columns that is extraneous to the segmentation design. If there has been any work done in cells, it might be best to delete all the rows to the right of the last relevant column and all the rows below the last relevant row.

Finally, the last tab - importControls – tells SAS in the next step how to bring in the data contained on various tabs in the segmentation design workbook. Other than two cells, this entire workbook will populated itself dynamically based on the other tabs. Those two cells are E5 and

E6 – shown in Figure 11 with the values “Electric” and “Gas,” respectively – and the values the contain must be identical to whatever you have specified on the original “Segs” tab. That is, if you’ve called your fuels “Electricity” and “Natural Gas,” the values in those cells must be identical.

Figure 11. A portion of the importControls Tab in Seg_Design_Template.xls



Seg_Design_Template.xls [Read-Only]

	A	B	C	D	E	F
1	sheetName	outFile	byVar	tranVar	fuel	startRow
2	ZB	ZB_Combos	z	b		2
3	BN	BN_Combos	n	b		2
4	NF	NF_Combos	n	f		2
5	NE_Elec	NE_Elec_Combos	n	e	Electric	2
6	NE_Gas	NE_Gas_Combos	n	e	Gas	2
7						

Segs / ZB / BN / NF / NE_Elec / NE_Gas / importControls

Once you are done populating Seg_Design_Template.xls, you will have to save the workbook with a very specific name in the data folder for the model under creation (C:\EUForecaster\modelData*yourModelname*). That name must be whatever your model name is with “_Segments” appended at the end. For example, if you’ve created the a model for small commercial customers for a utililty’s end-use model, you might call the model “Small_Com.” Accordingly, you’d save the workbook as “Small_Com_Segments.xls.” Again, the file is read-only, so it will prompt you to save it under another name should you try to save it normally.

Creation of the Segs Library Datasets

After completing the Seg_Design_Template.xls and workbook and saving it under another name, the next step is convert this information into the various Segs library datasets. To do this, under the Market Module on the main dashboard, select the “Create ‘Segs’ Datasets from Excel” option. The interface will prompt you to say ‘OK’ or to cancel. If you are confident in your segmentation design, select ‘OK.” To check that this code has run correctly, you should see the all of the segmentation design datasets in the “Segs” library, as shown in Figure 12, and they should all have a modified date reflecting the time when the code was submitted.

Figure 12. Contents of Segs Library

Contents of 'Segs'

Name	Size	Type	D.	Modified
B_dim	5.0KB (2 Cols X 14 Rows...	Table		10Jan06:10:19:30
E_dim	5.0KB (2 Cols X 4 Rows) ...	Table		10Jan06:10:19:32
F_dim	5.0KB (2 Cols X 2 Rows) ...	Table		10Jan06:10:19:32
Initparm	5.0KB (2 Cols X 1 Rows) ...	Table		10Jan06:10:19:28
N_dim	5.0KB (2 Cols X 11 Rows...	Table		10Jan06:10:19:31
Z	5.0KB (3 Cols X 1 Rows) ...	Table		10Jan06:10:19:40
Zb	5.0KB (6 Cols X 14 Rows...	Table		13Jan06:10:43:41
Zbn	9.0KB (8 Cols X 87 Rows...	Table		13Jan06:10:43:41
Zbnf	17.0KB (10 Cols X 160 R...	Table		11Jan06:16:49:08
Zbnfe	33.0KB (11 Cols X 376 R...	Table		10Jan06:10:19:39
Z_dim	5.0KB (2 Cols X 1 Rows) ...	Table		10Jan06:10:19:29

Expansion on the Segmentation Design

Once the Segs library is populated with the desired segmentation design, the next step is to expand the Segs library datasets to create all of datasets necessary to run the model. Select “Expand ‘Segs’ Datasets” under the Markets Module on the main dashboard and say ‘OK.” Once this code has run, you should be able to look in the “Input” library and see datasets it has created, as shown in Figure 13.

Figure 13. Contents of the Input Library

Contents of 'Input'

Name	Size	Type	Modified
Accountdecay_10	17.0KB (10 Cols X 115 R...	Table	08Feb06:13:44:38
Calibrationzb_10	9.0KB (7 Cols X 105 Row...	Table	08Feb06:13:44:40
Calibrationz_10	5.0KB (5 Cols X 21 Rows...	Table	08Feb06:13:44:40
Choicebatchcontrol	9.0KB (10 Cols X 1 Rows...	Table	08Feb06:13:44:39
Choicedrivers_10	301.0KB (15 Cols X 2646...	Table	08Feb06:13:44:38
Choiceparameters_10	65.0KB (21 Cols X 282 R...	Table	08Feb06:13:44:38
Customercountsactual_10	9.0KB (9 Cols X 15 Rows...	Table	08Feb06:13:44:39
Customercountsforecast_10	17.0KB (9 Cols X 100 Ro...	Table	08Feb06:13:44:39
Dsmechoice_10	49.0KB (17 Cols X 183 R...	Table	08Feb06:13:44:38
Dsmfchoice_10	33.0KB (14 Cols X 99 Ro...	Table	08Feb06:13:44:38
Dsmretrofit_10	33.0KB (20 Cols X 122 R...	Table	08Feb06:13:44:38
Echoicestatus_10	9.0KB (10 Cols X 61 Row...	Table	08Feb06:13:44:39
Equipmentage_10	17.0KB (9 Cols X 99 Row...	Table	08Feb06:13:44:39
Equipmentdecay_10	25.0KB (14 Cols X 122 R...	Table	08Feb06:13:44:38
Esharesinitial_10	25.0KB (15 Cols X 126 R...	Table	08Feb06:13:44:39
Fchoicestatus_10	9.0KB (8 Cols X 33 Rows...	Table	08Feb06:13:44:39
Forecastbatchcontrol	9.0KB (11 Cols X 1 Rows...	Table	08Feb06:13:44:39
Fsharesinitial_10	9.0KB (12 Cols X 61 Row...	Table	08Feb06:13:44:39
Intro	5.0KB (2 Cols X 1 Rows) ...	Table	08Feb06:13:44:39
Priceforecast_10	105.0KB (10 Cols X 1281...	Table	08Feb06:13:44:38
Saturations_10	641.0KB (9 Cols X 9009 ...	Table	08Feb06:13:44:38
Usagebatchcontrol	5.0KB (4 Cols X 1 Rows) ...	Table	08Feb06:13:44:39
Usagedrivers_10	7.9MB (33 Cols X 31752 ...	Table	08Feb06:13:44:39
Usageparameters_10	769.0KB (34 Cols X 2898...	Table	08Feb06:13:44:39

Note that this step will often be used more than once, as it also serves as a means of “refreshing” the model. Throughout the process of populating the model, any number of operator error-based issues can corrupt the structure of these input data sets, which will lead to questionable results during operation of the model. For example, necessary rows might be lost during an incorrect merge or a typo will lead to an incorrect variable name. When this happens, the easiest to way to recover is to perform this step, which will re-create all the datasets in the required structure.

Model Population

Once the starting datasets in the Input library have been created, you must enter data into the SAS datasets that were automatically created by building the segment master. Table 4 shows all the datasets that are created in the INPUT library and the module with which they are associated. The table also provides a brief outline of the information to be entered in each dataset with more detailed information provided in subsequent chapters.

Table 4. Starting Datasets in INPUT Library

Module	Dataset	Contents
Usage	usageBatchControl	See Batch Control Usage below
Usage	usageDrivers_10	Equipment usage equation forecast drivers
Usage	usageParameters_10	Coefficients describing how usage varies by weather, customer characteristics, prices, and other variables
Choice	choiceBatchControl	See Batch Control Usage below
Choice	choiceDrivers_10	Choice forecast drivers, including capital costs for equipment in existing, conversion, and new construction buildings, plus future availability of each equipment type
Choice	choiceParameters_10	Provider Choice function initialization parameters for Dimension 4 and 5 purchase choices
Choice	eChoiceStatus_10	A status variable that tells the Choice Module how to model shares for Dimension 5. Set this variable to “1” to hold the initial market shares constant over the forecast horizon.
Choice	eSharesInitial_10	Average and marginal market shares for existing, conversion, and new customers for Dimension 5
Choice	fChoiceStatus_10	A status variable that tells the Choice Module how to model shares for Dimension 4. Set this variable to “1” to hold the initial market shares constant over the forecast horizon.
Choice	fSharesInitial_10	Average and marginal market shares for existing, conversion, and new customers for Dimension 4
Choice	priceForecast_10	Fuel, product, or service price forecasts in native units (e.g., therms, kWh, gallons, cubic meters)
Forecast	ForecastBatchControl	See Batch Control Usage below
Forecast	accountDecay_10	Decay functional form indicator and parameters for existing, conversion, and new accounts
Forecast	customerCountsActual_10	Number of existing accounts, non-accounts on main, and non-accounts off main
Forecast	customerCountsForecast_10	Forecast of new construction (economic activity driving demand), capture rates, units per account, and number of units (i.e., units are a scale of measurement consistent with results of the usage forecast, such as buildings, square footage, apartments, etc.)
Forecast	equipmentAge_10	Mean age of end uses by historical vintage in the baseline (i.e., 0th) year of the forecast, used to initialize the age dimension in the turnover/vintage module
Forecast	equipmentDecay_10	Decay functional form indicator and parameters for equipment (end-uses) in existing, conversion, and new buildings
Forecast	saturations_10	Saturation (percentage of accounts that have the equipment) independent of fourth dimension market shares
N/A	calibrationZ_10	Total actual sales in base year for Dimension 1
N/A	calibrationZB_10	Total actual sales in base year for Dimension 2
Intervention Strategies	dsmEChoice_10	Exogenous parameters that change Dimension 5 market shares for existing, conversion, and/or new customers through ‘what if’ intervention strategies
Intervention Strategies	dsmFChoice_10	Exogenous parameters that change Dimension 4 market shares for existing, conversion, and/or new customers through ‘what if’’ intervention strategies
Intervention Strategies	dsmRetrofit_10	Exogenous parameters that adjust product usage through ‘what if’ convention strategies

The method for populating these datasets, however, depends on the interaction of several factors. If the operators SAS skills are limited and the overall segmentation design is simple enough that that datasets do not exceed Excel's row limits, the data can be exported, populated manually, and then re-imported. If the data that will go into the model already exist in an electronic format and the operator has SAS skills that cover basic merges and data manipulation, the datasets can be populated via SAS code. Another option is to create data entry templates that conform to the format of the various data sources that will then be imported into SAS, manipulated to take on the correct format for the model, and then used to populate the datasets via SAS code. The final and best solution will often be a combination of multiple methods.

Batch Control Usage

The INPUT library includes three "batch processing" datasets that describe how various datasets (input scenarios, or the "**_xx**" suffix) are jointly processed within End Use Forecaster forecast output scenarios. These datasets are:

- **usageBatchControl**: selects input scenarios for each set of input files for forecasting equipment purchase choices
- **choiceBatchControl**: "packages" sets of expected market shares as a result of customer service programs with those segments that are unaffected by these activities into one cohesive group
- **forecastBatchControl**: combines chosen product usage equations, usage drivers, and historical vintage adjustment scenarios

End Use Forecaster automatically creates the base case scenario, denoted by "_10," for each of these datasets. Additional scenarios can be designated in each batch dataset by:

- Adding a new row worksheet in each dataset through SAS/FSP and changing the relevant scenario indicators
- Writing SAS code to create the datasets with the desired scenario inputs
- Managing the batch controls in an Excel workbook and importing them via SAS

Batch processing datasets allow the user to specify all the input datasets for a given scenario. The strength of this approach is that it allows the analyst to mix and match datasets from different scenarios, which avoids having to keep identical datasets for different scenarios. Figure 14 presents a hypothetical **choiceBatchControl** dataset. In the example, the user has set up three different scenarios (10, 20, and 30), which pull mostly the same datasets, with a couple of exceptions. First, Scenario 20 pulls an alternate price forecast, ostensibly one with high gas prices. Second, Scenario 30 utilizes the price forecast produced for Scenario 20 and also pulls in an alternate usage forecast.

Figure 14. Example choiceBatchControl Dataset

scenario	choiceDrivers	priceForecast	choiceParameters	usageAnnual	eSharesInitial	fSharesInitial	eChoiceStatus	fChoiceStatus	scenarioName
10	10	10	10	10	10	10	10	10	Base Case
20	10	20	10	10	10	10	10	10	High Gas Price Forecast
30	10	20	10	30	10	10	10	10	Low Usage

Scenario 20 pulls a different price scenario.

Scenario 30 pulls different usage and price forecasts, but utilizes the same dataset used for Scenario20.

IV. Product Usage Module

End Use Forecaster tracks consumption of resources (natural gas, electricity, etc.) through the Product Usage module. The module provides a forecast of the predicted consumption by combining (1) a monthly forecast of consumption factors or drivers (i.e., independent or exogenous variables), stored in the SAS dataset **usageDrivers_xx**, and (2) a set of coefficients associated with each exogenous variable, stored in **usageParameters_xx**.

The Product Usage module merges the **usageParameters_xx** dataset with the usage forecast drivers (**usageDrivers_xx**) and sums the results over all variables in order to obtain usage forecasts at the unit level (e.g., per customer, per square foot). The results then become inputs into the Provider Choice and Forecast modules.

If the *usageEquationStatus* variable in **usageParameters_xx** equals 1, usage is a linear combination of the coefficients and forecast drivers:

(1) $$usageMonthly\_xx_m = \Sigma_c\ usageParameters\_xx_c * usageDrivers\_xx_{cm}$$

where:

- **usageParameters_xx** $_c$ = usage coefficients c, where the default has 21 slots (B0 through B20)
- **usageDrivers_xx** $_{cm}$ is the monthly forecast (m) of each forecast driver (independent variable) associated with coefficient c (X0 through X20)

If *usageEquationStatus* is set equal to 2, then the Product Usage Module assigns a log-log function:

(2) $$usageMonthly\_xx_m = exp(\Sigma_c\ usageParameters\_xx_c * log(usageDrivers\_xx_{cm}))$$

The default structure is a linear model with *usageEquationStatus* equal to 1.[2]

The final step in this module is to aggregate usage to an annual figure (usageAnnual_xx). Both monthly and annual forecasts for a given scenario are stored in the INTER library.

The **usageBatchControl** dataset in the INPUT library has the following variables that define the input datasets associated with each output scenario:

- *scenario*: The Product Usage module output scenario
- *usageParameters*: The input scenario associated with the product usage equations (**usageParameters_xx**)

---

[2] As discussed further below under Calibration, End Use Forecaster's automatic sales calibration routine is designed to work with the linear model where *usageEquationStatus* is set equal to 1. Calibration routines for more complex usage equation structures defined by the log-log or other status indicators (3, 4, etc.) can be developed by The Cadmus Group (Quantec) on request.

- *usageDrivers*: The input scenario associated with the product usage drivers (**usageDrivers_xx**)

Figure 15 shows the program flow, including input and output datasets. Table 5 describes the data sets and their key attributes in more detail.

Figure 15. Product Usage Module Program Flow for "usageBatch.sas"

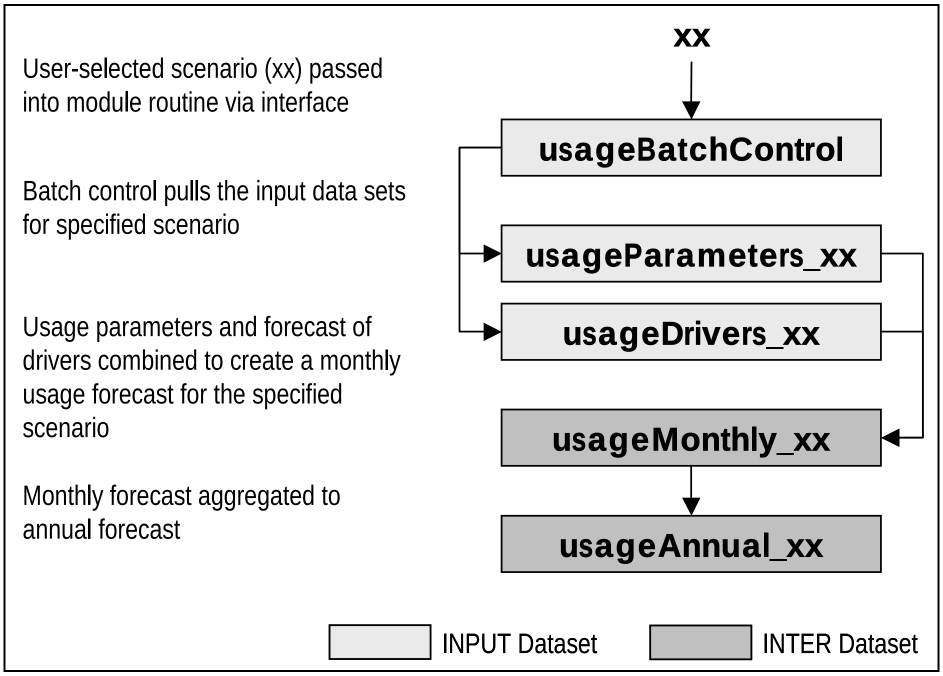


Table 5. Product Usage Module Data Library

Library	Dataset	Description	File/Record Dimensions	Variables/Attributes
INPUT	usageBatchControls	Usage forecast input scenarios	1 record per Output scenario	Usage equation input scenario, forecast driver input scenario, vintage adjustment input scenario, output scenario
INPUT	UsageParameters_xx	Usage forecast equation parameters	Dimensions 1, 2, 3, 4, 5, and vintage	Usage equation parameters B0 through B0 for input scenario Sxx
INPUT	usageDrivers_xx	Usage forecast drivers	Dimensions 1, 2, 3, 4, and 5, year, month	Usage forecast drivers X0 through X0 for input scenario Sxx

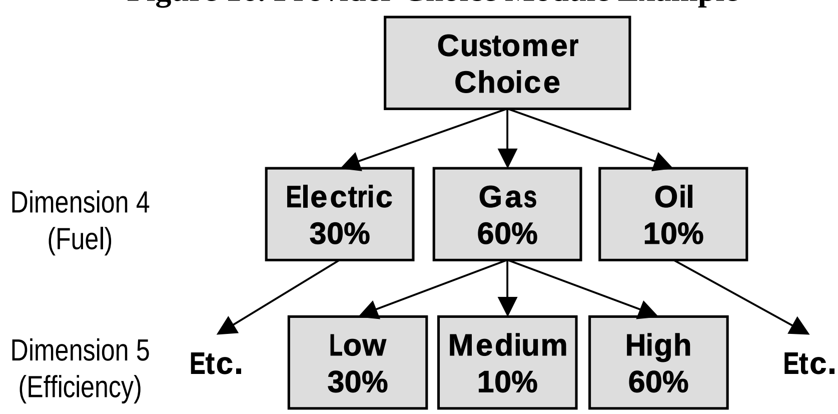
V. Provider Choice Module

The Provider Choice module analyzes customer choice decisions among competitors and product options. For example, customers choose their end-use equipment from various fuel types and efficiency levels. Purchase decisions are represented by a nested structure of provider (fuel) and product (efficiency) option choices.

The nested structure of the Provider Choice module is illustrated in Figure 16 below. This figure represents fourth and fifth dimension choices. The customer in this example faces a choice of gas vs. electricity vs. oil at the fourth dimension, and low vs. medium vs. high efficiency at the fifth dimension. Analysts often think of this problem as “efficiency choice conditional on fuel choice,” hence the downward arrows in the figure. But customer choice theory and the Provider Choice Module actually work in the opposite direction, with the fourth dimension conditional upon fifth dimension choices. In reality, the customer makes a simultaneous choice across these dimensions, and the model structure shown in Figure 16 is just a convenient way of modeling this behavior.

The Provider Choice module first estimates the fifth dimension (efficiency) parameters and forecasts its market shares. The model then calculates the weighted average operating and capital costs for each fourth dimension (fuel) alternative, estimates the choice equation coefficients, and then produces a forecast for the fourth dimension.

Figure 16. Provider Choice Module Example



Note that the structure of the tree need not be symmetric. For example, single fuel energy companies and water utilities may want to focus on multiple efficiency levels for customers using their products. A single efficiency level can be specified for the remaining fuels.

The application of choice coefficients and forecast drivers form a discrete choice-type model that is applied to individual customer data. These models are analogous to regression models for equipment usage. The estimated discrete choice model parameters describe how equipment costs, operating costs, equipment characteristics, and customer characteristics affect equipment choices. For each choice level there are capital and operating cost parameters (called betas) and alternative-specific intercepts (called alphas).

The alphas and betas are developed through one or more of the available Provider Choice algorithms in End Use Forecaster:

1. Using individual customer level survey and equipment usage data, discrete choice models consistent with the segmentation design are estimated. Note that like usage equation modeling, this estimation is conducted outside of End Use Forecaster, but may be conducted using the same SAS procedures as those used by End Use Forecaster.
2. If individual customer data are not available for discrete choice modeling, End Use Forecaster can use aggregate market data to simulate a simple choice model from equipment capital costs and operating costs.
3. If individual customer data are not available for discrete choice modeling, End Use Forecaster can calculated use apply approximate, solutions calculated using Mathematica. [Note: this feature is not currently available, but will be added by May 2006]

These alternatives are summarized in Table 6.

Table 6. Provider Choice Equation Status Variable Definitions

Status Variable	Description	Beta Parameters	Alpha (Intercept) Parameters	Potential Applicability to Choice Model
1	Exogenous Market Shares Specified	N/A	N/A	Yes
2	Logit: estimated	Estimated Outside End Use Forecaster	Estimated Outside End Use Forecaster	Yes
3	Logit: estimated	Estimated	Starting values: to be calibrated	Yes
4	Logit: simulated	Starting values: to be estimated & calibrated	Starting values: to be estimated & calibrated	Yes
5	Logit: calculated	Calculated	Calculated	Yes

Model Parameterization

Estimation Mode (Status 2 and 3)

Customer choice parameters can be estimated when sufficient micro-level customer choice data are available to estimate regression coefficients for actual consumer decisions. The Cadmux Group (Quantec) customizes and estimates choice equations for companies who request this approach or uses choice model parameters from previous research conduct by the company.

The choice equation status variables are set equal to 2 or 3 if this approach is used. If status equals 2, all parameters have been estimated outside the model, and no further calibration is necessary. If status equals 3, a logit functional form has been used to estimate operating and capital cost parameters and the model is being calibrated to base year market shares by adjusting the intercept terms.

Simulation Mode (Status 4)

The simulation of consumer choice is useful when customer-level data are not available. Most users of End Use Forecaster find themselves in this position before they can conduct primary market research. In simulation mode, this module estimates parameters of the choice function based on available data for:

- Operating and capital costs
- Marginal (most recent) equipment market shares
- Customer discount rates
- An estimate of the proportion of customer preferences or “utility” that is related to non-price factors

Provider Choice module coefficients are developed by solving a system of equations within the SAS Model procedure.

Exogenous Mode (Status 1)

If neither micro-level customer choice data nor aggregate data are available, or if poor data quality prevents choice equations from being estimated (simulated), the status variable can be set equal to 1 in order to bypass the Provider Choice Module. In such a cases, market shares are set equal to the values in **fSharesInitial_xx** and **eSharesInitial_xx**.

Forecasting

The Provider Choice model produces forecasts over the planning horizon by applying a forecast of equipment capital costs, equipment energy consumption (from the Product Usage module), and fuel price forecasts to the estimated (simulated) choice parameters.

If modes 2 through 4 are used, these variables will affect market shares over the forecast horizon. If the exogenous mode (status 1) is used, market shares are held constant at their base year values over the forecasting horizon. Exogenous forecasts can also be modified via alternative market share forecast scenarios that are specified in the Intervention Strategies module (see Chapter VI).

Market Availability

End Use Forecaster can adjust forecasted efficiency market shares to reflect changes in regulations by removing the market availability of specified alternatives in the future. In this adjustment procedure, End Use Forecaster shifts any market shares designated for efficiency alternatives to be removed from the market to the remaining alternatives, proportional to their *a priori* market shares. This approach to market availability can also be adapted to situations where an efficiency level has become obsolescent in the market, such as the market availability of alternatives of superior consumer value at lower cost.

End Use Forecaster includes a variable called *available* that is entered in the **choiceDrivers_xx** dataset. *Available* is equal to 1 when the configuration is available on the market and zero when it is no longer available. When the choice model finds an unavailable configuration, it will reassign that configuration's shares (at the efficiency level) to the remaining configurations.

Provider Choice Module Analysis and Data Flow

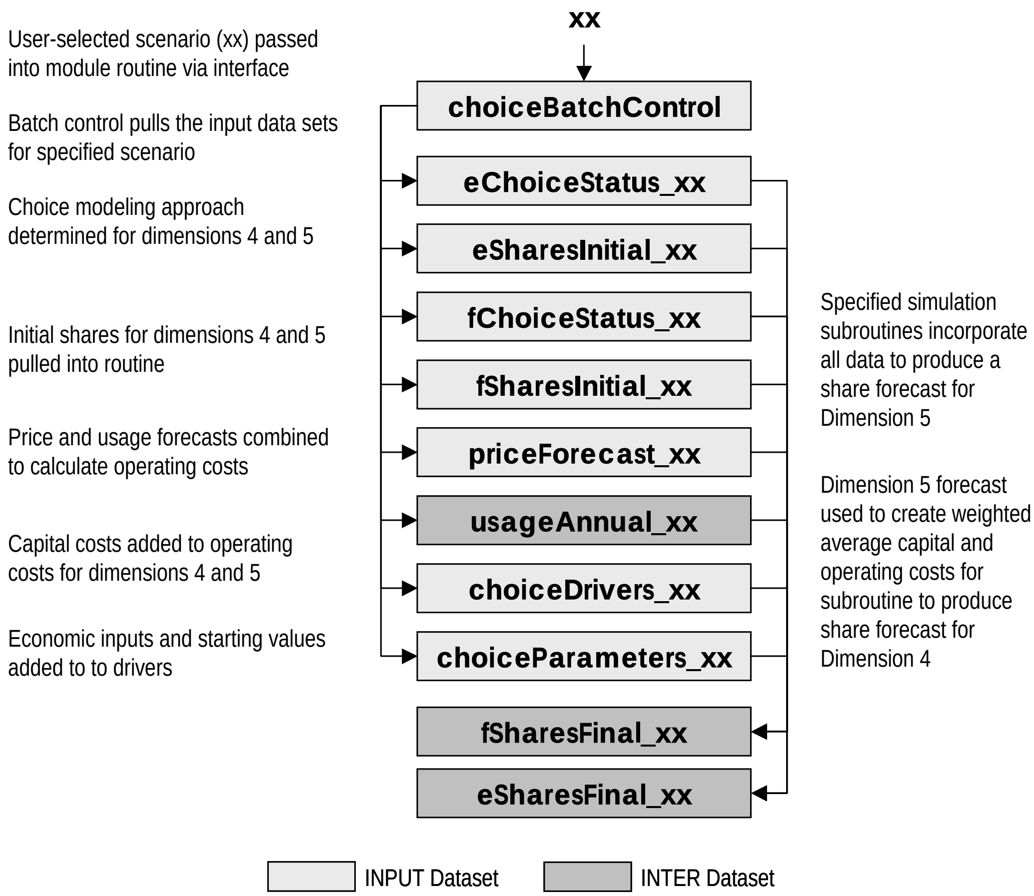
Figure 17 shows the data and analysis flow through the Provider Choice Module.

The dataset **choiceBatchControl** in the input library describes any scenario in terms of the following:

- Equipment capital costs and future availability (**choiceDrivers_xx**)
- Initial simulation (or estimation) parameters (**choiceParameters_xx**)
- Forecasted energy prices (**priceForecast_xx**)
- Product Usage output forecast scenario (**usageAnnual_xx**)
- Initial base-year efficiency (dimension 5) shares (**eSharesInitial_xx**)
- Initial base-year fuel (dimension 4) shares (**fSharesInitial_xx**)
- Indicator for efficiency (dimension 5) choice simulation (**eChoiceStatus_xx**)
- Indicator for fuel (dimension 4) choice simulation (**fChoiceStatus_xx**)

The simulation subroutines in choiceBatch.sas calibrate Provider Choice module coefficients to the baseline market shares in **fSharesInitial_xx** and **eSharesInitial_xx**. The program derives a simultaneous solution for all the qualitative choice coefficients using PROC MODEL from SAS/ETS. The first step in this subroutine is to integrate usage module information (consumption per configuration) with forecasted prices per unit of use to generate forecasted operating costs. Along with forecasted capital costs and other variables used in the qualitative choice models, this information serves as the forecast dataset for choice for each market segment. End Use Forecaster's default choice structure considers up to four alternatives at each level of the nest. The Cadmus Group (Quantec) can customize and modify the code if more than four alternatives are needed.

Figure 17. Provider Choice Module Program Flow for "choiceBatch.sas"



Initial Values

The initial value datasets from **choiceParameters_xx** are merged with the other datasets described above. Initial values and other parameters include:

- Equipment life
- Customer discount rate
- Share of customer preferences ("utility") associated with non-price attributes
- Initial values for alternative-specific constants and model coefficients

In some cases, the subroutine can be sensitive to the initial values, particularly for capital and operating cost coefficients. This problem can generally be mitigated by using initial values that are very small numbers, such as $1E^{-8}$.

Single-Alternative Choices

Choice estimation is not required for one-alternative situations; the choice forecasting routine assigns a 100% market share to these single alternative situations in the choice nest.

Confirming Calibration Results (Status 3 or 4)

A final step in the choice calibration process is to confirm that all equation coefficients have been solved correctly and that the coefficient values are reasonable. The nature of "solving" each choice equation for the appropriate coefficients requires an iterative process, where PROC MODEL begins with user-specified starting values of each coefficient and iterates toward a solution based on the input assumptions.

If the coefficient starting values are inappropriate, the calibration process may not reach a solution or it may reach one that is not in an economically feasible region. For example, starting values of coefficients need to be sufficiently low, such that, when they are multiplied by the independent variables, the result is not "out of the ballpark." Additionally, if the relative comparison of operating costs and capital costs are contrary to the user-specified discount rate, the calibration routine may find a solution where one of the coefficients may be positive (i.e., indicating that as costs rise, so do purchases, which is a clearly non-economic decision).

To check calibration results:

Certain files require inspecting as part of the forecasting process. Missing values in these forecasted market shares indicate a calibration problem.

- Look for the problem segment(s) in the EUFORECASTER\MODELLOGS directory. The choiceBatch.log file will let you know whether the model was ever "in the ballpark" by noting at what point in the solution-seeking process the SAS/ETS MODEL procedure failed.
- If there is a problem with the scale of a variable, the model will fail at iteration zero and the "hill climbing" optimization never begins.
- If the model fails during subsequent iterations, a systematic change in the initial parameters in **choiceDrivers_xx** is recommended until convergence is achieved. Using the final parameter values from another, similar, segment can help in the calibration process.

Table 7 summarizes the Provider Choice Module along with a description of the data and libraries.

Table 7. Provider Choice Module Data Libraries and Files

Library	Dataset	Description
INPUT	choiceBatchControl	Choice parameter input scenario, choice forecast driver input scenario, fuel price input scenario, output scenario
INPUT	choiceDrivers_xx	Capital cost equipment replacement, capital cost equipment conversion, capital cost new construction equipment, availability
INPUT	priceForecast_xx	Price forecast
INPUT	choiceParameters_xx	Description, NumAlternatives, Lifetime, Discount Rate, PriceShare, Alpha, A1-A4, B1-B2
INTER	usageAnnual_xx	Usage forecast
INPUT	eSharesInitial_xx	Dimension 5 base year average stock share, base year marginal share existing/replacement, base year marginal share conversion, base year marginal share new construction
INPUT	fSharesInitial_xx	Dimension 4 base year average stock share, base year marginal share existing/replacement, base year marginal share conversion, base year marginal share new construction
INPUT	fChoiceStatus_xx	Indicator for method of estimation/simulation for dimension 4 (fuel).
INPUT	eChoiceStatus_xx	Indicator for method of estimation/simulation for dimension 5 (efficiency)
INTER	fSharesFinal_xx	Shares forecast for dimension 4 (fuel) for existing, conversion, and new customers
INTER	eSharesFinal_xx	Shares forecast for dimension 5 (efficiency) for existing, conversion, and new customers

VI. Intervention Strategies Module

The Intervention Strategies module is intended to capture the impacts of a customer rebate or marketing program. These strategies are modeled as "what-if" scenarios. Depending upon the design of the service or program, these impacts combine specified market acceptance patterns with equipment characteristics to estimate impacts on forecasted choices and per-unit usage.

Substitution Programs

Provider (fuel) substitution strategies encourage consumers to purchase equipment from one provider over other providers. For existing equipment, this change can be done either immediately (early replacement) or at the point of existing equipment retirement (normal replacement). The **dsmFChoice_xx** dataset in the input directory controls how a market intervention will affect shares for a given scenario. The inputs in this dataset, summarized in Table 8, vary by the first, second, and third dimensions and can apply differently to existing, conversion, and new customers.

Table 8. Provider (Fuel) Substitution Program Drivers

Variable	Description	Minimum Value	Maximum Value
yearIntroduced	Year of program introduction activity	1	Last year of forecast horizon
programLife	Duration of program (years)	1	Years in forecast horizon
adoptionPath	Years to Full Adoption	1	7
applicability	Percent of customers to which the program applies	0*	1
marketShare	Percent of market share (%)	0*	1
earlyReplacement	Binary flag for whether early adoption applies to program	0	1
description	Program Description	{text}	{text}

* A zero value implies that the program will have no market impact, so the smallest practical value is 0.01 (1%).

** Early adoption applies to existing buildings only. A value of 1 implies that all applicable consumers (applicability * market share * adoption path %) switch immediately, whether or not the equipment fails. A zero implies that all adoption follows the normal equipment and/or building retirement schedule.

Equipment Efficiency Programs

Product (efficiency) option strategies encourage consumers to purchase a particular option (e.g., equipment with a certain efficiency rating). Either early or normal replacement may apply to existing equipment. Table 9 presents the drivers of purchasing programs and their usage.

Table 9. Product (Efficiency) Program Drivers

Variable	Description	Minimum Value	Maximum Value
yearIntroduced	Year of program introduction activity	1	Last year of forecast horizon
programLife	Duration of program (years)	1	Years in forecast horizon
adoptionPath	Years to Full Adoption	1	7
applicability	Percent of customers to which the program applies	0*	1
eLevel	Efficiency level to which program applies	1	4
marketShare	Percent of market share (%)	0*	1
earlyReplacement	Binary flag for whether early adoption applies to program	0	1
description	Program Description	{text}	{text}

* A zero value implies that the program will have no market impact, so the smallest practical value is 0.01 (1%).

** This represents the maximum efficiency level affected by the program for each end use, and is a supplementary type of applicability factor. The variable EL should be specified to be less than or equal to the maximum number of efficiency levels available for that market sector.

*** This represents the maximum vintage level affected by the program for each end use, and is a supplementary type of applicability factor. The variable V should be specified to be less than or equal to the maximum number of vintages for that market sector. Usually it is set equal to zero to denote an existing building or equipment retrofit strategy.

Equipment Retrofit and Operating & Maintenance (O&M) Service Programs

Usage retrofit strategies encourage consumers to change their product usage given the equipment they already have (e.g., improve the efficiency of existing equipment by installing measures such as weatherization or water heater retrofit kits). Table 10 presents the drivers of these programs.

Table 10. Equipment Efficiency Retrofit and O&M Program Drivers

Variable Name	Description	Minimum Value	Maximum Value
yearIntroduced	Year of program introduction activity	1	Last year of forecast horizon
programLife	Duration of program (years)	1	Years in forecast horizon
adoptionPath	Years to full adoption	1	7
applicability	Percent of customers to which the program applies	0*	1
eLevel	Lowest efficiency level to which program applies	1	4
marketShare	Percent of market share (%)	0*	1
eImprovement	Efficiency improvement (%)	0*	1
MeasureLife	Measure life (years)	1	Years in forecast horizon
vintageApplicability	Applicable vintages***	Lowest vintage	Years (vintages) in forecast horizon
description	Program Description	{text}	{text}

* A zero value implies that the program will have no market impact, so the smallest practical value is 0.01 (1%).

** This represents the maximum efficiency level affected by the program for each end use, and is a supplementary type of applicability factor. The variable EL should be specified to be less than or equal to the maximum number of efficiency levels available for that market sector.

*** This represents the maximum vintage level affected by the program for each end use, and is a supplementary type of applicability factor. The variable V should be specified to be less than or equal to the maximum number of vintages for that market sector. Usually it is set equal to zero to denote an existing building or equipment retrofit strategy.

Intervention Strategies Module Operations

You can create many types of Intervention Strategies programs for all market sectors sequentially and automatically, rather than creating each one manually. This batch processing is done via the following datasets, where the scenario indicator "yy" denotes a scenario that differs from "xx."

- **dsmFChoice_yy** – Dimension 4 (fuel) choice substitution for existing, conversion, and/or new customers, based on user specifications
- **dsmEChoice_yy** – Dimension 5 (efficiency) choice substitution for existing, conversion, and/or new customers, based on user specifications
- **dsmRetrofit_yy –** Equipment retrofit or O&M programs

Each of these files contains a row for each Dimension 1 – 3 combination and data inputs associated with Table 24 (**dsmFChoice_xx**), Table 23 (**dsmEChoice_xx**), or Table 25 (**dsmRetrofit_xx**).

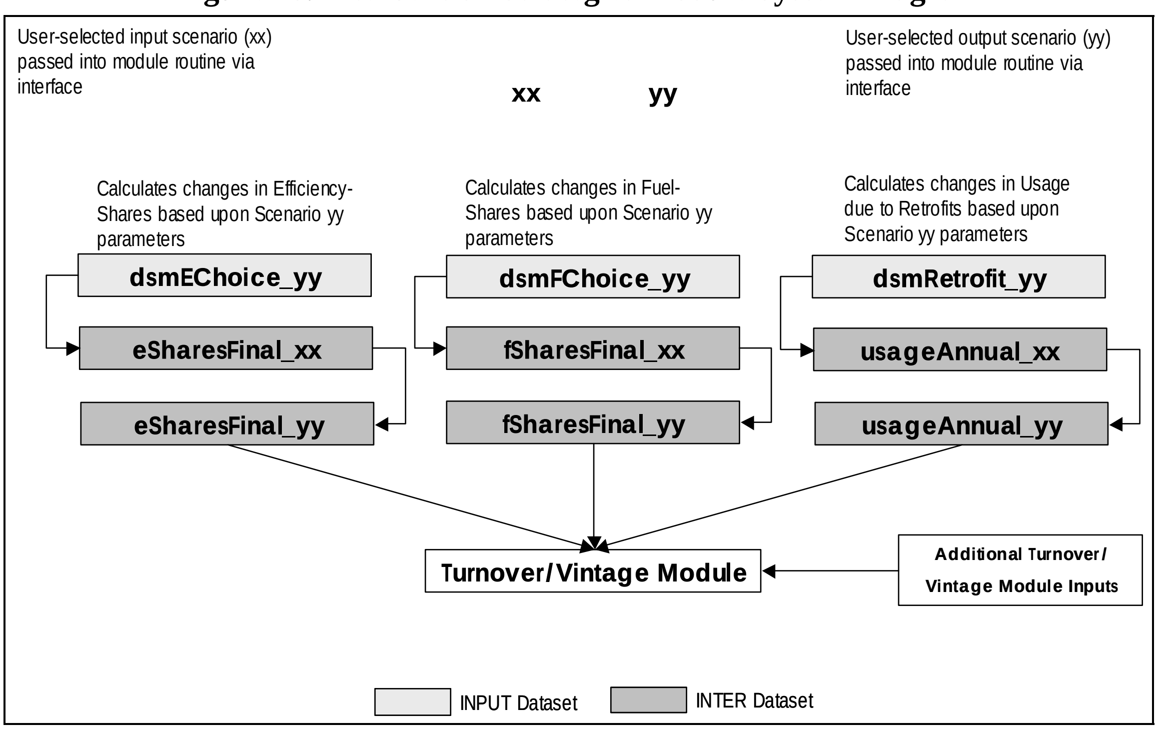
The Market Segmentation module creates base case files ("_10" files) where there is no intervention for each of these program categories. These files serve as templates that allow the user to create different scenarios of interest. To create strategies, you must copy these files to another scenario number and then make changes consistent with the desired intervention strategy over the forecast horizon. It is recommended that these designs be completed by individuals with marketing or demand-side management experience. Alternatively, The Cadmus Group (Quantec) can assist with the development of the first set of intervention strategies.

Figure 18 illustrates how the Intervention Strategies module modifies the Product Usage and/or Provider Choice output files and how these outputs are then used to develop an alternative forecast. Table 11 summarizes the data files used by this module.

Table 11. Intervention Strategies Module Data Library and Files

Directory	File Name	Description	File/Record Dimensions	Variables/Attributes
INPUT	dsmEChoice_xx	Existing/New Dimension 5 (efficiency) program parameters	Dimensions 1-4	Year introduced, program life, applicability, market share, adoption path, early adoption
INPUT	dsmFChoice_xx	Existing/New Dimension 4 (fuel choice) program parameters	Dimensions 1-4	Year introduced, program life, applicability, market share, adoption path, early adoption
INPUT	dsmRetrofit_xx	Product Usage retrofit parameters	Dimensions 1-4	Year introduced, program life, applicability, market share, adoption path, measure life, efficiency improvement, efficiency levels affected, vintages affected

Figure 18. Intervention Strategies Module System Diagram



VII. Forecast Module

The Forecast module serves several analytical and system functions, including forecasts of new construction and conversion accounts, decay or turnover of buildings and equipment, integration of Product Usage, Provider Choice and Intervention Strategies module results, and “internal” forecast reports for use by the End Use Forecaster analyst. Other reports from End Use Forecaster are described in Chapter 8.

The analytical portion of this module uses information on equipment saturation, average and marginal market shares, building and equipment decay, building account stocks and decay, customer conversions, and new construction to determine changes in the usage mix over time. The final forecast is equal to the number of units [indexed by year, building vintage, equipment age, fuel (provider), and efficiency (product)] multiplied by the consumption per the indexed equipment configuration.

Forecast Inputs

There are several sets of inputs in each Turnover/Vintage module forecast, which are described in Table 12 below. Alternative forecast scenarios using new estimates (scenarios) for new construction, account conversion, usage, choice, account decay, building decay, and any combinations of these can be conducted using the Turnover/Vintage module.

Table 12. Turnover/Vintage Forecast Inputs

Input Type	Dataset
Account Decay Parameters	accountDecay_xx
Equipment Decay Parameters	equipmentDecay_xx
Existing Equipment Age	equipmentAge_xx
Dimension 3 (End Use) Saturation	saturations_xx
Historical Accounts	customerCountsActual_xx
Account Forecast	customerCountsForecast_xx
Product Usage Forecast	usageAnnual_xx
Dimension 4 (Fuel) Shares Forecast	fSharesFinal_xx
Dimension 5 (Efficiency) Shares Forecast	eSharesFinal_xx

Historical and New Construction Building Stocks

Historical accounts are segmented into the number of total accounts in the base year and their distribution among the historical vintages as determined by the user in the segmentation design. Accounts are defined in terms of both buildings and building units (i.e., accounts, apartments, square feet, etc.). Building units are the level of measurement at which the Product Usage module estimates are rendered.

The total building stock in any forecast year is not the simple difference between the total building stock in the current year and the previous year because some buildings will have been destroyed, completely gutted, or removed from the system in the course of a year. The number of existing buildings replaced each year is dependent on the stock of vintages and the overall decay rate.

Forecasting Equipment Stocks

Dimension 3 (i.e., end use) equipment stocks are forecasted through similar methods as buildings. Initial base year equipment stock levels are estimated utilizing equipment saturation estimates for existing and new construction building vintages in the **saturations_xx** dataset. Market shares of new equipment over the forecast horizon are generated in the Provider Choice or Intervention Strategies module and passed to the Turnover/Vintage module via the series of market share forecasts in the **eSharesInitial_xx** and **fSharesInitial_xx** datasets. You may provide the average age of equipment in existing buildings in the base year in order to initialize the equipment age dimension (**equipmentAge_xx**). Generally, this average age is specified as the mean technical lifetime of the equipment.

The forecast simulation then estimates equipment stocks for Dimensions 3-5 (i.e., end use, fuel, and efficiency level) for each Dimension 1-2 combination. The new equipment stock installed each year is dependent on the growth and decay of building stocks, the natural replacement cycle of the equipment, the saturation rates of the end use in new construction, and the market shares of technology types.

End Use Forecaster contains a vintage hierarchy where Dimension 2 (buildings) dominates Dimension 3 (end uses). For example, an older dwelling may have a relatively new furnace and water heater, but these end uses effectively "disappear" if the building is demolished or undergoes a major renovation.

Building and Equipment Decay Functions

The user may specify decay rates of existing stocks of buildings and equipment, as well as new stock constructed or installed in subsequent years. Decay functions and parameters can differ for the existing and new stocks. Some analysts specify different decay functions for existing and new building stocks as the existing base year building stock is an amalgam of unknown vintages and new building stock is tracked as discreet homogenous annual blocks.

There are two datasets with decay rate data for each market segmentation design (**accountDecay_xx** and **equipmentDecay_xx**). In each of these decay data files, there are two sets of information to be entered: decay functions and decay parameters.

A numeric indicator ranging from 1 to 3 indicates the selected function. Available functions include exponential (1), logistic (2), and Weibull (3). Exponential functions have one parameter, logistic functions have four, and Weibull functions have two.[3] The logistic and exponential functions tend to be the most popular and are described in more detail below. The

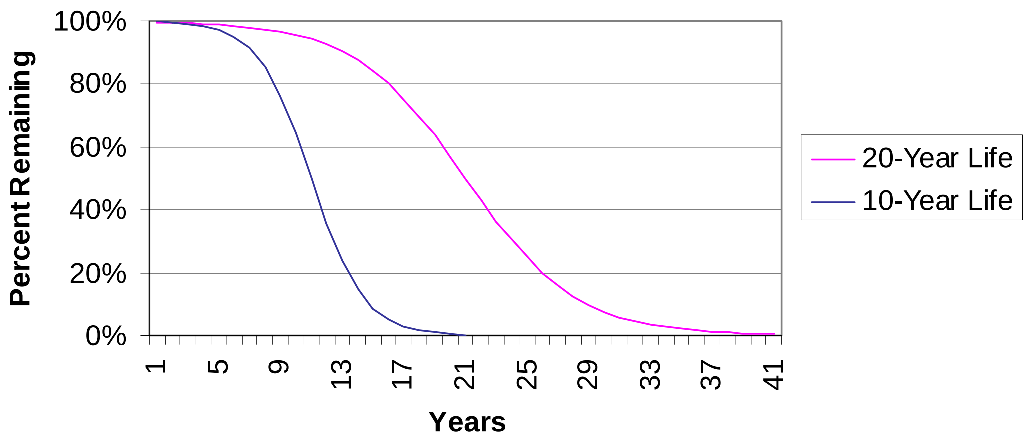
[3] These are discrete analogs to the continuous time distributions.

equipmentAge_xx dataset describes the average age of existing equipment in existing facilities. It tells the model where to start the equipment decay function.

Logistic Decay Function

End Use Forecaster uses the logistic function as the recommended decay mechanism for equipment decay construction, as shown in Figure 19. The logistic function is an S-shaped curve that results in a small decay rate for the first years, then increases over time before tapering off.

Figure 19. End Use Forecaster End Use Decay Functions



You may specify the periods and percentages of stock remaining for any two years in the appropriate SAS dataset. For example, to specify that 99% of the building stock remains 20 years after construction and that, 100 years after construction, only 50% of the buildings remain:

- In the SAS dataset, set the functional form indicator to 2
- Set the first parameter to the percent remaining after year X (0.99)
- Set the second parameter to year X (20)
- Set the third parameter to the percent remaining after year Y (0.50)
- Set the fourth parameter to year Y (100)

Exponential Decay Function

An exponential decay function can be used to represent a constant percentage decline for customers, buildings, or equipment. For example, a decay rate of 0.05 would cause 5% of the remaining stock to be removed each year. Since the base becomes progressively smaller, so does the absolute level of decay. If you choose an exponential decay rate:

- Set the functional form indicator equal to 1
- Set the first parameter equal to the specified decay rate
- Set the remaining three parameters equal to zero

Zero Decay

In some cases, decay rates may not be relevant information. This can occur in non end-use End Use Forecaster representations or in certain markets such as “miscellaneous consumption.” In these instances, choose the exponential function and set all parameters to zero.

Early Replacement

In some instances, you may specify the “early replacement” of existing equipment within an Intervention Strategies scenario. In these situations, the variable *earadop*, contained in **eChoiceFinal_xx** dataset, will effectively override the equipment decay functions if it is set equal to 1. The default value for *earadop* is zero (no early adoption).

Forecast Operations

The heart of this module is a SAS program called forecastBatch.sas, which completes the following tasks:

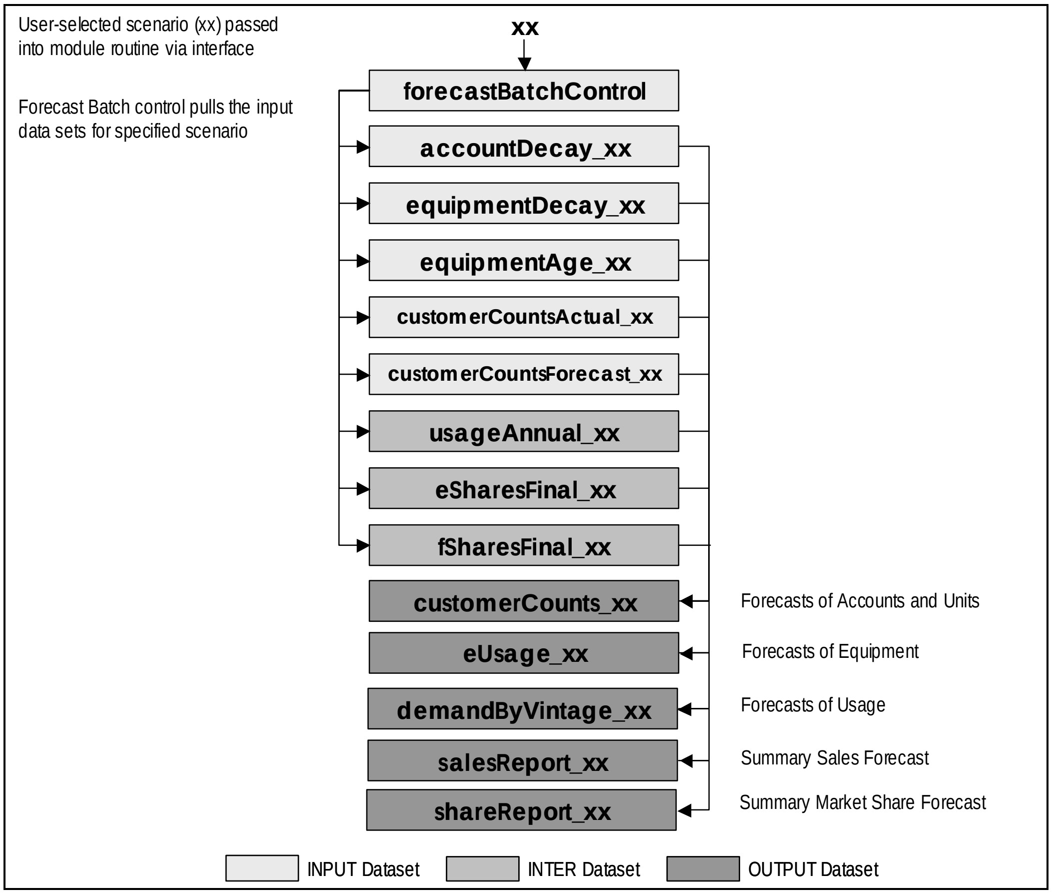
1. Merges all input data across Dimensions 1-3, including:
   - Existing accounts, plus a distribution of accounts across historical building vintages
   - New construction forecast, plus capture rates for new and conversion buildings
   - Dimension 3 saturation, equal to the number of Dimension 2 customers with Dimension 3 divided by total Dimension 2 customers
   - Decay rates for buildings (indexed by year and building vintage) and equipment (indexed by Dimension 4 and equipment age)
   - Product usage forecast (potentially modified by an intervention strategies scenario)
   - Provider choice forecast (potentially modified by an intervention strategies scenario)
2. Solves for output arrays that contain information on number of market segments units per year, indexed by the specified dimensions (e.g., building vintage, equipment age, fuel, and efficiency)
3. Stores the results in datasets of varying dimensions
4. Multiplies the number of units by the respective consumption estimate per unit, again indexed by the appropriate dimension.
5. Summarizes these results in standard report formats

Figure 20 illustrates how the operation of the Turnover module. Table 13 summarizes the programs developed for the Turnover/Vintage module, and Table 13 summarizes the data files used in this module.

Table 13. Forecast Module Data Library and Files

Library	Dataset Name	Description	Record Dimensions	Attributes/Variables
INPUT	ForecastBatchControl	Forecast module input control	One record per output scenario	Account history, distribution and new construction scenarios; decay scenarios; usage scenario, saturation scenarios, and equipment mean age scenario.
INPUT	accountDecay_xx	Decay parameters for Dimension 2	Dimensions 1 and 2, forecast vintages	Decay Function, Decay Parameters 1-4
INPUT	equipmentDecay_xx	New construction Dimension 3 (end use) decay	Dimensions 1, 2, 3 and 4	Decay Function, Decay Parameters 1-4
INPUT	saturations_xx	Existing Dimension 3 (end use) saturation	Dimensions 1, 2, and 3 Year, historical vintages	Saturation
INPUT	customerCountsActual_xx	Base year accounts and non-accounts (potential customers)	Dimensions 1 and 2	Accounts, non accounts
INPUT	equipmentAge_xx	Dimension 3 (end use) mean age in base year	Dimensions 1, 2, and 3, historical vintage	Dimension 3 (end use) mean age in base year
INPUT	customerCountsForecast_xx	New construction / economic driver forecast	Dimensions 1 and 2, Year	Forecasted new construction, capture rate, conversion rate, units per account,
INTER	usageAnnual_xx	Product Usage module output	Dimensions 1, 2, 3, 4 and 5, year, vintage	Annual usage
INTER	eSharesFinal_xx	Provider Choice module output – existing Dimension 5 market share forecast	Dimensions 1, 2, 3, 4 and 5, year	Market share for replacement, early replacement indicator
INTER	fSharesFinal_xx	Provider Choice module output – existing Dimension 4 market share forecast	Dimensions 1, 2, 3 and 4, year	Market share for replacement, early replacement indicator
OUTPUT	customerCounts_xx	Forecast of accounts and units (square footage)	Dimensions 1 and 2, year, vintage	(E/C/N) Accounts, (E/C/N) units, units per account, remaining nonconversion potential
OUTPUT	eUsage__xx	Forecast of equipment (end-uses)	Dimensions 1, 2, 3, 4 and 5, year, vintage	Total number of Dimension 3 (end uses)
OUTPUT	demandByVintage_xx	Forecast of usage (e.g., kWh, therms)	Dimensions 1, 2, 3, 4 and 5, year, vintage	(E/C/N) Accounts, (E/C/N) units, units per account, remaining nonconversion potential; Total number of Dimension 3 (end uses); Break out of dimension 3 by replacement, conversion, and new construction.
OUTPUT	salesReport_xx	Summary Sales Forecast	Dimensions 1, 2, 3 and 4, year	Total usage and equipment sales by Dimension 5
OUTPUT	shareReport_xx	Summary Market Share Forecast	Dimensions 1, 2, 3 and 4, year	Market shares for Dimensions 4 and 5, by existing, conversion, and new construction

Figure 20. Turnover (Vintage) Module System Diagram



VIII. End Use Forecaster Utilities

The main End Use Forecaster analysis modules – Product Usage, Provider Choice, Intervention Strategies, and Forecast – are typically run separately during the calibration and testing phase of any market segmentation and forecasting process. Once this process is complete, however, you can run these modules jointly and generate all relevant analyses with a single click of the mouse (after data are prepared, of course).

This chapter describes the various utilties available in End Use Forecaster: Super Batch, Calibration, Analysis of Data Files, and Reporting.

Super Batch Processing

Some forecasting scenarios lend themselves to super batch processing. When the Product Usage, Provider Choice, and Forecast modules all have the same scenario indicator value, the that scenario can be run across all modules by selecting it in the Super Batch frame.

Calibration

End Use Forecaster can be calibrated to base year energy usage data for the “primary” fuel of interest in the model (f=’1’). Calibration may proceed at the Z-Level, or at the Z-B-Level. Base year sales data must be available in the \INPUT**calibrationZ_xx or calibrationZB_xx** datasets. To calibrate the model apply the following procedure:

- Select the level at which the forecasts will be calibrated (the Z-Level vs. the Z-B-Level) from the Calibration Utility
- Select the scenario to be calibrated and the percent of usage to be assigned to the miscellaneous usage category.

The calibration routine works as follows:

1. Residual energy is attributed to the miscellaneous end use. This value should be greater than or equal to zero but generally does not exceed 10% of forecasted energy sales. In fact, the upper limit available through the model interface is 10%. Errors larger than this generally indicate a more fundamental data problem where an investigation of data inputs is required rather than this automated calibration process
2. When non-calibrated total usage is on the high side (miscellaneous would then be negative), the next step is to reduce the per-unit energy usage (i.e., customer or square foot) for each market segment, end use, and efficiency combination. Note that the *relative* energy usage across efficiency levels is unchanged. Conversely, when non-calibrated total usage is on the low side, simply let miscellaneous equal zero (the default value). All other end uses will be adjusted proportionately. Again, we recommend avoiding this procedure if the adjustment is larger than 10%.

The relative size of the calibration adjustment which is ultimately applied to the \INPUT**usageParameters_xx** datasetc can be found in \INTER**initialCalibrationRatio**.[4] The variable (*Zfratio* (*ZBfratio*) shows the percent error results, and how much End Use Forecaster had to change parameters through the calibration routine to match base year sales.

If additional calibration is needed beyond the base year to, for example, match an external econometric forecast over the duration of the forecast horizon, a post-processing adjustment using either SAS or Excel can be applied.[5]

After running the calibration routine, it is necessary to run the Usage, Choice, and Forecast modules (or Super Batch) and produce a new forecast. One can then click on the appropriate “Calibration: Calibration Check” routine to make sure the calibration worked as intended.

Analysis of Data Files

All SAS datasets in across End Use Forecaster libraries can be accessed directly from End Use Forecaster for further analysis in real time by following these steps:

- Click on “File: Analyze” to access SAS/INSIGHT
- Select the library and dataset of interest and perform desired analysis

  OR
- SAS/FSP software tools can also be used to browse the SAS datasets via the pull-down menu item “File: Library Map”

Reporting

Five default SAS output dataset reports are created in the OUTPUT directory by the Forecast module:

- A summary sales report (**salesReport_xx**)
- A summary market share report (**shareReport_xx**)
- Detailed account stock forecast (**customerCounts_xx**)
- Detailed market segment/end use equipment sales forecast (**eUsage_xx**)
- Detailed sales projections (**demandByVintage_xx**)

These reports can be browsed directly as described above, or exported to Excel. To accomplish the latter simply click on “Reports: Export Basic Reports to Excel” and select the Forecast module scenario to export.

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4 Notice that there is no scenario indicator on the **initialCalibrationRatio** dataset. This is because only one scenario per Model should be calibrated; all other scenarios within that model can then be developed from the calibrated **usageParameters_xx** or successor datasets.

5 Please contact The Cadmus Group (Quantec) for more information or to obtain a customized calibration routine

End Use Forecaster also produces reports that can be customized based upon the user's choice of segmentation combinations to analyze. These reports summarize and/or compare forecasts for two forecast scenarios specified by clicking on "Reports: Scenario Comparison Reports." The user specifies the Report Category (sales, market share, customer counts or demand by vintage) and, based on the category selection, is given the option of selecting different combinations of segments to summarize and/or compare.

Appendix: Variable Glossary

This glossary provides definitions for each End Use Forecaster SAS variable, and is organized by the model's libraries and datasets as defined in Chapter III.

Table 14. INPUT\accountDecay_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
vintage	Building vintage
accountDecayIndicator	Account decay indicator
accountDecayParm1	Account decay parameter 1
accountDecayParm2	Account decay parameter 2
accountDecayParm3	Account decay parameter 3
accountDecayParm4	Account decay parameter 4

Table 15. INPUT\calibrationZ

Variable Name	Description
z	The indicator for Dimension 1
year	Year of forecast (0 to rorecast horizon)
actualSales	Actual sales in base year

Table 16. INPUT\calibrationZB

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
year	Year
actualSales	Actual sales in base year

Table 17. INPUT\choiceBatchControl

Variable Name	Description
scenarioName	Descriptive name of the scenario
scenario	Output scenario number
choiceDrivers	Scenario to select for the choiceDrivers_xx dataset
priceForecast	Scenario to select for the priceForecast_xx dataset
choiceParameters	Scenario to select for the choiceParameters_xx dataset
usageAnnual	Scenario to select for the usageAnnual_xx dataset
eSharesInitial	Scenario to select for the eSharesInitial_xx dataset
fSharesInitial	Scenario to select for the fSharesInitial_xx dataset
eChoiceStatus	Scenario to select for the eChoiceStatus_xx dataset
fChoiceStatus	Scenario to select for the fChoiceStatus_xx dataset

Table 18. INPUT\choiceDrivers_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
e	The indicator for Dimension 5
year	Year
available	Binary switch to indicate availability of the alternative in any given year of the forecast
capitalCostExisting	Capitial cost for equipment in existing (replacement) construction
capitalCostConversion	Capital cost for equipment for conversion customers
capitalCostNew	Capital costs for equipment for new construction

Table 19. INPUT\choiceParameters_xx

Variable Name	Description
Z	The indicator for Dimension 1
B	The indicator for Dimension 2
N	The indicator for Dimension 3
f	The indicator for Dimension 4
eIndicator	Binary switch for choice modeling to indicate the dimension modeled (0 = Dimension 4 and 1 = Dimension 5)
conType	Type of construction or customer (new, existing, or conversion)
lifetime	Equipment or measure lifetime (years)
alpha	Constant
description	Description of Choice
discountRate	Implicit discount rate
priceShare	Price share of customer utility function
a1	Intercept for alternative 1
a2	Intercept for alternative 2
a3	Intercept for alternative 3
a4	Intercept for alternative 4
b1	Operating cost coefficient
b2	Capital cost coefficient

Table 20. INPUT\customerAccountsActual_xx

Variable Name	Description
Z	The indicator for Dimension 1
B	The indicator for Dimension 2
vintage	Building vintage
unitsPerAccount	Units per Dimension 1-2 and vintage combination (square footage, number of apartments, etc.). This should be set to 1 if the unit is the customer
accounts	Number of accounts.
onMainAccounts	Number of accounts on main.
offMainAccounts	Number of accounts off main.

Table 21. INPUT\customerAccountsForecast_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
year	Year
unitsPerAccount	Units per Dimension 1-2 and vintage combination (square footage, number of apartments, etc.). This should be set to 1 if the unit is the customer
newConstructionAccounts	New Construction accounts.
newConstructionCaptureRate	The "capture" rate of NEWCONST = the share of new buildings that are customers
conversionCaptureRate	The share (%) of existing non-customers converting or becoming a customer each year

Table 22. INPUT\dimens

Variable Name	Description
DIM	Dimension
DIMNAME	Dimension Name
DIMNUM	Starting Levels

Table 23. INPUT\dsmEChoice_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
conType	Type of construction or customer (new, existing, or conversion)
yearIntroduced	Year of Program Introduction
programLife	Duration of Program (Years)
adoptionPath	Years to Full Adoption
applicability	Percent of Customers Applicable
eLevel	e Level to Which Program Applies
marketShare	Market Share Percent
earlyReplacement	Early Replacement (binary)
description	Program Description

Table 24. INPUT\dsmFChoice_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
conType	Type of construction or customer (new, existing, or conversion)
yearIntroduced	Year of Program Introduction
programLife	Duration of Program (Years)
adoptionPath	Years to Full Adoption
applicability	Percent of Customers Applicable
marketShare	Market Share Percent
earlyReplacement	Early Replacement (binary)
description	Program Description

Table 25. INPUT\dsmRetrofit_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
yearIntroduced	Year of Program Introduction
programLife	Duration of Program (Years)
measureLife	The average life of Dimension 3 equipment
eImprovement	The efficiency improvement (%) as reflected by the reduction in equipment energy usage.
adoptionPath	Years to Full Adoption
vintageApplicability	Vintages to Which Programs Apply
applicability	Percent of Customers Applicable
marketShare	Market Share Percent
earlyReplacement	Early Replacement (binary)
eLevel	Lowest e Level to Which Program Applies
description	Program Description

Table 26. INPUT\eChoiceStatus_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
eChoiceStatus	This is a “status” variable for Dimension 5. It tells the Provider Choice module which of several possible equation/modeling processing should be followed.
eAlternatives	The number of choice alternatives for Dimension 5, which ranges from 1-4

Table 27. INPUT\eSharesInitial_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
e	The indicator for Dimension 5
baseAvgEShare	The average market share in the historical stock at Dimension 5
baseMargEShareExisting	The marginal (i.e., most recent) market share associated with the replacement of the product or service option by existing customers
baseMargEShareConversion	The marginal market share associated with conversion customers
baseMargEShareNew	The marginal market share associated with the new construction customers
peakDayLoadFactor	The peak demand or peak day load factor associated with annual usage for each Dimension 1-5 combination.

Table 28. INPUT\equipmentAge_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
equipmentMaxAge	The maximum age of existing equipment for each Dimension 1-3 combination regardless of the historical vintage
equipmentMeanAge	The average age of existing equipment for each Dimension 1-3 combination and each historical vintage
vintage	Building vintage

Table 29. INPUT\equipmentDecay_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
conType	Type of construction or customer (new, existing, or conversion)
equipmentDecayIndicator	Equipment decay indicator
equipmentDecayParm1	Equipment decay paramater 1
equipmentDecayParm2	Equipment decay paramater 2
equipmentDecayParm3	Equipment decay paramater 3
equipmentDecayParm4	Equipment decay paramater 4

Table 30. INPUT\fChoiceStatus_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
fChoiceStatus	This is a “status” variable for Dimension 4. It tells the Provider Choice module which of several possible equation/modeling processing should be followed.
fAlternatives	The number of choice alternatives for Dimension 4, which ranges from 1-4

Table 31. INPUT\forecastBatchControl

Variable Name	Description
scenarioName	Descriptive name of the output scenario
scenario	Output scenario number
accountDecay	Scenario to select for the accountDecay_xx dataset
equipmentDecay	Scenario to select for the equipmentDecay_xx dataset
equipmentAge	Scenario to select for the equipmentAge_xx dataset
saturations	Scenario to select for the saturations_xx dataset
customerCountsActual	Scenario to select for the customerCountsActual_xx dataset
customerCountsForecast	Scenario to select for the customerCountsForecast_xx dataset
usageAnnual	Scenario to select for the usageAnnual_xx dataset
eSharesFinal	Scenario to select for the eSharesFinal_xx dataset
fSharesFinal	Scenario to select for the fSharesFinal_xx dataset

Table 32. INPUT\fsharesInitial_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
baseAvgFShare	The average market share in the historical stock at Dimension 4.
baseMargFShareExisting	The marginal (i.e., most recent) market share associated with the replacement of the product or service by existing customers
baseMargFShareConversion	The marginal market share associated with the conversion customers
baseMargFShareNew	The marginal market share associated with the new construction customers

Table 33. INPUT\initParm

Variable Name	Description
BASEYR	Base Year
FCSTYRS	Forecast Years

Table 34. INPUT\priceForecast_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
year	Year
price	Price (Native Units)

Table 35. INPUT\saturations_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
year	Year
vintage	Building vintage
saturation	Presence of End Use (Percent)

Table 36. INPUT\scenarioDescriptions

Variable Name	Description
scenario	Output scenario number
scenarioName	Descriptive name of the scenario

Table 37INPUT\usageBatchControl

Variable Name	Description
scenarioName	Descriptive name of the scenario
scenario	Output scenario number
usageParameters	Scenario to select for the usageParameters_xx dataset
usageDrivers	Scenario to select for the usageDrivers_xx dataset

Table 38. INPUT\usageDrivers_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
e	The indicator for Dimension 5
year	Year
month	Month
X0 - X20	Product Usage module forecast drivers

Table 39. INPUT\usageParameters_xx

Variable Name	Description
Z	The indicator for Dimension 1
B	The indicator for Dimension 2
N	The indicator for Dimension 3
F	The indicator for Dimension 4
E	The indicator for Dimension 5
Vintage	Building vintage
B0 - B20	Product Usage module coefficients
usageEquationStatus	This is a “status” variable for the Product Usage module.

Table 40. INTER\eSharesFinal_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
e	The indicator for Dimension 5
year	Year
eshare	Share for Dimension 5
earadop	A 0/1 binary variable where a value of 1 indicates that the marginal market shares apply to all existing customers, not just those who need to replace retired equipment. The default value is 0; a one will be used if specified in the Intervention Strategies CSFUELE\Sxx dataset.
conType	Type of construction or customer (new, existing, or conversion)

Table 41. INTER\fSharesFinal_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
year	Year
fshare	Fuel Share
earadop	A 0/1 binary variable where a value of 1 indicates that the marginal market shares apply to all existing customers, not just those who need to replace retired equipment. The default value is 0; a one will be used if specified in the Intervention Strategies CSFUELE\Sxx dataset.
conType	Type of construction or customer (new, existing, or conversion)

Table 42. INTER\usageAnnual_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
year	Year
vintage	Building vintage
f	The indicator for Dimension 4
e	The indicator for Dimension 5
use	Annual usage from the usage module for each Dimension 1-5 combination by year and vintage

Table 43. INTER\usageMonthly_xx

Variable Name	Description
vintage	Building vintage
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
e	The indicator for Dimension 5
year	Year
month	Month
use	Monthly usage from the usage module for each Dimension 1-5 combination by year and vintage

Table 44. OUTPUT\customerCounts_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
year	Year
unitsPerAccount	Units per Dimension 1-2 and vintage combination (square footage, number of apartments, etc.). This should be set to 1 if the unit is the customer
vintage	Building vintage
remain	All customers and non-customers remaining for each vintage
totalAccounts	The sum of existing, conversion, and new construction customers
cAccounts	Conversion customers
nAccounts	New construction customers
totalUnits	totalAccounts * units per account
cUnits	cAccounts * units per account
nUnits	nAccounts * units per account

Table 45. OUTPUT\demandByVintage_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
vintage	Building vintage
year	Year
n	The indicator for Dimension 3
f	The indicator for Dimension 4
e	The indicator for Dimension 5
fuelSpecificUnits	The energy usage associated with a single unit at the full dimension 1 through 5 (zbnfe) level.
unitsPerAccount	Units per Dimension 1-2 and vintage combination (square footage, number of apartments, etc.). This should be set to 1 if the unit is the customer
use	Annual usage from the usage module for each Dimension 1-5 combination by year and vintage
peakDayLoadFactor	The peak demand or peak day load factor associated with annual usage for each Dimension 1-5 combination.
ereplcs	The total number of new Dimension 3 equipment sales from existing customers (who are replacing retired equipment) by year and vintage for each Dimension 1-5 combination
ceus	The total number of new Dimension 3 equipment sales from conversion customers by year and vintage for each Dimension 1-5 combination
neus	The total number of new Dimension 3 equipment sales from new construction customers by year and vintage for each Dimension 1-5 combination
totalUsage	Annual usage from the usage module for each Dimension 1-5 combination by year and vintage
cUsage	The total number of new Dimension 3 equipment sales from conversion customers by year and vintage for each Dimension 1-5 combination
nUsage	The total number of new Dimension 3 equipment sales from new construction customers by year and vintage for each Dimension 1-5 combination
usagePerUnit	Total usage per unit (e.g., square foot, customer, apartment, etc.) for each Dimension 1-5 combination by year and vintage = USE * EEUS
cuseunit	Total conversion usage per unit (e.g., square foot, customer, apartment, etc.) for each Dimension 1-5 combination by year and vintage = USE * CEUS
nuseunit	Total new construction usage per unit (e.g., square foot, customer, apartment, etc.) for each Dimension 1-5 combination by year and vintage = USE * NEUS

Table 46. OUTPUT\eUsage_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
vintage	Building vintage
year	Year
n	The indicator for Dimension 3
f	The indicator for Dimension 4
e	The indicator for Dimension 5
fuelSpecificUnits	The energy usage associated with a single unit at the full dimension 1 through 5 (zbnfe) level.

Table 47. OUTPUT\salesReport_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
year	Year
totalAccounts	The sum of existing, conversion, and new construction customers
totalUnits	totalAccounts * units per account
fuelSpecificUnits	The energy usage associated with a single unit at the full dimension 1 through 5 (zbnfe) level.
totalUsage	Annual usage from the usage module for each Dimension 1-5 combination by year and vintage
peakUsage	Annual peak usage from the usage module for each Dimension 1-5 combination by year and vintage
effeeus1 - effeeus4	This is the average number of fuel specific end-uses (FEUS) across the possible Dimension 5 (efficiency) levels, and is identical to AVGEU(1-4) in VNTFMKSH\Sxx
effuec1 - effuec4	The annual usage for each Dimension 5 level associated with each Dimension 1-4 combination. These estimates come directly from USE is USEANN\Sxx
effuse1 - effuse4	The total usage for each Dimension 1-5 combination by year and vintage. These estimates come directly from EUSE in VNTFDEMD\\Sxx
unitsPerAccount	Units per Dimension 1-2 and vintage combination (square footage, number of apartments, etc.). This should be set to 1 if the unit is the customer
uec	Sales per End Use Unit
fuelSpecificUnitsPerAccount	Fuel-Specific End-Use Units per Account
totalUsagePerAccount	Sales per Account

Table 48. OUTPUT\shareReport_xx

Variable Name	Description
z	The indicator for Dimension 1
b	The indicator for Dimension 2
n	The indicator for Dimension 3
f	The indicator for Dimension 4
year	Year
totalAccounts	The sum of existing, conversion, and new construction customers
totalUnits	totalAccounts * units per account
fuelSpecificUnits	The energy usage associated with a single unit at the full dimension 1 through 5 (zbnfe) level.
effeeus1 - effeeus4	This is the average number of fuel specific end-uses (FEUS) across the possible Dimension 5 (efficiency) levels, and is identical to AVGEU(1-4) in VNTFMKSH\Sxx
averageShareEff1 - averageShareEff4	The average stock share of Dimension 5 for each Dimension 1-4 combination
fshareExisting	The fourth dimension (fuel) market share for existing (replacement equipment) customers
fshareNew	The fourth dimension (fuel) market share for new construction customers
fshareConversion	The fourth dimension (fuel) market share for conversion customers
marginalShareExisting1 - marginalShareExisting4	The marginal (existing equipment) share of Dimension 5 for each Dimension 1-4 combination
marginalShareNew1 - marginalShareNew4	The marginal (new equipment) share of Dimension 5 for each Dimension 1-4 combination
marginalShareConversion1 - marginalShareConversion4	The marginal (conversion equipment) share of Dimension 5 for each Dimension 1-4 combination

The End Use Forecaster's data requirements are extensive and diverse; in practically every case, the set of sources necessary to fulfill them are equally varied. For the five Gas Company models, the data sources fell into four categories.

- Company-specific primary research – Studies conducted by or for the Gas Company help to characterize the market for different segments.
- Company databases – The Gas Company's MAS, for example, and other internal data sources have indispensable historical data on the customer counts and consumption patterns.
- Secondary data sources – Recent state projects by CALMAC, for example, have information on baseline end-use consumption and equipment costs.
- Assumptions – Professional judgment or assumptions based on previous model inputs are necessary to fill in those areas where other data sources are insufficient.

For nearly every input, more than one source was considered during the process of populating the model. The principal criterion for selection of the final source was the "reasonableness" of the results. In cases where alternative source produced similar results, preference was given to more recent and company-specific data. In some cases, multiple sources were used where one complemented another. The specific sources for each individual input are documented in Excel workbooks used during data development or in the SAS code used to populate the model. The final values used in the model are available in the SAS data sets for the various modules.

Residential Model

The residential model had the most consistent and robust set of sources. An analysis of raw data from the Gas Company's most recent RASS provided customized inputs for many of the customer characteristics. Data from CALMAC were available for unit energy consumption and equipment costs for the primary end uses. Gas Company data on customer counts, consumption, and meter forecasts were easily produced in a format consistent with the chosen segmentation design.

Usage Module - Residential

Data Set	Variable	Source	Notes
Input.UsageParameters_10	B0 (UEC)	CALMAC California Statewide Residential Sector Energy Efficiency Potential Study, Volume II: Appendices	Stock or standard efficiency UECs taken from "Base Tech UEC" inputs. UECs for higher efficiencies based on "Energy Savings" inputs.
	B1 (Price Elasticity)	SoCal Gas econometric model outputs	
Input.UsageDrivers_10	X0 (UEC)	Default values.	Forecast drivers
	X1 (Price)	SoCal Gas price forecasts	Marginal price forecast applied in usage module.
Input.UsageParameters_10	ADJUST	SoCal Gas historical customer data	Adjustment to UECs by vintage based on SoCal Gas historical use per customer.

Choice Module - Residential

Data Set	Variable	Source	Notes
Input.ChoiceParameters_10	Lifetime	SoCal Gas RASS	
	DiscountRate	Default	
	PriceShare	Default	
	A1, A2, A3, B1, B2	Default Starting Values	Some initial parameters changed during operation of choice module to allow calibration.
Input.ChoiceDrivers_10	CapitalCostExisting, CapitalCostNew, CapitalCostConversion	CALMAC California Statewide Residential Sector Energy Efficiency Potential Study, Volume II: Appendices	Where costs were not available from CALMAC, values from previous SoCal Gas residential model were adapted to accommodate additional efficiency level in current version
	Available	Assumptions	Stock efficiency level assumed unavailable after base year.
Input.FSharesInitial_10	BaseAvgFShare, BaseMargFShareExisting, BaseMargFShareConversion, BaseMargFShareNew	SoCal Gas RASS	
Input.ESharesInitial_10	BaseAvgEShare, BaseMargEShareExisting, BaseMargEShareConversion, BaseMargEShareNew	Assumptions, previous residential model, and CALMAC *California Statewide Residential Sector Energy Efficiency Potential Study, Volume II: Appendices*	

Forecast Module - Residential

Data Set	Variable	Source	Notes
Input.CustomerCountsActual_10	ACCTSY0	SoCal Gas historical customer data	
Input.CustomerCountsForecast_10	NEWCONST	SoCal Gas residential meter forecasts	
	UPA	Default	Units Per Account: set to one for single- and multi-family dwellings. Master- and sub-metered adjusted to account for customer counts per meter.
Input.AccountDecay_10	AccountDecayIndicator, AccountDecayParm1-4	SoCal Gas	No decay applied to new construction.
Input.EquipmentDecay_10	EquipmentDecayIndicator, EquipmentDecayParm1-4	Assumptions	Exponential decay function applied based on measure life assumptions. Logistic decay function applied based on measure life assumptions.
Input.EquipmentAge_10	EquipmentMeanAge, EquipmentMaxAge	SoCal Gas RASS	
Input.Saturations_10	SAT	SoCal Gas RASS	

Commercial Core and Non-Core Models

The Core and Non-Core Commercial models share the same sources for data. For most of the inputs, these sources provide identical values for both models. That is the sources for data do not show any distinction in the end use intensity (EUI) values, end-use saturations, and fuel and efficiency shares for the two models. The fundamental difference in the models is the Gas Company's customer counts for the different building types. Less significantly, price forecasts, which have an influence on both usage and choice modules, are also different for the two models.

Usage Module – Commercial Core and Noncore

End Use Forecaster's Library and Data Set	End Use Forecaster Variable(s)	Source	Notes
Input.UsageParameters_10	B0 (EUI)	SDG&E 2000 Commercial EUI Study, CALMAC *California Statewide Commercial Sector Natural Gas Energy Efficiency Potential Study, Volume II: Appendices*	Stock efficiency EUIs taken from SDG&E study. EUIs for higher efficiencies based on "Energy Savings" inputs from CALMAC.
	B1 (Price Elasticity)	SoCal Gas econometric model outputs	
Input.UsageDrivers_10	X0 (EUI)	Default values	Forecast drivers
	X1 (Price)	SoCal Gas price forecasts	Marginal price forecast applied in usage module.

Choice Module – Commercial Core and Noncore

Data Set	Variable	Source	Notes
Input. ChoiceParameters_10	Lifetime	So Cal Gas MAS, Assumptions	
	DiscountRate	Default Assumptions – 25%	The 25% customer discount rate stems from the implicit discount rate literature.
	PriceShare	Default Assumptions – 50%	The 50% price share assumption on previous Cadmus Group (formerly Quantec) research on how customers trade off price vs. non price attributes
	A1, A2, A3, B1, B2	Default Starting Values	Some initial parameters changed during operation of choice module to allow calibration.
Input. ChoiceDrivers_10	CapitalCostExisting, CapitalCostConversion, CapitalCostNew	So Cal Gas Average Price Forecast, Assumptions	Operating costs based on equipment usage data and SoCal Gas price forecast, with capital costs calculated based on assumed ratios of operating to capital costs.
	Available	Assumptions	Stock efficiency level assumed unavailable after base year.
Input. FSharesInitial_10	BaseAvgFShare, BaseMargFShareExisting, BaseMargFShareConversion, BaseMargFShareNew	SDG&E 2000 Commercial EUI Study, 1996 SoCal Gas Commercial & Industrial Energy Equipment Market Share Study	
Input. ESharesInitial_10	BaseAvgEShare, BaseMargEShareExisting, BaseMargEShareConversion, BaseMargEShareNew	Assumptions	10% high efficiency share(s) based on professional judgment and DSM free ridership literature.

Forecast Module – Commercial Core and Noncore

Data Set	Variable	Source	Notes
Input.CustomerCountsActual_10	ACCTSY0	SoCal Gas historical customer data	Base year accounts data.
Input.CustomerCountsForecast_10	NEWCONST	SoCal Gas historical customer data, SoCal Gas employment forecasts, and SoCal Gas employment elasticity from econometric model	New Construction.
	UPA	MAS	Units Per Account.
Input.AccountDecay_10	AccountDecayIndicator, AccountDecayParm1-4	Assumptions	No decay applied to existing accounts. No decay applied to new construction.
Input.EquipmentDecay_10	EquipmentDecayIndicator, EquipmentDecayParm1-4	Assumptions	Exponential decay function applied based on measure life assumptions. Logistic decay function applied based on measure life assumptions
Input.EquipmentAge_10	EquipmentMaxAge, EquipmentMeanAge	SoCal Gas MAS	
Input.Saturations_10	SAT	SDG&E 2000 Commercial EUI Study	

Industrial Core and Non-Core Models

The Core and Non-Core Industrial models also share the same data sources. Unlike the sources for the commercial models, the data from the Gas Company's MAS – one of the primary inputs into to calculation of the UECs – are different for core and non-core sectors. Consequently, the final UEC for a given building's end use can vary significantly between the models. As with the commercial models, the Gas Company's historical customer counts also drive differences in the forecasts.

Usage Module – Industrial Core and Noncore

Data Set	Variable	Source	Notes
Input.UsageParameters_10	B0 (EUI)	SoCal Gas MAS, SoCal Gas Commercial & Industrial Energy Equipment Market Share Study	UECs based on a top-down calculation based on historical use per customer, end-use saturations, and fuel shares.
	B1 (Price Elasticity)	SoCal Gas econometric model outputs	
Input.UsageDrivers_10	X0 (EUI)	Default values.	Forecast drivers
	X1 (Price)	SoCal Gas price forecasts	Marginal price forecast applied in usage module.

Choice Module – Industrial Core and Noncore

Data Set	Variable	Source	Notes
Input.ChoiceParameters_10	Lifetime	So Cal Gas MAS, Assumptions	
	DiscountRate	Default	
	PriceShare	Default	
	A1, A2, A3, B1, B2	Default Starting Values	Some initial parameters changed during operation of choice module to allow calibration.
Input.ChoiceDrivers_10	CapitalCostExisting, CapitalCostNew, CapitalCostConversion	So Cal Gas Average Price Forecast, Assumptions	Operating costs based on equipment usage data and SoCal Gas price forecast, with capital costs calculated based on assumed ratios of operating to capital costs.
	Available	Assumptions	Stock efficiency level assumed unavailable after base year.
Input.FSharesInitial_10	BaseAvgFShare, BaseMargFShareExisting, BaseMargFShareConversion, BaseMargFShareNew	SoCal Gas Commercial & Industrial Energy Equipment Market Share Study	
Input.ESharesInitial_10	BaseAvgEShare, BaseMargEShareExisting, BaseMargEShareConversion, BaseMargEShareNew	Assumptions.	

Forecast Module – Industrial Core and Noncore

Data Set	Variable	Source	Notes
Input.CustomerCountsActual_10	ACCTSY0	SoCal Gas historical customer data	
Input.CustomerCountsForecast_10	NEWCONST	SoCal Gas historical customer data, SoCal Gas employment forecasts, and SoCal Gas employment elasticity from econometric model	
	UPA	MAS	Units Per Account
Input.AccountDecay_10	AccountDecayIndicator, AccountDecayParm1-4	Assumptions	No decay applied to existing accounts.
Input.EquipmentDecay_10	EquipmentDecayIndicator, EquipmentDecayParm1-4	Assumptions	Exponential decay function applied based on measure life assumptions. Logistic decay function applied based on measure life assumptions.
Input.EquipmentAge_10	EquipmentMaxAge, EquipmentMeanAge	SoCal Gas MAS	
Input.Saturations_10	SAT	SoCalGas RASS	

2008 CALIFORNIA GAS REPORT

RESIDENTIAL DEMAND FORECAST
JULY 2008

The Gas Company

A Sempra Energy utility℠

Core Residential End-Use Model
2008 California Gas Report

Introduction:

SoCalGas used the End Use Forecaster model to generate annual gas demand forecasts for the residential market from 2008 through 2030. The software's market segmentation and end-use modeling framework analyzes the impacts of competitive strategies (gas vs. electricity) and market scenarios on gas demand and market shares.

The model separates the residential market into five building types (B-level). These groups are identified by the premise code classification found in the company billing files. The five residential groups are:

- Single-Family(SF);
- Multi-Family <= 4 units (MF2);
- Multi-Family > 4 units (MF3);
- Master Metered (MM); and
- Sub-Metered (SM).

The residential model identifies eight end-uses (N-level) that are the primary drivers of natural gas demand:

- Space heating;
- Water heating;
- Cooking;
- Drying;
- Pool heating;
- Spa heating;
- Fireplace; and
- Barbeque.

The model assumes two fuel choices (F-level) for end-uses:

- Natural gas; and
- Electricity.

The model assumes up to four efficiency levels (E-level) for the various end-uses. In general, the efficiency levels are:

- Stock;
- Standard;
- High efficiency; and
- Premium efficiency.

See Figure 1 for a classification of the number of efficiency levels for each end use by customer segment type.

A set of post-model adjustments were applied to the model's annual demand forecast. The first adjustment calibrates to the recorded 2005 weather-adjusted demand. Next, the annual forecast was parceled out to a series of monthly forecasts by a process which involves two steps. These two steps consist of (1) using the fitted equation[1] for customer demand to generate a forecast of use per customer that varies with the number of calendar days and heating degree days in a given month and (2) calculating a series of weights based on the customer's predicted monthly usage share in total annual consumption. The shares obtained from the latter step were then applied to annual totals to derive the stream of monthly forecasts which are conditional on the particular weather design specification for the entire year. A final adjustment to the forecast offsets the throughput by the energy efficiency savings. See Figure 2 for the annual demand forecast. Figures 3-6 illustrate the monthly forecasts for each weather scenario.

Data Sources:

The information used to perform the modeling and to generate the forecast includes historical 2007 consumption and customer counts; meter counts, growth, and decay; use per customer by vintage and unit energy consumption (UEC) values; fuel costs and price elasticity; equipment capital costs and availability; building and equipment lives and decay. The historical data were extracted from the billing tables housed within the Customer Information System (CIS). See Figure 7 for the 2007 historical data.

Meter Counts, Growth and Decay:

Regression equations were developed for each of the 5 building types. The meter count forecast is a company-specific forecast based on actual meter counts within the SoCalGas service territory. Data on meter decay rates were obtained from the Energy Information Administration (EIA). See Figure 8 for the meter count forecast.

Use Per Customer by Vintage and UEC:

Use per customer and Unit Energy Consumption (UEC) data were based on company marketing data and the California Measurement Advisory Council. See Figure 9 for the appliance UEC's.

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[1] SCG Monthly Use Per Customer = (0.74) * Calendar Days + (0.17) * Heating Degree Days

<u>Fuel Costs and Price Elasticity</u>:

Average and marginal gas prices ($/therm) were calculated from forecasts of the residential rate components. Residential rates have two consumption tiers. We used the simple average of the second tiers' projected monthly prices for each forecast year as the marginal rate. The marginal rate was used for each housing segment type.

For a given housing segment type, the average gas commodity rate was calculated using a pair of weights for the two consumption tiers applied to the simple average of each tier's monthly rate. The average commodity rate in each forecast year was developed using the same consumption tier weights, but with the forecasts of rates for each residential rate tier. The average gas price each year was then calculated by including the non-volumetric customer charges with the year's average gas commodity price. Figure 10 illustrates the gas price forecasts.

<u>Electric Price Data</u>:

The electricity price inputs consist of average prices (cents/kWh) and marginal prices (cents/kWh). The forecasts for the residential customer class were developed by SDG&E's electricity rate analysis group for 2008 through 2030.

A ratio of the housing type's average gas price to the overall residential gas price was constructed. The weight was then multiplied by the overall average electricity price to derive residential market-specific electricity prices.

The marginal prices for each residential housing type were calculated by multiplying each year's respective average price by a ratio. These ratios were 1.513 for the SF, MF2 and MF3 housing types, 1.034 for the MM housing type and 1.125 for the SM housing type. These various ratios ware estimated from analyses of SCE Schedule D rate schedule for housing types SF, MF2 and MF3; SCE Schedule DM for housing type MM; and SCE Schedule D as applied to sub-metered buildings for housing type SM. Copies of these rate schedules were obtained from the SCE web-site. Figure 11 illustrates the electricity price forecasts.

Price elasticities for each building type were based on the SoCalGas Residential Econometric Demand Forecasting Model. See Figure 7 for price elasticities.

Equipment Capital Costs and Availability:

Data on equipment capital costs and availability were from EIA, the Residential Appliance Saturation Survey (RASS), Energy Star (EPA & DOE), and SoCalGas company data. See Figures 12 and 13 for gas and electric appliance equipment cost.

Building and Equipment Lives and Decay:

Building decay rates are based on the building shell lifetimes, where the lifetime is defined as the length of time it takes for either a demolition or a major renovation to occur. For single-family residential buildings, an exponential rate of decay of 0.3% per year was assumed. See Figure 14 for the building decay rates.

Data on equipment lives and decay rates are based on EIA, RASS, Energy Star, and SoCalGas company data. See Figure 15 for the average lifetimes of gas appliances.

Saturations, Fuel and Efficiency Shares:

Saturation values, fuel shares, and efficiency shares were extracted from SoCalGas company data files and the most recent 2004 RASS Update. Please see Figures 16-19 for saturations, fuel, and efficiency shares.

RESIDENTIAL DATA

Southern California Gas Company
2008 California Gas Report
Figure 1: Number of Efficiency Levels by End Use by Customer Segment

	Space Heating		Water Heating		Cooking		Drying		Pool		Spa		Fireplace		BBQ	
	Gas	Electric	Gas	Electric	Gas	Electric	Gas	Electric	Gas	Electric	Gas	Electric	Gas	Electric	Gas	Electric
Single Family	4	1	4	4	2	2	2	4	2	0	2	0	1	0	1	1
Multi-Family <= 4 Units	4	1	4	4	2	2	2	4	0	0	0	0	0	0	1	1
Multi-Family > 4 Units	4	1	4	4	2	2	2	4	0	0	0	0	0	0	1	1
Master Meter	4	1	4	4	2	2	2	4	0	0	0	0	0	0	1	1
Sub-Meter	4	1	4	4	2	2	2	4	0	0	0	0	0	0	1	1

Southern California Gas Company
2008 California Gas Report
Figure 2: Annual Demand Forecast (Mdth)
Before EE Savings

Year	Total	Single Family	Multi-Family 2 - 4 Units	Multi-Family > 4 Units	Master Meter	Sub Meter
2007	252,830	181,397	17,920	32,989	14,891	5,633
2008	249,863	179,277	17,720	32,625	14,708	5,533
2009	248,097	178,164	17,579	32,336	14,562	5,456
2010	248,698	178,961	17,592	32,243	14,483	5,419
2011	249,237	179,691	17,609	32,171	14,391	5,375
2012	250,890	181,265	17,720	32,225	14,331	5,349
2013	252,491	182,789	17,830	32,287	14,264	5,320
2014	254,160	184,355	17,950	32,369	14,197	5,290
2015	254,594	184,962	17,973	32,344	14,082	5,233
2016	254,875	185,437	17,989	32,316	13,961	5,172
2017	255,296	186,005	18,019	32,313	13,844	5,115
2018	255,869	186,674	18,066	32,335	13,733	5,060
2019	256,614	187,463	18,131	32,385	13,627	5,009
2020	257,465	188,318	18,209	32,454	13,524	4,960
2021	258,749	189,495	18,326	32,573	13,435	4,920
2022	259,443	190,208	18,397	32,643	13,327	4,868
2023	260,154	190,922	18,473	32,722	13,220	4,818
2024	260,881	191,636	18,554	32,809	13,114	4,768
2025	261,679	192,399	18,642	32,910	13,009	4,719
2026	262,626	193,271	18,743	33,029	12,909	4,674
2027	263,627	194,176	18,852	33,160	12,811	4,629
2028	263,621	194,289	18,880	33,201	12,683	4,568
2029	265,103	195,527	19,041	33,401	12,601	4,533
2030	265,822	196,168	19,140	33,531	12,497	4,486

Southern California Gas Company
2008 California Gas Report
Figure 3: Average-Temperature Year Demand Forecast

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2007	36,125	30,003	27,708	21,016	15,781	12,403	11,658	11,624	11,466	14,410	23,734	36,901	252,829
2008	35,635	29,596	27,332	20,731	15,567	12,235	11,500	11,466	11,310	14,214	23,412	36,400	249,397
2009	35,239	29,267	27,028	20,500	15,394	12,099	11,372	11,339	11,185	14,056	23,151	35,995	246,626
2010	35,175	29,214	26,980	20,463	15,366	12,077	11,351	11,318	11,164	14,031	23,110	35,930	246,180
2011	35,094	29,147	26,918	20,416	15,331	12,049	11,325	11,292	11,139	13,998	23,056	35,848	245,614
2012	35,160	29,202	26,968	20,454	15,359	12,072	11,346	11,313	11,160	14,025	23,099	35,914	246,072
2013	35,200	29,235	26,998	20,478	15,377	12,085	11,359	11,326	11,172	14,040	23,126	35,955	246,350
2014	35,249	29,276	27,036	20,506	15,398	12,102	11,375	11,342	11,188	14,060	23,158	36,005	246,696
2015	35,122	29,170	26,939	20,432	15,343	12,059	11,334	11,301	11,147	14,009	23,075	35,876	245,806
2016	34,973	29,046	26,824	20,346	15,278	12,007	11,286	11,253	11,100	13,950	22,977	35,723	244,764
2017	34,844	28,939	26,725	20,271	15,221	11,963	11,244	11,212	11,059	13,899	22,892	35,592	243,861
2018	34,737	28,850	26,643	20,208	15,175	11,926	11,210	11,177	11,025	13,856	22,821	35,482	243,110
2019	34,654	28,782	26,580	20,160	15,139	11,898	11,183	11,150	10,999	13,823	22,767	35,398	242,532
2020	34,587	28,725	26,528	20,121	15,109	11,875	11,161	11,129	10,978	13,796	22,723	35,329	242,060
2021	34,581	28,721	26,524	20,118	15,107	11,873	11,159	11,127	10,976	13,794	22,719	35,323	242,020
2022	34,491	28,646	26,455	20,065	15,067	11,842	11,130	11,098	10,947	13,758	22,660	35,231	241,390
2023	34,470	28,629	26,439	20,053	15,058	11,835	11,124	11,091	10,941	13,749	22,646	35,210	241,244
2024	34,528	28,677	26,483	20,087	15,084	11,855	11,143	11,110	10,959	13,773	22,685	35,269	241,653
2025	34,603	28,739	26,540	20,130	15,116	11,880	11,167	11,134	10,983	13,802	22,733	35,345	242,174
2026	34,707	28,825	26,620	20,191	15,162	11,916	11,200	11,167	11,016	13,844	22,802	35,452	242,902
2027	34,831	28,929	26,716	20,263	15,216	11,959	11,240	11,208	11,055	13,894	22,884	35,579	243,774
2028	34,831	28,928	26,715	20,263	15,216	11,959	11,240	11,207	11,055	13,893	22,883	35,578	243,768
2029	35,042	29,104	26,878	20,386	15,308	12,031	11,308	11,275	11,122	13,978	23,022	35,794	245,250
2030	35,145	29,189	26,956	20,446	15,353	12,067	11,342	11,308	11,155	14,019	23,090	35,899	245,969

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Figure 4: Cold-Temperature Year Demand Forecast

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2007	41,228	34,076	31,073	23,061	16,676	12,667	11,701	11,649	11,543	15,015	26,349	42,166	277,203
2008	40,669	33,613	30,652	22,748	16,449	12,495	11,542	11,491	11,386	14,811	25,992	41,593	273,440
2009	40,217	33,240	30,311	22,495	16,267	12,356	11,413	11,364	11,259	14,646	25,703	41,131	270,401
2010	40,144	33,180	30,256	22,454	16,237	12,334	11,393	11,343	11,239	14,620	25,656	41,057	269,913
2011	40,052	33,103	30,187	22,403	16,200	12,306	11,367	11,317	11,213	14,586	25,597	40,962	269,292
2012	40,127	33,165	30,243	22,444	16,230	12,329	11,388	11,338	11,234	14,613	25,645	41,039	269,795
2013	40,172	33,202	30,277	22,470	16,248	12,343	11,401	11,351	11,247	14,630	25,674	41,085	270,099
2014	40,228	33,249	30,320	22,501	16,271	12,360	11,417	11,367	11,263	14,650	25,710	41,143	270,478
2015	40,083	33,129	30,210	22,420	16,213	12,315	11,376	11,326	11,222	14,597	25,617	40,994	269,503
2016	39,913	32,989	30,082	22,325	16,144	12,263	11,327	11,278	11,174	14,536	25,509	40,820	268,360
2017	39,766	32,867	29,971	22,243	16,084	12,218	11,285	11,236	11,133	14,482	25,415	40,670	267,370
2018	39,644	32,766	29,879	22,174	16,035	12,180	11,251	11,202	11,099	14,437	25,336	40,545	266,547
2019	39,549	32,688	29,808	22,122	15,997	12,151	11,224	11,175	11,073	14,403	25,276	40,448	265,913
2020	39,472	32,624	29,750	22,078	15,965	12,128	11,202	11,153	11,051	14,375	25,227	40,369	265,395
2021	39,466	32,619	29,745	22,075	15,963	12,126	11,200	11,151	11,049	14,373	25,223	40,363	265,351
2022	39,363	32,534	29,667	22,017	15,921	12,094	11,171	11,122	11,020	14,335	25,157	40,258	264,661
2023	39,339	32,514	29,650	22,004	15,912	12,087	11,164	11,116	11,014	14,326	25,142	40,233	264,501
2024	39,406	32,569	29,700	22,041	15,939	12,107	11,183	11,134	11,032	14,351	25,184	40,302	264,949
2025	39,491	32,640	29,764	22,089	15,973	12,133	11,207	11,158	11,056	14,382	25,239	40,388	265,520
2026	39,610	32,738	29,853	22,155	16,021	12,170	11,241	11,192	11,089	14,425	25,315	40,510	266,319
2027	39,752	32,855	29,960	22,235	16,079	12,214	11,281	11,232	11,129	14,477	25,405	40,655	267,275
2028	39,751	32,854	29,960	22,234	16,078	12,213	11,281	11,232	11,129	14,476	25,405	40,654	267,268
2029	39,992	33,054	30,142	22,369	16,176	12,287	11,350	11,300	11,197	14,564	25,559	40,901	268,893
2030	40,110	33,151	30,230	22,435	16,223	12,323	11,383	11,333	11,229	14,607	25,634	41,021	269,681

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Figure 5: Hot-Temperature Year Demand Forecast

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2007	31,014	25,940	24,343	18,963	14,895	12,139	11,624	11,598	11,398	13,805	21,118	31,627	228,464
2008	30,593	25,588	24,013	18,706	14,693	11,974	11,466	11,441	11,243	13,617	20,832	31,198	225,363
2009	30,253	25,303	23,746	18,498	14,530	11,841	11,339	11,314	11,118	13,466	20,600	30,851	222,858
2010	30,198	25,258	23,703	18,464	14,504	11,820	11,318	11,293	11,098	13,442	20,563	30,795	222,456
2011	30,129	25,200	23,648	18,422	14,470	11,793	11,292	11,267	11,073	13,411	20,516	30,725	221,944
2012	30,185	25,247	23,693	18,456	14,497	11,815	11,313	11,288	11,093	13,436	20,554	30,782	222,358
2013	30,219	25,275	23,719	18,477	14,514	11,828	11,326	11,301	11,106	13,451	20,577	30,817	222,609
2014	30,261	25,310	23,753	18,503	14,534	11,845	11,342	11,317	11,121	13,470	20,606	30,860	222,922
2015	30,152	25,219	23,667	18,436	14,482	11,802	11,301	11,276	11,081	13,421	20,532	30,749	222,118
2016	30,024	25,112	23,567	18,358	14,420	11,752	11,253	11,228	11,034	13,364	20,445	30,618	221,176
2017	29,914	25,020	23,480	18,290	14,367	11,708	11,212	11,187	10,994	13,315	20,369	30,505	220,360
2018	29,822	24,943	23,407	18,234	14,323	11,672	11,177	11,152	10,960	13,274	20,307	30,411	219,682
2019	29,751	24,883	23,352	18,191	14,289	11,645	11,150	11,126	10,934	13,243	20,258	30,339	219,159
2020	29,693	24,835	23,306	18,155	14,261	11,622	11,129	11,104	10,912	13,217	20,219	30,280	218,732
2021	29,688	24,831	23,302	18,152	14,258	11,620	11,127	11,102	10,911	13,215	20,215	30,275	218,696
2022	29,611	24,766	23,242	18,105	14,221	11,590	11,098	11,074	10,882	13,180	20,163	30,196	218,127
2023	29,593	24,751	23,228	18,094	14,213	11,583	11,091	11,067	10,876	13,172	20,151	30,178	217,995
2024	29,643	24,793	23,267	18,125	14,237	11,602	11,110	11,086	10,894	13,195	20,185	30,229	218,364
2025	29,707	24,847	23,317	18,164	14,267	11,627	11,134	11,109	10,917	13,223	20,228	30,294	218,835
2026	29,796	24,921	23,387	18,218	14,310	11,662	11,167	11,143	10,950	13,263	20,289	30,385	219,494
2027	29,903	25,011	23,471	18,284	14,362	11,704	11,208	11,183	10,990	13,310	20,362	30,494	220,282
2028	29,902	25,010	23,471	18,283	14,361	11,704	11,207	11,183	10,989	13,310	20,361	30,494	220,276
2029	30,084	25,162	23,613	18,394	14,449	11,775	11,275	11,251	11,056	13,391	20,485	30,679	221,615
2030	30,172	25,236	23,683	18,448	14,491	11,810	11,308	11,284	11,089	13,430	20,545	30,769	222,265

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Figure 6: Base-Temperature Year Demand Forecast

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2007	11,469	10,359	11,469	11,099	11,469	11,099	11,469	11,469	11,099	11,469	11,099	11,469	135,034
2008	11,313	10,218	11,313	10,948	11,313	10,948	11,313	11,313	10,948	11,313	10,948	11,313	133,201
2009	11,187	10,105	11,187	10,826	11,187	10,826	11,187	11,187	10,826	11,187	10,826	11,187	131,720
2010	11,167	10,086	11,167	10,807	11,167	10,807	11,167	11,167	10,807	11,167	10,807	11,167	131,482
2011	11,141	10,063	11,141	10,782	11,141	10,782	11,141	11,141	10,782	11,141	10,782	11,141	131,180
2012	11,162	10,082	11,162	10,802	11,162	10,802	11,162	11,162	10,802	11,162	10,802	11,162	131,425
2013	11,175	10,093	11,175	10,814	11,175	10,814	11,175	11,175	10,814	11,175	10,814	11,175	131,573
2014	11,190	10,107	11,190	10,829	11,190	10,829	11,190	11,190	10,829	11,190	10,829	11,190	131,758
2015	11,150	10,071	11,150	10,790	11,150	10,790	11,150	11,150	10,790	11,150	10,790	11,150	131,283
2016	11,103	10,028	11,103	10,745	11,103	10,745	11,103	11,103	10,745	11,103	10,745	11,103	130,726
2017	11,062	9,991	11,062	10,705	11,062	10,705	11,062	11,062	10,705	11,062	10,705	11,062	130,244
2018	11,028	9,961	11,028	10,672	11,028	10,672	11,028	11,028	10,672	11,028	10,672	11,028	129,843
2019	11,002	9,937	11,002	10,647	11,002	10,647	11,002	11,002	10,647	11,002	10,647	11,002	129,534
2020	10,980	9,917	10,980	10,626	10,980	10,626	10,980	10,980	10,626	10,980	10,626	10,980	129,282
2021	10,978	9,916	10,978	10,624	10,978	10,624	10,978	10,978	10,624	10,978	10,624	10,978	129,260
2022	10,950	9,890	10,950	10,596	10,950	10,596	10,950	10,950	10,596	10,950	10,596	10,950	128,924
2023	10,943	9,884	10,943	10,590	10,943	10,590	10,943	10,943	10,590	10,943	10,590	10,943	128,846
2024	10,962	9,901	10,962	10,608	10,962	10,608	10,962	10,962	10,608	10,962	10,608	10,962	129,064
2025	10,985	9,922	10,985	10,631	10,985	10,631	10,985	10,985	10,631	10,985	10,631	10,985	129,342
2026	11,018	9,952	11,018	10,663	11,018	10,663	11,018	11,018	10,663	11,018	10,663	11,018	129,732
2027	11,058	9,988	11,058	10,701	11,058	10,701	11,058	11,058	10,701	11,058	10,701	11,058	130,197
2028	11,058	9,987	11,058	10,701	11,058	10,701	11,058	11,058	10,701	11,058	10,701	11,058	130,194
2029	11,125	10,048	11,125	10,766	11,125	10,766	11,125	11,125	10,766	11,125	10,766	11,125	130,985
2030	11,157	10,078	11,157	10,797	11,157	10,797	11,157	11,157	10,797	11,157	10,797	11,157	131,369

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Figure 7: 2007 Historical Data

	Single Family	Multi-Family 2 - 4 Units	Multi-Family > 4 Units	Master Meter	Sub Meter
Total Therm Sales	1,813,971,079	179,204,271	329,886,686	148,907,107	56,325,087
Meter Count					
Pre-1979 Customers	2,405,277	425,459	727,454	37,085	1,698
1979 - 2004 Customers	1,063,379	111,271	384,161	3,453	107
2005-2007 Customers	55,725	5,562	11,998	43	1
TOTAL	3,524,381	542,292	1,123,613	40,581	1,805
Use Per Customer (UPC, therms)					
Pre-1979 Customers	522	335	304	3,394	30,835
1979 - 2004 Customers	502	316	276	6,529	37,088
2005-2007 Customers	437	259	251	12,119	-
Price Elasticity	-0.105	-0.112	-0.071	-0.069	-0.105

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Figure 8: Meter Count Forecast

Year	Total	Single Family	Multi-Family 2 - 4 Units	Multi-Family > 4 Units	Master Meter	Sub Meter
2007	5,232,672	3,524,381	542,292	1,123,613	40,581	1,805
2008	5,267,827	3,540,513	548,484	1,136,443	40,581	1,805
2009	5,307,477	3,563,512	553,905	1,147,674	40,581	1,805
2010	5,361,061	3,599,545	559,618	1,159,512	40,581	1,805
2011	5,422,440	3,639,455	566,607	1,173,992	40,581	1,805
2012	5,490,638	3,683,295	574,536	1,190,422	40,581	1,805
2013	5,561,639	3,728,503	582,932	1,207,818	40,581	1,805
2014	5,634,374	3,774,432	591,658	1,225,898	40,581	1,805
2015	5,708,655	3,820,827	600,736	1,244,707	40,581	1,805
2016	5,784,039	3,867,468	610,092	1,264,093	40,581	1,805
2017	5,860,018	3,914,060	619,658	1,283,914	40,581	1,805
2018	5,936,246	3,960,356	629,402	1,304,102	40,581	1,805
2019	6,012,880	4,006,471	639,337	1,324,687	40,581	1,805
2020	6,089,882	4,052,398	649,452	1,345,646	40,581	1,805
2021	6,167,069	4,098,101	659,701	1,366,881	40,581	1,805
2022	6,244,298	4,143,490	670,066	1,388,356	40,581	1,805
2023	6,321,627	4,188,582	680,560	1,410,099	40,581	1,805
2024	6,399,061	4,233,384	691,182	1,432,109	40,581	1,805
2025	6,476,977	4,278,284	701,930	1,454,377	40,581	1,805
2026	6,555,722	4,323,652	712,795	1,476,890	40,581	1,805
2027	6,634,909	4,369,019	723,804	1,499,700	40,581	1,805
2028	6,713,751	4,413,544	734,975	1,522,846	40,581	1,805
2029	6,791,906	4,456,998	746,271	1,546,251	40,581	1,805
2030	6,869,981	4,500,062	757,668	1,569,865	40,581	1,805

Note: The master meter and sub meter groups are expected to decline.
A decay rate was built into the model specification.

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Figure 9: Appliance Unit Energy Consumption (Gas in therms, Electric in Kwh)

		Single Family		Multi-Family 2 - 4 Units		Multi-Family > 4 Units		Master Meter		Sub Meter	
End-Use	**Vintage**	**Gas**	**Electric**	**Gas**	**Electric**	**Gas**	**Electric**	**Gas**	**Electric**	**Gas**	**Electric**
Space Heat	Stock	370	4,110	200	730	200	730	200	730	330	1,340
	Standard	330	3,730	180	670	180	-	180	-	300	-
	High	310	3,450	170	620	170	-	170	-	280	-
	Premium	280	3,170	150	570	150	-	150	-	260	-
Water Heat	Stock	260	2,440	230	2,440	230	2,440	230	2,440	210	2,010
	Standard	240	2,220	210	2,220	210	2,220	210	2,220	190	1,830
	High	230	2,110	200	2,110	200	2,110	200	2,110	180	1,740
	Premium	220	2,050	190	2,050	190	2,050	190	2,050	180	1,690
Cooking	Stock	50	574	34	465	34	465	34	465	45	514
	Standard	42.5	487.9	28.9	395	29	395	29	395	38	437
Drying	Stock	45.1	1442.1	24.2	1442.1	24	1,442	24	1,442	26	873
	Standard	42.8	1369.9	23.0	1370.0	23	1,370	23	1,370	25	830
Pool	Stock	177	3,431	177	3,431	177	3,431	177	3,431	177	3,431
Spa	Stock	146	430	146	430	146	430	146	430	146	430
Fireplace	Stock	21	-	21	-	21	-	21	-	21	-
BBQ	Stock	28	-	28	-	28	-	28	-	28	-

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Figure 10: Average and Marginal Gas Price Forecast (Nominal $ / therm)

		Average Price					Marginal Price				
Year	Price Deflator	Single Family	Multi-Family 2 - 4 Units	Multi-Family > 4 Units	Master Meter	Sub Meter	Single Family	Multi-Family 2 - 4 Units	Multi-Family > 4 Units	Master Meter	Sub Meter
2007	100.00	1.1155	1.0862	1.0890	1.0683	1.0787	1.2261	1.2261	1.2261	1.2261	1.2261
2008	102.16	1.2333	1.2039	1.2068	1.1861	1.1965	1.3439	1.3439	1.3439	1.3439	1.3439
2009	103.95	1.2851	1.2503	1.2537	1.0923	1.2414	1.4164	1.4164	1.4164	1.4164	1.4164
2010	105.84	1.2716	1.2367	1.2401	1.0775	1.2278	1.4032	1.4032	1.4032	1.4032	1.4032
2011	107.94	1.2783	1.2432	1.2467	1.0817	1.2344	1.4101	1.4101	1.4101	1.4101	1.4101
2012	110.22	1.2424	1.2073	1.2108	1.0745	1.1985	1.3746	1.3746	1.3746	1.3746	1.3746
2013	112.38	1.2135	1.1784	1.1818	1.0120	1.1695	1.3459	1.3459	1.3459	1.3459	1.3459
2014	114.59	1.1853	1.1501	1.1535	0.9811	1.1411	1.3181	1.3181	1.3181	1.3181	1.3181
2015	116.82	1.2289	1.1936	1.1971	1.0219	1.1846	1.3620	1.3620	1.3620	1.3620	1.3620
2016	119.03	1.2854	1.2500	1.2535	1.0754	1.2410	1.4188	1.4188	1.4188	1.4188	1.4188
2017	121.24	1.3377	1.3022	1.3057	1.1248	1.2932	1.4715	1.4715	1.4715	1.4715	1.4715
2018	123.49	1.3848	1.3492	1.3527	1.1689	1.3402	1.5189	1.5189	1.5189	1.5189	1.5189
2019	125.76	1.4249	1.3892	1.3928	1.2060	1.3802	1.5594	1.5594	1.5594	1.5594	1.5594
2020	128.18	1.4632	1.4274	1.4309	1.2413	1.4183	1.5981	1.5981	1.5981	1.5981	1.5981
2021	130.68	1.4790	1.4431	1.4466	1.2542	1.4340	1.6142	1.6142	1.6142	1.6142	1.6142
2022	133.17	1.5309	1.4949	1.4984	1.3024	1.4858	1.6665	1.6665	1.6665	1.6665	1.6665
2023	135.71	1.5842	1.5481	1.5516	1.3526	1.5389	1.7202	1.7202	1.7202	1.7202	1.7202
2024	138.30	1.6389	1.6026	1.6062	1.4039	1.5935	1.7753	1.7753	1.7753	1.7753	1.7753
2025	140.97	1.6928	1.6565	1.6601	1.4543	1.6473	1.8296	1.8296	1.8296	1.8296	1.8296
2026	143.71	1.7417	1.7052	1.7088	1.4840	1.6960	1.8789	1.8789	1.8789	1.8789	1.8789
2027	146.45	1.7417	1.7052	1.7088	1.4840	1.6960	1.9268	1.9268	1.9268	1.9268	1.9268
2028	149.20	1.7417	1.7052	1.7088	1.4840	1.6960	2.0395	2.0395	2.0395	2.0395	2.0395
2029	151.97	1.7417	1.7052	1.7088	1.4840	1.6960	2.0559	2.0559	2.0559	2.0559	2.0559
2030	154.80	1.7417	1.7052	1.7088	1.4840	1.6960	2.1233	2.1233	2.1233	2.1233	2.1233

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Figure 11: Average and Marginal Electric Price Forecast (Nominal cents / Kwh)

		Average Price					Marginal Price				
Year	Price Deflator	Single Family	Multi-Family 2 - 4 Units	Multi-Family > 4 Units	Master Meter	Sub Meter	Single Family	Multi-Family 2 - 4 Units	Multi-Family > 4 Units	Master Meter	Sub Meter
2007	100.00	15.62	15.21	15.25	14.96	15.10	23.64	23.01	23.08	15.47	17.00
2008	102.16	16.12	15.73	15.77	15.50	15.64	24.39	23.81	23.87	16.03	17.60
2009	103.95	16.95	16.51	16.56	16.24	16.40	25.65	24.99	25.05	16.79	18.45
2010	105.84	16.84	16.39	16.43	16.11	16.27	25.48	24.80	24.86	16.66	18.31
2011	107.94	17.07	16.61	16.65	16.32	16.49	25.83	25.13	25.20	16.88	18.55
2012	110.22	17.37	16.88	16.93	16.58	16.75	26.28	25.54	25.62	17.14	18.85
2013	112.38	17.44	16.94	16.99	16.64	16.81	26.40	25.64	25.71	17.20	18.92
2014	114.59	17.63	17.11	17.16	16.80	16.98	26.67	25.90	25.97	17.37	19.11
2015	116.82	17.81	17.28	17.33	16.95	17.14	26.94	26.14	26.22	17.53	19.29
2016	119.03	17.87	17.33	17.38	17.00	17.19	27.04	26.22	26.30	17.58	19.35
2017	121.24	18.07	17.53	17.58	17.20	17.39	27.34	26.52	26.60	17.78	19.57
2018	123.49	18.13	17.59	17.64	17.26	17.45	27.44	26.62	26.70	17.84	19.64
2019	125.76	18.20	17.65	17.71	17.31	17.51	27.55	26.71	26.79	17.90	19.70
2020	128.18	18.26	17.71	17.77	17.37	17.57	27.64	26.80	26.88	17.96	19.77
2021	130.68	18.33	17.77	17.82	17.43	17.63	27.73	26.89	26.97	18.02	19.84
2022	133.17	18.38	17.83	17.88	17.49	17.69	27.82	26.98	27.06	18.08	19.90
2023	135.71	18.44	17.89	17.94	17.55	17.74	27.90	27.07	27.15	18.14	19.97
2024	138.30	18.50	17.94	18.00	17.61	17.80	27.99	27.15	27.24	18.21	20.03
2025	140.97	18.55	18.00	18.06	17.66	17.86	28.07	27.24	27.32	18.26	20.10
2026	143.71	18.55	18.40	18.46	18.02	18.24	28.77	27.84	27.94	18.26	20.60
2027	146.45	18.55	18.40	18.46	18.02	18.24	28.77	27.84	27.94	18.26	20.60
2028	149.20	18.55	18.59	18.65	18.21	18.43	29.06	28.13	28.22	18.26	20.89
2029	151.97	18.55	18.78	18.84	18.40	18.62	29.35	28.42	28.51	18.26	21.18
2030	154.80	18.55	18.98	19.04	18.60	18.82	29.65	28.71	28.80	18.26	21.47

Southern California Gas Company
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Figure 12: Gas Appliance Equipment Cost (Nominal $)

End-use	Efficiency Level	Single Family	Multi-Family 2 - 4 Units	Multi-Family > 4 Units	Master Meter	Sub Meter
Space Heat	Stock	4,000	2,000	1,600	1,000	1,600
	Standard	4,600	2,300	1,840	1,150	1,840
	High	4,800	2,400	1,920	1,200	1,920
	Premium	5,000	2,500	1,980	1,250	1,980
Water Heat	Stock	550	330	330	330	330
	Standard	650	390	390	390	390
	High	700	420	420	420	420
	Premium	750	450	450	450	450
Cooking	Stock	500	300	250	250	250
	Standard	1,400	1,400	1,400	1,400	1,400
Drying	Stock	328	328	328	328	328
	Standard	482	482	482	482	482
Pool	Stock	1,200	1,200	1,200	1,200	1,200
Spa	Stock	2,000	2,000	2,000	2,000	2,000
Fireplace	Stock	150	150	150	150	150
BBQ	Stock	1,000	600	600	600	600

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Figure 13: Electric Appliance Equipment Cost (Nominal $)

End-use	Efficiency Level	Single Family	Multi-Family 2 - 4 Units	Multi-Family > 4 Units	Master Meter	Sub Meter
Space Heat	Stock	4,100	2,050	1,640	1,025	1,640
Water Heat	Stock	550	330	330	330	330
	Standard	650	390	390	390	390
	High	700	420	420	420	420
	Premium	750	450	450	450	450
Cooking	Stock	500	300	250	250	250
	Standard	1,400	1,400	1,400	1,400	1,400
Drying	Stock	328	328	328	328	328
	Standard	482	482	482	482	482
Pool	Stock	1,200	1,200	1,200	1,200	1,200
Spa	Stock	2,000	2,000	2,000	2,000	2,000
Fireplace	Stock	150	150	150	150	150
BBQ	Stock	1,000	600	600	600	600

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Figure 14: Building Lives and Decay Rate

Building Type	Building Decay Rate
Single-Family	0.003
Multi-Family 2 - 4 Units	0.006
Multi-Family > 4 Units	0.006
Master Meter	0.008
Sub Meter	0.008

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Figure 15: Gas Appliance Equipment Age (Years)

			Single Family		Multi-Family 2 - 4 Units		Multi-Family > 4 Units		Master Meter		Sub Meter	
End-Use	**Vintage**	**Max**	**Average**	**Max**	**Average**	**Max**	**Average**	**Max**	**Average**	**Max**	**Average**	**Max**
Space Heat	Pre-1979	17	17	17	15	15	15	15	16	16	16	16
	1979 - 2004	17	10	17	12	15	11	15	11	16	11	16
	2005-2007	17	3	17	4	15	4	15	4	16	4	16
Water Heat	Pre-1979	7	7	7	7	8	6	8	6	8	6	8
	1979 - 2004	7	7	7	8	8	8	8	8	8	8	8
	2005-2007	7	3	7	2	8	4	8	4	8	4	8
Cooking	Pre-1979	12	10	12	10	10	10	11	14	14	14	14
	1979 - 2004	12	10	12	9	10	11	11	11	14	11	14
	2005-2007	12	2	12	2	10	4	11	3	14	3	14
Drying	Pre-1979	8	8	8	7	9	6	8	8	8	8	8
	1979 - 2004	8	8	8	9	9	8	8	8	8	8	8
	2005-2007	8	6	8	3	9	3	8	4	8	4	8
Pool	Pre-1979	13	13	13	13	13	13	13	13	13	13	13
	1979 - 2004	13	9	13	9	13	9	13	9	13	9	13
	2005-2007	13	3	13	3	13	3	13	3	13	3	13
Spa	Pre-1979	11	11	11	11	11	11	11	11	11	11	11
	1979 - 2004	11	8	11	8	11	8	11	8	11	8	11
	2005-2007	11	3	11	3	11	3	11	3	11	3	11
Fireplace	Pre-1979	15	15	15	15	15	15	15	15	15	15	15
	1979 - 2004	15	15	15	15	15	15	15	15	15	15	15
	2005-2007	15	15	15	15	15	15	15	15	15	15	15
BBQ	Pre-1979	7	7	7	5	6	5	5	5	9	5	9
	1979 - 2004	7	7	7	6	6	5	5	9	9	9	9
	2005-2007	7	5	7	3	6	5	5	2	9	2	9
Other	Pre-1979	15	15	15	15	15	15	15	15	15	15	15
	1979 - 2004	15	15	15	15	15	15	15	15	15	15	15
	2005-2007	15	15	15	15	15	15	15	15	15	15	15

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Figure 16: End-Use Saturations

End-use	Vintage	Single Family	Multi-Family 2 - 4 Units	Multi-Family > 4 Units	Master Meter	Sub Meter
Space Heat	Pre-1979	0.9955	0.9809	0.9655	0.9375	1.0000
	1979 - 2004	0.9990	0.9979	0.9933	0.9600	1.0000
	2005-2007	0.9968	1.0000	0.9491	1.0000	1.0000
Water Heat	Pre-1979	0.9994	1.0000	0.9873	0.9834	1.0000
	1979 - 2004	1.0000	1.0000	0.9892	1.0000	1.0000
	2005-2007	1.0000	1.0000	0.9613	1.0000	1.0000
Cooking	Pre-1979	0.9923	0.9855	0.9855	0.9921	0.9705
	1979 - 2004	0.9953	0.9913	0.9913	1.0000	1.0000
	2005-2007	0.9922	1.0000	1.0000	1.0000	1.0000
Drying	Pre-1979	0.8721	0.8153	0.8153	0.7578	0.8529
	1979 - 2004	0.8973	0.8602	0.8602	0.9600	0.7272
	2005-2007	0.9248	0.7744	0.7744	1.0000	1.0000
Pool	Pre-1979	0.0772	0.0521	0.1045	0.1179	0.1179
	1979 - 2004	0.1611	0.1308	0.1941	0.0053	0.0053
	2005-2007	0.1555	0.1308	0.1941	0.0053	0.0053
Spa	Pre-1979	0.1354	0.0526	0.0668	0.1329	0.1329
	1979 - 2004	0.2339	0.1923	0.2896	0.2012	0.2012
	2005-2007	0.2039	0.1923	0.2896	0.2012	0.2012
Fireplace	Pre-1979	0.5493	0.2634	0.1519	0.1894	0.1894
	1979 - 2004	0.7149	0.6261	0.4775	0.4156	0.4156
	2005-2007	0.7149	0.6261	0.4775	0.4156	0.4156
Barbecue	Pre-1979	0.4595	0.2630	0.1524	0.1875	0.2058
	1979 - 2004	0.5980	0.4739	0.3192	0.3600	0.2727
	2005-2007	0.6581	0.4405	0.1639	0.0000	0.0000

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Figure 17: Gas Fuel Shares

End-use	Single Family	Multi-Family 2 - 4 Units	Multi-Family > 4 Units	Master Meter	Sub Meter
Space Heat	0.9573	0.9399	0.8249	0.9610	0.9610
Water Heat	0.9876	0.9803	0.9627	0.9614	0.9614
Cooking	0.8075	0.8183	0.8151	0.8744	0.8744
Drying	0.7924	0.7416	0.7445	0.7190	0.5657
Pool	0.8247	0.8247	0.8247	0.8247	0.8247
Spa	0.5819	0.5819	0.5819	0.5819	0.5819
Fireplace	0.5816	0.5816	0.5816	0.5816	0.5816
Barbecue	0.2759	0.2663	0.2978	0.1251	0.0364

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Figure 18: Gas Efficiency Shares

Gas End-use	Efficiency Level	Single Family Existing	Single Family New	Multi-Family 2 - 4 Units Existing	Multi-Family 2 - 4 Units New	Multi-Family > 4 Units Existing	Multi-Family > 4 Units New	Master Meter Existing	Master Meter New	Sub Meter Existing	Sub Meter New
Space Heat	Stock	0.59	0.59	0.70	0.70	0.50	0.50	0.50	0.50	0.59	0.59
	Standard	0.34	0.34	0.28	0.28	0.48	0.48	0.48	0.48	0.34	0.34
	High	0.06	0.06	0.01	0.01	0.01	0.01	0.01	0.01	0.06	0.06
	Premium	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Water Heat	Stock	0.10	0.10	0.22	0.22	0.13	0.13	0.13	0.13	0.10	0.10
	Standard	0.68	0.68	0.61	0.61	0.76	0.76	0.76	0.76	0.68	0.68
	High	0.21	0.21	0.16	0.16	0.10	0.10	0.10	0.10	0.21	0.21
	Premium	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Cooking	Stock	0.90	0.90	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
	Standard	0.10	0.10	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Drying	Stock	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
	Standard	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Pool	Stock	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Spa	Stock	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fireplace	Stock	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Barbecue	Stock	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Southern California Gas Company
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Figure 19: Electric Efficiency Shares

Electric End-use	Efficiency Level	Single Family		Multi-Family 2 - 4 Units		Multi-Family > 4 Units		Master Meter		Sub Meter	
		Existing	New	Existing	New	Existing	New	Existing	New	Existing	New
Space Heat	Stock	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Water Heat	Stock	0.10	0.10	0.22	0.22	0.13	0.13	0.13	0.13	0.10	0.10
	Standard	0.68	0.68	0.61	0.61	0.76	0.76	0.76	0.76	0.68	0.68
	High	0.21	0.21	0.16	0.16	0.10	0.10	0.10	0.10	0.21	0.21
	Premium	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Cooking	Stock	0.90	0.90	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
	Standard	0.10	0.10	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Drying	Stock	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
	Standard	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Pool	Stock	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Space Heat	Stock	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fireplace	Stock	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Barbeque	Stock	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

2008 CALIFORNIA GAS REPORT

CORE COMMERCIAL AND INDUSTRIAL DEMAND FORECAST
JULY 2008

The Gas Company

A Sempra Energy utility℠

Core Commercial and Industrial End Use Model
2008 California Gas Report

Introduction

The G10 commercial and industrial gas demand forecast used the EUForecaster model to generate annual gas demand forecasts for the years 2008 through 2030.

The model segments the G-10 commercial and industrial markets into 14 sectors and 11 sectors by type of business activity, respectively. Business activity is determined by the NAICS code assigned to the customer and carried on the customer's billing record. A second segmentation within each specific business type involved further disaggregation into end-uses.

The gas demand forecast that results from the EUForecaster model is at the annual design HDD total of 1,379 for an Average Year. The gas demand forecasts under Cold, Hot and Base temperature were then constructed based on Cold Year (Hdd = 1,665), Hot Year (Hdd=1,093) and Base Year (Hdd=0) annual assumptions.

This *end use* forecasts under the above four temperature scenarios are then adjusted for a set of *post-model* adjustments. These adjustments consist of *reductions* for the EE/DSM savings provided by the EE/DSM group. An addition to load associated with (existing) G10 commercial and industrial customers who install electric self-generation equipment was included. This program was established initially by the State of California through AB970 and is now known as SGIP. Other adjustments to the load consist of the anticipated noncore to core migration expected after the year 2009 and a reduction in load for the City of Vernon customers. The final adjustment adds both the Gas AC and Gas Engine demand forecasts into commercial G10 forecast. All of these post-model adjustments are summarized in tables that follow.

Data Sources

The key set of information used to perform the modeling and to generate the forecast includes historical year 2007 consumption and customer counts, employment forecasts, gas and electric energy use intensity (EUI) values, end-use saturations, fuel and efficiency shares, gas and electric price forecasts, equipment age, use per meter for existing and new customers, and equipment cost. A description of each component follows.

A. Historical Year 2007 Sales:

The historical data are extracted from the billing tables in the Customer Information System (CIS). The gas consumption by business type was adjusted to our 1,379 average year HDD.

B. Employment Data:

The level of employment in each business type is used as a measure of economic activity in the G-10 commercial and industrial demand forecast models. The employment data series matches the NAICS categories used to develop the historical consumption data. The employment data were compiled and totaled for the 12 counties comprising SoCalGas' service territory. The forecast data comes from Global Insight's Spring 2008 Regional forecast released in June 2008 and based on Global Insight's May 2008 US Economic Forecast. The historical 2007 data comes from the California Employment Development Department.

C. Gas Price Data:

Average and marginal gas prices ($/therm) were calculated from forecasts of the G-10 rate components. We used the underlying detailed consumption data, previously used for our econometric model work on our core C&I G-10 customers, to separate monthly consumption for customers by each business type into the respective G-10 consumption tiers.

For a given business type, we calculated an annual average gas commodity rate for a 12-month period. The average commodity rate in each forecast year was developed using the same monthly consumption pattern, but with the forecasts of rates for each G-10 rate tier. The average gas price each year was then calculated by including the non-volumetric customer charges with the year's average gas commodity rate.

Each respective business type's marginal gas commodity rate (for each month) was calculated by "pricing" the entire month's consumption at the G-10 rate's tier that was the last tier with non-zero consumption -- the marginal consumption tier -- for the customers of the given business type. The marginal gas price was then calculated as the simple average of the 12 monthly marginal commodity rates. The forecasts for each year used the same monthly consumption pattern, but used the projected G-10 price of the marginal consumption tier.

D. Electric Price Data:

Both average prices (cents/KWh) and marginal prices (cents/KWh) were developed as electricity price inputs. Forecasts for SCE commercial and industrial customer classes were developed from the CEC's July 2007 Report, CEC-200-2007-013-SD, Appendix B: Utility-Specific Retail Price Forecast Tables, at page 3 for SCE. The resulting price projections were set equal to the CEC's projections for the commercial and industrial classes. Prices were developed through 2030. These were the average electricity prices for the G-10 core commercial and core industrial markets.

The marginal prices were calculated by multiplying each year's respective average price by a ratio. These ratios, 1.000 for commercial and 0.789 for industrial, were estimated from an analysis of the SCE GS-2 rate schedule posted on their website in March 2006. (These customers were assumed to be large non-self-generation customers who also were on time-of-use rates.)

To impute each year's average and marginal electricity prices to each core commercial and core industrial business type, we simply calculated the ratio of the average (or marginal) gas price to the overall core commercial or core industrial gas price for each business type, then multiplied by the overall average (or marginal) electricity price.

E. Building and Equipment Decay Rates:

Building decay rates are based on buildings' lifetimes, where the lifetime is defined as the length of time it takes for either a demolition or a major renovation in which major systems are replaced. For existing core buildings and facilities, an exponential rate of decay of 1% per year was assumed, consistent with an average remaining life for existing buildings of 100 years. (A building decay rate concept is not relevant to non-core large gas transport customers. In both the commercial and industrial non-core models the existing building decay rate was set equal to zero.)

All new construction decay rates were assumed to be zero over the forecast horizon. This assumption was required because the growth of new buildings and facilities was tied directly to the econometric models.

End-Use lifetimes were derived from a variety of sources.

Commercial:

- Space heat: 25 years
- Water heat: 15 years
- AC/compressor: 20 years
- All other commercial end-uses: 15 years

Industrial:

- Fire-tube boiler: 25 years
- Water-tube boiler: 25 years
- Engine (motors): 25 years
- All other industrial end-uses: 20 years

F. Equipment Saturations, Fuel Shares, and Efficiency Shares:

EUForecaster defines saturation as the percentage of customers in any segment that has a particular end use, independent of fuel shares. EUForecaster adjusted core commercial fuel shares according to a set of fuel-choice equations over the forecast horizon.

End-use saturations in the industrial model were initially set equal to 100%. Industrial end-use gas fuel shares were initially approximated. We then used an iterative procedure to further adjust industrial saturation and fuel shares such that the EUForecaster sales totals matched SoCalGas industrial sales figures, and our estimates of electric usage by SoCalGas customers. Finally, all commercial and industrial fuel shares were held constant over the forecast horizon.

Energy efficiency varied within the major gas end-uses/processes, including all boilers, space heat, and water heat. Four levels of efficiency were assigned to gas equipment: low, medium (standard) high, and premium for core commercial and three levels of efficiency were assigned to gas equipment: low, medium (standard), and high for core industrial market. California and federal standards have effectively eliminated the lowest efficiency alternatives for several gas end-uses from being purchased as new or replacement equipment. The lowest efficiency alternative for these end uses is, therefore, allowed to exist in the base year stock, but the customer must then purchase either medium (e.g., equipment that just meets Government standards), high or premium efficiency equipment as these units decay.

For existing equipment stock, the low efficiency share was set to 50%, whereas the medium efficiency share ranges from 40 to 45%, and the high efficiency share ranges from 5 to 10%.

EUForecaster's choice module prorates the low share to the medium, high and premium alternatives in proportion to their shares noted above. Therefore, replacement and new construction efficiency shares for medium range from 80% to 90%, and high ranges from 10% to 20%.

G. DSM Forecast:

The end-use gas demand forecast developed with EUForecaster does not capture the effects of SoCalGas' EE/DSM programs. Energy savings goals from the CPUC's mandated energy efficiency/energy conservation programs for the core commercial and industrial were provided by SoCalGas' DSM department. These savings are subtracted from the forecast generated by the core commercial and industrial forecasts generated by EUForecaster.

Gas Air Conditioning and Gas Engines

A special tariff for gas air-conditioning rates went into effect at the end of 1993, while a special tariff for gas engine rates started in early 1995. The forecasts of core gas air conditioning and gas engine demand are based on the latest information provided by customers. Both segments are forecasted based on the expected number of customers in each market times their usage per customer. Usage per customer is based on the annual average use per customer of 2005–2007.

G10 COMMERCIAL DATA TABLES

Southern California Gas Company
2008 California Gas Report- Commercial G10
The Year the Equipment Was Installed by Business Types

Sector	Space Heater	Water Heater	Cooktop	Griddle	Fryer	Other Cooking Equipment	Kitchen Equipment	AC	Dryer	Engine	Other
Office	1977	1978	1974	1978	1979	1976	1980	1975	1978	1975	1973
Restaurant	1980	1983	1980	1980	1982	1981	1983	1977	1983	1978	1980
Retail	1976	1979	1977	1977	1984	1981	1977	1976	1978	1984	1977
Laundry	1979	1975	1981	1986	1986	1986	1986	1975	1976	.	1975
Warehouse	1977	1977	1975	1981	1979	1979	1939	1975	1983	1981	1978
School	1975	1977	1971	1972	1975	1972	1972	1973	1975	1974	1972
College	1974	1976	1973	1974	1975	1975	1973	1979	1974	1973	1970
Health	1976	1979	1974	1975	1977	1975	1973	1975	1977	1974	1975
Lodging	1974	1981	1975	1979	1983	1979	1984	1975	1980	1975	1981
Misc	1974	1977	1972	1972	1976	1973	1979	1974	1978	1974	1978
Government	1975	1977	1973	1979	1975	1976	1978	1975	1980	1978	1972
TIU	1975	1979	1975	1978	1982	1979	1990	1975	1983	1978	1981
Construction	1977	1977	1972	1974	1975	1974	1953	1973	1980	1975	1976
Agriculture	1982	1980	1973	1979	1980	1979	1970	1976	1971	1987	1985

Southern California Gas Company
2008 California Gas Report: Commercial G10
Incremental Meter Forecast by Business Types

Year	Office	Restaurant	Retail	Laundry	Warehouse	School	College	Health	Lodging	Misc	Government	TCU	Construc-tion	Agriculture
2006	382	421	-81	-5	-43	21	-19	81	48	-506	27	63	32	200
2007	546	587	105	5	-14	90	31	113	58	-244	35	91	24	70
2008	-104	-92	-74	-12	-21	-16	-6	-21	-12	-86	-9	-21	-14	-4
2009	41	37	29	5	8	6	2	8	5	34	4	8	5	2
2010	159	142	113	19	32	24	9	33	19	133	14	32	21	7
2011	132	118	94	15	27	20	7	27	16	110	12	26	18	5
2012	154	137	109	18	31	23	8	31	18	128	13	31	20	6
2013	156	139	111	18	32	24	8	32	19	130	14	31	21	6
2014	153	136	108	18	31	23	8	31	18	127	13	30	20	6
2015	138	123	98	16	28	21	7	28	16	115	12	27	18	6
2016	129	115	92	15	26	19	7	26	15	108	11	26	17	5
2017	118	105	84	14	24	18	6	24	14	99	10	24	16	5
2018	114	102	81	13	23	17	6	23	14	95	10	23	15	5
2019	123	109	87	14	25	18	7	25	14	102	11	24	16	5
2020	131	117	93	15	27	20	7	27	16	110	11	26	18	5
2021	120	107	85	14	24	18	6	25	14	100	10	24	16	5
2022	135	120	96	16	28	20	7	28	16	113	12	27	18	6
2023	148	131	105	17	30	22	8	30	17	123	13	29	20	6
2024	153	136	108	18	31	23	8	31	18	127	13	30	20	6
2025	151	134	107	18	31	23	8	31	18	126	13	30	20	6
2026	145	129	103	17	30	22	8	30	17	121	13	29	19	6
2027	150	133	106	17	31	23	8	31	18	125	13	30	20	6
2028	149	132	106	17	30	22	8	30	18	124	13	30	20	6
2029	144	128	102	17	29	22	8	29	17	120	13	29	19	6
2030	149	132	106	17	30	22	8	30	18	124	13	30	20	6

Southern California Gas Company
2008 California Gas Report - Commercial G10
ElectricPrice Forecasat (Cent/KWH)

(a) Average Price Forecast

Year	Agriculture	College	Construction	Government	Health	Laundry	Lodging	Misc	Office	Restaurant	Retail	School	TCU	Warehouse
2007	17.36	18.03	22.73	18.98	19.36	19.05	19.08	21.50	21.01	20.28	21.19	19.96	19.03	19.18
2008	18.58	19.21	23.62	20.09	20.44	20.15	20.18	22.46	22.00	21.29	22.17	21.01	20.14	20.29
2009	18.54	19.09	23.30	19.87	20.17	19.84	19.90	22.15	21.67	20.87	21.82	20.67	19.92	20.11
2010	17.51	18.06	22.20	18.84	19.14	18.82	18.87	21.08	20.61	19.84	20.76	19.63	18.89	19.07
2011	17.87	18.47	22.86	19.30	19.63	19.30	19.35	21.68	21.19	20.40	21.35	20.16	19.35	19.54
2012	16.79	17.36	21.60	18.17	18.50	18.18	18.23	20.47	20.00	19.25	20.16	19.01	18.22	18.39
2013	16.92	17.51	21.81	18.33	18.66	18.35	18.39	20.66	20.19	19.43	20.35	19.19	18.38	18.55
2014	17.12	17.72	22.12	18.57	18.91	18.59	18.64	20.95	20.47	19.71	20.63	19.45	18.62	18.79
2015	17.30	17.92	22.41	18.80	19.14	18.83	18.87	21.22	20.73	19.97	20.90	19.70	18.85	19.01
2016	17.46	18.10	22.68	19.00	19.36	19.04	19.08	21.47	20.98	20.22	21.15	19.94	19.05	19.21
2017	17.70	18.34	22.85	19.23	19.59	19.29	19.32	21.66	21.18	20.46	21.35	20.16	19.29	19.44
2018	17.91	18.55	23.06	19.46	19.82	19.52	19.55	21.87	21.40	20.70	21.57	20.40	19.51	19.65
2019	18.08	18.74	23.31	19.67	20.04	19.74	19.77	22.12	21.64	20.94	21.82	20.63	19.72	19.85
2020	18.30	18.96	23.50	19.89	20.26	19.98	20.00	22.32	21.86	21.18	22.03	20.86	19.94	20.07
2021	18.50	19.17	23.72	20.11	20.49	20.21	20.23	22.54	22.08	21.43	22.26	21.09	20.16	20.28
2022	18.74	19.40	23.91	20.34	20.71	20.44	20.46	22.74	22.29	21.66	22.47	21.32	20.39	20.50
2023	18.97	19.63	24.09	20.57	20.94	20.68	20.69	22.94	22.50	21.89	22.68	21.55	20.62	20.72
2024	19.20	19.86	24.27	20.80	21.17	20.92	20.93	23.14	22.71	22.13	22.89	21.77	20.85	20.94
2025	19.41	20.08	24.48	21.02	21.40	21.15	21.16	23.36	22.93	22.37	23.11	22.01	21.07	21.15
2026	19.62	20.29	24.69	21.24	21.62	21.39	21.39	23.58	23.16	22.61	23.33	22.24	21.29	21.37
2027	19.83	20.51	24.90	21.47	21.85	21.62	21.62	23.80	23.38	22.86	23.56	22.47	21.52	21.59
2028	20.05	20.73	25.12	21.70	22.09	21.86	21.86	24.02	23.61	23.11	23.79	22.71	21.75	21.81
2029	20.27	20.95	25.33	21.93	22.32	22.11	22.10	24.24	23.84	23.36	24.02	22.95	21.98	22.03
2030	20.49	21.18	25.55	22.16	22.56	22.35	22.34	24.47	24.07	23.61	24.25	23.20	22.21	22.25

(b) Marginal Price Forecasat

Year	Agriculture	College	Construction	Government	Health	Laundry	Lodging	Misc	Office	Restaurant	Retail	School	TCU	Warehouse
2007	18.13	18.58	20.67	19.24	19.67	20.08	19.53	20.50	20.43	20.77	20.58	19.99	19.42	19.13
2008	19.33	19.74	21.66	20.35	20.75	21.12	20.62	21.51	21.44	21.75	21.58	21.03	20.51	20.25
2009	19.32	19.67	21.26	20.17	20.50	20.80	20.39	21.13	21.07	21.33	21.18	20.73	20.30	20.09
2010	18.27	18.62	20.22	19.12	19.45	19.76	19.35	20.09	20.03	20.29	20.15	19.69	19.26	19.04
2011	18.66	19.04	20.79	19.59	19.96	20.30	19.84	20.65	20.59	20.87	20.71	20.22	19.74	19.50
2012	17.53	17.91	19.63	18.45	18.81	19.14	18.69	19.49	19.43	19.71	19.55	19.06	18.59	18.36
2013	17.67	18.05	19.82	18.61	18.97	19.32	18.86	19.67	19.61	19.90	19.74	19.24	18.76	18.52
2014	17.88	18.27	20.10	18.85	19.23	19.58	19.10	19.95	19.88	20.18	20.01	19.50	19.00	18.76
2015	18.06	18.48	20.37	19.07	19.46	19.83	19.34	20.21	20.14	20.45	20.28	19.75	19.23	18.98
2016	18.23	18.65	20.62	19.27	19.68	20.06	19.55	20.46	20.39	20.71	20.53	19.98	19.44	19.17
2017	18.45	18.88	20.84	19.50	19.90	20.28	19.77	20.68	20.61	20.93	20.75	20.20	19.66	19.40
2018	18.65	19.08	21.07	19.71	20.12	20.51	19.99	20.91	20.84	21.17	20.98	20.42	19.88	19.61
2019	18.83	19.27	21.32	19.92	20.34	20.74	20.21	21.15	21.08	21.42	21.23	20.65	20.09	19.81
2020	19.03	19.48	21.55	20.13	20.56	20.97	20.43	21.38	21.31	21.65	21.46	20.87	20.31	20.03
2021	19.22	19.68	21.79	20.35	20.78	21.19	20.64	21.62	21.54	21.89	21.69	21.10	20.53	20.24
2022	19.44	19.90	22.01	20.57	21.01	21.41	20.86	21.84	21.77	22.11	21.92	21.32	20.75	20.46
2023	19.66	20.12	22.24	20.79	21.23	21.64	21.09	22.06	21.99	22.33	22.14	21.54	20.97	20.68
2024	19.88	20.34	22.46	21.01	21.45	21.86	21.31	22.29	22.21	22.56	22.36	21.77	21.19	20.90
2025	20.08	20.55	22.70	21.22	21.67	22.09	21.52	22.52	22.44	22.79	22.60	21.99	21.40	21.11
2026	20.28	20.75	22.93	21.44	21.89	22.31	21.75	22.75	22.68	23.03	22.83	22.22	21.62	21.33
2027	20.48	20.96	23.17	21.66	22.12	22.54	21.97	22.99	22.91	23.27	23.07	22.45	21.85	21.55
2028	20.69	21.17	23.41	21.88	22.34	22.78	22.19	23.23	23.15	23.52	23.31	22.68	22.07	21.77
2029	20.90	21.39	23.66	22.10	22.57	23.01	22.42	23.47	23.39	23.76	23.55	22.91	22.30	21.99
2030	21.11	21.61	23.90	22.33	22.81	23.25	22.65	23.71	23.63	24.01	23.80	23.15	22.52	22.21

Southern California Gas Company
2008 California Gas Report - Commercial G10
Gas Price Forecasat ($/Therm)

(a) Average Price Forecast

Year	Price Deflator	Agriculture	College	Construction	Government	Health	Laundry	Lodging	Misc	Office	Restaurant	Retail	School	TCU	Warehouse
2007	100.00	1.031	0.998	1.041	0.933	0.937	0.966	0.869	0.946	0.932	1.053	0.925	0.930	1.123	0.838
2008	101.67	1.261	1.229	1.271	1.163	1.163	1.195	1.094	1.175	1.161	1.281	1.152	1.157	1.353	1.061
2009	103.41	1.242	1.207	1.251	1.149	1.156	1.179	1.093	1.162	1.149	1.263	1.143	1.148	1.330	1.064
2010	105.44	1.229	1.194	1.239	1.136	1.142	1.166	1.077	1.149	1.135	1.250	1.129	1.133	1.318	1.048
2011	107.46	1.235	1.201	1.245	1.141	1.146	1.171	1.081	1.154	1.140	1.256	1.133	1.138	1.324	1.051
2012	109.61	1.197	1.163	1.206	1.101	1.106	1.132	1.040	1.114	1.100	1.217	1.093	1.098	1.286	1.010
2013	111.72	1.167	1.133	1.177	1.071	1.074	1.102	1.008	1.084	1.070	1.187	1.062	1.067	1.257	0.977
2014	113.98	1.136	1.103	1.146	1.040	1.042	1.071	0.974	1.052	1.038	1.156	1.030	1.035	1.227	0.943
2015	116.32	1.178	1.146	1.188	1.081	1.082	1.113	1.014	1.093	1.079	1.199	1.071	1.076	1.270	0.982
2016	118.68	1.236	1.204	1.246	1.138	1.138	1.170	1.069	1.150	1.136	1.256	1.127	1.132	1.328	1.036
2017	121.09	1.288	1.256	1.298	1.189	1.188	1.221	1.117	1.200	1.186	1.308	1.177	1.182	1.380	1.084
2018	123.50	1.334	1.302	1.344	1.234	1.232	1.266	1.160	1.245	1.231	1.354	1.221	1.226	1.427	1.126
2019	125.90	1.375	1.345	1.386	1.274	1.271	1.308	1.199	1.285	1.271	1.395	1.261	1.266	1.469	1.164
2020	128.42	1.412	1.382	1.423	1.311	1.307	1.344	1.233	1.321	1.307	1.432	1.297	1.302	1.507	1.197
2021	131.02	1.426	1.397	1.437	1.324	1.319	1.358	1.244	1.334	1.320	1.446	1.309	1.314	1.522	1.208
2022	133.63	1.481	1.452	1.492	1.377	1.371	1.412	1.295	1.387	1.373	1.500	1.361	1.366	1.577	1.258
2023	136.28	1.533	1.505	1.545	1.429	1.421	1.464	1.344	1.439	1.425	1.553	1.412	1.417	1.630	1.306
2024	138.99	1.587	1.560	1.599	1.482	1.473	1.517	1.395	1.492	1.478	1.607	1.465	1.470	1.685	1.356
2025	141.80	1.641	1.614	1.652	1.534	1.524	1.570	1.445	1.544	1.530	1.660	1.516	1.521	1.739	1.405
2026	144.69	1.673	1.647	1.685	1.566	1.554	1.602	1.474	1.575	1.561	1.692	1.546	1.552	1.772	1.433
2027	147.63	1.719	1.694	1.732	1.611	1.598	1.648	1.516	1.620	1.606	1.739	1.591	1.596	1.819	1.475
2028	150.61	1.778	1.753	1.790	1.669	1.654	1.706	1.571	1.677	1.663	1.797	1.647	1.653	1.879	1.528
2029	153.65	1.846	1.822	1.859	1.736	1.720	1.774	1.635	1.744	1.730	1.865	1.713	1.719	1.948	1.592
2030	156.78	1.913	1.890	1.926	1.802	1.784	1.840	1.698	1.809	1.795	1.932	1.778	1.784	2.016	1.654

(b) Marginal Price Forecasat

Year	Price Deflator	Agriculture	College	Construction	Government	Health	Laundry	Lodging	Misc	Office	Restaurant	Retail	School	TCU	Warehouse
2007	100.00	0.904	0.921	0.912	0.886	0.839	0.873	0.805	0.864	0.858	0.906	0.842	0.852	0.921	0.786
2008	101.67	1.132	1.152	1.140	1.114	1.062	1.099	1.027	1.090	1.083	1.133	1.066	1.077	1.148	1.006
2009	103.41	1.122	1.138	1.129	1.107	1.064	1.095	1.035	1.087	1.081	1.123	1.068	1.077	1.136	1.017
2010	105.44	1.108	1.125	1.115	1.093	1.048	1.080	1.018	1.072	1.066	1.109	1.052	1.061	1.122	1.000
2011	107.46	1.112	1.130	1.120	1.097	1.052	1.084	1.020	1.076	1.070	1.113	1.055	1.065	1.127	1.002
2012	109.61	1.072	1.090	1.080	1.057	1.010	1.043	0.978	1.035	1.029	1.073	1.014	1.023	1.087	0.959
2013	111.72	1.042	1.060	1.049	1.026	0.978	1.012	0.945	1.003	0.997	1.043	0.981	0.991	1.057	0.925
2014	113.98	1.009	1.028	1.017	0.993	0.944	0.979	0.910	0.970	0.963	1.011	0.947	0.958	1.025	0.890
2015	116.32	1.050	1.070	1.058	1.033	0.982	1.019	0.948	1.009	1.003	1.051	0.986	0.997	1.067	0.927
2016	118.68	1.107	1.127	1.115	1.089	1.037	1.074	1.001	1.065	1.058	1.108	1.041	1.052	1.123	0.980
2017	121.09	1.156	1.177	1.165	1.139	1.085	1.123	1.048	1.113	1.106	1.158	1.089	1.100	1.174	1.027
2018	123.50	1.201	1.222	1.210	1.183	1.128	1.167	1.090	1.157	1.150	1.202	1.132	1.143	1.219	1.068
2019	125.90	1.241	1.263	1.250	1.222	1.166	1.206	1.127	1.196	1.188	1.242	1.170	1.182	1.259	1.104
2020	128.42	1.277	1.299	1.286	1.257	1.199	1.241	1.159	1.230	1.222	1.278	1.204	1.216	1.295	1.136
2021	131.02	1.289	1.312	1.299	1.270	1.210	1.252	1.169	1.241	1.234	1.291	1.214	1.227	1.309	1.145
2022	133.63	1.342	1.366	1.352	1.321	1.260	1.304	1.218	1.293	1.284	1.343	1.265	1.278	1.362	1.193
2023	136.28	1.393	1.417	1.403	1.372	1.309	1.354	1.266	1.342	1.334	1.394	1.314	1.327	1.413	1.240
2024	138.99	1.445	1.470	1.456	1.424	1.359	1.405	1.315	1.393	1.385	1.447	1.364	1.378	1.466	1.288
2025	141.80	1.497	1.523	1.508	1.475	1.408	1.456	1.363	1.443	1.435	1.498	1.413	1.427	1.518	1.336
2026	144.69	1.527	1.554	1.538	1.505	1.436	1.485	1.389	1.473	1.464	1.529	1.442	1.456	1.549	1.362
2027	147.63	1.572	1.599	1.583	1.549	1.478	1.528	1.430	1.516	1.506	1.574	1.484	1.499	1.594	1.402
2028	150.61	1.628	1.656	1.640	1.605	1.532	1.584	1.483	1.571	1.561	1.630	1.538	1.553	1.652	1.454
2029	153.65	1.695	1.724	1.707	1.670	1.596	1.649	1.545	1.635	1.626	1.697	1.602	1.617	1.719	1.515
2030	156.78	1.760	1.789	1.772	1.735	1.658	1.713	1.606	1.699	1.689	1.762	1.664	1.680	1.784	1.575

Southern California Gas Company
2008 California Gas Report - Commercial G10
Historical Throughput and Customer Counts

Segment	2007 Therm Sales	2007 Meter Count adj	2007 Meter Count, Existing/Old customers	2007 Meter Count New Customers	Avg Use Per Meter Existing Customers	Avg Use Per Meter New Customers	Price Elasticity	Decay Rates	Employment Elasticities
Office	73,285,289	40,809	40,225	584	1,631	3,397	-0.072000	0.0000%	0.5048142
Restaurant	249,262,092	36,275	35,502	773	6,572	10,758	-0.001000	0.0000%	1.1390094
Retail	57,732,018	28,913	28,538	375	1,799	4,189	-0.032000	0.3798%	0.6699614
Laundry	66,361,340	4,796	4,723	73	14,127	23,309	-0.026000	0.2767%	0.4107731
Warehouse	24,123,918	8,411	8,330	81	3,039	3,992	0.000000	0.8151%	0.5413965
School	38,500,150	6,035	5,964	71	6,252	9,609	-0.103000	0.0000%	0.0000000
College	21,341,811	2,190	2,156	34	9,806	8,995	-0.090000	0.0000%	0.7344599
Health	54,014,629	8,284	8,247	37	5,934	26,623	-0.052000	0.0000%	0.1338678
Lodging	56,520,094	4,793	4,756	37	11,432	49,129	-0.013000	0.0000%	0.4292959
Misc	76,956,257	35,881	35,477	404	2,066	5,658	-0.030000	0.7163%	0.0000000
Government	24,002,135	3,496	3,452	44	6,280	21,119	-0.061000	0.0000%	1.6919191
TCU	35,426,675	7,985	7,885	100	4,075	13,453	-0.062000	0.0000%	0.7235239
Construction	6,400,160	5,476	5,354	122	810	2,234	-0.179000	0.0000%	0.1063725
Agriculture	36,979,431	1,708	1,699	9	21,151	22,424	-0.059000	0.0000%	0.6688191

Southern California Gas Company
2008 California Gas Report - Commercial G10
Average Use Per Meter therm

Sector	Space Heater	Water Heater	Cooktop	Griddle	Fryer	Other Cooking Equipment	Kitchen Equipment	AC	Dryer	Engine	Other	Total Building
Office	533	221	27	9	7	28	6	9	27	8	531	1,405
Restaurant	406	786	1,312	540	1,036	1,147	279	16	7	0	258	5,787
Retail	359	218	79	13	88	152	94	21	40	3	497	1,566
Laundry	35	563	5	1	1	7	0	1	5,657	0	5,268	11,538
Warehouse	430	125	18	5	43	49	63	49	143	42	1,382	2,348
School	3,050	1,028	174	13	39	319	33	39	6	42	893	5,635
College	3,954	1,953	191	56	98	235	54	247	60	84	2,690	9,623
Health	1,510	946	152	29	41	117	66	27	208	15	1,597	4,708
Lodging	1,513	3,090	426	104	133	519	256	25	805	1	3,492	10,363
Misc	677	413	84	17	28	69	22	70	27	5	457	1,868
Governmei	2,496	1,451	128	63	37	105	57	67	34	369	978	5,784
TCU	814	293	26	6	12	23	15	40	3	1,278	1,351	3,860
Constructic	268	84	7	0	1	4	2	8	50	0	395	819
Agriculture	2,621	635	108	18	224	499	453	6	661	4,334	8,751	18,309

Southern California Gas Company
2008 California Gas Report
Use Per Meter for New Customers therm

Sector	Space Heater	Water Heater	Cooktop	Griddle	Fryer	Other Cooking Equipment	Kitchen Equipment	AC	Dryer	Engine	Other	Total Building
Office	310	2	41	210	0	84	15	0	0	0	1,029	1,691
Restaurant	1,117	1,015	1,122	662	783	428	740	15	0	0	1,262	7,143
Retail	618	505	71	17	100	99	460	0	371	1	0	2,241
Laundry	0	29	0	0	0	0	0	0	6,446	0	4,622	11,097
Warehouse	101	151	0	169	0	0	871	0	2,955	0	0	4,248
School	2,364	985	207	1	0	380	11	0	0	0	4,870	8,818
College	2,153	86	0	0	0	0	0	0	0	3,638	0	5,877
Health	807	1,802	189	0	79	75	87	0	89	0	2,990	6,119
Lodging	464	2,725	0	204	269	550	16	0	656	0	19,466	24,350
Misc	390	46	0	2	0	0	39	0	20	0	6,925	7,422
Government	0	0	0	0	0	0	0	0	0	0	0	0
TCU	629	24	0	0	0	0	0	0	0	4,125	4,376	9,154
Construction	0	0	0	0	0	0	0	0	0	0	0	0
Agriculture	545	361	0	0	0	0	0	0	0	5,892	11,349	18,148

Southern California Gas Company
2008 California Gas Report - Commercial G10
UEC, Equipment Cost and Efficiency Shares

Where Fuel = 1 (gas) and = 2 (electric), and
Efficiency =1 (stock), =2 (standard), =3 (high) and =4 (premium)

Business Types	End Use	Fuel	Efficiency	uec (therm/SqFt)	Equipment Cost	efficiency shares
Office	Space_Heat	1	1	0.3046	4.3149	0.65
Office	Space_Heat	1	2	0.2742	4.7464	0.3
Office	Space_Heat	1	3	0.2495	5.1779	0.04
Office	Space_Heat	1	4	0.2248	5.6094	0.01
Office	Space_Heat	2	1	6.2481	3.4519	1
Office	Space_Heat	2	2	5.6233	3.7971	0
Office	Space_Heat	2	3	5.1172	4.1423	0
Office	Space_Heat	2	4	4.6111	4.4875	0
Office	Water_Heat	1	1	0.0474	0.6712	0.4
Office	Water_Heat	1	2	0.0427	0.7384	0.5
Office	Water_Heat	1	3	0.0373	0.8055	0.08
Office	Water_Heat	1	4	0.032	0.8726	0.02
Office	Water_Heat	2	1	0.972	0.537	0.4
Office	Water_Heat	2	2	0.8748	0.5907	0.5
Office	Water_Heat	2	3	0.7654	0.6444	0.08
Office	Water_Heat	2	4	0.6561	0.6981	0.02
Office	Cooking	1	1	0.0346	0.4899	0.65
Office	Cooking	1	2	0.0311	0.5389	0.35
Office	Cooking	2	1	0.7094	0.3919	0.65
Office	Cooking	2	2	0.6385	0.4311	0.35
Office	AC_Compressor	1	1	0.1043	1.4773	0.65
Office	AC_Compressor	1	2	0.0939	1.6251	0.35
Office	AC_Compressor	2	1	2.1392	1.1819	0.65
Office	AC_Compressor	2	2	1.9253	1.3	0.35
Office	Other	1	1	0	0	1
Office	Other	2	1	0	0	0
Restaurant	Space_Heat	1	1	0.1177	1.5841	0.65
Restaurant	Space_Heat	1	2	0.1059	1.7425	0.3
Restaurant	Space_Heat	1	3	0.0964	1.9009	0.04
Restaurant	Space_Heat	1	4	0.0868	2.0593	0.01
Restaurant	Space_Heat	2	1	2.4134	1.2673	1
Restaurant	Space_Heat	2	2	2.1721	1.394	0
Restaurant	Space_Heat	2	3	1.9766	1.5207	0
Restaurant	Space_Heat	2	4	1.7811	1.6474	0
Restaurant	Water_Heat	1	1	0.8666	11.666	0.4
Restaurant	Water_Heat	1	2	0.7799	12.8326	0.5
Restaurant	Water_Heat	1	3	0.6824	13.9992	0.08
Restaurant	Water_Heat	1	4	0.5849	15.1658	0.02
Restaurant	Water_Heat	2	1	17.7736	9.3328	0.4
Restaurant	Water_Heat	2	2	15.9962	10.2661	0.5
Restaurant	Water_Heat	2	3	13.9967	11.1994	0.08
Restaurant	Water_Heat	2	4	11.9972	12.1327	0.02
Restaurant	Cook_top	1	1	1.1985	16.1343	0.65

Business Types	End Use	Fuel	Efficiency	(therm/SqFt)	Equipment Cost	efficiency shares
Restaurant	Cook_top	1	2	1.0787	17.7477	0.35
Restaurant	Cook_top	2	1	24.5811	12.9074	0.65
Restaurant	Cook_top	2	2	22.123	14.1981	0.35
Restaurant	Fryer	1	1	1.0791	14.5274	0.65
Restaurant	Fryer	1	2	0.9712	15.9802	0.35
Restaurant	Fryer	2	1	22.133	11.622	0.65
Restaurant	Fryer	2	2	19.9197	12.7841	0.35
Restaurant	Griddle	1	1	0.9107	12.2603	0.65
Restaurant	Griddle	1	2	0.8197	13.4863	0.35
Restaurant	Griddle	2	1	18.6789	9.8082	0.65
Restaurant	Griddle	2	2	16.8111	10.789	0.35
Restaurant	Other_Cooking	1	1	0.9712	13.0747	0.65
Restaurant	Other_Cooking	1	2	0.8741	14.3822	0.35
Restaurant	Other_Cooking	2	1	19.9197	10.4598	0.65
Restaurant	Other_Cooking	2	2	17.9278	11.5057	0.35
Restaurant	AC_Compressor	1	1	0.2028	2.7306	0.65
Restaurant	AC_Compressor	1	2	0.1826	3.0036	0.35
Restaurant	AC_Compressor	2	1	4.1601	2.1844	0.65
Restaurant	AC_Compressor	2	2	3.7441	2.4029	0.35
Restaurant	Other	1	1	0	0	1
Restaurant	Other	2	1	0	0	0
Retail	Space_Heat	1	1	0.2455	3.5122	0.65
Retail	Space_Heat	1	2	0.221	3.8634	0.3
Retail	Space_Heat	1	3	0.2011	4.2146	0.04
Retail	Space_Heat	1	4	0.1812	4.5658	0.01
Retail	Space_Heat	2	1	5.0356	2.8097	1
Retail	Space_Heat	2	2	4.532	3.0907	0
Retail	Space_Heat	2	3	4.1241	3.3717	0
Retail	Space_Heat	2	4	3.7163	3.6527	0
Retail	Water_Heat	1	1	0.1093	1.563	0.4
Retail	Water_Heat	1	2	0.0983	1.7193	0.5
Retail	Water_Heat	1	3	0.086	1.8756	0.08
Retail	Water_Heat	1	4	0.0738	2.0319	0.02
Retail	Water_Heat	2	1	2.2409	1.2504	0.4
Retail	Water_Heat	2	2	2.0168	1.3754	0.5
Retail	Water_Heat	2	3	1.7647	1.5004	0.08
Retail	Water_Heat	2	4	1.5126	1.6255	0.02
Retail	Cooking	1	1	0.3079	4.4039	0.65
Retail	Cooking	1	2	0.2771	4.8443	0.35
Retail	Cooking	2	1	6.3142	3.5231	0.65
Retail	Cooking	2	2	5.683	3.875	0.35
Retail	Other	1	1	0	0	1
Retail	Other	2	1	0	0	0
Laundry	Space_Heat	1	1	0.147	1.836	0.65
Laundry	Space_Heat	1	2	0.132	2.02	0.3
Laundry	Space_Heat	1	3	0.12	2.203	0.04
Laundry	Space_Heat	1	4	0.108	2.387	0.01
Laundry	Space_Heat	2	1	3.012	1.469	1
Laundry	Space_Heat	2	2	2.711	1.616	0
Laundry	Space_Heat	2	3	2.467	1.763	0
Laundry	Space_Heat	2	4	2.223	1.909	0
Laundry	Water_Heat	1	1	2.76	34.512	0.4
Laundry	Water_Heat	1	2	2.484	37.963	0.5
Laundry	Water_Heat	1	3	2.174	41.414	0.08

Business Types	End Use	Fuel	Efficiency	(therm/SqFt)	Equipment Cost	efficiency shares
Laundry	Water_Heat	1	4	1.863	44.865	0.02
Laundry	Water_Heat	2	1	56.617	27.609	0.4
Laundry	Water_Heat	2	2	50.955	30.37	0.5
Laundry	Water_Heat	2	3	44.586	33.131	0.08
Laundry	Water_Heat	2	4	38.216	35.892	0.02
Laundry	Drying	1	1	14.937	186.738	0.65
Laundry	Drying	1	2	13.443	205.412	0.35
Laundry	Drying	2	1	306.348	149.39	0.65
Laundry	Drying	2	2	275.713	164.329	0.35
Laundry	Other	1	1	0	0	1
Laundry	Other	2	1	0	0	0
Warehouse	Space_Heat	1	1	0.621	7.909	0.65
Warehouse	Space_Heat	1	2	0.559	8.7	0.3
Warehouse	Space_Heat	1	3	0.509	9.491	0.04
Warehouse	Space_Heat	1	4	0.458	10.282	0.01
Warehouse	Space_Heat	2	1	12.739	6.327	1
Warehouse	Space_Heat	2	2	11.465	6.96	0
Warehouse	Space_Heat	2	3	10.433	7.593	0
Warehouse	Space_Heat	2	4	9.401	8.225	0
Warehouse	Water_Heat	1	1	0.205	2.608	0.4
Warehouse	Water_Heat	1	2	0.184	2.869	0.5
Warehouse	Water_Heat	1	3	0.161	3.13	0.08
Warehouse	Water_Heat	1	4	0.138	3.39	0.02
Warehouse	Water_Heat	2	1	4.2	2.086	0.4
Warehouse	Water_Heat	2	2	3.78	2.295	0.5
Warehouse	Water_Heat	2	3	3.308	2.504	0.08
Warehouse	Water_Heat	2	4	2.835	2.712	0.02
Warehouse	Engine	1	1	8.884	113.127	0.65
Warehouse	Engine	1	2	7.995	124.44	0.35
Warehouse	Engine	2	1	182.207	90.502	0.65
Warehouse	Engine	2	2	163.986	99.552	0.35
Warehouse	Other	1	1	0	0	1
Warehouse	Other	2	1	0	0	0
School	Space_Heat	1	1	0.092	1.225	0.65
School	Space_Heat	1	2	0.083	1.348	0.3
School	Space_Heat	1	3	0.076	1.471	0.04
School	Space_Heat	1	4	0.068	1.593	0.01
School	Space_Heat	2	1	1.895	0.98	1
School	Space_Heat	2	2	1.705	1.078	0
School	Space_Heat	2	3	1.552	1.176	0
School	Space_Heat	2	4	1.398	1.274	0
School	Water_Heat	1	1	0.123	1.635	0.4
School	Water_Heat	1	2	0.111	1.799	0.5
School	Water_Heat	1	3	0.097	1.962	0.08
School	Water_Heat	1	4	0.083	2.126	0.02
School	Water_Heat	2	1	2.528	1.308	0.4
School	Water_Heat	2	2	2.276	1.439	0.5
School	Water_Heat	2	3	1.991	1.57	0.08
School	Water_Heat	2	4	1.707	1.701	0.02
School	Cook_top	1	1	0.046	0.61	0.65
School	Cook_top	1	2	0.041	0.671	0.35
School	Cook_top	2	1	0.943	0.488	0.65
School	Cook_top	2	2	0.849	0.537	0.35
School	Fryer	1	1	0.046	0.612	0.65

Business Types	End Use	Fuel	Efficiency	(therm/SqFt)	Equipment Cost	efficiency shares
School	Fryer	1	2	0.041	0.673	0.35
School	Fryer	2	1	0.946	0.489	0.65
School	Fryer	2	2	0.851	0.538	0.35
School	Griddle	1	1	0.046	0.612	0.65
School	Griddle	1	2	0.041	0.673	0.35
School	Griddle	2	1	0.946	0.489	0.65
School	Griddle	2	2	0.851	0.538	0.35
School	Other_Cooking	1	1	0.046	0.61	0.65
School	Other_Cooking	1	2	0.041	0.671	0.35
School	Other_Cooking	2	1	0.943	0.488	0.65
School	Other_Cooking	2	2	0.849	0.537	0.35
School	AC_Compressor	1	1	0.065	0.866	0.65
School	AC_Compressor	1	2	0.059	0.953	0.35
School	AC_Compressor	2	1	1.339	0.693	0.65
School	AC_Compressor	2	2	1.205	0.762	0.35
School	Other	1	1	0	0	1
School	Other	2	1	0	0	0
College	Space_Heat	1	1	0.26643	3.14441	0.65
College	Space_Heat	1	2	0.23979	3.45885	0.3
College	Space_Heat	1	3	0.21821	3.77329	0.04
College	Space_Heat	1	4	0.19663	4.08773	0.01
College	Space_Heat	2	1	5.46443	2.51553	1
College	Space_Heat	2	2	4.91799	2.76708	0
College	Space_Heat	2	3	4.47537	3.01863	0
College	Space_Heat	2	4	4.03275	3.27018	0
College	Water_Heat	1	1	0.28715	3.38894	0.4
College	Water_Heat	1	2	0.25844	3.72784	0.5
College	Water_Heat	1	3	0.22613	4.06673	0.08
College	Water_Heat	1	4	0.19383	4.40563	0.02
College	Water_Heat	2	1	5.88939	2.71116	0.4
College	Water_Heat	2	2	5.30045	2.98227	0.5
College	Water_Heat	2	3	4.6379	3.25339	0.08
College	Water_Heat	2	4	3.97534	3.5245	0.02
College	Cook_top	1	1	0.0486	0.57358	0.65
College	Cook_top	1	2	0.04374	0.63093	0.35
College	Cook_top	2	1	0.99678	0.45886	0.65
College	Cook_top	2	2	0.8971	0.50475	0.35
College	Fryer	1	1	0.04857	0.57322	0.65
College	Fryer	1	2	0.04371	0.63055	0.35
College	Fryer	2	1	0.99616	0.45858	0.65
College	Fryer	2	2	0.89655	0.50444	0.35
College	Griddle	1	1	0.04857	0.57322	0.65
College	Griddle	1	2	0.04371	0.63055	0.35
College	Griddle	2	1	0.99616	0.45858	0.65
College	Griddle	2	2	0.89655	0.50444	0.35
College	Other_Cooking	1	1	0.0486	0.57358	0.65
College	Other_Cooking	1	2	0.04374	0.63093	0.35
College	Other_Cooking	2	1	0.99678	0.45886	0.65
College	Other_Cooking	2	2	0.8971	0.50475	0.35
College	AC_Compressor	1	1	0.11819	1.3949	0.65
College	AC_Compressor	1	2	0.10637	1.53439	0.35
College	AC_Compressor	2	1	2.4241	1.11592	0.65
College	AC_Compressor	2	2	2.18169	1.22752	0.35
College	Other	1	1	0	0	1

Business Types	End Use	Fuel	Efficiency	(therm/SqFt)	Equipment Cost	efficiency shares
College	Other	2	1	0	0	0
Health	Space_Heat	1	1	0.06894	0.8825	0.65
Health	Space_Heat	1	2	0.06205	0.97075	0.3
Health	Space_Heat	1	3	0.05646	1.059	0.04
Health	Space_Heat	1	4	0.05088	1.14725	0.01
Health	Space_Heat	2	1	1.41395	0.706	1
Health	Space_Heat	2	2	1.27255	0.7766	0
Health	Space_Heat	2	3	1.15802	0.8472	0
Health	Space_Heat	2	4	1.04349	0.9178	0
Health	Water_Heat	1	1	0.41709	5.33917	0.4
Health	Water_Heat	1	2	0.37538	5.87309	0.5
Health	Water_Heat	1	3	0.32846	6.407	0.08
Health	Water_Heat	1	4	0.28154	6.94092	0.02
Health	Water_Heat	2	1	8.55444	4.27134	0.4
Health	Water_Heat	2	2	7.699	4.69847	0.5
Health	Water_Heat	2	3	6.73662	5.1256	0.08
Health	Water_Heat	2	4	5.77425	5.55274	0.02
Health	Cook_top	1	1	0.26358	3.37409	0.65
Health	Cook_top	1	2	0.23722	3.7115	0.35
Health	Cook_top	2	1	5.40598	2.69927	0.65
Health	Cook_top	2	2	4.86538	2.9692	0.35
Health	Fryer	1	1	0.26358	3.37409	0.65
Health	Fryer	1	2	0.23722	3.7115	0.35
Health	Fryer	2	1	5.40598	2.69927	0.65
Health	Fryer	2	2	4.86538	2.9692	0.35
Health	Griddle	1	1	0.26358	3.37409	0.65
Health	Griddle	1	2	0.23722	3.7115	0.35
Health	Griddle	2	1	5.40598	2.69927	0.65
Health	Griddle	2	2	4.86538	2.9692	0.35
Health	Other_Cooking	1	1	0.02636	0.33743	0.65
Health	Other_Cooking	1	2	0.02372	0.37118	0.35
Health	Other_Cooking	2	1	0.54064	0.26995	0.65
Health	Other_Cooking	2	2	0.48657	0.29694	0.35
Health	Drying	1	1	0.14598	1.86871	0.65
Health	Drying	1	2	0.13138	2.05558	0.35
Health	Drying	2	1	2.99405	1.49497	0.65
Health	Drying	2	2	2.69465	1.64446	0.35
Health	AC_Compressor	1	1	0.11386	1.45749	0.65
Health	AC_Compressor	1	2	0.10247	1.60324	0.35
Health	AC_Compressor	2	1	2.3352	1.16599	0.65
Health	AC_Compressor	2	2	2.10168	1.28259	0.35
Health	Other	1	1	0	0	1
Health	Other	2	1	0	0	0
Lodging	Space_Heat	1	1	0.38698	4.85892	0.65
Lodging	Space_Heat	1	2	0.3483	5.3448	0.3
Lodging	Space_Heat	1	3	0.3169	5.8307	0.04
Lodging	Space_Heat	1	4	0.2856	6.3166	0.01
Lodging	Space_Heat	2	1	7.9369	3.8871	1
Lodging	Space_Heat	2	2	7.1432	4.2759	
Lodging	Space_Heat	2	3	6.5003	4.6646	
Lodging	Space_Heat	2	4	5.8574	5.0533	
Lodging	Water_Heat	1	1	0.6901	8.6651	0.4
Lodging	Water_Heat	1	2	0.6211	9.5317	0.5
Lodging	Water_Heat	1	3	0.5435	10.3982	0.08

Business Types	End Use	Fuel	Efficiency	(therm/SqFt)	Equipment Cost	efficiency shares
Lodging	Water_Heat	1	4	0.4658	11.2647	0.02
Lodging	Water_Heat	2	1	14.1542	6.9321	0.4
Lodging	Water_Heat	2	2	12.7388	7.6253	0.5
Lodging	Water_Heat	2	3	11.1465	8.3185	0.08
Lodging	Water_Heat	2	4	9.5541	9.0118	0.02
Lodging	Cook_top	1	1	0.321	4.0305	0.65
Lodging	Cook_top	1	2	0.2889	4.4335	0.35
Lodging	Cook_top	2	1	6.5837	3.2244	0.65
Lodging	Cook_top	2	2	5.9253	3.5468	0.35
Lodging	Fryer	1	1	0.4183	5.2524	0.65
Lodging	Fryer	1	2	0.3765	5.7777	0.35
Lodging	Fryer	2	1	8.5797	4.2019	0.65
Lodging	Fryer	2	2	7.7217	4.6221	0.35
Lodging	Griddle	1	1	0.4183	5.2524	0.65
Lodging	Griddle	1	2	0.3765	5.7777	0.35
Lodging	Griddle	2	1	8.5797	4.2019	0.65
Lodging	Griddle	2	2	7.7217	4.6221	0.35
Lodging	Other_Cooking	1	1	0.041	0.5148	0.65
Lodging	Other_Cooking	1	2	0.0369	0.5663	0.35
Lodging	Other_Cooking	2	1	0.8409	0.4118	0.65
Lodging	Other_Cooking	2	2	0.7568	0.453	0.35
Lodging	Drying	1	1	0.1725	2.1663	0.65
Lodging	Drying	1	2	0.1553	2.3829	0.35
Lodging	Drying	2	1	3.5386	1.733	0.65
Lodging	Drying	2	2	3.1847	1.9063	0.35
Lodging	AC_Compressor	1	1	0.057	0.7157	0.65
Lodging	AC_Compressor	1	2	0.0513	0.7872	0.35
Lodging	AC_Compressor	2	1	1.169	0.5725	0.65
Lodging	AC_Compressor	2	2	1.0521	0.6298	0.35
Lodging	Other	1	1	0	0	1
Lodging	Other	2	1	0	0	0
Misc	Space_Heat	1	1	0.1469	2.1455	0.65
Misc	Space_Heat	1	2	0.1322	2.36	0.3
Misc	Space_Heat	1	3	0.1203	2.5746	0.04
Misc	Space_Heat	1	4	0.1084	2.7891	0.01
Misc	Space_Heat	2	1	3.0121	1.7164	1
Misc	Space_Heat	2	2	2.7109	1.888	0
Misc	Space_Heat	2	3	2.4669	2.0597	0
Misc	Space_Heat	2	4	2.2229	2.2313	0
Misc	Water_Heat	1	1	0.2013	2.9412	0.4
Misc	Water_Heat	1	2	0.1812	3.2354	0.5
Misc	Water_Heat	1	3	0.1585	3.5295	0.08
Misc	Water_Heat	1	4	0.1359	3.8236	0.02
Misc	Water_Heat	2	1	4.1292	2.353	0.4
Misc	Water_Heat	2	2	3.7163	2.5883	0.5
Misc	Water_Heat	2	3	3.2518	2.8236	0.08
Misc	Water_Heat	2	4	2.7872	3.0589	0.02
Misc	Cook_top	1	1	0.043	0.6282	0.65
Misc	Cook_top	1	2	0.0387	0.691	0.35
Misc	Cook_top	2	1	0.8819	0.5025	0.65
Misc	Cook_top	2	2	0.7937	0.5528	0.35
Misc	Fryer	1	1	0.043	0.6285	0.65
Misc	Fryer	1	2	0.0387	0.6913	0.35
Misc	Fryer	2	1	0.8823	0.5028	0.65

Business Types	End Use	Fuel	Efficiency	(therm/SqFt)	Equipment Cost	efficiency shares
Misc	Fryer	2	2	0.7941	0.5531	0.35
Misc	Griddle	1	1	0.043	0.6285	0.65
Misc	Griddle	1	2	0.0387	0.6913	0.35
Misc	Griddle	2	1	0.8823	0.5028	0.65
Misc	Griddle	2	2	0.7941	0.5531	0.35
Misc	Other_Cooking	1	1	0.043	0.6282	0.65
Misc	Other_Cooking	1	2	0.0387	0.691	0.35
Misc	Other_Cooking	2	1	0.8819	0.5025	0.65
Misc	Other_Cooking	2	2	0.7937	0.5528	0.35
Misc	AC_Compressor	1	1	0.1322	1.9306	0.65
Misc	AC_Compressor	1	2	0.1189	2.1237	0.35
Misc	AC_Compressor	2	1	2.7104	1.5445	0.65
Misc	AC_Compressor	2	2	2.4394	1.6989	0.35
Misc	Other	1	1	0	0	1
Misc	Other	2	1	0	0	0
Government	Space_Heat	1	1	0.3046	3.815	0.65
Government	Space_Heat	1	2	0.2742	4.1965	0.3
Government	Space_Heat	1	3	0.2495	4.578	0.04
Government	Space_Heat	1	4	0.2248	4.9595	0.01
Government	Space_Heat	2	1	6.2481	3.052	1
Government	Space_Heat	2	2	5.6233	3.3572	0
Government	Space_Heat	2	3	5.1172	3.6624	0
Government	Space_Heat	2	4	4.6111	3.9676	0
Government	Water_Heat	1	1	0.0474	0.5935	0.4
Government	Water_Heat	1	2	0.0427	0.6528	0.5
Government	Water_Heat	1	3	0.0373	0.7122	0.08
Government	Water_Heat	1	4	0.032	0.7715	0.02
Government	Water_Heat	2	1	0.972	0.4748	0.4
Government	Water_Heat	2	2	0.8748	0.5222	0.5
Government	Water_Heat	2	3	0.7654	0.5697	0.08
Government	Water_Heat	2	4	0.6561	0.6172	0.02
Government	Cook_top	1	1	0.0346	0.4333	0.65
Government	Cook_top	1	2	0.0311	0.4766	0.35
Government	Cook_top	2	1	0.7096	0.3466	0.65
Government	Cook_top	2	2	0.6387	0.3813	0.35
Government	Fryer	1	1	0.0346	0.4332	0.65
Government	Fryer	1	2	0.0311	0.4765	0.35
Government	Fryer	2	1	0.7094	0.3465	0.65
Government	Fryer	2	2	0.6385	0.3812	0.35
Government	Griddle	1	1	0.0346	0.4332	0.65
Government	Griddle	1	2	0.0311	0.4765	0.35
Government	Griddle	2	1	0.7094	0.3465	0.65
Government	Griddle	2	2	0.6385	0.3812	0.35
Government	Other_Cooking	1	1	0.0346	0.4333	0.65
Government	Other_Cooking	1	2	0.0311	0.4766	0.35
Government	Other_Cooking	2	1	0.7096	0.3466	0.65
Government	Other_Cooking	2	2	0.6387	0.3813	0.35
Government	AC_Compressor	1	1	0.1043	1.3062	0.65
Government	AC_Compressor	1	2	0.0939	1.4368	0.35
Government	AC_Compressor	2	1	2.1392	1.0449	0.65
Government	AC_Compressor	2	2	1.9253	1.1494	0.35
Government	Other	1	1	0	0	1
Government	Other	2	1	0	0	0
TCU	Space_Heat	1	1	0.1469	1.8457	0.65

Business Types	End Use	Fuel	Efficiency	(therm/SqFt)	Equipment Cost	efficiency shares
TCU	Space_Heat	1	2	0.1322	2.0303	0.3
TCU	Space_Heat	1	3	0.1203	2.2149	0.04
TCU	Space_Heat	1	4	0.1084	2.3995	0.01
TCU	Space_Heat	2	1	3.0121	1.4766	1
TCU	Space_Heat	2	2	2.7109	1.6242	0
TCU	Space_Heat	2	3	2.4669	1.7719	0
TCU	Space_Heat	2	4	2.2229	1.9196	0
TCU	Water_Heat	1	1	0.2013	2.5303	0.4
TCU	Water_Heat	1	2	0.1812	2.7833	0.5
TCU	Water_Heat	1	3	0.1585	3.0364	0.08
TCU	Water_Heat	1	4	0.1359	3.2894	0.02
TCU	Water_Heat	2	1	4.1292	2.0243	0.4
TCU	Water_Heat	2	2	3.7163	2.2267	0.5
TCU	Water_Heat	2	3	3.2518	2.4291	0.08
TCU	Water_Heat	2	4	2.7872	2.6315	0.02
TCU	Engine	1	1	2.4409	30.6768	0.65
TCU	Engine	1	2	2.1968	33.7445	0.35
TCU	Engine	2	1	50.0617	24.5415	0.65
TCU	Engine	2	2	45.0556	26.9956	0.35
TCU	Other	1	1	0	0	1
TCU	Other	2	1	0	0	0
Construction	Space_Heat	1	1	0.1469	2.2951	0.65
Construction	Space_Heat	1	2	0.1322	2.5246	0.3
Construction	Space_Heat	1	3	0.1203	2.7542	0.04
Construction	Space_Heat	1	4	0.1084	2.9837	0.01
Construction	Space_Heat	2	1	3.0121	1.8361	1
Construction	Space_Heat	2	2	2.7109	2.0197	0
Construction	Space_Heat	2	3	2.4669	2.2033	0
Construction	Space_Heat	2	4	2.2229	2.3869	0
Construction	Water_Heat	1	1	0.2013	3.1464	0.4
Construction	Water_Heat	1	2	0.1812	3.461	0.5
Construction	Water_Heat	1	3	0.1585	3.7757	0.08
Construction	Water_Heat	1	4	0.1359	4.0903	0.02
Construction	Water_Heat	2	1	4.1292	2.5171	0.4
Construction	Water_Heat	2	2	3.7163	2.7688	0.5
Construction	Water_Heat	2	3	3.2518	3.0205	0.08
Construction	Water_Heat	2	4	2.7872	3.2722	0.02
Construction	Other	1	1	0	0	1
Construction	Other	2	1	0	0	0
Agriculture	Space_Heat	1	1	0.1469	1.6583	0.65
Agriculture	Space_Heat	1	2	0.1322	1.8242	0.3
Agriculture	Space_Heat	1	3	0.1203	1.99	0.04
Agriculture	Space_Heat	1	4	0.1084	2.1558	0.01
Agriculture	Space_Heat	2	1	3.0121	1.3267	1
Agriculture	Space_Heat	2	2	2.7109	1.4593	0
Agriculture	Space_Heat	2	3	2.4669	1.592	0
Agriculture	Space_Heat	2	4	2.2229	1.7247	0
Agriculture	Water_Heat	1	1	0.2013	2.2734	0.4
Agriculture	Water_Heat	1	2	0.1812	2.5008	0.5
Agriculture	Water_Heat	1	3	0.1585	2.7281	0.08
Agriculture	Water_Heat	1	4	0.1359	2.9554	0.02
Agriculture	Water_Heat	2	1	4.1292	1.8187	0.4
Agriculture	Water_Heat	2	2	3.7163	2.0006	0.5
Agriculture	Water_Heat	2	3	3.2518	2.1825	0.08

Business Types	End Use	Fuel	Efficiency	(therm/SqFt)	Equipment Cost	efficiency shares
Agriculture	Water_Heat	2	4	2.7872	2.3644	0.02
Agriculture	Drying	1	1	0.2013	2.2734	0.65
Agriculture	Drying	1	2	0.1812	2.5008	0.35
Agriculture	Drying	2	1	4.1292	1.8187	0.65
Agriculture	Drying	2	2	3.7163	2.0006	0.35
Agriculture	Engine	1	1	0.8657	9.7757	0.65
Agriculture	Engine	1	2	0.7791	10.7533	0.35
Agriculture	Engine	2	1	17.7557	7.8206	0.65
Agriculture	Engine	2	2	15.9802	8.6026	0.35
Agriculture	Other	1	1	0	0	1
Agriculture	Other	2	1	0	0	0

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Fuel Market Share

Where Fuel = 1 (gas) and 2 (electric)

Business Types	End Use	Fuel	Share
Office	Space_Heat	1	0.8555
Office	Space_Heat	2	0.1445
Office	Water_Heat	1	0.16581
Office	Water_Heat	2	0.83419
Office	Cooking	1	0.02069
Office	Cooking	2	0.97931
Office	AC_Compressor	1	0.06
Office	AC_Compressor	2	0.94
Office	Other	1	1
Restaurant	Space_Heat	1	0.59046
Restaurant	Space_Heat	2	0.40954
Restaurant	Water_Heat	1	0.90204
Restaurant	Water_Heat	2	0.09796
Restaurant	Cook_top	1	0.97733
Restaurant	Cook_top	2	0.02267
Restaurant	Fryer	1	0.90535
Restaurant	Fryer	2	0.09465
Restaurant	Griddle	1	0.97038
Restaurant	Griddle	2	0.02962
Restaurant	Other_Cooking	1	0.66
Restaurant	Other_Cooking	2	0.34
Restaurant	AC_Compressor	1	0.06
Restaurant	AC_Compressor	2	0.94
Restaurant	Other	1	1
Retail	Space_Heat	1	0.51751
Retail	Space_Heat	2	0.48249
Retail	Water_Heat	1	0.31008
Retail	Water_Heat	2	0.68992
Retail	Cooking	1	0.09367
Retail	Cooking	2	0.90633
Retail	Other	1	1
Laundry	Space_Heat	1	0.57692
Laundry	Space_Heat	2	0.42308
Laundry	Water_Heat	1	0.67647
Laundry	Water_Heat	2	0.32353
Laundry	Drying	1	0.6
Laundry	Drying	2	0.4
Laundry	Other	1	1
Warehouse	Space_Heat	1	0.43723
Warehouse	Space_Heat	2	0.56277
Warehouse	Water_Heat	1	0.07159
Warehouse	Water_Heat	2	0.92841
Warehouse	Engine	1	0.06

Business Types	End Use	Fuel	Share
Warehouse	Engine	2	0.94
Warehouse	Other	1	1
School	Space_Heat	1	0.75284
School	Space_Heat	2	0.24716
School	Water_Heat	1	0.75843
School	Water_Heat	2	0.24157
School	Cook_top	1	0.42857
School	Cook_top	2	0.57143
School	Fryer	1	0.42857
School	Fryer	2	0.57143
School	Griddle	1	0.42857
School	Griddle	2	0.57143
School	Other_Cooking	1	0.42857
School	Other_Cooking	2	0.57143
School	AC_Compressor	1	0.06
School	AC_Compressor	2	0.94
School	Other	1	1
College	Space_Heat	1	0.33028
College	Space_Heat	2	0.66972
College	Water_Heat	1	0.81675
College	Water_Heat	2	0.18325
College	Cook_top	1	0.04801
College	Cook_top	2	0.95199
College	Fryer	1	0.04801
College	Fryer	2	0.95199
College	Griddle	1	0.04801
College	Griddle	2	0.95199
College	Other_Cooking	1	0.04801
College	Other_Cooking	2	0.95199
College	AC_Compressor	1	0.06
College	AC_Compressor	2	0.94
College	Other	1	1
Health	Space_Heat	1	0.66026
Health	Space_Heat	2	0.33974
Health	Water_Heat	1	0.8242
Health	Water_Heat	2	0.1758
Health	Cook_top	1	0.09487
Health	Cook_top	2	0.90513
Health	Fryer	1	0.09487
Health	Fryer	2	0.90513
Health	Griddle	1	0.09487
Health	Griddle	2	0.90513
Health	Other_Cooking	1	0.66
Health	Other_Cooking	2	0.34
Health	Drying	1	0.6
Health	Drying	2	0.4
Health	AC_Compressor	1	0.06
Health	AC_Compressor	2	0.94
Health	Other	1	1
Lodging	Space_Heat	1	0.27151
Lodging	Space_Heat	2	0.72849
Lodging	Water_Heat	1	0.98948

Business Types	End Use	Fuel	Share
Lodging	Water_Heat	2	0.01052
Lodging	Cook_top	1	0.44958
Lodging	Cook_top	2	0.55042
Lodging	Fryer	1	0.44958
Lodging	Fryer	2	0.55042
Lodging	Griddle	1	0.44958
Lodging	Griddle	2	0.55042
Lodging	Other_Cooking	1	0.44958
Lodging	Other_Cooking	2	0.55042
Lodging	Drying	1	0.6
Lodging	Drying	2	0.4
Lodging	AC_Compressor	1	0.06
Lodging	AC_Compressor	2	0.94
Lodging	Other	1	1
Misc	Space_Heat	1	0.54964
Misc	Space_Heat	2	0.45036
Misc	Water_Heat	1	0.55691
Misc	Water_Heat	2	0.44309
Misc	Cook_top	1	0.97733
Misc	Cook_top	2	0.02267
Misc	Fryer	1	0.90535
Misc	Fryer	2	0.09465
Misc	Griddle	1	0.97038
Misc	Griddle	2	0.02962
Misc	Other_Cooking	1	0.66
Misc	Other_Cooking	2	0.34
Misc	AC_Compressor	1	0.06
Misc	AC_Compressor	2	0.94
Misc	Other	1	1
Government	Space_Heat	1	0.8555
Government	Space_Heat	2	0.1445
Government	Water_Heat	1	0.16581
Government	Water_Heat	2	0.83419
Government	Cook_top	1	0.97733
Government	Cook_top	2	0.02267
Government	Fryer	1	0.90535
Government	Fryer	2	0.09465
Government	Griddle	1	0.97038
Government	Griddle	2	0.02962
Government	Other_Cooking	1	0.66
Government	Other_Cooking	2	0.34
Government	AC_Compressor	1	0.06
Government	AC_Compressor	2	0.94
Government	Other	1	1
TCU	Space_Heat	1	0.57692
TCU	Space_Heat	2	0.42308
TCU	Water_Heat	1	0.67647
TCU	Water_Heat	2	0.32353
TCU	Engine	1	0.06
TCU	Engine	2	0.94
TCU	Other	1	1
Construction	Space_Heat	1	0.57692

Business Types	End Use	Fuel	Share
Construction	Space_Heat	2	0.42308
Construction	Water_Heat	1	0.67647
Construction	Water_Heat	2	0.32353
Construction	Other	1	1
Agriculture	Space_Heat	1	0.57692
Agriculture	Space_Heat	2	0.42308
Agriculture	Water_Heat	1	0.67647
Agriculture	Water_Heat	2	0.32353
Agriculture	Drying	1	1
Agriculture	Drying	2	0
Agriculture	Engine	1	0.06
Agriculture	Engine	2	0.94
Agriculture	Other	1	1
Grocery	Space_Heat	1	0.74652
Grocery	Space_Heat	2	0.25348
Grocery	Water_Heat	1	0.70846
Grocery	Water_Heat	2	0.29154
Grocery	Cook_top	1	0.35627
Grocery	Cook_top	2	0.64373
Grocery	Fryer	1	0.35627
Grocery	Fryer	2	0.64373
Grocery	Griddle	1	0.35627
Grocery	Griddle	2	0.64373
Grocery	Other_Cooking	1	0.35627
Grocery	Other_Cooking	2	0.64373
Grocery	AC_Compressor	1	0.06
Grocery	AC_Compressor	2	0.94
Grocery	Other	1	1

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Efficiency Shares

bname	nname	fname	Stock	Standard	High	Premium
Agriculture	Drying	Electric	0.65	0.35	N/A	N/A
Agriculture	Drying	Natural_Gas	0.65	0.35	N/A	N/A
Agriculture	Engine	Electric	0.65	0.35	N/A	N/A
Agriculture	Engine	Natural_Gas	0.65	0.35	N/A	N/A
Agriculture	Other	Natural_Gas	1	N/A	N/A	N/A
Agriculture	Space_Heat	Electric	1	N/A	N/A	N/A
Agriculture	Space_Heat	Natural_Gas	0.65	0.3	0.04	0.01
Agriculture	Water_Heat	Electric	0.4	0.5	0.08	0.02
Agriculture	Water_Heat	Natural_Gas	0.4	0.5	0.08	0.02
College	AC_Compressor	Electric	0.65	0.35	N/A	N/A
College	AC_Compressor	Natural_Gas	0.65	0.35	N/A	N/A
College	Cook_top	Electric	0.65	0.35	N/A	N/A
College	Cook_top	Natural_Gas	0.65	0.35	N/A	N/A
College	Fryer	Electric	0.65	0.35	N/A	N/A
College	Fryer	Natural_Gas	0.65	0.35	N/A	N/A
College	Griddle	Electric	0.65	0.35	N/A	N/A
College	Griddle	Natural_Gas	0.65	0.35	N/A	N/A
College	Other	Natural_Gas	1	N/A	N/A	N/A
College	Other_Cooking	Electric	0.65	0.35	N/A	N/A
College	Other_Cooking	Natural_Gas	0.65	0.35	N/A	N/A
College	Space_Heat	Electric	1	N/A	N/A	N/A
College	Space_Heat	Natural_Gas	0.65	0.3	0.04	0.01
College	Water_Heat	Electric	0.4	0.5	0.08	0.02
College	Water_Heat	Natural_Gas	0.4	0.5	0.08	0.02
Construction	Other	Natural_Gas	1	N/A	N/A	N/A
Construction	Space_Heat	Electric	1	N/A	N/A	N/A
Construction	Space_Heat	Natural_Gas	0.65	0.3	0.04	0.01
Construction	Water_Heat	Electric	0.4	0.5	0.08	0.02
Construction	Water_Heat	Natural_Gas	0.4	0.5	0.08	0.02
Government	AC_Compressor	Electric	0.65	0.35	N/A	N/A
Government	AC_Compressor	Natural_Gas	0.65	0.35	N/A	N/A
Government	Cook_top	Electric	0.65	0.35	N/A	N/A

bname	nname	fname	Stock	Standard	High	Premium
Government	Cook_top	Natural_Gas	0.65	0.35	N/A	N/A
Government	Fryer	Electric	0.65	0.35	N/A	N/A
Government	Fryer	Natural_Gas	0.65	0.35	N/A	N/A
Government	Griddle	Electric	0.65	0.35	N/A	N/A
Government	Griddle	Natural_Gas	0.65	0.35	N/A	N/A
Government	Other	Natural_Gas	1	N/A	N/A	N/A
Government	Other_Cooking	Electric	0.65	0.35	N/A	N/A
Government	Other_Cooking	Natural_Gas	0.65	0.35	N/A	N/A
Government	Space_Heat	Electric	1	N/A	N/A	N/A
Government	Space_Heat	Natural_Gas	0.65	0.3	0.04	0.01
Government	Water_Heat	Electric	0.4	0.5	0.08	0.02
Government	Water_Heat	Natural_Gas	0.4	0.5	0.08	0.02
Grocery	AC_Compressor	Electric	0.65	0.35	N/A	N/A
Grocery	AC_Compressor	Natural_Gas	0.65	0.35	N/A	N/A
Grocery	Cook_top	Electric	0.65	0.35	N/A	N/A
Grocery	Cook_top	Natural_Gas	0.65	0.35	N/A	N/A
Grocery	Fryer	Electric	0.65	0.35	N/A	N/A
Grocery	Fryer	Natural_Gas	0.65	0.35	N/A	N/A
Grocery	Griddle	Electric	0.65	0.35	N/A	N/A
Grocery	Griddle	Natural_Gas	0.65	0.35	N/A	N/A
Grocery	Other	Natural_Gas	1	N/A	N/A	N/A
Grocery	Other_Cooking	Electric	0.65	0.35	N/A	N/A
Grocery	Other_Cooking	Natural_Gas	0.65	0.35	N/A	N/A
Grocery	Space_Heat	Electric	1	N/A	N/A	N/A
Grocery	Space_Heat	Natural_Gas	0.65	0.3	0.04	0.01
Grocery	Water_Heat	Electric	0.4	0.5	0.08	0.02
Grocery	Water_Heat	Natural_Gas	0.4	0.5	0.08	0.02
Health	AC_Compressor	Electric	0.65	0.35	N/A	N/A
Health	AC_Compressor	Natural_Gas	0.65	0.35	N/A	N/A
Health	Cook_top	Electric	0.65	0.35	N/A	N/A
Health	Cook_top	Natural_Gas	0.65	0.35	N/A	N/A
Health	Drying	Electric	0.65	0.35	N/A	N/A
Health	Drying	Natural_Gas	0.65	0.35	N/A	N/A
Health	Fryer	Electric	0.65	0.35	N/A	N/A
Health	Fryer	Natural_Gas	0.65	0.35	N/A	N/A
Health	Griddle	Electric	0.65	0.35	N/A	N/A

bname	nname	fname	Stock	Standard	High	Premium
Health	Griddle	Natural_Gas	0.65	0.35	N/A	N/A
Health	Other	Natural_Gas	1	N/A	N/A	N/A
Health	Other_Cooking	Electric	0.65	0.35	N/A	N/A
Health	Other_Cooking	Natural_Gas	0.65	0.35	N/A	N/A
Health	Space_Heat	Electric	1	N/A	N/A	N/A
Health	Space_Heat	Natural_Gas	0.65	0.3	0.04	0.01
Health	Water_Heat	Electric	0.4	0.5	0.08	0.02
Health	Water_Heat	Natural_Gas	0.4	0.5	0.08	0.02
Laundry	Drying	Electric	0.65	0.35	N/A	N/A
Laundry	Drying	Natural_Gas	0.65	0.35	N/A	N/A
Laundry	Other	Natural_Gas	1	N/A	N/A	N/A
Laundry	Space_Heat	Electric	1	N/A	N/A	N/A
Laundry	Space_Heat	Natural_Gas	0.65	0.3	0.04	0.01
Laundry	Water_Heat	Electric	0.4	0.5	0.08	0.02
Laundry	Water_Heat	Natural_Gas	0.4	0.5	0.08	0.02
Lodging	AC_Compressor	Electric	0.65	0.35	N/A	N/A
Lodging	AC_Compressor	Natural_Gas	0.65	0.35	N/A	N/A
Lodging	Cook_top	Electric	0.65	0.35	N/A	N/A
Lodging	Cook_top	Natural_Gas	0.65	0.35	N/A	N/A
Lodging	Drying	Electric	0.65	0.35	N/A	N/A
Lodging	Drying	Natural_Gas	0.65	0.35	N/A	N/A
Lodging	Fryer	Electric	0.65	0.35	N/A	N/A
Lodging	Fryer	Natural_Gas	0.65	0.35	N/A	N/A
Lodging	Griddle	Electric	0.65	0.35	N/A	N/A
Lodging	Griddle	Natural_Gas	0.65	0.35	N/A	N/A
Lodging	Other	Natural_Gas	1	N/A	N/A	N/A
Lodging	Other_Cooking	Electric	0.65	0.35	N/A	N/A
Lodging	Other_Cooking	Natural_Gas	0.65	0.35	N/A	N/A
Lodging	Space_Heat	Electric	1	N/A	N/A	N/A
Lodging	Space_Heat	Natural_Gas	0.65	0.3	0.04	0.01
Lodging	Water_Heat	Electric	0.4	0.5	0.08	0.02
Lodging	Water_Heat	Natural_Gas	0.4	0.5	0.08	0.02
Misc	AC_Compressor	Electric	0.65	0.35	N/A	N/A
Misc	AC_Compressor	Natural_Gas	0.65	0.35	N/A	N/A
Misc	Cook_top	Electric	0.65	0.35	N/A	N/A
Misc	Cook_top	Natural_Gas	0.65	0.35	N/A	N/A

bname	nname	fname	Stock	Standard	High	Premium
Misc	Fryer	Electric	0.65	0.35	N/A	N/A
Misc	Fryer	Natural_Gas	0.65	0.35	N/A	N/A
Misc	Griddle	Electric	0.65	0.35	N/A	N/A
Misc	Griddle	Natural_Gas	0.65	0.35	N/A	N/A
Misc	Other	Natural_Gas	1	N/A	N/A	N/A
Misc	Other_Cooking	Electric	0.65	0.35	N/A	N/A
Misc	Other_Cooking	Natural_Gas	0.65	0.35	N/A	N/A
Misc	Space_Heat	Electric	1	N/A	N/A	N/A
Misc	Space_Heat	Natural_Gas	0.65	0.3	0.04	0.01
Misc	Water_Heat	Electric	0.4	0.5	0.08	0.02
Misc	Water_Heat	Natural_Gas	0.4	0.5	0.08	0.02
Office	AC_Compressor	Electric	0.65	0.35	N/A	N/A
Office	AC_Compressor	Natural_Gas	0.65	0.35	N/A	N/A
Office	Cooking	Electric	0.65	0.35	N/A	N/A
Office	Cooking	Natural_Gas	0.65	0.35	N/A	N/A
Office	Other	Natural_Gas	1	N/A	N/A	N/A
Office	Space_Heat	Electric	1	N/A	N/A	N/A
Office	Space_Heat	Natural_Gas	0.65	0.3	0.04	0.01
Office	Water_Heat	Electric	0.4	0.5	0.08	0.02
Office	Water_Heat	Natural_Gas	0.4	0.5	0.08	0.02
Restaurant	AC_Compressor	Electric	0.65	0.35	N/A	N/A
Restaurant	AC_Compressor	Natural_Gas	0.65	0.35	N/A	N/A
Restaurant	Cook_top	Electric	0.65	0.35	N/A	N/A
Restaurant	Cook_top	Natural_Gas	0.65	0.35	N/A	N/A
Restaurant	Fryer	Electric	0.65	0.35	N/A	N/A
Restaurant	Fryer	Natural_Gas	0.65	0.35	N/A	N/A
Restaurant	Griddle	Electric	0.65	0.35	N/A	N/A
Restaurant	Griddle	Natural_Gas	0.65	0.35	N/A	N/A
Restaurant	Other	Natural_Gas	1	N/A	N/A	N/A
Restaurant	Other_Cooking	Electric	0.65	0.35	N/A	N/A
Restaurant	Other_Cooking	Natural_Gas	0.65	0.35	N/A	N/A
Restaurant	Space_Heat	Electric	1	N/A	N/A	N/A
Restaurant	Space_Heat	Natural_Gas	0.65	0.3	0.04	0.01
Restaurant	Water_Heat	Electric	0.4	0.5	0.08	0.02
Restaurant	Water_Heat	Natural_Gas	0.4	0.5	0.08	0.02
Retail	Cooking	Electric	0.65	0.35	N/A	N/A

bname	nname	fname	Stock	Standard	High	Premium
Retail	Cooking	Natural_Gas	0.65	0.35	N/A	N/A
Retail	Other	Natural_Gas	1	N/A	N/A	N/A
Retail	Space_Heat	Electric	1	N/A	N/A	N/A
Retail	Space_Heat	Natural_Gas	0.65	0.3	0.04	0.01
Retail	Water_Heat	Electric	0.4	0.5	0.08	0.02
Retail	Water_Heat	Natural_Gas	0.4	0.5	0.08	0.02
School	AC_Compressor	Electric	0.65	0.35	N/A	N/A
School	AC_Compressor	Natural_Gas	0.65	0.35	N/A	N/A
School	Cook_top	Electric	0.65	0.35	N/A	N/A
School	Cook_top	Natural_Gas	0.65	0.35	N/A	N/A
School	Fryer	Electric	0.65	0.35	N/A	N/A
School	Fryer	Natural_Gas	0.65	0.35	N/A	N/A
School	Griddle	Electric	0.65	0.35	N/A	N/A
School	Griddle	Natural_Gas	0.65	0.35	N/A	N/A
School	Other	Natural_Gas	1	N/A	N/A	N/A
School	Other_Cooking	Electric	0.65	0.35	N/A	N/A
School	Other_Cooking	Natural_Gas	0.65	0.35	N/A	N/A
School	Space_Heat	Electric	1	N/A	N/A	N/A
School	Space_Heat	Natural_Gas	0.65	0.3	0.04	0.01
School	Water_Heat	Electric	0.4	0.5	0.08	0.02
School	Water_Heat	Natural_Gas	0.4	0.5	0.08	0.02
TCU	Engine	Electric	0.65	0.35	N/A	N/A
TCU	Engine	Natural_Gas	0.65	0.35	N/A	N/A
TCU	Other	Natural_Gas	1	N/A	N/A	N/A
TCU	Space_Heat	Electric	1	N/A	N/A	N/A
TCU	Space_Heat	Natural_Gas	0.65	0.3	0.04	0.01
TCU	Water_Heat	Electric	0.4	0.5	0.08	0.02
TCU	Water_Heat	Natural_Gas	0.4	0.5	0.08	0.02
Warehouse	Engine	Electric	0.65	0.35	N/A	N/A
Warehouse	Engine	Natural_Gas	0.65	0.35	N/A	N/A
Warehouse	Other	Natural_Gas	1	N/A	N/A	N/A
Warehouse	Space_Heat	Electric	1	N/A	N/A	N/A
Warehouse	Space_Heat	Natural_Gas	0.65	0.3	0.04	0.01
Warehouse	Water_Heat	Electric	0.4	0.5	0.08	0.02
Warehouse	Water_Heat	Natural_Gas	0.4	0.5	0.08	0.02

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Saturation Rate

Where Fuel = 1 (gas) and 2 (electric), and

Business Type	End Use	saturation
Office	Space_Heat	0.872
Office	Water_Heat	0.7
Office	Cooking	0.082
Office	AC_Compressor	0.931
Office	Other	1
Restaurant	Space_Heat	0.818
Restaurant	Water_Heat	0.96
Restaurant	Cook_top	0.75
Restaurant	Fryer	0.729
Restaurant	Griddle	0.574
Restaurant	Other_Cooking	0.9
Restaurant	AC_Compressor	0.871
Restaurant	Other	1
Retail	Space_Heat	0.771
Retail	Water_Heat	0.62
Retail	Cooking	0.245
Retail	Other	1
Laundry	Space_Heat	0.72
Laundry	Water_Heat	1
Laundry	Drying	1
Laundry	Other	1
Warehouse	Space_Heat	0.231
Warehouse	Water_Heat	0.88
Warehouse	Engine	0.25
Warehouse	Other	1
School	Space_Heat	0.967
School	Water_Heat	0.9
School	Cook_top	0.147
School	Fryer	0.147
School	Griddle	0.147
School	Other_Cooking	0.147
School	AC_Compressor	0.885
School	Other	1
College	Space_Heat	0.763
College	Water_Heat	0.955
College	Cook_top	0.147
College	Fryer	0.147
College	Griddle	0.147
College	Other_Cooking	0.147
College	AC_Compressor	0.885
College	Other	1
Health	Space_Heat	0.936
Health	Water_Heat	1
Health	Cook_top	0.102
Health	Fryer	0.102
Health	Griddle	0.102
Health	Other_Cooking	0.102
Health	Drying	0.82
Health	AC_Compressor	0.792
Health	Other	1
Lodging	Space_Heat	0.895
Lodging	Water_Heat	1
Lodging	Cook_top	0.084
Lodging	Fryer	0.084
Lodging	Griddle	0.084
Lodging	Other_Cooking	0.084
Lodging	Drying	0.82
Lodging	AC_Compressor	0.795
Lodging	Other	1
Misc	Space_Heat	0.695
Misc	Water_Heat	0.69
Misc	Cook_top	0.021
Misc	Fryer	0.021
Misc	Griddle	0.021
Misc	Other_Cooking	0.021

Misc	AC_Compressor	0.731
Misc	Other	1
Government	Space_Heat	0.872
Government	Water_Heat	0.7
Government	Cook_top	0.196
Government	Fryer	0.196
Government	Griddle	0.196
Government	Other_Cooking	0.196
Government	AC_Compressor	0.888
Government	Other	1
TCU	Space_Heat	0.72
TCU	Water_Heat	0.69
TCU	Engine	0.5
TCU	Other	1
Construction	Space_Heat	0.72
Construction	Water_Heat	0.69
Construction	Other	1
Agriculture	Space_Heat	0.72
Agriculture	Water_Heat	0.69
Agriculture	Drying	1
Agriculture	Engine	0.5
Agriculture	Other	1
Grocery	Space_Heat	0.647
Grocery	Water_Heat	0.93
Grocery	Cook_top	0.245
Grocery	Fryer	0.245
Grocery	Griddle	0.245
Grocery	Other_Cooking	0.245
Grocery	AC_Compressor	0.856
Grocery	Other	1

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Equipment Cost Data

b	n	f	e	bname	nname	EQcost
1	1	1	1	Office	Space_Heat	4.3149
1	1	1	2	Office	Space_Heat	4.7464
1	1	1	3	Office	Space_Heat	5.1779
1	1	1	4	Office	Space_Heat	5.6094
1	1	2	1	Office	Space_Heat	3.4519
1	1	2	2	Office	Space_Heat	3.7971
1	1	2	3	Office	Space_Heat	4.1423
1	1	2	4	Office	Space_Heat	4.4875
1	2	1	1	Office	Water_Heat	0.6712
1	2	1	2	Office	Water_Heat	0.7384
1	2	1	3	Office	Water_Heat	0.8055
1	2	1	4	Office	Water_Heat	0.8726
1	2	2	1	Office	Water_Heat	0.537
1	2	2	2	Office	Water_Heat	0.5907
1	2	2	3	Office	Water_Heat	0.6444
1	2	2	4	Office	Water_Heat	0.6981
1	3	1	1	Office	Cooking	0.4899
1	3	1	2	Office	Cooking	0.5389
1	3	2	1	Office	Cooking	0.3919
1	3	2	2	Office	Cooking	0.4311
1	10	1	1	Office	AC_Compressor	1.4773
1	10	1	2	Office	AC_Compressor	1.6251
1	10	2	1	Office	AC_Compressor	1.1819
1	10	2	2	Office	AC_Compressor	1.3
1	11	1	1	Office	Other	0
1	11	2	1	Office	Other	0
2	1	1	1	Restaurant	Space_Heat	1.5841
2	1	1	2	Restaurant	Space_Heat	1.7425
2	1	1	3	Restaurant	Space_Heat	1.9009
2	1	1	4	Restaurant	Space_Heat	2.0593
2	1	2	1	Restaurant	Space_Heat	1.2673
2	1	2	2	Restaurant	Space_Heat	1.394
2	1	2	3	Restaurant	Space_Heat	1.5207
2	1	2	4	Restaurant	Space_Heat	1.6474
2	2	1	1	Restaurant	Water_Heat	11.666
2	2	1	2	Restaurant	Water_Heat	12.8326
2	2	1	3	Restaurant	Water_Heat	13.9992
2	2	1	4	Restaurant	Water_Heat	15.1658
2	2	2	1	Restaurant	Water_Heat	9.3328
2	2	2	2	Restaurant	Water_Heat	10.2661
2	2	2	3	Restaurant	Water_Heat	11.1994
2	2	2	4	Restaurant	Water_Heat	12.1327
2	4	1	1	Restaurant	Cook_top	16.1343
2	4	1	2	Restaurant	Cook_top	17.7477
2	4	2	1	Restaurant	Cook_top	12.9074
2	4	2	2	Restaurant	Cook_top	14.1981
2	5	1	1	Restaurant	Fryer	14.5274
2	5	1	2	Restaurant	Fryer	15.9802
2	5	2	1	Restaurant	Fryer	11.622
2	5	2	2	Restaurant	Fryer	12.7841
2	6	1	1	Restaurant	Griddle	12.2603
2	6	1	2	Restaurant	Griddle	13.4863
2	6	2	1	Restaurant	Griddle	9.8082
2	6	2	2	Restaurant	Griddle	10.789
2	7	1	1	Restaurant	Other_Cooking	13.0747
2	7	1	2	Restaurant	Other_Cooking	14.3822
2	7	2	1	Restaurant	Other_Cooking	10.4598
2	7	2	2	Restaurant	Other_Cooking	11.5057
2	10	1	1	Restaurant	AC_Compressor	2.7306
2	10	1	2	Restaurant	AC_Compressor	3.0036
2	10	2	1	Restaurant	AC_Compressor	2.1844
2	10	2	2	Restaurant	AC_Compressor	2.4029
2	11	1	1	Restaurant	Other	0
2	11	2	1	Restaurant	Other	0
3	1	1	1	Retail	Space_Heat	3.5122
3	1	1	2	Retail	Space_Heat	3.8634
3	1	1	3	Retail	Space_Heat	4.2146
3	1	1	4	Retail	Space_Heat	4.5658
3	1	2	1	Retail	Space_Heat	2.8097
3	1	2	2	Retail	Space_Heat	3.0907

b	n	f	e	bname	nname	EQcost
3	1	2	3	Retail	Space_Heat	3.3717
3	1	2	4	Retail	Space_Heat	3.6527
3	2	1	1	Retail	Water_Heat	1.563
3	2	1	2	Retail	Water_Heat	1.7193
3	2	1	3	Retail	Water_Heat	1.8756
3	2	1	4	Retail	Water_Heat	2.0319
3	2	2	1	Retail	Water_Heat	1.2504
3	2	2	2	Retail	Water_Heat	1.3754
3	2	2	3	Retail	Water_Heat	1.5004
3	2	2	4	Retail	Water_Heat	1.6255
3	3	1	1	Retail	Cooking	4.4039
3	3	1	2	Retail	Cooking	4.8443
3	3	2	1	Retail	Cooking	3.5231
3	3	2	2	Retail	Cooking	3.875
3	11	1	1	Retail	Other	0
3	11	2	1	Retail	Other	0
4	1	1	1	Laundry	Space_Heat	1.836
4	1	1	2	Laundry	Space_Heat	2.02
4	1	1	3	Laundry	Space_Heat	2.203
4	1	1	4	Laundry	Space_Heat	2.387
4	1	2	1	Laundry	Space_Heat	1.469
4	1	2	2	Laundry	Space_Heat	1.616
4	1	2	3	Laundry	Space_Heat	1.763
4	1	2	4	Laundry	Space_Heat	1.909
4	2	1	1	Laundry	Water_Heat	34.512
4	2	1	2	Laundry	Water_Heat	37.963
4	2	1	3	Laundry	Water_Heat	41.414
4	2	1	4	Laundry	Water_Heat	44.865
4	2	2	1	Laundry	Water_Heat	27.609
4	2	2	2	Laundry	Water_Heat	30.37
4	2	2	3	Laundry	Water_Heat	33.131
4	2	2	4	Laundry	Water_Heat	35.892
4	8	1	1	Laundry	Drying	186.738
4	8	1	2	Laundry	Drying	205.412
4	8	2	1	Laundry	Drying	149.39
4	8	2	2	Laundry	Drying	164.329
4	11	1	1	Laundry	Other	0
4	11	2	1	Laundry	Other	0
5	1	1	1	Warehouse	Space_Heat	7.909
5	1	1	2	Warehouse	Space_Heat	8.7
5	1	1	3	Warehouse	Space_Heat	9.491
5	1	1	4	Warehouse	Space_Heat	10.282
5	1	2	1	Warehouse	Space_Heat	6.327
5	1	2	2	Warehouse	Space_Heat	6.96
5	1	2	3	Warehouse	Space_Heat	7.593
5	1	2	4	Warehouse	Space_Heat	8.225
5	2	1	1	Warehouse	Water_Heat	2.608
5	2	1	2	Warehouse	Water_Heat	2.869
5	2	1	3	Warehouse	Water_Heat	3.13
5	2	1	4	Warehouse	Water_Heat	3.39
5	2	2	1	Warehouse	Water_Heat	2.086
5	2	2	2	Warehouse	Water_Heat	2.295
5	2	2	3	Warehouse	Water_Heat	2.504
5	2	2	4	Warehouse	Water_Heat	2.712
5	9	1	1	Warehouse	Engine	113.127
5	9	1	2	Warehouse	Engine	124.44
5	9	2	1	Warehouse	Engine	90.502
5	9	2	2	Warehouse	Engine	99.552
5	11	1	1	Warehouse	Other	0
5	11	2	1	Warehouse	Other	0
6	1	1	1	School	Space_Heat	1.225
6	1	1	2	School	Space_Heat	1.348
6	1	1	3	School	Space_Heat	1.471
6	1	1	4	School	Space_Heat	1.593
6	1	2	1	School	Space_Heat	0.98
6	1	2	2	School	Space_Heat	1.078
6	1	2	3	School	Space_Heat	1.176
6	1	2	4	School	Space_Heat	1.274
6	2	1	1	School	Water_Heat	1.635
6	2	1	2	School	Water_Heat	1.799
6	2	1	3	School	Water_Heat	1.962
6	2	1	4	School	Water_Heat	2.126
6	2	2	1	School	Water_Heat	1.308
6	2	2	2	School	Water_Heat	1.439
6	2	2	3	School	Water_Heat	1.57
6	2	2	4	School	Water_Heat	1.701
6	4	1	1	School	Cook_top	0.61
6	4	1	2	School	Cook_top	0.671

b	n	f	e	bname	nname	EQcost
6	4	2	1	School	Cook_top	0.488
6	4	2	2	School	Cook_top	0.537
6	5	1	1	School	Fryer	0.612
6	5	1	2	School	Fryer	0.673
6	5	2	1	School	Fryer	0.489
6	5	2	2	School	Fryer	0.538
6	6	1	1	School	Griddle	0.612
6	6	1	2	School	Griddle	0.673
6	6	2	1	School	Griddle	0.489
6	6	2	2	School	Griddle	0.538
6	7	1	1	School	Other_Cooking	0.61
6	7	1	2	School	Other_Cooking	0.671
6	7	2	1	School	Other_Cooking	0.488
6	7	2	2	School	Other_Cooking	0.537
6	10	1	1	School	AC_Compressor	0.866
6	10	1	2	School	AC_Compressor	0.953
6	10	2	1	School	AC_Compressor	0.693
6	10	2	2	School	AC_Compressor	0.762
6	11	1	1	School	Other	0
6	11	2	1	School	Other	0
7	1	1	1	College	Space_Heat	3.14441
7	1	1	2	College	Space_Heat	3.45885
7	1	1	3	College	Space_Heat	3.77329
7	1	1	4	College	Space_Heat	4.08773
7	1	2	1	College	Space_Heat	2.51553
7	1	2	2	College	Space_Heat	2.76708
7	1	2	3	College	Space_Heat	3.01863
7	1	2	4	College	Space_Heat	3.27018
7	2	1	1	College	Water_Heat	3.38894
7	2	1	2	College	Water_Heat	3.72784
7	2	1	3	College	Water_Heat	4.06673
7	2	1	4	College	Water_Heat	4.40563
7	2	2	1	College	Water_Heat	2.71116
7	2	2	2	College	Water_Heat	2.98227
7	2	2	3	College	Water_Heat	3.25339
7	2	2	4	College	Water_Heat	3.5245
7	4	1	1	College	Cook_top	0.57358
7	4	1	2	College	Cook_top	0.63093
7	4	2	1	College	Cook_top	0.45886
7	4	2	2	College	Cook_top	0.50475
7	5	1	1	College	Fryer	0.57322
7	5	1	2	College	Fryer	0.63055
7	5	2	1	College	Fryer	0.45858
7	5	2	2	College	Fryer	0.50444
7	6	1	1	College	Griddle	0.57322
7	6	1	2	College	Griddle	0.63055
7	6	2	1	College	Griddle	0.45858
7	6	2	2	College	Griddle	0.50444
7	7	1	1	College	Other_Cooking	0.57358
7	7	1	2	College	Other_Cooking	0.63093
7	7	2	1	College	Other_Cooking	0.45886
7	7	2	2	College	Other_Cooking	0.50475
7	10	1	1	College	AC_Compressor	1.3949
7	10	1	2	College	AC_Compressor	1.53439
7	10	2	1	College	AC_Compressor	1.11592
7	10	2	2	College	AC_Compressor	1.22752
7	11	1	1	College	Other	0
7	11	2	1	College	Other	0
8	1	1	1	Health	Space_Heat	0.8825
8	1	1	2	Health	Space_Heat	0.97075
8	1	1	3	Health	Space_Heat	1.059
8	1	1	4	Health	Space_Heat	1.14725
8	1	2	1	Health	Space_Heat	0.706
8	1	2	2	Health	Space_Heat	0.7766
8	1	2	3	Health	Space_Heat	0.8472
8	1	2	4	Health	Space_Heat	0.9178
8	2	1	1	Health	Water_Heat	5.33917
8	2	1	2	Health	Water_Heat	5.87309
8	2	1	3	Health	Water_Heat	6.407
8	2	1	4	Health	Water_Heat	6.94092
8	2	2	1	Health	Water_Heat	4.27134
8	2	2	2	Health	Water_Heat	4.69847
8	2	2	3	Health	Water_Heat	5.1256
8	2	2	4	Health	Water_Heat	5.55274
8	4	1	1	Health	Cook_top	3.37409
8	4	1	2	Health	Cook_top	3.7115
8	4	2	1	Health	Cook_top	2.69927
8	4	2	2	Health	Cook_top	2.9692

b	n	f	e	bname	nname	EQcost
8	5	1	1	Health	Fryer	3.37409
8	5	1	2	Health	Fryer	3.7115
8	5	2	1	Health	Fryer	2.69927
8	5	2	2	Health	Fryer	2.9692
8	6	1	1	Health	Griddle	3.37409
8	6	1	2	Health	Griddle	3.7115
8	6	2	1	Health	Griddle	2.69927
8	6	2	2	Health	Griddle	2.9692
8	7	1	1	Health	Other_Cooking	0.33743
8	7	1	2	Health	Other_Cooking	0.37118
8	7	2	1	Health	Other_Cooking	0.26995
8	7	2	2	Health	Other_Cooking	0.29694
8	8	1	1	Health	Drying	1.86871
8	8	1	2	Health	Drying	2.05558
8	8	2	1	Health	Drying	1.49497
8	8	2	2	Health	Drying	1.64446
8	10	1	1	Health	AC_Compressor	1.45749
8	10	1	2	Health	AC_Compressor	1.60324
8	10	2	1	Health	AC_Compressor	1.16599
8	10	2	2	Health	AC_Compressor	1.28259
8	11	1	1	Health	Other	0
8	11	2	1	Health	Other	0
9	1	1	1	Lodging	Space_Heat	4.85892
9	1	1	2	Lodging	Space_Heat	5.3448
9	1	1	3	Lodging	Space_Heat	5.8307
9	1	1	4	Lodging	Space_Heat	6.3166
9	1	2	1	Lodging	Space_Heat	3.8871
9	1	2	2	Lodging	Space_Heat	4.2759
9	1	2	3	Lodging	Space_Heat	4.6646
9	1	2	4	Lodging	Space_Heat	5.0533
9	2	1	1	Lodging	Water_Heat	8.6651
9	2	1	2	Lodging	Water_Heat	9.5317
9	2	1	3	Lodging	Water_Heat	10.3982
9	2	1	4	Lodging	Water_Heat	11.2647
9	2	2	1	Lodging	Water_Heat	6.9321
9	2	2	2	Lodging	Water_Heat	7.6253
9	2	2	3	Lodging	Water_Heat	8.3185
9	2	2	4	Lodging	Water_Heat	9.0118
9	4	1	1	Lodging	Cook_top	4.0305
9	4	1	2	Lodging	Cook_top	4.4335
9	4	2	1	Lodging	Cook_top	3.2244
9	4	2	2	Lodging	Cook_top	3.5468
9	5	1	1	Lodging	Fryer	5.2524
9	5	1	2	Lodging	Fryer	5.7777
9	5	2	1	Lodging	Fryer	4.2019
9	5	2	2	Lodging	Fryer	4.6221
9	6	1	1	Lodging	Griddle	5.2524
9	6	1	2	Lodging	Griddle	5.7777
9	6	2	1	Lodging	Griddle	4.2019
9	6	2	2	Lodging	Griddle	4.6221
9	7	1	1	Lodging	Other_Cooking	0.5148
9	7	1	2	Lodging	Other_Cooking	0.5663
9	7	2	1	Lodging	Other_Cooking	0.4118
9	7	2	2	Lodging	Other_Cooking	0.453
9	8	1	1	Lodging	Drying	2.1663
9	8	1	2	Lodging	Drying	2.3829
9	8	2	1	Lodging	Drying	1.733
9	8	2	2	Lodging	Drying	1.9063
9	10	1	1	Lodging	AC_Compressor	0.7157
9	10	1	2	Lodging	AC_Compressor	0.7872
9	10	2	1	Lodging	AC_Compressor	0.5725
9	10	2	2	Lodging	AC_Compressor	0.6298
9	11	1	1	Lodging	Other	0
9	11	2	1	Lodging	Other	0
10	1	1	1	Misc	Space_Heat	2.1455
10	1	1	2	Misc	Space_Heat	2.36
10	1	1	3	Misc	Space_Heat	2.5746
10	1	1	4	Misc	Space_Heat	2.7891
10	1	2	1	Misc	Space_Heat	1.7164
10	1	2	2	Misc	Space_Heat	1.888
10	1	2	3	Misc	Space_Heat	2.0597
10	1	2	4	Misc	Space_Heat	2.2313
10	2	1	1	Misc	Water_Heat	2.9412
10	2	1	2	Misc	Water_Heat	3.2354
10	2	1	3	Misc	Water_Heat	3.5295
10	2	1	4	Misc	Water_Heat	3.8236
10	2	2	1	Misc	Water_Heat	2.3533
10	2	2	2	Misc	Water_Heat	2.5883

b	n	f	e	bname	nname	EQcost
10	2	2	3	Misc	Water_Heat	2.8236
10	2	2	4	Misc	Water_Heat	3.0589
10	4	1	1	Misc	Cook_top	0.6282
10	4	1	2	Misc	Cook_top	0.691
10	4	2	1	Misc	Cook_top	0.5025
10	4	2	2	Misc	Cook_top	0.5528
10	5	1	1	Misc	Fryer	0.6285
10	5	1	2	Misc	Fryer	0.6913
10	5	2	1	Misc	Fryer	0.5028
10	5	2	2	Misc	Fryer	0.5531
10	6	1	1	Misc	Griddle	0.6285
10	6	1	2	Misc	Griddle	0.6913
10	6	2	1	Misc	Griddle	0.5028
10	6	2	2	Misc	Griddle	0.5531
10	7	1	1	Misc	Other_Cooking	0.6282
10	7	1	2	Misc	Other_Cooking	0.691
10	7	2	1	Misc	Other_Cooking	0.5025
10	7	2	2	Misc	Other_Cooking	0.5528
10	10	1	1	Misc	AC_Compressor	1.9306
10	10	1	2	Misc	AC_Compressor	2.1237
10	10	2	1	Misc	AC_Compressor	1.5445
10	10	2	2	Misc	AC_Compressor	1.6989
10	11	1	1	Misc	Other	0
10	11	2	1	Misc	Other	0
11	1	1	1	Government	Space_Heat	3.815
11	1	1	2	Government	Space_Heat	4.1965
11	1	1	3	Government	Space_Heat	4.578
11	1	1	4	Government	Space_Heat	4.9595
11	1	2	1	Government	Space_Heat	3.052
11	1	2	2	Government	Space_Heat	3.3572
11	1	2	3	Government	Space_Heat	3.6624
11	1	2	4	Government	Space_Heat	3.9676
11	2	1	1	Government	Water_Heat	0.5935
11	2	1	2	Government	Water_Heat	0.6528
11	2	1	3	Government	Water_Heat	0.7122
11	2	1	4	Government	Water_Heat	0.7715
11	2	2	1	Government	Water_Heat	0.4748
11	2	2	2	Government	Water_Heat	0.5222
11	2	2	3	Government	Water_Heat	0.5697
11	2	2	4	Government	Water_Heat	0.6172
11	4	1	1	Government	Cook_top	0.4333
11	4	1	2	Government	Cook_top	0.4766
11	4	2	1	Government	Cook_top	0.3466
11	4	2	2	Government	Cook_top	0.3813
11	5	1	1	Government	Fryer	0.4332
11	5	1	2	Government	Fryer	0.4765
11	5	2	1	Government	Fryer	0.3465
11	5	2	2	Government	Fryer	0.3812
11	6	1	1	Government	Griddle	0.4332
11	6	1	2	Government	Griddle	0.4765
11	6	2	1	Government	Griddle	0.3465
11	6	2	2	Government	Griddle	0.3812
11	7	1	1	Government	Other_Cooking	0.4333
11	7	1	2	Government	Other_Cooking	0.4766
11	7	2	1	Government	Other_Cooking	0.3466
11	7	2	2	Government	Other_Cooking	0.3813
11	10	1	1	Government	AC_Compressor	1.3062
11	10	1	2	Government	AC_Compressor	1.4368
11	10	2	1	Government	AC_Compressor	1.0449
11	10	2	2	Government	AC_Compressor	1.1494
11	11	1	1	Government	Other	0
11	11	2	1	Government	Other	0
12	1	1	1	TCU	Space_Heat	1.8457
12	1	1	2	TCU	Space_Heat	2.0303
12	1	1	3	TCU	Space_Heat	2.2149
12	1	1	4	TCU	Space_Heat	2.3995
12	1	2	1	TCU	Space_Heat	1.4766
12	1	2	2	TCU	Space_Heat	1.6242
12	1	2	3	TCU	Space_Heat	1.7719
12	1	2	4	TCU	Space_Heat	1.9196
12	2	1	1	TCU	Water_Heat	2.5303
12	2	1	2	TCU	Water_Heat	2.7833
12	2	1	3	TCU	Water_Heat	3.0364
12	2	1	4	TCU	Water_Heat	3.2894
12	2	2	1	TCU	Water_Heat	2.0243
12	2	2	2	TCU	Water_Heat	2.2267
12	2	2	3	TCU	Water_Heat	2.4291
12	2	2	4	TCU	Water_Heat	2.6315

b	n	f	e	bname	nname	EQcost
12	9	1	1	TCU	Engine	30.6768
12	9	1	2	TCU	Engine	33.7445
12	9	2	1	TCU	Engine	24.5415
12	9	2	2	TCU	Engine	26.9956
12	11	1	1	TCU	Other	0
12	11	2	1	TCU	Other	0
13	1	1	1	Construction	Space_Heat	2.2951
13	1	1	2	Construction	Space_Heat	2.5246
13	1	1	3	Construction	Space_Heat	2.7542
13	1	1	4	Construction	Space_Heat	2.9837
13	1	2	1	Construction	Space_Heat	1.8361
13	1	2	2	Construction	Space_Heat	2.0197
13	1	2	3	Construction	Space_Heat	2.2033
13	1	2	4	Construction	Space_Heat	2.3869
13	2	1	1	Construction	Water_Heat	3.1464
13	2	1	2	Construction	Water_Heat	3.461
13	2	1	3	Construction	Water_Heat	3.7757
13	2	1	4	Construction	Water_Heat	4.0903
13	2	2	1	Construction	Water_Heat	2.5171
13	2	2	2	Construction	Water_Heat	2.7688
13	2	2	3	Construction	Water_Heat	3.0205
13	2	2	4	Construction	Water_Heat	3.2722
13	11	1	1	Construction	Other	0
13	11	2	1	Construction	Other	0
14	1	1	1	Agriculture	Space_Heat	1.6583
14	1	1	2	Agriculture	Space_Heat	1.8242
14	1	1	3	Agriculture	Space_Heat	1.99
14	1	1	4	Agriculture	Space_Heat	2.1558
14	1	2	1	Agriculture	Space_Heat	1.3267
14	1	2	2	Agriculture	Space_Heat	1.4593
14	1	2	3	Agriculture	Space_Heat	1.592
14	1	2	4	Agriculture	Space_Heat	1.7247
14	2	1	1	Agriculture	Water_Heat	2.2734
14	2	1	2	Agriculture	Water_Heat	2.5008
14	2	1	3	Agriculture	Water_Heat	2.7281
14	2	1	4	Agriculture	Water_Heat	2.9554
14	2	2	1	Agriculture	Water_Heat	1.8187
14	2	2	2	Agriculture	Water_Heat	2.0006
14	2	2	3	Agriculture	Water_Heat	2.1825
14	2	2	4	Agriculture	Water_Heat	2.3644
14	8	1	1	Agriculture	Drying	2.2734
14	8	1	2	Agriculture	Drying	2.5008
14	8	2	1	Agriculture	Drying	1.8187
14	8	2	2	Agriculture	Drying	2.0006
14	9	1	1	Agriculture	Engine	9.7757
14	9	1	2	Agriculture	Engine	10.7533
14	9	2	1	Agriculture	Engine	7.8206
14	9	2	2	Agriculture	Engine	8.6026
14	11	1	1	Agriculture	Other	0
14	11	2	1	Agriculture	Other	0

Southern California Gas Company
2008 California Gas Report - Commercial G10
Employment Forecast (in millions)

YEAR	Office	Restaurant	Retail	Laundry	Warehouse	School	College	Health	Lodging	Misc	Government	TCU	Construction	Agriculture	Total
2007	1.13791	0.59743	1.01307	0.08446	0.46327	0.61344	0.20463	0.73830	0.09884	0.21777	0.51739	0.56758	0.46070	0.22439	6.93920
2008	1.15080	0.59208	1.00406	0.08518	0.46712	0.61344	0.20463	0.75624	0.10036	0.21963	0.51663	0.56470	0.42839	0.22181	6.92507
2009	1.18380	0.59971	1.01698	0.08451	0.46921	0.61774	0.20606	0.77014	0.10173	0.21792	0.52032	0.57301	0.41443	0.22502	7.00058
2010	1.23286	0.60486	1.02570	0.08370	0.47311	0.62409	0.20818	0.77995	0.10279	0.21582	0.52567	0.58103	0.41569	0.22954	7.10299
2011	1.27381	0.60828	1.03151	0.08348	0.47815	0.63167	0.21071	0.78910	0.10437	0.21524	0.53206	0.59321	0.41775	0.23392	7.20328
2012	1.29489	0.61338	1.04017	0.08384	0.48220	0.63996	0.21347	0.80033	0.10591	0.21618	0.53905	0.60400	0.42652	0.23832	7.29821
2013	1.30972	0.61768	1.04747	0.08429	0.48524	0.64636	0.21561	0.81202	0.10708	0.21734	0.54442	0.61476	0.43624	0.24252	7.38076
2014	1.32969	0.62091	1.05293	0.08458	0.48797	0.65098	0.21715	0.82214	0.10795	0.21809	0.54831	0.62298	0.44458	0.24637	7.45464
2015	1.34915	0.62333	1.05704	0.08481	0.48975	0.65442	0.21830	0.83183	0.10864	0.21868	0.55120	0.63061	0.45173	0.24997	7.51947
2016	1.36795	0.62512	1.06007	0.08514	0.49226	0.65758	0.21935	0.83989	0.10930	0.21952	0.55387	0.63914	0.45853	0.25332	7.58102
2017	1.38773	0.62566	1.06098	0.08552	0.49527	0.66041	0.22030	0.84910	0.10989	0.22051	0.55625	0.64669	0.46470	0.25662	7.63963
2018	1.40998	0.62671	1.06277	0.08570	0.49924	0.66304	0.22117	0.85876	0.11052	0.22098	0.55847	0.65303	0.47068	0.25978	7.70084
2019	1.43096	0.62883	1.06637	0.08601	0.50406	0.66567	0.22205	0.86809	0.11136	0.22177	0.56068	0.65984	0.47650	0.26283	7.76502
2020	1.45360	0.63150	1.07088	0.08630	0.50803	0.66781	0.22276	0.87730	0.11232	0.22252	0.56249	0.66565	0.48180	0.26603	7.82899
2021	1.47464	0.63463	1.07619	0.08663	0.51210	0.66914	0.22321	0.88787	0.11320	0.22338	0.56360	0.67424	0.48630	0.26903	7.89415
2022	1.50059	0.63780	1.08158	0.08695	0.51765	0.67058	0.22369	0.89759	0.11406	0.22418	0.56481	0.68426	0.49158	0.27216	7.96748
2023	1.53083	0.64083	1.08672	0.08730	0.52294	0.67220	0.22423	0.90705	0.11492	0.22509	0.56618	0.69506	0.49725	0.27547	8.04605
2024	1.56268	0.64366	1.09152	0.08765	0.52797	0.67386	0.22478	0.91580	0.11570	0.22601	0.56758	0.70620	0.50364	0.27878	8.12582
2025	1.59351	0.64609	1.09564	0.08794	0.53199	0.67571	0.22540	0.92343	0.11647	0.22674	0.56914	0.71788	0.51131	0.28211	8.20333
2026	1.62306	0.64861	1.09990	0.08828	0.53477	0.67749	0.22599	0.92999	0.11728	0.22761	0.57064	0.73060	0.52029	0.28546	8.27998
2027	1.65030	0.65173	1.10520	0.08872	0.53763	0.67934	0.22661	0.93704	0.11816	0.22875	0.57219	0.74446	0.53167	0.28891	8.36072
2028	1.67447	0.65531	1.11126	0.08912	0.54076	0.68115	0.22721	0.94400	0.11908	0.22980	0.57371	0.75862	0.54261	0.29230	8.43941
2029	1.69962	0.65876	1.11712	0.08943	0.54401	0.68272	0.22774	0.94987	0.12006	0.23058	0.57504	0.77298	0.55317	0.29569	8.51679
2030	1.72750	0.66138	1.12156	0.08966	0.54680	0.68403	0.22817	0.95450	0.12092	0.23117	0.57614	0.78758	0.56376	0.29907	8.59226

Southern California Gas Company
2008 California Gas Report Gas AC
Core Commercial Demand Forecast **(Mdth)**

YEAR	MDTH1	MDTH2	MDTH3	MDTH4	MDTH5	MDTH6	MDTH7	MDTH8	MDTH9	MDTH10	MDTH11	MDTH12	TOTAL
2007	6	6	5	8	7	10	12	16	16	12	9	6	113
2008	4	9	4	6	8	10	13	17	16	12	9	7	116
2009	7	9	4	6	8	10	13	17	16	12	9	7	119
2010	7	9	4	6	8	10	13	17	16	12	9	7	119
2011	6	8	4	6	7	10	12	16	15	11	9	7	111
2012	6	8	4	6	7	10	12	16	15	11	9	7	111
2013	6	8	3	6	7	9	11	15	14	11	8	6	104
2014	6	8	3	6	7	9	11	15	14	11	8	6	104
2015	5	7	3	5	6	8	11	14	13	10	7	6	97
2016	5	7	3	5	6	8	11	14	13	10	7	6	97
2017	5	7	3	5	6	8	11	14	13	10	7	6	97
2018	5	7	3	5	6	8	10	13	12	9	7	5	89
2019	4	6	3	4	5	7	9	12	11	8	6	5	82
2020	4	6	2	4	5	7	8	11	10	8	6	4	74
2021	4	5	2	4	4	6	7	10	9	7	5	4	67
2022	4	5	2	4	4	6	7	10	9	7	5	4	67
2023	3	4	2	3	4	5	6	9	8	6	5	4	59
2024	3	4	2	3	4	5	6	9	8	6	5	4	59
2025	3	4	2	3	3	5	6	8	7	5	4	3	52
2026	3	4	2	3	3	5	6	8	7	5	4	3	52
2027	2	3	1	2	3	4	5	7	6	5	3	3	45
2028	2	3	1	2	2	3	4	5	5	4	3	2	37
2029	2	3	1	2	2	3	4	5	5	4	3	2	37
2030	2	3	1	2	2	3	4	5	5	4	3	2	37

Southern California Gas Company
2008 California Gas Report Gas Engine
Core Commercial Demand Forecast **(Mdth)**

YEAR	MDTH1	MDTH	MDTH3	MDTH4	MDTH5	MDTH6	MDTH7	MDTH8	MDTH9	MDTH10	MDTH11	MDTH12	TOTAL
2007	56	92	119	173	228	276	339	331	289	171	145	99	2,317
2008	46	64	93	115	166	214	261	284	250	152	108	87	1,840
2009	36	64	92	114	164	212	258	282	247	151	107	87	1,813
2010	37	65	95	117	169	218	266	290	255	155	110	89	1,866
2011	37	65	95	117	169	218	266	290	255	155	110	89	1,866
2012	37	65	95	117	169	218	266	290	255	155	110	89	1,866
2013	37	65	95	117	169	218	266	290	255	155	110	89	1,866
2014	37	66	95	118	170	219	268	292	256	156	111	90	1,877
2015	37	66	95	118	170	219	268	292	256	156	111	90	1,877
2016	37	66	95	118	170	219	268	292	256	156	111	90	1,877
2017	37	66	95	118	170	219	268	292	256	156	111	90	1,877
2018	37	66	95	118	170	219	268	292	256	156	111	90	1,877
2019	37	66	95	118	170	219	268	292	256	156	111	90	1,877
2020	37	66	95	118	170	219	268	292	256	156	111	90	1,877
2021	37	66	95	118	170	219	268	292	256	156	111	90	1,877
2022	37	66	96	118	171	220	269	293	257	157	112	90	1,887
2023	37	66	96	118	171	220	269	293	257	157	112	90	1,887
2024	37	66	96	118	171	220	269	293	257	157	112	90	1,887
2025	37	66	96	118	171	220	269	293	257	157	112	90	1,887
2026	37	66	96	118	171	220	269	293	257	157	112	90	1,887
2027	37	66	96	118	171	220	269	293	257	157	112	90	1,887
2028	37	66	96	118	171	220	269	293	257	157	112	90	1,887
2029	37	66	96	118	171	220	269	293	257	157	112	90	1,887
2030	37	66	96	118	171	220	269	293	257	157	112	90	1,887

Southern California Gas Company
2008 California Gas Report Commercial G10
Core Commercial Demand Forecast (Mdth)
Base ("Zero" Hdd) Temperature

YEAR	Model Output G10-Com	DSM	Vernon	SGIP	G30 Migrate to G10	Com-G10	GAC	GEN	Total Core Com
2007	61,291	954	0	52	0	60,389	113	2,317	62,819
2008	59,953	1,168	23	72	0	58,835	116	1,840	60,791
2009	60,597	1,865	386	92	67	58,505	119	1,813	60,436
2010	61,234	2,590	386	112	100	58,470	119	1,866	60,455
2011	61,799	3,356	386	132	133	58,322	111	1,866	60,299
2012	62,515	4,184	386	152	133	58,230	111	1,866	60,208
2013	63,168	5,102	386	172	133	57,986	104	1,866	59,956
2014	63,763	6,019	386	192	133	57,683	104	1,877	59,664
2015	64,155	6,937	386	212	133	57,178	97	1,877	59,151
2016	64,494	7,854	386	232	133	56,620	97	1,877	58,593
2017	64,799	8,772	386	252	133	56,028	97	1,877	58,001
2018	65,135	9,689	386	252	133	55,446	89	1,877	57,411
2019	65,529	10,606	386	252	133	54,922	82	1,877	56,880
2020	65,954	11,524	386	252	133	54,430	74	1,877	56,381
2021	66,443	12,441	386	252	133	54,001	67	1,877	55,944
2022	66,879	13,359	386	252	133	53,520	67	1,887	55,474
2023	67,020	13,108	386	252	133	53,911	59	1,887	55,858
2024	67,281	13,329	386	252	133	53,951	59	1,887	55,898
2025	67,520	13,521	386	252	133	53,999	52	1,887	55,938
2026	67,790	13,672	386	252	133	54,118	52	1,887	56,057
2027	68,049	13,762	386	252	133	54,287	52	1,887	56,226
2028	68,278	13,762	386	252	133	54,515	52	1,887	56,455
2029	68,488	13,762	386	252	133	54,725	52	1,887	56,664
2030	68,682	13,762	386	252	133	54,920	52	1,887	56,859

Southern California Gas Company
2008 California Gas Report Commercial G10
Core Commercial Demand Forecast (Mdth)
Hot Temperature

YEAR	Model Output G10-Com	DSM	Vernon	SGIP	G30 Migrate to G10	Com-G10	GAC	GEN	Total Core Com
2007	78,535	954	0	52	0	77,633	113	2,317	80,063
2008	76,754	1,168	23	72	0	75,636	116	1,840	77,592
2009	77,383	1,865	386	92	67	75,291	119	1,813	77,222
2010	77,994	2,590	386	112	100	75,230	119	1,866	77,215
2011	78,502	3,356	386	132	133	75,025	111	1,866	77,002
2012	79,186	4,184	386	152	133	74,901	111	1,866	76,879
2013	79,764	5,102	386	172	133	74,582	104	1,866	76,551
2014	80,266	6,019	386	192	133	74,186	104	1,877	76,167
2015	80,508	6,937	386	212	133	73,531	97	1,877	75,504
2016	80,682	7,854	386	232	133	72,807	97	1,877	74,781
2017	80,812	8,772	386	252	133	72,040	97	1,877	74,014
2018	80,982	9,689	386	252	133	71,292	89	1,877	73,258
2019	81,225	10,606	386	252	133	70,619	82	1,877	72,577
2020	81,510	11,524	386	252	133	69,986	74	1,877	71,937
2021	81,876	12,441	386	252	133	69,435	67	1,877	71,378
2022	82,175	13,359	386	252	133	68,816	67	1,887	70,770
2023	82,428	13,108	386	252	133	69,319	59	1,887	71,265
2024	82,700	13,329	386	252	133	69,371	59	1,887	71,318
2025	82,953	13,521	386	252	133	69,432	52	1,887	71,371
2026	83,257	13,672	386	252	133	69,584	52	1,887	71,524
2027	83,565	13,762	386	252	133	69,802	52	1,887	71,742
2028	83,858	13,762	386	252	133	70,096	52	1,887	72,035
2029	84,128	13,762	386	252	133	70,366	52	1,887	72,305
2030	84,378	13,762	386	252	133	70,616	52	1,887	72,555

Southern California Gas Company
2008 California Gas Report Commercial G10
Core Commercial Demand Forecast (Mdth)
Cold Temperature

YEAR	Model Output G10-Com	DSM	Vernon	SGIP	G30 Migrate to G10	Com-G10	GAC	GEN	Total Core Com
2007	87,569	954	0	52	0	86,667	113	2,317	89,097
2008	85,556	1,168	23	72	0	84,437	116	1,840	86,394
2009	86,176	1,865	386	92	67	84,084	119	1,813	86,016
2010	86,775	2,590	386	112	100	84,011	119	1,866	85,996
2011	87,252	3,356	386	132	133	83,775	111	1,866	85,753
2012	87,920	4,184	386	152	133	83,635	111	1,866	85,613
2013	88,458	5,102	386	172	133	83,276	104	1,866	85,246
2014	88,912	6,019	386	192	133	82,832	104	1,877	84,813
2015	89,076	6,937	386	212	133	82,099	97	1,877	84,072
2016	89,162	7,854	386	232	133	81,288	97	1,877	83,261
2017	89,201	8,772	386	252	133	80,429	97	1,877	82,402
2018	89,284	9,689	386	252	133	79,594	89	1,877	81,560
2019	89,449	10,606	386	252	133	78,842	82	1,877	80,800
2020	89,660	11,524	386	252	133	78,136	74	1,877	80,087
2021	89,962	12,441	386	252	133	77,520	67	1,877	79,463
2022	90,188	13,359	386	252	133	76,829	67	1,887	78,783
2023	90,500	13,108	386	252	133	77,391	59	1,887	79,337
2024	90,778	13,329	386	252	133	77,449	59	1,887	79,396
2025	91,038	13,521	386	252	133	77,517	52	1,887	79,456
2026	91,360	13,672	386	252	133	77,687	52	1,887	79,627
2027	91,693	13,762	386	252	133	77,931	52	1,887	79,870
2028	92,021	13,762	386	252	133	78,259	52	1,887	80,198
2029	92,322	13,762	386	252	133	78,560	52	1,887	80,499
2030	92,601	13,762	386	252	133	78,839	52	1,887	80,778

Southern California Gas Company
2008 California Gas Report Commercial G10
Core Commercial Demand Forecast **(Mdth)**
Avg Temperature

YEAR	Model Output G10-Com	DSM	Vernon	SGIP	G30 Migrate to G10	Com-G10	GAC	GEN	Total Core Com
2007	83,045	954	0	52	0	82,142	113	2,317	84,573
2008	81,148	1,168	23	72	0	80,029	116	1,840	81,985
2009	81,772	1,865	386	92	67	79,680	119	1,813	81,611
2010	82,377	2,590	386	112	100	79,613	119	1,866	81,598
2011	82,870	3,356	386	132	133	79,393	111	1,866	81,370
2012	83,546	4,184	386	152	133	79,261	111	1,866	81,238
2013	84,103	5,102	386	172	133	78,921	104	1,866	80,891
2014	84,581	6,019	386	192	133	78,502	104	1,877	80,482
2015	84,785	6,937	386	212	133	77,808	97	1,877	79,781
2016	84,915	7,854	386	232	133	77,040	97	1,877	79,014
2017	85,000	8,772	386	252	133	76,228	97	1,877	78,201
2018	85,126	9,689	386	252	133	75,436	89	1,877	77,402
2019	85,330	10,606	386	252	133	74,723	82	1,877	76,681
2020	85,578	11,524	386	252	133	74,054	74	1,877	76,005
2021	85,912	12,441	386	252	133	73,470	67	1,877	75,414
2022	86,175	13,359	386	252	133	72,816	67	1,887	74,770
2023	86,457	13,108	386	252	133	73,348	59	1,887	75,295
2024	86,732	13,329	386	252	133	73,403	59	1,887	75,350
2025	86,989	13,521	386	252	133	73,467	52	1,887	75,407
2026	87,302	13,672	386	252	133	73,629	52	1,887	75,568
2027	87,622	13,762	386	252	133	73,860	45	1,887	75,791
2028	87,933	13,762	386	252	133	74,170	37	1,887	76,095
2029	88,218	13,762	386	252	133	74,456	37	1,887	76,380
2030	88,483	13,762	386	252	133	74,721	37	1,887	76,645

G10 Industrial Data Tables

Southern California Gas Company
2008 CGR - Industrial G10
The Year the Equipment Was Installed by Business Types

Business Type	Fire_ Tube_ Boiler	Water_ Tube_ Boiler	Space_ Heat	Water_ Heat	Dryer	Furnace_ Oven_ Kiln	AC	Engine	Other
Mining	1981	1974	1978	1978	1968	1980	1973	1980	1975
Food	1980	1982	1975	1978	1976	1983	1970	1987	1977
Textile	1985	1979	1977	1978	1981	1976	1976	.	1979
Wood_Paper	1979	1975	1975	1976	1976	1976	1976	.	1980
Chemical	1980	1980	1976	1977	1967	1976	1974	1980	1979
Petroleum	1980	1981	1974	1977	1975	1979	.	1972	1978
Stone	1980	1973	1975	1977	1980	1978	1982	.	1977
Primary_Metal	1986	1979	1975	1976	1976	1977	1978	.	1974
Fabricated_Metal	1982	1981	1976	1977	1979	1979	1976	1972	1976
Transport	1980	1978	1976	1976	1980	1980	1974	1988	1976
Misc	1979	1980	1976	1976	1978	1978	1976	1979	1977

2008 CGR - Industrial G10
Electric Price Forecasat **(Cent/KWH)**

(a) Average Price Forecast

Year	Chemical	Fab_Metal	Food	Mining	Petroleum	Prim_Metal	Stone	Textile	Transport	Wood_Paper	Misc
2007	12.03	11.38	11.48	11.88	11.92	11.22	11.95	11.73	12.27	13.14	12.60
2008	12.71	12.13	12.22	12.57	12.61	11.99	12.64	12.45	12.92	13.67	13.20
2009	13.16	12.64	12.72	13.04	13.07	12.53	13.09	12.92	13.34	14.04	13.61
2010	12.92	12.39	12.47	12.80	12.82	12.27	12.85	12.68	13.11	13.81	13.38
2011	12.91	12.38	12.46	12.79	12.82	12.25	12.84	12.67	13.11	13.82	13.38
2012	13.17	12.60	12.68	13.04	13.07	12.46	13.10	12.91	13.39	14.15	13.68
2013	13.30	12.68	12.78	13.15	13.19	12.54	13.22	13.02	13.53	14.34	13.83
2014	13.30	12.65	12.75	13.14	13.19	12.50	13.22	13.01	13.54	14.39	13.86
2015	13.43	12.79	12.88	13.28	13.32	12.63	13.35	13.14	13.68	14.51	13.99
2016	13.42	12.80	12.89	13.27	13.31	12.65	13.35	13.14	13.66	14.46	13.96
2017	13.40	12.79	12.88	13.26	13.30	12.65	13.33	13.13	13.64	14.42	13.92
2018	13.37	12.78	12.87	13.23	13.27	12.63	13.31	13.11	13.60	14.37	13.88
2019	13.34	12.75	12.84	13.20	13.24	12.61	13.27	13.08	13.57	14.32	13.84
2020	13.32	12.73	12.82	13.17	13.22	12.59	13.25	13.06	13.54	14.28	13.81
2021	13.29	12.70	12.79	13.15	13.20	12.56	13.23	13.04	13.53	14.27	13.79
2022	13.27	12.69	12.77	13.12	13.17	12.54	13.20	13.02	13.49	14.22	13.75
2023	13.24	12.67	12.75	13.10	13.15	12.53	13.18	12.99	13.46	14.17	13.72
2024	13.21	12.65	12.73	13.07	13.12	12.51	13.15	12.97	13.43	14.12	13.68
2025	13.19	12.64	12.71	13.05	13.10	12.50	13.13	12.95	13.41	14.08	13.65
2026	13.45	12.89	12.97	13.31	13.37	12.75	13.40	13.22	13.68	14.37	13.93
2027	13.73	13.16	13.24	13.58	13.64	13.01	13.67	13.49	13.96	14.65	14.20
2028	14.00	13.43	13.51	13.86	13.92	13.28	13.95	13.76	14.24	14.93	14.48
2029	14.29	13.71	13.79	14.14	14.20	13.56	14.23	14.05	14.52	15.21	14.76
2030	14.58	14.00	14.08	14.43	14.49	13.85	14.52	14.34	14.82	15.50	15.06

(b) Marginal Price Forecasat

Year	Chemical	Fab_Metal	Food	Mining	Petroleum	Prim_Metal	Stone	Textile	Transport	Wood_Paper	Misc
2007	9.50	9.18	9.20	9.39	9.43	9.11	9.41	9.30	9.52	10.03	9.73
2008	10.03	9.75	9.76	9.93	9.97	9.69	9.95	9.86	10.05	10.49	10.23
2009	10.38	10.14	10.16	10.30	10.33	10.09	10.32	10.24	10.40	10.78	10.55
2010	10.19	9.95	9.96	10.11	10.14	9.89	10.13	10.04	10.21	10.60	10.37
2011	10.19	9.94	9.95	10.10	10.14	9.88	10.12	10.04	10.20	10.60	10.37
2012	10.40	10.12	10.14	10.30	10.34	10.06	10.32	10.23	10.41	10.85	10.59
2013	10.49	10.20	10.22	10.39	10.43	10.13	10.41	10.32	10.51	10.98	10.71
2014	10.50	10.18	10.20	10.39	10.43	10.11	10.41	10.31	10.52	11.02	10.72
2015	10.60	10.29	10.31	10.50	10.54	10.22	10.52	10.41	10.62	11.12	10.83
2016	10.59	10.29	10.31	10.49	10.53	10.22	10.51	10.41	10.61	11.10	10.81
2017	10.58	10.28	10.30	10.48	10.52	10.21	10.50	10.40	10.60	11.07	10.79
2018	10.56	10.26	10.28	10.46	10.50	10.20	10.48	10.38	10.58	11.04	10.77
2019	10.53	10.24	10.26	10.43	10.47	10.17	10.45	10.35	10.55	11.01	10.74
2020	10.51	10.22	10.24	10.41	10.45	10.15	10.43	10.33	10.53	10.99	10.72
2021	10.49	10.20	10.22	10.39	10.43	10.13	10.41	10.31	10.51	10.98	10.71
2022	10.47	10.18	10.20	10.37	10.41	10.12	10.39	10.29	10.49	10.95	10.68
2023	10.45	10.16	10.18	10.35	10.39	10.10	10.37	10.27	10.47	10.92	10.65
2024	10.43	10.14	10.16	10.33	10.37	10.08	10.35	10.25	10.45	10.90	10.63
2025	10.41	10.13	10.14	10.31	10.35	10.07	10.33	10.24	10.43	10.87	10.61
2026	10.62	10.33	10.35	10.52	10.56	10.27	10.54	10.45	10.64	11.10	10.83
2027	10.84	10.54	10.56	10.74	10.78	10.48	10.76	10.66	10.86	11.32	11.05
2028	11.05	10.76	10.78	10.95	10.99	10.69	10.97	10.87	11.07	11.55	11.27
2029	11.28	10.98	11.00	11.18	11.22	10.91	11.20	11.10	11.30	11.77	11.49
2030	11.50	11.20	11.22	11.40	11.44	11.14	11.42	11.32	11.53	12.00	11.72

2008 CGR - Industrial G10
Gas Price Forecasat ($/Therm)

(a) Average Price Forecast

Year	Price Deflator	Chemical	Fabricated Metal	Food	Mining	Petroleum	Primary Metal	Stone	Textile	Transport	Wood Paper	Misc
2007	100.00	0.8610	0.8142	0.8212	0.8500	0.8527	0.8032	0.8549	0.8396	0.8782	0.9405	0.9017
2008	101.67	1.0850	1.0359	1.0431	1.0731	1.0765	1.0241	1.0791	1.0631	1.1035	1.1671	1.1271
2009	103.41	1.0855	1.0430	1.0495	1.0757	1.0778	1.0333	1.0797	1.0658	1.1008	1.1585	1.1228
2010	105.44	1.0700	1.0265	1.0331	1.0599	1.0621	1.0165	1.0642	1.0499	1.0857	1.1442	1.1079
2011	107.46	1.0733	1.0290	1.0357	1.0629	1.0653	1.0187	1.0675	1.0530	1.0894	1.1487	1.1119
2012	109.61	1.0318	0.9866	0.9934	1.0212	1.0238	0.9760	1.0260	1.0112	1.0485	1.1086	1.0712
2013	111.72	0.9996	0.9535	0.9604	0.9887	0.9915	0.9426	0.9938	0.9787	1.0167	1.0777	1.0396
2014	113.98	0.9658	0.9186	0.9257	0.9545	0.9575	0.9074	0.9599	0.9445	0.9834	1.0452	1.0065
2015	116.32	1.0050	0.9568	0.9639	0.9934	0.9966	0.9453	0.9991	0.9834	1.0231	1.0859	1.0465
2016	118.68	1.0597	1.0106	1.0178	1.0479	1.0513	0.9987	1.0538	1.0378	1.0784	1.1421	1.1020
2017	121.09	1.1079	1.0576	1.0650	1.0957	1.0993	1.0454	1.1020	1.0856	1.1271	1.1918	1.1509
2018	123.50	1.1507	1.0993	1.1068	1.1382	1.1420	1.0868	1.1447	1.1280	1.1704	1.2361	1.1945
2019	125.90	1.1890	1.1366	1.1442	1.1762	1.1803	1.1237	1.1831	1.1661	1.2093	1.2760	1.2337
2020	128.42	1.2228	1.1693	1.1770	1.2096	1.2139	1.1560	1.2168	1.1995	1.2437	1.3114	1.2683
2021	131.02	1.2335	1.1788	1.1866	1.2200	1.2245	1.1651	1.2275	1.2098	1.2550	1.3237	1.2799
2022	133.63	1.2841	1.2282	1.2361	1.2702	1.2749	1.2141	1.2780	1.2599	1.3062	1.3760	1.3313
2023	136.28	1.3331	1.2760	1.2841	1.3189	1.3239	1.2616	1.3271	1.3086	1.3559	1.4268	1.3813
2024	138.99	1.3835	1.3251	1.3334	1.3688	1.3741	1.3102	1.3774	1.3586	1.4068	1.4789	1.4326
2025	141.80	1.4330	1.3733	1.3817	1.4179	1.4235	1.3580	1.4269	1.4076	1.4570	1.5302	1.4831
2026	144.69	1.4614	1.4004	1.4090	1.4460	1.4518	1.3847	1.4553	1.4357	1.4861	1.5606	1.5125
2027	147.63	1.5037	1.4413	1.4500	1.4878	1.4939	1.4251	1.4976	1.4775	1.5291	1.6048	1.5558
2028	150.61	1.5580	1.4942	1.5030	1.5417	1.5481	1.4776	1.5518	1.5313	1.5841	1.6611	1.6112
2029	153.65	1.6221	1.5568	1.5658	1.6053	1.6120	1.5397	1.6159	1.5949	1.6489	1.7273	1.6763
2030	156.78	1.6847	1.6179	1.6271	1.6674	1.6744	1.6003	1.6784	1.6570	1.7123	1.7920	1.7400

(b) Marginal Price Forecasat

Year	Price Deflator	Chemical	Fabricated Metal	Food	Mining	Petroleum	Primary Metal	Stone	Textile	Transport	Wood Paper	Misc
2007	100.0000	0.7986	0.7720	0.7737	0.7897	0.7932	0.7661	0.7913	0.7824	0.8004	0.8432	0.8180
2008	101.6713	1.0195	0.9911	0.9929	1.0099	1.0138	0.9848	1.0118	1.0023	1.0215	1.0667	1.0400
2009	103.4106	1.0287	1.0051	1.0066	1.0208	1.0240	0.9999	1.0223	1.0145	1.0304	1.0679	1.0457
2010	105.4351	1.0120	0.9877	0.9892	1.0038	1.0071	0.9824	1.0054	0.9973	1.0137	1.0523	1.0295
2011	107.4584	1.0141	0.9892	0.9908	1.0058	1.0091	0.9837	1.0074	0.9991	1.0159	1.0555	1.0321
2012	109.6106	0.9715	0.9459	0.9475	0.9628	0.9663	0.9402	0.9645	0.9560	0.9733	1.0140	0.9899
2013	111.7237	0.9380	0.9118	0.9134	0.9292	0.9328	0.9059	0.9309	0.9222	0.9399	0.9817	0.9570
2014	113.9782	0.9029	0.8759	0.8775	0.8938	0.8974	0.8699	0.8956	0.8866	0.9047	0.9477	0.9224
2015	116.3236	0.9407	0.9129	0.9146	0.9313	0.9351	0.9068	0.9332	0.9239	0.9426	0.9868	0.9607
2016	118.6760	0.9941	0.9655	0.9673	0.9845	0.9883	0.9592	0.9864	0.9768	0.9961	1.0415	1.0147
2017	121.0858	1.0408	1.0115	1.0133	1.0309	1.0349	1.0049	1.0329	1.0231	1.0428	1.0895	1.0620
2018	123.4968	1.0822	1.0520	1.0539	1.0720	1.0761	1.0453	1.0740	1.0639	1.0843	1.1322	1.1039
2019	125.8998	1.1191	1.0881	1.0901	1.1087	1.1129	1.0813	1.1107	1.1004	1.1212	1.1705	1.1414
2020	128.4189	1.1514	1.1196	1.1215	1.1406	1.1450	1.1125	1.1428	1.1322	1.1536	1.2042	1.1743
2021	131.0243	1.1605	1.1278	1.1298	1.1495	1.1539	1.1206	1.1516	1.1408	1.1628	1.2148	1.1841
2022	133.6320	1.2095	1.1759	1.1780	1.1982	1.2027	1.1685	1.2004	1.1892	1.2118	1.2652	1.2337
2023	136.2765	1.2570	1.2225	1.2246	1.2453	1.2500	1.2148	1.2476	1.2361	1.2593	1.3142	1.2818
2024	138.9923	1.3056	1.2702	1.2724	1.2937	1.2985	1.2624	1.2960	1.2842	1.3081	1.3644	1.3312
2025	141.8013	1.3534	1.3170	1.3193	1.3411	1.3461	1.3089	1.3435	1.3314	1.3559	1.4138	1.3796
2026	144.6908	1.3801	1.3427	1.3450	1.3674	1.3725	1.3344	1.3699	1.3575	1.3826	1.4421	1.4070
2027	147.6298	1.4205	1.3821	1.3844	1.4075	1.4127	1.3735	1.4101	1.3973	1.4231	1.4843	1.4482
2028	150.6102	1.4729	1.4334	1.4359	1.4596	1.4650	1.4247	1.4622	1.4491	1.4756	1.5384	1.5014
2029	153.6550	1.5351	1.4945	1.4970	1.5214	1.5269	1.4855	1.5241	1.5106	1.5379	1.6024	1.5643
2030	156.7814	1.5956	1.5540	1.5566	1.5816	1.5873	1.5447	1.5844	1.5705	1.5985	1.6648	1.6257

Southern California Gas Company
2008 CGR - Industrial G10
Historical Throughput and Customer Counts

Business Type	therms_ 2007	meters_ 2007	meters_ 2007_ ExCust	meters_ 2007_ NewCust	avgUse_ 2007_ ExCust	avgUse_ 2007_ NewCust	Price Elasticity	Employment Elasticity
Mining	2843183	217	206	11	13744.26	1078.67	0.000000	0.321451
Food	62539747	2287	2219	68	27700.68	15763.89	-0.190795	1.242506
Textile	24072469	761	756	5	31781.10	9190.86	0.000000	0.033325
Wood_Paper	7757673	692	681	11	11161.44	14248.63	0.000000	0.508272
Chemical	17004786	901	892	9	18999.45	6364.06	-0.080517	0.650067
Petroleum	9745527	152	150	2	64946.40	1783.79	-0.180563	0.084537
Stone	8333228	605	599	6	13865.83	4599.58	0.000000	0.416909
Primary_Metal	12444603	407	401	6	30839.90	12966.86	0.000000	0.956685
Fabricated_Metal	26087987	2299	2284	15	11382.64	6003.18	-0.137441	1.023881
Transportation	9317504	2294	2287	7	4031.12	14047.27	0.000000	0.402505
Misc	55620267	9654	9566	88	5747.94	7220.82	-0.108307	0.879307
Total	235766973.00	20269						

Southern California Gas Company
2008 CGR - Industrial G10
Average Use Per Meter

therm

Business Type	Fire_ Tube_ Boiler	Water_ Tube_ Boiler	Space_ Heat	Water_ Heat	Dryer	Furnace_ Oven_ Kiln	AC	Engine	Other	Total
Mining	4366.6	42.6	491.8	121.7	1553.1	1535.6	11.0	1218.1	4169.3	13509.8
Food	16172.7	3829.2	1397.9	549.5	1970.7	4751.6	95.4	397.2	3383.0	32547.2
Textile	13453.1	3495.6	435.2	874.1	8247.0	1773.6	282.9	0.0	904.9	29466.4
Wood_Paper	4003.5	1313.9	895.2	91.2	727.6	1271.4	12.3	0.0	1333.4	9648.5
Chemical	5933.3	3338.2	757.4	575.4	49.0	1093.9	6.3	0.3	3051.2	14805.0
Petroleum	7748.0	1953.7	342.9	449.8	25523.9	112.3	0.0	34.5	10240.9	46406.0
Stone	1797.2	357.2	697.5	675.5	3176.5	6897.1	127.4	0.0	1204.3	14932.7
Prim_Metal	442.0	1396.6	1205.0	287.3	59.1	25647.9	237.4	0.0	2342.9	31618.2
Fab_Metal	1535.4	1498.7	1207.0	266.6	133.7	3842.0	20.7	0.0	2434.7	10938.7
Transport	387.3	225.6	666.8	192.0	424.5	723.0	5.7	2.5	373.0	3000.4
Misc	750.9	528.1	496.4	138.2	336.2	1853.1	33.0	6.0	952.2	5094.1

Southern California Gas Company
2008 CGR - Industrial G10
Use Per Meter for New Customers therm

Business Type	Fire_ Tube_ Boiler	Water_ Tube_ Boiler	Space_ Heat	Water_ Heat	Dryer	Furnace_ Oven_ Kiln	AC	Engine	Other	Total
Mining	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35872.2	0.0	35872.2
Food	13791.7	2.8	205.1	225.3	0.0	0.0	0.0	0.0	0.0	14224.8
Textile	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wood_Paper	.	.	.	.	.	.	.	.	.	0.0
Chemical	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17866.6	17866.6
Petroleum	0.0	0.0	0.0	0.0	140409.4	0.0	0.0	0.0	0.0	140409.4
Stone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prim_Metal	0.0	0.0	0.0	891.7	0.0	14986.1	0.0	0.0	4995.4	20873.2
Fab_Metal	0.0	0.0	558.2	0.0	0.0	3041.6	0.0	0.0	8110.9	11710.8
Transport	0.0	0.0	0.0	0.0	0.0	2306.4	0.0	0.0	331.4	2637.8
Misc	612.3	0.0	0.0	5.0	2182.2	1428.8	0.0	0.0	983.8	5212.0

Southern California Gas Company
2008 CGR - Industrial G10
Electric UEC (Kwh/SqFt)

Business Type	Fire_ Tube_ Boiler	Water_ Tube_ Boiler	Space_ Heat	Water_ Heat	Dryer	Furnace_ Oven_ Kiln	AC	Engine	Other
Mining	12053557	117480	22540	4117	3349437	1388699	3261	2871579	.
Food	992080	234899	77958	15939	1062552	781260	24817	1163891	.
Textile	1428304	371125	20797	30369	3811277	1069238	74615	0	.
Wood_Paper	11051345	3626956	48301	2915	523062	985476	3282	0	.
Chemical	1169880	658201	34723	19440	26417	593554	1620	738	.
Petroleum	1527674	385215	15711	15192	13761553	60935	0	101154	.
Stone	4960873	985989	31975	22824	6850607	6237158	37820	0	.
Primary_Metal	174313	550730	55233	9317	25494	13916258	66288	0	.
Fabricated_Metal	605450	591011	55315	8658	57653	2084618	5763	0	.
Transportation	76358	44486	30560	6490	228869	392291	1456	7240	.
Miscellaneous	148060	104128	22745	4673	181266	1005453	8471	17618	.

Southern California Gas Company
2008 CGR - Industrial G10

GAS UEC **(Therm per SqFt.)**

Business Type	Fire_ Tube_ Boiler	Water_ Tube_ Boiler	Space_ Heat	Water_ Heat	Dryer	Furnace_ Oven_ Kiln	AC	Engine	Other
Mining	587697	5728	1099	281	163309	67709	159	140010	4169
Food	48371	11453	3801	1088	51807	38092	1210	56748	3383
Textile	69640	18095	1014	2073	185827	52133	3638	0	905
Wood_Paper	538832	176840	2355	199	25503	48049	160	0	1333
Chemical	57040	32092	1693	1327	1288	28940	79	36	3051
Petroleum	74485	18782	766	1037	670974	2971	0	4932	10241
Stone	241878	48074	1559	1558	334016	304106	1844	0	1204
Primary_Metal	8499	26852	2693	636	1243	678517	3232	0	2343
Fabricated_Metal	29520	28816	2697	591	2811	101640	281	0	2435
Transportation	3723	2169	1490	443	11159	19127	71	353	373
Miscellaneous	7219	5077	1109	319	8838	49023	413	859	

Southern California Gas Company
2008 CGR - Industrial G10
Gas Market Shares

Business Type	Fire_ Tube_ Boiler	Water_ Tube_ Boiler	Space_ Heat	Water_ Heat	Dryer	Furnace_ Oven_ Kiln	AC	Engine	Other
Chemical	0.74	0.74	0.61	0.59	0.32	0.38	0.11	0.01	1
Fabricated_Metal	0.74	0.74	0.61	0.59	0.32	0.38	0.11	0.01	1
Food	0.74	0.74	0.61	0.59	0.32	0.38	0.11	0.01	1
Mining	0.74	0.74	0.61	0.59	0.32	0.38	0.11	0.01	1
Miscllaneous	0.74	0.74	0.61	0.59	0.32	0.38	0.11	0.01	1
Petroleum	0.74	0.74	0.61	0.59	0.32	0.38	0.11	0.01	1
Primary_Metal	0.74	0.74	0.61	0.59	0.32	0.38	0.11	0.01	1
Stone	0.74	0.74	0.61	0.59	0.32	0.38	0.11	0.01	1
Textile	0.74	0.74	0.61	0.59	0.32	0.38	0.11	0.01	1
Transportation	0.74	0.74	0.61	0.59	0.32	0.38	0.11	0.01	1
Wood_Paper	0.74	0.74	0.61	0.59	0.32	0.38	0.11	0.01	1

Southern California Gas Company
2008 CGR - Industrial G10
Saturation Rate

Business Type	Fire_ Tube_ Boiler	Water_ Tube_ Boiler	Space_ Heat	Water_ Heat	Dryer	Furnace_ Oven_ Kiln	AC	Engine	Other
Mining	0.01	0.01	0.73	0.73	0.03	0.06	0.64	0.87	1.00
Food	0.45	0.45	0.60	0.85	0.12	0.33	0.73	0.70	1.00
Textile	0.26	0.26	0.70	0.71	0.14	0.09	0.72	0.46	1.00
Wood_Paper	0.01	0.01	0.62	0.77	0.09	0.07	0.71	0.50	1.00
Chemical	0.14	0.14	0.73	0.73	0.12	0.10	0.74	0.70	1.00
Petroleum	0.14	0.14	0.73	0.73	0.12	0.10	0.74	0.70	1.00
Stone	0.01	0.01	0.73	0.73	0.03	0.06	0.64	0.87	1.00
Prim_Metal	0.07	0.07	0.73	0.76	0.15	0.10	0.68	0.86	1.00
Fab_Metal	0.07	0.07	0.73	0.76	0.15	0.10	0.68	0.86	1.00
Transport	0.14	0.14	0.73	0.73	0.12	0.10	0.74	0.70	1.00
Misc	0.14	0.14	0.73	0.73	0.12	0.10	0.74	0.70	1.00

Southern California Gas Company
2008 CGR - Industrial G10
Employment Forecast (in thousands)

YEAR	Mining	Food	Textile	Wood_Paper	Chemical	Petroleum	Stone	Primary_Metal	Fabricated_Metal	Transportation	Miscellaneous	Total
2007	19.04250	119.68417	38.85667	26.49583	38.90917	6.13500	26.55083	9.99083	93.15333	79.85917	423.70083	882.37500
2008	19.51750	118.46500	37.60333	24.72917	39.10583	6.18250	25.47333	9.86417	93.94333	79.35167	422.11250	876.34667
2009	19.64167	119.18000	36.92083	24.16417	39.42750	6.07833	24.94250	9.49500	92.03583	79.76750	413.81917	865.46917
2010	19.31000	119.78833	36.72917	24.90583	40.04000	5.99583	25.13917	9.34917	92.13000	80.32917	414.03000	867.74167
2011	18.88500	120.63500	36.54917	25.84417	40.84917	5.93750	25.47250	9.32000	93.36000	81.06667	414.52583	872.44417
2012	18.35333	121.15417	35.97167	26.25417	41.66000	5.85250	25.59917	9.32917	95.92583	81.27667	414.73667	876.11417
2013	17.67083	121.57833	35.32417	26.31250	42.39333	5.76250	25.56583	9.30500	97.87083	80.81333	414.27583	876.87083
2014	17.00250	122.21417	34.81417	26.39917	43.09417	5.69583	25.50917	9.25833	99.12417	80.21917	414.55167	877.87917
2015	16.40833	123.05667	34.44583	26.52333	43.81833	5.63167	25.47000	9.20917	100.56833	79.71083	414.77500	879.61417
2016	15.91083	124.00500	34.18583	26.66667	44.51667	5.56750	25.45083	9.17250	102.44750	79.27667	416.13750	883.34000
2017	15.42750	124.89667	34.14000	26.65667	45.28167	5.51000	25.51083	9.18500	104.32917	78.79250	419.20250	888.93417
2018	14.98833	125.59667	34.14667	26.66833	45.95250	5.46833	25.59750	9.21417	105.53750	78.41333	420.17833	891.75917
2019	14.72083	126.21667	34.10167	26.58500	46.48750	5.42000	25.59250	9.19750	105.81083	77.99000	418.53750	890.65917
2020	14.64000	126.80083	34.06500	26.44667	46.96417	5.36750	25.65583	9.17250	105.32583	77.59250	415.46750	887.50750
2021	14.63083	127.35667	34.07917	26.29083	47.46250	5.33250	25.71583	9.17583	104.69167	77.07333	410.97833	882.78667
2022	14.62417	127.60000	34.13917	26.12083	47.90417	5.30250	25.70417	9.14000	103.33833	76.62333	406.82417	877.32083
2023	14.61083	127.74167	34.06083	25.96417	48.31667	5.26750	25.68583	9.12750	102.44250	76.27000	403.80667	873.29083
2024	14.59917	127.89667	33.90667	25.84250	48.61583	5.22500	25.65000	9.12417	101.85083	75.95583	401.75583	870.42167
2025	14.57750	128.06083	33.82667	25.74917	48.87917	5.17750	25.61167	9.09667	101.04000	75.61083	400.69750	868.33750
2026	14.53833	128.29167	33.82750	25.67917	49.17417	5.14333	25.59417	9.06500	100.42833	75.26583	400.59333	867.60333
2027	14.50500	128.47833	33.82000	25.54667	49.51500	5.10000	25.58583	8.97250	100.09333	74.80500	401.10250	867.52333
2028	14.48750	128.54667	33.69417	25.32667	49.85250	5.05917	25.56167	8.87000	99.54667	74.30083	402.10917	867.36000
2029	14.47417	128.66417	33.52000	25.14167	50.14083	5.02417	25.50667	8.75750	98.70750	73.82667	403.16417	866.92750
2030	14.44750	128.86333	33.43500	25.01250	50.36167	4.98667	25.43167	8.62333	97.84417	73.56333	404.02750	866.59500

Southern California Gas Company
2008 CGR - Industrial G10
UEC, Equipment Cost and Efficiency Shares

Where Fuel = 1 (gas) and = 2 (electric), and
Efficiency =1 (stock), =2 (standard), =3 (high) and =4 (premium)

Business Type	End Use	Fuel	Efficiency	EQcost
Mining	Fire_Tube_Boiler	1	1	3,907,010
Mining	Fire_Tube_Boiler	1	2	4,297,711
Mining	Fire_Tube_Boiler	1	3	4,688,412
Mining	Fire_Tube_Boiler	2	1	3,125,608
Mining	Fire_Tube_Boiler	2	2	3,438,169
Mining	Fire_Tube_Boiler	2	3	3,750,729
Mining	Water_Tube_Boiler	1	1	38,080
Mining	Water_Tube_Boiler	1	2	41,888
Mining	Water_Tube_Boiler	1	3	45,696
Mining	Water_Tube_Boiler	2	1	30,464
Mining	Water_Tube_Boiler	2	2	33,510
Mining	Water_Tube_Boiler	2	3	36,557
Mining	Space_Heat	1	1	7,306
Mining	Space_Heat	1	2	8,037
Mining	Space_Heat	1	3	8,767
Mining	Space_Heat	2	1	5,845
Mining	Space_Heat	2	2	6,429
Mining	Space_Heat	2	3	7,014
Mining	Water_Heat	1	1	1,868
Mining	Water_Heat	1	2	2,055
Mining	Water_Heat	1	3	2,242
Mining	Water_Heat	2	1	1,494
Mining	Water_Heat	2	2	1,644
Mining	Water_Heat	2	3	1,793
Mining	Dryer	1	1	1,085,678
Mining	Dryer	1	2	1,194,246
Mining	Dryer	1	3	1,302,814
Mining	Dryer	2	1	868,543
Mining	Dryer	2	2	955,397
Mining	Dryer	2	3	1,042,251
Mining	Furnace_Oven_Kiln	1	1	450,129
Mining	Furnace_Oven_Kiln	1	2	495,142
Mining	Furnace_Oven_Kiln	1	3	540,155
Mining	Furnace_Oven_Kiln	2	1	360,104
Mining	Furnace_Oven_Kiln	2	2	396,114
Mining	Furnace_Oven_Kiln	2	3	432,124
Mining	AC	1	1	1,057
Mining	AC	1	2	1,163
Mining	AC	1	3	1,268
Mining	AC	2	1	846
Mining	AC	2	2	930
Mining	AC	2	3	1,015
Mining	Engine	1	1	930,786
Mining	Engine	1	2	1,023,865
Mining	Engine	1	3	1,116,944
Mining	Engine	2	1	744,629
Mining	Engine	2	2	819,092
Mining	Engine	2	3	893,555
Mining	Other	1	1	-
Mining	Other	1	2	-
Mining	Other	1	3	-
Mining	Other	2	1	-
Mining	Other	2	2	-
Mining	Other	2	3	-
Food	Fire_Tube_Boiler	1	1	303,093
Food	Fire_Tube_Boiler	1	2	333,402
Food	Fire_Tube_Boiler	1	3	363,711
Food	Fire_Tube_Boiler	2	1	242,474

Food	Fire_Tube_Boiler	2	2	266,722
Food	Fire_Tube_Boiler	2	3	290,969
Food	Water_Tube_Boiler	1	1	71,765
Food	Water_Tube_Boiler	1	2	78,941
Food	Water_Tube_Boiler	1	3	86,117
Food	Water_Tube_Boiler	2	1	57,412
Food	Water_Tube_Boiler	2	2	63,153
Food	Water_Tube_Boiler	2	3	68,894
Food	Space_Heat	1	1	23,817
Food	Space_Heat	1	2	26,199
Food	Space_Heat	1	3	28,580
Food	Space_Heat	2	1	19,054
Food	Space_Heat	2	2	20,959
Food	Space_Heat	2	3	22,864
Food	Water_Heat	1	1	6,817
Food	Water_Heat	1	2	7,499
Food	Water_Heat	1	3	8,181
Food	Water_Heat	2	1	5,454
Food	Water_Heat	2	2	5,999
Food	Water_Heat	2	3	6,545
Food	Dryer	1	1	324,623
Food	Dryer	1	2	357,085
Food	Dryer	1	3	389,547
Food	Dryer	2	1	259,698
Food	Dryer	2	2	285,668
Food	Dryer	2	3	311,638
Food	Furnace_Oven_Kiln	1	1	238,684
Food	Furnace_Oven_Kiln	1	2	262,553
Food	Furnace_Oven_Kiln	1	3	286,421
Food	Furnace_Oven_Kiln	2	1	190,948
Food	Furnace_Oven_Kiln	2	2	210,042
Food	Furnace_Oven_Kiln	2	3	229,137
Food	AC	1	1	7,582
Food	AC	1	2	8,340
Food	AC	1	3	9,098
Food	AC	2	1	6,065
Food	AC	2	2	6,672
Food	AC	2	3	7,279
Food	Engine	1	1	355,583
Food	Engine	1	2	391,141
Food	Engine	1	3	426,700
Food	Engine	2	1	284,466
Food	Engine	2	2	312,913
Food	Engine	2	3	341,360
Food	Other	1	1	-
Food	Other	1	2	-
Food	Other	1	3	-
Food	Other	2	1	-
Food	Other	2	2	-
Food	Other	2	3	-
Textile	Fire_Tube_Boiler	1	1	440,682
Textile	Fire_Tube_Boiler	1	2	484,750
Textile	Fire_Tube_Boiler	1	3	528,818
Textile	Fire_Tube_Boiler	2	1	352,546
Textile	Fire_Tube_Boiler	2	2	387,800
Textile	Fire_Tube_Boiler	2	3	423,055
Textile	Water_Tube_Boiler	1	1	114,505
Textile	Water_Tube_Boiler	1	2	125,956
Textile	Water_Tube_Boiler	1	3	137,406
Textile	Water_Tube_Boiler	2	1	91,604
Textile	Water_Tube_Boiler	2	2	100,765
Textile	Water_Tube_Boiler	2	3	109,925
Textile	Space_Heat	1	1	6,417
Textile	Space_Heat	1	2	7,058
Textile	Space_Heat	1	3	7,700
Textile	Space_Heat	2	1	5,133
Textile	Space_Heat	2	2	5,647
Textile	Space_Heat	2	3	6,160
Textile	Water_Heat	1	1	13,118
Textile	Water_Heat	1	2	14,430

Textile	Water_Heat	1	3	15,742
Textile	Water_Heat	2	1	10,494
Textile	Water_Heat	2	2	11,544
Textile	Water_Heat	2	3	12,593
Textile	Dryer	1	1	1,175,913
Textile	Dryer	1	2	1,293,505
Textile	Dryer	1	3	1,411,096
Textile	Dryer	2	1	940,731
Textile	Dryer	2	2	1,034,804
Textile	Dryer	2	3	1,128,877
Textile	Furnace_Oven_Kiln	1	1	329,898
Textile	Furnace_Oven_Kiln	1	2	362,887
Textile	Furnace_Oven_Kiln	1	3	395,877
Textile	Furnace_Oven_Kiln	2	1	263,918
Textile	Furnace_Oven_Kiln	2	2	290,310
Textile	Furnace_Oven_Kiln	2	3	316,702
Textile	AC	1	1	23,021
Textile	AC	1	2	25,323
Textile	AC	1	3	27,626
Textile	AC	2	1	18,417
Textile	AC	2	2	20,259
Textile	AC	2	3	22,100
Textile	Engine	1	1	-
Textile	Engine	1	2	-
Textile	Engine	1	3	-
Textile	Engine	2	1	-
Textile	Engine	2	2	-
Textile	Engine	2	3	-
Textile	Other	1	1	-
Textile	Other	1	2	-
Textile	Other	1	3	-
Textile	Other	2	1	-
Textile	Other	2	2	-
Textile	Other	2	3	-
Wood_Paper	Fire_Tube_Boiler	1	1	3,531,505
Wood_Paper	Fire_Tube_Boiler	1	2	3,884,655
Wood_Paper	Fire_Tube_Boiler	1	3	4,237,806
Wood_Paper	Fire_Tube_Boiler	2	1	2,825,204
Wood_Paper	Fire_Tube_Boiler	2	2	3,107,724
Wood_Paper	Fire_Tube_Boiler	2	3	3,390,245
Wood_Paper	Water_Tube_Boiler	1	1	1,159,009
Wood_Paper	Water_Tube_Boiler	1	2	1,274,910
Wood_Paper	Water_Tube_Boiler	1	3	1,390,811
Wood_Paper	Water_Tube_Boiler	2	1	927,207
Wood_Paper	Water_Tube_Boiler	2	2	1,019,928
Wood_Paper	Water_Tube_Boiler	2	3	1,112,649
Wood_Paper	Space_Heat	1	1	15,435
Wood_Paper	Space_Heat	1	2	16,978
Wood_Paper	Space_Heat	1	3	18,522
Wood_Paper	Space_Heat	2	1	12,348
Wood_Paper	Space_Heat	2	2	13,583
Wood_Paper	Space_Heat	2	3	14,817
Wood_Paper	Water_Heat	1	1	1,304
Wood_Paper	Water_Heat	1	2	1,435
Wood_Paper	Water_Heat	1	3	1,565
Wood_Paper	Water_Heat	2	1	1,043
Wood_Paper	Water_Heat	2	2	1,148
Wood_Paper	Water_Heat	2	3	1,252
Wood_Paper	Dryer	1	1	167,147
Wood_Paper	Dryer	1	2	183,861
Wood_Paper	Dryer	1	3	200,576
Wood_Paper	Dryer	2	1	133,717
Wood_Paper	Dryer	2	2	147,089
Wood_Paper	Dryer	2	3	160,461
Wood_Paper	Furnace_Oven_Kiln	1	1	314,913
Wood_Paper	Furnace_Oven_Kiln	1	2	346,404
Wood_Paper	Furnace_Oven_Kiln	1	3	377,896
Wood_Paper	Furnace_Oven_Kiln	2	1	251,931
Wood_Paper	Furnace_Oven_Kiln	2	2	277,124
Wood_Paper	Furnace_Oven_Kiln	2	3	302,317

Wood_Paper	AC	1	1	1,049
Wood_Paper	AC	1	2	1,154
Wood_Paper	AC	1	3	1,258
Wood_Paper	AC	2	1	839
Wood_Paper	AC	2	2	923
Wood_Paper	AC	2	3	1,007
Wood_Paper	Engine	1	1	-
Wood_Paper	Engine	1	2	-
Wood_Paper	Engine	1	3	-
Wood_Paper	Engine	2	1	-
Wood_Paper	Engine	2	2	-
Wood_Paper	Engine	2	3	-
Wood_Paper	Other	1	1	-
Wood_Paper	Other	1	2	-
Wood_Paper	Other	1	3	-
Wood_Paper	Other	2	1	-
Wood_Paper	Other	2	2	-
Wood_Paper	Other	2	3	-
Chemical	Fire_Tube_Boiler	1	1	374,525
Chemical	Fire_Tube_Boiler	1	2	411,977
Chemical	Fire_Tube_Boiler	1	3	449,430
Chemical	Fire_Tube_Boiler	2	1	299,620
Chemical	Fire_Tube_Boiler	2	2	329,582
Chemical	Fire_Tube_Boiler	2	3	359,544
Chemical	Water_Tube_Boiler	1	1	210,716
Chemical	Water_Tube_Boiler	1	2	231,788
Chemical	Water_Tube_Boiler	1	3	252,859
Chemical	Water_Tube_Boiler	2	1	168,573
Chemical	Water_Tube_Boiler	2	2	185,430
Chemical	Water_Tube_Boiler	2	3	202,287
Chemical	Space_Heat	1	1	11,116
Chemical	Space_Heat	1	2	12,228
Chemical	Space_Heat	1	3	13,339
Chemical	Space_Heat	2	1	8,893
Chemical	Space_Heat	2	2	9,782
Chemical	Space_Heat	2	3	10,672
Chemical	Water_Heat	1	1	8,713
Chemical	Water_Heat	1	2	9,584
Chemical	Water_Heat	1	3	10,456
Chemical	Water_Heat	2	1	6,970
Chemical	Water_Heat	2	2	7,668
Chemical	Water_Heat	2	3	8,365
Chemical	Dryer	1	1	8,457
Chemical	Dryer	1	2	9,303
Chemical	Dryer	1	3	10,148
Chemical	Dryer	2	1	6,766
Chemical	Dryer	2	2	7,442
Chemical	Dryer	2	3	8,119
Chemical	Furnace_Oven_Kiln	1	1	190,020
Chemical	Furnace_Oven_Kiln	1	2	209,022
Chemical	Furnace_Oven_Kiln	1	3	228,024
Chemical	Furnace_Oven_Kiln	2	1	152,016
Chemical	Furnace_Oven_Kiln	2	2	167,218
Chemical	Furnace_Oven_Kiln	2	3	182,419
Chemical	AC	1	1	519
Chemical	AC	1	2	571
Chemical	AC	1	3	622
Chemical	AC	2	1	415
Chemical	AC	2	2	456
Chemical	AC	2	3	498
Chemical	Engine	1	1	236
Chemical	Engine	1	2	260
Chemical	Engine	1	3	284
Chemical	Engine	2	1	189
Chemical	Engine	2	2	208
Chemical	Engine	2	3	227
Chemical	Other	1	1	-
Chemical	Other	1	2	-
Chemical	Other	1	3	-
Chemical	Other	2	1	-

Chemical	Other	2	2	-
Chemical	Other	2	3	-
Petroleum	Fire_Tube_Boiler	1	1	461,658
Petroleum	Fire_Tube_Boiler	1	2	507,824
Petroleum	Fire_Tube_Boiler	1	3	553,990
Petroleum	Fire_Tube_Boiler	2	1	369,326
Petroleum	Fire_Tube_Boiler	2	2	406,259
Petroleum	Fire_Tube_Boiler	2	3	443,192
Petroleum	Water_Tube_Boiler	1	1	116,411
Petroleum	Water_Tube_Boiler	1	2	128,052
Petroleum	Water_Tube_Boiler	1	3	139,693
Petroleum	Water_Tube_Boiler	2	1	93,129
Petroleum	Water_Tube_Boiler	2	2	102,442
Petroleum	Water_Tube_Boiler	2	3	111,754
Petroleum	Space_Heat	1	1	4,748
Petroleum	Space_Heat	1	2	5,222
Petroleum	Space_Heat	1	3	5,697
Petroleum	Space_Heat	2	1	3,798
Petroleum	Space_Heat	2	2	4,178
Petroleum	Space_Heat	2	3	4,558
Petroleum	Water_Heat	1	1	6,427
Petroleum	Water_Heat	1	2	7,070
Petroleum	Water_Heat	1	3	7,713
Petroleum	Water_Heat	2	1	5,142
Petroleum	Water_Heat	2	2	5,656
Petroleum	Water_Heat	2	3	6,170
Petroleum	Dryer	1	1	4,158,697
Petroleum	Dryer	1	2	4,574,567
Petroleum	Dryer	1	3	4,990,436
Petroleum	Dryer	2	1	3,326,957
Petroleum	Dryer	2	2	3,659,653
Petroleum	Dryer	2	3	3,992,349
Petroleum	Furnace_Oven_Kiln	1	1	18,414
Petroleum	Furnace_Oven_Kiln	1	2	20,256
Petroleum	Furnace_Oven_Kiln	1	3	22,097
Petroleum	Furnace_Oven_Kiln	2	1	14,731
Petroleum	Furnace_Oven_Kiln	2	2	16,205
Petroleum	Furnace_Oven_Kiln	2	3	17,678
Petroleum	AC	1	1	-
Petroleum	AC	1	2	-
Petroleum	AC	1	3	-
Petroleum	AC	2	1	-
Petroleum	AC	2	2	-
Petroleum	AC	2	3	-
Petroleum	Engine	1	1	30,569
Petroleum	Engine	1	2	33,625
Petroleum	Engine	1	3	36,682
Petroleum	Engine	2	1	24,455
Petroleum	Engine	2	2	26,900
Petroleum	Engine	2	3	29,346
Petroleum	Other	1	1	-
Petroleum	Other	1	2	-
Petroleum	Other	1	3	-
Petroleum	Other	2	1	-
Petroleum	Other	2	2	-
Petroleum	Other	2	3	-
Stone	Fire_Tube_Boiler	1	1	1,591,073
Stone	Fire_Tube_Boiler	1	2	1,750,181
Stone	Fire_Tube_Boiler	1	3	1,909,288
Stone	Fire_Tube_Boiler	2	1	1,272,859
Stone	Fire_Tube_Boiler	2	2	1,400,145
Stone	Fire_Tube_Boiler	2	3	1,527,431
Stone	Water_Tube_Boiler	1	1	316,231
Stone	Water_Tube_Boiler	1	2	347,854
Stone	Water_Tube_Boiler	1	3	379,477
Stone	Water_Tube_Boiler	2	1	252,985
Stone	Water_Tube_Boiler	2	2	278,283
Stone	Water_Tube_Boiler	2	3	303,582
Stone	Space_Heat	1	1	10,255
Stone	Space_Heat	1	2	11,281

Stone	Space_Heat	1	3	12,306
Stone	Space_Heat	2	1	8,204
Stone	Space_Heat	2	2	9,024
Stone	Space_Heat	2	3	9,845
Stone	Water_Heat	1	1	10,249
Stone	Water_Heat	1	2	11,273
Stone	Water_Heat	1	3	12,298
Stone	Water_Heat	2	1	8,199
Stone	Water_Heat	2	2	9,019
Stone	Water_Heat	2	3	9,839
Stone	Dryer	1	1	2,197,157
Stone	Dryer	1	2	2,416,873
Stone	Dryer	1	3	2,636,589
Stone	Dryer	2	1	1,757,726
Stone	Dryer	2	2	1,933,498
Stone	Dryer	2	3	2,109,271
Stone	Furnace_Oven_Kiln	1	1	2,000,409
Stone	Furnace_Oven_Kiln	1	2	2,200,450
Stone	Furnace_Oven_Kiln	1	3	2,400,491
Stone	Furnace_Oven_Kiln	2	1	1,600,327
Stone	Furnace_Oven_Kiln	2	2	1,760,360
Stone	Furnace_Oven_Kiln	2	3	1,920,393
Stone	AC	1	1	12,130
Stone	AC	1	2	13,343
Stone	AC	1	3	14,556
Stone	AC	2	1	9,704
Stone	AC	2	2	10,674
Stone	AC	2	3	11,645
Stone	Engine	1	1	-
Stone	Engine	1	2	-
Stone	Engine	1	3	-
Stone	Engine	2	1	-
Stone	Engine	2	2	-
Stone	Engine	2	3	-
Stone	Other	1	1	-
Stone	Other	1	2	-
Stone	Other	1	3	-
Stone	Other	2	1	-
Stone	Other	2	2	-
Stone	Other	2	3	-
Prim_Metal	Fire_Tube_Boiler	1	1	54,853
Prim_Metal	Fire_Tube_Boiler	1	2	60,338
Prim_Metal	Fire_Tube_Boiler	1	3	65,823
Prim_Metal	Fire_Tube_Boiler	2	1	43,882
Prim_Metal	Fire_Tube_Boiler	2	2	48,270
Prim_Metal	Fire_Tube_Boiler	2	3	52,658
Prim_Metal	Water_Tube_Boiler	1	1	173,303
Prim_Metal	Water_Tube_Boiler	1	2	190,633
Prim_Metal	Water_Tube_Boiler	1	3	207,963
Prim_Metal	Water_Tube_Boiler	2	1	138,642
Prim_Metal	Water_Tube_Boiler	2	2	152,506
Prim_Metal	Water_Tube_Boiler	2	3	166,371
Prim_Metal	Space_Heat	1	1	17,381
Prim_Metal	Space_Heat	1	2	19,119
Prim_Metal	Space_Heat	1	3	20,857
Prim_Metal	Space_Heat	2	1	13,905
Prim_Metal	Space_Heat	2	2	15,295
Prim_Metal	Space_Heat	2	3	16,685
Prim_Metal	Water_Heat	1	1	4,105
Prim_Metal	Water_Heat	1	2	4,515
Prim_Metal	Water_Heat	1	3	4,926
Prim_Metal	Water_Heat	2	1	3,284
Prim_Metal	Water_Heat	2	2	3,612
Prim_Metal	Water_Heat	2	3	3,941
Prim_Metal	Dryer	1	1	8,022
Prim_Metal	Dryer	1	2	8,825
Prim_Metal	Dryer	1	3	9,627
Prim_Metal	Dryer	2	1	6,418
Prim_Metal	Dryer	2	2	7,060
Prim_Metal	Dryer	2	3	7,701

Prim_Metal	Furnace_Oven_Kiln	1	1	4,379,149
Prim_Metal	Furnace_Oven_Kiln	1	2	4,817,064
Prim_Metal	Furnace_Oven_Kiln	1	3	5,254,978
Prim_Metal	Furnace_Oven_Kiln	2	1	3,503,319
Prim_Metal	Furnace_Oven_Kiln	2	2	3,853,651
Prim_Metal	Furnace_Oven_Kiln	2	3	4,203,983
Prim_Metal	AC	1	1	20,859
Prim_Metal	AC	1	2	22,945
Prim_Metal	AC	1	3	25,031
Prim_Metal	AC	2	1	16,687
Prim_Metal	AC	2	2	18,356
Prim_Metal	AC	2	3	20,025
Prim_Metal	Engine	1	1	-
Prim_Metal	Engine	1	2	-
Prim_Metal	Engine	1	3	-
Prim_Metal	Engine	2	1	-
Prim_Metal	Engine	2	2	-
Prim_Metal	Engine	2	3	-
Prim_Metal	Other	1	1	-
Prim_Metal	Other	1	2	-
Prim_Metal	Other	1	3	-
Prim_Metal	Other	2	1	-
Prim_Metal	Other	2	2	-
Prim_Metal	Other	2	3	-
Fab_Metal	Fire_Tube_Boiler	1	1	199,496
Fab_Metal	Fire_Tube_Boiler	1	2	219,446
Fab_Metal	Fire_Tube_Boiler	1	3	239,395
Fab_Metal	Fire_Tube_Boiler	2	1	159,597
Fab_Metal	Fire_Tube_Boiler	2	2	175,557
Fab_Metal	Fire_Tube_Boiler	2	3	191,516
Fab_Metal	Water_Tube_Boiler	1	1	194,739
Fab_Metal	Water_Tube_Boiler	1	2	214,212
Fab_Metal	Water_Tube_Boiler	1	3	233,686
Fab_Metal	Water_Tube_Boiler	2	1	155,791
Fab_Metal	Water_Tube_Boiler	2	2	171,370
Fab_Metal	Water_Tube_Boiler	2	3	186,949
Fab_Metal	Space_Heat	1	1	18,226
Fab_Metal	Space_Heat	1	2	20,049
Fab_Metal	Space_Heat	1	3	21,872
Fab_Metal	Space_Heat	2	1	14,581
Fab_Metal	Space_Heat	2	2	16,039
Fab_Metal	Space_Heat	2	3	17,497
Fab_Metal	Water_Heat	1	1	3,994
Fab_Metal	Water_Heat	1	2	4,393
Fab_Metal	Water_Heat	1	3	4,793
Fab_Metal	Water_Heat	2	1	3,195
Fab_Metal	Water_Heat	2	2	3,515
Fab_Metal	Water_Heat	2	3	3,834
Fab_Metal	Dryer	1	1	18,997
Fab_Metal	Dryer	1	2	20,896
Fab_Metal	Dryer	1	3	22,796
Fab_Metal	Dryer	2	1	15,197
Fab_Metal	Dryer	2	2	16,717
Fab_Metal	Dryer	2	3	18,237
Fab_Metal	Furnace_Oven_Kiln	1	1	686,883
Fab_Metal	Furnace_Oven_Kiln	1	2	755,571
Fab_Metal	Furnace_Oven_Kiln	1	3	824,260
Fab_Metal	Furnace_Oven_Kiln	2	1	549,507
Fab_Metal	Furnace_Oven_Kiln	2	2	604,457
Fab_Metal	Furnace_Oven_Kiln	2	3	659,408
Fab_Metal	AC	1	1	1,899
Fab_Metal	AC	1	2	2,089
Fab_Metal	AC	1	3	2,279
Fab_Metal	AC	2	1	1,519
Fab_Metal	AC	2	2	1,671
Fab_Metal	AC	2	3	1,823
Fab_Metal	Engine	1	1	-
Fab_Metal	Engine	1	2	-
Fab_Metal	Engine	1	3	-
Fab_Metal	Engine	2	1	-

Fab_Metal	Engine	2	2	-
Fab_Metal	Engine	2	3	-
Fab_Metal	Other	1	1	-
Fab_Metal	Other	1	2	-
Fab_Metal	Other	1	3	-
Fab_Metal	Other	2	1	-
Fab_Metal	Other	2	2	-
Fab_Metal	Other	2	3	-
Transport	Fire_Tube_Boiler	1	1	27,156
Transport	Fire_Tube_Boiler	1	2	29,871
Transport	Fire_Tube_Boiler	1	3	32,587
Transport	Fire_Tube_Boiler	2	1	21,724
Transport	Fire_Tube_Boiler	2	2	23,897
Transport	Fire_Tube_Boiler	2	3	26,069
Transport	Water_Tube_Boiler	1	1	15,821
Transport	Water_Tube_Boiler	1	2	17,403
Transport	Water_Tube_Boiler	1	3	18,985
Transport	Water_Tube_Boiler	2	1	12,657
Transport	Water_Tube_Boiler	2	2	13,922
Transport	Water_Tube_Boiler	2	3	15,188
Transport	Space_Heat	1	1	10,868
Transport	Space_Heat	1	2	11,955
Transport	Space_Heat	1	3	13,042
Transport	Space_Heat	2	1	8,694
Transport	Space_Heat	2	2	9,564
Transport	Space_Heat	2	3	10,433
Transport	Water_Heat	1	1	3,231
Transport	Water_Heat	1	2	3,554
Transport	Water_Heat	1	3	3,877
Transport	Water_Heat	2	1	2,585
Transport	Water_Heat	2	2	2,843
Transport	Water_Heat	2	3	3,102
Transport	Dryer	1	1	81,394
Transport	Dryer	1	2	89,533
Transport	Dryer	1	3	97,673
Transport	Dryer	2	1	65,115
Transport	Dryer	2	2	71,627
Transport	Dryer	2	3	78,138
Transport	Furnace_Oven_Kiln	1	1	139,512
Transport	Furnace_Oven_Kiln	1	2	153,464
Transport	Furnace_Oven_Kiln	1	3	167,415
Transport	Furnace_Oven_Kiln	2	1	111,610
Transport	Furnace_Oven_Kiln	2	2	122,771
Transport	Furnace_Oven_Kiln	2	3	133,932
Transport	AC	1	1	518
Transport	AC	1	2	570
Transport	AC	1	3	621
Transport	AC	2	1	414
Transport	AC	2	2	456
Transport	AC	2	3	497
Transport	Engine	1	1	2,575
Transport	Engine	1	2	2,832
Transport	Engine	1	3	3,090
Transport	Engine	2	1	2,060
Transport	Engine	2	2	2,266
Transport	Engine	2	3	2,472
Transport	Other	1	1	-
Transport	Other	1	2	-
Transport	Other	1	3	-
Transport	Other	2	1	-
Transport	Other	2	2	-
Transport	Other	2	3	-
Misc	Fire_Tube_Boiler	1	1	50,324
Misc	Fire_Tube_Boiler	1	2	55,356
Misc	Fire_Tube_Boiler	1	3	60,388
Misc	Fire_Tube_Boiler	2	1	40,259
Misc	Fire_Tube_Boiler	2	2	44,285
Misc	Fire_Tube_Boiler	2	3	48,311
Misc	Water_Tube_Boiler	1	1	35,392
Misc	Water_Tube_Boiler	1	2	38,931

Misc	Water_Tube_Boiler	1	3	42,470
Misc	Water_Tube_Boiler	2	1	28,313
Misc	Water_Tube_Boiler	2	2	31,145
Misc	Water_Tube_Boiler	2	3	33,976
Misc	Space_Heat	1	1	7,731
Misc	Space_Heat	1	2	8,504
Misc	Space_Heat	1	3	9,277
Misc	Space_Heat	2	1	6,185
Misc	Space_Heat	2	2	6,803
Misc	Space_Heat	2	3	7,422
Misc	Water_Heat	1	1	2,224
Misc	Water_Heat	1	2	2,446
Misc	Water_Heat	1	3	2,669
Misc	Water_Heat	2	1	1,779
Misc	Water_Heat	2	2	1,957
Misc	Water_Heat	2	3	2,135
Misc	Dryer	1	1	61,610
Misc	Dryer	1	2	67,771
Misc	Dryer	1	3	73,932
Misc	Dryer	2	1	49,288
Misc	Dryer	2	2	54,217
Misc	Dryer	2	3	59,145
Misc	Furnace_Oven_Kiln	1	1	341,739
Misc	Furnace_Oven_Kiln	1	2	375,913
Misc	Furnace_Oven_Kiln	1	3	410,087
Misc	Furnace_Oven_Kiln	2	1	273,391
Misc	Furnace_Oven_Kiln	2	2	300,731
Misc	Furnace_Oven_Kiln	2	3	328,070
Misc	AC	1	1	2,879
Misc	AC	1	2	3,167
Misc	AC	1	3	3,455
Misc	AC	2	1	2,303
Misc	AC	2	2	2,534
Misc	AC	2	3	2,764
Misc	Engine	1	1	5,988
Misc	Engine	1	2	6,587
Misc	Engine	1	3	7,186
Misc	Engine	2	1	4,790
Misc	Engine	2	2	5,270
Misc	Engine	2	3	5,749
Misc	Other	1	1	-
Misc	Other	1	2	-
Misc	Other	1	3	-
Misc	Other	2	1	-
Misc	Other	2	2	-
Misc	Other	2	3	-

Southern California Gas Company
2008 CGR - Industrial G10
Core Industrial Demand Forecast (Mdth)
Average Temperature

Model Output

Avg	G10-Ind	EE/DSM	SGIP + MiGRATION	City of Vernon	Final
2007	23576.7	0.0	0.0	0.00	23576.7
2008	22802.4	460.5	5.1	32.57	22314.4
2009	22646.3	672.6	7.1	560.18	21420.7
2010	22776.9	893.2	127.5	560.18	21451.0
2011	22921.7	1126.3	189.0	560.18	21424.3
2012	23207.0	1378.1	249.9	560.18	21518.5
2013	23418.7	1657.2	251.8	560.18	21453.2
2014	23636.2	1936.3	253.8	560.18	21393.5
2015	23673.7	2215.4	255.8	560.18	21153.9
2016	23701.9	2494.5	257.8	560.18	20905.0
2017	23770.8	2773.6	259.8	560.18	20696.8
2018	23801.0	3052.7	261.7	560.18	20449.9
2019	23772.1	3331.8	261.7	560.18	20141.8
2020	23717.9	3610.9	261.7	560.18	19808.5
2021	23705.7	3890.0	261.7	560.18	19517.3
2022	23553.4	4169.1	261.7	560.18	19085.9
2023	23427.2	3987.7	261.7	560.18	19141.0
2024	23317.3	4054.7	261.7	560.18	18964.2
2025	23214.1	4113.2	261.7	560.18	18802.5
2026	23184.0	4159.2	261.7	560.18	18726.4
2027	23131.3	4186.5	261.7	560.18	18646.4
2028	23046.2	4186.5	261.7	560.18	18561.3
2029	22938.8	4186.5	261.7	560.18	18453.8
2030	22906.3	4186.5	261.7	560.18	18421.3

Southern California Gas Company
2009 CGR - Industrial G10
Core Industrial Demand Forecast (Mdth)
Cold Temperature

Model Output

YEAR	G10-Ind	EE/DSM	SGIP + MIGRATION	City of Vernon	Final
2007	24,073.16	0	0	0	24,073.16
2008	23,282.53	470.20	5.13	32.57	22,784.89
2009	23,123.20	686.72	7.11	560.18	21,883.41
2010	23,256.52	911.99	127.49	560.18	21,911.84
2011	23,404.41	1,150.00	188.99	560.18	21,883.22
2012	23,695.63	1,407.12	249.85	560.18	21,978.19
2013	23,911.86	1,692.10	251.83	560.18	21,911.42
2014	24,133.91	1,977.07	253.81	560.18	21,850.47
2015	24,172.17	2,262.05	255.79	560.18	21,605.74
2016	24,201.04	2,547.03	257.77	560.18	21,351.61
2017	24,271.39	2,832.00	259.75	560.18	21,138.96
2018	24,302.21	3,116.98	261.73	560.18	20,886.79
2019	24,272.64	3,401.95	261.73	560.18	20,572.24
2020	24,217.31	3,686.93	261.73	560.18	20,231.93
2021	24,204.91	3,971.91	261.73	560.18	19,934.55
2022	24,049.40	4,256.88	261.73	560.18	19,494.07
2023	23,920.46	4,071.66	261.73	560.18	19,550.36
2024	23,808.34	4,140.12	261.73	560.18	19,369.78
2025	23,702.94	4,199.82	261.73	560.18	19,204.68
2026	23,672.19	4,246.78	261.73	560.18	19,126.96
2027	23,618.38	4,274.64	261.73	560.18	19,045.29
2028	23,531.54	4,274.64	261.73	560.18	18,958.45
2029	23,421.79	4,274.64	261.73	560.18	18,848.70
2030	23,388.62	4,274.64	261.73	560.18	18,815.53

Southern California Gas Company
2008 CGR - Industrial G10
Core Industrial Demand Forecast (Mdth)
Hot Temperature

YEAR	Model Output G10-Ind	EE/DSM	SGIP + MIGRATION	City of Vernon	Final
2007	23,080.2	0.0	0.0	0.0	23,080.2
2008	22,322.2	450.8	5.1	32.6	21,844.0
2009	22,169.5	658.4	7.1	560.2	20,958.0
2010	22,297.3	874.4	127.5	560.2	20,990.2
2011	22,439.1	1,102.6	189.0	560.2	20,965.3
2012	22,718.3	1,349.1	249.9	560.2	21,058.9
2013	22,925.6	1,622.3	251.8	560.2	20,994.9
2014	23,138.5	1,895.5	253.8	560.2	20,936.6
2015	23,175.2	2,168.7	255.8	560.2	20,702.0
2016	23,202.8	2,442.0	257.8	560.2	20,458.5
2017	23,270.3	2,715.2	259.8	560.2	20,254.7
2018	23,299.8	2,988.4	261.7	560.2	20,013.0
2019	23,271.5	3,261.6	261.7	560.2	19,711.4
2020	23,218.4	3,534.9	261.7	560.2	19,385.1
2021	23,206.5	3,808.1	261.7	560.2	19,100.0
2022	23,057.5	4,081.3	261.7	560.2	18,677.7
2023	22,933.8	3,903.7	261.7	560.2	18,731.7
2024	22,826.3	3,969.4	261.7	560.2	18,558.5
2025	22,725.3	4,026.6	261.7	560.2	18,400.2
2026	22,695.8	4,071.6	261.7	560.2	18,325.7
2027	22,644.2	4,098.3	261.7	560.2	18,247.4
2028	22,561.0	4,098.3	261.7	560.2	18,164.2
2029	22,455.7	4,098.3	261.7	560.2	18,059.0
2030	22,423.9	4,098.3	261.7	560.2	18,027.2

Southern California Gas Company
2008 CGR - Industrial G10
Core Industrial Demand Forecast (Mdth)
Base Temperature

YEAR	Model Output G10-Ind	EE/DSM	SGIP + MIGRATIOn	City of Vernon	Final
2007	21,182.9	0.0	0.0	0.0	21,182.9
2008	20,487.2	413.7	5.1	32.6	20,046.0
2009	20,347.0	604.3	7.1	560.2	19,189.7
2010	20,464.3	802.5	127.5	560.2	19,229.1
2011	20,594.5	1,011.9	189.0	560.2	19,211.3
2012	20,850.7	1,238.2	249.9	560.2	19,302.2
2013	21,041.0	1,488.9	251.8	560.2	19,243.7
2014	21,236.4	1,739.7	253.8	560.2	19,190.3
2015	21,270.0	1,990.5	255.8	560.2	18,975.2
2016	21,295.4	2,241.2	257.8	560.2	18,751.8
2017	21,357.3	2,492.0	259.8	560.2	18,564.9
2018	21,384.5	2,742.8	261.7	560.2	18,343.3
2019	21,358.4	2,993.5	261.7	560.2	18,066.5
2020	21,309.8	3,244.3	261.7	560.2	17,767.0
2021	21,298.8	3,495.0	261.7	560.2	17,505.4
2022	21,162.0	3,745.8	261.7	560.2	17,117.8
2023	21,048.6	3,582.8	261.7	560.2	17,167.3
2024	20,949.9	3,643.1	261.7	560.2	17,008.4
2025	20,857.2	3,695.6	261.7	560.2	16,863.1
2026	20,830.1	3,736.9	261.7	560.2	16,794.7
2027	20,782.7	3,761.4	261.7	560.2	16,722.9
2028	20,706.3	3,761.4	261.7	560.2	16,646.5
2029	20,609.8	3,761.4	261.7	560.2	16,549.9
2030	20,580.6	3,761.4	261.7	560.2	16,520.7

2008 CALIFORNIA GAS REPORT

NONCORE COMMERCIAL AND INDUSTRIAL DEMAND FORECAST
JULY 2008

The Gas Company

A Sempra Energy utility℠

Noncore Commercial and Industrial End Use Model

Introduction

The purpose of these workpapers is to document the methodology used to forecast demand for SoCalGas' noncore commercial and industrial markets. The EUforecaster model's market segmentation and end-use modeling framework was used by SoCalGas to assess the impacts of equipment replacement and market scenarios on gas demand and market share. The model segments the noncore commercial and industrial markets into 14 sectors and 11 sectors by type of business activity, respectively. Business activity is determined by the NAICS (North American Industrial Classification System) code on the billing record. The final demand forecast for the noncore commercial and industrial market is taken from output from the EUForecaster and reduced by CPUC-authorized energy efficiency goal.

Data Sources

A. Historical Billing Data

Monthly historical gas usage for the commercial and industrial markets were obtained from SoCalGas' billing records for 2007. The recorded usage was then further disaggregated into the 14 commercial or 11 industrial business sectors.

B. Natural Gas Price

The natural gas prices used to forecast demand were based on the price of gas at the burner-tip in each market segment, which is composed of the gas commodity cost, transportation rate (G-30 tariff rate) and Public Purpose Program surcharge. The weighted average cost of gas (WACOG) was used a proxy for the gas commodity cost. Since the G-30 tariff rate is priced according to tier, calculations were made to arrive at the overall average and marginal transportation rates from historical usage in 2007. The average rate is calculated from the weighted average rate at each tier for each customer; where as the marginal rate is calculated as the rate that was billed at the last volume for each customer.

C. Electricity Price Data

Both average prices (cents/kWh) and marginal prices (cents/kWh) were developed as electricity price inputs. Forecasts for the SCE industrial customer class were developed from the CEC's July 2007 report CEC-200-2007-013-SD, Appendix B: Utility-Specific Retail Price Forecast Tables at page #3 for SCE. The resulting price projections were set to CEC's projections for the industrial class. Prices were developed through 2025. These were the average electricity prices for the noncore industrial market, overall.

The marginal prices were calculated by multiplying each year's respective average price by a ratio. This ratio, 0.705, was estimated from an analysis of the SCE TOU-8 rate schedule, for non-self-generation customers, posted on their web-site in March 2006.

The same set of average and marginal prices were used for each of the noncore Commercial and Industrial markets.

D. Employment

Employment, as a measure of economic activity, is used to drive the noncore commercial and industrial demand forecast models. The employment forecast through 2013 is based on Global Insight's winter 2008 (released February 2008) and forecast starting 2014 is based on growth rates from Global Insight fall 2007 (released November 2007) long-term regional forecast. Global Insight prepares regular regional employment forecast for California and the aggregated six largest counties' Metropolitan Statistical Area (MSA) in SoCalGas' service area. (The six counties – Kern, Los Angeles, Orange, Riverside, San Bernardino, and Ventura – account for 85% of the service area's total population and employment). The historical employment data used was derived from the California Employment Development Department (EDD) for the 12 counties served by SoCalGas. The monthly employment used in the model was generally by summing the weighted employment data over the commercial and industrial NAICS codes.

E. Post-Model Adjustment

Once the EuForecaster end-use model forecast was generated, post-model adjustments were made to account for effects the model is not designed to simulate. Energy goals that were authorized by the CPUC in decision D.04-09-060 and expected load leaving for service by the City of Vernon were subtracted from the model forecast to arrive at final demand forecast for the commercial and industrial markets. Customer migration from noncore to core has come to an end and no adjustment was made in the forecasting period for future migration.

NONCORE COMMERCIAL AND INDUSTRIAL DATA TABLES

Noncore Commercial Demand Forecast (Mth)

	Commercial Average Year				Commercial Cold Year			
Date	AvgYr	DSM	Vernon	AvgYrAdj	ColdYr	DSM	Vernon	ColdYrAdj
Jan-06	2,228	0	0	2,228	2,228	0	0	2,228
Feb-06	1,971	0	0	1,971	1,971	0	0	1,971
Mar-06	2,288	0	0	2,288	2,288	0	0	2,288
Apr-06	1,935	0	0	1,935	1,935	0	0	1,935
May-06	1,703	0	0	1,703	1,703	0	0	1,703
Jun-06	1,496	0	0	1,496	1,496	0	0	1,496
Jul-06	1,491	0	0	1,491	1,491	0	0	1,491
Aug-06	1,536	0	0	1,536	1,536	0	0	1,536
Sep-06	1,656	0	0	1,656	1,656	0	0	1,656
Oct-06	1,929	0	0	1,929	1,929	0	0	1,929
Nov-06	1,784	0	0	1,784	1,784	0	0	1,784
Dec-06	2,247	0	0	2,247	2,247	0	0	2,247
Jan-07	2,286	0	0	2,286	2,286	0	0	2,286
Feb-07	1,858	0	0	1,858	1,858	0	0	1,858
Mar-07	1,833	0	0	1,833	1,833	0	0	1,833
Apr-07	1,724	0	0	1,724	1,724	0	0	1,724
May-07	1,610	0	0	1,610	1,610	0	0	1,610
Jun-07	1,443	0	0	1,443	1,443	0	0	1,443
Jul-07	1,364	0	0	1,364	1,364	0	0	1,364
Aug-07	1,451	0	0	1,451	1,451	0	0	1,451
Sep-07	1,700	0	0	1,700	1,700	0	0	1,700
Oct-07	1,596	0	0	1,596	1,596	0	0	1,596
Nov-07	1,639	0	0	1,639	1,639	0	0	1,639
Dec-07	2,095	0	0	2,095	2,095	0	0	2,095
Jan-08	2,099	2	0	2,097	2,224	2	0	2,221
Feb-08	1,832	2	0	1,830	1,932	2	0	1,929
Mar-08	1,894	2	0	1,892	1,976	2	0	1,974
Apr-08	1,692	2	0	1,690	1,742	2	0	1,740
May-08	1,604	2	0	1,602	1,626	2	0	1,623
Jun-08	1,482	2	0	1,480	1,489	2	0	1,486
Jul-08	1,504	2	0	1,501	1,504	2	0	1,502
Aug-08	1,503	2	0	1,500	1,503	2	0	1,501
Sep-08	1,460	2	0	1,457	1,461	2	0	1,459
Oct-08	1,571	2	0	1,568	1,585	2	0	1,583
Nov-08	1,758	2	0	1,756	1,822	2	0	1,819
Dec-08	2,118	2	0	2,116	2,247	2	0	2,244
Jan-09	2,111	11	4	2,097	2,236	11	4	2,222
Feb-09	1,843	11	4	1,829	1,942	11	4	1,928
Mar-09	1,905	11	4	1,891	1,988	11	4	1,973
Apr-09	1,702	11	4	1,688	1,752	11	4	1,738
May-09	1,614	11	4	1,600	1,636	11	4	1,621
Jun-09	1,492	11	4	1,477	1,498	11	4	1,484
Jul-09	1,513	11	4	1,499	1,514	11	4	1,500
Aug-09	1,512	11	4	1,498	1,513	11	4	1,499
Sep-09	1,469	11	4	1,455	1,471	11	4	1,456
Oct-09	1,580	11	4	1,566	1,595	11	4	1,581
Nov-09	1,769	11	4	1,754	1,833	11	4	1,818
Dec-09	2,130	11	4	2,116	2,259	11	4	2,245
Jan-10	2,126	19	4	2,103	2,252	19	4	2,229
Feb-10	1,856	19	4	1,833	1,956	19	4	1,933
Mar-10	1,919	19	4	1,896	2,002	19	4	1,979
Apr-10	1,714	19	4	1,691	1,765	19	4	1,742
May-10	1,625	19	4	1,602	1,647	19	4	1,624
Jun-10	1,502	19	4	1,479	1,509	19	4	1,486

Noncore Commercial Demand Forecast (Mth)

	Commercial Average Year				Commercial Cold Year			
Date	AvgYr	DSM	Vernon	AvgYrAdj	ColdYr	DSM	Vernon	ColdYrAdj
Jul-10	1,524	19	4	1,501	1,525	19	4	1,502
Aug-10	1,523	19	4	1,500	1,523	19	4	1,501
Sep-10	1,479	19	4	1,456	1,481	19	4	1,458
Oct-10	1,591	19	4	1,569	1,606	19	4	1,583
Nov-10	1,781	19	4	1,758	1,845	19	4	1,823
Dec-10	2,145	19	4	2,122	2,275	19	4	2,252
Jan-11	2,137	28	4	2,105	2,263	28	4	2,231
Feb-11	1,865	28	4	1,833	1,966	28	4	1,934
Mar-11	1,929	28	4	1,897	2,012	28	4	1,980
Apr-11	1,723	28	4	1,691	1,774	28	4	1,742
May-11	1,634	28	4	1,602	1,656	28	4	1,624
Jun-11	1,510	28	4	1,478	1,516	28	4	1,484
Jul-11	1,532	28	4	1,500	1,532	28	4	1,500
Aug-11	1,531	28	4	1,499	1,531	28	4	1,499
Sep-11	1,487	28	4	1,455	1,488	28	4	1,456
Oct-11	1,600	28	4	1,568	1,614	28	4	1,583
Nov-11	1,790	28	4	1,758	1,855	28	4	1,823
Dec-11	2,156	28	4	2,124	2,287	28	4	2,255
Jan-12	2,155	38	4	2,113	2,282	38	4	2,240
Feb-12	1,881	38	4	1,839	1,982	38	4	1,941
Mar-12	1,945	38	4	1,903	2,029	38	4	1,987
Apr-12	1,737	38	4	1,695	1,788	38	4	1,747
May-12	1,647	38	4	1,605	1,669	38	4	1,627
Jun-12	1,522	38	4	1,480	1,529	38	4	1,487
Jul-12	1,544	38	4	1,502	1,545	38	4	1,503
Aug-12	1,543	38	4	1,501	1,544	38	4	1,502
Sep-12	1,499	38	4	1,457	1,501	38	4	1,459
Oct-12	1,613	38	4	1,571	1,628	38	4	1,586
Nov-12	1,805	38	4	1,763	1,870	38	4	1,828
Dec-12	2,174	38	4	2,132	2,306	38	4	2,264
Jan-13	2,170	49	4	2,118	2,299	49	4	2,246
Feb-13	1,894	49	4	1,842	1,997	49	4	1,944
Mar-13	1,959	49	4	1,906	2,043	49	4	1,991
Apr-13	1,750	49	4	1,697	1,801	49	4	1,749
May-13	1,659	49	4	1,606	1,681	49	4	1,629
Jun-13	1,533	49	4	1,481	1,540	49	4	1,487
Jul-13	1,555	49	4	1,503	1,556	49	4	1,504
Aug-13	1,554	49	4	1,502	1,555	49	4	1,502
Sep-13	1,510	49	4	1,457	1,512	49	4	1,459
Oct-13	1,624	49	4	1,572	1,640	49	4	1,587
Nov-13	1,818	49	4	1,765	1,884	49	4	1,831
Dec-13	2,190	49	4	2,137	2,322	49	4	2,270
Jan-14	2,185	60	4	2,121	2,314	60	4	2,251
Feb-14	1,907	60	4	1,844	2,010	60	4	1,947
Mar-14	1,972	60	4	1,908	2,057	60	4	1,994
Apr-14	1,762	60	4	1,698	1,814	60	4	1,750
May-14	1,670	60	4	1,607	1,693	60	4	1,629
Jun-14	1,544	60	4	1,480	1,550	60	4	1,487
Jul-14	1,566	60	4	1,502	1,567	60	4	1,503
Aug-14	1,565	60	4	1,501	1,566	60	4	1,502
Sep-14	1,520	60	4	1,456	1,522	60	4	1,458
Oct-14	1,635	60	4	1,572	1,651	60	4	1,587
Nov-14	1,830	60	4	1,767	1,897	60	4	1,833
Dec-14	2,205	60	4	2,141	2,338	60	4	2,274

Noncore Commercial Demand Forecast (Mth)

	Commercial Average Year				Commercial Cold Year			
Date	AvgYr	DSM	Vernon	AvgYrAdj	ColdYr	DSM	Vernon	ColdYrAdj
Jan-15	2,191	71	4	2,116	2,321	71	4	2,246
Feb-15	1,912	71	4	1,838	2,016	71	4	1,941
Mar-15	1,977	71	4	1,903	2,063	71	4	1,988
Apr-15	1,766	71	4	1,692	1,818	71	4	1,744
May-15	1,675	71	4	1,600	1,697	71	4	1,623
Jun-15	1,548	71	4	1,473	1,555	71	4	1,480
Jul-15	1,570	71	4	1,496	1,571	71	4	1,496
Aug-15	1,569	71	4	1,495	1,570	71	4	1,495
Sep-15	1,524	71	4	1,450	1,526	71	4	1,451
Oct-15	1,640	71	4	1,565	1,655	71	4	1,581
Nov-15	1,835	71	4	1,761	1,902	71	4	1,827
Dec-15	2,211	71	4	2,136	2,344	71	4	2,270
Jan-16	2,195	82	4	2,110	2,325	82	4	2,239
Feb-16	1,916	82	4	1,830	2,019	82	4	1,934
Mar-16	1,981	82	4	1,896	2,067	82	4	1,981
Apr-16	1,770	82	4	1,684	1,822	82	4	1,736
May-16	1,678	82	4	1,592	1,700	82	4	1,615
Jun-16	1,551	82	4	1,465	1,557	82	4	1,472
Jul-16	1,573	82	4	1,488	1,574	82	4	1,488
Aug-16	1,572	82	4	1,487	1,573	82	4	1,487
Sep-16	1,527	82	4	1,442	1,529	82	4	1,443
Oct-16	1,643	82	4	1,557	1,658	82	4	1,573
Nov-16	1,839	82	4	1,753	1,905	82	4	1,820
Dec-16	2,215	82	4	2,129	2,349	82	4	2,263
Jan-17	2,200	93	4	2,104	2,331	93	4	2,234
Feb-17	1,921	93	4	1,824	2,024	93	4	1,928
Mar-17	1,986	93	4	1,890	2,072	93	4	1,975
Apr-17	1,774	93	4	1,678	1,826	93	4	1,730
May-17	1,682	93	4	1,586	1,705	93	4	1,608
Jun-17	1,555	93	4	1,458	1,561	93	4	1,465
Jul-17	1,577	93	4	1,481	1,578	93	4	1,481
Aug-17	1,576	93	4	1,480	1,577	93	4	1,480
Sep-17	1,531	93	4	1,434	1,533	93	4	1,436
Oct-17	1,647	93	4	1,551	1,662	93	4	1,566
Nov-17	1,843	93	4	1,747	1,910	93	4	1,814
Dec-17	2,220	93	4	2,124	2,355	93	4	2,258
Jan-18	2,206	104	4	2,098	2,336	104	4	2,229
Feb-18	1,925	104	4	1,818	2,029	104	4	1,922
Mar-18	1,991	104	4	1,883	2,076	104	4	1,969
Apr-18	1,778	104	4	1,671	1,831	104	4	1,723
May-18	1,686	104	4	1,579	1,709	104	4	1,601
Jun-18	1,558	104	4	1,451	1,565	104	4	1,458
Jul-18	1,581	104	4	1,473	1,582	104	4	1,474
Aug-18	1,580	104	4	1,472	1,580	104	4	1,473
Sep-18	1,534	104	4	1,427	1,536	104	4	1,429
Oct-18	1,651	104	4	1,544	1,666	104	4	1,559
Nov-18	1,848	104	4	1,740	1,914	104	4	1,807
Dec-18	2,225	104	4	2,118	2,360	104	4	2,253
Jan-19	2,211	115	4	2,093	2,342	115	4	2,223
Feb-19	1,930	115	4	1,812	2,034	115	4	1,916
Mar-19	1,995	115	4	1,877	2,081	115	4	1,963
Apr-19	1,782	115	4	1,664	1,835	115	4	1,717
May-19	1,690	115	4	1,572	1,713	115	4	1,595
Jun-19	1,562	115	4	1,444	1,569	115	4	1,450

Noncore Commercial Demand Forecast (Mth)

	Commercial Average Year				Commercial Cold Year			
Date	AvgYr	DSM	Vernon	AvgYrAdj	ColdYr	DSM	Vernon	ColdYrAdj
Jul-19	1,584	115	4	1,466	1,585	115	4	1,467
Aug-19	1,583	115	4	1,465	1,584	115	4	1,466
Sep-19	1,538	115	4	1,420	1,540	115	4	1,422
Oct-19	1,655	115	4	1,537	1,670	115	4	1,552
Nov-19	1,852	115	4	1,734	1,919	115	4	1,801
Dec-19	2,231	115	4	2,112	2,366	115	4	2,247
Jan-20	2,218	126	4	2,089	2,349	126	4	2,220
Feb-20	1,936	126	4	1,807	2,041	126	4	1,911
Mar-20	2,002	126	4	1,873	2,088	126	4	1,959
Apr-20	1,788	126	4	1,659	1,841	126	4	1,712
May-20	1,695	126	4	1,566	1,718	126	4	1,589
Jun-20	1,567	126	4	1,438	1,574	126	4	1,445
Jul-20	1,589	126	4	1,460	1,590	126	4	1,461
Aug-20	1,588	126	4	1,459	1,589	126	4	1,460
Sep-20	1,543	126	4	1,414	1,545	126	4	1,416
Oct-20	1,660	126	4	1,531	1,676	126	4	1,546
Nov-20	1,858	126	4	1,729	1,925	126	4	1,796
Dec-20	2,238	126	4	2,109	2,373	126	4	2,244
Jan-21	2,227	136	4	2,087	2,359	136	4	2,219
Feb-21	1,944	136	4	1,804	2,049	136	4	1,909
Mar-21	2,010	136	4	1,870	2,097	136	4	1,957
Apr-21	1,796	136	4	1,656	1,848	136	4	1,708
May-21	1,702	136	4	1,562	1,725	136	4	1,585
Jun-21	1,573	136	4	1,433	1,580	136	4	1,440
Jul-21	1,596	136	4	1,456	1,597	136	4	1,457
Aug-21	1,595	136	4	1,455	1,596	136	4	1,456
Sep-21	1,549	136	4	1,409	1,551	136	4	1,411
Oct-21	1,667	136	4	1,527	1,683	136	4	1,543
Nov-21	1,866	136	4	1,726	1,933	136	4	1,793
Dec-21	2,247	136	4	2,107	2,383	136	4	2,243
Jan-22	2,234	147	4	2,083	2,366	147	4	2,215
Feb-22	1,950	147	4	1,799	2,055	147	4	1,904
Mar-22	2,016	147	4	1,865	2,103	147	4	1,952
Apr-22	1,801	147	4	1,650	1,854	147	4	1,703
May-22	1,707	147	4	1,556	1,730	147	4	1,579
Jun-22	1,578	147	4	1,427	1,585	147	4	1,434
Jul-22	1,601	147	4	1,450	1,602	147	4	1,451
Aug-22	1,600	147	4	1,449	1,600	147	4	1,449
Sep-22	1,554	147	4	1,403	1,556	147	4	1,405
Oct-22	1,672	147	4	1,521	1,687	147	4	1,536
Nov-22	1,871	147	4	1,720	1,939	147	4	1,788
Dec-22	2,254	147	4	2,103	2,390	147	4	2,239
Jan-23	2,240	156	4	2,081	2,373	156	4	2,213
Feb-23	1,955	156	4	1,796	2,061	156	4	1,902
Mar-23	2,022	156	4	1,863	2,109	156	4	1,950
Apr-23	1,806	156	4	1,647	1,859	156	4	1,700
May-23	1,712	156	4	1,553	1,736	156	4	1,576
Jun-23	1,583	156	4	1,423	1,590	156	4	1,430
Jul-23	1,606	156	4	1,446	1,606	156	4	1,447
Aug-23	1,605	156	4	1,445	1,605	156	4	1,446
Sep-23	1,558	156	4	1,399	1,560	156	4	1,401
Oct-23	1,677	156	4	1,517	1,692	156	4	1,533
Nov-23	1,877	156	4	1,717	1,945	156	4	1,785
Dec-23	2,260	156	4	2,101	2,397	156	4	2,238

Noncore Commercial Demand Forecast (Mth)

	Commercial Average Year				Commercial Cold Year			
Date	AvgYr	DSM	Vernon	AvgYrAdj	ColdYr	DSM	Vernon	ColdYrAdj
Jan-24	2,247	159	4	2,084	2,379	159	4	2,217
Feb-24	1,961	159	4	1,799	2,067	159	4	1,905
Mar-24	2,028	159	4	1,865	2,115	159	4	1,953
Apr-24	1,811	159	4	1,649	1,865	159	4	1,703
May-24	1,717	159	4	1,555	1,740	159	4	1,578
Jun-24	1,587	159	4	1,425	1,594	159	4	1,432
Jul-24	1,610	159	4	1,448	1,611	159	4	1,449
Aug-24	1,609	159	4	1,447	1,610	159	4	1,448
Sep-24	1,563	159	4	1,401	1,565	159	4	1,403
Oct-24	1,681	159	4	1,519	1,697	159	4	1,535
Nov-24	1,882	159	4	1,720	1,950	159	4	1,788
Dec-24	2,267	159	4	2,105	2,404	159	4	2,242
Jan-25	2,252	161	4	2,088	2,386	161	4	2,221
Feb-25	1,966	161	4	1,802	2,072	161	4	1,908
Mar-25	2,033	161	4	1,869	2,121	161	4	1,956
Apr-25	1,816	161	4	1,652	1,869	161	4	1,705
May-25	1,722	161	4	1,557	1,745	161	4	1,581
Jun-25	1,591	161	4	1,427	1,598	161	4	1,434
Jul-25	1,614	161	4	1,450	1,615	161	4	1,451
Aug-25	1,613	161	4	1,449	1,614	161	4	1,450
Sep-25	1,567	161	4	1,403	1,569	161	4	1,404
Oct-25	1,686	161	4	1,522	1,702	161	4	1,537
Nov-25	1,887	161	4	1,722	1,955	161	4	1,791
Dec-25	2,273	161	4	2,108	2,410	161	4	2,246
Jan-26	2,261	163	4	2,095	2,394	163	4	2,228
Feb-26	1,973	163	4	1,807	2,080	163	4	1,914
Mar-26	2,040	163	4	1,874	2,128	163	4	1,962
Apr-26	1,823	163	4	1,656	1,876	163	4	1,710
May-26	1,728	163	4	1,562	1,751	163	4	1,585
Jun-26	1,597	163	4	1,431	1,604	163	4	1,438
Jul-26	1,620	163	4	1,454	1,621	163	4	1,455
Aug-26	1,619	163	4	1,453	1,620	163	4	1,454
Sep-26	1,573	163	4	1,407	1,575	163	4	1,408
Oct-26	1,692	163	4	1,526	1,708	163	4	1,542
Nov-26	1,894	163	4	1,728	1,962	163	4	1,796
Dec-26	2,281	163	4	2,115	2,419	163	4	2,253
Jan-27	2,268	164	4	2,101	2,403	164	4	2,235
Feb-27	1,980	164	4	1,813	2,087	164	4	1,920
Mar-27	2,047	164	4	1,880	2,136	164	4	1,968
Apr-27	1,829	164	4	1,662	1,883	164	4	1,716
May-27	1,734	164	4	1,567	1,757	164	4	1,590
Jun-27	1,603	164	4	1,435	1,610	164	4	1,442
Jul-27	1,626	164	4	1,458	1,627	164	4	1,459
Aug-27	1,625	164	4	1,457	1,625	164	4	1,458
Sep-27	1,578	164	4	1,411	1,580	164	4	1,413
Oct-27	1,698	164	4	1,531	1,714	164	4	1,547
Nov-27	1,900	164	4	1,733	1,969	164	4	1,802
Dec-27	2,289	164	4	2,122	2,427	164	4	2,260
Jan-28	2,270	164	4	2,103	2,404	164	4	2,237
Feb-28	1,982	164	4	1,814	2,089	164	4	1,921
Mar-28	2,049	164	4	1,882	2,137	164	4	1,970
Apr-28	1,830	164	4	1,663	1,884	164	4	1,717
May-28	1,735	164	4	1,568	1,759	164	4	1,591
Jun-28	1,604	164	4	1,437	1,611	164	4	1,444

Noncore Commercial Demand Forecast (Mth)

	Commercial Average Year				Commercial Cold Year			
Date	AvgYr	DSM	Vernon	AvgYrAdj	ColdYr	DSM	Vernon	ColdYrAdj
Jul-28	1,627	164	4	1,460	1,628	164	4	1,461
Aug-28	1,626	164	4	1,459	1,627	164	4	1,459
Sep-28	1,579	164	4	1,412	1,581	164	4	1,414
Oct-28	1,699	164	4	1,532	1,715	164	4	1,548
Nov-28	1,902	164	4	1,734	1,970	164	4	1,803
Dec-28	2,291	164	4	2,123	2,429	164	4	2,262
Jan-29	2,280	164	4	2,113	2,415	164	4	2,248
Feb-29	1,991	164	4	1,823	2,098	164	4	1,931
Mar-29	2,058	164	4	1,891	2,147	164	4	1,980
Apr-29	1,839	164	4	1,671	1,893	164	4	1,726
May-29	1,743	164	4	1,576	1,767	164	4	1,600
Jun-29	1,611	164	4	1,444	1,618	164	4	1,451
Jul-29	1,634	164	4	1,467	1,635	164	4	1,468
Aug-29	1,633	164	4	1,466	1,634	164	4	1,467
Sep-29	1,586	164	4	1,419	1,588	164	4	1,421
Oct-29	1,707	164	4	1,540	1,723	164	4	1,556
Nov-29	1,910	164	4	1,743	1,979	164	4	1,812
Dec-29	2,301	164	4	2,134	2,440	164	4	2,273
Jan-30	2,286	164	4	2,119	2,421	164	4	2,254
Feb-30	1,995	164	4	1,828	2,103	164	4	1,936
Mar-30	2,063	164	4	1,896	2,152	164	4	1,985
Apr-30	1,843	164	4	1,676	1,897	164	4	1,730
May-30	1,747	164	4	1,580	1,771	164	4	1,604
Jun-30	1,615	164	4	1,448	1,622	164	4	1,455
Jul-30	1,638	164	4	1,471	1,639	164	4	1,472
Aug-30	1,637	164	4	1,470	1,638	164	4	1,471
Sep-30	1,590	164	4	1,423	1,592	164	4	1,425
Oct-30	1,711	164	4	1,544	1,727	164	4	1,560
Nov-30	1,915	164	4	1,748	1,984	164	4	1,817
Dec-30	2,307	164	4	2,139	2,446	164	4	2,279

Noncore Commercial Demand Forecast
Forecast by Sectors from End-Use Model (MDth)

Year	Agriculture	College	Govern-ment	Health	Laundry	Lodging	Misc	Office	Restaurant	Retail	TCU	Warehouse	Grand Total
2007	2,166	1,971	3,056	6,669	1,067	1,119	50	844	37	131	3,575	19	20,705
2008	2,151	1,950	3,023	6,612	1,052	1,112	49	841	36	130	3,542	19	20,518
2009	2,168	1,958	3,030	6,650	1,050	1,119	49	853	37	131	3,577	19	20,640
2010	2,191	1,968	3,050	6,683	1,052	1,128	49	864	37	131	3,613	20	20,786
2011	2,208	1,976	3,049	6,713	1,054	1,135	49	871	37	132	3,648	20	20,892
2012	2,232	1,989	3,066	6,771	1,059	1,143	49	878	37	132	3,689	20	21,065
2013	2,255	2,000	3,079	6,822	1,062	1,150	50	884	37	132	3,728	20	21,218
2014	2,277	2,010	3,091	6,868	1,065	1,155	50	892	37	133	3,764	20	21,361
2015	2,289	2,011	3,090	6,888	1,065	1,156	50	895	37	132	3,786	20	21,419
2016	2,299	2,011	3,087	6,897	1,064	1,156	49	897	37	132	3,808	20	21,458
2017	2,310	2,012	3,086	6,914	1,064	1,156	49	899	37	132	3,833	20	21,512
2018	2,321	2,012	3,084	6,936	1,063	1,157	49	902	37	131	3,848	20	21,562
2019	2,332	2,012	3,082	6,964	1,063	1,159	49	907	37	131	3,856	20	21,613
2020	2,345	2,012	3,088	6,993	1,064	1,163	49	911	37	131	3,870	20	21,683
2021	2,360	2,013	3,080	7,035	1,067	1,167	49	916	37	132	3,896	20	21,773
2022	2,372	2,011	3,075	7,062	1,069	1,170	49	921	37	132	3,918	20	21,836
2023	2,385	2,009	3,070	7,088	1,071	1,173	49	926	37	132	3,941	20	21,901
2024	2,398	2,007	3,066	7,112	1,072	1,176	49	931	37	132	3,962	20	21,962
2025	2,411	2,005	3,062	7,132	1,073	1,178	49	937	37	132	3,983	20	22,019
2026	2,426	2,005	3,060	7,156	1,076	1,183	50	943	38	132	4,011	21	22,100
2027	2,441	2,004	3,057	7,177	1,079	1,187	50	948	38	132	4,043	21	22,176
2028	2,450	1,996	3,045	7,179	1,079	1,187	50	950	38	132	4,067	21	22,193
2029	2,468	1,997	3,046	7,209	1,083	1,194	50	956	38	132	4,101	21	22,294
2030	2,482	1,994	3,047	7,223	1,084	1,197	50	961	38	132	4,121	21	22,348

Noncore Commercial & Industrial Demand Forecast
Weather Sensitivity Factor (MTherm)

Date	Actual G30	Actual G30	Calendar HDD	
Jan-06	2,228	5,293	271	
Feb-06	1,971	4,953	203	
Mar-06	2,288	5,646	341	
Apr-06	1,935	5,388	161	
May-06	1,703	5,523	32	
Jun-06	1,496	5,216	0	
Jul-06	1,491	5,367	0	
Aug-06	1,536	6,110	0	
Sep-06	1,656	5,579	0	
Oct-06	1,929	5,274	39	
Nov-06	1,784	4,819	103	
Dec-06	2,247	4,532	272	
Jan-07	2,286	5,079	345	
Feb-07	1,858	4,652	213	
Mar-07	1,833	5,212	131	
Apr-07	1,724	5,029	122	
May-07	1,610	5,149	52	
Jun-07	1,443	4,831	15	
Jul-07	1,364	5,300	0	
Aug-07	1,451	5,702	0	
Sep-07	1,700	5,365	11	
Oct-07	1,596	5,166	40	
Nov-07	1,639	4,461	124	
Dec-07	2,095	4,137	351	
2006	22,264	63,701	1,422	85,964
2007	20,600	60,082	1,404	80,683
				6.5%

Commercial - Significant and Correct Sign
SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.910571
R Square	0.829139
Adjusted R Square	0.821372
Standard Error	120.0512
Observations	24

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1538648	1538648	106.7594	6.64E-10
Residual	22	317070.6	14412.3		
Total	23	1855719			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	1539.432	34.20516	45.00584	3.72E-23	1468.495	1610.369	1468.495	1610.369
Calendar HDD	2.094023	0.202665	10.33244	6.64E-10	1.673722	2.514324	1.673722	2.514324

Industrial - Insignificant and Incorrect Sign
SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.466601
R Square	0.217716
Adjusted R Square	0.182158
Standard Error	396.11
Observations	24

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	960685.6	960685.6	6.122795	0.021535
Residual	22	3451868	156903.1		
Total	23	4412554			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	5352.443	112.8602	47.42544	1.19E-23	5118.385	5586.501	5118.385	5586.501
Calendar HDD	-1.654636	0.668694	-2.474428	0.021535	-3.041422	-0.267849	-3.041422	-0.267849

Com_NCore_07_Source_Data.xls GasPriceForecast

Year	Com Price Deflator	Ind Price Deflator	C Non Core Average Price	C Non Core Marginal Price	I Non Core Average Price	I Non Core Marginal Price
2007	100.00	100.00	0.7432	0.7161	0.7219	0.6995
2008	102.16	102.16	0.9606	0.9331	0.9389	0.9160
2009	103.95	103.95	0.9520	0.9339	0.9390	0.9238
2010	105.84	105.84	0.9315	0.9130	0.9181	0.9026
2011	107.94	107.94	0.9309	0.9119	0.9172	0.9013
2012	110.22	110.22	0.8867	0.8673	0.8727	0.8564
2013	112.38	112.38	0.8502	0.8303	0.8358	0.8192
2014	114.59	114.59	0.8133	0.7929	0.7986	0.7815
2015	116.82	116.82	0.8482	0.8273	0.8331	0.8157
2016	119.03	119.03	0.8967	0.8753	0.8812	0.8633
2017	121.24	121.24	0.9402	0.9183	0.9244	0.9060
2018	123.49	123.49	0.9784	0.9560	0.9622	0.9435
2019	125.76	125.76	1.0104	0.9874	0.9938	0.9746
2020	128.18	128.18	1.0394	1.0159	1.0225	1.0028
2021	130.68	130.68	1.0456	1.0215	1.0282	1.0081
2022	133.17	133.17	1.0885	1.0639	1.0707	1.0501
2023	135.71	135.71	1.1322	1.1070	1.1140	1.0930
2024	138.30	138.30	1.1770	1.1512	1.1584	1.1368
2025	140.97	140.97	1.2207	1.1943	1.2016	1.1796
2026	143.71	143.71	1.2433	1.2163	1.2238	1.2012
2027	146.45	146.45	1.2795	1.2519	1.2596	1.2365
2028	149.20	149.20	1.3812	1.3530	1.3608	1.3372
2029	151.97	151.97	1.3848	1.3559	1.3639	1.3398
2030	154.80	154.80	1.4405	1.4109	1.4191	1.3944

Gas Transportation Forecast from Rate Design (Nominal Cents per Therm)

Year	PPP	FAR	Co Use- Transm	Dcharge	D1	D2	D3	D4	Tcharge	T1	T2	CPI	WACOG $/MMBtu
2006	3.22			$350	16.75	11.48	8.12	5.71	$700	13.54	5.32	0.97	6.25
2007	2.73			$350	16.56	11.15	7.68	5.21	$700	13.28	4.81	1.00	6.30
2008	2.81			$350	16.83	11.32	7.79	5.27	$700	13.67	4.91	1.02	8.46
2009	3.17	0.530	0.231	$375	14.62	10.80	8.35	6.61	$750	6.55	6.55	1.04	8.46
2010	3.24	0.541	0.223	$375	14.95	11.03	8.52	6.73	$750	6.68	6.68	1.06	8.24
2011	3.31	0.552	0.216	$375	15.27	11.26	8.70	6.86	$750	6.82	6.82	1.08	8.21
2012	3.26			$375	15.46	11.35	8.72	6.84	$750	6.80	6.80	1.10	7.76
2013	3.27			$375	15.71	11.51	8.82	6.89	$750	6.86	6.86	1.12	7.38
2014	3.23			$375	15.93	11.62	8.86	6.89	$750	6.86	6.86	1.15	7.00
2015	3.34			$375	16.35	11.94	9.11	7.10	$750	7.07	7.07	1.17	7.31
2016	3.52			$375	16.87	12.35	9.45	7.39	$750	7.37	7.37	1.19	7.76
2017	3.64			$375	17.33	12.70	9.74	7.62	$750	7.62	7.62	1.21	8.16
2018	3.76			$375	17.79	13.05	10.01	7.85	$750	7.86	7.86	1.23	8.51
2019	3.93			$375	18.28	13.43	10.33	8.11	$750	8.14	8.14	1.26	8.79
2020	4.03			$375	18.73	13.77	10.59	8.32	$750	8.36	8.36	1.28	9.05
2021	4.09			$375	19.13	14.04	10.79	8.47	$750	8.51	8.51	1.31	9.08
2022	4.28			$375	19.68	14.48	11.16	8.78	$750	8.84	8.84	1.33	9.47
2023	4.41			$375	20.20	14.88	11.47	9.04	$750	9.12	9.12	1.36	9.86
2024	4.56			$375	20.73	15.28	11.80	9.31	$750	9.41	9.41	1.38	10.27
2025	4.70			$375	21.27	15.70	12.13	9.58	$750	9.70	9.70	1.41	10.67
2026	3.26			$375	20.24	14.53	10.89	8.28	$750	8.42	8.42	1.44	11.01
2027	3.35			$375	20.74	14.90	11.17	8.50	$750	8.66	8.66	1.46	11.34
2028	3.53			$375	21.36	15.38	11.56	8.83	$750	9.02	9.02	1.49	12.31
2029	3.59			$375	21.86	15.75	11.84	9.05	$750	9.26	9.26	1.52	12.31
2030	3.77			$375	22.51	16.26	12.26	9.40	$750	9.64	9.64	1.55	12.81

2007 G30 C&I Weight of Usage by Tier

	Service	Tier	Both	Com	Ind
Average	D	1	D1	28.34%	16.25%
Average	D	2	D2	40.67%	29.34%
Average	D	3	D3	15.42%	17.28%
Average	D	4	D4	15.57%	37.13%
Average	T	1	T1	91.87%	47.71%
Average	T	2	T2	8.13%	52.29%
Marginal	D	1	D1	3.01%	1.05%
Marginal	D	2	D2	39.91%	19.84%
Marginal	D	3	D3	22.87%	18.38%
Marginal	D	4	D4	34.22%	60.74%
Marginal	T	1	T1	66.32%	24.38%
Marginal	T	2	T2	33.68%	75.62%

		2007 Volume	Percent
All		806,825,626	100.00%
All	D	761,420,922	94.37%
All	T	45,404,704	5.63%
Com		222,683,362	27.60%
Ind		584,142,264	72.40%
Com	D	208,473,760	93.62%
Com	T	14,209,602	6.38%
Ind	D	552,947,162	94.66%
Ind	T	31,195,102	5.12%

Com_NCore_07_Source_Data.xls - ElecPriceForecast

Year	C Non Core Average Price	C Non Core Marginal Price	I Non Core Average Price	I Non Core Marginal Price
2007	10.88	7.67	10.88	7.67
2008	11.50	8.10	11.50	8.10
2009	11.91	8.40	11.91	8.40
2010	11.69	8.24	11.69	8.24
2011	11.69	8.24	11.69	8.24
2012	11.92	8.40	11.92	8.40
2013	12.03	8.48	12.03	8.48
2014	12.03	8.48	12.03	8.48
2015	12.15	8.56	12.15	8.56
2016	12.14	8.56	12.14	8.56
2017	12.13	8.55	12.13	8.55
2018	12.10	8.53	12.10	8.53
2019	12.07	8.51	12.07	8.51
2020	12.05	8.49	12.05	8.49
2021	12.03	8.48	12.03	8.48
2022	12.00	8.46	12.00	8.46
2023	11.98	8.44	11.98	8.44
2024	11.95	8.43	11.95	8.43
2025	11.93	8.41	11.93	8.41
2026	12.18	8.58	12.18	8.58
2027	12.42	8.76	12.42	8.76
2028	12.67	8.93	12.67	8.93
2029	12.93	9.11	12.93	9.11
2030	13.19	9.30	13.19	9.30

Com_NCore_07_Source_Data.xls - AltFuelPriceForecast

Year	C Non Core Average Price	C Non Core Marginal Price	I Non Core Average Price	I Non Core Marginal Price
2007	1.4171	1.4171	1.4171	1.4171
2008	1.7976	1.7976	1.7976	1.7976
2009	1.7119	1.7119	1.7119	1.7119
2010	1.6615	1.6615	1.6615	1.6615
2011	1.6295	1.6295	1.6295	1.6295
2012	1.5910	1.5910	1.5910	1.5910
2013	1.5581	1.5581	1.5581	1.5581
2014	1.5266	1.5266	1.5266	1.5266
2015	1.5273	1.5273	1.5273	1.5273
2016	1.5341	1.5341	1.5341	1.5341
2017	1.5543	1.5543	1.5543	1.5543
2018	1.5857	1.5857	1.5857	1.5857
2019	1.6155	1.6155	1.6155	1.6155
2020	1.6418	1.6418	1.6418	1.6418
2021	1.6574	1.6574	1.6574	1.6574
2022	1.6927	1.6927	1.6927	1.6927
2023	1.7346	1.7346	1.7346	1.7346
2024	1.7738	1.7738	1.7738	1.7738
2025	1.8167	1.8167	1.8167	1.8167
2026	1.8555	1.8555	1.8555	1.8555
2027	1.8519	1.8519	1.8519	1.8519
2028	1.8954	1.8954	1.8954	1.8954
2029	1.9454	1.9454	1.9454	1.9454
2030	1.9856	1.9856	1.9856	1.9856

Com_NCore_07_Source_Data.xls - CGR_Employment_Data

YEAR	Office	Restaurant	Retail	Laundry	Warehouse	School	College	Health	Lodging	Misc	Governmen	TCU	Constructio	Agriculture	Total
2007	1.6646	0.5897	1.0142	0.0841	0.4535	0.6222	0.2074	0.7374	0.0976	0.2182	0.6240	0.5680	0.4828	0.2302	7.5938
2008	1.7056	0.5980	1.0285	0.0838	0.4603	0.6267	0.2089	0.7454	0.0991	0.2175	0.6280	0.5727	0.4689	0.2332	7.6765
2009	1.7630	0.6040	1.0389	0.0834	0.4657	0.6327	0.2109	0.7548	0.1006	0.2163	0.6321	0.5852	0.4608	0.2369	7.7853
2010	1.8139	0.6079	1.0455	0.0833	0.4704	0.6389	0.2130	0.7611	0.1021	0.2161	0.6405	0.5961	0.4630	0.2413	7.8931
2011	1.8473	0.6111	1.0510	0.0836	0.4744	0.6444	0.2148	0.7681	0.1034	0.2169	0.6407	0.6083	0.4647	0.2451	7.9737
2012	1.8697	0.6134	1.0549	0.0838	0.4766	0.6503	0.2168	0.7780	0.1044	0.2173	0.6452	0.6194	0.4714	0.2490	8.0501
2013	1.8920	0.6152	1.0580	0.0838	0.4783	0.6555	0.2185	0.7871	0.1052	0.2173	0.6491	0.6302	0.4805	0.2531	8.1237
2014	1.9182	0.6164	1.0602	0.0838	0.4806	0.6601	0.2200	0.7950	0.1058	0.2173	0.6526	0.6402	0.4902	0.2569	8.1974
2015	1.9423	0.6172	1.0615	0.0839	0.4825	0.6641	0.2214	0.8031	0.1064	0.2176	0.6555	0.6500	0.5006	0.2605	8.2667
2016	1.9643	0.6177	1.0623	0.0841	0.4851	0.6680	0.2227	0.8097	0.1070	0.2183	0.6584	0.6611	0.5112	0.2639	8.3338
2017	1.9858	0.6175	1.0620	0.0844	0.4881	0.6724	0.2241	0.8174	0.1075	0.2189	0.6616	0.6727	0.5217	0.2673	8.4014
2018	2.0096	0.6180	1.0629	0.0845	0.4925	0.6757	0.2252	0.8260	0.1081	0.2192	0.6639	0.6802	0.5312	0.2707	8.4677
2019	2.0369	0.6193	1.0651	0.0846	0.4974	0.6780	0.2260	0.8353	0.1089	0.2196	0.6657	0.6850	0.5389	0.2738	8.5344
2020	2.0649	0.6214	1.0687	0.0849	0.5016	0.6802	0.2267	0.8445	0.1099	0.2203	0.6706	0.6912	0.5462	0.2772	8.6082
2021	2.0899	0.6239	1.0730	0.0854	0.5056	0.6815	0.2272	0.8548	0.1108	0.2214	0.6677	0.7004	0.5533	0.2805	8.6753
2022	2.1187	0.6266	1.0777	0.0859	0.5105	0.6828	0.2276	0.8645	0.1117	0.2227	0.6686	0.7105	0.5605	0.2841	8.7524
2023	2.1498	0.6296	1.0829	0.0864	0.5151	0.6842	0.2281	0.8741	0.1127	0.2241	0.6695	0.7208	0.5680	0.2879	8.8332
2024	2.1834	0.6325	1.0879	0.0869	0.5202	0.6855	0.2285	0.8830	0.1136	0.2254	0.6703	0.7305	0.5757	0.2916	8.9149
2025	2.2168	0.6351	1.0923	0.0873	0.5255	0.6869	0.2290	0.8906	0.1145	0.2264	0.6713	0.7399	0.5839	0.2953	8.9947
2026	2.2499	0.6379	1.0971	0.0878	0.5291	0.6881	0.2294	0.8976	0.1155	0.2277	0.6720	0.7506	0.5941	0.2991	9.0758
2027	2.2804	0.6413	1.1029	0.0884	0.5321	0.6892	0.2297	0.9048	0.1165	0.2292	0.6727	0.7633	0.6070	0.3031	9.1605
2028	2.3070	0.6451	1.1094	0.0889	0.5351	0.6898	0.2299	0.9120	0.1176	0.2307	0.6730	0.7773	0.6192	0.3070	9.2420
2029	2.3348	0.6492	1.1165	0.0895	0.5389	0.6903	0.2301	0.9189	0.1187	0.2321	0.6733	0.7887	0.6312	0.3110	9.3230
2030	2.3670	0.6526	1.1225	0.0899	0.5425	0.6906	0.2302	0.9254	0.1198	0.2332	0.6769	0.7980	0.6434	0.3150	9.4070

Com_NCore_07_Source_Data.xls Econometric_Forecast

Year	Office	Restaurant	Retail	Laundry	Warehouse	School	College	Health	Lodging	Misc	Government	TCU	Construction	Agriculture	ALL_G10Com
2007	8437125	366155	1312874	10669374	194195	0	19711441	66685080	11191866	501383	30564222	35753175	0	21659785	207046676
2008	8644912	371345	1331480	10634410	197113	0	19851710	67403874	11359101	499739	30759706	36052462	0	21937921	209299717
2009	8935649	375079	1344859	10579524	199408	0	20043166	68261129	11530342	497157	30964123	36837375	0	22288243	212266709
2010	9193908	377468	1353423	10567564	201437	0	20238727	68826601	11706428	496593	31374764	37523800	0	22704304	215205787
2011	9362962	379445	1360507	10606922	203131	0	20412925	69462218	11858745	498444	31385628	38291356	0	23060100	217405516
2012	9476536	380877	1365642	10626722	204093	0	20599413	70359034	11974904	499374	31604201	38988536	0	23428370	219486929
2013	9589757	381991	1369635	10627414	204823	0	20763741	71176115	12061347	499407	31795856	39669513	0	23811887	221492795
2014	9722296	382775	1372446	10626400	205828	0	20909778	71896791	12131873	499358	31966162	40299484	0	24174185	223502205
2015	9844887	383248	1374144	10643429	206633	0	21037628	72622827	12198225	500159	32110110	40918697	0	24509495	225392165
2016	9956400	383557	1375249	10675136	207717	0	21162395	73220593	12264918	501649	32248728	41616781	0	24826274	227223732
2017	10064978	383442	1374835	10704894	209033	0	21299755	73920743	12326459	503049	32405415	42344507	0	25151138	229065705
2018	10186011	383744	1375922	10717865	210893	0	21404949	74700133	12395305	503658	32521980	42816568	0	25466023	230873503
2019	10324093	384554	1378830	10738327	212983	0	21476487	75533120	12487819	504619	32608502	43119694	0	25757206	232691312
2020	10465964	385845	1383455	10773765	214791	0	21547458	76366154	12597899	506284	32848181	43508421	0	26078745	234704593
2021	10592611	387398	1389025	10829732	216494	0	21587084	77304947	12703104	508914	32704853	44090456	0	26394920	236534038
2022	10738870	389111	1395170	10891602	218605	0	21629630	78182043	12811985	511821	32748037	44722161	0	26731473	238636759
2023	10896370	390974	1401849	10961470	220581	0	21673425	79049542	12923203	515105	32791785	45374421	0	27083142	240837410
2024	11066746	392772	1408296	11022275	222744	0	21714945	79848964	13027830	517963	32832790	45984936	0	27431474	243065872
2025	11235895	394363	1413998	11072934	225032	0	21760193	80537423	13132333	520343	32880130	46576385	0	27778897	245240993
2026	11403902	396095	1420210	11136798	226555	0	21798603	81171565	13243083	523344	32918300	47245876	0	28138235	247454519
2027	11558207	398206	1427780	11210507	227840	0	21831341	81823627	13361720	526807	32950270	48048401	0	28513058	249762202
2028	11693133	400555	1436203	11284195	229140	0	21851069	82472613	13484327	530270	32966476	48926902	0	28886780	251985611
2029	11834188	403102	1445335	11350207	230764	0	21865809	83100163	13616634	533373	32977729	49644257	0	29257343	254193724
2030	11997076	405269	1453105	11406667	232296	0	21877974	83681458	13737214	536025	33157618	50230807	0	29635202	256484738

Com_NCore_07_Source_Data.xls - saturations

zname	bname	nname	SAT	SOURCE
Commercial	Agriculture	Drying	1.0000	Assumed
Commercial	Agriculture	Engine	0.5000	Assumed
Commercial	Agriculture	Other	1.0000	DEFAULT
Commercial	Agriculture	Space_Heat	0.7200	CI_1996_STUDY
Commercial	Agriculture	Water_Heat	0.6900	CI_1996_STUDY
Commercial	College	AC_Compressor	0.8850	CBECS
Commercial	College	Cook_top	0.1470	CBECS
Commercial	College	Fryer	0.1470	CBECS
Commercial	College	Griddle	0.1470	CBECS
Commercial	College	Other	1.0000	DEFAULT
Commercial	College	Other_Cooking	0.1470	CBECS
Commercial	College	Space_Heat	0.7630	SDGE_EUI_STUDY
Commercial	College	Water_Heat	0.9550	SDGE_EUI_STUDY
Commercial	Construction	Other	1.0000	DEFAULT
Commercial	Construction	Space_Heat	0.7200	CI_1996_STUDY
Commercial	Construction	Water_Heat	0.6900	CI_1996_STUDY
Commercial	Government	AC_Compressor	0.8880	CBECS
Commercial	Government	Cook_top	0.1960	CBECS
Commercial	Government	Fryer	0.1960	CBECS
Commercial	Government	Griddle	0.1960	CBECS
Commercial	Government	Other	1.0000	DEFAULT
Commercial	Government	Other_Cooking	0.1960	CBECS
Commercial	Government	Space_Heat	0.8720	SDGE_EUI_STUDY
Commercial	Government	Water_Heat	0.7000	CI_1996_STUDY
Commercial	Grocery	AC_Compressor	0.8560	CBECS
Commercial	Grocery	Cook_top	0.2450	CBECS
Commercial	Grocery	Fryer	0.2450	CBECS
Commercial	Grocery	Griddle	0.2450	CBECS
Commercial	Grocery	Other	1.0000	DEFAULT
Commercial	Grocery	Other_Cooking	0.2450	CBECS
Commercial	Grocery	Space_Heat	0.6470	SDGE_EUI_STUDY
Commercial	Grocery	Water_Heat	0.9300	CI_1996_STUDY
Commercial	Health	AC_Compressor	0.7920	CBECS
Commercial	Health	Cook_top	0.1020	CBECS
Commercial	Health	Drying	0.8200	CI_1996_STUDY
Commercial	Health	Fryer	0.1020	CBECS
Commercial	Health	Griddle	0.1020	CBECS
Commercial	Health	Other	1.0000	DEFAULT
Commercial	Health	Other_Cooking	0.1020	CBECS
Commercial	Health	Space_Heat	0.9360	SDGE_EUI_STUDY
Commercial	Health	Water_Heat	1.0000	CI_1996_STUDY
Commercial	Laundry	Drying	1.0000	CI_1996_STUDY
Commercial	Laundry	Other	1.0000	CI_1996_STUDY
Commercial	Laundry	Space_Heat	0.7200	CI_1996_STUDY
Commercial	Laundry	Water_Heat	1.0000	CI_1996_STUDY
Commercial	Lodging	AC_Compressor	0.7950	CBECS
Commercial	Lodging	Cook_top	0.0840	CBECS
Commercial	Lodging	Drying	0.8200	CI_1996_STUDY

Com_NCore_07_Source_Data.xls - saturations

zname	bname	nname	SAT	SOURCE
Commercial	Lodging	Fryer	0.0840	CBECS
Commercial	Lodging	Griddle	0.0840	CBECS
Commercial	Lodging	Other	1.0000	CI_1996_STUDY
Commercial	Lodging	Other_Cooking	0.0840	CBECS
Commercial	Lodging	Space_Heat	0.8950	SDGE_EUI_STUDY
Commercial	Lodging	Water_Heat	1.0000	CI_1996_STUDY
Commercial	Misc	AC_Compressor	0.7310	CBECS
Commercial	Misc	Cook_top	0.0210	CBECS
Commercial	Misc	Fryer	0.0210	CBECS
Commercial	Misc	Griddle	0.0210	CBECS
Commercial	Misc	Other	1.0000	CI_1996_STUDY
Commercial	Misc	Other_Cooking	0.0210	CBECS
Commercial	Misc	Space_Heat	0.6950	SDGE_EUI_STUDY
Commercial	Misc	Water_Heat	0.6900	CI_1996_STUDY
Commercial	Office	AC_Compressor	0.9310	CBECS
Commercial	Office	Cooking	0.0820	CBECS
Commercial	Office	Other	1.0000	CI_1996_STUDY
Commercial	Office	Space_Heat	0.8720	SDGE_EUI_STUDY
Commercial	Office	Water_Heat	0.7000	CI_1996_STUDY
Commercial	Restaurant	AC_Compressor	0.8710	CBECS
Commercial	Restaurant	Cook_top	0.7500	SCG_COOKING_STUDY
Commercial	Restaurant	Fryer	0.7290	SCG_COOKING_STUDY
Commercial	Restaurant	Griddle	0.5740	SCG_COOKING_STUDY
Commercial	Restaurant	Other	1.0000	CI_1996_STUDY
Commercial	Restaurant	Other_Cooking	0.9000	CI_1996_STUDY
Commercial	Restaurant	Space_Heat	0.8180	SDGE_EUI_STUDY
Commercial	Restaurant	Water_Heat	0.9600	CI_1996_STUDY
Commercial	Retail	Cooking	0.2450	CBECS
Commercial	Retail	Other	1.0000	CI_1996_STUDY
Commercial	Retail	Space_Heat	0.7710	SDGE_EUI_STUDY
Commercial	Retail	Water_Heat	0.6200	CI_1996_STUDY
Commercial	School	AC_Compressor	0.8850	CBECS
Commercial	School	Cook_top	0.1470	CBECS
Commercial	School	Fryer	0.1470	CBECS
Commercial	School	Griddle	0.1470	CBECS
Commercial	School	Other	1.0000	CI_1996_STUDY
Commercial	School	Other_Cooking	0.1470	CBECS
Commercial	School	Space_Heat	0.9670	SDGE_EUI_STUDY
Commercial	School	Water_Heat	0.9000	CI_1996_STUDY
Commercial	TCU	Engine	0.5000	Assumed
Commercial	TCU	Other	1.0000	CI_1996_STUDY
Commercial	TCU	Space_Heat	0.7200	CI_1996_STUDY
Commercial	TCU	Water_Heat	0.6900	CI_1996_STUDY
Commercial	Warehouse	Engine	0.2500	Assumed
Commercial	Warehouse	Other	1.0000	DEFAULT
Commercial	Warehouse	Space_Heat	0.2310	SDGE_EUI_STUDY
Commercial	Warehouse	Water_Heat	0.8800	SDGE_EUI_STUDY

Com_NCore_07_Source_Data.xls - ComNCoreAvgEQAge

Sector	Space Heater	Water Heater	Cooktop	Griddle	Fryer	Other Cooking Equipment	Kitchen Equipment	AC	Dryer	Engine	Other
Office	.	.	.	.	.	.	.	.	.	.	1966
Restaurant	1972	.	.	.	.	.	.	.	.	.	1974
Retail											
Laundry	1965	1980	.	.	.	.	.	2001	1983	.	1984
Warehouse	.	.	.	.	.	.	.	.	.	.	.
School	.	.	.	.	.	.	.	.	.	.	.
College	1974	1975	.	.	.	.	1988	1981	.	.	1968
Health	1975	1973	1973	1979	1983	1980	1975	1985	1972	.	1974
Lodging	1985	1978	1990	1986	1986	1990	1990	1953	1989	.	1991
Misc	.	1996	.	.	.	.	.	.	.	.	1991
Government	1979	1980	1976	1982	1979	1979	1982	1987	1980	1965	1976
TCU	1976	1969	.	.	.	.	.	.	.	1975	1977
Construction	.	.	.	.	.	.	.	.	.	.	.
Agriculture	1992	1991	.	.	.	.	1998	.	1970	1975	1992

Year Equipment Installed

Com_NCore_07_Source_Data.xls ComNCoreUsePerMeterAvg

Sector	Space Heater	Water Heater	Cooktop	Griddle	Fryer	Other Cooking Equipment	Kitchen Equipment	AC	Dryer	Engine	Other	Total Building
Office	639803	265634	32398	10771	8218	33512	7188	10967	31892	9112	637930	1687425
Restaurant	25693	49731	83004	34146	65575	72554	17667	1023	458	0	16305	366155
Retail	100285	60912	22179	3694	24704	42585	26335	5843	11229	897	138962	437625
Laundry	1724	27409	225	35	56	326	2	52	275338	0	256380	561546
Warehouse	35523	10320	1468	409	3538	4068	5201	4042	11813	3509	114303	194195
School	0	0	0	0	0	0	0	0	0	0	0	0
College	506289	250077	24430	7207	12529	30072	6951	31646	7675	10755	344335	1231965
Health	251621	157666	25270	4895	6865	19433	10991	4554	34613	2581	266041	784530
Lodging	85976	175610	24239	5916	7575	29517	14528	1421	45751	29	198483	589046
Misc	181733	110992	22472	4486	7395	18471	5903	18712	7185	1379	122654	501383
Government	387949	225537	19822	9768	5798	16316	8850	10357	5232	57299	152021	898948
TCU	132324	47571	4190	1041	1976	3669	2506	6464	408	207613	219487	627249
Construction	0	0	0	0	0	0	0	0	0	0	0	0
Agriculture	100013	24231	4115	687	8559	19033	17303	235	25223	165377	333926	698703

Com_NCore_07_Source_Data.xls - 2007_Historical_Data .

Segment	2007 Therm Sales	2007 Meter Count	2007 Meter Count, Existing/Old customers	2007 Meter Count New Customers	Avg Use Per Meter Existing Customers	Avg Use Per Meter New Customers	Price Elasticity	Employment Elasticities	MAS SQFT ADJ
Office	8437125	5	5	0	1687425	0	-0.046000	0.474000	3786510
Restaurant	366155	1	1	0	366155	0	-0.046000	0.474000	373813
Retail	1312874	3	3	0	437625	0	-0.046000	0.474000	2667893
Laundry	10669374	19	19	0	561546	0	-0.046000	0.474000	53150
Warehouse	194195	1	1	0	194195	0	-0.046000	0.474000	5697150
School	0	0	0	0	0	0	-0.046000	0.474000	0
College	19711441	16	16	0	1231965	0	-0.046000	0.474000	4367776
Health	66685080	85	85	0	784530	0	-0.046000	0.474000	1707720
Lodging	11191866	19	19	0	589046	0	-0.046000	0.474000	447289
Misc	501383	1	1	0	501383	0	-0.046000	0.474000	8338418
Government	30564222	34	34	0	898948	0	-0.046000	0.474000	3248578
TCU	35753175	57	57	0	627249	0	-0.046000	0.474000	2697060
Construction	0	0	0	0	0	0	-0.046000	0.474000	0
Agriculture	21659785	31	31	0	698703	0	-0.046000	0.474000	1625346

Noncore Commercial Demand Forecast
Gas Saturations by Business and Equipment Types

zName	bName	nName	_TYPE_	_FREQ_	saturation
			0	45,849	0.6197
		AC_Compressor	1	4,216	0.8472
		Cook_top	1	3,689	0.2067
		Cooking	1	1,054	0.1635
		Drying	1	2,108	0.9100
		Engine	1	1,581	0.4167
		Fryer	1	3,689	0.2037
		Griddle	1	3,689	0.1816
		Other	1	7,378	1.0000
		Other_Cooking	1	3,689	0.2281
		Space_Heat	1	7,378	0.7643
		Water_Heat	1	7,378	0.8196
	Agriculture		2	2,635	0.7820
	College		2	4,216	0.5239
	Construction		2	1,581	0.8033
	Government		2	4,216	0.5305
	Health		2	4,743	0.5507
	Laundry		2	2,108	0.9300
	Lodging		2	4,743	0.5384
	Misc		2	4,216	0.4000
	Office		2	2,635	0.7170
	Restaurant		2	4,216	0.8252
	Retail		2	2,108	0.6590
	School		2	4,216	0.5425
	TCU		2	2,108	0.7275
	Warehouse		2	2,108	0.5902
	Agriculture	Drying	3	527	1.0000
	Agriculture	Engine	3	527	0.5000
	Agriculture	Other	3	527	1.0000
	Agriculture	Space_Heat	3	527	0.7200
	Agriculture	Water_Heat	3	527	0.6900
	College	AC_Compressor	3	527	0.8850
	College	Cook_top	3	527	0.1470
	College	Fryer	3	527	0.1470
	College	Griddle	3	527	0.1470
	College	Other	3	527	1.0000
	College	Other_Cooking	3	527	0.1470
	College	Space_Heat	3	527	0.7630
	College	Water_Heat	3	527	0.9550
	Construction	Other	3	527	1.0000
	Construction	Space_Heat	3	527	0.7200
	Construction	Water_Heat	3	527	0.6900
	Government	AC_Compressor	3	527	0.8880
	Government	Cook_top	3	527	0.1960
	Government	Fryer	3	527	0.1960
	Government	Griddle	3	527	0.1960
	Government	Other	3	527	1.0000
	Government	Other_Cooking	3	527	0.1960
	Government	Space_Heat	3	527	0.8720
	Government	Water_Heat	3	527	0.7000
	Health	AC_Compressor	3	527	0.7920
	Health	Cook_top	3	527	0.1020
	Health	Drying	3	527	0.8200
	Health	Fryer	3	527	0.1020

Noncore Commercial Demand Forecast
Gas Saturations by Business and Equipment Types

zName	bName	nName	_TYPE_	_FREQ_	saturation
	Health	Griddle	3	527	0.1020
	Health	Other	3	527	1.0000
	Health	Other_Cooking	3	527	0.1020
	Health	Space_Heat	3	527	0.9360
	Health	Water_Heat	3	527	1.0000
	Laundry	Drying	3	527	1.0000
	Laundry	Other	3	527	1.0000
	Laundry	Space_Heat	3	527	0.7200
	Laundry	Water_Heat	3	527	1.0000
	Lodging	AC_Compressor	3	527	0.7950
	Lodging	Cook_top	3	527	0.0840
	Lodging	Drying	3	527	0.8200
	Lodging	Fryer	3	527	0.0840
	Lodging	Griddle	3	527	0.0840
	Lodging	Other	3	527	1.0000
	Lodging	Other_Cooking	3	527	0.0840
	Lodging	Space_Heat	3	527	0.8950
	Lodging	Water_Heat	3	527	1.0000
	Misc	AC_Compressor	3	527	0.7310
	Misc	Cook_top	3	527	0.0210
	Misc	Fryer	3	527	0.0210
	Misc	Griddle	3	527	0.0210
	Misc	Other	3	527	1.0000
	Misc	Other_Cooking	3	527	0.0210
	Misc	Space_Heat	3	527	0.6950
	Misc	Water_Heat	3	527	0.6900
	Office	AC_Compressor	3	527	0.9310
	Office	Cooking	3	527	0.0820
	Office	Other	3	527	1.0000
	Office	Space_Heat	3	527	0.8720
	Office	Water_Heat	3	527	0.7000
	Restaurant	AC_Compressor	3	527	0.8710
	Restaurant	Cook_top	3	527	0.7500
	Restaurant	Fryer	3	527	0.7290
	Restaurant	Griddle	3	527	0.5740
	Restaurant	Other	3	527	1.0000
	Restaurant	Other_Cooking	3	527	0.9000
	Restaurant	Space_Heat	3	527	0.8180
	Restaurant	Water_Heat	3	527	0.9600
	Retail	Cooking	3	527	0.2450
	Retail	Other	3	527	1.0000
	Retail	Space_Heat	3	527	0.7710
	Retail	Water_Heat	3	527	0.6200
	School	AC_Compressor	3	527	0.8850
	School	Cook_top	3	527	0.1470
	School	Fryer	3	527	0.1470
	School	Griddle	3	527	0.1470
	School	Other	3	527	1.0000
	School	Other_Cooking	3	527	0.1470
	School	Space_Heat	3	527	0.9670
	School	Water_Heat	3	527	0.9000
	TCU	Engine	3	527	0.5000
	TCU	Other	3	527	1.0000
	TCU	Space_Heat	3	527	0.7200

Noncore Commercial Demand Forecast
Gas Saturations by Business and Equipment Types

zName	bName	nName	_TYPE_	_FREQ_	saturation
	TCU	Water_Heat	3	527	0.6900
	Warehouse	Engine	3	527	0.2500
	Warehouse	Other	3	527	1.0000
	Warehouse	Space_Heat	3	527	0.2310
	Warehouse	Water_Heat	3	527	0.8800
Commercial			4	45,849	0.6197
Commercial		AC_Compressor	5	4,216	0.8472
Commercial		Cook_top	5	3,689	0.2067
Commercial		Cooking	5	1,054	0.1635
Commercial		Drying	5	2,108	0.9100
Commercial		Engine	5	1,581	0.4167
Commercial		Fryer	5	3,689	0.2037
Commercial		Griddle	5	3,689	0.1816
Commercial		Other	5	7,378	1.0000
Commercial		Other_Cooking	5	3,689	0.2281
Commercial		Space_Heat	5	7,378	0.7643
Commercial		Water_Heat	5	7,378	0.8196
Commercial	Agriculture		6	2,635	0.7820
Commercial	College		6	4,216	0.5239
Commercial	Construction		6	1,581	0.8033
Commercial	Government		6	4,216	0.5305
Commercial	Health		6	4,743	0.5507
Commercial	Laundry		6	2,108	0.9300
Commercial	Lodging		6	4,743	0.5384
Commercial	Misc		6	4,216	0.4000
Commercial	Office		6	2,635	0.7170
Commercial	Restaurant		6	4,216	0.8252
Commercial	Retail		6	2,108	0.6590
Commercial	School		6	4,216	0.5425
Commercial	TCU		6	2,108	0.7275
Commercial	Warehouse		6	2,108	0.5902
Commercial	Agriculture	Drying	7	527	1.0000
Commercial	Agriculture	Engine	7	527	0.5000
Commercial	Agriculture	Other	7	527	1.0000
Commercial	Agriculture	Space_Heat	7	527	0.7200
Commercial	Agriculture	Water_Heat	7	527	0.6900
Commercial	College	AC_Compressor	7	527	0.8850
Commercial	College	Cook_top	7	527	0.1470
Commercial	College	Fryer	7	527	0.1470
Commercial	College	Griddle	7	527	0.1470
Commercial	College	Other	7	527	1.0000
Commercial	College	Other_Cooking	7	527	0.1470
Commercial	College	Space_Heat	7	527	0.7630
Commercial	College	Water_Heat	7	527	0.9550
Commercial	Construction	Other	7	527	1.0000
Commercial	Construction	Space_Heat	7	527	0.7200
Commercial	Construction	Water_Heat	7	527	0.6900
Commercial	Government	AC_Compressor	7	527	0.8880
Commercial	Government	Cook_top	7	527	0.1960
Commercial	Government	Fryer	7	527	0.1960
Commercial	Government	Griddle	7	527	0.1960
Commercial	Government	Other	7	527	1.0000
Commercial	Government	Other_Cooking	7	527	0.1960
Commercial	Government	Space_Heat	7	527	0.8720

Noncore Commercial Demand Forecast
Gas Saturations by Business and Equipment Types

zName	bName	nName	_TYPE_	_FREQ_	saturation
Commercial	Government	Water_Heat	7	527	0.7000
Commercial	Health	AC_Compressor	7	527	0.7920
Commercial	Health	Cook_top	7	527	0.1020
Commercial	Health	Drying	7	527	0.8200
Commercial	Health	Fryer	7	527	0.1020
Commercial	Health	Griddle	7	527	0.1020
Commercial	Health	Other	7	527	1.0000
Commercial	Health	Other_Cooking	7	527	0.1020
Commercial	Health	Space_Heat	7	527	0.9360
Commercial	Health	Water_Heat	7	527	1.0000
Commercial	Laundry	Drying	7	527	1.0000
Commercial	Laundry	Other	7	527	1.0000
Commercial	Laundry	Space_Heat	7	527	0.7200
Commercial	Laundry	Water_Heat	7	527	1.0000
Commercial	Lodging	AC_Compressor	7	527	0.7950
Commercial	Lodging	Cook_top	7	527	0.0840
Commercial	Lodging	Drying	7	527	0.8200
Commercial	Lodging	Fryer	7	527	0.0840
Commercial	Lodging	Griddle	7	527	0.0840
Commercial	Lodging	Other	7	527	1.0000
Commercial	Lodging	Other_Cooking	7	527	0.0840
Commercial	Lodging	Space_Heat	7	527	0.8950
Commercial	Lodging	Water_Heat	7	527	1.0000
Commercial	Misc	AC_Compressor	7	527	0.7310
Commercial	Misc	Cook_top	7	527	0.0210
Commercial	Misc	Fryer	7	527	0.0210
Commercial	Misc	Griddle	7	527	0.0210
Commercial	Misc	Other	7	527	1.0000
Commercial	Misc	Other_Cooking	7	527	0.0210
Commercial	Misc	Space_Heat	7	527	0.6950
Commercial	Misc	Water_Heat	7	527	0.6900
Commercial	Office	AC_Compressor	7	527	0.9310
Commercial	Office	Cooking	7	527	0.0820
Commercial	Office	Other	7	527	1.0000
Commercial	Office	Space_Heat	7	527	0.8720
Commercial	Office	Water_Heat	7	527	0.7000
Commercial	Restaurant	AC_Compressor	7	527	0.8710
Commercial	Restaurant	Cook_top	7	527	0.7500
Commercial	Restaurant	Fryer	7	527	0.7290
Commercial	Restaurant	Griddle	7	527	0.5740
Commercial	Restaurant	Other	7	527	1.0000
Commercial	Restaurant	Other_Cooking	7	527	0.9000
Commercial	Restaurant	Space_Heat	7	527	0.8180
Commercial	Restaurant	Water_Heat	7	527	0.9600
Commercial	Retail	Cooking	7	527	0.2450
Commercial	Retail	Other	7	527	1.0000
Commercial	Retail	Space_Heat	7	527	0.7710
Commercial	Retail	Water_Heat	7	527	0.6200
Commercial	School	AC_Compressor	7	527	0.8850
Commercial	School	Cook_top	7	527	0.1470
Commercial	School	Fryer	7	527	0.1470
Commercial	School	Griddle	7	527	0.1470
Commercial	School	Other	7	527	1.0000
Commercial	School	Other_Cooking	7	527	0.1470

Noncore Commercial Demand Forecast
Gas Saturations by Business and Equipment Types

zName	bName	nName	_TYPE_	_FREQ_	saturation
Commercial	School	Space_Heat	7	527	0.9670
Commercial	School	Water_Heat	7	527	0.9000
Commercial	TCU	Engine	7	527	0.5000
Commercial	TCU	Other	7	527	1.0000
Commercial	TCU	Space_Heat	7	527	0.7200
Commercial	TCU	Water_Heat	7	527	0.6900
Commercial	Warehouse	Engine	7	527	0.2500
Commercial	Warehouse	Other	7	527	1.0000
Commercial	Warehouse	Space_Heat	7	527	0.2310
Commercial	Warehouse	Water_Heat	7	527	0.8800

Noncore Commercial Demand Forecast
Efficiency Shares by Fuels and End Uses

nName	fName	eName	_TYPE_	_FREQ_	baseAvgEShare
			0	376	0.4255
		High	1	42	0.0667
		Premium	1	42	0.0167
		Standard	1	132	0.3765
		Stock	1	160	0.6675
	Electric		2	160	0.4563
	Natural_Gas		2	216	0.4028
	Electric	High	3	14	0.0800
	Electric	Premium	3	14	0.0200
	Electric	Standard	3	59	0.3856
	Electric	Stock	3	73	0.6692
	Natural_Gas	High	3	28	0.0600
	Natural_Gas	Premium	3	28	0.0150
	Natural_Gas	Standard	3	73	0.3692
	Natural_Gas	Stock	3	87	0.6661
AC_Compressor			4	32	0.5000
Cook_top			4	28	0.5000
Cooking			4	8	0.5000
Drying			4	16	0.5000
Engine			4	12	0.5000
Fryer			4	28	0.5000
Griddle			4	28	0.5000
Other			4	14	1.0000
Other_Cooking			4	28	0.5000
Space_Heat			4	70	0.4000
Water_Heat			4	112	0.2500
AC_Compressor		Standard	5	16	0.3500
AC_Compressor		Stock	5	16	0.6500
Cook_top		Standard	5	14	0.3500
Cook_top		Stock	5	14	0.6500
Cooking		Standard	5	4	0.3500
Cooking		Stock	5	4	0.6500
Drying		Standard	5	8	0.3500
Drying		Stock	5	8	0.6500
Engine		Standard	5	6	0.3500
Engine		Stock	5	6	0.6500
Fryer		Standard	5	14	0.3500
Fryer		Stock	5	14	0.6500
Griddle		Standard	5	14	0.3500
Griddle		Stock	5	14	0.6500
Other		Stock	5	14	1.0000
Other_Cooking		Standard	5	14	0.3500
Other_Cooking		Stock	5	14	0.6500
Space_Heat		High	5	14	0.0400
Space_Heat		Premium	5	14	0.0100
Space_Heat		Standard	5	14	0.3000
Space_Heat		Stock	5	28	0.8250
Water_Heat		High	5	28	0.0800
Water_Heat		Premium	5	28	0.0200
Water_Heat		Standard	5	28	0.5000
Water_Heat		Stock	5	28	0.4000
AC_Compressor	Electric		6	16	0.5000
AC_Compressor	Natural_Gas		6	16	0.5000
Cook_top	Electric		6	14	0.5000

Noncore Commercial Demand Forecast
Efficiency Shares by Fuels and End Uses

nName	fName	eName	_TYPE_	_FREQ_	baseAvgEShare
Cook_top	Natural_Gas		6	14	0.5000
Cooking	Electric		6	4	0.5000
Cooking	Natural_Gas		6	4	0.5000
Drying	Electric		6	8	0.5000
Drying	Natural_Gas		6	8	0.5000
Engine	Electric		6	6	0.5000
Engine	Natural_Gas		6	6	0.5000
Fryer	Electric		6	14	0.5000
Fryer	Natural_Gas		6	14	0.5000
Griddle	Electric		6	14	0.5000
Griddle	Natural_Gas		6	14	0.5000
Other	Natural_Gas		6	14	1.0000
Other_Cooking	Electric		6	14	0.5000
Other_Cooking	Natural_Gas		6	14	0.5000
Space_Heat	Electric		6	14	1.0000
Space_Heat	Natural_Gas		6	56	0.2500
Water_Heat	Electric		6	56	0.2500
Water_Heat	Natural_Gas		6	56	0.2500
AC_Compressor	Electric	Standard	7	8	0.3500
AC_Compressor	Electric	Stock	7	8	0.6500
AC_Compressor	Natural_Gas	Standard	7	8	0.3500
AC_Compressor	Natural_Gas	Stock	7	8	0.6500
Cook_top	Electric	Standard	7	7	0.3500
Cook_top	Electric	Stock	7	7	0.6500
Cook_top	Natural_Gas	Standard	7	7	0.3500
Cook_top	Natural_Gas	Stock	7	7	0.6500
Cooking	Electric	Standard	7	2	0.3500
Cooking	Electric	Stock	7	2	0.6500
Cooking	Natural_Gas	Standard	7	2	0.3500
Cooking	Natural_Gas	Stock	7	2	0.6500
Drying	Electric	Standard	7	4	0.3500
Drying	Electric	Stock	7	4	0.6500
Drying	Natural_Gas	Standard	7	4	0.3500
Drying	Natural_Gas	Stock	7	4	0.6500
Engine	Electric	Standard	7	3	0.3500
Engine	Electric	Stock	7	3	0.6500
Engine	Natural_Gas	Standard	7	3	0.3500
Engine	Natural_Gas	Stock	7	3	0.6500
Fryer	Electric	Standard	7	7	0.3500
Fryer	Electric	Stock	7	7	0.6500
Fryer	Natural_Gas	Standard	7	7	0.3500
Fryer	Natural_Gas	Stock	7	7	0.6500
Griddle	Electric	Standard	7	7	0.3500
Griddle	Electric	Stock	7	7	0.6500
Griddle	Natural_Gas	Standard	7	7	0.3500
Griddle	Natural_Gas	Stock	7	7	0.6500
Other	Natural_Gas	Stock	7	14	1.0000
Other_Cooking	Electric	Standard	7	7	0.3500
Other_Cooking	Electric	Stock	7	7	0.6500
Other_Cooking	Natural_Gas	Standard	7	7	0.3500
Other_Cooking	Natural_Gas	Stock	7	7	0.6500
Space_Heat	Electric	Stock	7	14	1.0000
Space_Heat	Natural_Gas	High	7	14	0.0400
Space_Heat	Natural_Gas	Premium	7	14	0.0100

Noncore Commercial Demand Forecast
Efficiency Shares by Fuels and End Uses

nName	fName	eName	_TYPE_	_FREQ_	baseAvgEShare
Space_Heat	Natural_Gas	Standard	7	14	0.3000
Space_Heat	Natural_Gas	Stock	7	14	0.6500
Water_Heat	Electric	High	7	14	0.0800
Water_Heat	Electric	Premium	7	14	0.0200
Water_Heat	Electric	Standard	7	14	0.5000
Water_Heat	Electric	Stock	7	14	0.4000
Water_Heat	Natural_Gas	High	7	14	0.0800
Water_Heat	Natural_Gas	Premium	7	14	0.0200
Water_Heat	Natural_Gas	Standard	7	14	0.5000
Water_Heat	Natural_Gas	Stock	7	14	0.4000

Noncore Commercial Demand Forecast
Fuel Shares by Businesses and End Uses

bName	nName	fName	_TYPE_	_FREQ_	baseAvgFShare
			0	160	0.5438
		Electric	1	73	0.5184
		Natural_Gas	1	87	0.5650
	AC_Compressor		2	16	0.5000
	Cook_top		2	14	0.5000
	Cooking		2	4	0.5000
	Drying		2	8	0.5000
	Engine		2	6	0.5000
	Fryer		2	14	0.5000
	Griddle		2	14	0.5000
	Other		2	14	1.0000
	Other_Cooking		2	14	0.5000
	Space_Heat		2	28	0.5000
	Water_Heat		2	28	0.5000
	AC_Compressor	Electric	3	8	0.9400
	AC_Compressor	Natural_Gas	3	8	0.0600
	Cook_top	Electric	3	7	0.4353
	Cook_top	Natural_Gas	3	7	0.5647
	Cooking	Electric	3	2	0.9428
	Cooking	Natural_Gas	3	2	0.0572
	Drying	Electric	3	4	0.3000
	Drying	Natural_Gas	3	4	0.7000
	Engine	Electric	3	3	0.9400
	Engine	Natural_Gas	3	3	0.0600
	Fryer	Electric	3	7	0.4661
	Fryer	Natural_Gas	3	7	0.5339
	Griddle	Electric	3	7	0.4383
	Griddle	Natural_Gas	3	7	0.5617
	Other	Natural_Gas	3	14	1.0000
	Other_Cooking	Electric	3	7	0.4905
	Other_Cooking	Natural_Gas	3	7	0.5095
	Space_Heat	Electric	3	14	0.4194
	Space_Heat	Natural_Gas	3	14	0.5806
	Water_Heat	Electric	3	14	0.4095
	Water_Heat	Natural_Gas	3	14	0.5905
Agriculture			4	9	0.5556
College			4	15	0.5333
Construction			4	5	0.6000
Government			4	15	0.5333
Health			4	17	0.5294
Laundry			4	7	0.5714
Lodging			4	17	0.5294
Misc			4	15	0.5333
Office			4	9	0.5556
Restaurant			4	15	0.5333
Retail			4	7	0.5714
School			4	15	0.5333
TCU			4	7	0.5714
Warehouse			4	7	0.5714
Agriculture		Electric	5	4	0.4217
Agriculture		Natural_Gas	5	5	0.6627
College		Electric	5	7	0.8001
College		Natural_Gas	5	8	0.2999
Construction		Electric	5	2	0.3733

Noncore Commercial Demand Forecast
Fuel Shares by Businesses and End Uses

bName	nName	fName	_TYPE_	_FREQ_	baseAvgFShare
Construction		Natural_Gas	5	3	0.7511
Government		Electric	5	7	0.3437
Government		Natural_Gas	5	8	0.6993
Health		Electric	5	8	0.6139
Health		Natural_Gas	5	9	0.4543
Laundry		Electric	5	3	0.3822
Laundry		Natural_Gas	5	4	0.7133
Lodging		Electric	5	8	0.5351
Lodging		Natural_Gas	5	9	0.5244
Misc		Electric	5	7	0.3315
Misc		Natural_Gas	5	8	0.7100
Office		Electric	5	4	0.7245
Office		Natural_Gas	5	5	0.4204
Restaurant		Electric	5	7	0.2763
Restaurant		Natural_Gas	5	8	0.7582
Retail		Electric	5	3	0.6929
Retail		Natural_Gas	5	4	0.4803
School		Electric	5	7	0.5306
School		Natural_Gas	5	8	0.5357
TCU		Electric	5	3	0.5622
TCU		Natural_Gas	5	4	0.5783
Warehouse		Electric	5	3	0.8104
Warehouse		Natural_Gas	5	4	0.3922
Agriculture	Drying		6	2	0.5000
Agriculture	Engine		6	2	0.5000
Agriculture	Other		6	1	1.0000
Agriculture	Space_Heat		6	2	0.5000
Agriculture	Water_Heat		6	2	0.5000
College	AC_Compressor		6	2	0.5000
College	Cook_top		6	2	0.5000
College	Fryer		6	2	0.5000
College	Griddle		6	2	0.5000
College	Other		6	1	1.0000
College	Other_Cooking		6	2	0.5000
College	Space_Heat		6	2	0.5000
College	Water_Heat		6	2	0.5000
Construction	Other		6	1	1.0000
Construction	Space_Heat		6	2	0.5000
Construction	Water_Heat		6	2	0.5000
Government	AC_Compressor		6	2	0.5000
Government	Cook_top		6	2	0.5000
Government	Fryer		6	2	0.5000
Government	Griddle		6	2	0.5000
Government	Other		6	1	1.0000
Government	Other_Cooking		6	2	0.5000
Government	Space_Heat		6	2	0.5000
Government	Water_Heat		6	2	0.5000
Health	AC_Compressor		6	2	0.5000
Health	Cook_top		6	2	0.5000
Health	Drying		6	2	0.5000
Health	Fryer		6	2	0.5000
Health	Griddle		6	2	0.5000
Health	Other		6	1	1.0000
Health	Other_Cooking		6	2	0.5000

Noncore Commercial Demand Forecast
Fuel Shares by Businesses and End Uses

bName	nName	fName	_TYPE_	_FREQ_	baseAvgFShare
Health	Space_Heat		6	2	0.5000
Health	Water_Heat		6	2	0.5000
Laundry	Drying		6	2	0.5000
Laundry	Other		6	1	1.0000
Laundry	Space_Heat		6	2	0.5000
Laundry	Water_Heat		6	2	0.5000
Lodging	AC_Compressor		6	2	0.5000
Lodging	Cook_top		6	2	0.5000
Lodging	Drying		6	2	0.5000
Lodging	Fryer		6	2	0.5000
Lodging	Griddle		6	2	0.5000
Lodging	Other		6	1	1.0000
Lodging	Other_Cooking		6	2	0.5000
Lodging	Space_Heat		6	2	0.5000
Lodging	Water_Heat		6	2	0.5000
Misc	AC_Compressor		6	2	0.5000
Misc	Cook_top		6	2	0.5000
Misc	Fryer		6	2	0.5000
Misc	Griddle		6	2	0.5000
Misc	Other		6	1	1.0000
Misc	Other_Cooking		6	2	0.5000
Misc	Space_Heat		6	2	0.5000
Misc	Water_Heat		6	2	0.5000
Office	AC_Compressor		6	2	0.5000
Office	Cooking		6	2	0.5000
Office	Other		6	1	1.0000
Office	Space_Heat		6	2	0.5000
Office	Water_Heat		6	2	0.5000
Restaurant	AC_Compressor		6	2	0.5000
Restaurant	Cook_top		6	2	0.5000
Restaurant	Fryer		6	2	0.5000
Restaurant	Griddle		6	2	0.5000
Restaurant	Other		6	1	1.0000
Restaurant	Other_Cooking		6	2	0.5000
Restaurant	Space_Heat		6	2	0.5000
Restaurant	Water_Heat		6	2	0.5000
Retail	Cooking		6	2	0.5000
Retail	Other		6	1	1.0000
Retail	Space_Heat		6	2	0.5000
Retail	Water_Heat		6	2	0.5000
School	AC_Compressor		6	2	0.5000
School	Cook_top		6	2	0.5000
School	Fryer		6	2	0.5000
School	Griddle		6	2	0.5000
School	Other		6	1	1.0000
School	Other_Cooking		6	2	0.5000
School	Space_Heat		6	2	0.5000
School	Water_Heat		6	2	0.5000
TCU	Engine		6	2	0.5000
TCU	Other		6	1	1.0000
TCU	Space_Heat		6	2	0.5000
TCU	Water_Heat		6	2	0.5000
Warehouse	Engine		6	2	0.5000
Warehouse	Other		6	1	1.0000

Noncore Commercial Demand Forecast
Fuel Shares by Businesses and End Uses

bName	nName	fName	_TYPE_	_FREQ_	baseAvgFShare
Warehouse	Space_Heat		6	2	0.5000
Warehouse	Water_Heat		6	2	0.5000
Agriculture	Drying	Electric	7	1	0.0000
Agriculture	Drying	Natural_Gas	7	1	1.0000
Agriculture	Engine	Electric	7	1	0.9400
Agriculture	Engine	Natural_Gas	7	1	0.0600
Agriculture	Other	Natural_Gas	7	1	1.0000
Agriculture	Space_Heat	Electric	7	1	0.4231
Agriculture	Space_Heat	Natural_Gas	7	1	0.5769
Agriculture	Water_Heat	Electric	7	1	0.3235
Agriculture	Water_Heat	Natural_Gas	7	1	0.6765
College	AC_Compressor	Electric	7	1	0.9400
College	AC_Compressor	Natural_Gas	7	1	0.0600
College	Cook_top	Electric	7	1	0.9520
College	Cook_top	Natural_Gas	7	1	0.0480
College	Fryer	Electric	7	1	0.9520
College	Fryer	Natural_Gas	7	1	0.0480
College	Griddle	Electric	7	1	0.9520
College	Griddle	Natural_Gas	7	1	0.0480
College	Other	Natural_Gas	7	1	1.0000
College	Other_Cooking	Electric	7	1	0.9520
College	Other_Cooking	Natural_Gas	7	1	0.0480
College	Space_Heat	Electric	7	1	0.6697
College	Space_Heat	Natural_Gas	7	1	0.3303
College	Water_Heat	Electric	7	1	0.1832
College	Water_Heat	Natural_Gas	7	1	0.8168
Construction	Other	Natural_Gas	7	1	1.0000
Construction	Space_Heat	Electric	7	1	0.4231
Construction	Space_Heat	Natural_Gas	7	1	0.5769
Construction	Water_Heat	Electric	7	1	0.3235
Construction	Water_Heat	Natural_Gas	7	1	0.6765
Government	AC_Compressor	Electric	7	1	0.9400
Government	AC_Compressor	Natural_Gas	7	1	0.0600
Government	Cook_top	Electric	7	1	0.0227
Government	Cook_top	Natural_Gas	7	1	0.9773
Government	Fryer	Electric	7	1	0.0947
Government	Fryer	Natural_Gas	7	1	0.9053
Government	Griddle	Electric	7	1	0.0296
Government	Griddle	Natural_Gas	7	1	0.9704
Government	Other	Natural_Gas	7	1	1.0000
Government	Other_Cooking	Electric	7	1	0.3400
Government	Other_Cooking	Natural_Gas	7	1	0.6600
Government	Space_Heat	Electric	7	1	0.1445
Government	Space_Heat	Natural_Gas	7	1	0.8555
Government	Water_Heat	Electric	7	1	0.8342
Government	Water_Heat	Natural_Gas	7	1	0.1658
Health	AC_Compressor	Electric	7	1	0.9400
Health	AC_Compressor	Natural_Gas	7	1	0.0600
Health	Cook_top	Electric	7	1	0.9051
Health	Cook_top	Natural_Gas	7	1	0.0949
Health	Drying	Electric	7	1	0.4000
Health	Drying	Natural_Gas	7	1	0.6000
Health	Fryer	Electric	7	1	0.9051
Health	Fryer	Natural_Gas	7	1	0.0949

Noncore Commercial Demand Forecast
Fuel Shares by Businesses and End Uses

bName	nName	fName	_TYPE_	_FREQ_	baseAvgFShare
Health	Griddle	Electric	7	1	0.9051
Health	Griddle	Natural_Gas	7	1	0.0949
Health	Other	Natural_Gas	7	1	1.0000
Health	Other_Cooking	Electric	7	1	0.3400
Health	Other_Cooking	Natural_Gas	7	1	0.6600
Health	Space_Heat	Electric	7	1	0.3397
Health	Space_Heat	Natural_Gas	7	1	0.6603
Health	Water_Heat	Electric	7	1	0.1758
Health	Water_Heat	Natural_Gas	7	1	0.8242
Laundry	Drying	Electric	7	1	0.4000
Laundry	Drying	Natural_Gas	7	1	0.6000
Laundry	Other	Natural_Gas	7	1	1.0000
Laundry	Space_Heat	Electric	7	1	0.4231
Laundry	Space_Heat	Natural_Gas	7	1	0.5769
Laundry	Water_Heat	Electric	7	1	0.3235
Laundry	Water_Heat	Natural_Gas	7	1	0.6765
Lodging	AC_Compressor	Electric	7	1	0.9400
Lodging	AC_Compressor	Natural_Gas	7	1	0.0600
Lodging	Cook_top	Electric	7	1	0.5504
Lodging	Cook_top	Natural_Gas	7	1	0.4496
Lodging	Drying	Electric	7	1	0.4000
Lodging	Drying	Natural_Gas	7	1	0.6000
Lodging	Fryer	Electric	7	1	0.5504
Lodging	Fryer	Natural_Gas	7	1	0.4496
Lodging	Griddle	Electric	7	1	0.5504
Lodging	Griddle	Natural_Gas	7	1	0.4496
Lodging	Other	Natural_Gas	7	1	1.0000
Lodging	Other_Cooking	Electric	7	1	0.5504
Lodging	Other_Cooking	Natural_Gas	7	1	0.4496
Lodging	Space_Heat	Electric	7	1	0.7285
Lodging	Space_Heat	Natural_Gas	7	1	0.2715
Lodging	Water_Heat	Electric	7	1	0.0105
Lodging	Water_Heat	Natural_Gas	7	1	0.9895
Misc	AC_Compressor	Electric	7	1	0.9400
Misc	AC_Compressor	Natural_Gas	7	1	0.0600
Misc	Cook_top	Electric	7	1	0.0227
Misc	Cook_top	Natural_Gas	7	1	0.9773
Misc	Fryer	Electric	7	1	0.0947
Misc	Fryer	Natural_Gas	7	1	0.9053
Misc	Griddle	Electric	7	1	0.0296
Misc	Griddle	Natural_Gas	7	1	0.9704
Misc	Other	Natural_Gas	7	1	1.0000
Misc	Other_Cooking	Electric	7	1	0.3400
Misc	Other_Cooking	Natural_Gas	7	1	0.6600
Misc	Space_Heat	Electric	7	1	0.4504
Misc	Space_Heat	Natural_Gas	7	1	0.5496
Misc	Water_Heat	Electric	7	1	0.4431
Misc	Water_Heat	Natural_Gas	7	1	0.5569
Office	AC_Compressor	Electric	7	1	0.9400
Office	AC_Compressor	Natural_Gas	7	1	0.0600
Office	Cooking	Electric	7	1	0.9793
Office	Cooking	Natural_Gas	7	1	0.0207
Office	Other	Natural_Gas	7	1	1.0000
Office	Space_Heat	Electric	7	1	0.1445

Noncore Commercial Demand Forecast
Fuel Shares by Businesses and End Uses

bName	nName	fName	_TYPE_	_FREQ_	baseAvgFShare
Office	Space_Heat	Natural_Gas	7	1	0.8555
Office	Water_Heat	Electric	7	1	0.8342
Office	Water_Heat	Natural_Gas	7	1	0.1658
Restaurant	AC_Compressor	Electric	7	1	0.9400
Restaurant	AC_Compressor	Natural_Gas	7	1	0.0600
Restaurant	Cook_top	Electric	7	1	0.0227
Restaurant	Cook_top	Natural_Gas	7	1	0.9773
Restaurant	Fryer	Electric	7	1	0.0947
Restaurant	Fryer	Natural_Gas	7	1	0.9053
Restaurant	Griddle	Electric	7	1	0.0296
Restaurant	Griddle	Natural_Gas	7	1	0.9704
Restaurant	Other	Natural_Gas	7	1	1.0000
Restaurant	Other_Cooking	Electric	7	1	0.3400
Restaurant	Other_Cooking	Natural_Gas	7	1	0.6600
Restaurant	Space_Heat	Electric	7	1	0.4095
Restaurant	Space_Heat	Natural_Gas	7	1	0.5905
Restaurant	Water_Heat	Electric	7	1	0.0980
Restaurant	Water_Heat	Natural_Gas	7	1	0.9020
Retail	Cooking	Electric	7	1	0.9063
Retail	Cooking	Natural_Gas	7	1	0.0937
Retail	Other	Natural_Gas	7	1	1.0000
Retail	Space_Heat	Electric	7	1	0.4825
Retail	Space_Heat	Natural_Gas	7	1	0.5175
Retail	Water_Heat	Electric	7	1	0.6899
Retail	Water_Heat	Natural_Gas	7	1	0.3101
School	AC_Compressor	Electric	7	1	0.9400
School	AC_Compressor	Natural_Gas	7	1	0.0600
School	Cook_top	Electric	7	1	0.5714
School	Cook_top	Natural_Gas	7	1	0.4286
School	Fryer	Electric	7	1	0.5714
School	Fryer	Natural_Gas	7	1	0.4286
School	Griddle	Electric	7	1	0.5714
School	Griddle	Natural_Gas	7	1	0.4286
School	Other	Natural_Gas	7	1	1.0000
School	Other_Cooking	Electric	7	1	0.5714
School	Other_Cooking	Natural_Gas	7	1	0.4286
School	Space_Heat	Electric	7	1	0.2472
School	Space_Heat	Natural_Gas	7	1	0.7528
School	Water_Heat	Electric	7	1	0.2416
School	Water_Heat	Natural_Gas	7	1	0.7584
TCU	Engine	Electric	7	1	0.9400
TCU	Engine	Natural_Gas	7	1	0.0600
TCU	Other	Natural_Gas	7	1	1.0000
TCU	Space_Heat	Electric	7	1	0.4231
TCU	Space_Heat	Natural_Gas	7	1	0.5769
TCU	Water_Heat	Electric	7	1	0.3235
TCU	Water_Heat	Natural_Gas	7	1	0.6765
Warehouse	Engine	Electric	7	1	0.9400
Warehouse	Engine	Natural_Gas	7	1	0.0600
Warehouse	Other	Natural_Gas	7	1	1.0000
Warehouse	Space_Heat	Electric	7	1	0.5628
Warehouse	Space_Heat	Natural_Gas	7	1	0.4372
Warehouse	Water_Heat	Electric	7	1	0.9284
Warehouse	Water_Heat	Natural_Gas	7	1	0.0716

Noncore Industrial Demand Forecast (Mth)

	Industrial - All Temperature Years			
Date	IndModel	DSM	Vernon	Ind-All
Jan-06	5,293	0	0	5,293
Feb-06	4,953	0	0	4,953
Mar-06	5,646	0	0	5,646
Apr-06	5,388	0	0	5,388
May-06	5,523	0	0	5,523
Jun-06	5,216	0	0	5,216
Jul-06	5,367	0	0	5,367
Aug-06	6,110	0	0	6,110
Sep-06	5,579	0	0	5,579
Oct-06	5,274	0	0	5,274
Nov-06	4,819	0	0	4,819
Dec-06	4,532	0	0	4,532
Jan-07	5,079	0	0	5,079
Feb-07	4,652	0	0	4,652
Mar-07	5,212	0	0	5,212
Apr-07	5,029	0	0	5,029
May-07	5,149	0	0	5,149
Jun-07	4,831	0	0	4,831
Jul-07	5,300	0	0	5,300
Aug-07	5,702	0	0	5,702
Sep-07	5,365	0	0	5,365
Oct-07	5,166	0	0	5,166
Nov-07	4,461	0	0	4,461
Dec-07	4,137	0	0	4,137
Jan-08	4,966	6	186	4,774
Feb-08	4,485	6	186	4,293
Mar-08	4,966	6	186	4,774
Apr-08	4,806	6	186	4,614
May-08	4,966	6	186	4,774
Jun-08	4,806	6	186	4,614
Jul-08	4,966	6	186	4,774
Aug-08	4,966	6	186	4,774
Sep-08	4,806	6	186	4,614
Oct-08	4,966	6	186	4,774
Nov-08	4,806	6	186	4,614
Dec-08	4,966	6	186	4,774
Jan-09	4,942	25	315	4,602
Feb-09	4,463	25	315	4,124
Mar-09	4,942	25	315	4,602
Apr-09	4,782	25	315	4,443
May-09	4,942	25	315	4,602
Jun-09	4,782	25	315	4,443
Jul-09	4,942	25	315	4,602
Aug-09	4,942	25	315	4,602
Sep-09	4,782	25	315	4,443
Oct-09	4,942	25	315	4,602
Nov-09	4,782	25	315	4,443
Dec-09	4,942	25	315	4,602
Jan-10	4,960	45	315	4,600
Feb-10	4,480	45	315	4,120
Mar-10	4,960	45	315	4,600
Apr-10	4,800	45	315	4,440
May-10	4,960	45	315	4,600
Jun-10	4,800	45	326	4,429

Noncore Industrial Demand Forecast (Mth)

	Industrial - All Temperature Years			
Date	IndModel	DSM	Vernon	Ind-All
Jul-10	4,960	45	326	4,589
Aug-10	4,960	45	330	4,585
Sep-10	4,800	45	330	4,425
Oct-10	4,960	45	330	4,585
Nov-10	4,800	45	330	4,425
Dec-10	4,960	45	330	4,585
Jan-11	4,980	66	330	4,583
Feb-11	4,498	66	330	4,101
Mar-11	4,980	66	330	4,583
Apr-11	4,819	66	330	4,423
May-11	4,980	66	330	4,583
Jun-11	4,819	66	330	4,423
Jul-11	4,980	66	330	4,583
Aug-11	4,980	66	330	4,583
Sep-11	4,819	66	330	4,423
Oct-11	4,980	66	330	4,583
Nov-11	4,819	66	330	4,423
Dec-11	4,980	66	330	4,583
Jan-12	5,014	89	330	4,594
Feb-12	4,528	89	330	4,109
Mar-12	5,014	89	330	4,594
Apr-12	4,852	89	330	4,432
May-12	5,014	89	330	4,594
Jun-12	4,852	89	330	4,432
Jul-12	5,014	89	330	4,594
Aug-12	5,014	89	330	4,594
Sep-12	4,852	89	330	4,432
Oct-12	5,014	89	330	4,594
Nov-12	4,852	89	330	4,432
Dec-12	5,014	89	330	4,594
Jan-13	5,033	115	330	4,588
Feb-13	4,546	115	330	4,101
Mar-13	5,033	115	330	4,588
Apr-13	4,871	115	330	4,426
May-13	5,033	115	330	4,588
Jun-13	4,871	115	330	4,426
Jul-13	5,033	115	330	4,588
Aug-13	5,033	115	330	4,588
Sep-13	4,871	115	330	4,426
Oct-13	5,033	115	330	4,588
Nov-13	4,871	115	330	4,426
Dec-13	5,033	115	330	4,588
Jan-14	5,053	140	330	4,583
Feb-14	4,564	140	330	4,094
Mar-14	5,053	140	330	4,583
Apr-14	4,890	140	330	4,420
May-14	5,053	140	330	4,583
Jun-14	4,890	140	330	4,420
Jul-14	5,053	140	330	4,583
Aug-14	5,053	140	330	4,583
Sep-14	4,890	140	330	4,420
Oct-14	5,053	140	330	4,583
Nov-14	4,890	140	330	4,420
Dec-14	5,053	140	330	4,583

Noncore Industrial Demand Forecast (Mth)

	Industrial - All Temperature Years			
Date	IndModel	DSM	Vernon	Ind-All
Jan-15	5,045	166	330	4,549
Feb-15	4,556	166	330	4,060
Mar-15	5,045	166	330	4,549
Apr-15	4,882	166	330	4,386
May-15	5,045	166	330	4,549
Jun-15	4,882	166	330	4,386
Jul-15	5,045	166	330	4,549
Aug-15	5,045	166	330	4,549
Sep-15	4,882	166	330	4,386
Oct-15	5,045	166	330	4,549
Nov-15	4,882	166	330	4,386
Dec-15	5,045	166	330	4,549
Jan-16	5,034	191	330	4,513
Feb-16	4,547	191	330	4,025
Mar-16	5,034	191	330	4,513
Apr-16	4,872	191	330	4,350
May-16	5,034	191	330	4,513
Jun-16	4,872	191	330	4,350
Jul-16	5,034	191	330	4,513
Aug-16	5,034	191	330	4,513
Sep-16	4,872	191	330	4,350
Oct-16	5,034	191	330	4,513
Nov-16	4,872	191	330	4,350
Dec-16	5,034	191	330	4,513
Jan-17	5,028	217	330	4,481
Feb-17	4,542	217	330	3,995
Mar-17	5,028	217	330	4,481
Apr-17	4,866	217	330	4,319
May-17	5,028	217	330	4,481
Jun-17	4,866	217	330	4,319
Jul-17	5,028	217	330	4,481
Aug-17	5,028	217	330	4,481
Sep-17	4,866	217	330	4,319
Oct-17	5,028	217	330	4,481
Nov-17	4,866	217	330	4,319
Dec-17	5,028	217	330	4,481
Jan-18	5,024	242	330	4,451
Feb-18	4,537	242	330	3,965
Mar-18	5,024	242	330	4,451
Apr-18	4,862	242	330	4,289
May-18	5,024	242	330	4,451
Jun-18	4,862	242	330	4,289
Jul-18	5,024	242	330	4,451
Aug-18	5,024	242	330	4,451
Sep-18	4,862	242	330	4,289
Oct-18	5,024	242	330	4,451
Nov-18	4,862	242	330	4,289
Dec-18	5,024	242	330	4,451
Jan-19	5,016	268	330	4,419
Feb-19	4,531	268	330	3,933
Mar-19	5,016	268	330	4,419
Apr-19	4,854	268	330	4,257
May-19	5,016	268	330	4,419
Jun-19	4,854	268	330	4,257

Noncore Industrial Demand Forecast (Mth)

	Industrial - All Temperature Years			
Date	IndModel	DSM	Vernon	Ind-All
Jul-19	5,016	268	330	4,419
Aug-19	5,016	268	330	4,419
Sep-19	4,854	268	330	4,257
Oct-19	5,016	268	330	4,419
Nov-19	4,854	268	330	4,257
Dec-19	5,016	268	330	4,419
Jan-20	5,010	293	330	4,386
Feb-20	4,525	293	330	3,902
Mar-20	5,010	293	330	4,386
Apr-20	4,848	293	330	4,225
May-20	5,010	293	330	4,386
Jun-20	4,848	293	330	4,225
Jul-20	5,010	293	330	4,386
Aug-20	5,010	293	330	4,386
Sep-20	4,848	293	330	4,225
Oct-20	5,010	293	330	4,386
Nov-20	4,848	293	330	4,225
Dec-20	5,010	293	330	4,386
Jan-21	5,013	318	330	4,364
Feb-21	4,528	318	330	3,879
Mar-21	5,013	318	330	4,364
Apr-21	4,851	318	330	4,202
May-21	5,013	318	330	4,364
Jun-21	4,851	318	330	4,202
Jul-21	5,013	318	330	4,364
Aug-21	5,013	318	330	4,364
Sep-21	4,851	318	330	4,202
Oct-21	5,013	318	330	4,364
Nov-21	4,851	318	330	4,202
Dec-21	5,013	318	330	4,364
Jan-22	4,997	344	330	4,323
Feb-22	4,513	344	330	3,839
Mar-22	4,997	344	330	4,323
Apr-22	4,836	344	330	4,162
May-22	4,997	344	330	4,323
Jun-22	4,836	344	330	4,162
Jul-22	4,997	344	330	4,323
Aug-22	4,997	344	330	4,323
Sep-22	4,836	344	330	4,162
Oct-22	4,997	344	330	4,323
Nov-22	4,836	344	330	4,162
Dec-22	4,997	344	330	4,323
Jan-23	4,982	364	330	4,288
Feb-23	4,500	364	330	3,806
Mar-23	4,982	364	330	4,288
Apr-23	4,822	364	330	4,128
May-23	4,982	364	330	4,288
Jun-23	4,822	364	330	4,128
Jul-23	4,982	364	330	4,288
Aug-23	4,982	364	330	4,288
Sep-23	4,822	364	330	4,128
Oct-23	4,982	364	330	4,288
Nov-23	4,822	364	330	4,128
Dec-23	4,982	364	330	4,288

Noncore Industrial Demand Forecast (Mth)

	Industrial - All Temperature Years			
Date	IndModel	DSM	Vernon	Ind-All
Jan-24	4,968	370	330	4,268
Feb-24	4,487	370	330	3,787
Mar-24	4,968	370	330	4,268
Apr-24	4,808	370	330	4,108
May-24	4,968	370	330	4,268
Jun-24	4,808	370	330	4,108
Jul-24	4,968	370	330	4,268
Aug-24	4,968	370	330	4,268
Sep-24	4,808	370	330	4,108
Oct-24	4,968	370	330	4,268
Nov-24	4,808	370	330	4,108
Dec-24	4,968	370	330	4,268
Jan-25	4,954	375	330	4,249
Feb-25	4,475	375	330	3,769
Mar-25	4,954	375	330	4,249
Apr-25	4,794	375	330	4,089
May-25	4,954	375	330	4,249
Jun-25	4,794	375	330	4,089
Jul-25	4,954	375	330	4,249
Aug-25	4,954	375	330	4,249
Sep-25	4,794	375	330	4,089
Oct-25	4,954	375	330	4,249
Nov-25	4,794	375	330	4,089
Dec-25	4,954	375	330	4,249
Jan-26	4,950	379	330	4,241
Feb-26	4,471	379	330	3,762
Mar-26	4,950	379	330	4,241
Apr-26	4,790	379	330	4,081
May-26	4,950	379	330	4,241
Jun-26	4,790	379	330	4,081
Jul-26	4,950	379	330	4,241
Aug-26	4,950	379	330	4,241
Sep-26	4,790	379	330	4,081
Oct-26	4,950	379	330	4,241
Nov-26	4,790	379	330	4,081
Dec-26	4,950	379	330	4,241
Jan-27	4,939	382	330	4,227
Feb-27	4,461	382	330	3,749
Mar-27	4,939	382	330	4,227
Apr-27	4,780	382	330	4,068
May-27	4,939	382	330	4,227
Jun-27	4,780	382	330	4,068
Jul-27	4,939	382	330	4,227
Aug-27	4,939	382	330	4,227
Sep-27	4,780	382	330	4,068
Oct-27	4,939	382	330	4,227
Nov-27	4,780	382	330	4,068
Dec-27	4,939	382	330	4,227
Jan-28	4,905	382	330	4,193
Feb-28	4,430	382	330	3,718
Mar-28	4,905	382	330	4,193
Apr-28	4,747	382	330	4,034
May-28	4,905	382	330	4,193
Jun-28	4,747	382	330	4,034

Noncore Industrial Demand Forecast (Mth)

	Industrial - All Temperature Years			
Date	IndModel	DSM	Vernon	Ind-All
Jul-28	4,905	382	330	4,193
Aug-28	4,905	382	330	4,193
Sep-28	4,747	382	330	4,034
Oct-28	4,905	382	330	4,193
Nov-28	4,747	382	330	4,034
Dec-28	4,905	382	330	4,193
Jan-29	4,902	382	330	4,190
Feb-29	4,428	382	330	3,716
Mar-29	4,902	382	330	4,190
Apr-29	4,744	382	330	4,032
May-29	4,902	382	330	4,190
Jun-29	4,744	382	330	4,032
Jul-29	4,902	382	330	4,190
Aug-29	4,902	382	330	4,190
Sep-29	4,744	382	330	4,032
Oct-29	4,902	382	330	4,190
Nov-29	4,744	382	330	4,032
Dec-29	4,902	382	330	4,190
Jan-30	4,884	382	330	4,172
Feb-30	4,411	382	330	3,699
Mar-30	4,884	382	330	4,172
Apr-30	4,726	382	330	4,014
May-30	4,884	382	330	4,172
Jun-30	4,726	382	330	4,014
Jul-30	4,884	382	330	4,172
Aug-30	4,884	382	330	4,172
Sep-30	4,726	382	330	4,014
Oct-30	4,884	382	330	4,172
Nov-30	4,726	382	330	4,014
Dec-30	4,884	382	330	4,172

Noncore Industrial Demand Forecast
Forecast by Sectors from End-Use Model (MDth)

Year	Chemical	Fab_Metal	Food	Mining	Misc	Petroleum	Prim_Metal	Stone	Textile	Transport	Wood_Paper	Grand Total
2007	3,118	4,785	19,524	2,584	2,510	3,363	8,179	5,899	3,582	1,655	4,884	60,082
2008	3,061	4,703	19,041	2,561	2,453	3,305	7,966	5,669	3,458	1,615	4,636	58,469
2009	3,073	4,659	19,093	2,568	2,431	3,279	7,829	5,615	3,429	1,619	4,589	58,185
2010	3,103	4,674	19,189	2,555	2,439	3,268	7,797	5,651	3,431	1,629	4,663	58,398
2011	3,135	4,707	19,270	2,531	2,442	3,256	7,794	5,689	3,426	1,637	4,745	58,634
2012	3,180	4,791	19,404	2,511	2,455	3,252	7,836	5,731	3,419	1,648	4,804	59,031
2013	3,220	4,856	19,512	2,479	2,464	3,243	7,857	5,751	3,405	1,650	4,828	59,265
2014	3,258	4,905	19,634	2,447	2,475	3,239	7,871	5,768	3,396	1,651	4,855	59,498
2015	3,277	4,927	19,652	2,404	2,469	3,215	7,833	5,750	3,373	1,642	4,853	59,395
2016	3,291	4,954	19,657	2,365	2,464	3,188	7,793	5,728	3,350	1,632	4,849	59,271
2017	3,310	4,983	19,667	2,328	2,465	3,164	7,775	5,717	3,339	1,623	4,833	59,204
2018	3,327	4,999	19,674	2,295	2,462	3,146	7,766	5,711	3,331	1,615	4,822	59,149
2019	3,340	4,997	19,686	2,275	2,453	3,128	7,746	5,701	3,323	1,609	4,807	59,063
2020	3,353	4,978	19,703	2,267	2,441	3,110	7,726	5,699	3,317	1,602	4,788	58,985
2021	3,373	4,966	19,753	2,267	2,430	3,102	7,730	5,707	3,319	1,598	4,777	59,022
2022	3,381	4,923	19,726	2,261	2,413	3,087	7,699	5,692	3,313	1,590	4,752	58,837
2023	3,389	4,890	19,691	2,255	2,399	3,072	7,676	5,677	3,302	1,583	4,727	58,662
2024	3,392	4,866	19,659	2,249	2,388	3,054	7,657	5,660	3,289	1,576	4,706	58,495
2025	3,395	4,837	19,632	2,243	2,380	3,035	7,631	5,644	3,278	1,570	4,688	58,333
2026	3,404	4,820	19,640	2,239	2,379	3,025	7,615	5,639	3,277	1,566	4,680	58,284
2027	3,412	4,805	19,626	2,234	2,377	3,010	7,571	5,630	3,272	1,559	4,662	58,158
2028	3,404	4,765	19,520	2,220	2,365	2,982	7,489	5,595	3,248	1,545	4,617	57,750
2029	3,418	4,750	19,548	2,221	2,370	2,976	7,454	5,594	3,243	1,542	4,605	57,722
2030	3,418	4,718	19,515	2,214	2,366	2,959	7,386	5,573	3,232	1,536	4,583	57,501

Ind_NCore_07_Source_Data.xls - IndNonCoreEconFcast

Mining	Food	Textile	Wood_Paper	Chemical	Petroleum	Stone	Prim_Metal	Fab_Metal	Transport	Misc
25839480	195237446	35816873	48838251	31175385	33629969	58991355	81790872	47851730	16547192	25102222
26487290	193247123	34660966	45582414	31332020	33902196	56600362	80767284	48256311	16442012	25008075
26653358	194415657	34032660	44541256	31590861	33338387	55418524	77728583	47276934	16528207	24516656
26201839	195407228	33855620	45908216	32079639	32869926	55857656	76532900	47326292	16644603	24529196
25627239	196789278	33688649	47638197	32731279	32549472	56598968	76296808	47956567	16797439	24558722
24904774	197635853	33157165	48394122	33379725	32093658	56880944	76369756	49274924	16840995	24571136
23981370	198328790	32559782	48500354	33967040	31597984	56802455	76166969	50274497	16744741	24543898
23071612	199365704	32090932	48660105	34528705	31226264	56679543	75793016	50917857	16621678	24560106
22265434	200739474	31750603	48886449	35108829	30882718	56594061	75378539	51661220	16516337	24573357
21590088	202288976	31510932	49156400	35667318	30528224	56550159	75102128	52625304	16426606	24654097
20934419	203740505	31469366	49134166	36281322	30212490	56684316	75207570	53592463	16326155	24835707
20337596	204885315	31476327	49157039	36819987	29987064	56871373	75418960	54212183	16247530	24893522
19975815	205894955	31434601	49004853	37246569	29717158	56864914	75280969	54352933	16160070	24796375
19868436	206848169	31399906	48750740	37630449	29435532	57009341	75102094	54105167	16077482	24614347
19853325	207753082	31413780	48457766	38029134	29238015	57135958	75118323	53778889	15970013	24348507
19845823	208151926	31469402	48147123	38382757	29069232	57110873	74825942	53083135	15876828	24102354
19828093	208379232	31396353	47858572	38713520	28889072	57069946	74728208	52622874	15803226	23923508
19810470	208635851	31253969	47632436	38954478	28658570	56991258	74679464	52319188	15738316	23802053

Ind_NCore_07_Source_Data.xls - IndNonCoreEmpFcast

YEAR	Mining	Food	Textile	Wood_Pape	Chemical	Petroleum	Stone	Prim_Metal	Fab_Metal	Transport	Misc	EMPLTOT
2007	19.04117	119.68375	38.85692	26.49550	38.90900	6.13358	26.54942	9.99092	93.15425	79.85883	423.70117	882.37450
2008	19.51854	118.46365	37.60290	24.72916	39.10449	6.18323	25.47334	9.86588	93.94186	79.35122	422.11206	876.34633
2009	19.64092	119.17998	36.92126	24.16431	39.42754	6.08040	24.94144	9.49470	92.03528	79.76721	413.81737	865.47042
2010	19.30819	119.78783	36.72920	24.90591	40.03757	5.99496	25.13908	9.34865	92.13137	80.32895	414.02905	867.74075
2011	18.88477	120.63505	36.54805	25.84445	40.85086	5.93652	25.47271	9.31981	93.35834	81.06656	414.52741	872.44452
2012	18.35238	121.15401	35.97146	26.25455	41.66017	5.85338	25.59961	9.32872	95.92482	81.27677	414.73695	876.11282
2013	17.67192	121.57879	35.32337	26.31219	42.39318	5.76298	25.56429	9.30395	97.87072	80.81223	414.27720	876.87081
2014	17.00152	122.21444	34.81473	26.39885	43.09417	5.69519	25.50897	9.25827	99.12316	80.21831	414.55077	877.87838
2015	16.40745	123.05658	34.44551	26.52165	43.81821	5.63253	25.47050	9.20764	100.57029	79.70993	414.77444	879.61471
2016	15.90978	124.00645	34.18550	26.66810	44.51524	5.56787	25.45074	9.17387	102.44709	79.27687	416.13725	883.33878
2017	15.42662	124.89626	34.14041	26.65604	45.28156	5.51029	25.51112	9.18675	104.32989	78.79208	419.20266	888.93367
2018	14.98682	125.59805	34.14796	26.66845	45.95385	5.46917	25.59531	9.21258	105.53632	78.41263	420.17851	891.75962
2019	14.72022	126.21698	34.10269	26.58588	46.48625	5.41995	25.59240	9.19572	105.81032	77.99054	418.53877	890.65971
2020	14.64109	126.80131	34.06505	26.44802	46.96536	5.36858	25.65740	9.17387	105.32798	77.59195	415.46630	887.50693
2021	14.62996	127.35604	34.08010	26.28908	47.46294	5.33256	25.71438	9.17585	104.69281	77.07330	410.97920	882.78622
2022	14.62443	127.60054	34.14044	26.12055	47.90429	5.30178	25.70309	9.14014	103.33837	76.62357	406.82436	877.32156
2023	14.61136	127.73988	34.06119	25.96401	48.31711	5.26892	25.68468	9.12820	102.44236	76.26836	403.80562	873.29168
2024	14.59838	127.89719	33.90673	25.84133	48.61784	5.22688	25.64926	9.12224	101.85117	75.95510	401.75558	870.42169
2025	14.57966	128.06162	33.82764	25.75020	48.88053	5.17860	25.61098	9.09645	101.04094	75.61122	400.69830	868.33612
2026	14.53691	128.29270	33.82763	25.67951	49.17516	5.14362	25.59381	9.06468	100.43047	75.26597	400.59302	867.60347
2027	14.50361	128.47751	33.82007	25.54697	49.51603	5.10055	25.58682	8.97339	100.09244	74.80357	401.10180	867.52276
2028	14.48875	128.54487	33.69565	25.32736	49.85354	5.06050	25.56270	8.87014	99.54676	74.29882	402.10973	867.35884
2029	14.47201	128.66532	33.51860	25.14027	50.13979	5.02450	25.50753	8.75699	98.70872	73.82767	403.16408	866.92547
2030	14.44598	128.86432	33.43565	25.01266	50.36009	4.98760	25.43231	8.62198	97.84323	73.56336	404.02797	866.59514

Ind_NCore_07_Source_Data.xls - IndNonCoreUsePerMeterAvg

Segment	Fire_Tube_Boil	Wat_Tube_Boil	Space_Heat	Water_Heat	Dryer	Furnace_Oven_ Kiln	AC	Engine	Misc_Other	Total
Mining	190265	753191	9790	5831	505592	1325018	0	54952	26414	2871053
Food	879689	238082	9519	12401	327015	80205	905	2641	62989	1613447
Textile	806163	110943	6656	21174	368675	116808	0	12211	49741	1492370
Wood_Paper	238982	600130	102	418	89231	51280	0	0	37321	1017464
Chemical	464749	145451	3264	2269	0	22492	7474	0	271224	916923
Petroleum	53245	0	23897	1843	201722	641961	0	0	66449	989117
Stone	96407	0	14944	2705	60704	2513140	0	0	121212	2809112
Prim_Metal	50083	179749	5644	649	59326	2216718	203	0	213992	2726362
Fab_Metal	115744	12158	15742	1634	2559	690819	52	962	136896	976566
Transport	86862	130249	26454	2770	1544	727494	205	0	127568	1103146
Misc	262226	86907	10639	11127	19491	180679	4	0	167227	738301

Ind_NCore_07_Source_Data.xls - IndNonCoreSat

Segment	Fire_Tube_Boil	Wat_Tube_Boil	Space_Heat	Water_Heat	Dryer	Furnace_Oven_Kiln	AC	Engine	Misc_Other
Mining	0.01	0.01	0.73	0.73	0.03	0.06	0.64	0.87	1.00
Food	0.45	0.45	0.60	0.85	0.12	0.33	0.73	0.70	1.00
Textile	0.26	0.26	0.70	0.71	0.14	0.09	0.72	0.46	1.00
Wood_Paper	0.01	0.01	0.62	0.77	0.09	0.07	0.71	0.50	1.00
Chemical	0.14	0.14	0.73	0.73	0.12	0.10	0.74	0.70	1.00
Petroleum	0.14	0.14	0.73	0.73	0.12	0.10	0.74	0.70	1.00
Stone	0.01	0.01	0.73	0.73	0.03	0.06	0.64	0.87	1.00
Prim_Metal	0.07	0.07	0.73	0.76	0.15	0.10	0.68	0.86	1.00
Fab_Metal	0.07	0.07	0.73	0.76	0.15	0.10	0.68	0.86	1.00
Transport	0.14	0.14	0.73	0.73	0.12	0.10	0.74	0.70	1.00
Misc	0.14	0.14	0.73	0.73	0.12	0.10	0.74	0.70	1.00

Ind_NCore_07_Source_Data.xls - IndNonCoreGasShare

Segment	Fire_Tube_Boil	Wat_Tube_Boil	Space_Heat	Water_Heat	Dryer	Furnace_Oven_ Kiln	AC	Engine	Misc_Other
Mining	0.75	0.75	0.61	0.59	0.32	0.62	0.11	0.01	1.00
Food	0.79	0.79	0.61	0.59	0.32	0.62	0.11	0.01	1.00
Textile	0.79	0.79	0.61	0.59	0.32	0.62	0.11	0.01	1.00
Wood_Paper	0.75	0.75	0.61	0.59	0.32	0.62	0.11	0.01	1.00
Chemical	0.79	0.79	0.61	0.59	0.32	0.62	0.11	0.01	1.00
Petroleum	0.79	0.79	0.61	0.59	0.32	0.62	0.11	0.01	1.00
Stone	0.79	0.79	0.61	0.59	0.32	0.62	0.11	0.01	1.00
Prim_Metal	0.79	0.79	0.61	0.59	0.32	0.62	0.11	0.01	1.00
Fab_Metal	0.79	0.79	0.61	0.59	0.32	0.62	0.11	0.01	1.00
Transport	0.75	0.75	0.61	0.59	0.32	0.62	0.11	0.01	1.00
Misc	0.79	0.79	0.61	0.59	0.32	0.62	0.11	0.01	1.00

Gas share unadjusted	Fire_Tube_Boil	Wat_Tube_Boil	Space_Heat	Water_Heat	Dryer	Furnace_Oven_ Kiln	AC	Engine	Misc_Other
Mining	75%	75%	65%	60%	33%	65%	11%	1%	100%
Food	75%	75%	65%	60%	33%	65%	11%	1%	100%
Textile	75%	75%	65%	60%	33%	65%	11%	1%	100%
Wood_Paper	75%	75%	65%	60%	33%	65%	11%	1%	100%
Chemical	75%	75%	65%	60%	33%	65%	11%	1%	100%
Petroleum	75%	75%	65%	60%	33%	65%	11%	1%	100%
Stone	75%	75%	65%	60%	33%	65%	11%	1%	100%
Prim_Metal	75%	75%	65%	60%	33%	65%	11%	1%	100%
Fab_Metal	75%	75%	65%	60%	33%	65%	11%	1%	100%
Transport	75%	75%	65%	60%	33%	65%	11%	1%	100%
Misc	75%	75%	65%	60%	33%	65%	11%	1%	100%

electric share unadjusted	Fire_Tube_Boil	Wat_Tube_Boil	Space_Heat	Water_Heat	Dryer	Furnace_Oven_ Kiln	AC	Engine	Misc_Other
Mining	25%	25%	41%	41%	71%	40%	91%	99%	100%
Food	20%	20%	41%	41%	71%	40%	91%	99%	100%
Textile	20%	20%	41%	41%	71%	40%	91%	99%	100%
Wood_Paper	25%	25%	41%	41%	71%	40%	91%	99%	100%
Chemical	20%	20%	41%	41%	71%	40%	91%	99%	100%
Petroleum	20%	20%	41%	41%	71%	40%	91%	99%	100%
Stone	20%	20%	41%	41%	71%	40%	91%	99%	100%
Prim_Metal	20%	20%	41%	41%	71%	40%	91%	99%	100%
Fab_Metal	20%	20%	41%	41%	71%	40%	91%	99%	100%
Transport	25%	25%	41%	41%	71%	40%	91%	99%	100%
Misc	20%	20%	41%	41%	71%	40%	91%	99%	100%

Ind_NCore_07_Source_Data.xls - IndNonCoreElecUec

Segment	Fire_Tube_Boil	Wat_Tube_Boil	Space_Heat	Water_Heat	Dryer	Furnace_Oven_Kiln	AC	Engine
Mining	311700114	1233912930	266299	116921	647124219	711126534	0	76883217
Food	41425664	11211568	407510	276223	135353440	10123645	180794	5940873
Textile	63761817	8774796	237011	547934	126927638	52461093	0	40558119
Wood_Paper	799504539	2007713563	6645	16232	77743050	48173085	0	0
Chemical	70902822	22190185	115757	59317	0	9442740	1484152	0
Petroleum	21161884	0	2207800	125491	219234462	702122971	0	0
Stone	284092939	0	731195	97568	139757861	2426118904	0	0
Prim_Metal	6940624	24909971	90900	7398	8992590	422681228	19874	0
Fab_Metal	39062748	4103358	617510	45371	944518	320793120	12490	1963343
Transport	16679997	25011535	1180812	91137	810979	384433232	51172	0
Misc	57873838	19180472	545807	420788	11763220	109733850	1046	0

Relative Efficiency Gas to Electric	Fire_Tube_Boil	Wat_Tube_Boil	Space_Heat	Water_Heat	Dryer	Furnace_Oven_Kiln	AC	Engine
Mining	70%	70%	70%	50%	70%	70%	70%	70%
Food	70%	70%	70%	50%	70%	70%	70%	70%
Textile	70%	70%	70%	50%	70%	70%	70%	70%
Wood_Paper	70%	70%	70%	50%	70%	70%	70%	70%
Chemical	70%	70%	70%	50%	70%	70%	70%	70%
Petroleum	70%	70%	70%	50%	70%	70%	70%	70%
Stone	70%	70%	70%	50%	70%	70%	70%	70%
Prim_Metal	70%	70%	70%	50%	70%	70%	70%	70%
Fab_Metal	70%	70%	70%	50%	70%	70%	70%	70%
Transport	70%	70%	70%	50%	70%	70%	70%	70%
Misc	70%	70%	70%	50%	70%	70%	70%	70%

Ind_NCore_07_Source_Data.xls - IndNonCoreAvgEQAge

Segment	Fire_Tube_Boil	Wat_Tube_Boil	Space_Heat	Water_Heat	Dryer	Furnace_Oven_ Kiln	AC	Engine	Misc_Other
Mining	1979	1976	1971	1989	1973	1972	.	1985	1972
Food	1981	1979	1978	1980	1984	1978	1999	1989	1976
Textile	1977	1975	.	1980	1988	1975	1990	.	1971
Wood_Paper	1980	1975	1975	1975	1981	1977	.	1968	1981
Chemical	1985	1976	1978	1985	1986	1979	1996	.	1983
Petroleum	1970	.	1980	1982	1968	1988	.	.	1968
Stone	1976	.	1984	1982	1978	1976	.	.	1967
Prim_Metal	1990	1975	1974	1983	1989	1982	1975	.	1979
Fab_Metal	1974	1972	1976	1981	1976	1980	1998	.	1978
Transport	1977	1989	1970	1976	.	1981	1976	.	1982
Misc	1980	1978	1978	1982	1984	1980	.	.	1984

Ind_NCore_07_Source_Data.xls - 2007_Historical_Data

Segment	2007 Therm Sales	2007 Meter Count	2007 Meter Count, Existing/Old customers	2007 Meter Count New Customers	Avg Use Per Meter Existing Customers	Avg Use Per Meter New Customers	Price Elasticity	Emp Elasticity
Mining	25839480	9	9	0	2871053	.	-0.071000	0.474000
Food	195237446	122	121	0	1613447	.	-0.071000	0.474000
Textile	35816873	24	24	0	1492370	.	-0.071000	0.474000
Wood_Paper	48838251	48	48	0	1017464	.	-0.071000	0.474000
Chemical	31175385	34	34	0	916923	.	-0.071000	0.474000
Petroleum	33629969	34	34	0	989117	.	-0.071000	0.474000
Stone	58991355	21	21	0	2809112	.	-0.071000	0.474000
Prim_Metal	81790872	30	30	0	2726362	.	-0.071000	0.474000
Fab_Metal	47851730	49	49	0	976566	.	-0.071000	0.474000
Transport	16547192	15	15	0	1103146	.	-0.071000	0.474000
Misc	25102222	34	34	0	738301	.	-0.071000	0.474000

Noncore Industrial Demand Forecast
Gas Saturations by Businesses and Equipment

zName	bName	nName	_TYPE_	_FREQ_	saturation
			0	49,538	0.4736
		AC	1	5,270	0.7020
		Dryer	1	5,797	0.1082
		Engine	1	3,689	0.7471
		Fire_Tube_Boiler	1	5,797	0.1309
		Furnace_Oven_Kiln	1	5,797	0.1100
		Other	1	5,797	1.0000
		Space_Heat	1	5,797	0.7055
		Water_Heat	1	5,797	0.7482
		Water_Tube_Boiler	1	5,797	0.1309
	Chemical		2	4,743	0.4889
	Fab_Metal		2	4,743	0.4911
	Food		2	4,743	0.5811
	Mining		2	4,743	0.4533
	Misc		2	4,743	0.4889
	Petroleum		2	4,216	0.4575
	Prim_Metal		2	4,216	0.4450
	Stone		2	4,216	0.4013
	Textile		2	4,216	0.4850
	Transport		2	4,743	0.4889
	Wood_Paper		2	4,216	0.4100
	Chemical	AC	3	527	0.7400
	Chemical	Dryer	3	527	0.1200
	Chemical	Engine	3	527	0.7000
	Chemical	Fire_Tube_Boiler	3	527	0.1400
	Chemical	Furnace_Oven_Kiln	3	527	0.1000
	Chemical	Other	3	527	1.0000
	Chemical	Space_Heat	3	527	0.7300
	Chemical	Water_Heat	3	527	0.7300
	Chemical	Water_Tube_Boiler	3	527	0.1400
	Fab_Metal	AC	3	527	0.6800
	Fab_Metal	Dryer	3	527	0.1500
	Fab_Metal	Engine	3	527	0.8600
	Fab_Metal	Fire_Tube_Boiler	3	527	0.0700
	Fab_Metal	Furnace_Oven_Kiln	3	527	0.1000
	Fab_Metal	Other	3	527	1.0000
	Fab_Metal	Space_Heat	3	527	0.7300
	Fab_Metal	Water_Heat	3	527	0.7600
	Fab_Metal	Water_Tube_Boiler	3	527	0.0700
	Food	AC	3	527	0.7300
	Food	Dryer	3	527	0.1200
	Food	Engine	3	527	0.7000
	Food	Fire_Tube_Boiler	3	527	0.4500
	Food	Furnace_Oven_Kiln	3	527	0.3300
	Food	Other	3	527	1.0000
	Food	Space_Heat	3	527	0.6000
	Food	Water_Heat	3	527	0.8500
	Food	Water_Tube_Boiler	3	527	0.4500
	Mining	AC	3	527	0.6400
	Mining	Dryer	3	527	0.0300
	Mining	Engine	3	527	0.8700
	Mining	Fire_Tube_Boiler	3	527	0.0100
	Mining	Furnace_Oven_Kiln	3	527	0.0600
	Mining	Other	3	527	1.0000

Noncore Industrial Demand Forecast
Gas Saturations by Businesses and Equipment

zName	bName	nName	_TYPE_	_FREQ_	saturation
	Mining	Space_Heat	3	527	0.7300
	Mining	Water_Heat	3	527	0.7300
	Mining	Water_Tube_Boiler	3	527	0.0100
	Misc	AC	3	527	0.7400
	Misc	Dryer	3	527	0.1200
	Misc	Engine	3	527	0.7000
	Misc	Fire_Tube_Boiler	3	527	0.1400
	Misc	Furnace_Oven_Kiln	3	527	0.1000
	Misc	Other	3	527	1.0000
	Misc	Space_Heat	3	527	0.7300
	Misc	Water_Heat	3	527	0.7300
	Misc	Water_Tube_Boiler	3	527	0.1400
	Petroleum	Dryer	3	527	0.1200
	Petroleum	Engine	3	527	0.7000
	Petroleum	Fire_Tube_Boiler	3	527	0.1400
	Petroleum	Furnace_Oven_Kiln	3	527	0.1000
	Petroleum	Other	3	527	1.0000
	Petroleum	Space_Heat	3	527	0.7300
	Petroleum	Water_Heat	3	527	0.7300
	Petroleum	Water_Tube_Boiler	3	527	0.1400
	Prim_Metal	AC	3	527	0.6800
	Prim_Metal	Dryer	3	527	0.1500
	Prim_Metal	Fire_Tube_Boiler	3	527	0.0700
	Prim_Metal	Furnace_Oven_Kiln	3	527	0.1000
	Prim_Metal	Other	3	527	1.0000
	Prim_Metal	Space_Heat	3	527	0.7300
	Prim_Metal	Water_Heat	3	527	0.7600
	Prim_Metal	Water_Tube_Boiler	3	527	0.0700
	Stone	AC	3	527	0.6400
	Stone	Dryer	3	527	0.0300
	Stone	Fire_Tube_Boiler	3	527	0.0100
	Stone	Furnace_Oven_Kiln	3	527	0.0600
	Stone	Other	3	527	1.0000
	Stone	Space_Heat	3	527	0.7300
	Stone	Water_Heat	3	527	0.7300
	Stone	Water_Tube_Boiler	3	527	0.0100
	Textile	AC	3	527	0.7200
	Textile	Dryer	3	527	0.1400
	Textile	Fire_Tube_Boiler	3	527	0.2600
	Textile	Furnace_Oven_Kiln	3	527	0.0900
	Textile	Other	3	527	1.0000
	Textile	Space_Heat	3	527	0.7000
	Textile	Water_Heat	3	527	0.7100
	Textile	Water_Tube_Boiler	3	527	0.2600
	Transport	AC	3	527	0.7400
	Transport	Dryer	3	527	0.1200
	Transport	Engine	3	527	0.7000
	Transport	Fire_Tube_Boiler	3	527	0.1400
	Transport	Furnace_Oven_Kiln	3	527	0.1000
	Transport	Other	3	527	1.0000
	Transport	Space_Heat	3	527	0.7300
	Transport	Water_Heat	3	527	0.7300
	Transport	Water_Tube_Boiler	3	527	0.1400
	Wood_Paper	AC	3	527	0.7100

Noncore Industrial Demand Forecast
Gas Saturations by Businesses and Equipment

zName	bName	nName	_TYPE_	_FREQ_	saturation
	Wood_Paper	Dryer	3	527	0.0900
	Wood_Paper	Fire_Tube_Boiler	3	527	0.0100
	Wood_Paper	Furnace_Oven_Kiln	3	527	0.0700
	Wood_Paper	Other	3	527	1.0000
	Wood_Paper	Space_Heat	3	527	0.6200
	Wood_Paper	Water_Heat	3	527	0.7700
	Wood_Paper	Water_Tube_Boiler	3	527	0.0100
IndCore			4	49,538	0.4736
IndCore		AC	5	5,270	0.7020
IndCore		Dryer	5	5,797	0.1082
IndCore		Engine	5	3,689	0.7471
IndCore		Fire_Tube_Boiler	5	5,797	0.1309
IndCore		Furnace_Oven_Kiln	5	5,797	0.1100
IndCore		Other	5	5,797	1.0000
IndCore		Space_Heat	5	5,797	0.7055
IndCore		Water_Heat	5	5,797	0.7482
IndCore		Water_Tube_Boiler	5	5,797	0.1309
IndCore	Chemical		6	4,743	0.4889
IndCore	Fab_Metal		6	4,743	0.4911
IndCore	Food		6	4,743	0.5811
IndCore	Mining		6	4,743	0.4533
IndCore	Misc		6	4,743	0.4889
IndCore	Petroleum		6	4,216	0.4575
IndCore	Prim_Metal		6	4,216	0.4450
IndCore	Stone		6	4,216	0.4013
IndCore	Textile		6	4,216	0.4850
IndCore	Transport		6	4,743	0.4889
IndCore	Wood_Paper		6	4,216	0.4100
IndCore	Chemical	AC	7	527	0.7400
IndCore	Chemical	Dryer	7	527	0.1200
IndCore	Chemical	Engine	7	527	0.7000
IndCore	Chemical	Fire_Tube_Boiler	7	527	0.1400
IndCore	Chemical	Furnace_Oven_Kiln	7	527	0.1000
IndCore	Chemical	Other	7	527	1.0000
IndCore	Chemical	Space_Heat	7	527	0.7300
IndCore	Chemical	Water_Heat	7	527	0.7300
IndCore	Chemical	Water_Tube_Boiler	7	527	0.1400
IndCore	Fab_Metal	AC	7	527	0.6800
IndCore	Fab_Metal	Dryer	7	527	0.1500
IndCore	Fab_Metal	Engine	7	527	0.8600
IndCore	Fab_Metal	Fire_Tube_Boiler	7	527	0.0700
IndCore	Fab_Metal	Furnace_Oven_Kiln	7	527	0.1000
IndCore	Fab_Metal	Other	7	527	1.0000
IndCore	Fab_Metal	Space_Heat	7	527	0.7300
IndCore	Fab_Metal	Water_Heat	7	527	0.7600
IndCore	Fab_Metal	Water_Tube_Boiler	7	527	0.0700
IndCore	Food	AC	7	527	0.7300
IndCore	Food	Dryer	7	527	0.1200
IndCore	Food	Engine	7	527	0.7000
IndCore	Food	Fire_Tube_Boiler	7	527	0.4500
IndCore	Food	Furnace_Oven_Kiln	7	527	0.3300
IndCore	Food	Other	7	527	1.0000
IndCore	Food	Space_Heat	7	527	0.6000
IndCore	Food	Water_Heat	7	527	0.8500

Noncore Industrial Demand Forecast
Gas Saturations by Businesses and Equipment

zName	bName	nName	_TYPE_	_FREQ_	saturation
IndCore	Food	Water_Tube_Boiler	7	527	0.4500
IndCore	Mining	AC	7	527	0.6400
IndCore	Mining	Dryer	7	527	0.0300
IndCore	Mining	Engine	7	527	0.8700
IndCore	Mining	Fire_Tube_Boiler	7	527	0.0100
IndCore	Mining	Furnace_Oven_Kiln	7	527	0.0600
IndCore	Mining	Other	7	527	1.0000
IndCore	Mining	Space_Heat	7	527	0.7300
IndCore	Mining	Water_Heat	7	527	0.7300
IndCore	Mining	Water_Tube_Boiler	7	527	0.0100
IndCore	Misc	AC	7	527	0.7400
IndCore	Misc	Dryer	7	527	0.1200
IndCore	Misc	Engine	7	527	0.7000
IndCore	Misc	Fire_Tube_Boiler	7	527	0.1400
IndCore	Misc	Furnace_Oven_Kiln	7	527	0.1000
IndCore	Misc	Other	7	527	1.0000
IndCore	Misc	Space_Heat	7	527	0.7300
IndCore	Misc	Water_Heat	7	527	0.7300
IndCore	Misc	Water_Tube_Boiler	7	527	0.1400
IndCore	Petroleum	Dryer	7	527	0.1200
IndCore	Petroleum	Engine	7	527	0.7000
IndCore	Petroleum	Fire_Tube_Boiler	7	527	0.1400
IndCore	Petroleum	Furnace_Oven_Kiln	7	527	0.1000
IndCore	Petroleum	Other	7	527	1.0000
IndCore	Petroleum	Space_Heat	7	527	0.7300
IndCore	Petroleum	Water_Heat	7	527	0.7300
IndCore	Petroleum	Water_Tube_Boiler	7	527	0.1400
IndCore	Prim_Metal	AC	7	527	0.6800
IndCore	Prim_Metal	Dryer	7	527	0.1500
IndCore	Prim_Metal	Fire_Tube_Boiler	7	527	0.0700
IndCore	Prim_Metal	Furnace_Oven_Kiln	7	527	0.1000
IndCore	Prim_Metal	Other	7	527	1.0000
IndCore	Prim_Metal	Space_Heat	7	527	0.7300
IndCore	Prim_Metal	Water_Heat	7	527	0.7600
IndCore	Prim_Metal	Water_Tube_Boiler	7	527	0.0700
IndCore	Stone	AC	7	527	0.6400
IndCore	Stone	Dryer	7	527	0.0300
IndCore	Stone	Fire_Tube_Boiler	7	527	0.0100
IndCore	Stone	Furnace_Oven_Kiln	7	527	0.0600
IndCore	Stone	Other	7	527	1.0000
IndCore	Stone	Space_Heat	7	527	0.7300
IndCore	Stone	Water_Heat	7	527	0.7300
IndCore	Stone	Water_Tube_Boiler	7	527	0.0100
IndCore	Textile	AC	7	527	0.7200
IndCore	Textile	Dryer	7	527	0.1400
IndCore	Textile	Fire_Tube_Boiler	7	527	0.2600
IndCore	Textile	Furnace_Oven_Kiln	7	527	0.0900
IndCore	Textile	Other	7	527	1.0000
IndCore	Textile	Space_Heat	7	527	0.7000
IndCore	Textile	Water_Heat	7	527	0.7100
IndCore	Textile	Water_Tube_Boiler	7	527	0.2600
IndCore	Transport	AC	7	527	0.7400
IndCore	Transport	Dryer	7	527	0.1200
IndCore	Transport	Engine	7	527	0.7000

Noncore Industrial Demand Forecast
Gas Saturations by Businesses and Equipment

zName	bName	nName	_TYPE_	_FREQ_	saturation
IndCore	Transport	Fire_Tube_Boiler	7	527	0.1400
IndCore	Transport	Furnace_Oven_Kiln	7	527	0.1000
IndCore	Transport	Other	7	527	1.0000
IndCore	Transport	Space_Heat	7	527	0.7300
IndCore	Transport	Water_Heat	7	527	0.7300
IndCore	Transport	Water_Tube_Boiler	7	527	0.1400
IndCore	Wood_Paper	AC	7	527	0.7100
IndCore	Wood_Paper	Dryer	7	527	0.0900
IndCore	Wood_Paper	Fire_Tube_Boiler	7	527	0.0100
IndCore	Wood_Paper	Furnace_Oven_Kiln	7	527	0.0700
IndCore	Wood_Paper	Other	7	527	1.0000
IndCore	Wood_Paper	Space_Heat	7	527	0.6200
IndCore	Wood_Paper	Water_Heat	7	527	0.7700
IndCore	Wood_Paper	Water_Tube_Boiler	7	527	0.0100

Noncore Industrial Demand Forecast
Efficiency Shares by Fuels and End Uses

nName	fName	eName	_TYPE_	_FREQ_	baseAvgEShare
			0	343	0.5160
		High	1	83	0.0300
		Low	1	177	0.8453
		Standard	1	83	0.3000
	Electric		2	83	1.0000
	Natural_Gas		2	260	0.3615
	Electric	Low	3	83	1.0000
	Natural_Gas	High	3	83	0.0300
	Natural_Gas	Low	3	94	0.7086
	Natural_Gas	Standard	3	83	0.3000
AC			4	40	0.5000
Dryer			4	44	0.5000
Engine			4	28	0.5000
Fire_Tube_Boiler			4	44	0.5000
Furnace_Oven_Kiln			4	44	0.5000
Other			4	11	1.0000
Space_Heat			4	44	0.5000
Water_Heat			4	44	0.5000
Water_Tube_Boiler			4	44	0.5000
AC		High	5	10	0.0300
AC		Low	5	20	0.8350
AC		Standard	5	10	0.3000
Dryer		High	5	11	0.0300
Dryer		Low	5	22	0.8350
Dryer		Standard	5	11	0.3000
Engine		High	5	7	0.0300
Engine		Low	5	14	0.8350
Engine		Standard	5	7	0.3000
Fire_Tube_Boiler		High	5	11	0.0300
Fire_Tube_Boiler		Low	5	22	0.8350
Fire_Tube_Boiler		Standard	5	11	0.3000
Furnace_Oven_Kiln		High	5	11	0.0300
Furnace_Oven_Kiln		Low	5	22	0.8350
Furnace_Oven_Kiln		Standard	5	11	0.3000
Other		Low	5	11	1.0000
Space_Heat		High	5	11	0.0300
Space_Heat		Low	5	22	0.8350
Space_Heat		Standard	5	11	0.3000
Water_Heat		High	5	11	0.0300
Water_Heat		Low	5	22	0.8350
Water_Heat		Standard	5	11	0.3000
Water_Tube_Boiler		High	5	11	0.0300
Water_Tube_Boiler		Low	5	22	0.8350
Water_Tube_Boiler		Standard	5	11	0.3000
AC	Electric		6	10	1.0000
AC	Natural_Gas		6	30	0.3333
Dryer	Electric		6	11	1.0000
Dryer	Natural_Gas		6	33	0.3333
Engine	Electric		6	7	1.0000
Engine	Natural_Gas		6	21	0.3333
Fire_Tube_Boiler	Electric		6	11	1.0000
Fire_Tube_Boiler	Natural_Gas		6	33	0.3333
Furnace_Oven_Kiln	Electric		6	11	1.0000
Furnace_Oven_Kiln	Natural_Gas		6	33	0.3333

Noncore Industrial Demand Forecast
Efficiency Shares by Fuels and End Uses

nName	fName	eName	_TYPE_	_FREQ_	baseAvgEShare
Other	Natural_Gas		6	11	1.0000
Space_Heat	Electric		6	11	1.0000
Space_Heat	Natural_Gas		6	33	0.3333
Water_Heat	Electric		6	11	1.0000
Water_Heat	Natural_Gas		6	33	0.3333
Water_Tube_Boiler	Electric		6	11	1.0000
Water_Tube_Boiler	Natural_Gas		6	33	0.3333
AC	Electric	Low	7	10	1.0000
AC	Natural_Gas	High	7	10	0.0300
AC	Natural_Gas	Low	7	10	0.6700
AC	Natural_Gas	Standard	7	10	0.3000
Dryer	Electric	Low	7	11	1.0000
Dryer	Natural_Gas	High	7	11	0.0300
Dryer	Natural_Gas	Low	7	11	0.6700
Dryer	Natural_Gas	Standard	7	11	0.3000
Engine	Electric	Low	7	7	1.0000
Engine	Natural_Gas	High	7	7	0.0300
Engine	Natural_Gas	Low	7	7	0.6700
Engine	Natural_Gas	Standard	7	7	0.3000
Fire_Tube_Boiler	Electric	Low	7	11	1.0000
Fire_Tube_Boiler	Natural_Gas	High	7	11	0.0300
Fire_Tube_Boiler	Natural_Gas	Low	7	11	0.6700
Fire_Tube_Boiler	Natural_Gas	Standard	7	11	0.3000
Furnace_Oven_Kiln	Electric	Low	7	11	1.0000
Furnace_Oven_Kiln	Natural_Gas	High	7	11	0.0300
Furnace_Oven_Kiln	Natural_Gas	Low	7	11	0.6700
Furnace_Oven_Kiln	Natural_Gas	Standard	7	11	0.3000
Other	Natural_Gas	Low	7	11	1.0000
Space_Heat	Electric	Low	7	11	1.0000
Space_Heat	Natural_Gas	High	7	11	0.0300
Space_Heat	Natural_Gas	Low	7	11	0.6700
Space_Heat	Natural_Gas	Standard	7	11	0.3000
Water_Heat	Electric	Low	7	11	1.0000
Water_Heat	Natural_Gas	High	7	11	0.0300
Water_Heat	Natural_Gas	Low	7	11	0.6700
Water_Heat	Natural_Gas	Standard	7	11	0.3000
Water_Tube_Boiler	Electric	Low	7	11	1.0000
Water_Tube_Boiler	Natural_Gas	High	7	11	0.0300
Water_Tube_Boiler	Natural_Gas	Low	7	11	0.6700
Water_Tube_Boiler	Natural_Gas	Standard	7	11	0.3000

Noncore Industrial Demand Forecast
Fuel Shares by Businesses and End Uses

bName	nName	fName	_TYPE_	_FREQ_	baseAvgFShare
			0	177	0.5311
		Electric	1	83	0.4958
		Natural_Gas	1	94	0.5622
	AC		2	20	0.5000
	Dryer		2	22	0.5000
	Engine		2	14	0.5000
	Fire_Tube_Boiler		2	22	0.5000
	Furnace_Oven_Kiln		2	22	0.5000
	Other		2	11	1.0000
	Space_Heat		2	22	0.5000
	Water_Heat		2	22	0.5000
	Water_Tube_Boiler		2	22	0.5000
	AC	Electric	3	10	0.8900
	AC	Natural_Gas	3	10	0.1100
	Dryer	Electric	3	11	0.6800
	Dryer	Natural_Gas	3	11	0.3200
	Engine	Electric	3	7	0.9900
	Engine	Natural_Gas	3	7	0.0100
	Fire_Tube_Boiler	Electric	3	11	0.2209
	Fire_Tube_Boiler	Natural_Gas	3	11	0.7791
	Furnace_Oven_Kiln	Electric	3	11	0.3800
	Furnace_Oven_Kiln	Natural_Gas	3	11	0.6200
	Other	Natural_Gas	3	11	1.0000
	Space_Heat	Electric	3	11	0.3900
	Space_Heat	Natural_Gas	3	11	0.6100
	Water_Heat	Electric	3	11	0.4100
	Water_Heat	Natural_Gas	3	11	0.5900
	Water_Tube_Boiler	Electric	3	11	0.2209
	Water_Tube_Boiler	Natural_Gas	3	11	0.7791
Chemical			4	17	0.5294
Fab_Metal			4	17	0.5294
Food			4	17	0.5294
Mining			4	17	0.5294
Misc			4	17	0.5294
Petroleum			4	15	0.5333
Prim_Metal			4	15	0.5333
Stone			4	15	0.5333
Textile			4	15	0.5333
Transport			4	17	0.5294
Wood_Paper			4	15	0.5333
Chemical		Electric	5	8	0.5200
Chemical		Natural_Gas	5	9	0.5378
Fab_Metal		Electric	5	8	0.5200
Fab_Metal		Natural_Gas	5	9	0.5378
Food		Electric	5	8	0.5200
Food		Natural_Gas	5	9	0.5378
Mining		Electric	5	8	0.5300
Mining		Natural_Gas	5	9	0.5289
Misc		Electric	5	8	0.5200
Misc		Natural_Gas	5	9	0.5378
Petroleum		Electric	5	7	0.4671
Petroleum		Natural_Gas	5	8	0.5913
Prim_Metal		Electric	5	7	0.4529
Prim_Metal		Natural_Gas	5	8	0.6038

Noncore Industrial Demand Forecast
Fuel Shares by Businesses and End Uses

bName	nName	fName	_TYPE_	_FREQ_	baseAvgFShare
Stone		Electric	5	7	0.4529
Stone		Natural_Gas	5	8	0.6038
Textile		Electric	5	7	0.4529
Textile		Natural_Gas	5	8	0.6038
Transport		Electric	5	8	0.5300
Transport		Natural_Gas	5	9	0.5289
Wood_Paper		Electric	5	7	0.4643
Wood_Paper		Natural_Gas	5	8	0.5938
Chemical	AC		6	2	0.5000
Chemical	Dryer		6	2	0.5000
Chemical	Engine		6	2	0.5000
Chemical	Fire_Tube_Boiler		6	2	0.5000
Chemical	Furnace_Oven_Kiln		6	2	0.5000
Chemical	Other		6	1	1.0000
Chemical	Space_Heat		6	2	0.5000
Chemical	Water_Heat		6	2	0.5000
Chemical	Water_Tube_Boiler		6	2	0.5000
Fab_Metal	AC		6	2	0.5000
Fab_Metal	Dryer		6	2	0.5000
Fab_Metal	Engine		6	2	0.5000
Fab_Metal	Fire_Tube_Boiler		6	2	0.5000
Fab_Metal	Furnace_Oven_Kiln		6	2	0.5000
Fab_Metal	Other		6	1	1.0000
Fab_Metal	Space_Heat		6	2	0.5000
Fab_Metal	Water_Heat		6	2	0.5000
Fab_Metal	Water_Tube_Boiler		6	2	0.5000
Food	AC		6	2	0.5000
Food	Dryer		6	2	0.5000
Food	Engine		6	2	0.5000
Food	Fire_Tube_Boiler		6	2	0.5000
Food	Furnace_Oven_Kiln		6	2	0.5000
Food	Other		6	1	1.0000
Food	Space_Heat		6	2	0.5000
Food	Water_Heat		6	2	0.5000
Food	Water_Tube_Boiler		6	2	0.5000
Mining	AC		6	2	0.5000
Mining	Dryer		6	2	0.5000
Mining	Engine		6	2	0.5000
Mining	Fire_Tube_Boiler		6	2	0.5000
Mining	Furnace_Oven_Kiln		6	2	0.5000
Mining	Other		6	1	1.0000
Mining	Space_Heat		6	2	0.5000
Mining	Water_Heat		6	2	0.5000
Mining	Water_Tube_Boiler		6	2	0.5000
Misc	AC		6	2	0.5000
Misc	Dryer		6	2	0.5000
Misc	Engine		6	2	0.5000
Misc	Fire_Tube_Boiler		6	2	0.5000
Misc	Furnace_Oven_Kiln		6	2	0.5000
Misc	Other		6	1	1.0000
Misc	Space_Heat		6	2	0.5000
Misc	Water_Heat		6	2	0.5000
Misc	Water_Tube_Boiler		6	2	0.5000
Petroleum	Dryer		6	2	0.5000

Noncore Industrial Demand Forecast
Fuel Shares by Businesses and End Uses

bName	nName	fName	_TYPE_	_FREQ_	baseAvgFShare
Petroleum	Engine		6	2	0.5000
Petroleum	Fire_Tube_Boiler		6	2	0.5000
Petroleum	Furnace_Oven_Kiln		6	2	0.5000
Petroleum	Other		6	1	1.0000
Petroleum	Space_Heat		6	2	0.5000
Petroleum	Water_Heat		6	2	0.5000
Petroleum	Water_Tube_Boiler		6	2	0.5000
Prim_Metal	AC		6	2	0.5000
Prim_Metal	Dryer		6	2	0.5000
Prim_Metal	Fire_Tube_Boiler		6	2	0.5000
Prim_Metal	Furnace_Oven_Kiln		6	2	0.5000
Prim_Metal	Other		6	1	1.0000
Prim_Metal	Space_Heat		6	2	0.5000
Prim_Metal	Water_Heat		6	2	0.5000
Prim_Metal	Water_Tube_Boiler		6	2	0.5000
Stone	AC		6	2	0.5000
Stone	Dryer		6	2	0.5000
Stone	Fire_Tube_Boiler		6	2	0.5000
Stone	Furnace_Oven_Kiln		6	2	0.5000
Stone	Other		6	1	1.0000
Stone	Space_Heat		6	2	0.5000
Stone	Water_Heat		6	2	0.5000
Stone	Water_Tube_Boiler		6	2	0.5000
Textile	AC		6	2	0.5000
Textile	Dryer		6	2	0.5000
Textile	Fire_Tube_Boiler		6	2	0.5000
Textile	Furnace_Oven_Kiln		6	2	0.5000
Textile	Other		6	1	1.0000
Textile	Space_Heat		6	2	0.5000
Textile	Water_Heat		6	2	0.5000
Textile	Water_Tube_Boiler		6	2	0.5000
Transport	AC		6	2	0.5000
Transport	Dryer		6	2	0.5000
Transport	Engine		6	2	0.5000
Transport	Fire_Tube_Boiler		6	2	0.5000
Transport	Furnace_Oven_Kiln		6	2	0.5000
Transport	Other		6	1	1.0000
Transport	Space_Heat		6	2	0.5000
Transport	Water_Heat		6	2	0.5000
Transport	Water_Tube_Boiler		6	2	0.5000
Wood_Paper	AC		6	2	0.5000
Wood_Paper	Dryer		6	2	0.5000
Wood_Paper	Fire_Tube_Boiler		6	2	0.5000
Wood_Paper	Furnace_Oven_Kiln		6	2	0.5000
Wood_Paper	Other		6	1	1.0000
Wood_Paper	Space_Heat		6	2	0.5000
Wood_Paper	Water_Heat		6	2	0.5000
Wood_Paper	Water_Tube_Boiler		6	2	0.5000
Chemical	AC	Electric	7	1	0.8900
Chemical	AC	Natural_Gas	7	1	0.1100
Chemical	Dryer	Electric	7	1	0.6800
Chemical	Dryer	Natural_Gas	7	1	0.3200
Chemical	Engine	Electric	7	1	0.9900
Chemical	Engine	Natural_Gas	7	1	0.0100

Noncore Industrial Demand Forecast
Fuel Shares by Businesses and End Uses

bName	nName	fName	_TYPE_	_FREQ_	baseAvgFShare
Chemical	Fire_Tube_Boiler	Electric	7	1	0.2100
Chemical	Fire_Tube_Boiler	Natural_Gas	7	1	0.7900
Chemical	Furnace_Oven_Kiln	Electric	7	1	0.3800
Chemical	Furnace_Oven_Kiln	Natural_Gas	7	1	0.6200
Chemical	Other	Natural_Gas	7	1	1.0000
Chemical	Space_Heat	Electric	7	1	0.3900
Chemical	Space_Heat	Natural_Gas	7	1	0.6100
Chemical	Water_Heat	Electric	7	1	0.4100
Chemical	Water_Heat	Natural_Gas	7	1	0.5900
Chemical	Water_Tube_Boiler	Electric	7	1	0.2100
Chemical	Water_Tube_Boiler	Natural_Gas	7	1	0.7900
Fab_Metal	AC	Electric	7	1	0.8900
Fab_Metal	AC	Natural_Gas	7	1	0.1100
Fab_Metal	Dryer	Electric	7	1	0.6800
Fab_Metal	Dryer	Natural_Gas	7	1	0.3200
Fab_Metal	Engine	Electric	7	1	0.9900
Fab_Metal	Engine	Natural_Gas	7	1	0.0100
Fab_Metal	Fire_Tube_Boiler	Electric	7	1	0.2100
Fab_Metal	Fire_Tube_Boiler	Natural_Gas	7	1	0.7900
Fab_Metal	Furnace_Oven_Kiln	Electric	7	1	0.3800
Fab_Metal	Furnace_Oven_Kiln	Natural_Gas	7	1	0.6200
Fab_Metal	Other	Natural_Gas	7	1	1.0000
Fab_Metal	Space_Heat	Electric	7	1	0.3900
Fab_Metal	Space_Heat	Natural_Gas	7	1	0.6100
Fab_Metal	Water_Heat	Electric	7	1	0.4100
Fab_Metal	Water_Heat	Natural_Gas	7	1	0.5900
Fab_Metal	Water_Tube_Boiler	Electric	7	1	0.2100
Fab_Metal	Water_Tube_Boiler	Natural_Gas	7	1	0.7900
Food	AC	Electric	7	1	0.8900
Food	AC	Natural_Gas	7	1	0.1100
Food	Dryer	Electric	7	1	0.6800
Food	Dryer	Natural_Gas	7	1	0.3200
Food	Engine	Electric	7	1	0.9900
Food	Engine	Natural_Gas	7	1	0.0100
Food	Fire_Tube_Boiler	Electric	7	1	0.2100
Food	Fire_Tube_Boiler	Natural_Gas	7	1	0.7900
Food	Furnace_Oven_Kiln	Electric	7	1	0.3800
Food	Furnace_Oven_Kiln	Natural_Gas	7	1	0.6200
Food	Other	Natural_Gas	7	1	1.0000
Food	Space_Heat	Electric	7	1	0.3900
Food	Space_Heat	Natural_Gas	7	1	0.6100
Food	Water_Heat	Electric	7	1	0.4100
Food	Water_Heat	Natural_Gas	7	1	0.5900
Food	Water_Tube_Boiler	Electric	7	1	0.2100
Food	Water_Tube_Boiler	Natural_Gas	7	1	0.7900
Mining	AC	Electric	7	1	0.8900
Mining	AC	Natural_Gas	7	1	0.1100
Mining	Dryer	Electric	7	1	0.6800
Mining	Dryer	Natural_Gas	7	1	0.3200
Mining	Engine	Electric	7	1	0.9900
Mining	Engine	Natural_Gas	7	1	0.0100
Mining	Fire_Tube_Boiler	Electric	7	1	0.2500
Mining	Fire_Tube_Boiler	Natural_Gas	7	1	0.7500
Mining	Furnace_Oven_Kiln	Electric	7	1	0.3800

Noncore Industrial Demand Forecast
Fuel Shares by Businesses and End Uses

bName	nName	fName	_TYPE_	_FREQ_	baseAvgFShare
Mining	Furnace_Oven_Kiln	Natural_Gas	7	1	0.6200
Mining	Other	Natural_Gas	7	1	1.0000
Mining	Space_Heat	Electric	7	1	0.3900
Mining	Space_Heat	Natural_Gas	7	1	0.6100
Mining	Water_Heat	Electric	7	1	0.4100
Mining	Water_Heat	Natural_Gas	7	1	0.5900
Mining	Water_Tube_Boiler	Electric	7	1	0.2500
Mining	Water_Tube_Boiler	Natural_Gas	7	1	0.7500
Misc	AC	Electric	7	1	0.8900
Misc	AC	Natural_Gas	7	1	0.1100
Misc	Dryer	Electric	7	1	0.6800
Misc	Dryer	Natural_Gas	7	1	0.3200
Misc	Engine	Electric	7	1	0.9900
Misc	Engine	Natural_Gas	7	1	0.0100
Misc	Fire_Tube_Boiler	Electric	7	1	0.2100
Misc	Fire_Tube_Boiler	Natural_Gas	7	1	0.7900
Misc	Furnace_Oven_Kiln	Electric	7	1	0.3800
Misc	Furnace_Oven_Kiln	Natural_Gas	7	1	0.6200
Misc	Other	Natural_Gas	7	1	1.0000
Misc	Space_Heat	Electric	7	1	0.3900
Misc	Space_Heat	Natural_Gas	7	1	0.6100
Misc	Water_Heat	Electric	7	1	0.4100
Misc	Water_Heat	Natural_Gas	7	1	0.5900
Misc	Water_Tube_Boiler	Electric	7	1	0.2100
Misc	Water_Tube_Boiler	Natural_Gas	7	1	0.7900
Petroleum	Dryer	Electric	7	1	0.6800
Petroleum	Dryer	Natural_Gas	7	1	0.3200
Petroleum	Engine	Electric	7	1	0.9900
Petroleum	Engine	Natural_Gas	7	1	0.0100
Petroleum	Fire_Tube_Boiler	Electric	7	1	0.2100
Petroleum	Fire_Tube_Boiler	Natural_Gas	7	1	0.7900
Petroleum	Furnace_Oven_Kiln	Electric	7	1	0.3800
Petroleum	Furnace_Oven_Kiln	Natural_Gas	7	1	0.6200
Petroleum	Other	Natural_Gas	7	1	1.0000
Petroleum	Space_Heat	Electric	7	1	0.3900
Petroleum	Space_Heat	Natural_Gas	7	1	0.6100
Petroleum	Water_Heat	Electric	7	1	0.4100
Petroleum	Water_Heat	Natural_Gas	7	1	0.5900
Petroleum	Water_Tube_Boiler	Electric	7	1	0.2100
Petroleum	Water_Tube_Boiler	Natural_Gas	7	1	0.7900
Prim_Metal	AC	Electric	7	1	0.8900
Prim_Metal	AC	Natural_Gas	7	1	0.1100
Prim_Metal	Dryer	Electric	7	1	0.6800
Prim_Metal	Dryer	Natural_Gas	7	1	0.3200
Prim_Metal	Fire_Tube_Boiler	Electric	7	1	0.2100
Prim_Metal	Fire_Tube_Boiler	Natural_Gas	7	1	0.7900
Prim_Metal	Furnace_Oven_Kiln	Electric	7	1	0.3800
Prim_Metal	Furnace_Oven_Kiln	Natural_Gas	7	1	0.6200
Prim_Metal	Other	Natural_Gas	7	1	1.0000
Prim_Metal	Space_Heat	Electric	7	1	0.3900
Prim_Metal	Space_Heat	Natural_Gas	7	1	0.6100
Prim_Metal	Water_Heat	Electric	7	1	0.4100
Prim_Metal	Water_Heat	Natural_Gas	7	1	0.5900
Prim_Metal	Water_Tube_Boiler	Electric	7	1	0.2100

Noncore Industrial Demand Forecast
Fuel Shares by Businesses and End Uses

bName	nName	fName	_TYPE_	_FREQ_	baseAvgFShare
Prim_Metal	Water_Tube_Boiler	Natural_Gas	7	1	0.7900
Stone	AC	Electric	7	1	0.8900
Stone	AC	Natural_Gas	7	1	0.1100
Stone	Dryer	Electric	7	1	0.6800
Stone	Dryer	Natural_Gas	7	1	0.3200
Stone	Fire_Tube_Boiler	Electric	7	1	0.2100
Stone	Fire_Tube_Boiler	Natural_Gas	7	1	0.7900
Stone	Furnace_Oven_Kiln	Electric	7	1	0.3800
Stone	Furnace_Oven_Kiln	Natural_Gas	7	1	0.6200
Stone	Other	Natural_Gas	7	1	1.0000
Stone	Space_Heat	Electric	7	1	0.3900
Stone	Space_Heat	Natural_Gas	7	1	0.6100
Stone	Water_Heat	Electric	7	1	0.4100
Stone	Water_Heat	Natural_Gas	7	1	0.5900
Stone	Water_Tube_Boiler	Electric	7	1	0.2100
Stone	Water_Tube_Boiler	Natural_Gas	7	1	0.7900
Textile	AC	Electric	7	1	0.8900
Textile	AC	Natural_Gas	7	1	0.1100
Textile	Dryer	Electric	7	1	0.6800
Textile	Dryer	Natural_Gas	7	1	0.3200
Textile	Fire_Tube_Boiler	Electric	7	1	0.2100
Textile	Fire_Tube_Boiler	Natural_Gas	7	1	0.7900
Textile	Furnace_Oven_Kiln	Electric	7	1	0.3800
Textile	Furnace_Oven_Kiln	Natural_Gas	7	1	0.6200
Textile	Other	Natural_Gas	7	1	1.0000
Textile	Space_Heat	Electric	7	1	0.3900
Textile	Space_Heat	Natural_Gas	7	1	0.6100
Textile	Water_Heat	Electric	7	1	0.4100
Textile	Water_Heat	Natural_Gas	7	1	0.5900
Textile	Water_Tube_Boiler	Electric	7	1	0.2100
Textile	Water_Tube_Boiler	Natural_Gas	7	1	0.7900
Transport	AC	Electric	7	1	0.8900
Transport	AC	Natural_Gas	7	1	0.1100
Transport	Dryer	Electric	7	1	0.6800
Transport	Dryer	Natural_Gas	7	1	0.3200
Transport	Engine	Electric	7	1	0.9900
Transport	Engine	Natural_Gas	7	1	0.0100
Transport	Fire_Tube_Boiler	Electric	7	1	0.2500
Transport	Fire_Tube_Boiler	Natural_Gas	7	1	0.7500
Transport	Furnace_Oven_Kiln	Electric	7	1	0.3800
Transport	Furnace_Oven_Kiln	Natural_Gas	7	1	0.6200
Transport	Other	Natural_Gas	7	1	1.0000
Transport	Space_Heat	Electric	7	1	0.3900
Transport	Space_Heat	Natural_Gas	7	1	0.6100
Transport	Water_Heat	Electric	7	1	0.4100
Transport	Water_Heat	Natural_Gas	7	1	0.5900
Transport	Water_Tube_Boiler	Electric	7	1	0.2500
Transport	Water_Tube_Boiler	Natural_Gas	7	1	0.7500
Wood_Paper	AC	Electric	7	1	0.8900
Wood_Paper	AC	Natural_Gas	7	1	0.1100
Wood_Paper	Dryer	Electric	7	1	0.6800
Wood_Paper	Dryer	Natural_Gas	7	1	0.3200
Wood_Paper	Fire_Tube_Boiler	Electric	7	1	0.2500
Wood_Paper	Fire_Tube_Boiler	Natural_Gas	7	1	0.7500

Noncore Industrial Demand Forecast
Fuel Shares by Businesses and End Uses

bName	nName	fName	_TYPE_	_FREQ_	baseAvgFShare
Wood_Paper	Furnace_Oven_Kiln	Electric	7	1	0.3800
Wood_Paper	Furnace_Oven_Kiln	Natural_Gas	7	1	0.6200
Wood_Paper	Other	Natural_Gas	7	1	1.0000
Wood_Paper	Space_Heat	Electric	7	1	0.3900
Wood_Paper	Space_Heat	Natural_Gas	7	1	0.6100
Wood_Paper	Water_Heat	Electric	7	1	0.4100
Wood_Paper	Water_Heat	Natural_Gas	7	1	0.5900
Wood_Paper	Water_Tube_Boiler	Electric	7	1	0.2500
Wood_Paper	Water_Tube_Boiler	Natural_Gas	7	1	0.7500

2008 CALIFORNIA GAS REPORT

NATURAL GAS VEHICLES
JULY 2008

The Gas Company

A Sempra Energy utility℠

YEAR	MDTH1	MDTH2	MDTH3	MDTH4	MDTH5	MDTH6	MDTH7	MDTH8	MDTH9	MDTH10	MDTH11	MDTH12	TOTAL	RATE	DELCODE	NGVTYPE
2007	7.46	6.16	6.69	7.58	8.96	9.37	8.87	8.69	8.79	9.26	6.92	7.59	88.9	GNV	N	C
2008	8.37	8.37	8.37	8.37	8.37	8.37	8.37	8.37	8.37	8.37	8.37	8.37	100.4	GNV	N	C
2009	9.44	9.44	9.44	9.44	9.44	9.44	9.44	9.44	9.44	9.44	9.44	9.44	113.3	GNV	N	C
2010	10.67	11.67	12.67	13.67	14.67	15.67	16.67	17.67	18.67	19.67	20.67	21.67	128.0	GNV	N	C
2011	12.04	12.04	12.04	12.04	12.04	12.04	12.04	12.04	12.04	12.04	12.04	12.04	144.5	GNV	N	C
2012	12.82	12.82	12.82	12.82	12.82	12.82	12.82	12.82	12.82	12.82	12.82	12.82	153.8	GNV	N	C
2013	13.64	13.64	13.64	13.64	13.64	13.64	13.64	13.64	13.64	13.64	13.64	13.64	163.7	GNV	N	C
2014	14.53	14.53	14.53	14.53	14.53	14.53	14.53	14.53	14.53	14.53	14.53	14.53	174.3	GNV	N	C
2015	15.47	15.47	15.47	15.47	15.47	15.47	15.47	15.47	15.47	15.47	15.47	15.47	185.6	GNV	N	C
2016	16.47	16.47	16.47	16.47	16.47	16.47	16.47	16.47	16.47	16.47	16.47	16.47	197.6	GNV	N	C
2017	17.53	17.53	17.53	17.53	17.53	17.53	17.53	17.53	17.53	17.53	17.53	17.53	210.3	GNV	N	C
2018	18.66	18.66	18.66	18.66	18.66	18.66	18.66	18.66	18.66	18.66	18.66	18.66	223.9	GNV	N	C
2019	19.87	19.87	19.87	19.87	19.87	19.87	19.87	19.87	19.87	19.87	19.87	19.87	238.4	GNV	N	C
2020	21.15	21.15	21.15	21.15	21.15	21.15	21.15	21.15	21.15	21.15	21.15	21.15	253.8	GNV	N	C
2021	22.52	22.52	22.52	22.52	22.52	22.52	22.52	22.52	22.52	22.52	22.52	22.52	270.2	GNV	N	C
2022	23.97	23.97	23.97	23.97	23.97	23.97	23.97	23.97	23.97	23.97	23.97	23.97	287.6	GNV	N	C
2023	25.44	25.44	25.44	25.44	25.44	25.44	25.44	25.44	25.44	25.44	25.44	25.44	305.3	GNV	N	C
2024	26.93	26.93	26.93	26.93	26.93	26.93	26.93	26.93	26.93	26.93	26.93	26.93	323.1	GNV	N	C
2025	28.41	28.41	28.41	28.41	28.41	28.41	28.41	28.41	28.41	28.41	28.41	28.41	340.9	GNV	N	C
2026	30.73	30.73	30.73	30.73	30.73	30.73	30.73	30.73	30.73	30.73	30.73	30.73	358.7	GNV	N	C
2027	31.36	31.36	31.36	31.36	31.36	31.36	31.36	31.36	31.36	31.36	31.36	31.36	376.3	GNV	N	C
2028	32.79	32.79	32.79	32.79	32.79	32.79	32.79	32.79	32.79	32.79	32.79	32.79	393.5	GNV	N	C
2029	34.19	34.19	34.19	34.19	34.19	34.19	34.19	34.19	34.19	34.19	34.19	34.19	410.3	GNV	N	C
2030	35.54	35.54	35.54	35.54	35.54	35.54	35.54	35.54	35.54	35.54	35.54	35.54	426.5	GNV	N	C

2007	677.14	618.24	707.94	688.59	720.89	663.76	706.02	738.01	689.75	749.39	708.14	689.66	8357.5	GNV	N	U
2008	786.38	786.38	786.38	786.38	786.38	786.38	786.38	786.38	786.38	786.38	786.38	786.38	9436.5	GNV	N	U
2009	887.89	887.89	887.89	887.89	887.89	887.89	887.89	887.89	887.89	887.89	887.89	887.89	10654.7	GNV	N	U
2010	1002.53	1002.53	1002.53	1002.53	1002.53	1002.53	1002.53	1002.53	1002.53	1002.53	1002.53	1002.53	12030.3	GNV	N	U
2011	1,131.95	1,131.95	1,131.95	1,131.95	1,131.95	1,131.95	1,131.95	1,131.95	1,131.95	1,131.95	1,131.95	1,131.95	13583.4	GNV	N	U
2012	1,205.08	1,205.08	1,205.08	1,205.08	1,205.08	1,205.08	1,205.08	1,205.08	1,205.08	1,205.08	1,205.08	1,205.08	14460.9	GNV	N	U
2013	1,282.92	1,283.92	1,284.92	1,285.92	1,286.92	1,287.92	1,288.92	1,289.92	1,290.92	1,291.92	1,292.92	1,293.92	15395.0	GNV	N	U
2014	1,365.79	1,365.79	1,365.79	1,365.79	1,365.79	1,365.79	1,365.79	1,365.79	1,365.79	1,365.79	1,365.79	1,365.79	16389.5	GNV	N	U
2015	1,454.03	1,454.03	1,454.03	1,454.03	1,454.03	1,454.03	1,454.03	1,454.03	1,454.03	1,454.03	1,454.03	1,454.03	17448.3	GNV	N	U
2016	1547.96	1547.96	1547.96	1547.96	1547.96	1547.96	1547.96	1547.96	1547.96	1547.96	1547.96	1547.96	18575.5	GNV	N	U
2017	1647.95	1647.95	1647.95	1647.95	1647.95	1647.95	1647.95	1647.95	1647.95	1647.95	1647.95	1647.95	19775.4	GNV	N	U
2018	1754.41	1754.41	1754.41	1754.41	1754.41	1754.41	1754.41	1754.41	1754.41	1754.41	1754.41	1754.41	21052.9	GNV	N	U
2019	1867.75	1868.75	1869.75	1870.75	1871.75	1872.75	1873.75	1874.75	1875.75	1876.75	1877.75	1878.75	22413.0	GNV	N	U
2020	1988.40	1988.40	1988.40	1988.40	1988.40	1988.40	1988.40	1988.40	1988.40	1988.40	1988.40	1988.40	23860.8	GNV	N	U
2021	2116.86	2116.86	2116.86	2116.86	2116.86	2116.86	2116.86	2116.86	2116.86	2116.86	2116.86	2116.86	25402.3	GNV	N	U
2022	2253.60	2253.60	2253.60	2253.60	2253.60	2253.60	2253.60	2253.60	2253.60	2253.60	2253.60	2253.60	27043.2	GNV	N	U
2023	2391.98	2391.98	2391.98	2391.98	2391.98	2391.98	2391.98	2391.98	2391.98	2391.98	2391.98	2391.98	28703.7	GNV	N	U
2024	2531.43	2531.43	2531.43	2531.43	2531.43	2531.43	2531.43	2531.43	2531.43	2531.43	2531.43	2531.43	30377.1	GNV	N	U
2025	2671.16	2671.16	2671.16	2671.16	2671.16	2671.16	2671.16	2671.16	2671.16	2671.16	2671.16	2671.16	32053.9	GNV	N	U
2026	2810.33	2810.33	2810.33	2810.33	2810.33	2810.33	2810.33	2810.33	2810.33	2810.33	2810.33	2810.33	33723.9	GNV	N	U
2027	2948.03	2948.03	2948.03	2948.03	2948.03	2948.03	2948.03	2948.03	2948.03	2948.03	2948.03	2948.03	35376.4	GNV	N	U
2028	3083.06	3083.06	3083.06	3083.06	3083.06	3083.06	3083.06	3083.06	3083.06	3083.06	3083.06	3083.06	36996.7	GNV	T	U
2029	3214.70	3214.70	3214.70	3214.70	3214.70	3214.70	3214.70	3214.70	3214.70	3214.70	3214.70	3214.70	38576.4	GNV	T	U
2030	3342.00	3342.00	3342.00	3342.00	3342.00	3342.00	3342.00	3342.00	3342.00	3342.00	3342.00	3342.00	40104.0	GNV	T	U

2007	0	0	0	0	0	0	0	0	0	0	0	0	0.0	GNV	T	U
2008	0	0	0	0	0	0	0	0	0	0	0	0	0.0	GNV	T	U
2009	0	0	0	0	0	0	0	0	0	0	0	0	0.0	GNV	T	U
2010	0	0	0	0	0	0	0	0	0	0	0	0	0.0	GNV	T	U
2011	0	0	0	0	0	0	0	0	0	0	0	0	0.0	GNV	T	U
2012	0	0	0	0	0	0	0	0	0	0	0	0	0.0	GNV	T	U
2013	0	0	0	0	0	0	0	0	0	0	0	0	0.0	GNV	T	U
2014	0	0	0	0	0	0	0	0	0	0	0	0	0.0	GNV	T	U
2015	0	0	0	0	0	0	0	0	0	0	0	0	0.0	GNV	T	U
2016	0	0	0	0	0	0	0	0	0	0	0	0	0.0	GNV	T	U
2017	0	0	0	0	0	0	0	0	0	0	0	0	0.0	GNV	T	U
2018	0	0	0	0	0	0	0	0	0	0	0	0	0.0	GNV	T	U
2019	0	0	0	0	0	0	0	0	0	0	0	0	0.0	GNV	T	U
2020	0	0	0	0	0	0	0	0	0	0	0	0	0.0	GNV	T	U
2021	0	0	0	0	0	0	0	0	0	0	0	0	0.0	GNV	T	U
2022	0	0	0	0	0	0	0	0	0	0	0	0	0.0	GNV	T	U
2023	0	0	0	0	0	0	0	0	0	0	0	0	0.0	GNV	T	U
2024	0	0	0	0	0	0	0	0	0	0	0	0	0.0	GNV	T	U
2025	0	0	0	0	0	0	0	0	0	0	0	0	0.0	GNV	T	U
2026	0	0	0	0	0	0	0	0	0	0	0	0	0.0	GNV	T	U
2027	0	0	0	0	0	0	0	0	0	0	0	0	0.0	GNV	T	U
2028	0	0	0	0	0	0	0	0	0	0	0	0	0.0	GNV	T	U
2029	0	0	0	0	0	0	0	0	0	0	0	0	0.0	GNV	T	U
2030	0	0	0	0	0	0	0	0	0	0	0	0	0.0	GNV	T	U

2008 SoCalGas CGR

Compressed:
2007 throughput is actual received from the billing department.
Throughput forecast increased at the rate of 7.06 % per year 2008 through 2030, from 88.9 Mdtherms to 426.5 Mdtherms.

Uncompressed:
2007 throughput is actual received from the billing department.
Uncompressed throughput forecast is expected to grow at the annual compounded rate of 7.06% for the next 23 years. Growth over the next four years will be mainly due to ports and goods movements loads. The growth rate will then decrease gradually through 2030 as the main fleet markets become more saturated. Throughput increase over the next 23 years is expected to reach a total load of 40,104 Mdtherms. Mdtherms. This throughput increase is expected to come mainly from Port trucks which serve the LA and Long Beach Ports. CARB and the Ports are seeking ways to reduce emissions resulting from an estimated 18,000 trucks which serve the two Ports. NGVs are expected to play a significant role in the conversion of these trucks.

NGV stations are expected to grow from a 2007 level of 216 to approximately 797 by 2030, an annual compounded growth rate of 5.84% per year to accommodate the throughput growth.

7.06%	Station growth rate 2003 through 2005
5.84%	Station growth rate is based on the CEC AB 1007, 2006 through 2030 conservative throughput forecast

2008 CALIFORNIA GAS REPORT

ENERGY EFFICIENCY
JULY 2008

A Sempra Energy utility™

2008 California Gas Report: Energy Efficiency

ANNUAL NET SAVINGS	2008 Mdth	2009 Mdth	2010 Mdth	2011 Mdth	2012 Mdth	2013 Mdth	2014 Mdth	2015 Mdth	2016 Mdth	2017 Mdth	2018 Mdth
Core Residential	466	1,006	1,046	1,105	1,194	1,324	1,324	1,324	1,324	1,324	1,324
Core Commercial	1,168	697	725	766	828	917	917	917	917	917	917
Core Industrial	461	212	221	233	252	279	279	279	279	279	279
NonCore Commercial	29	99	103	109	118	131	131	131	131	131	131
NonCore Industrial retail	68	232	241	255	276	306	306	306	306	306	306
NonCore Industrial refinery	138	474	493	521	563	623	623	623	623	623	623
Total	**2,330**	**2,720**	**2,830**	**2,990**	**3,230**	**3,580**	**3,580**	**3,580**	**3,580**	**3,580**	**3,580**

Cumulative Savings Mdth	2008 Mdth	2009 Mdth	2010 Mdth	2011 Mdth	2012 Mdth	2013 Mdth	2014 Mdth	2015 Mdth	2016 Mdth	2017 Mdth	2018 Mdth
Core Residential	**466**	**1,471**	**2,518**	**3,623**	**4,817**	**6,141**	**7,464**	**8,788**	**10,111**	**11,435**	**12,759**
Core Commercial	**1,168**	**1,865**	**2,590**	**3,356**	**4,184**	**5,102**	**6,019**	**6,937**	**7,854**	**8,772**	**9,689**
Core Industrial	**461**	**673**	**893**	**1,126**	**1,378**	**1,657**	**1,936**	**2,215**	**2,494**	**2,774**	**3,053**
NonCore Commercial	**29**	**129**	**232**	**341**	**460**	**590**	**721**	**852**	**983**	**1,114**	**1,245**
NonCore Industrial regular	**68**	**300**	**541**	**797**	**1,072**	**1,378**	**1,683**	**1,989**	**2,294**	**2,600**	**2,905**
NonCore Industrial refinery	**138**	**612**	**1,105**	**1,626**	**2,188**	**2,812**	**3,435**	**4,059**	**4,682**	**5,306**	**5,929**
Total Load Impacts	**2,330**	**5,050**	**7,880**	**10,870**	**14,100**	**17,680**	**21,260**	**24,840**	**28,420**	**32,000**	**35,580**

MMCF factor: **1.0305**

Cumulative Savings MMCF	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Core Residential	452	1,428	2,443	3,516	4,675	5,959	7,243	8,528	9,812	11,097	12,381
Core Commercial	1,133	1,810	2,514	3,257	4,060	4,951	5,841	6,731	7,622	8,512	9,402
Core Industrial	447	653	867	1,093	1,337	1,608	1,879	2,150	2,421	2,692	2,962
NonCore Commercial	28	125	225	331	446	573	700	827	954	1,081	1,208
NonCore Industrial regular	66	291	525	773	1,041	1,337	1,633	1,930	2,226	2,523	2,819
NonCore Industrial refinery	134	594	1,072	1,578	2,123	2,729	3,334	3,939	4,544	5,149	5,754
Total Cumulative Load	**2,261**	**4,900**	**7,646**	**10,548**	**13,682**	**17,156**	**20,630**	**24,104**	**27,579**	**31,053**	**34,527**

ANNUAL NET SAVINGS	2019 Mdth	2020 Mdth	2021 Mdth	2022 Mdth	2023 Mdth	2024 Mdth	2025 Mdth	2026 Mdth	2027 Mdth	2028 Mdth	2029 Mdth	2030 Mdth
Core Residential	1,324	1,324	1,324	1,324	1,324	1,324	1,324	1,324	1,324	1,324	1,324	1,324
Core Commercial	917	917	917	917	917	917	917	917	917	917	917	917
Core Industrial	279	279	279	279	279	279	279	279	279	279	279	279
NonCore Commercial	131	131	131	131	131	131	131	131	131	131	131	131
NonCore Industrial retail	306	306	306	306	306	306	306	306	306	306	306	306
NonCore Industrial refinery	623	623	623	623	623	623	623	623	623	623	623	623
Total	**3,580**	**3,580**	**3,580**	**3,580**	**3,580**	**3,580**	**3,580**	**3,580**	**3,580**	**3,580**	**3,580**	**3,580**

Cumulative Savings Mdth	2019 Mdth	2020 Mdth	2021 Mdth	2022 Mdth	2023 Mdth	2024 Mdth	2025 Mdth	2026 Mdth	2027 Mdth	2028 Mdth	2029 Mdth	2030 Mdth
Core Residential	**14,082**	**15,406**	**16,729**	**18,053**	**18,910**	**19,228**	**19,506**	**19,724**	**19,853**	**19,853**	**19,853**	**19,853**
Core Commercial	**10,606**	**11,524**	**12,441**	**13,359**	**13,108**	**13,329**	**13,521**	**13,672**	**13,762**	**13,762**	**13,762**	**13,762**
Core Industrial	**3,332**	**3,611**	**3,890**	**4,169**	**3,988**	**4,055**	**4,113**	**4,159**	**4,186**	**4,186**	**4,186**	**4,186**
NonCore Commercial	**1,376**	**1,507**	**1,638**	**1,769**	**1,871**	**1,902**	**1,930**	**1,951**	**1,964**	**1,964**	**1,964**	**1,964**
NonCore Industrial regular	**3,211**	**3,516**	**3,822**	**4,127**	**4,365**	**4,438**	**4,502**	**4,553**	**4,583**	**4,583**	**4,583**	**4,583**
NonCore Industrial refinery	**6,553**	**7,176**	**7,799**	**8,423**	**8,908**	**9,058**	**9,188**	**9,291**	**9,352**	**9,352**	**9,352**	**9,352**
Total Load Impacts	**39,160**	**42,740**	**46,320**	**49,900**	**51,150**	**52,010**	**52,760**	**53,350**	**53,700**	**53,700**	**53,700**	**53,700**

Cumulative Savings MMCF	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Core Residential	13,665	14,950	16,234	17,518	18,351	18,659	18,928	19,140	19,266	19,266	19,266	19,266
Core Commercial	10,293	11,183	12,073	12,963	12,720	12,934	13,121	13,268	13,355	13,355	13,355	13,355
Core Industrial	3,233	3,504	3,775	4,046	3,870	3,935	3,991	4,036	4,063	4,063	4,063	4,063
NonCore Commercial	1,335	1,462	1,589	1,716	1,815	1,846	1,872	1,893	1,906	1,906	1,906	1,906
NonCore Industrial regular	3,116	3,412	3,709	4,005	4,236	4,307	4,369	4,418	4,447	4,447	4,447	4,447
NonCore Industrial refinery	6,359	6,964	7,569	8,174	8,644	8,790	8,916	9,016	9,075	9,075	9,075	9,075
Total Cumulative Load	**38,001**	**41,475**	**44,949**	**48,423**	**49,636**	**50,471**	**51,198**	**51,771**	**52,111**	**52,111**	**52,111**	**52,111**

2008 CALIFORNIA GAS REPORT

EXCHANGE DEMAND FORECAST
JULY 2008

The Gas Company

A Sempra Energy utility℠

2008 California Gas Report
Gas Exchange Demand Forecast

Overview

An interutility gas exchange agreement allows each utility to fulfill gas demand from gas provided by the other utility company. In the case of Pacific Gas and Electric Company (PG&E) and Southern California Gas Company (SCG) such an exchange agreement is contained in the Master Exchange Agreement (MEA).

Interutility Exchange Demand Forecasts

The exchange of gas between SCG and PG&E has been in practice since 1949. With the termination of the General Service Mutual Assistance Agreement between the two companies in May 5, 1988, the CPUC ordered the two companies to renegotiate a uniform procedure for exchanging gas. This instrument is now called the Master Exchange Agreement, which the CPUC approved on February 7, 1990.

The primary purpose of the MEA exchange forecast is to establish the net revenues/costs resulting from the services mutually provided by PG&E and SoCalGas. Monthly gas load under the MEA from 2005 to 2007 formed the forecasts for the exchange gas load. Exchange load is expected to remain stable as has been in the past years. Table 1 summarizes the forecast for SCG gas deliveries under the Master Exchange Agreement. Note the table shows unilateral flows and not the net transactions.

SoCalGas to PG&E Delivery Forecast (Mdth)
Table 1

YEAR	MDTH1	MDTH2	MDTH3	MDTH4	MDTH5	MDTH6	MDTH7	MDTH8	MDTH9	MDTH1	MDTH1	MDTH1	TOTAL
2007	89.53	18.11	37.69	30.79	24.46	20.36	17.80	19.14	20.46	25.29	33.13	73.21	410.00
2008	89.53	18.11	37.69	30.79	24.46	20.36	17.80	19.14	20.46	25.29	33.13	73.21	410.00
2009	89.53	18.11	37.69	30.79	24.46	20.36	17.80	19.14	20.46	25.29	33.13	73.21	410.00
2010	89.53	18.11	37.69	30.79	24.46	20.36	17.80	19.14	20.46	25.29	33.13	73.21	410.00
2011	89.53	18.11	37.69	30.79	24.46	20.36	17.80	19.14	20.46	25.29	33.13	73.21	410.00
2012	89.53	18.11	37.69	30.79	24.46	20.36	17.80	19.14	20.46	25.29	33.13	73.21	410.00
2013	89.53	18.11	37.69	30.79	24.46	20.36	17.80	19.14	20.46	25.29	33.13	73.21	410.00
2014	89.53	18.11	37.69	30.79	24.46	20.36	17.80	19.14	20.46	25.29	33.13	73.21	410.00
2015	89.53	18.11	37.69	30.79	24.46	20.36	17.80	19.14	20.46	25.29	33.13	73.21	410.00
2016	89.53	18.11	37.69	30.79	24.46	20.36	17.80	19.14	20.46	25.29	33.13	73.21	410.00
2017	89.53	18.11	37.69	30.79	24.46	20.36	17.80	19.14	20.46	25.29	33.13	73.21	410.00
2018	89.53	18.11	37.69	30.79	24.46	20.36	17.80	19.14	20.46	25.29	33.13	73.21	410.00
2019	89.53	18.11	37.69	30.79	24.46	20.36	17.80	19.14	20.46	25.29	33.13	73.21	410.00
2020	89.53	18.11	37.69	30.79	24.46	20.36	17.80	19.14	20.46	25.29	33.13	73.21	410.00
2021	89.53	18.11	37.69	30.79	24.46	20.36	17.80	19.14	20.46	25.29	33.13	73.21	410.00
2022	89.53	18.11	37.69	30.79	24.46	20.36	17.80	19.14	20.46	25.29	33.13	73.21	410.00
2023	89.53	18.11	37.69	30.79	24.46	20.36	17.80	19.14	20.46	25.29	33.13	73.21	410.00
2024	89.53	18.11	37.69	30.79	24.46	20.36	17.80	19.14	20.46	25.29	33.13	73.21	410.00
2025	89.53	18.11	37.69	30.79	24.46	20.36	17.80	19.14	20.46	25.29	33.13	73.21	410.00
2026	89.53	18.11	37.69	30.79	24.46	20.36	17.80	19.14	20.46	25.29	33.13	73.21	410.00
2027	89.53	18.11	37.69	30.79	24.46	20.36	17.80	19.14	20.46	25.29	33.13	73.21	410.00
2028	89.53	18.11	37.69	30.79	24.46	20.36	17.80	19.14	20.46	25.29	33.13	73.21	410.00
2029	89.53	18.11	37.69	30.79	24.46	20.36	17.80	19.14	20.46	25.29	33.13	73.21	410.00
2030	89.53	18.11	37.69	30.79	24.46	20.36	17.80	19.14	20.46	25.29	33.13	73.21	410.00

2008 CALIFORNIA GAS REPORT

EOR STEAMING
JULY 2008

The Gas Company

A Sempra Energy utility™

ENHANCED OIL RECOVERY - STEAMING

FORECAST METHODOLOGY FOR THE 2008 CALIFORNIA GAS REPORT

Southern California Gas' ("SoCalGas") forecast of enhanced oil recovery ("EOR") steaming gas requirements as reported in the *2008 California Gas Report* ("CGR") is based on customer-specific historical data and market analysis. The major steps in developing this forecast are outlined below and described in detail in the following pages.

- Analyze Historical Gas Demand
- Evaluate Market Potential
- Calculate Effect of Bypass

A. Analyze Historical Gas Demand

Historical customer gas demand data for the period 2005 through 2007 were analyzed in order to determine typical throughput volumes over the past few years. FERC reports from Kern River Transmission Company and the Mojave Pipeline Company ("Kern/Mojave"), Format NO. FERC 567, from the same time period were studied in order to determine bypass trends.

B. **Evaluate Market Potential**

Potential EOR gas demand was determined by considering market information given the following assumptions:

1. Oil prices will be high enough for EOR production to be economically desirable.
2. SoCalGas has no capacity or supply constraints.
3. Air quality regulations will continue to either require or encourage the use of gas, rather than oil, in all areas.

Since the BCAP oil price scenario is favorable for EOR production, the historical gas demand was combined with potential gas demand to become the base load for the EOR forecast. The early years of the EOR steaming forecast include some additional load expected to come on line as a result of the expansion of oil production operations in existing fields that are not already interconnected with non-utility gas pipelines. However, the forecast assumes that as time goes on any new production will be offset by declining production in wells that will be depleted during the forecast period.

C. **Calculate Effect of Bypass**

Kern/Mojave began operating in February, 1992. At that time, many of SoCalGas' customers began taking service directly from the pipelines, thereby bypassing SoCalGas' distribution system.

Several factors were taken into consideration in order to forecast future bypass volumes. These factors were: the customer's geographical location, the amount of natural gas a customer has contracted to move on Kern/Mojave; the quantities of gas the customer has under any long-term contract with SoCalGas; the amount of Kern/Mojave gas available from marketers who have no designated end-users; and the amount of gas currently bypassing SoCalGas' distribution system.

Based on these considerations, the following assumptions were made:

1. EOR demand for customers located in the Los Angeles Basin and Santa Barbara and Ventura areas will not bypass SoCalGas' distribution system.
2. Customers who have already bypassed SoCalGas' system will continue to bypass at their current levels.
3. Customers located in the San Joaquin Valley who have long-term transportation contracts with SoCalGas will increase their level of bypass when their contracts expire during 2008 and 2009.

The forecast of gas demand for EOR steaming is shown in the following table.

2008 CALIFORNIA GAS REPORT - EOR STEAMING FORECAST (2008 - 2030)
(MMCFD)

	HISTORICAL			FORECAST																						
SOCALGAS DELIVERIES	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Long-Term Contract Customers	19	19	19	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Short-Term Contract Customers	15	20	20	19	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
Total Deliveries	34	39	39	34	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28

2008 CALIFORNIA GAS REPORT

ELECTRIC GENERATION
JULY 2008

The Gas Company
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2008 CALIFORNIA GAS REPORT

NON-COGENERATION ELECTRIC GENERATION
JULY 2008

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Non-cogeneration Electric Generation (EG)

The MARKETSYM production cost model was used to prepare the natural gas demand for SoCalGas' EG customers through 2030.

SoCalGas performed a dry hydro sensitivity, 1-in-10 dry hydro year, as defined by the CEC. The attached Schedule 2 detail summarizes the annual gas demand through 2030 and the last schedule includes the sensitivities.

The electric generation forecast is based on an analysis of the plant's operation in the western electric market using the Marketsym model from Global Energy Decisions (GED). Marketsym has been used by SoCalGas in previous applications before the Commission. This workpaper includes both the input assumptions and results.

Workpaper List

California Load Forecast
SoCalGas used the California Energy Commission's (CEC) *California Energy Demand 2008-2018*, *Staff Revised Forecast* (http://www.energy.ca.gov/2007publications/CEC-200-2007-015/CEC-200-2007-015-SF.PDF), with the incremental 2009-2016 energy efficiency programs for IOUs as mandated by CPUC Decision 07-12-052. See attached file, CECNov2007ForecastperLTTP_031708.xls.

Load forecasts for Rest of WECC
For outside of California, load data were based on GED's most recent update of peak and energy. For the most part, GED acquired the data from other utilities' resource plans. The load profiles are based on the average of 10 historical years. For the period 2008-2012, the growth rate is about 1.5% in the PNW region, and about 3.3% in the SW region.

Renewables

Existing and Future Renewable Assumption
Please see attached file, *2008CGR Renewables.xls*.

Throughput Forecasts data
Please see the consolidated gas demand forecast in the following files and tables.
For SoCal Large Cogen is in Schedule 1 of cogen.xls, SoCal Gas Non-cogeneration Electric Generation is in Schedule 2 of ueg.xls, and SDG&E Non-cogeneration Electric Generation is in Schedule 3 of sdge ueg.xls.

Spread Sheets on Sensitivities
Please see attached file, *sensitivities.xls*, for gas volume sensitivities due to load and renewable resource uncertainties.

2008 CGR Work Papers - Robert Anderson

California Energy Demand 2008-2018 Staff Forecast, extended to 2030, with incremental effects of 2009-2016 IOU Energy Efficiency Programs assumed in Decision 07-12-052
Net Energy for Load by Control Area
(GWh)

	2007	2008	2009	2010	2011	2012	2013	2014	2015
PG&E North	94,568	95,726	96,795	97,861	99,017	100,128	101,159	102,139	103,126
PG&E Service Area by CEC Forecasting Climate zone:									
Zone 1 (North Coast and Mountain)	4,837	4,885	4,935	4,984	5,038	5,090	5,137	5,184	5,231
Zone 2 (Sacramento Region)	8,308	8,504	8,718	8,931	9,156	9,383	9,606	9,828	10,054
Zone 3 (Valley Region)	23,805	24,140	24,389	24,645	24,927	25,200	25,459	25,706	25,960
Zone 4 (East Bay Region)	25,795	26,100	26,401	26,700	27,034	27,351	27,642	27,919	28,196
Zone 5 (San Francisco Region)	24,377	24,570	24,746	24,919	25,097	25,260	25,396	25,515	25,629
PG&E Service Area Total	87,123	88,199	89,190	90,178	91,252	92,284	93,240	94,152	95,070
PG&E Direct Access	7,543	7,468	7,468	7,468	7,468	7,468	7,468	7,468	7,468
PG&E Bundled	79,579	80,731	81,722	82,710	83,784	84,816	85,772	86,684	87,602
Northern California Power Agency	2,639	2,674	2,707	2,740	2,774	2,807	2,839	2,869	2,899
Silicon Valley Power	2,920	2,958	2,992	3,026	3,064	3,099	3,131	3,161	3,190
CCSF	1,376	1,383	1,390	1,397	1,403	1,410	1,416	1,421	1,426
Other Publicly Owned Utilities	510	512	516	520	524	528	533	536	540
Dept of Water Resources - North	1,558	1,558	1,558	1,558	1,558	1,558	1,558	1,558	1,558
Total North of Path 15	96,126	97,284	98,353	99,419	100,575	101,686	102,717	103,697	104,684
Path 26 Pacific Gas & Electric - Bundled South	6,857	6,938	7,018	7,097	7,186	7,288	7,384	7,476	7,569
Path 26 - Dept of Water Resources	2,575	2,575	2,575	2,575	2,575	2,575	2,575	2,575	2,575
Total Zone Path 26	9,431	9,512	9,593	9,672	9,761	9,862	9,958	10,051	10,143
Total NP15 + ZP26	105,558	106,796	107,946	109,090	110,336	111,549	112,675	113,748	114,827
Southern California Edison Planning Area Total	105,332	107,101	108,652	110,249	111,848	113,414	114,852	116,242	117,601
SCE Service Area by CEC Forecasting Climate zone:									
Zone 7 (Southern San Joaquin Valley)	5,554	5,667	5,768	5,871	5,980	6,093	6,195	6,296	6,399
Zone 8 (Coastal LA Basin)	46,374	46,901	47,321	47,776	48,236	48,676	49,061	49,415	49,749
Zone 9 (Inland LA Basin)	18,094	18,345	18,560	18,770	18,997	19,211	19,409	19,599	19,786
Zone 10 (Inland Empire)	26,372	27,098	27,766	28,446	29,103	29,755	30,374	30,986	31,593
SCE Service Area Total	96,394	98,011	99,415	100,863	102,314	103,735	105,038	106,296	107,527
SCE Direct access	10,146	10,045	10,045	10,045	10,045	10,045	10,045	10,045	10,045
SCE Bundled	86,248	87,966	89,370	90,818	92,270	93,690	94,993	96,252	97,482
Anaheim Public Utilities Dept.	2,902	2,936	2,968	3,001	3,036	3,068	3,098	3,125	3,151
Riverside Utilities Dept	2,243	2,318	2,393	2,467	2,538	2,609	2,678	2,746	2,814
Vernon Municipal Light Dept	1,232	1,243	1,249	1,258	1,268	1,277	1,284	1,290	1,296
Metropolitan Water District	1,317	1,317	1,318	1,318	1,319	1,321	1,321	1,322	1,322
Other Publicly Owned Utilities	1,244	1,277	1,309	1,342	1,373	1,404	1,434	1,462	1,491
Pasadena Water and Power Dept	1,327	1,334	1,339	1,344	1,352	1,358	1,363	1,368	1,374
San Diego Gas & Electric	21,733	22,020	22,373	22,721	23,073	23,419	23,750	24,074	24,400
SDG&E Bundled Customers	18,399	18,687	19,040	19,387	19,740	20,086	20,416	20,741	21,067
SDG&E Direct Access	3,333	3,333	3,333	3,333	3,333	3,333	3,333	3,333	3,333
Dept of Water Resources - South	5,109	5,109	5,109	5,109	5,109	5,109	5,109	5,109	5,109
Total South of Path 15	133,501	135,563	137,473	139,423	141,382	143,300	145,074	146,793	148,484
Turlock Irrigation District Control Area	2,532	2,570	2,608	2,645	2,686	2,727	2,767	2,805	2,844
Sacramento Municipal Utilities District	11,740	11,887	12,063	12,239	12,431	12,629	12,817	13,002	13,180
WAPA	2,406	2,406	2,406	2,406	2,406	2,406	2,406	2,406	2,406
Redding	916	933	958	992	1,031	1,051	1,072	1,092	1,113
Roseville	1,379	1,412	1,451	1,489	1,529	1,570	1,610	1,650	1,691
Shasta	206	209	211	212	214	216	217	219	220
Modesto Irrigation District	2,876	2,924	2,970	3,016	3,067	3,117	3,165	3,211	3,259
Total SMUD/WAPA Control Area	19,524	19,773	20,060	20,354	20,679	20,989	21,287	21,581	21,869
Los Angeles Department of Water and Power	27,820	28,004	28,221	28,401	28,561	28,711	28,846	28,969	29,080
Burbank Public Service Dept	1,166	1,169	1,173	1,178	1,183	1,187	1,191	1,193	1,196
Glendale Public Service Dept	1,218	1,219	1,223	1,229	1,234	1,238	1,241	1,244	1,247
Total LADWP Control Area	30,205	30,393	30,617	30,807	30,979	31,135	31,278	31,406	31,523
Imperial Irrigation District Control Area	3,740	3,850	3,966	4,082	4,195	4,310	4,424	4,538	4,656
Total CAISO	239,058	242,359	245,419	248,513	251,718	254,849	257,749	260,541	263,311
Total Forecast of load in California-based balancing auth	295,059	298,945	302,669	306,401	310,257	314,011	317,504	320,871	324,202

2008 CGR Work Papers - Robert Anderson

California Energy Demand 2008-2018 Staff Foreca
effects of 2009-2016 IOU Energy Efficiency Progra
Net Energy for Load by Control Area
(GWh)

	2016	2017	2018	Average Annual Grov 2008-2018
PG&E North	104,093	105,254	106,402	1.1%
PG&E Service Area by CEC Forecasting Climate zone:				
Zone 1 (North Coast and Mountain)	5,278	5,338	5,396	1.0%
Zone 2 (Sacramento Region)	10,278	10,525	10,774	2.4%
Zone 3 (Valley Region)	26,209	26,514	26,819	1.1%
Zone 4 (East Bay Region)	28,465	28,789	29,105	1.1%
Zone 5 (San Francisco Region)	25,740	25,905	26,067	0.6%
PG&E Service Area Total	95,971	97,071	98,161	1.1%
PG&E Direct Access	7,468	7,468	7,468	0.0%
PG&E Bundled	88,503	89,603	90,693	
Northern California Power Agency	2,928	2,955	2,982	
Silicon Valley Power	3,219	3,245	3,269	1.0%
CCSF	1,431	1,435	1,439	0.4%
Other Publicly Owned Utilities	544	547	551	0.7%
Dept of Water Resources - North	1,558	1,558	1,558	0.0%
Total North of Path 15	105,651	106,812	107,960	
Path 26 Pacific Gas & Electric - Bundled South	7,659	7,745	7,829	1.2%
Path 26 - Dept of Water Resources	2,575	2,575	2,575	0.0%
Total Zone Path 26	10,233	10,320	10,403	0.9%
Total NP15 + ZP26	115,884	117,132	118,364	1.0%
Southern California Edison Planning Area Total	118,903	120,355	121,827	1.3%
SCE Service Area by CEC Forecasting Climate zone:				
Zone 7 (Southern San Joaquin Valley)	6,501	6,616	6,733	1.7%
Zone 8 (Coastal LA Basin)	50,063	50,447	50,858	0.8%
Zone 9 (Inland LA Basin)	19,971	20,192	20,404	1.1%
Zone 10 (Inland Empire)	32,170	32,785	33,397	2.1%
SCE Service Area Total	108,705	110,039	111,393	1.3%
SCE Direct access	10,045	10,045	10,045	0.0%
SCE Bundled	98,660	99,995	101,348	1.4%
Anaheim Public Utilities Dept.	3,175	3,197	3,221	0.9%
Riverside Utilities Dept	2,881	2,946	3,012	2.7%
Vernon Municipal Light Dept	1,301	1,303	1,305	0.5%
Metropolitan Water District	1,322	1,322	1,322	0.0%
Other Publicly Owned Utilities	1,519	1,547	1,575	2.1%
Pasadena Water and Power Dept	1,376	1,380	1,384	0.4%
San Diego Gas & Electric	24,722	25,032	25,337	1.4%
SDG&E Bundled Customers	21,389	21,698	22,004	1.6%
SDG&E Direct Access	3,333	3,333	3,333	0.0%
Dept of Water Resources - South	5,109	5,109	5,109	0.0%
Total South of Path 15	150,110	151,875	153,657	1.3%
Turlock Irrigation District Control Area	2,883	2,920	2,958	1.4%
Sacramento Municipal Utilities District	13,348	13,505	13,661	1.4%
WAPA	2,406	2,406	2,406	0.0%
Redding	1,134	1,156	1,177	2.3%
Roseville	1,731	1,771	1,811	2.5%
Shasta	221	221	222	0.6%
Modesto Irrigation District	3,305	3,351	3,397	1.5%
Total SMUD/WAPA Control Area	22,146	22,411	22,674	1.4%
Los Angeles Department of Water and Power	29,189	29,286	29,386	0.5%
Burbank Public Service Dept	1,197	1,199	1,200	0.3%
Glendale Public Service Dept	1,248	1,250	1,251	0.3%
Total LADWP Control Area	31,635	31,735	31,838	0.5%
Imperial Irrigation District Control Area	4,772	4,889	5,007	2.7%
Total CAISO	265,995	269,007	272,021	1.2%
Total Forecast of load in California-based balancing auth	327,430	330,962	334,497	1.1%

California Renewable Energy in Current Database (GWh)

Renewables	2007	2008	2009	2010	2011	2012	2013	2014	2015
NP15 Biomass	927	959	956	**956**	956	959	956	956	956
NP15 Geothermal	7,583	7,584	7,619	**7,801**	7,801	7,803	7,801	7,801	7,801
NP15 Wind	2,112	2,221	2,218	**2,218**	2,218	2,221	2,218	2,218	2,218
NP15 Solar	-	-	-	**-**	-	-	-	-	-
NP15 Hydro	3,447	3,447	3,447	**3,447**	3,447	3,447	3,447	3,447	3,447
sub-total	***14,068***	***14,210***	***14,241***	***14,422***	***14,422***	***14,429***	***14,422***	***14,422***	***14,422***
SP15 Biomass	1,109	1,116	1,302	**1,302**	1,302	1,305	1,302	1,302	1,302
SP15 Geothermal	6,198	6,215	6,582	**6,581**	6,580	6,598	6,577	6,579	6,577
SP15 Wind	3,292	4,160	4,915	**5,653**	6,390	6,403	6,390	6,390	6,390
SP15 Solar	556	556	556	**556**	556	556	556	556	556
SP15 Hydro	1,811	1,811	1,811	**1,811**	1,811	1,811	1,811	1,811	1,811
sub-total	***12,966***	***13,858***	***15,165***	***15,901***	***16,638***	***16,673***	***16,635***	***16,636***	***16,635***
Total	**27,035**	**28,068**	**29,406**	**30,324**	**31,060**	**31,102**	**31,057**	**31,059**	**31,057**

Renewable Energy by Regions (GWh)

Regions	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total NP15 NEL	132,722	134,248	135,722	**137,198**	138,810	140,374	141,838	143,242	144,649
Total NP15 Sales	121,430	122,825	124,174	**125,524**	126,998	128,429	129,768	131,053	132,340
Current NP15 Renewalbes	14,068	14,210	14,241	**14,422**	14,422	14,429	14,422	14,422	14,422
% Current Renewable	12%	12%	12%	**12%**	11%	11%	11%	11%	11%
Total NP15 Renewable Forecast	14,334	15,735	17,277	19,852	21,591	25,387	25,683	25,960	26,225
% of Total NP15 Renewable Forecast	12%	13%	14%	**16%**	17%	20%	20%	20%	20%
Total SP15 NEL	162,337	164,696	166,947	**169,203**	171,447	173,637	175,667	177,628	179,553
Total SP15 Sales	151,285	153,486	155,585	**157,690**	159,783	161,826	163,720	165,550	167,346
Current SP15 Renewalbes	12,966	13,858	15,165	**15,901**	16,638	16,673	16,635	16,636	16,635
% Current Renewable	9%	9%	10%	**10%**	11%	10%	10%	10%	10%
Total SP15 Renewable Forecast	16,329	19,138	22,113	**25,351**	27,698	31,855	32,279	32,672	33,052
% of Total SP15 Renewable Forecast	11%	13%	14%	**16%**	18%	20%	20%	20%	20%
Total CA NEL	295,059	298,945	302,669	**306,401**	310,257	314,011	317,504	320,871	324,202
Total CA Sales	272,714	276,312	279,759	**283,214**	286,781	290,256	293,488	296,603	299,686
Current Renewable	27,035	28,068	29,406	**30,324**	31,060	31,102	31,057	31,059	31,057
% Current Renewable	10%	10%	11%	**11%**	11%	11%	11%	11%	10%
Total Renewable Forecast	30,663	34,873	39,390	**45,203**	49,289	57,242	57,962	58,632	59,277
% of Total Renewable Forecast	**11%**	**13%**	**14%**	**16.2%**	**17.4%**	**20.0%**	**20.0%**	**20.0%**	**20.0%**
Total Renewable Required NP15	265	1,525	3,036	**5,429**	7,169	10,958	11,261	11,537	11,803
Total Renewable Required SP15	3,363	5,281	6,948	**9,450**	11,060	15,183	15,644	16,036	16,417
Total Renewable Required	**3,628**	**6,805**	**9,984**	**14,879**	**18,229**	**26,140**	**26,905**	**27,573**	**28,220**

Additional Renewables (GWh)	2007	2008	2009	2010	2011	2012	2013	2014	2015
NP15	265	1,525	3,036	**5,429**	7,169	10,958	11,261	11,537	11,803
Wind_NP15	265	1,525	2,429	**3,258**	3,630	6,283	6,494	6,688	6,874
Geothermal_NP15	-	-	607	**1,629**	2,151	3,287	3,378	3,461	3,541
Solar_NP15	-	-	-	**543**	1,388	1,388	1,388	1,388	1,388
	265	1,525	3,036	**5,429**	7,169	10,958	11,261	11,537	11,803
SP15	3,363	5,281	6,948	**9,450**	11,060	15,183	15,644	16,036	16,417
Wind_SCE	3,211	5,129	5,354	**5,915**	6,017	8,199	8,303	8,665	9,017
Wind_SDGE	152	152	152	**633**	633	633	633	633	633
Geothermal_SCE	-	-	400	**600**	1,200	1,800	1,800	1,800	1,800
Geothermal_IID	-	-	400	**600**	1,200	1,800	1,800	1,800	1,800
Geothermal_SDGE			318	**318**	318	318	318	318	318
Solar_IV	-	-	323	**647**	863	1,294	1,617	1,617	1,617
Solar_SCE	-	-	-	**500**	553	759	782	802	821
Solar_SDGE	-	-	-	**236**	277	380	391	401	410
	3,363	5,281	6,948	**9,450**	11,060	15,183	15,644	16,036	16,417
	3,628	**6,805**	**9,984**	**14,879**	**18,229**	**26,140**	**26,905**	**27,573**	**28,220**

Schedule 2
2008 CGR - SoCalgas Noncore G50-BASE HYDRO Ueg/Ewg Template
for Gas Demand Forecast Summary (MDth)

	EG-Rate: Tier1 (< 3,000,000 Therms/Yr)	EG-Rate: Tier2 (≥ 3,000,000 Therms/Yr)	Total
2007	2,094	202,999	205,094
2008	3,794	202,320	206,114
2009	3,705	197,115	200,820
2010	2,004	190,144	192,147
2011	1,903	196,149	198,052
2012	1,235	197,710	198,945
2013	1,090	195,162	196,252
2014	1,183	196,006	197,189
2015	938	197,889	198,826
2016	946	199,675	200,622
2017	954	201,380	202,334
2018	962	203,082	204,044
2019	972	205,096	206,068
2020	981	207,131	208,112
2021	981	207,131	208,112
2022	981	207,131	208,112
2023	981	207,131	208,112
2024	981	207,131	208,112
2025	981	207,131	208,112
2026	981	207,131	208,112
2027	981	207,131	208,112
2028	981	207,131	208,112
2029	981	207,131	208,112
2030	981	207,131	208,112

After 2015, the 2020 value was developed by growing the 2015 usage by the same rate as electric energy growth, minus the part that would be met with renewable power. The EG forecast is held constant at 2020 levels for 2025 and 2030.

2008 CGR Work Papers - Robert Anderson

2008 CGR Sensitivity for Year 2015

Year	Heat Rate	
2015	8300	Btu/kwh
	8.3	mmbtu/mwh

UAF	1.0305	mmBtu/mcf
		Gbtu/mmcf

1% Change In Southern California Renewables

Input

1800	**gwh**
14,940.0	GBtu
14,497.8	mmcf

Output

14	**Bcf**

Electricity Demand change by 1000 GWh

Input

1000	**gwh**
8,300.0	GBtu
8,054.3	mmcf

Output

8	**Bcf**

2008 CALIFORNIA GAS REPORT

INDUSTRIAL/COMMERCIAL COGENERATION < 20MW
JULY 2008

The Gas Company

A Sempra Energy utility℠

Southern California Gas Company
Small Electric Generation Gas Demand Forecast

Overview

The small electric generation (Cogen) demand forecast described in this workpaper is for those electric generation customers that have installed equipment primarily to generate electricity for their own use rather than to sell the power to an electric utility.

Forecast Methodology

Demand is determined as the total demand for each existing individual facility taking into account historical operational characteristics and any anticipated future additions or operational changes.

A. Demand Forecast for Small EG (NON SGIP)

The demand forecast for the small EG (non-SGIP) load is estimated on an individual customer basis. Demand for each customer is projected to grow from the previous year's level by the anticipated employment growth of the business. The employment growth for each business sector is classified by the North American Industry Classification System (NAICS) code. These data were obtained by Global Insight's Winter 2007/2008 Projection.

$$\text{Use}_{(\text{year, NAICS})} = \text{Use}_{(\text{year -1, NAICS})} * \text{Growth}_{(\text{year, NAICS})}$$

The subsequent table provides a month-by-month summation of the current and expected demand changes for the customers based on an analysis of historical operation characteristics and taking into account any anticipated future additions or changes. Except for some relatively minor changes discussed below, overall demand within this market segment is expected to be mostly constant and stable.

Historical load information runs through December 2007. Between January 2005 and December 2006, a total of 23 new customers were added to this group and 32 existing customers changed (discontinued) their service. The forecast below also includes an adjustment due to the expected migration of approximately 27 noncore customers to G-10 beginning in September 2009. The overall load transferred by 2011 will be 3,700,000 therms but the load will shift gradually over the 2009-2011 time frame. When the EG customers' current 2 year GT-F contracts expire and/or when the marketer gas contracts expire, we will observe the transfers. Beginning in September 2009, we expect 1,850,000 therms to transfer to core subscription. In 2010, an additional 925,000 therms will transfer to core so that the total transfer reaches 2,775,000 therms. By 2011, the full

3,700,000 therms will have transferred from noncore to core. Of the total, 64% of the transfers are expected from industrial customers and 36% of the transfers are expected from commercial customers.

B. Demand Forecast for SGIP

The Self-Generation Incentive Program (SGIP) is the successor of the AB970 program that was signed into law on September 6, 2000. It required the CPUC to initiate activities for load control and distributed generation. The CPUC Decision D.-01-03-073 authorized self generation incentive program to be applied across utility service areas. The term self generation refers to distributed generation technologies that consist of small gas turbines, internal combustion engines, wind turbines, photovoltaics and fuel cells. The technologies are designated to provide a portion of the customer's entire electric load and for those using natural gas waste heat recovery from the electric power generation system is required. SoCalGas launched its portion of the program on July 2001.

In determining the amount of added load from the SGIP, SoCalGas averages the added load from 2004 to 2007, and projects the same amount of added load each year to year 2017, under the assumption that the funding for the SGIP would continue to 2017. Note that 3 natural gas projects were completed in 2003, 2 were completed in 2004 and only 1 was completed in 2005. After 2017, the amount of added load is expected to remain constant. The forecast for SGIP under the G50 rate is included in the large EG forecast and the SGIP forecast under the G10 rate is included in the core commercial and industrial forecast. The 2008-2030 SGIP added load for the small commercial and industrial market segment is depicted in the subsequent table.

Small Cogeneration Demand Forecast
Excludes the Self-Generation Incentive Program
Table 1
(Mdth)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2007 Z	1,616.7	1,385.7	1,490.5	1,591.3	1,631.1	1,768.2	2,126.5	2,033.5	1,837.9	1,911.5	1,679.3	1,694.5	20,766.9
2008 Z	1,623.1	1,391.2	1,496.3	1,597.5	1,637.4	1,775.1	2,134.9	2,041.5	1,845.1	1,919.0	1,685.8	1,701.2	20,848.1
2009 Z	1,615.3	1,384.5	1,489.2	1,589.9	1,629.6	1,766.6	2,124.6	2,031.7	1,836.3	1,909.8	1,677.8	1,693.0	20,748.3
2010 Z	1,614.9	1,384.1	1,488.8	1,589.5	1,629.2	1,766.2	2,124.1	2,031.2	1,835.8	1,909.3	1,677.3	1,692.6	20,742.9
2011 Z	1,614.6	1,383.9	1,488.5	1,589.2	1,628.9	1,765.9	2,123.7	2,030.8	1,835.5	1,909.0	1,677.0	1,692.3	20,739.4
2012 Z	1,621.7	1,390.0	1,495.1	1,596.2	1,636.0	1,773.6	2,133.0	2,039.7	1,843.5	1,917.3	1,684.4	1,699.7	20,830.3
2013 Z	1,628.9	1,396.2	1,501.7	1,603.3	1,643.3	1,781.5	2,142.5	2,048.8	1,851.7	1,925.9	1,691.9	1,707.3	20,923.0
2014 Z	1,636.3	1,402.5	1,508.5	1,610.5	1,650.8	1,789.6	2,152.2	2,058.1	1,860.1	1,934.6	1,699.5	1,715.0	21,017.7
2015 Z	1,643.8	1,408.9	1,515.4	1,617.9	1,658.3	1,797.8	2,162.1	2,067.5	1,868.7	1,943.5	1,707.3	1,722.9	21,114.2
2016 Z	1,651.5	1,415.5	1,522.5	1,625.5	1,666.1	1,806.2	2,172.2	2,077.2	1,877.4	1,952.5	1,715.3	1,730.9	21,212.6
2017 Z	1,659.3	1,422.2	1,529.7	1,633.1	1,673.9	1,814.7	2,182.4	2,087.0	1,886.2	1,961.8	1,723.4	1,739.1	21,312.8
2018 Z	1,667.2	1,429.0	1,537.0	1,641.0	1,682.0	1,823.4	2,192.9	2,097.0	1,895.3	1,971.2	1,731.7	1,747.4	21,414.9
2019 Z	1,675.3	1,435.9	1,544.5	1,648.9	1,690.1	1,832.2	2,203.5	2,107.2	1,904.5	1,980.7	1,740.1	1,755.9	21,518.8
2020 Z	1,683.5	1,443.0	1,552.1	1,657.0	1,698.4	1,841.2	2,214.4	2,117.5	1,913.8	1,990.5	1,748.6	1,764.5	21,624.5
2021 Z	1,691.9	1,450.2	1,559.8	1,665.3	1,706.9	1,850.4	2,225.4	2,128.1	1,923.3	2,000.4	1,757.3	1,773.3	21,732.1
2022 Z	1,700.4	1,457.4	1,567.6	1,673.6	1,715.5	1,859.7	2,236.6	2,138.8	1,933.0	2,010.4	1,766.1	1,782.2	21,841.5
2023 Z	1,709.1	1,464.9	1,575.6	1,682.2	1,724.2	1,869.2	2,248.0	2,149.6	1,942.9	2,020.7	1,775.1	1,791.3	21,952.7
2024 Z	1,717.9	1,472.4	1,583.7	1,690.8	1,733.1	1,878.8	2,259.5	2,160.7	1,952.9	2,031.1	1,784.3	1,800.5	22,065.7
2025 Z	1,726.8	1,480.1	1,592.0	1,699.6	1,742.1	1,888.6	2,271.3	2,172.0	1,963.0	2,041.6	1,793.6	1,809.9	22,180.5
2026	1,735.9	1,487.9	1,600.3	1,708.6	1,751.3	1,898.5	2,283.2	2,183.4	1,973.3	2,052.4	1,803.0	1,819.4	22,297.1
2027	1,745.1	1,495.8	1,608.8	1,717.6	1,760.6	1,908.6	2,295.4	2,195.0	1,983.8	2,063.3	1,812.6	1,829.1	22,415.6
2028	1,754.5	1,503.8	1,617.5	1,726.8	1,770.0	1,918.8	2,307.7	2,206.8	1,994.5	2,074.3	1,822.3	1,838.9	22,535.9
2029	1,764.0	1,511.9	1,626.2	1,736.2	1,779.6	1,929.2	2,320.2	2,218.7	2,005.3	2,085.6	1,832.2	1,848.9	22,657.9
2030	1,773.6	1,520.2	1,635.1	1,745.7	1,789.3	1,939.8	2,332.9	2,230.8	2,016.2	2,097.0	1,842.2	1,859.0	22,781.8

Small Generation Demand Forecast
Self Generation Incentive Program Volumes
Table 2
(Mdth)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2007	0.7	1.5	2.2	2.9	3.7	4.4	5.1	5.8	6.6	7.3	8.0	8.8	57.0
2008	1.0	2.0	3.0	4.1	5.1	6.1	7.1	8.1	9.1	10.1	11.1	12.2	79.0
2009	1.3	2.6	3.9	5.2	6.5	7.8	9.1	10.4	11.7	12.9	14.2	15.5	101.0
2010	1.6	3.2	4.7	6.3	7.9	9.5	11.0	12.6	14.2	15.8	17.3	18.9	123.0
2011	1.9	3.7	5.6	7.4	9.3	11.2	13.0	14.9	16.7	18.6	20.4	22.3	145.0
2012	2.1	4.3	6.4	8.6	10.7	12.8	15.0	17.1	19.3	21.4	23.6	25.7	167.0
2013	2.4	4.8	7.3	9.7	12.1	14.5	17.0	19.4	21.8	24.2	26.7	29.1	189.0
2014	2.7	5.4	8.1	10.8	13.5	16.2	18.9	21.6	24.3	27.1	29.8	32.5	211.0
2015	3.0	6.0	9.0	11.9	14.9	17.9	20.9	23.9	26.9	29.9	32.9	35.8	233.0
2016	3.3	6.5	9.8	13.1	16.3	19.6	22.9	26.2	29.4	32.7	36.0	39.2	255.0
2017	3.6	7.1	10.7	14.2	17.8	21.3	24.9	28.4	32.0	35.5	39.1	42.6	277.0
2018	3.6	7.1	10.7	14.2	17.8	21.3	24.9	28.4	32.0	35.5	39.1	42.6	277.0
2019	3.6	7.1	10.7	14.2	17.8	21.3	24.9	28.4	32.0	35.5	39.1	42.6	277.0
2020	3.6	7.1	10.7	14.2	17.8	21.3	24.9	28.4	32.0	35.5	39.1	42.6	277.0
2021	3.6	7.1	10.7	14.2	17.8	21.3	24.9	28.4	32.0	35.5	39.1	42.6	277.0
2022	3.6	7.1	10.7	14.2	17.8	21.3	24.9	28.4	32.0	35.5	39.1	42.6	277.0
2023	3.6	7.1	10.7	14.2	17.8	21.3	24.9	28.4	32.0	35.5	39.1	42.6	277.0
2024	3.6	7.1	10.7	14.2	17.8	21.3	24.9	28.4	32.0	35.5	39.1	42.6	277.0
2025	3.6	7.1	10.7	14.2	17.8	21.3	24.9	28.4	32.0	35.5	39.1	42.6	277.0
2026	3.6	7.1	10.7	14.2	17.8	21.3	24.9	28.4	32.0	35.5	39.1	42.6	277.0
2027	3.6	7.1	10.7	14.2	17.8	21.3	24.9	28.4	32.0	35.5	39.1	42.6	277.0
2028	3.6	7.1	10.7	14.2	17.8	21.3	24.9	28.4	32.0	35.5	39.1	42.6	277.0
2029	3.6	7.1	10.7	14.2	17.8	21.3	24.9	28.4	32.0	35.5	39.1	42.6	277.0
2030	3.6	7.1	10.7	14.2	17.8	21.3	24.9	28.4	32.0	35.5	39.1	42.6	277.0

2008 CALIFORNIA GAS REPORT

INDUSTRIAL/COMMERCIAL COGENERATION > 20 MW
JULY 2008

The Gas Company

A Sempra Energy utility℠

Industrial/Commercial Cogeneration (>20 MW)

The MARKETSYM production cost model was used to prepare the natural gas demand through 2030. The attached detail summarizes the annual load.

Schedule 1
2008 CGR - SoCalgas Noncore G50-BASE HYDRO Large Co-Generation Template for Gas Demand Forecast Summary (MDth)

	EG-Rate: Tier1 (< 3,000,000 Therms/Yr)	EG-Rate: Tier2 (> 3,000,000 Therms/Yr)	Total
2007	102	54,238	54,340
2008	0	53,743	53,743
2009	0	52,033	52,033
2010	0	51,980	51,980
2011	0	52,057	52,057
2012	0	52,171	52,171
2013	0	52,084	52,084
2014	0	52,084	52,084
2015	0	52,112	52,112
2016	0	52,583	52,583
2017	0	53,031	53,031
2018	0	53,480	53,480
2019	0	54,010	54,010
2020	0	54,546	54,546
2021	0	54,546	54,546
2022	0	54,546	54,546
2023	0	54,546	54,546
2024	0	54,546	54,546
2025	0	54,546	54,546
2026	0	54,546	54,546
2027	0	54,546	54,546
2028	0	54,546	54,546
2029	0	54,546	54,546
2030	0	54,546	54,546

After 2015, the 2020 value was developed by growing the 2015 usage by the same rate as electric energy growth, minus the part that would be met with renewable power. The EG forecast is held constant at 2020 levels for 2025 and 2030.

2008 CALIFORNIA GAS REPORT

EOR RELATED COGENERATION
JULY 2008

The Gas Company

A Sempra Energy utility™

ENHANCED OIL RECOVERY - COGENERATION

FORECAST METHODOLOGY FOR THE 2008 CALIFORNIA GAS REPORT

Southern California Gas' ("SoCalGas") forecast of enhanced oil recovery ("EOR") cogeneration gas requirements as reported in the *2008 California Gas Report* ("CGR") is based on customer-specific historical data and market analysis. The major steps in developing this forecast are outlined below and described in detail in the following pages.

- Analyze Historical Gas Demand
- Evaluate Market Potential
- Calculate Effect of Bypass

A. Analyze Historical Gas Demand

Historical customer gas demand data for the period 2005 through 2007 were analyzed in order to determine typical throughput volumes over the past few years. FERC reports from Kern River Transmission Company and the Mojave Pipeline Company ("Kern/Mojave"), Format NO. FERC 567, from the same time period were studied in order to determine bypass trends.

B. Evaluate Market Potential

Potential EOR gas demand was determined by considering market information given the following assumptions:

1. Oil prices will be high enough for EOR production to be economically desirable.
2. SoCalGas has no capacity or supply constraints.
3. Air quality regulations will continue to either require or encourage the use of gas, rather than oil, in all areas.
4. Most cogeneration facilities are not alternate fuel capable.

No additional EOR congeneration projects are scheduled to start up during the forecast period.

C. Calculate Effect of Bypass

Kern/Mojave began operating in February, 1992. At that time, many of SoCalGas' customers began taking service directly from the pipelines, thereby bypassing SoCalGas' distribution system.

Several factors were taken into consideration in order to forecast future bypass volumes. These factors were: the customer's geographical location, the amount of natural gas a customer has contracted to move on Kern/Mojave; the quantities of gas the customer has under any long-term contract with SoCalGas; the amount of Kern/Mojave gas available from marketers who have no designated end-users; and the amount of gas currently bypassing SoCalGas' distribution system.

Based on these considerations, the following assumptions were made:

1. EOR demand for customers located in the Los Angeles Basin and Santa Barbara and Ventura areas will not bypass SoCalGas' distribution system.
2. Customers who have already bypassed SoCalGas' system will continue to bypass at their current levels.
3. Customers located in the San Joaquin Valley who have long-term transportation contracts with SoCalGas will increase their level of bypass when their contracts expire during 2008 and 2009.

The forecast of gas demand for EOR cogeneration is shown in the following table.

2008 CALIFORNIA GAS REPORT - EOR COGENERATION FORECAST (2008 - 2030)
(MMCFD)

	HISTORICAL			FORECAST																						
SOCALGAS DELIVERIES	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Long-Term Contract Customers	30	36	52	50	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Short-Term Contract Customers	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Total Deliveries	40	46	62	60	18	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10

2008 CALIFORNIA GAS REPORT

REFINERY-RELATED COGENERATION
JULY 2008

The Gas Company

A Sempra Energy utility℠

Southern California Gas Company
Refinery Segment Gas Demand Forecast
Workpaper in Support of CGR 2008

I. Overview

These workpapers document the forecasting methodology for refinery segment gas demand. SoCalGas' refinery segment consists of 17 petroleum refining customers classified in SIC2911, 10 refinery-related cogenerators, 3 hydrogen producers and 1 petroleum refined product transporters. . These customers are characterized by a complex interaction of refinery operations, on-site generation of alternate fuels, and changing regulatory requirements impacting the production of petroleum products. Therefore, the demand forecasts for the refinery market incorporate factors such as refinery operations, alternate fuels competition and gasoline regulations.

II. Forecasting Methodology for Refinery Segment Gas Demand

The refinery segment gas demand forecast is developed by the following procedures.

A). Develop an econometric model to forecast total gas demand for refinery segment customers.

B). Incorporate the savings from both Commission-mandated energy efficiency programs and other refinery process related energy efficient improvements that are not eligible for SoCalGas' Energy Efficiency programs.

C). Break the final gas demand forecast by G-30 and EG rate class categories.

A) Econometric Model

1. Introduction

The refinery market is first forecasted by an econometric model with monthly historic data. The refinery segment gas demand model is a multiple log-linear regression model. The model includes a binary variable to reflect increased noncore demand beginning November 1999 due to one additional customer coming on line.

The refinery segment demand forecast model is developed using historical data from January 1998 through July 2007. The forecast period is from January 2009 through December 2030. Section 2 provides an overview of the input data sets. Section 3 describes the formulation and estimation results of the model. Section 4 shows the econometric forecast result and comparison with the historic data from January 1998 through July 2007.

2. Input Data

The refinery segment gas demand model is calibrated using monthly data from the historical database for the period January 1998 through July 2007. The endogenous (dependent variable) variable is the total refinery segment gas usage. The exogenous variables are monthly gas prices, butane prices and a binary variable. Descriptions for each of these data components are listed below. The input data are listed in Appendix A.

* Historic Gas Usage

Historic monthly gas usage data for refinery segment customers are obtained from SoCalGas Customer Billing Records for the period January 1998 through July 2007. The monthly usage data are then further divided by the number of days for each month to come up with the average daily usage by month.

* Gas Prices

The gas prices are the burner tip gas prices which consist of gas cost, transportation rate, municipal surcharge and PPP (Public Purpose Programs) surcharge. The California Border Spot Prices (CBSP) are used as a proxy for gas cost. The monthly transportation rates for the historic period are generated by taking the monthly recorded revenues divided by the actual throughput. For the forecast period, the forecast weighted average tariff rate is used as transportation rate. The weights are derived from historical usage data by rate category for period June 2000 to July 2007. The municipal surcharges are 2% of the gas cost for customers located in the city of Los Angeles and 1.48% for those in other cities.

* One Binary Variable

A binary variable is used in the model. The binary variable, NEW, which equals one for November, 1999 forward, and zero otherwise is designed to reflect the addition of one new customer in November 1999.

3. Model Specification and Estimation Results

* Specification of Equation

A single equation is estimated for the refinery segment gas demand forecast.

The equation is in the following form:

$\ln(USE\_Day_t) = a + b * \ln(GAS/BUTANE) + c * NEW_t + E_t$

Where:

t = Month, for January 1998, t = 1;

$\ln(USE\_Day_t)$ = Natural logarithm of the average daily refinery load (Mdth/day) in month t;

ln(GAS/BUTANE) = Natural logarithm of the ratio of burner tip gas prices to butane prices in month t. The gas and butane prices are the average prices of the month t and month t-1;

NEW_t = New customer dummy variable, for November 1999 and after, NEW=1; otherwise NEW=0;

E_t = Error term

The estimated parameters are the lower case letters a, b, and c.

* <u>Estimation Results</u>

The equation is estimated using EXCEL function LINEST for multiple linear regression. The results of the regression are shown in Table I below. All the coefficients are statistically significant with correct signs. The overall R-squared value equals 0.753. The coefficient b represents the effect of the ratio of gas to butane prices on gas demand. The coefficient c reflects the effect of new customers on gas demand.

Table I. Econometric Model Estimation Results

Parameter	Variable	Parameter Estimate	Standard Error	P Value
a	Intercept	5.222	0.012	0.0001
b	LN(GAS/BUTANE)	-0.143	0.016	0.0050
c	NEW	0.1901	0.013	0.0001

$R^2 = 0.753$

F = 170.9; SE (y) =0.055

df = 112

4. Comparison of Forecast vs. Actual Usage

Table II shows the actual gas usage, predicted gas demand and percentage error for years 1998 through July 2007.

Table II. Econometric Model Results - Actual and Predicted Usage

Year	Actual Mdth	Predicted Mdth	Percent Error
1998	67,363	66,413	-1.4 %
1999	69,306	70,766	2.1 %
2000	79,524	81,773	2.8 %
2001	74,607	78,037	4.6 %
2002	85,093	81,349	- 4.4 %
2003	84,477	80,821	- 4.3 %
2004	84,540	83,597	- 1.1 %
2005	83,607	83,496	-0.1 %
2006	85,627	86,374	0.9 %
2007 Jan - Jul	49,033	49,518	1.0 %

B). ENERGY EFFICIENCY SAVINGS

The forecast volumes derived from the econometric model do not account for the potential savings due to both Commission-mandated energy efficiency programs and other refinery process related energy efficient improvements that are not eligible for SoCalGas' Energy Efficiency programs.

To support the Energy Action Plan II (EAP) which was endorsed by Governor Schwarzenegger, the Commission adopted aggressive energy efficiency goals for SoCalGas customers in D.04-09-060. The forecasted savings due to Commission-mandated energy efficiency programs were deducted from the econometric forecast.

In addition, there are potential energy savings that are not eligible for the Commission-mandated energy programs but are forecasted to be implemented by two customers. These savings were also taken out from the econometric forecast.

C). BREAK THE REFINERY GAS DEMAND FORECAST BY G-30 AND EG RATE-CLASS

The refinery G-30 and refinery-related EG forecast volumes were developed by taking the total refinery gas demand multiplying by the percent of G-30 volumes relative to total refinery volumes based on refinery billing records for the months of June 2000 through June 2007. These percentages, 78% and 22%, are reasonably predictive of the allocation of refinery gas volumes for rate-class G-30 and EG customers for the forecast period.

III. COLD YEAR DEMAND

Refinery gas demand is not weather sensitive. Therefore, the cold year demand is the same as the average year demand.

Appendix

Input and Output Data

Section I: Model Inputs

Refinery Segment Econometric Model

	Gas Burner Tip$/Dth	Gas Burner Tip$/Dth	Gas Burner Tip$/Dth	Gas Burner Tip$/Dth	Gas Burner Tip$/Dth	Gas Burner Tip$/Dth	Gas Burner Tip$/Dth	Gas Burner Tip$/Dth	Gas Burner Tip$/Dth	Gas Burner Tip$/Dth	Gas Burner Tip$/Dth	Gas Burner Tip$/Dth	Gas Burner Tip$/Dth
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2007	$ 7.06	$ 7.82	$ 6.83	$ 7.61	$ 7.80	$ 7.50	$ 6.61	$ 6.41	$ 6.15	$ 7.19	$ 6.76	$ 7.50	$ 7.10
2008	$ 8.29	$ 8.80	$ 9.13	$ 8.97	$ 9.03	$ 9.20	$ 9.42	$ 9.50	$ 9.38	$ 9.31	$ 9.36	$ 9.89	$ 9.19
2009	$ 10.27	$ 10.26	$ 10.01	$ 8.76	$ 8.68	$ 8.73	$ 8.86	$ 8.91	$ 8.92	$ 8.86	$ 9.08	$ 9.43	$ 9.23
2010	$ 9.63	$ 9.64	$ 9.42	$ 8.66	$ 8.61	$ 8.66	$ 8.72	$ 8.77	$ 8.78	$ 8.85	$ 8.93	$ 9.26	$ 8.99
2011	$ 9.56	$ 9.61	$ 9.36	$ 8.50	$ 8.44	$ 8.50	$ 8.61	$ 8.66	$ 8.68	$ 8.73	$ 8.96	$ 9.26	$ 8.91
2012	$ 9.11	$ 9.13	$ 8.88	$ 8.05	$ 8.01	$ 8.06	$ 8.19	$ 8.23	$ 8.25	$ 8.29	$ 8.49	$ 8.79	$ 8.46
2013	$ 8.69	$ 8.73	$ 8.47	$ 7.70	$ 7.65	$ 7.70	$ 7.81	$ 7.85	$ 7.87	$ 7.91	$ 8.12	$ 8.39	$ 8.07
2014	$ 8.28	$ 8.32	$ 8.06	$ 7.35	$ 7.30	$ 7.34	$ 7.46	$ 7.48	$ 7.51	$ 7.55	$ 7.74	$ 7.99	$ 7.70
2015	$ 8.65	$ 8.69	$ 8.44	$ 7.67	$ 7.63	$ 7.67	$ 7.81	$ 7.84	$ 7.84	$ 7.89	$ 8.10	$ 8.35	$ 8.05
2016	$ 9.17	$ 9.20	$ 8.96	$ 8.15	$ 8.10	$ 8.15	$ 8.28	$ 8.33	$ 8.35	$ 8.38	$ 8.61	$ 8.89	$ 8.55
2017	$ 9.64	$ 9.68	$ 9.41	$ 8.57	$ 8.50	$ 8.58	$ 8.68	$ 8.73	$ 8.76	$ 8.80	$ 9.04	$ 9.33	$ 8.98
2018	$ 10.08	$ 10.10	$ 9.82	$ 8.92	$ 8.87	$ 8.91	$ 9.05	$ 9.09	$ 9.12	$ 9.19	$ 9.44	$ 9.75	$ 9.36
2019	$ 10.41	$ 10.44	$ 10.17	$ 9.24	$ 9.21	$ 9.27	$ 9.37	$ 9.42	$ 9.45	$ 9.50	$ 9.77	$ 10.09	$ 9.69
2020	$ 10.72	$ 10.74	$ 10.46	$ 9.52	$ 9.47	$ 9.52	$ 9.64	$ 9.69	$ 9.74	$ 9.80	$ 10.06	$ 10.41	$ 9.98
2021	$ 10.78	$ 10.80	$ 10.52	$ 9.57	$ 9.52	$ 9.58	$ 9.70	$ 9.74	$ 9.77	$ 9.83	$ 10.12	$ 10.45	$ 10.03
2022	$ 11.23	$ 11.27	$ 10.97	$ 9.98	$ 9.92	$ 9.99	$ 10.15	$ 10.16	$ 10.19	$ 10.25	$ 10.55	$ 10.88	$ 10.46
2023	$ 11.74	$ 11.77	$ 11.46	$ 10.41	$ 10.36	$ 10.41	$ 10.59	$ 10.60	$ 10.60	$ 10.65	$ 10.96	$ 11.30	$ 10.90
2024	$ 12.20	$ 12.22	$ 11.90	$ 10.82	$ 10.77	$ 10.84	$ 11.07	$ 11.02	$ 11.03	$ 11.10	$ 11.41	$ 11.76	$ 11.34
2025	$ 12.68	$ 12.73	$ 12.39	$ 11.24	$ 11.19	$ 11.28	$ 11.40	$ 11.45	$ 11.45	$ 11.52	$ 11.85	$ 12.23	$ 11.78
2026	$ 12.98	$ 13.01	$ 12.66	$ 11.49	$ 11.41	$ 11.52	$ 11.67	$ 11.71	$ 11.72	$ 11.79	$ 12.12	$ 12.54	$ 12.05
2027	$ 13.44	$ 13.49	$ 13.13	$ 11.91	$ 11.84	$ 11.91	$ 12.08	$ 12.10	$ 12.10	$ 12.18	$ 12.52	$ 12.95	$ 12.47
2028	$ 13.95	$ 13.99	$ 13.63	$ 12.36	$ 12.29	$ 12.36	$ 12.54	$ 12.57	$ 12.56	$ 12.65	$ 13.00	$ 13.44	$ 12.95
2029	$ 14.56	$ 14.61	$ 14.22	$ 12.92	$ 12.84	$ 12.91	$ 13.10	$ 13.13	$ 13.13	$ 13.22	$ 13.58	$ 14.05	$ 13.52
2030	$ 15.16	$ 15.21	$ 14.81	$ 13.45	$ 13.37	$ 13.44	$ 13.64	$ 13.67	$ 13.67	$ 13.77	$ 14.16	$ 14.64	$ 14.08

	CBSP $/Dth	CBSP $/Dth	CBSP $/Dth	CBSP $/Dth	CBSP $/Dth	CBSP $/Dth	CBSP $/Dth	CBSP $/Dth	CBSP $/Dth	CBSP $/Dth	CBSP $/Dth	CBSP $/Dth	CBSP $/Dth
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2007	$ 6.45	$ 7.19	$ 6.23	$ 6.99	$ 7.18	$ 6.88	$ 6.01	$ 5.82	$ 5.57	$ 6.59	$ 6.17	$ 6.89	$ 6.50
2008	$ 7.67	$ 8.17	$ 8.50	$ 8.34	$ 8.40	$ 8.57	$ 8.78	$ 8.86	$ 8.74	$ 8.67	$ 8.73	$ 9.24	$ 8.56
2009	$ 9.51	$ 9.50	$ 9.26	$ 8.03	$ 7.95	$ 8.00	$ 8.12	$ 8.18	$ 8.18	$ 8.13	$ 8.34	$ 8.69	$ 8.49
2010	$ 8.88	$ 8.89	$ 8.67	$ 7.91	$ 7.87	$ 7.92	$ 7.98	$ 8.03	$ 8.04	$ 8.10	$ 8.19	$ 8.51	$ 8.25
2011	$ 8.80	$ 8.85	$ 8.60	$ 7.75	$ 7.69	$ 7.74	$ 7.86	$ 7.90	$ 7.93	$ 7.97	$ 8.20	$ 8.50	$ 8.15
2012	$ 8.35	$ 8.37	$ 8.12	$ 7.31	$ 7.27	$ 7.32	$ 7.44	$ 7.48	$ 7.50	$ 7.54	$ 7.74	$ 8.03	$ 7.71
2013	$ 7.93	$ 7.97	$ 7.72	$ 6.96	$ 6.91	$ 6.96	$ 7.07	$ 7.11	$ 7.13	$ 7.16	$ 7.37	$ 7.64	$ 7.33
2014	$ 7.53	$ 7.57	$ 7.31	$ 6.61	$ 6.56	$ 6.60	$ 6.72	$ 6.74	$ 6.77	$ 6.81	$ 6.99	$ 7.24	$ 6.95
2015	$ 7.88	$ 7.91	$ 7.66	$ 6.90	$ 6.87	$ 6.91	$ 7.04	$ 7.07	$ 7.08	$ 7.12	$ 7.33	$ 7.58	$ 7.28
2016	$ 8.36	$ 8.39	$ 8.15	$ 7.36	$ 7.31	$ 7.35	$ 7.48	$ 7.53	$ 7.55	$ 7.58	$ 7.81	$ 8.09	$ 7.75
2017	$ 8.80	$ 8.84	$ 8.57	$ 7.75	$ 7.68	$ 7.75	$ 7.86	$ 7.91	$ 7.94	$ 7.97	$ 8.21	$ 8.50	$ 8.15
2018	$ 9.21	$ 9.23	$ 8.95	$ 8.07	$ 8.02	$ 8.06	$ 8.19	$ 8.23	$ 8.27	$ 8.33	$ 8.58	$ 8.89	$ 8.50
2019	$ 9.51	$ 9.54	$ 9.27	$ 8.36	$ 8.33	$ 8.39	$ 8.49	$ 8.54	$ 8.57	$ 8.61	$ 8.88	$ 9.19	$ 8.81
2020	$ 9.80	$ 9.81	$ 9.54	$ 8.62	$ 8.56	$ 8.61	$ 8.74	$ 8.78	$ 8.83	$ 8.89	$ 9.15	$ 9.49	$ 9.07
2021	$ 9.84	$ 9.86	$ 9.58	$ 8.65	$ 8.60	$ 8.66	$ 8.78	$ 8.82	$ 8.85	$ 8.91	$ 9.19	$ 9.51	$ 9.11
2022	$ 10.26	$ 10.30	$ 10.00	$ 9.03	$ 8.97	$ 9.04	$ 9.19	$ 9.20	$ 9.24	$ 9.29	$ 9.59	$ 9.91	$ 9.50
2023	$ 10.73	$ 10.77	$ 10.46	$ 9.42	$ 9.38	$ 9.43	$ 9.61	$ 9.61	$ 9.62	$ 9.66	$ 9.96	$ 10.30	$ 9.91
2024	$ 11.16	$ 11.18	$ 10.86	$ 9.80	$ 9.75	$ 9.82	$ 10.05	$ 10.00	$ 10.01	$ 10.08	$ 10.39	$ 10.73	$ 10.32
2025	$ 11.61	$ 11.65	$ 11.32	$ 10.19	$ 10.14	$ 10.23	$ 10.34	$ 10.39	$ 10.40	$ 10.47	$ 10.80	$ 11.17	$ 10.73
2026	$ 12.00	$ 12.03	$ 11.68	$ 10.53	$ 10.46	$ 10.57	$ 10.71	$ 10.75	$ 10.76	$ 10.83	$ 11.16	$ 11.57	$ 11.09
2027	$ 12.43	$ 12.48	$ 12.13	$ 10.92	$ 10.86	$ 10.93	$ 11.09	$ 11.12	$ 11.11	$ 11.19	$ 11.53	$ 11.95	$ 11.48
2028	$ 12.90	$ 12.94	$ 12.58	$ 11.33	$ 11.27	$ 11.34	$ 11.51	$ 11.55	$ 11.54	$ 11.62	$ 11.97	$ 12.40	$ 11.91
2029	$ 13.48	$ 13.53	$ 13.15	$ 11.86	$ 11.78	$ 11.86	$ 12.05	$ 12.07	$ 12.07	$ 12.16	$ 12.52	$ 12.98	$ 12.46
2030	$ 14.04	$ 14.09	$ 13.70	$ 12.35	$ 12.27	$ 12.35	$ 12.55	$ 12.57	$ 12.57	$ 12.67	$ 13.05	$ 13.53	$ 12.98

Section I: Model Inputs

Refinery Segment Econometric Model

Year	$/Dth Transp Rate Jan	$/Dth Transp Rate Feb	$/Dth Transp Rate Mar	$/Dth Transp Rate Apr	$/Dth Transp Rate May	$/Dth Transp Rate Jun	$/Dth Transp Rate Jul	$/Dth Transp Rate Aug	$/Dth Transp Rate Sep	$/Dth Transp Rate Oct	$/Dth Transp Rate Nov	$/Dth Transp Rate Dec	$/Dth Transp Rate Total
2007	$ 0.28	$ 0.29	$ 0.28	$ 0.29	$ 0.29	$ 0.30	$ 0.29	$ 0.28	$ 0.28	$ 0.28	$ 0.28	$ 0.28	$ 0.28
2008	$ 0.28	$ 0.28	$ 0.28	$ 0.28	$ 0.28	$ 0.28	$ 0.28	$ 0.28	$ 0.28	$ 0.28	$ 0.28	$ 0.28	$ 0.28
2009	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35
2010	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36
2011	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37
2012	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37
2013	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37	$ 0.37
2014	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38
2015	$ 0.39	$ 0.39	$ 0.39	$ 0.39	$ 0.39	$ 0.39	$ 0.39	$ 0.39	$ 0.39	$ 0.39	$ 0.39	$ 0.39	$ 0.39
2016	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40
2017	$ 0.41	$ 0.41	$ 0.41	$ 0.41	$ 0.41	$ 0.41	$ 0.41	$ 0.41	$ 0.41	$ 0.41	$ 0.41	$ 0.41	$ 0.41
2018	$ 0.43	$ 0.43	$ 0.43	$ 0.43	$ 0.43	$ 0.43	$ 0.43	$ 0.43	$ 0.43	$ 0.43	$ 0.43	$ 0.43	$ 0.43
2019	$ 0.44	$ 0.44	$ 0.44	$ 0.44	$ 0.44	$ 0.44	$ 0.44	$ 0.44	$ 0.44	$ 0.44	$ 0.44	$ 0.44	$ 0.44
2020	$ 0.45	$ 0.45	$ 0.45	$ 0.45	$ 0.45	$ 0.45	$ 0.45	$ 0.45	$ 0.45	$ 0.45	$ 0.45	$ 0.45	$ 0.45
2021	$ 0.46	$ 0.46	$ 0.46	$ 0.46	$ 0.46	$ 0.46	$ 0.46	$ 0.46	$ 0.46	$ 0.46	$ 0.46	$ 0.46	$ 0.46
2022	$ 0.47	$ 0.47	$ 0.47	$ 0.47	$ 0.47	$ 0.47	$ 0.47	$ 0.47	$ 0.47	$ 0.47	$ 0.47	$ 0.47	$ 0.47
2023	$ 0.49	$ 0.49	$ 0.49	$ 0.49	$ 0.49	$ 0.49	$ 0.49	$ 0.49	$ 0.49	$ 0.49	$ 0.49	$ 0.49	$ 0.49
2024	$ 0.50	$ 0.50	$ 0.50	$ 0.50	$ 0.50	$ 0.50	$ 0.50	$ 0.50	$ 0.50	$ 0.50	$ 0.50	$ 0.50	$ 0.50
2025	$ 0.52	$ 0.52	$ 0.52	$ 0.52	$ 0.52	$ 0.52	$ 0.52	$ 0.52	$ 0.52	$ 0.52	$ 0.52	$ 0.52	$ 0.52
2026	$ 0.53	$ 0.53	$ 0.53	$ 0.53	$ 0.53	$ 0.53	$ 0.53	$ 0.53	$ 0.53	$ 0.53	$ 0.53	$ 0.53	$ 0.53
2027	$ 0.55	$ 0.55	$ 0.55	$ 0.55	$ 0.55	$ 0.55	$ 0.55	$ 0.55	$ 0.55	$ 0.55	$ 0.55	$ 0.55	$ 0.55
2028	$ 0.56	$ 0.56	$ 0.56	$ 0.56	$ 0.56	$ 0.56	$ 0.56	$ 0.56	$ 0.56	$ 0.56	$ 0.56	$ 0.56	$ 0.56
2029	$ 0.58	$ 0.58	$ 0.58	$ 0.58	$ 0.58	$ 0.58	$ 0.58	$ 0.58	$ 0.58	$ 0.58	$ 0.58	$ 0.58	$ 0.58
2030	$ 0.60	$ 0.60	$ 0.60	$ 0.60	$ 0.60	$ 0.60	$ 0.60	$ 0.60	$ 0.60	$ 0.60	$ 0.60	$ 0.60	$ 0.60

Year	PPP $/Dth Jan	PPP $/Dth Feb	PPP $/Dth Mar	PPP $/Dth Apr	PPP $/Dth May	PPP $/Dth Jun	PPP $/Dth Jul	PPP $/Dth Aug	PPP $/Dth Sep	PPP $/Dth Oct	PPP $/Dth Nov	PPP $/Dth Dec	PPP $/Dth Total
2007	$ 0.27	$ 0.27	$ 0.27	$ 0.27	$ 0.27	$ 0.27	$ 0.27	$ 0.27	$ 0.27	$ 0.27	$ 0.27	$ 0.27	$ 0.27
2008	$ 0.28	$ 0.28	$ 0.28	$ 0.28	$ 0.28	$ 0.28	$ 0.28	$ 0.28	$ 0.28	$ 0.28	$ 0.28	$ 0.28	$ 0.28
2009	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32
2010	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32
2011	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33
2012	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33
2013	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33
2014	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32	$ 0.32
2015	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33
2016	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35
2017	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36
2018	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38
2019	$ 0.39	$ 0.39	$ 0.39	$ 0.39	$ 0.39	$ 0.39	$ 0.39	$ 0.39	$ 0.39	$ 0.39	$ 0.39	$ 0.39	$ 0.39
2020	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40	$ 0.40
2021	$ 0.41	$ 0.41	$ 0.41	$ 0.41	$ 0.41	$ 0.41	$ 0.41	$ 0.41	$ 0.41	$ 0.41	$ 0.41	$ 0.41	$ 0.41
2022	$ 0.43	$ 0.43	$ 0.43	$ 0.43	$ 0.43	$ 0.43	$ 0.43	$ 0.43	$ 0.43	$ 0.43	$ 0.43	$ 0.43	$ 0.43
2023	$ 0.44	$ 0.44	$ 0.44	$ 0.44	$ 0.44	$ 0.44	$ 0.44	$ 0.44	$ 0.44	$ 0.44	$ 0.44	$ 0.44	$ 0.44
2024	$ 0.46	$ 0.46	$ 0.46	$ 0.46	$ 0.46	$ 0.46	$ 0.46	$ 0.46	$ 0.46	$ 0.46	$ 0.46	$ 0.46	$ 0.46
2025	$ 0.47	$ 0.47	$ 0.47	$ 0.47	$ 0.47	$ 0.47	$ 0.47	$ 0.47	$ 0.47	$ 0.47	$ 0.47	$ 0.47	$ 0.47
2026	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33
2027	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33	$ 0.33
2028	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35	$ 0.35
2029	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36	$ 0.36
2030	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38	$ 0.38

Section I: Model Inputs
Refinery Segment Econometric Model

	Butane $/Dth	Butane $/Dth	Butane $/Dth	Butane $/Dth	Butane $/Dth	Butane $/Dth	Butane $/Dth	Butane $/Dth	Butane $/Dth	Butane $/Dth	Butane $/Dth	Butane $/Dth	Butane $/Dth
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2007	$ 9.90	$ 10.40	$ 9.72	$ 9.71	$ 9.82	$ 9.62	$ 9.43	$ 9.52	$ 10.49	$ 11.82	$ 17.11	$ 17.11	$ 11.22
2008	$ 17.56	$ 14.44	$ 14.03	$ 14.26	$ 14.35	$ 14.28	$ 13.34	$ 13.77	$ 14.94	$ 14.13	$ 15.92	$ 17.10	$ 14.84
2009	$ 17.28	$ 15.61	$ 13.01	$ 13.02	$ 13.10	$ 13.04	$ 12.46	$ 12.87	$ 13.95	$ 13.47	$ 15.18	$ 16.31	$ 14.11
2010	$ 16.56	$ 14.96	$ 12.46	$ 12.61	$ 12.69	$ 12.63	$ 11.99	$ 12.38	$ 13.43	$ 13.14	$ 14.81	$ 15.90	$ 13.63
2011	$ 16.23	$ 14.67	$ 12.22	$ 12.26	$ 12.34	$ 12.28	$ 11.66	$ 12.04	$ 13.06	$ 12.88	$ 14.52	$ 15.59	$ 13.31
2012	$ 15.81	$ 14.28	$ 11.90	$ 11.87	$ 11.95	$ 11.89	$ 11.29	$ 11.66	$ 12.64	$ 12.55	$ 14.15	$ 15.20	$ 12.93
2013	$ 15.44	$ 13.95	$ 11.62	$ 11.53	$ 11.61	$ 11.56	$ 10.96	$ 11.32	$ 12.28	$ 12.27	$ 13.83	$ 14.86	$ 12.60
2014	$ 15.08	$ 13.62	$ 11.35	$ 11.21	$ 11.28	$ 11.23	$ 10.64	$ 10.99	$ 11.92	$ 12.01	$ 13.53	$ 14.53	$ 12.28
2015	$ 15.10	$ 13.64	$ 11.37	$ 11.17	$ 11.24	$ 11.19	$ 10.61	$ 10.96	$ 11.88	$ 12.01	$ 13.54	$ 14.54	$ 12.27
2016	$ 15.18	$ 13.72	$ 11.43	$ 11.19	$ 11.26	$ 11.21	$ 10.63	$ 10.98	$ 11.91	$ 12.08	$ 13.61	$ 14.62	$ 12.32
2017	$ 15.39	$ 13.91	$ 11.59	$ 11.33	$ 11.40	$ 11.35	$ 10.76	$ 11.12	$ 12.06	$ 12.24	$ 13.79	$ 14.82	$ 12.48
2018	$ 15.73	$ 14.21	$ 11.84	$ 11.57	$ 11.64	$ 11.59	$ 10.98	$ 11.34	$ 12.30	$ 12.49	$ 14.08	$ 15.12	$ 12.74
2019	$ 16.03	$ 14.48	$ 12.06	$ 11.78	$ 11.86	$ 11.81	$ 11.20	$ 11.56	$ 12.54	$ 12.73	$ 14.35	$ 15.41	$ 12.98
2020	$ 16.29	$ 14.72	$ 12.26	$ 11.97	$ 12.05	$ 11.99	$ 11.37	$ 11.74	$ 12.74	$ 12.94	$ 14.59	$ 15.67	$ 13.19
2021	$ 16.44	$ 14.85	$ 12.37	$ 12.06	$ 12.13	$ 12.08	$ 11.45	$ 11.83	$ 12.83	$ 13.06	$ 14.72	$ 15.81	$ 13.30
2022	$ 16.80	$ 15.18	$ 12.65	$ 12.32	$ 12.40	$ 12.34	$ 11.71	$ 12.09	$ 13.11	$ 13.34	$ 15.04	$ 16.15	$ 13.60
2023	$ 17.24	$ 15.58	$ 12.98	$ 12.65	$ 12.73	$ 12.67	$ 12.01	$ 12.41	$ 13.46	$ 13.68	$ 15.42	$ 16.56	$ 13.95
2024	$ 17.65	$ 15.95	$ 13.28	$ 12.94	$ 13.02	$ 12.97	$ 12.30	$ 12.70	$ 13.78	$ 14.00	$ 15.78	$ 16.95	$ 14.28
2025	$ 18.09	$ 16.35	$ 13.62	$ 13.27	$ 13.35	$ 13.30	$ 12.62	$ 13.03	$ 14.13	$ 14.34	$ 16.16	$ 17.36	$ 14.63
2026	$ 18.49	$ 16.71	$ 13.92	$ 13.56	$ 13.65	$ 13.59	$ 12.89	$ 13.31	$ 14.44	$ 14.66	$ 16.52	$ 17.74	$ 14.96
2027	$ 18.45	$ 16.67	$ 13.89	$ 13.48	$ 13.57	$ 13.51	$ 12.81	$ 13.23	$ 14.35	$ 14.63	$ 16.49	$ 17.71	$ 14.90
2028	$ 18.90	$ 17.08	$ 14.23	$ 13.81	$ 13.90	$ 13.84	$ 13.13	$ 13.56	$ 14.71	$ 14.98	$ 16.88	$ 18.13	$ 15.26
2029	$ 19.42	$ 17.55	$ 14.62	$ 14.20	$ 14.29	$ 14.23	$ 13.50	$ 13.94	$ 15.12	$ 15.39	$ 17.34	$ 18.63	$ 15.69
2030	$ 19.83	$ 17.92	$ 14.93	$ 14.51	$ 14.60	$ 14.54	$ 13.79	$ 14.24	$ 15.45	$ 15.72	$ 17.72	$ 19.03	$ 16.02

Section II: Load Reductions (Energy Efficiency Programs and Other Programs)

EE Program Savings

EE_ Savings	Mdth	Mdth	Mdth	Mdth	Mdth	Mdth	Mdth	Mdth	Mdth	Mdth	Mdth	Mdth	Mdth
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2007	-	-	-	-	-	-	-	-	-	-	-	-	-
2008	12	11	12	11	12	11	12	12	11	12	11	12	138
2009	52	47	52	50	52	50	52	52	50	52	50	52	612
2010	94	85	94	91	94	91	94	94	91	94	91	94	1,105
2011	138	125	138	134	138	134	138	138	134	138	134	138	1,626
2012	186	168	186	180	186	180	186	186	180	186	180	186	2,188
2013	239	216	239	231	239	231	239	239	231	239	231	239	2,812
2014	292	264	292	282	292	282	292	292	282	292	282	292	3,435
2015	345	311	345	334	345	334	345	345	334	345	334	345	4,059
2016	398	359	398	385	398	385	398	398	385	398	385	398	4,682
2017	451	407	451	436	451	436	451	451	436	451	436	451	5,306
2018	504	455	504	487	504	487	504	504	487	504	487	504	5,929
2019	557	503	557	539	557	539	557	557	539	557	539	557	6,553
2020	609	550	609	590	609	590	609	609	590	609	590	609	7,176
2021	662	598	662	641	662	641	662	662	641	662	641	662	7,799
2022	715	646	715	692	715	692	715	715	692	715	692	715	8,423
2023	757	683	757	732	757	732	757	757	732	757	732	757	8,908
2024	769	695	769	744	769	744	769	769	744	769	744	769	9,058
2025	780	705	780	755	780	755	780	780	755	780	755	780	9,188
2026	789	713	789	764	789	764	789	789	764	789	764	789	9,291
2027	794	717	794	769	794	769	794	794	769	794	769	794	9,352
2028	794	717	794	769	794	769	794	794	769	794	769	794	9,352
2029	794	717	794	769	794	769	794	794	769	794	769	794	9,352
2030	794	717	794	769	794	769	794	794	769	794	769	794	9,352

Load Reduction other than EE Programs

ditiona Load Deduct	Mdth	Mdth	Mdth	Mdth	Mdth	Mdth	Mdth	Mdth	Mdth	Mdth	Mdth	Mdth	Mdth
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2007	-	-	-	-	-	-	-	-	-	-	-	-	-
2008	-	-	-	-	-	-	-	-	-	-	-	-	-
2009	135	122	135	130	135	130	135	135	130	135	130	135	1,584
2010	135	122	135	130	135	130	135	135	130	135	130	135	1,584
2011	135	122	135	130	135	130	135	135	130	135	130	135	1,584
2012	135	122	135	130	135	130	135	135	130	135	130	135	1,584
2013	135	122	135	130	135	130	135	135	130	135	130	135	1,584
2014	135	122	135	130	135	130	135	135	130	135	130	135	1,584
2015	135	122	135	130	135	130	135	135	130	135	130	135	1,584
2016	135	122	135	130	135	130	135	135	130	135	130	135	1,584
2017	135	122	135	130	135	130	135	135	130	135	130	135	1,584
2018	135	122	135	130	135	130	135	135	130	135	130	135	1,584
2019	135	122	135	130	135	130	135	135	130	135	130	135	1,584
2020	135	122	135	130	135	130	135	135	130	135	130	135	1,584
2021	135	122	135	130	135	130	135	135	130	135	130	135	1,584
2022	135	122	135	130	135	130	135	135	130	135	130	135	1,584
2023	135	122	135	130	135	130	135	135	130	135	130	135	1,584
2024	135	122	135	130	135	130	135	135	130	135	130	135	1,584
2025	135	122	135	130	135	130	135	135	130	135	130	135	1,584
2026	135	122	135	130	135	130	135	135	130	135	130	135	1,584
2027	135	122	135	130	135	130	135	135	130	135	130	135	1,584
2028	135	122	135	130	135	130	135	135	130	135	130	135	1,584
2029	135	122	135	130	135	130	135	135	130	135	130	135	1,584
2030	135	122	135	130	135	130	135	135	130	135	130	135	1,584

Section III: Forecast Results (Refinery Segment)

Refinery G30 Mdth Forecast

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2007	6,158	4,819	5,996	5,782	5,910	4,760	5,180	5,525	6,058	6,468	6,584	6,990	70,230
2008	6,131	5,607	5,853	5,651	5,854	5,656	5,797	5,768	5,629	5,836	5,676	5,918	69,376
2009	5,739	5,136	5,581	5,387	5,630	5,450	5,603	5,589	5,452	5,654	5,500	5,737	66,457
2010	5,706	5,113	5,555	5,346	5,570	5,391	5,542	5,528	5,393	5,593	5,446	5,688	65,871
2011	5,653	5,062	5,498	5,294	5,518	5,341	5,488	5,472	5,338	5,539	5,392	5,626	65,222
2012	5,607	5,227	5,471	5,267	5,487	5,311	5,456	5,439	5,306	5,510	5,368	5,601	65,051
2013	5,575	5,197	5,437	5,231	5,448	5,273	5,417	5,400	5,269	5,475	5,335	5,568	64,626
2014	5,543	5,169	5,405	5,198	5,411	5,238	5,379	5,362	5,233	5,440	5,305	5,537	64,217
2015	5,482	5,088	5,316	5,111	5,319	5,148	5,286	5,269	5,143	5,349	5,217	5,447	63,175
2016	5,389	4,999	5,219	5,014	5,217	5,050	5,186	5,168	5,044	5,248	5,121	5,346	62,000
2017	5,296	4,922	5,137	4,934	5,134	4,969	5,103	5,087	4,964	5,166	5,042	5,264	61,019
2018	5,219	4,858	5,067	4,867	5,064	4,902	5,034	5,018	4,898	5,095	4,972	5,192	60,186
2019	5,151	4,799	5,001	4,803	4,997	4,836	4,967	4,952	4,834	5,030	4,909	5,126	59,404
2020	5,086	4,741	4,939	4,742	4,934	4,775	4,904	4,888	4,772	4,965	4,847	5,061	58,654
2021	5,029	4,696	4,889	4,692	4,882	4,725	4,852	4,836	4,722	4,916	4,799	5,012	58,051
2022	4,970	4,633	4,819	4,626	4,813	4,658	4,781	4,766	4,655	4,847	4,732	4,943	57,244
2023	4,913	4,582	4,763	4,573	4,758	4,605	4,727	4,712	4,604	4,794	4,681	4,891	56,604
2024	4,889	4,559	4,739	4,549	4,733	4,581	4,700	4,684	4,579	4,768	4,655	4,864	56,300
2025	4,865	4,538	4,716	4,527	4,711	4,559	4,681	4,667	4,559	4,746	4,634	4,841	56,042
2026	4,850	4,529	4,707	4,518	4,704	4,551	4,672	4,657	4,549	4,736	4,624	4,831	55,928
2027	4,828	4,496	4,671	4,482	4,664	4,515	4,635	4,620	4,514	4,702	4,592	4,797	55,515
2028	4,809	4,486	4,661	4,472	4,654	4,505	4,624	4,609	4,504	4,691	4,582	4,786	55,383
2029	4,796	4,474	4,648	4,460	4,641	4,493	4,612	4,597	4,492	4,678	4,568	4,772	55,231
2030	4,781	4,459	4,633	4,445	4,626	4,478	4,597	4,582	4,477	4,662	4,553	4,756	55,050

Refinery EG Mdth Forecast

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2007	1,355	1,238	1,657	1,645	1,436	1,453	1,646	1,509	1,601	1,721	1,663	1,845	18,767
2008	1,628	1,488	1,554	1,500	1,554	1,502	1,539	1,531	1,495	1,550	1,507	1,571	18,419
2009	1,570	1,406	1,528	1,475	1,541	1,492	1,534	1,530	1,492	1,548	1,505	1,569	18,191
2010	1,572	1,410	1,532	1,475	1,536	1,487	1,529	1,525	1,488	1,543	1,502	1,568	18,167
2011	1,570	1,407	1,529	1,473	1,534	1,485	1,526	1,522	1,484	1,540	1,499	1,563	18,133
2012	1,571	1,462	1,535	1,478	1,539	1,489	1,531	1,526	1,488	1,545	1,504	1,569	18,236
2013	1,576	1,466	1,540	1,482	1,543	1,493	1,534	1,530	1,492	1,550	1,509	1,574	18,289
2014	1,582	1,472	1,545	1,487	1,547	1,497	1,538	1,534	1,496	1,554	1,515	1,580	18,346
2015	1,580	1,463	1,536	1,477	1,536	1,487	1,528	1,523	1,486	1,544	1,505	1,570	18,235
2016	1,569	1,452	1,524	1,465	1,523	1,475	1,515	1,511	1,473	1,532	1,493	1,558	18,089
2017	1,558	1,444	1,516	1,458	1,516	1,467	1,507	1,503	1,466	1,524	1,486	1,550	17,994
2018	1,552	1,440	1,512	1,453	1,511	1,463	1,503	1,499	1,461	1,519	1,481	1,545	17,939
2019	1,548	1,437	1,508	1,450	1,507	1,459	1,499	1,495	1,458	1,516	1,478	1,541	17,897
2020	1,545	1,434	1,506	1,447	1,504	1,456	1,497	1,492	1,455	1,513	1,475	1,538	17,863
2021	1,544	1,435	1,507	1,448	1,505	1,456	1,497	1,493	1,456	1,514	1,476	1,539	17,868
2022	1,542	1,431	1,502	1,444	1,501	1,452	1,492	1,488	1,451	1,509	1,472	1,535	17,820
2023	1,538	1,427	1,498	1,440	1,497	1,449	1,489	1,485	1,448	1,506	1,469	1,532	17,779
2024	1,535	1,424	1,495	1,437	1,494	1,446	1,485	1,481	1,445	1,503	1,465	1,528	17,738
2025	1,532	1,421	1,492	1,434	1,491	1,443	1,483	1,479	1,443	1,500	1,462	1,525	17,704
2026	1,530	1,421	1,492	1,434	1,491	1,443	1,483	1,479	1,442	1,500	1,462	1,525	17,701
2027	1,525	1,414	1,484	1,426	1,482	1,434	1,474	1,470	1,434	1,492	1,455	1,517	17,608
2028	1,520	1,411	1,481	1,423	1,479	1,432	1,471	1,467	1,432	1,489	1,452	1,514	17,573
2029	1,517	1,408	1,478	1,420	1,476	1,429	1,468	1,464	1,428	1,486	1,449	1,511	17,532
2030	1,513	1,404	1,474	1,416	1,472	1,425	1,464	1,460	1,425	1,481	1,445	1,506	17,484

Section III: Forecast Results (Refinery Segment)

Refinery G30 + EG Mdth Forecast

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2007	7,513	6,057	7,653	7,426	7,346	6,212	6,826	7,202	7,643	8,214	7,940	8,808	88,839
2008	7,759	7,095	7,407	7,152	7,408	7,157	7,336	7,299	7,124	7,386	7,182	7,490	87,795
2009	7,309	6,542	7,109	6,862	7,171	6,942	7,137	7,119	6,944	7,202	7,005	7,306	84,649
2010	7,278	6,523	7,087	6,822	7,106	6,878	7,071	7,053	6,880	7,136	6,948	7,256	84,038
2011	7,224	6,469	7,027	6,767	7,053	6,826	7,014	6,994	6,822	7,079	6,891	7,189	83,355
2012	7,177	6,689	7,006	6,745	7,026	6,800	6,986	6,965	6,795	7,056	6,872	7,170	83,287
2013	7,151	6,664	6,976	6,713	6,991	6,766	6,951	6,930	6,761	7,024	6,845	7,142	82,915
2014	7,124	6,640	6,950	6,684	6,957	6,735	6,917	6,896	6,728	6,994	6,820	7,117	82,563
2015	7,062	6,550	6,852	6,588	6,856	6,635	6,814	6,792	6,628	6,893	6,723	7,017	81,410
2016	6,957	6,450	6,743	6,479	6,741	6,524	6,701	6,679	6,516	6,779	6,615	6,904	80,089
2017	6,855	6,367	6,653	6,392	6,650	6,436	6,610	6,590	6,430	6,689	6,527	6,813	79,012
2018	6,771	6,298	6,579	6,320	6,575	6,365	6,537	6,517	6,359	6,614	6,453	6,736	78,125
2019	6,699	6,236	6,510	6,253	6,504	6,294	6,466	6,447	6,292	6,546	6,387	6,667	77,301
2020	6,631	6,176	6,445	6,189	6,438	6,232	6,401	6,381	6,227	6,478	6,322	6,599	76,517
2021	6,573	6,131	6,395	6,140	6,387	6,182	6,349	6,329	6,178	6,429	6,275	6,551	75,919
2022	6,512	6,064	6,321	6,069	6,314	6,110	6,274	6,254	6,107	6,356	6,204	6,478	75,064
2023	6,451	6,009	6,262	6,013	6,255	6,054	6,216	6,196	6,052	6,301	6,150	6,423	74,383
2024	6,424	5,984	6,235	5,986	6,227	6,026	6,184	6,165	6,024	6,270	6,120	6,392	74,038
2025	6,396	5,959	6,208	5,961	6,202	6,001	6,164	6,146	6,001	6,246	6,096	6,366	73,746
2026	6,380	5,950	6,199	5,953	6,195	5,994	6,154	6,136	5,992	6,236	6,087	6,355	73,629
2027	6,353	5,909	6,154	5,908	6,146	5,949	6,109	6,090	5,949	6,194	6,047	6,314	73,123
2028	6,329	5,897	6,142	5,896	6,134	5,937	6,096	6,077	5,936	6,180	6,034	6,301	72,956
2029	6,314	5,881	6,125	5,880	6,117	5,921	6,080	6,061	5,920	6,163	6,017	6,283	72,763
2030	6,295	5,863	6,106	5,861	6,098	5,903	6,061	6,042	5,902	6,144	5,997	6,262	72,534

2008 CALIFORNIA GAS REPORT

WHOLESALE REQUIREMENTS
JULY 2008

The Gas Company

A Sempra Energy utility℠

2008 CALIFORNIA GAS REPORT

San Diego Gas & Electric Company
JULY 2008

The Gas Company

A Sempra Energy utility℠

2008 CALIFORNIA GAS REPORT

CITY OF LONG BEACH OIL AND GAS DEPARTMENT
JULY 2008

The Gas Company
A Sempra Energy utility℠

City of Long Beach Municipal Gas Department

2008 CALIFORNIA GAS REPORT WORKPAPERS

The estimated gas demand for the City of Long Beach Gas Department (Long Beach) for the years 2007 through 2030 are shown on the below for normal and cold temperatures.

2008 CALIFORNIA GAS REPORT

SOUTHWEST GAS CORPORATION
JULY 2008

A Sempra Energy utility℠

SOUTHWEST GAS CORPORATION

2008

Projected annual requirements for Southwest Gas Corporation (SWGas) for 2007 to 2030 are shown in the below for normal and cold temperature conditions. Southwest Gas California load forecast was provided by Southwest Gas.

2008 CALIFORNIA GAS REPORT

CITY OF VERNON
JULY 2008

The Gas Company
A Sempra Energy utility™

City of Vernon

2008 CALIFORNIA GAS REPORT WORKPAPERS

Vernon's commercial and industrial load is based on recorded 2006 and 2007 usage for commercial and industrial customers already served by Vernon plus those additional customers that are expected to request retail service from Vernon. The throughput forecast for the EG customers is based on a power market simulation.

The detail below summarizes by year and by month the gas demand through 2030.

2008 CALIFORNIA GAS REPORT

MEXICALI
JULY 2008

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2008 CALIFORNIA GAS REPORT

PEAKDAY FORECAST
JULY 2008

The Gas Company

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SoCalGas Heating Degree Day (HDD) Weather Designs

(Calendar Based)

	Cold		Average	Hot	
	1-in-35 exceedance	1-in-10 exceedance		1-in-10 exceedance	1-in-35 exceedance
January	349.0	328.5	289.1	249.7	229.1
February	278.1	261.8	230.3	198.9	182.6
March	229.8	216.3	190.3	164.4	150.8
April	140.1	131.9	116.1	100.3	92.0
May	60.8	57.2	50.3	43.5	39.9
June	18.1	17.0	15.0	13.0	11.9
July	2.4	2.2	1.9	1.7	1.5
August	1.8	1.7	1.5	1.3	1.2
September	4.9	4.6	4.0	3.5	3.2
October	41.3	38.9	34.2	29.5	27.1
November	178.7	168.1	148.0	127.8	117.3
December	360.0	338.8	298.2	257.5	236.3
	1665.0	1567.0	**1379.0**	1191.0	1093.0

2008-CGR Sales + Transport + Exchange for Month of DECEMBER (units=Mdth/Day)
"1-in-2" Likelihood Cold Day Temperature

No. "CGR_B"	CLASS	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
		----	----	----	----	----	----	----	----	----	----	----	----	----
1	RESIDEN	2032.6	2005.0	1982.7	1979.1	1974.6	1978.3	1980.5	1983.3	1976.1	1967.7	1960.5	1954.4	1949.8
2	Com G10	448.0	436.5	435.4	434.5	433.2	432.5	430.6	428.3	424.5	420.3	415.9	411.6	407.7
2	GAC 2/	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
2	GEN 2/	3.2	2.8	2.8	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
3	Ind G10	76.0	72.0	69.4	70.1	69.3	69.6	69.4	69.2	68.4	67.6	66.9	66.1	65.2
4	NGV 2/	22.5	25.6	28.9	33.0	36.9	39.3	42.2	44.5	47.4	50.5	53.7	57.2	61.2
		======	======	======	======	======	======	======	======	======	======	======	======	======
Total:	MDth/day	2582.4	2542.1	2519.4	2519.9	2517.1	2522.7	2525.7	2528.4	2519.5	2509.2	2500.1	2492.4	2486.9
	MMcf/day 4/	2506.0	2466.9	2444.9	2445.3	2442.6	2448.0	2451.0	2453.6	2445.0	2435.0	2426.1	2418.7	2413.3
	Days per Mo	31	31	31	31	31	31	31	31	31	31	31	31	31
Pk-Day Temp. (deg-F) =		45.5	45.5	45.5	45.5	45.5	45.5	45.5	45.5	45.5	45.5	45.5	45.5	45.5
Hdd: December--ColdYr =		360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
"Wkday/Wkend" Factor-Res:		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
"Wkday/Wkend" Factor-NonRes:		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Use this Method&I Calculations

Notes:

1/ =("Cold-Dec" / 31 days)+[("Cold-Dec" - "Base-Dec")
/ "Cold-Dec_Hdd"]*(65 degF - 45.5 degF)

2/ "Non-temperature" sensitive market segment.

3/ "Weekday/Weekend" Factor applies to the "raw" estimate.

4/ Dth/Mcf= 1.0305

2008-CGR Sales + Transport + Exchange for Month of DECEMBER (units=Mdth/Day)
"1-in-2" Likelihood Cold Day Temperature

No. "CGR_B"	CLASS	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
		----	----	----	----	----	----	----	----	----	----	----
1	RESIDEN	1946.0	1945.7	1940.6	1939.4	1942.7	1946.9	1952.8	1959.8	1959.7	1971.6	1977.4
2	Com G10	404.0	400.9	397.3	400.2	400.5	400.8	401.7	403.0	404.7	406.2	407.7
2	GAC 2/	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
2	GEN 2/	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
3	Ind G10	64.1	63.1	61.7	61.9	61.4	60.8	60.6	60.3	60.1	59.7	59.6
4	NGV 2/	64.8	69.0	73.5	78.0	82.5	87.1	91.6	96.1	100.5	104.8	109.0
		======	======	======	======	======	======	======	======	======	======	======
Total:	MDth/day	2482.0	2481.7	2476.2	2482.6	2490.1	2498.7	2509.7	2522.2	2527.9	2545.4	2556.6
	MMcf/day 4/	2408.5	2408.3	2402.9	2409.1	2416.4	2424.7	2435.5	2447.5	2453.1	2470.0	2481.0
	Days per Mo	31	31	31	31	31	31	31	31	31	31	31
Pk-Day Temp. (deg-F) =		45.5	45.5	45.5	45.5	45.5	45.5	45.5	45.5	45.5	45.5	45.5
Hdd: December--ColdYr =		360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
"Wkday/Wkend" Factor-Res:		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
"Wkday/Wkend" Factor-NonRes:		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Use this Method

Notes:

1/ =("Cold-Dec" / 31 days)+[("Cold-Dec" - "Base-Dec")
/ "Cold-Dec_Hdd"]*(65 degF - 45.5 degF)

2/ "Non-temperature" sensitive market segment.

3/ "Weekday/Weekend" Factor applies to the "raw" estimate.

4/ Dth/Mcf= 1.0305

2008-CGR Sales + Transport + Exchange for Month of DECEMBER (units=Mdth/Day)
"1-in-10" Likelihood Cold Day Temperature

No. "CGR_B"	CLASS	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
		----	----	----	----	----	----	----	----	----	----	----	----	----
1	RESIDEN	2399.2	2366.6	2340.3	2336.1	2330.7	2335.1	2337.7	2341.0	2332.6	2322.7	2314.1	2307.0	2301.5
2	Com G10	510.9	497.8	496.6	495.7	494.2	493.4	491.2	488.6	484.2	479.4	474.4	469.4	465.0
2	GAC 2/	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
2	GEN 2/	3.2	2.8	2.8	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
3	Ind G10	80.3	76.0	73.3	74.0	73.2	73.5	73.3	73.1	72.2	71.4	70.7	69.9	68.8
4	NGV 2/	22.5	25.6	28.9	33.0	36.9	39.3	42.2	44.5	47.4	50.5	53.7	57.2	61.2
		======	======	======	======	======	======	======	======	======	======	======	======	======
Total:	MDth/day	3016.2	2969.1	2942.3	2942.0	2938.1	2944.3	2947.4	2950.3	2939.5	2927.1	2916.0	2906.5	2899.6
	MMcf/day 4/	2927.0	2881.2	2855.2	2854.9	2851.2	2857.1	2860.2	2862.9	2852.5	2840.4	2829.7	2820.5	2813.8
	Days per Mo	31	31	31	31	31	31	31	31	31	31	31	31	31
Pk-Day Temp. (deg-F) =		41.2	41.2	41.2	41.2	41.2	41.2	41.2	41.2	41.2	41.2	41.2	41.2	41.2
Hdd: December--ColdYr =		360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
"Wkday/Wkend" Factor-Res:		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
"Wkday/Wkend" Factor-NonRes:		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Use this Method&l Calculations

Notes:

1/ =("Cold-Dec" / 31 days)+[("Cold-Dec" - "Base-Dec")
/ "Cold-Dec_Hdd"]*(65 degF - 41.2 degF)

2/ "Non-temperature" sensitive market segment.

3/ "Weekday/Weekend" Factor applies to the "raw" estimate.

4/ Dth/Mcf= 1.0305

2008-CGR Sales + Transport + Exchange for Month of DECEMBER (units=Mdth/Day)
"1-in-10" Likelihood Cold Day Temperature

No. "CGR_B"	CLASS	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
		----	----	----	----	----	----	----	----	----	----	----
1	RESIDEN	2297.0	2296.6	2290.7	2289.3	2293.1	2298.1	2305.0	2313.3	2313.2	2327.3	2334.1
2	Com G10	460.8	457.2	453.1	456.4	456.8	457.2	458.2	459.6	461.6	463.3	465.0
2	GAC 2/	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
2	GEN 2/	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
3	Ind G10	67.7	66.7	65.2	65.4	64.8	64.2	64.0	63.7	63.4	63.1	62.9
4	NGV 2/	64.8	69.0	73.5	78.0	82.5	87.1	91.6	96.1	100.5	104.8	109.0
		======	======	======	======	======	======	======	======	======	======	======
Total:	MDth/day	2893.4	2892.5	2885.5	2892.1	2900.3	2909.6	2921.8	2935.7	2941.7	2961.5	2974.0
	MMcf/day 4/	2807.7	2806.9	2800.1	2806.5	2814.4	2823.5	2835.4	2848.8	2854.6	2873.8	2885.9
	Days per Mo	31	31	31	31	31	31	31	31	31	31	31
	Pk-Day Temp. (deg-F) =	41.2	41.2	41.2	41.2	41.2	41.2	41.2	41.2	41.2	41.2	41.2
	Hdd: December--ColdYr =	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
	"Wkday/Wkend" Factor-Res:	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	"Wkday/Wkend" Factor-NonRes:	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Use this Method

Notes:

1/ =("Cold-Dec" / 31 days)+[("Cold-Dec" - "Base-Dec")
/ "Cold-Dec_Hdd"]*(65 degF - 41.2 degF)

2/ "Non-temperature" sensitive market segment.

3/ "Weekday/Weekend" Factor applies to the "raw" estimate.

4/ Dth/Mcf= 1.0305

2008-CGR Sales + Transport + Exchange for Month of DECEMBER (units=Mdth/Day)
"1-in-35" Likelihood Cold Day Temperature

No. "CGR_B"	CLASS	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
		----	----	----	----	----	----	----	----	----	----	----	----	----
1	RESIDEN	2603.8	2568.5	2539.9	2535.4	2529.5	2534.2	2537.1	2540.7	2531.5	2520.8	2511.5	2503.7	2497.8
2	Com G10	546.1	532.0	530.9	529.9	528.2	527.3	525.0	522.2	517.6	512.4	507.0	501.7	497.0
2	GAC 2/	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
2	GEN 2/	3.2	2.8	2.8	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
3	Ind G10	82.6	78.2	75.5	76.2	75.4	75.6	75.4	75.2	74.4	73.5	72.8	71.9	70.8
4	NGV 2/	22.5	25.6	28.9	33.0	36.9	39.3	42.2	44.5	47.4	50.5	53.7	57.2	61.2
		======	======	======	======	======	======	======	======	======	======	======	======	======
Total:	MDth/day	3258.4	3207.4	3178.3	3177.5	3173.1	3179.6	3182.8	3185.7	3173.9	3160.3	3148.1	3137.6	3129.9
	MMcf/day 4/	3161.9	3112.5	3084.2	3083.5	3079.2	3085.5	3088.6	3091.4	3080.0	3066.7	3054.9	3044.8	3037.3
	Days per Mo	31	31	31	31	31	31	31	31	31	31	31	31	31
	Pk-Day Temp. (deg-F) =	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8
	Hdd: December--ColdYr =	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
	"Wkday/Wkend" Factor-Res:	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	"Wkday/Wkend" Factor-NonRes:	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Use this Method&I Calculations

Notes:

1/ =("Cold-Dec" / 31 days)+[("Cold-Dec" - "Base-Dec")
/ "Cold-Dec_Hdd"]*(65 degF - 38.8 degF)

2/ "Non-temperature" sensitive market segment.

3/ "Weekday/Weekend" Factor applies to the "raw" estimate.

4/ Dth/Mcf= 1.0305

2008-CGR Sales + Transport + Exchange for Month of DECEMBER (units=Mdth/Day)
"1-in-35" Likelihood Cold Day Temperature

No. "CGR_B"	CLASS	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
		----	----	----	----	----	----	----	----	----	----	----
1	RESIDEN	2492.9	2492.5	2486.0	2484.5	2488.7	2494.1	2501.6	2510.6	2510.5	2525.8	2533.2
2	Com G10	492.5	488.7	484.3	487.8	488.2	488.6	489.7	491.2	493.3	495.2	497.0
2	GAC 2/	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
2	GEN 2/	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
3	Ind G10	69.7	68.7	67.1	67.3	66.7	66.1	65.9	65.6	65.3	64.9	64.8
4	NGV 2/	64.8	69.0	73.5	78.0	82.5	87.1	91.6	96.1	100.5	104.8	109.0
		======	======	======	======	======	======	======	======	======	======	======
Total:	MDth/day	3123.0	3121.9	3114.0	3120.7	3129.2	3139.0	3151.8	3166.5	3172.6	3193.7	3206.9
	MMcf/day 4/	3030.6	3029.5	3021.8	3028.3	3036.6	3046.1	3058.6	3072.8	3078.7	3099.2	3112.0
	Days per Mo	31	31	31	31	31	31	31	31	31	31	31
Pk-Day Temp. (deg-F) =		38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8
Hdd: December--ColdYr =		360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
"Wkday/Wkend" Factor-Res:		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
"Wkday/Wkend" Factor-NonRes:		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Use this Method

Notes:

1/ =("Cold-Dec" / 31 days)+[("Cold-Dec" - "Base-Dec")
/ "Cold-Dec_Hdd"]*(65 degF - 38.8 degF)

2/ "Non-temperature" sensitive market segment.

3/ "Weekday/Weekend" Factor applies to the "raw" estimate.

4/ Dth/Mcf= 1.0305

Friday, May 16, 2008 2008-CGR Sales + Transport + Exchange for Month of DECEMBER (units=mdth)
Temp=December, Cold Year

No.	"CGR_CLASS	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
		----	----	----	----	----	----	----	----	----	----	----	----	----
1	Residen	42165.5	41593.2	41130.9	41056.6	40962.2	41038.6	41084.9	41142.6	40994.3	40820.4	40669.9	40544.6	40448.2
2	Com G10	10307.3	10043.0	10012.1	9991.3	9962.7	9946.7	9904.7	9852.6	9766.1	9670.4	9569.0	9469.7	9380.3
2	GAC	5.7	7.1	7.1	7.1	6.6	6.6	6.2	6.2	5.8	6.1	5.8	5.3	4.9
2	GEN	98.8	87.4	86.6	89.2	89.2	89.2	89.2	89.7	89.7	89.7	89.7	89.7	89.7
3	Ind G10	2117.9	2005.0	1928.3	1950.1	1927.0	1935.0	1929.2	1924.0	1902.6	1880.4	1861.8	1839.7	1812.1
4	NGV	697.3	794.7	897.3	1024.2	1144.0	1217.9	1307.6	1380.3	1469.5	1564.4	1665.5	1773.1	1898.6
		======	======	======	======	======	======	======	======	======	======	======	======	======
		55393	54530	54062	54119	54092	54234	54322	54395	54228	54031	53862	53722	53634

Friday, May 16, 2008 2008-CGR Sales + Transport + Exchange for Month of DECEMBER (units=mdth)
Temp=December, Cold Year

No.	"CGR_CLASS	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
		----	----	----	----	----	----	----	----	----	----	----
1	Residen	40369.4	40362.8	40257.8	40233.3	40301.5	40388.4	40509.9	40655.3	40654.3	40901.4	41021.4
2	Com G10	9296.3	9223.1	9140.9	9207.7	9214.6	9222.7	9243.0	9271.9	9310.9	9346.7	9379.9
2	GAC	4.4	4.0	4.0	3.5	3.5	3.1	3.1	2.7	2.2	2.2	2.2
2	GEN	89.7	89.7	90.2	90.2	90.2	90.2	90.2	90.2	90.2	90.2	90.2
3	Ind G10	1782.1	1756.0	1717.2	1722.2	1706.3	1691.7	1684.9	1677.7	1670.1	1660.4	1657.5
4	NGV	2009.6	2139.4	2277.6	2417.4	2558.4	2699.6	2841.1	2979.4	3115.9	3248.9	3377.5
		======	======	======	======	======	======	======	======	======	======	======
		53552	53575	53488	53674	53875	54096	54372	54677	54844	55250	55529

Friday, May 16, 2008 2008-CGR Sales + Transport + Exchange for Month of DECEMBER
(units=mdth)
Temp=December, Base Year

No.	"CGR_CLASS	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
		----	----	----	----	----	----	----	----	----	----	----	----	----
1	Residen	11468.6	11312.9	11187.2	11167.0	11141.3	11162.1	11174.7	11190.4	11150.0	11102.7	11061.8	11027.7	11001.5
2	Com G10	5036.1	4907.2	4881.0	4868.0	4856.9	4850.7	4831.7	4807.9	4767.2	4722.1	4674.2	4625.7	4582.0
2	GAC	5.7	7.1	7.1	7.1	6.6	6.6	6.2	6.2	5.8	6.1	5.8	5.3	4.9
2	GEN	98.8	87.4	86.6	89.2	89.2	89.2	89.2	89.7	89.7	89.7	89.7	89.7	89.7
3	Ind G10	1765.2	1670.9	1599.6	1622.8	1601.0	1608.5	1603.7	1599.4	1581.6	1563.1	1547.7	1529.4	1506.3
4	NGV	697.3	794.7	897.3	1024.2	1144.0	1217.9	1307.6	1380.3	1469.5	1564.4	1665.5	1773.1	1898.6
		======	======	======	======	======	======	======	======	======	======	======	======	======
		19072	18780	18659	18778	18839	18935	19013	19074	19064	19048	19045	19051	19083

Friday, May 16, 2008 2008-CGR Sales + Transport + Exchange for Month of DECEMBER
(units=mdth)
Temp=December, Base Year

No.	"CGR_CLASS	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
		----	----	----	----	----	----	----	----	----	----	----
1	Residen	10980.1	10978.3	10949.7	10943.1	10961.6	10985.3	11018.3	11057.9	11057.6	11124.8	11157.4
2	Com G10	4541.0	4505.3	4465.2	4497.8	4501.2	4505.1	4515.0	4529.1	4548.2	4565.7	4581.9
2	GAC	4.4	4.0	4.0	3.5	3.5	3.1	3.1	2.7	2.2	2.2	2.2
2	GEN	89.7	89.7	90.2	90.2	90.2	90.2	90.2	90.2	90.2	90.2	90.2
3	Ind G10	1481.4	1459.6	1427.3	1431.4	1418.1	1406.0	1400.3	1394.3	1388.0	1379.9	1377.5
4	NGV	2009.6	2139.4	2277.6	2417.4	2558.4	2699.6	2841.1	2979.4	3115.9	3248.9	3377.5
		======	======	======	======	======	======	======	======	======	======	======
		19106	19176	19214	19383	19533	19689	19868	20054	20202	20412	20587

2008 CALIFORNIA GAS REPORT

SUPPORTING DATA
JULY 2008

The Gas Company
A Sempra Energy utility℠

2008 CALIFORNIA GAS REPORT

WEATHER: HEATING DEGREE DAYS – AVERAGE AND "COLD" YEAR DESIGNS; AND WINTER PEAK DAY DESIGN TEMPERATURES

JULY 2008

I. Overview

Southern California Gas Company's service area extends from Fresno County to the Mexican border. To quantify the overall temperature experienced within this region, SoCalGas aggregates daily temperature recordings from fifteen U.S. Weather Bureau weather stations first into six temperature zones and then into one system average heating degree-day ("HDD") figure. The table below lists weather station locations by temperature zones.

Table 1

Weather Stations by Temperature Zones and Weights

Temperature Zone	Weight	Station (After 10/31/2002)	Station (Before 11/1/2002)
1. High mountain	0.0057	Big Bear Lake	Lake Arrowhead
2. Low desert	0.0354	Palm Springs	Palm Springs
		El Centro	Brawley
3. Coastal	0.1888	Los Angeles Airport	Los Angeles Airport
		Newport Beach	Newport Beach Harbor
		Santa Barbara Airport	Santa Barbara Airport
4. High desert	0.0676	Bakersfield	Bakersfield Airport
		Lancaster Airport	Palmdale
		Fresno	Visalia
5. Interior valleys	0.3854	Burbank	Burbank
		Pasadena	Pasadena
		Ontario	Pomona Cal Poly
		San Bernardino	Redlands
6. Basin	0.3171	Los Angeles Civic Center	Los Angeles Civic Center
		Santa Ana	Santa Ana

SoCalGas uses 65° Fahrenheit to calculate the number of HDDs. One heating degree day is accumulated for each degree that the daily average is below 65° Fahrenheit. To arrive at the HDD figure for each temperature zone, SoCalGas uses the simple average of the weather station HDDs in that temperature zone. To arrive at the system average HDDs figure for its entire service area, SoCalGas weights the HDD figure for each zone using the proportion of gas customers within each temperature zone based on calendar year 2006 customer counts. These weights are used in calculating the data shown from January 1987 to December 2006.

Daily weather temperatures are from the National Climatic Data Center or from preliminary data that SoCalGas captures each day and posts on its web-site: http://www.socalgas.com/business/weather/ for various individual weather stations as well as for its system average values of HDD. Annual HDDs for the entire service area from 1987 to 2006 are listed in Table 2, below.

Table 2

Calendar Month Heating Degree-Days (Jan. 1987 through Dec. 2006)

	Month												Total
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	"Cal-Year"
1987	349	226	212	60	42	13	6	2	3	18	160	406	1497
1988	301	159	142	120	64	31	2	3	11	16	176	341	1366
1989	366	315	153	61	53	19	1	3	9	40	104	234	1358
1990	296	299	206	72	56	10	1	1	1	10	120	368	1440
1991	283	117	315	119	101	26	4	3	4	45	113	275	1405
1992	282	182	202	40	15	15	1	1	1	11	127	372	1249
1993	337	258	116	51	16	11	0	0	3	11	128	275	1206
1994	230	259	130	112	79	6	3	0	2	41	292	309	1463
1995	317	136	179	129	110	40	2	2	2	14	68	245	1244
1996	263	201	170	57	14	3	1	0	0	68	144	261	1182
1997	282	205	114	97	5	4	1	0	0	26	120	296	1150
1998	268	282	186	185	87	21	0	0	5	43	167	320	1564
1999	264	245	284	235	78	39	1	2	5	8	127	244	1532
2000	246	243	210	81	26	5	2	1	3	65	247	240	1369
2001	378	338	196	209	26	7	4	3	3	21	146	358	1689
2002	333	202	226	150	79	11	2	4	8	78	92	314	1499
2003	140	232	166	180	74	17	1	1	3	16	200	305	1335
2004	291	301	86	85	18	8	3	2	4	73	227	291	1389
2005	286	208	176	116	35	11	4	1	9	44	99	234	1223
2006	271	200	338	163	29	3	0	1	5	36	103	277	1426
20-Yr-Avg (Jan1987-Dec2006)													
Avg.	**289.2**	**230.4**	**190.4**	**116.1**	**50.4**	**15.0**	**2.0**	**1.5**	**4.1**	**34.2**	**148.0**	**298.3**	**1379.3**
St.Dev.	**52.5**	**58.9**	**64.7**	**55.9**	**32.0**	**11.3**	**1.6**	**1.2**	**3.1**	**22.7**	**56.6**	**50.6**	**141.255**
Min.	**140.0**	**117.0**	**86.0**	**40.0**	**5.0**	**3.0**	**0.0**	**0.0**	**0.0**	**8.0**	**68.0**	**234.0**	**1150.0**
Max.	**378.0**	**338.0**	**338.0**	**235.0**	**110.0**	**40.0**	**6.0**	**4.0**	**11.0**	**78.0**	**292.0**	**406.0**	**1689.0**

II. Calculations to Define Our Average-Temperature Year

The simple average of the 20-year period (January 1987 through December 2006) was used to represent the Average Year total and the individual monthly values for HDD. The standard deviation of these 20 years of annual HDDs was used to design the two Cold Years based on a "1-in-10" and "1-in-35" chance, $\boldsymbol{c}$, that the respective annual "Cold Year" $\boldsymbol{hdd_c}$ value would be exceeded.

Our model for the annual HDD data is essentially a regression model where the only "explanatory" variable is the constant term. For example, the annual HDDs are modeled by the equation below:

$HDD_y = \beta_0 + e_y$; where β_0 represents the mean and the e_y is an error term.

It turns out (e.g., see *Econometrics*, Wonnacott and Wonnacott, 1970, Wiley & Sons, Inc., 1970, p. 254) that the average of the annual HDD_y estimates β_0 and that the standard deviation of these HDDs about the mean, β_0, estimates the standard deviation, s_e, of the error term, e_y. Further, a probability model for the annual HDD is based on a T-Distribution with N-1 degrees of freedom, where, N is the number of years of HDD data we use:

$U = (HDD_y - \beta_0)/s_e$, has a T-Distribution with N-1 degrees of freedom.

III. Calculating the Cold-Temperature Year Weather Designs

<u>Cold Year HDD Weather Designs</u>

For SoCalGas, cold-temperature-year HDD weather designs are developed with a 1-in-35 year chance of occurrence. In terms of probabilities this can be expressed as the following for a "1-in-35" cold-year HDD value in equation 1 and a "1-in-10" cold-year HDD value in equation 2, with Annual HDD as the random variable:

(1) Prob { Annual HDD > "1-in-35" Cold-Yr HDD } = 1/35 = 0.0286

(2) Prob { Annual HDD > "1-in-10" Cold-Yr HDD } = 1/10 = 0.1000

An area of 0.0286 under one tail of the T-Distribution translates to 2.025 standard deviations *above* an average-year based on a t-statistic with 19 degrees of freedom. Using the standard deviation of 141.25 HDD from the last 20 years of data, these equations yield values of about 1,665 HDD for a "1-in-35" cold year and 1,567 as the number of HDDs for a "1-in-10" cold year (an area of 0.1000 under one tail of the T-Distribution translates to 1.328 standard deviations *above* an average-year based on a t-statistic with 19 degrees of freedom). For example, the "1-in-35" cold-year HDD is calculated as follows:

(3) Cold-year HDD = 1,665 which equals approximately

1,379 average-year HDDs + 2.025 * 141.25

Table 3 shows monthly HDD figures for "1-in-35" cold year, "1-in-10" cold year and, average year temperature designs. The monthly average-temperature-year HDDs are calculated from weighted monthly HDDs from 1987 to 2006, as shown as the bottom of Table 2, above. For example, the average-year December value of 298.2 HDD equals the simple average of the 20 December HDD figures from 1987 to 2006, and represents 21.6 percent of the HDDs in an average-year. SoCalGas calculates the cold--temperature-year monthly HDD values using the same shape of the average-year HDDs. For example, since 21.6 percent of average-temperature-year HDDs occurred in December, the estimated number of HDDs during December for a cold-year is equal to 1,665 HDDs multiplied by 21.6 percent, or 360.0 HDDs.

Table 3

Calendar Month Heating Degree-Day Designs

SoCalGas Heating Degree Day (HDD) Weather Designs

(Calendar Based)

	Cold		Average	Hot	
	1-in-35 Design	1-in-10 Design		1-in-10 Design	1-in-35 Design
January	349.0	328.5	289.1	249.7	229.1
February	278.1	261.8	230.3	198.9	182.6
March	229.8	216.3	190.3	164.4	150.8
April	140.1	131.9	116.1	100.3	92.0
May	60.8	57.2	50.3	43.5	39.9
June	18.1	17.0	15.0	13.0	11.9
July	2.4	2.2	1.9	1.7	1.5
August	1.8	1.7	1.5	1.3	1.2
September	4.9	4.6	4.0	3.5	3.2
October	41.3	38.9	34.2	29.5	27.1
November	178.7	168.1	148.0	127.8	117.3
December	360.0	338.8	298.2	257.5	236.3
	1665	1567	1379	1191	1093

IV. Calculating the Peak-Day Design Temperature

SoCalGas' Peak-Day design temperature of 38.8 degrees Fahrenheit, denoted "Deg-F," is determined from a statistical analysis of observed annual minimum daily system average temperatures constructed from daily temperature recordings from the three U.S. Weather Bureau weather stations discussed above. Since we have a time series of daily data by year, the following notation will be used for the remainder of this discussion:

(1) $AVG_{y,d}$ = system average value of Temperature

for calendar year "y" and day "d".

The calendar year, y, can range from 1950 through 2006, while the day, d, can range from 1 to 365, for non leap years, or from 1 to 366 for leap years. The "upper" value for the day, d, thus depends on the calendar year, y, and will be denoted by n(y)=365, or 366, respectively, when y is a non-leap year or a leap year.

For each calendar year, we calculate the following statistic from our series of daily system average temperatures defined in equation (1) above:

(2) $MinAVG_y = \min_{d=1}^{n(y)}\{ AVG_{y,d} \}$, for y=1950, 1973, …, 2006.

(The notation used in equation 2 means "For a particular year, y, list all the daily values of system average temperature for that year, then pick the smallest one.")

The resulting minimum annual temperatures are shown in Table 4, below. Note that most of the minimum temperatures occur in the months of December or January; however, for some calendar years the minimums occurred in other months (the minimum for 2006 was observed in March).

The statistical methods we use to analyze this data employ software developed to fit three generic probability models: the Generalized Extreme Value (GEV) model, the Double-Exponential or GUMBEL (EV1) model and a 2-Parameter Students' T-Distribution (T-Dist) model. [The GEV and EV1 models have the same mathematical specification as those implemented in a DOS-based executable-only computer code that was developed by Richard L. Lehman and described in a paper published in the Proceedings of the Eighth Conference on Applied Climatology, January 17-22, 1993, Anaheim, California, pp. 270-273, by the American Meteorological Society, Boston, MA., with the title "Two Software Products for Extreme Value Analysis: System Overviews of ANYEX and DDEX." At the time he wrote the paper, Dr. Lehman was with the Climate

Analysis Center, National Weather Service/NOAA in Washington, D.C., zip code 20233.] The Statistical Analysis Software (SAS) procedure for nonlinear statistical model estimation (PROC MODEL, from SAS V6.12) was used to do the calculations. Further, the calculation procedures were implemented to fit the probability models to observed *maximums* of data, like heating degrees. By recognizing that:

$$- \text{MinAVG}_y = - \min_{d=1}^{n(y)}\{\text{AVG}_{y,d}\} = \max_{d=1}^{n(y)}\{ -\text{AVG}_{y,d}\}, \text{ for } y=1950, \ldots, 2006;$$

this same software, when applied to the *negative* of the minimum temperature data, yields appropriate probability model estimation results.

The calculations done to fit any one of the three probability models chooses the parameter values that provide the “best fit” of the parametric probability model’s calculated cumulative distribution function (CDF) to the empirical cumulative distribution function (ECDF). Note that the ECDF is constructed based on the variable “-MinAVG$_y$” (which is a *maximum* over a set of *negative* temperatures) with values of the variable MinAVG$_y$ that are the same as shown in Table 4.

In Table 5, the data for -MinAVG$_y$ are shown after they have been sorted from “lowest” to “highest” value. The ascending *ordinal* value is shown in the column labeled “RANK” and the empirical cumulative distribution function is calculated and shown in the next column. The formula used to calculate this function is:

$$\text{ECDF} = (\text{RANK} - \alpha)/[\text{MaxRANK} + (1 - 2\,\alpha)],$$

where the parameter “α” (shown as *alpha* in Table 5) is a “small” positive value (usually less than ½) that is used to bound the ECDF away from 0 and 1.

Of the three probability models considered (GEV, EV1, and T_Dist) the results obtained for the GEV model were selected since the fit to the ECDF was better than that of either the EV1 model or the T_Dist model. (Convergence to stable parameter estimates was occasionally a problem with fitting a GEV model to the ECDF; however, convergence was obtained in this case.)

The following mathematical expression specifies the GEV model we fit to the data for “-MinAVG$_y$ “ shown in Table 5.

(3) $\text{ECDF}(-\text{MinAVG}_y) = \text{Prob}\{ -T < -\text{MinAVG}_y \}= \exp[-((1- k \bullet z)\ (1/k))],$

where “exp[.]” is the exponential function, and

(4) $z = (-\text{MinAVG}_y - \gamma) / \theta,$ for each year, y, and

the parameters “k”, “γ” and “θ” are estimated for the GEV model. The estimated values for k, γ and θ are shown in Table 5 along with the fitted values of the model CDF (the column: “Fitted” Model CDF).

Now, to calculate a *peak-day design temperature*, $TPDD_\delta$, with a specified likelihood, δ, that a value less than $TPDD_\delta$ would be observed, we use the equation below:

(5) $\delta = \text{Prob}\ \{ T \leq TPDD_\delta \}$, which is equivalent to

(6) $\delta = \text{Prob}\ \{ [(-T - \gamma) / \theta] \geq [(-TPDD_\delta - \gamma) / \theta] \}, = \text{Prob}\ \{ [(-T - \gamma) / \theta] \geq [z_\delta] \}$,

where $z_\delta = [(-TPDD_\delta - \gamma) / \theta]$. In terms of our probability model,

(7) $\delta = 1 - \exp[-((1- k \bullet z_\delta)\ (1/k))]$, or $(1- \delta) = \exp[-((1- k \bullet z_\delta)\ (1/k))]$,

which yields the following equation for z_δ,

(7') $z_\delta = \{1 - [\ (-\ln(1- \delta))\ ^{(k)}\} \ (1/k)$, where "ln[.]" is the natural

logarithm function. The implied equation for $TPDD_\delta$ is:

(8) $TPDD_\delta = - [\gamma + (z_\delta \cdot \theta)]$.

To calculate the minimum daily (system average) temperature to define our extreme weather event, we specify that this COLDEST-Day be one where the temperature would be lower with a "1-in-35" likelihood. This criterion translates into two equations to be solved based on equations (7) and (8) above:

(9) solve for "z_δ" from equation (7') above with $(1-\delta) = (1 - 1/35) = 1 - 0.0286$,

(10) solve for "$TPDD_\delta$" from $TPDD_\delta = - [\gamma + (z_\delta \cdot \theta)]$.

The value of $z_\delta = 2.855$ and $TPDD_\delta = - [\gamma + (z_\delta \cdot \theta)] = 38.8$ degrees Fahrenheit, with values for "k", "γ" and "θ" in Table 5, below.

SDG&E's Peak-Day design temperature of 41.2 degrees Fahrenheit, is calculated in a methodologically similar way as for the 38.8 degree peak day temperature. The criteria specified in equation (9) above for a "1-in-35" likelihood would be replaced by a "1-in-10" likelihood.

(9') solve for "z_δ" from equation (7') above with $(1-\delta) = (1 - 1/10) = 1 - 0.1000$,

which yields a "z_δ" value of $z_\delta = 1.959$ and, $TPDD_\delta = - [\gamma + (z_\delta \cdot \theta)] = 41.2$, with values for "k", "γ" and "θ" in Table 5, below.

A plot of the cumulative distribution function for $MinAVG_y$ based on the fitted model parameters "k", "γ" and "θ" in Table 5, below, is shown in Figure 1.

Table 4

YEAR	MINAVG	Month(MinAvg)
1950	40.9183	Jan
1951	44.5976	Dec
1952	43.1127	Jan
1953	45.6944	Feb
1954	45.7266	Dec
1955	45.8405	Dec
1956	44.9376	Feb
1957	39.5106	Jan
1958	46.3200	Nov
1959	48.2742	Feb
1960	42.3773	Jan
1961	47.2724	Dec
1962	43.4605	Jan
1963	42.6634	Jan
1964	45.2679	Nov
1965	44.8386	Jan
1966	46.7472	Jan
1967	40.8227	Dec
1968	40.6646	Dec
1969	44.8695	Jan
1970	46.8395	Dec
1971	43.0352	Jan
1972	41.4527	Dec
1973	45.1152	Jan
1974	43.0357	Jan
1975	44.6574	Jan
1976	44.8893	Jan
1977	48.4115	Jan
1978	41.7090	Dec
1979	41.3919	Jan
1980	50.3768	Jan
1981	49.3495	Jan
1982	45.3700	Jan
1983	48.7163	Jan
1984	46.9387	Dec
1985	45.1652	Feb
1986	48.6176	Feb
1987	43.5032	Dec
1988	43.3276	Dec
1989	40.6421	Feb
1990	39.0510	Dec
1991	48.6652	Mar
1992	47.4024	Dec
1993	46.1631	Jan
1994	47.1736	Nov
1995	49.8793	Dec
1996	44.9600	Feb
1997	48.3607	Jan
1998	43.6996	Dec
1999	49.0383	Jan
2000	48.8114	Mar
2001	47.1589	Feb
2002	45.8350	Jan
2003	47.1264	Dec
2004	48.2675	Nov
2005	47.2984	Jan
2006	45.7944	Mar

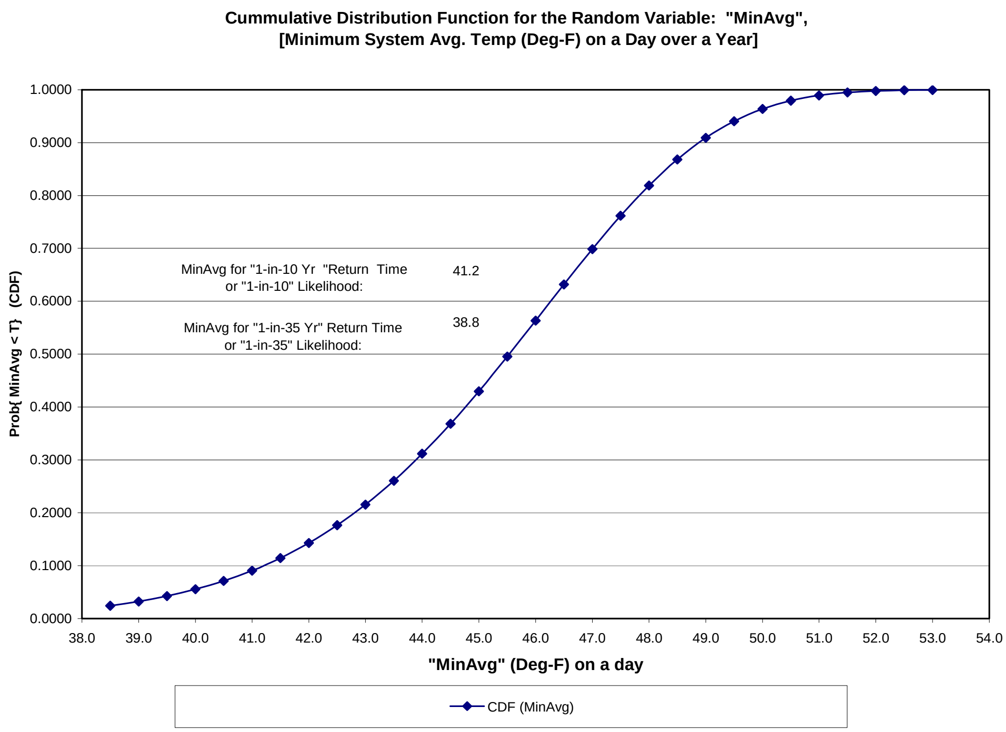
Table 5

alpha= 0.375

YEAR	Month (-MinAvg)	Days/Yr	-MinAvg	"Rank"	Empirical CDF	"Fitted" Model CDF
1980	Jan	366	-50.3768	1	0.01092	0.02390
1995	Dec	365	-49.8793	2	0.02838	0.04117
1981	Jan	365	-49.3495	3	0.04585	0.06799
1999	Jan	365	-49.0383	4	0.06332	0.08830
2000	Mar	366	-48.8114	5	0.08079	0.10533
1983	Jan	365	-48.7163	6	0.09825	0.11302
1991	Mar	365	-48.6652	7	0.11572	0.11729
1986	Feb	365	-48.6176	8	0.13319	0.12135
1977	Jan	365	-48.4115	9	0.15066	0.13987
1997	Jan	365	-48.3607	10	0.16812	0.14466
1959	Feb	365	-48.2742	11	0.18559	0.15302
2004	Nov	366	-48.2675	12	0.20306	0.15368
1992	Dec	366	-47.4024	13	0.22052	0.25018
2005	Jan	365	-47.2984	14	0.23799	0.26311
1961	Dec	365	-47.2724	15	0.25546	0.26637
1994	Nov	365	-47.1736	16	0.27293	0.27889
2001	Feb	365	-47.1589	17	0.29039	0.28078
2003	Dec	365	-47.1264	18	0.30786	0.28495
1984	Dec	366	-46.9387	19	0.32533	0.30938
1970	Dec	365	-46.8395	20	0.34279	0.32250
1966	Jan	365	-46.7472	21	0.36026	0.33483
1958	Nov	365	-46.3200	22	0.37773	0.39283
1993	Jan	365	-46.1631	23	0.39520	0.41435
1955	Dec	365	-45.8405	24	0.41266	0.45856
2002	Jan	365	-45.8350	25	0.43013	0.45930
2006	Mar	365	-45.7944	26	0.44760	0.46484
1954	Dec	365	-45.7266	27	0.46507	0.47407
1953	Feb	365	-45.6944	28	0.48253	0.47845
1982	Jan	365	-45.3700	29	0.50000	0.52199
1964	Nov	366	-45.2679	30	0.51747	0.53546
1985	Feb	365	-45.1652	31	0.53493	0.54887
1973	Jan	365	-45.1152	32	0.55240	0.55536
1996	Feb	366	-44.9600	33	0.56987	0.57524
1956	Feb	366	-44.9376	34	0.58734	0.57807
1976	Jan	366	-44.8893	35	0.60480	0.58416
1969	Jan	365	-44.8695	36	0.62227	0.58665
1965	Jan	365	-44.8386	37	0.63974	0.59051
1975	Jan	365	-44.6574	38	0.65721	0.61284
1951	Dec	365	-44.5976	39	0.67467	0.62007
1998	Dec	365	-43.6996	40	0.69214	0.71966
1987	Dec	365	-43.5032	41	0.70961	0.73900
1962	Jan	365	-43.4605	42	0.72707	0.74308
1988	Dec	366	-43.3276	43	0.74454	0.75553
1952	Jan	366	-43.1127	44	0.76201	0.77476
1974	Jan	365	-43.0357	45	0.77948	0.78138
1971	Jan	365	-43.0352	46	0.79694	0.78143
1963	Jan	365	-42.6634	47	0.81441	0.81145
1960	Jan	366	-42.3773	48	0.83188	0.83240
1978	Dec	365	-41.7090	49	0.84934	0.87440
1972	Dec	366	-41.4527	50	0.86681	0.88811
1979	Jan	365	-41.3919	51	0.88428	0.89118
1950	Jan	365	-40.9183	52	0.90175	0.91283
1967	Dec	365	-40.8227	53	0.91921	0.91675
1968	Dec	366	-40.6646	54	0.93668	0.92290
1989	Feb	365	-40.6421	55	0.95415	0.92374
1957	Jan	365	-39.5106	56	0.97162	0.95735
1990	Dec	365	-39.0510	57	0.98908	0.96684

Mean{-MinAvg}=	-45.2833
St.Dev{-MinAvg}=	2.7909
"Gamma": "Data Analysis Fitted Est."=	**-46.50**
"Theta": "Data Analysis Fitted Est."=	**2.70**
"Kappa": "Data Analysis Fitted Est."=	**0.13**

Figure 1


Cummulative Distribution Function for the Random Variable: "MinAvg",
[Minimum System Avg. Temp (Deg-F) on a Day over a Year]
Prob[MinAvg < T} (CDF)
1.0000
0.9000
0.8000
0.7000
0.6000
0.5000
0.4000
0.3000
0.2000
0.1000
0.0000
MinAvg for "1-in-10 Yr "Return Time or "1-in-10" Likelihood:
41.2
MinAvg for "1-in-35 Yr" Return Time or "1-in-35" Likelihood:
38.8
38.0
39.0
40.0
41.0
42.0
43.0
44.0
45.0
46.0
47.0
48.0
49.0
50.0
51.0
52.0
53.0
54.0
"MinAvg" (Deg-F) on a day
CDF (MinAvg)

V. Estimating the Uncertainty in the Peak-Day Design Temperature

The calculated peak-day design temperatures in section IV above also have a statistical uncertainty associated with them. The estimated measures of uncertainty recommended for our use are calculated from the fitted model for the probability distribution and are believed to be reasonable, although rough, approximations.

The basic approach used the estimated parameters for the probability distribution (see the results provided in Table 5, above) to calculate the fitted temperatures as a function of the empirical CDF listed in Table 5. These fitted temperatures are then “compared” with the observed temperatures by calculating the difference = “observed” – “fitted” values. The full set of differences are then separated into the lower third (L), the middle third (M) and the upper third (U) of the distribution. Finally, calculate values of the root-mean-square error (RMSE) of the differences in each third of the distribution, along with the entire set of differences overall. The data in Table 6, below, show the temperature data and the resulting RMSE values.

The formula below is used to calculate the RMSE for a specified set of “N” data differences:

$$\text{RMSE} = \text{SQRT}\left\{ \left(\sum_{i=1, ..., N} e[\ i\ ]^{2}\right) / (N-3)\right\},$$

where e[i] = *observed* less *fitted* value of temperature, T[i]. The number of estimated paramters (3 for the GEV model) is subtracted from the respective number of data differences, N, in the denominator of the RMSE expression.

Since both the “1-in-35” and “1-in-10” peak-day temperature values are in the lower third quantile of the fitted distribution, the calculated standard error for these estimates is 0.6 Deg-F.

Table 6

Quantile: (Lower, Middle, Upper 3rd's)	Observed "T[i]" Temp. Ranked	"Fitted Value" of "T[i]"	Residual "e[i]": Obs'd. less Fitted Value of "T[i]"	Square of "e[i]":
U	50.3768	50.9922	-0.6154	0.3787
U	49.8793	50.2266	-0.3474	0.1207
U	49.3495	49.7719	-0.4225	0.1785
U	49.0383	49.4297	-0.3914	0.1532
U	48.8114	49.1474	-0.3360	0.1129
U	48.7163	48.9027	-0.1864	0.0347
U	48.6652	48.6838	-0.0187	0.0003
U	48.6176	48.4839	0.1336	0.0179
U	48.4115	48.2984	0.1131	0.0128
U	48.3607	48.1242	0.2365	0.0560
U	48.2742	47.9590	0.3153	0.0994
U	48.2675	47.8011	0.4664	0.2175
U	47.4024	47.6492	-0.2468	0.0609
U	47.2984	47.5024	-0.2040	0.0416
U	47.2724	47.3597	-0.0873	0.0076
U	47.1736	47.2205	-0.0469	0.0022
U	47.1589	47.0842	0.0747	0.0056
U	47.1264	46.9503	0.1762	0.0310
U	46.9387	46.8183	0.1204	0.0145
M	46.8395	46.6879	0.1516	0.0230
M	46.7472	46.5587	0.1885	0.0355
M	46.3200	46.4304	-0.1104	0.0122
M	46.1631	46.3027	-0.1396	0.0195
M	45.8405	46.1754	-0.3349	0.1122
M	45.8350	46.0481	-0.2131	0.0454
M	45.7944	45.9207	-0.1263	0.0159
M	45.7266	45.7928	-0.0662	0.0044
M	45.6944	45.6642	0.0301	0.0009
M	45.3700	45.5347	-0.1648	0.0271
M	45.2679	45.4040	-0.1361	0.0185
M	45.1652	45.2719	-0.1067	0.0114
M	45.1152	45.1381	-0.0228	0.0005
M	44.9600	45.0022	-0.0422	0.0018
M	44.9376	44.8640	0.0736	0.0054
M	44.8893	44.7231	0.1662	0.0276
M	44.8695	44.5793	0.2902	0.0842
M	44.8386	44.4319	0.4067	0.1654
M	44.6574	44.2807	0.3767	0.1419
L	44.5976	44.1251	0.4725	0.2233
L	43.6996	43.9644	-0.2649	0.0702
L	43.5032	43.7981	-0.2949	0.0870
L	43.4605	43.6253	-0.1648	0.0272
L	43.3276	43.4452	-0.1176	0.0138
L	43.1127	43.2565	-0.1438	0.0207
L	43.0357	43.0580	-0.0223	0.0005
L	43.0352	42.8480	0.1872	0.0350
L	42.6634	42.6245	0.0390	0.0015
L	42.3773	42.3847	-0.0074	0.0001
L	41.7090	42.1253	-0.4162	0.1733
L	41.4527	41.8414	-0.3888	0.1512
L	41.3919	41.5267	-0.1348	0.0182
L	40.9183	41.1714	-0.2531	0.0641
L	40.8227	40.7604	0.0623	0.0039
L	40.6646	40.2683	0.3963	0.1570
L	40.6421	39.6459	0.9962	0.9925
L	39.5106	38.7759	0.7347	0.5398
L	39.0510	37.2085	1.8425	3.3948
			Overall RMSE ($e_{[i]}$):	0.5 °F
			Lower 3rd RMSE ($e_{[i]}$):	0.6 °F
			Middle 3rd RMSE ($e_{[i]}$):	0.2 °F
			Upper 3rd RMSE ($e_{[i]}$):	0.3 °F

VI. The Relationship between Annual Likelihoods for Peak-Day Temperatures and “Expected Return Time”

The event whose probability distribution we’ve modeled is the likelihood that the minimum daily temperature over a calendar year is less than a specified value. And, in particular, we’ve used this probability model to infer the value of a temperature, our *peak-day design temperature* ($TPDD_\delta$), that corresponds to a pre-defined likelihood, δ, that the observed minimum temperature is less than or equal to this design temperature.

(1) δ = Prob{ Minimum Daily Temperature over the Year < $TPDD_\delta$ }.

For some applications, it is useful to think of how this specified likelihood (or “risk level” δ) relates to the expected number of years until this Peak-Day event would first occur. This expected number of years is what is meant by the *return period*. The results stated below are found in the book: ***Statistics of Extremes***, E.J. Gumbel, Columbia University Press, 1958, on pages 21-25.

(2) E[#Yrs for Peak-Day Event to Occur] = 1 / δ,

1 / Prob{ Minimum Daily Temperature over the Year < $TPDD_\delta$ }.

For our peak-day design temperature (38.8°F) associated with a 1-in-35 annual likelihood, the return period is 35 years (δ=1/35). For the 41.2°F peak-day design temperature, the return period is 10 years (δ=1/10). Occasionally, a less precise terminology is used. For example, the 38.8°F peak-day design temperature may be referred to as a “1-in-35 year cold day”; and the 41.2°F peak-day design temperature may be referred to as a “1-in-10 year cold day.”

The probability model for the *return period*, as a random variable, is a geometric (discrete) distribution with positive integer values for the *return period*. The parameter δ = Prob{ Minimum Daily Temperature over the Year < $TPDD_\delta$ }.

(3) Prob{ *return period* = r } = $(1 - \delta)^{(r-1)}\,\delta$, for r = 1, 2, 3, . . .

The expected value of the *return period* is already given in (2) above; the variance of the *return period* is:

(4) Var[*return period*] = (E[*return period*])^2 x (1- (1 / E [*return period*])),

(4’) Var[*return period*] = (E[*return period*]) x (E [*return period*] - 1).

Equations (4) and (4’) indicate that the standard deviation (square root of the variance) of the *return period* is nearly equal to its expected value. Thus, there is substantial variability about the expected value—a *return period* is not very precise.

VII. Calculation of Likelihoods for Peak-Day Temperature Events Over a Specified Number of Years

With a specified annual likelihood (i.e., a level of risk) for a peak-day temperature event, several forward-looking questions can be posed:

1). What is the probability that we observe *no* peak-day event over the next N years?

2). What is the probability that we observe *at least one* specified peak-day event over the next N years?"

3). What is the probability that we observe exactly one peak-day event over the next N years?

4). What is the underlying peak-day temperature associated with the annual likelihood computed from setting the probability in question 3 above to a specified value?

To calculate the probabilities to answer questions 1-3, we use a binomial probability model:

(1) BiNomial(s, N, δ) = { N! / [(s!) (N-s)!]} $[\delta]^{(s)}$ $[1 - \delta]^{(N-s)}$, where

N = # of years, s = # of peak-day events and δ = Annual Likelihood of a peak-day event.; the notation "N!" means the product "N(N-1)(N-2) ... (2)(1)" in the formula.

The binomial probability model is the one that applies here since for a specified number of years in the future, N, and a specified annual likelihood, δ, for the peak-day event, there are typically a number of ways that a specified number of annual peak-day events can occur out of the total, N, regardless of the order in which the outcomes might occur.

For δ=0.1, N=10 years the answer to question 1) is calculated from:

(2) Prob{ *No* peak-day event over 10 years } = BiNomial(0, 10, 0.1) = 0.3487

The answer to question 2) is simply:

(3) Prob{ *At Least* One peak-day event over 10 years } =

1 - Prob{ No peak-day event over 10 years } = 1 – 0.3487 = 0.6513

The answer to question 3) is calculated from:

(4) Prob{ *Exactly One* peak-day event over 10 years } = BiNomial(1, 10, 0.1)

(4') Prob{ *Exactly One* peak-day event over 10 years } = 0.3874

Finally, to find an answer to question 4) where there's a 1/10 chance that only one peak-day event occurs over a ten-year period, we solve for δ in the equation:

(5) 0.1000 = BiNomial(1, 10, δ).

A numerical solution to this equation yields $\delta = 0.0011$, approximately, for the annual likelihood of a peak-day event. Our estimation results of Section IV, above, allow us to calculate the peak-day design temperature for this value of δ. The resulting calculations yield $TPDD_{\delta} = 37.2$°F. A similar set of calculations for the case where we want to find the annual likelihood of a peak-day where only one peak-day event occurs over a thirty-five year period with a chance of 1/35=0.0286. The resulting value of $\delta = 0.000841$ with $TPDD_{\delta} = 33.9$°F for this value of δ.

VIII. Attachment 1: SAS Program Execution Log

```
NOTE: Copyright (c) 1989-1996 by SAS Institute Inc., Cary, NC, USA.
NOTE: SAS (r) Proprietary Software Release 6.12  TS020
      Licensed to SAN DIEGO GAS & ELECTRIC CO, Site 0009311007.

Title1 "Data Analysis for Maximum/Minimum Daily SysAvg Temperatures (Un-Rounded)." ;
Title2 "Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods." ;

/****************************************************************************************************/
/*                                                                                                  */
/*                                                                                                  */
/*                                                                                                  */
/* FILE SAVED: "S:\Weather\2009Bcap\SoCalGas\GEV4DlyTemp(NLReg2)_Scg4WP.sas"                        */
/*                                                                                                  */
/*              Sep. 10th,2007 for Annual Max of Negative of Min. Temp.                             */
/*              Also, separately for and each of twelve(12) calendar months Jan-Dec.                */
/*              Fit GEV models (3-parameter and 2-parameter), plus a simple T-Dist. model.          */
/*                                                                                                  */
/****************************************************************************************************/

options mprint ;
/* %cour8p */
   %cour8l
MPRINT(COUR8L):   DM 'dlgprtsetup orient=landscape nodisplay';
MPRINT(COUR8L):   OPTIONS LS=158 PS=72;

 options ls=211 ps=69 ; **<<LANDSCAPE:  SAS-Monospace w/Roman 6pt. Font >>**;
*options ls=160 ps=90 ; **<<PORTRAIT:   SAS-Monospace w/Roman 6pt. Font >>**;

options date number notes ;

libname out2 'S:\Weather\2009Bcap\SoCalGas\' ;
NOTE: Libref OUT2 was successfully assigned as follows:
      Engine:        V612
      Physical Name: S:\Weather\2009Bcap\SoCalGas

proc contents data=out2.DlySys_d ;
run ;

NOTE: The PROCEDURE CONTENTS used 0.12 seconds.

data seriesD ;
  set out2.DlySys_d ;
  year = year(date) ;
  month = month(date) ;
  posAvg = avg ;
  negAvg = -avg ;
run ;

NOTE: The data set WORK.SERIESD has 21000 observations and 8 variables.
NOTE: The DATA statement used 0.51 seconds.

proc means data=seriesD noprint nway ;
 class year month ;
  var posAvg negAvg ;
 output out=mostat
                  mean=posAvg  negAvg
                   max=MxPosAvg MxNegAvg
                   min=MnPosAvg MnNegAvg    ;
run;

NOTE: The data set WORK.MOSTAT has 690 observations and 10 variables.
```

```
NOTE: The PROCEDURE MEANS used 0.1 seconds.



proc sort data=mostat ;
   by year month ;
run ;

NOTE: The data set WORK.MOSTAT has 690 observations and 10 variables.
NOTE: The PROCEDURE SORT used 0.12 seconds.



data mostat ;
   set mostat ;
   MxPRatio = MxPosAvg/ PosAvg  ;
   MnPRatio = MnPosAvg/ PosAvg  ;
   MxNRatio = MxNegAvg/ NegAvg  ;
   MnNRatio = MnNegAvg/ NegAvg  ;
run ;

NOTE: The data set WORK.MOSTAT has 690 observations and 14 variables.
NOTE: The DATA statement used 0.18 seconds.



/****************
***<< Print Summary Tables of Means/Minimums/Maximums of daily NEGATIVE-Temperatures (degrees-F). >>*** ;

proc transpose data=mostat out=AvTData prefix=AvT_ ;
   where (year < 2007) ;
   by year;
   id month ;
   var NegAvg  ;
run ;

data AvTData ;
   set AvTData ;

 if (mod(year,4)=0) then do ;
        AvTyr = (AvT_1 + AvT_3 + AvT_5 + AvT_7 + AvT_8 + AvT_10 + AvT_12)*31
               + (AvT_4 + AvT_6 + AvT_9 + AvT_11)*30
               + (AvT_2)*29 ;
        AvTyr = AvTyr / 366 ;
        end ;
 else do ;
        AvTyr = (AvT_1 + AvT_3 + AvT_5 + AvT_7 + AvT_8 + AvT_10 + AvT_12)*31
               + (AvT_4 + AvT_6 + AvT_9 + AvT_11)*30
               + (AvT_2)*28 ;
        AvTyr = AvTyr / 365 ;
        end ;

run ;

proc print data=AvTData ;
 id year ;
 var AvTyr AvT_1-AvT_12 ;
title3 'Monthly Mean NEGATIVE Temperature (Deg-F) from 1950 thru 2006.';
run ;





proc transpose data=mostat out=MnTData prefix=MnT_ ;
   where (year < 2007) ;
   by year;
   id month ;
   var MnNegAvg ;
```

```
run ;
data MnTData ;
   set MnTData ;
 MnTyr = min(of MnT_1-MnT_12) ;
run ;
proc print data=MnTData ;
 id year ;
 var MnTyr MnT_1-MnT_12 ;
title3 'Monthly MINIMUM NEGATIVE-Temperature (Deg-F) from 1950 thru 2006.';
run ;
****************/
proc transpose data=mostat out=MxTData prefix=MxT_ ;
   where (year < 2007) ;
   by year;
   id month ;
   var MxNegAvg ;
run ;

NOTE: The data set WORK.MXTDATA has 57 observations and 14 variables.
NOTE: The PROCEDURE TRANSPOSE used 0.11 seconds.


data MxTData ;
   set MxTData ;
 MxTyr = max(of MxT_1-MxT_12) ;
run ;

NOTE: The data set WORK.MXTDATA has 57 observations and 15 variables.
NOTE: The DATA statement used 0.14 seconds.


proc print data=MxTData ;
 id year ;
 var MxTyr MxT_1-MxT_12 ;
title3 'Monthly MAXIMUM NEGATIVE-Temperature (Deg-F) from 1950 thru 2006.';
run ;

NOTE: The PROCEDURE PRINT used 0.09 seconds.


/****************
***<< Descriptive Statistics: Maximums of daily NEGATIVE-Temperatures (Deg-F) for Year and each calendar month.
>>*** ;
proc corr data=MxTData ;
  var MxTyr MxT_1 - MxT_12 ;
title3 'Correlation Matrix of Monthly Maximum NEGATIVE-Temperatures (Deg-F) within same year.';
run ;
proc arima data=MxTData ;
  identify var=MxTyr ;
  identify var=MxT_1 ;
  identify var=MxT_2 ;
  identify var=MxT_3 ;
  identify var=MxT_4 ;
  identify var=MxT_5 ;
  identify var=MxT_6 ;
```

```
  identify var=MxT_7 ;
  identify var=MxT_8 ;
  identify var=MxT_9 ;
  identify var=MxT_10 ;
  identify var=MxT_11 ;
  identify var=MxT_12 ;
title3 "Auto-correlation analysis of each calendar month's Maximum NEGATIVE-Temperatures (Deg-F) within same
year.";
run ;

proc univariate normal data=MxTData plot ;
  id year ;
  var MxTyr MxT_1 - MxT_12 ;
title3 "Probability plots and tests for NORMALity by each calendar month's Maximun NEGATIVE-Temperatures (Deg-F)
time series.";
run ;

proc means data=MxTData ;
  var MxT_1 - MxT_12  MxTYr ;
run ;
****************/

***<< Statistical Estimation of GEV Models: Maximums of daily heating degrees for Year and each calendar month.
>>*** ;

%macro RankIt(file=MxTData,var=MxTYr,rank=RankYr,prob=PrMxTYr,Nobser=57,PltValue=0.375) ;
proc sort data=&file ;
  by &var ;
run ;

data &file ;
   set &file ;
   retain &rank 0     alpha &pltvalue ;

  &rank = &rank + 1 ;
  &prob =  (&rank - alpha) / (&Nobser +(1 - 2*alpha)) ;
run ;

proc print data=&file ;
  var &var &rank &prob alpha year ;
run ;
%mend RankIt ;

%macro GEVfit(file=MxTData,ofile=MxTNL1,outfit=fit1,outest=est1,depvar=PrMxTYr,var=MxTYr,typeGEV=1,
              KappaI=0.25,GammaI=-47.05,ThetaI=2.77,YrLo=1950,YrHi=2006) ;
proc sort data=&file ;
   by year ;
run ;

proc model data=&file converge=0.001
           maxit=500 dw ;  outmodel=&ofile ;
     range year = &YrLo to &YrHi ;  **<< Dropped Jan-Jul 2007 data. >>** ;

     y = (&var - Gamma) / Theta ;

    %if &typeGEV=1 %then %do ;  ***<< 3-parameter GEV Model. >>>*** ;
        &depvar = exp( -(1 - Kappa * (y))**(1/Kappa) ) ;
        %let typmod = 3-parameter GEV Model. ;
        %end ;

    %if &typeGEV=2 %then %do ;  **<< 2-parameter "Double Exponential" or  "Gumbel" Model. >>** ;
        &depvar = exp( -exp(-(y)) ) ;
        %let typmod = 2-parameter Double Exponential or Gumbel Model. ;
```

```
        %end ;

    %if (&typeGEV NE 1) AND (&typeGEV NE 2) %then  %do ; **<< 2-parameter "T-Dist" Model. >>** ;
        dft=(&YrHi - &YrLo) +1 -2 ;
        &depvar = probt(y,dft) ;
        %let typmod = 2-parameter T-Dist Model. ;
        %end ;

  %if &typeGEV = 1 %then %do ;
  parms
        Kappa  &KappaI
        Gamma  &GammaI
        Theta  &ThetaI ;
  %end ;

  %if (&typeGEV NE 1)  %then %do ;
  parms
        Gamma  &GammaI
        Theta  &ThetaI ;
  %end ;

  fit &depvar   /out=&outfit  outall
                 outest=&outest corrb corrs outcov ;

title3 "Non-linear Estimation of &&typmod: for Maximum NEGATIVE Temperature (Deg-F)." ;
run ;
%mend GEVfit ;

/****************
****************/

proc means data=MxTData ;
  var MxT_1 - MxT_12  MxTYr ;
 output out=VarStat
        mean=mean1-mean12 meanYr
        std=stdev1-stdev12 stdevYr;
title3 "Calc. Means and Standard Deviantions to use as Starting Values in Non-Linear Estimations." ;
run ;

NOTE: The data set WORK.VARSTAT has 1 observations and 28 variables.
NOTE: The PROCEDURE MEANS used 0.06 seconds.


proc print data=VarStat ;
run ;

NOTE: The PROCEDURE PRINT used 0.0 seconds.


data _null_ ;
   set VarStat ;

  call symput('gamma_Yr',meanYr) ;
  call symput('theta_Yr',stdevYr) ;

  call symput('gamma_12',mean12) ;
  call symput('theta_12',stdev12) ;

  call symput('gamma_11',mean11) ;
  call symput('theta_11',stdev11) ;

  call symput('gamma_10',mean10) ;
  call symput('theta_10',stdev10) ;

  call symput('gamma_9',mean9) ;
```

```
324    call symput('theta_9',stdev9) ;
325
326    call symput('gamma_8',mean8) ;
327    call symput('theta_8',stdev8) ;
328
329    call symput('gamma_7',mean7) ;
330    call symput('theta_7',stdev7) ;
331
332    call symput('gamma_6',mean6) ;
333    call symput('theta_6',stdev6) ;
334
335    call symput('gamma_5',mean5) ;
336    call symput('theta_5',stdev5) ;
337
338    call symput('gamma_4',mean4) ;
339    call symput('theta_4',stdev4) ;
340
341    call symput('gamma_3',mean3) ;
342    call symput('theta_3',stdev3) ;
343
344    call symput('gamma_2',mean2) ;
345    call symput('theta_2',stdev2) ;
346
347    call symput('gamma_1',mean1) ;
348    call symput('theta_1',stdev1) ;
349
350  run ;

NOTE: Numeric values have been converted to character values at the places given by: (Line):(Column).
      311:26   312:26   314:26   315:26   317:26   318:26   320:26   321:26   323:25   324:25   326:25   327:25
329:25   330:25   332:25   333:25   335:25   336:25   338:25   339:25   341:25   342:25
      344:25   345:25   347:25   348:25
NOTE: The DATA statement used 0.07 seconds.


351
352
353
354
355
356
357  *********<<< Analysis for "Annual" Data  (i.e., SUFIX "mm" = "_Yr"  >>>******************;
358
359
360
361
362
363  %RankIt(file=MxTData,var=MxTYr,rank=RankYr,prob=PrMxTYr,Nobser=57,PltValue=0.375) ;
MPRINT(RANKIT):   PROC SORT DATA=MXTDATA ;
MPRINT(RANKIT):   BY MXTYR ;
MPRINT(RANKIT):   RUN ;

NOTE: The data set WORK.MXTDATA has 57 observations and 15 variables.
NOTE: The PROCEDURE SORT used 0.07 seconds.


MPRINT(RANKIT):   DATA MXTDATA ;
MPRINT(RANKIT):   SET MXTDATA ;
MPRINT(RANKIT):   RETAIN RANKYR 0 ALPHA 0.375 ;
MPRINT(RANKIT):   RANKYR = RANKYR + 1 ;
MPRINT(RANKIT):   PRMXTYR = (RANKYR - ALPHA) / (57 +(1 - 2*ALPHA)) ;
MPRINT(RANKIT):   RUN ;

NOTE: The data set WORK.MXTDATA has 57 observations and 18 variables.
NOTE: The DATA statement used 0.14 seconds.


MPRINT(RANKIT):   PROC PRINT DATA=MXTDATA ;
MPRINT(RANKIT):   VAR MXTYR RANKYR PRMXTYR ALPHA YEAR ;
MPRINT(RANKIT):   RUN ;

NOTE: The PROCEDURE PRINT used 0.0 seconds.


364
365
366
```

```
%GEVfit(file=MxTData,ofile=MxTNL1,outfit=fit1,outest=est1,depvar=PrMxTYr,var=MxTYr,typeGEV=1,
        KappaI=0.25,GammaI=&gamma_Yr,ThetaI=&theta_Yr,YrLo=1950,YrHi=2006) ;
MPRINT(GEVFIT):   PROC SORT DATA=MXTDATA ;
MPRINT(GEVFIT):   BY YEAR ;
MPRINT(GEVFIT):   RUN ;

NOTE: The data set WORK.MXTDATA has 57 observations and 18 variables.
NOTE: The PROCEDURE SORT used 0.1 seconds.


MPRINT(GEVFIT):   PROC MODEL DATA=MXTDATA CONVERGE=0.001 MAXIT=500 DW ;
MPRINT(GEVFIT):   OUTMODEL%MXTNL1 ;
MPRINT(GEVFIT):   RANGE YEAR = 1950 TO 2006 ;
MPRINT(GEVFIT):   **<< DROPPED JAN-JUL 2007 DATA. >>** ;
MPRINT(GEVFIT):   Y % (MXTYR - GAMMA) / THETA ;
MPRINT(GEVFIT):   ***<< 3-PARAMETER GEV MODEL. >>>*** ;
MPRINT(GEVFIT):   PRMXTYR % EXP( -(1 - KAPPA * (Y))**(1/KAPPA) ) ;
MPRINT(GEVFIT):   PARMS KAPPA 0.25 GAMMA -45.28325702 THETA 2.7908621426 ;

MPRINT(GEVFIT):   FIT PRMXTYR /OUT=FIT1 OUTALL OUTEST=EST1 CORRB CORRS OUTCOV ;
MPRINT(GEVFIT):   TITLE3 "Non-linear Estimation of 3-parameter GEV Model.: for Maximum NEGATIVE Temperature (Deg-F)." ;
MPRINT(GEVFIT):   RUN ;

NOTE: At OLS Iteration 4 CONVERGE=0.001 Criteria Met.
NOTE: The data set WORK.FIT1 has 171 observations and 6 variables.
NOTE: The data set WORK.EST1 has 4 observations and 6 variables.

NOTE: The PROCEDURE MODEL used 0.14 seconds.


proc print data=fit1 ;
run ;

NOTE: The PROCEDURE PRINT used 0.0 seconds.


proc transpose data=fit1 out=pred1 prefix=probP ;
   where (_type_ = "PREDICT" ) ;
   by year;
   var prmxtyr ;
run ;

NOTE: The data set WORK.PRED1 has 57 observations and 3 variables.
NOTE: The PROCEDURE TRANSPOSE used 0.07 seconds.


data comb1 ;
   merge MxTData pred1 ;
  by year ;
   ProbP = ProbP1 ;
  keep year MxTYr PrMxTYr ProbP ;
run ;

NOTE: The data set WORK.COMB1 has 57 observations and 4 variables.
NOTE: The DATA statement used 0.09 seconds.


proc print data=comb1 ;
run ;

NOTE: The PROCEDURE PRINT used 0.01 seconds.
```

```
proc plot data=comb1 ;
  plot prmxtyr*MxTYr='*'
       ProbP*MxTYr='-' / overlay ;
run ;

NOTE: The PROCEDURE PLOT used 0.0 seconds.


proc print data=est1 ;
run ;

NOTE: The PROCEDURE PRINT used 0.0 seconds.


/*****************
data out2.est1_Yr ;   ***<<< Save a copy of the "G.E.V. Model" estimation results!  >>>*** ;
  set est1 ;
run ;
*****************/
data comb  ;
   merge MxTData pred1 ;
  by year ;

 ***<< "Log(PrMxTYr) - Log(ProgP)" to calc. RMSE of Proportional Errors Models! >>** ;
   LgPrRat1 = Log(PrMxTYr/ProbP1) ;

 label   LgPrRat1 = "Log(PrMxTYr/ProbP1)- GEV" ;

   if (PrMxTYr <= (1/3)) then Quantile=1 ;  **<< "Lower Third" >>** ;
   if (PrMxTYr > (1/3)) AND (PrMxTYr <= (2/3)) then Quantile=2 ; **<< "Middle Third" >>** ;
   if (PrMxTYr > (2/3)) then Quantile=3 ;  **<< "Upper Third" >>** ;

  keep year MxTYr Quantile PrMxTYr ProbP1 LgPrRat1 ;
run ;

NOTE: The data set WORK.COMB has 57 observations and 6 variables.
NOTE: The DATA statement used 0.09 seconds.


proc print data=comb  ;
  var year MxTYr Quantile  PrMxTYr ProbP1  LgPrRat1 ;
title3 "Est'd CDFs and Logarithms of 'Empirical CDF rel. to Fitted CDF' values by Models." ;
run ;

NOTE: The PROCEDURE PRINT used 0.01 seconds.


proc means data=comb  n mean std min max var uss ;
  var LgPrRat1 ;
title3 "Stats for Logarithms of 'Empirical CDF rel. to Fitted CDF' values by Models to calc. RMSE of Prop. Model Spec" ;
```

```
run ;

NOTE: The PROCEDURE MEANS used 0.0 seconds.


proc sort data=comb ;
  by Quantile ;
run ;

NOTE: The data set WORK.COMB has 57 observations and 6 variables.
NOTE: The PROCEDURE SORT used 0.09 seconds.


proc means data=comb  n mean std min max var uss ;
  by Quantile ;
  var LgPrRat1 ;
title3 "Stats By Quantile for Logarithms of 'Empirical CDF rel. to Fitted CDF' values by Models to calc. RMSE of
Prop. Model Spec" ;
run ;

NOTE: The PROCEDURE MEANS used 0.0 seconds.


quit ;
```

IX. Attachment 2: SAS Program Output

Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods.
Monthly MAXIMUM NEGATIVE-Temperature (Deg-F) from 1950 thru 2006.

YEAR	MXTYR	MXT_1	MXT_2	MXT_3	MXT_4	MXT_5	MXT_6	MXT_7	MXT_8	MXT_9	MXT_10	MXT_11	MXT_12
1950	-40.9183	-40.9183	-45.0309	-50.6980	-53.8151	-54.7181	-60.2020	-68.2032	-67.7307	-64.0708	-63.1306	-52.1389	-51.8156
1951	-44.5976	-46.2885	-44.6835	-46.0473	-54.1593	-55.4942	-62.0715	-68.0392	-64.4889	-65.6125	-55.7540	-49.1660	-44.5976
1952	-43.1127	-43.1127	-46.8780	-45.9001	-53.2172	-60.9574	-59.6656	-68.4091	-69.2871	-61.9533	-61.0544	-46.9622	-47.1245
1953	-45.6944	-48.5670	-45.6944	-45.8429	-50.5556	-53.9157	-58.8051	-72.1189	-65.4629	-64.5738	-57.3008	-50.5122	-49.2611
1954	-45.7266	-47.6747	-49.5010	-49.0421	-56.6919	-56.3848	-61.4700	-69.7204	-67.4059	-63.9522	-58.4575	-51.4478	-45.7266
1955	-45.8405	-46.1598	-45.9999	-51.4955	-53.7804	-52.8762	-58.5254	-66.2440	-71.0526	-63.4701	-58.0043	-49.7967	-45.8405
1956	-44.9376	-48.5611	-44.9376	-51.5237	-50.4258	-58.2291	-65.0088	-66.1543	-66.3468	-70.3272	-53.5182	-53.5197	-48.6827
1957	-39.5106	-39.5106	-49.0264	-51.1614	-51.2577	-57.6415	-65.1280	-71.1565	-66.5313	-67.5519	-57.1781	-52.2147	-52.8553
1958	-46.3200	-50.2357	-53.7443	-49.7749	-51.1693	-60.7190	-66.2454	-69.5691	-72.6722	-66.4429	-62.7581	-46.3200	-52.9509
1959	-48.2742	-51.5517	-48.2742	-57.6774	-59.6718	-58.2296	-66.5294	-74.3827	-68.4063	-65.9227	-60.1894	-58.6028	-48.7768
1960	-42.3773	-42.3773	-48.4002	-52.2086	-53.3744	-57.3592	-66.2734	-69.1094	-69.4832	-67.1967	-59.0686	-50.3970	-45.6696
1961	-47.2724	-50.8979	-53.3212	-53.4290	-54.5046	-58.9468	-60.4804	-69.1039	-68.6472	-64.2766	-55.7973	-51.8086	-47.2724
1962	-43.4605	-43.4605	-45.2642	-46.9431	-57.8712	-54.9372	-57.8178	-68.2038	-70.0797	-66.1326	-60.9339	-54.8585	-47.9104
1963	-42.6634	-42.6634	-52.8886	-48.0317	-51.2141	-60.4437	-60.5433	-68.2398	-70.3210	-67.4875	-62.4023	-53.0858	-48.9380
1964	-45.2679	-47.5898	-49.7929	-48.2096	-52.0983	-52.5155	-58.9257	-68.3026	-67.8691	-65.7274	-61.5203	-45.2679	-45.6579
1965	-44.8386	-44.8386	-47.8390	-51.7063	-48.2403	-57.5491	-58.9825	-68.2346	-71.1326	-64.2985	-60.8709	-51.6710	-46.3873
1966	-46.7472	-46.7472	-48.2209	-47.3474	-57.5673	-58.5316	-62.8474	-69.7731	-68.7017	-66.7299	-63.4473	-52.6452	-47.3241
1967	-40.8227	-49.5660	-52.8626	-51.1507	-48.1869	-57.8414	-58.8463	-72.1557	-74.6289	-70.2575	-64.7694	-51.6433	-40.8227
1968	-40.6646	-46.2174	-52.3831	-53.8226	-55.4464	-56.9789	-61.5246	-67.7807	-68.3734	-64.7656	-59.6491	-54.2979	-40.6646
1969	-44.8695	-44.8695	-47.3801	-48.6289	-53.6741	-55.6541	-62.6936	-68.6035	-72.0494	-67.1531	-59.2281	-56.3347	-48.8588
1970	-46.8395	-47.0105	-54.2545	-51.9971	-51.7666	-57.5537	-61.9765	-71.3083	-71.1595	-65.9486	-58.2075	-53.2640	-46.8395
1971	-43.0352	-43.0352	-48.9632	-48.7365	-52.7209	-55.7858	-58.4771	-68.6935	-70.5249	-62.7990	-49.2473	-52.4035	-44.7042
1972	-41.4527	-45.9910	-49.9478	-55.3826	-54.2799	-56.8509	-65.8108	-70.0259	-70.0547	-66.1924	-55.9821	-53.7719	-41.4527
1973	-45.1152	-45.1152	-52.1136	-49.1287	-55.3944	-58.0825	-63.6435	-67.2313	-67.9027	-65.8271	-61.9101	-49.7465	-50.8663
1974	-43.0357	-43.0357	-51.8365	-48.2493	-55.5989	-58.3259	-65.3704	-68.5846	-70.7465	-66.6510	-56.3246	-55.0899	-44.8741
1975	-44.6574	-44.6574	-47.9921	-49.7435	-47.3570	-56.3139	-61.2364	-69.2099	-68.4586	-67.2450	-59.1765	-47.8011	-48.6515
1976	-44.8893	-44.8893	-49.4852	-45.4270	-50.3203	-57.9625	-60.4401	-70.6023	-67.6337	-67.4457	-62.8448	-51.7497	-51.2957
1977	-48.4115	-48.4115	-51.9002	-48.6781	-53.4387	-53.9351	-64.6083	-69.2738	-72.8009	-65.6203	-60.4860	-54.1167	-53.2783
1978	-41.7090	-51.1514	-48.2519	-54.1496	-51.2672	-59.4244	-65.6986	-68.6657	-68.5766	-65.7315	-59.3326	-48.9885	-41.7090
1979	-41.3919	-41.3919	-45.8522	-49.7428	-56.2625	-58.7635	-63.8454	-66.4377	-69.7559	-69.1085	-59.9719	-51.6410	-49.5125
1980	-50.3768	-50.3768	-54.7678	-52.8708	-53.2038	-57.1815	-60.4939	-71.7167	-69.8779	-66.1002	-59.0129	-56.0461	-51.7200
1981	-49.3495	-49.3495	-52.2001	-52.3554	-54.8037	-61.3543	-68.1083	-72.8923	-72.7502	-68.1353	-58.0807	-50.8778	-53.0239
1982	-45.3700	-45.3700	-52.3062	-49.2748	-50.3162	-57.7777	-62.6896	-66.6740	-69.5272	-63.7542	-61.7388	-52.1082	-48.4154
1983	-48.7163	-48.7163	-51.6368	-54.5892	-52.4995	-57.6504	-62.5190	-68.9611	-70.3569	-63.9702	-65.4058	-49.4946	-49.4734
1984	-46.9387	-49.6055	-53.8744	-56.9148	-54.9328	-59.3652	-66.0078	-73.0291	-74.6374	-70.7266	-60.6443	-50.0103	-46.9387
1985	-45.1652	-47.4235	-45.1652	-49.0860	-54.8622	-58.9718	-62.8074	-71.4047	-69.3085	-64.6834	-61.8016	-47.5297	-46.8065
1986	-48.6176	-56.1532	-48.6176	-50.3428	-57.6992	-59.4629	-66.2437	-68.9688	-72.1164	-61.0838	-61.4565	-58.2226	-52.9465
1987	-43.5032	-44.3662	-46.0077	-50.7665	-56.2742	-59.9866	-66.4674	-66.9273	-68.0183	-67.0169	-62.0412	-52.7038	-43.5032
1988	-43.3276	-50.0196	-51.3240	-54.3772	-53.9840	-55.3539	-59.0162	-70.7512	-69.9194	-64.1953	-63.9406	-50.9867	-43.3276
1989	-40.6421	-42.9652	-40.6421	-52.1899	-55.3728	-58.1553	-64.2909	-71.1422	-69.3183	-62.7900	-59.7738	-56.1194	-51.9548
1990	-39.0510	-48.8377	-43.4403	-49.1345	-58.1469	-61.0587	-63.1220	-71.9270	-69.7638	-68.9071	-63.3810	-52.4093	-39.0510
1991	-48.6652	-51.7661	-56.1423	-48.6652	-57.4699	-55.7956	-63.6607	-67.8875	-70.2961	-66.5090	-57.6141	-52.6907	-50.5800
1992	-47.4024	-48.1599	-51.8713	-53.3449	-61.2215	-66.5537	-64.3894	-67.9333	-68.9651	-70.0242	-63.4069	-55.4792	-47.4024
1993	-46.1631	-46.1631	-50.8600	-53.4783	-60.3073	-63.4357	-59.6859	-70.9967	-70.0326	-67.4525	-63.2595	-54.9295	-50.1589
1994	-47.1736	-51.6097	-50.0541	-51.7135	-54.1858	-57.0848	-66.7722	-70.9065	-73.3826	-67.0793	-62.0435	-47.1736	-50.0169
1995	-49.8793	-49.9718	-54.1227	-52.5921	-52.0618	-56.5449	-57.7074	-69.7173	-71.6251	-67.2143	-62.7438	-60.5064	-49.8793
1996	-44.9600	-47.7931	-44.9600	-54.9768	-59.6587	-62.8110	-63.9200	-71.5748	-71.9000	-68.8149	-54.3917	-53.3720	-52.5625
1997	-48.3607	-48.3607	-53.5183	-53.2627	-55.7346	-66.8710	-64.7330	-70.4457	-71.8313	-71.7448	-62.3917	-54.8566	-49.0615
1998	-43.6996	-50.7301	-52.4312	-49.9064	-49.9848	-55.2384	-61.0526	-70.2079	-72.5190	-64.9650	-60.8509	-55.3366	-43.6996
1999	-49.0383	-49.0383	-49.9853	-50.1448	-50.2300	-57.5467	-57.2890	-69.1483	-68.8947	-67.6164	-64.4302	-54.9701	-52.0835
2000	-48.8114	-49.7875	-49.0202	-48.8114	-55.6612	-61.2809	-64.6786	-69.2288	-69.4263	-67.1507	-57.1913	-50.4226	-51.1616
2001	-47.1589	-47.3384	-47.1589	-51.9366	-50.0810	-62.8882	-66.4468	-69.2261	-70.3780	-68.8565	-62.9730	-51.7265	-49.1444
2002	-45.8350	-45.8350	-49.0274	-50.2363	-56.2738	-57.7097	-64.7967	-69.9058	-69.8958	-63.2328	-58.8869	-58.5578	-48.8063
2003	-47.1264	-54.6311	-52.8533	-53.0693	-53.4142	-58.5656	-62.9161	-73.0022	-73.4882	-70.1809	-57.5439	-53.0856	-47.1264
2004	-48.2675	-49.1275	-50.7909	-53.7009	-56.5720	-63.6295	-65.8962	-68.8128	-70.1843	-65.5951	-56.1447	-48.2675	-48.2971
2005	-47.2984	-47.2984	-54.0102	-53.5888	-57.5386	-60.9376	-65.3049	-70.7168	-70.7986	-65.7663	-60.5273	-55.2603	-50.6921
2006	-45.7944	-51.5953	-48.3804	-45.7944	-53.6916	-62.4372	-68.4140	-74.6936	-72.0289	-68.1588	-62.1909	-52.1181	-48.0708

Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods.
Calc. Means and Standard Deviantions to use as Starting Values in Non-Linear Estimations.

OBS	_TYPE_	_FREQ_	MEAN1	MEAN2	MEAN3	MEAN4	MEAN5	MEAN6	MEAN7	MEAN8	MEAN9	MEAN10	MEAN11	MEAN12
1	0	57	-47.3489	-49.6121	-50.8597	-54.0616	-58.3960	-62.8618	-69.6901	-69.9917	-66.3543	-60.0418	-52.3952	-48.0039

OBS	MEANYR	STDEV1	STDEV2	STDEV3	STDEV4	STDEV5	STDEV6	STDEV7	STDEV8	STDEV9	STDEV10	STDEV11	STDEV12	STDEVYR
1	-45.2833	3.37514	3.34055	2.83983	3.11508	3.00291	2.94848	1.94490	2.10459	2.28647	3.10600	3.18026	3.44773	2.79086

Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods.
Calc. Means and Standard Deviantions to use as Starting Values in Non-Linear Estimations.

OBS	MXTYR	RANKYR	PRMXTYR	ALPHA	YEAR
1	-50.3768	1	0.01092	0.375	1980
2	-49.8793	2	0.02838	0.375	1995
3	-49.3495	3	0.04585	0.375	1981
4	-49.0383	4	0.06332	0.375	1999
5	-48.8114	5	0.08079	0.375	2000
6	-48.7163	6	0.09825	0.375	1983
7	-48.6652	7	0.11572	0.375	1991
8	-48.6176	8	0.13319	0.375	1986
9	-48.4115	9	0.15066	0.375	1977
10	-48.3607	10	0.16812	0.375	1997
11	-48.2742	11	0.18559	0.375	1959
12	-48.2675	12	0.20306	0.375	2004
13	-47.4024	13	0.22052	0.375	1992
14	-47.2984	14	0.23799	0.375	2005
15	-47.2724	15	0.25546	0.375	1961
16	-47.1736	16	0.27293	0.375	1994
17	-47.1589	17	0.29039	0.375	2001
18	-47.1264	18	0.30786	0.375	2003
19	-46.9387	19	0.32533	0.375	1984
20	-46.8395	20	0.34279	0.375	1970
21	-46.7472	21	0.36026	0.375	1966
22	-46.3200	22	0.37773	0.375	1958
23	-46.1631	23	0.39520	0.375	1993
24	-45.8405	24	0.41266	0.375	1955
25	-45.8350	25	0.43013	0.375	2002
26	-45.7944	26	0.44760	0.375	2006
27	-45.7266	27	0.46507	0.375	1954
28	-45.6944	28	0.48253	0.375	1953
29	-45.3700	29	0.50000	0.375	1982
30	-45.2679	30	0.51747	0.375	1964
31	-45.1652	31	0.53493	0.375	1985
32	-45.1152	32	0.55240	0.375	1973
33	-44.9600	33	0.56987	0.375	1996
34	-44.9376	34	0.58734	0.375	1956
35	-44.8893	35	0.60480	0.375	1976
36	-44.8695	36	0.62227	0.375	1969
37	-44.8386	37	0.63974	0.375	1965
38	-44.6574	38	0.65721	0.375	1975
39	-44.5976	39	0.67467	0.375	1951
40	-43.6996	40	0.69214	0.375	1998
41	-43.5032	41	0.70961	0.375	1987
42	-43.4605	42	0.72707	0.375	1962
43	-43.3276	43	0.74454	0.375	1988
44	-43.1127	44	0.76201	0.375	1952
45	-43.0357	45	0.77948	0.375	1974
46	-43.0352	46	0.79694	0.375	1971
47	-42.6634	47	0.81441	0.375	1963
48	-42.3773	48	0.83188	0.375	1960
49	-41.7090	49	0.84934	0.375	1978
50	-41.4527	50	0.86681	0.375	1972
51	-41.3919	51	0.88428	0.375	1979
52	-40.9183	52	0.90175	0.375	1950
53	-40.8227	53	0.91921	0.375	1967
54	-40.6646	54	0.93668	0.375	1968
55	-40.6421	55	0.95415	0.375	1989
56	-39.5106	56	0.97162	0.375	1957
57	-39.0510	57	0.98908	0.375	1990

Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods.
Non-linear Estimation of 3-parameter GEV Model.: for Maximum NEGATIVE Temperature (Deg-F).

MODEL Procedure

Model Summary

Model Variables	1
Parameters	4
RANGE Variable	YEAR
Equations	1
Number of Statements	3

Model Variables: PRMXTYR

Parameters: GAMMA: -45.28 THETA: 2.791 KAPPA: 0.25 MXTNL1

Equations: PRMXTYR

Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods.

Non-linear Estimation of 3-parameter GEV Model.: for Maximum NEGATIVE Temperature (Deg-F).

MODEL Procedure

The Equation to Estimate is:

PRMXTYR = F(GAMMA, THETA, KAPPA)

Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods.
Non-linear Estimation of 3-parameter GEV Model.: for Maximum NEGATIVE Temperature (Deg-F).

MODEL Procedure
OLS Estimation

OLS Estimation Summary

Dataset Option	Dataset
DATA=	MXTDATA
OUT=	FIT1
OUTEST=	EST1

Parameters Estimated	3

RANGE Processed	YEAR
First	1950
Last	2006

Minimization Summary

Method	GAUSS
Iterations	4

Final Convergence	Criteria
R	0.00003406
PPC(KAPPA)	0.000061
RPC(KAPPA)	0.001778
Object	1.2881E-6
Trace(S)	0.00055178
Objective Value	0.00052274

Observations Processed

Read	57
Solved	57

Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods.
Non-linear Estimation of 3-parameter GEV Model.: for Maximum NEGATIVE Temperature (Deg-F).

MODEL Procedure
OLS Estimation

Nonlinear OLS Summary of Residual Errors

Equation	DF Model	DF Error	SSE	MSE	Root MSE	R-Square	Adj R-Sq	Durbin Watson
PRMXTYR	3	54	0.02980	0.0005518	0.02349	0.9937	0.9934	1.841

Nonlinear OLS Parameter Estimates

Parameter	Estimate	Approx. Std Err	'T' Ratio	Approx. Prob>|T|
GAMMA	-46.502656	0.03471	-1339.56	0.0001
THETA	2.702588	0.05989	45.12	0.0001
KAPPA	0.126360	0.03430	3.68	0.0005

Number of Observations		Statistics for System	
Used	57	Objective	0.000523
Missing	0	Objective*N	0.0298

RANGE of Fit: YEAR = 1950 TO 2006

Correlations of Estimates

CorrB	GAMMA	THETA	KAPPA
GAMMA	1.0000	-0.0234	0.3840
THETA	-0.0234	1.0000	0.6189
KAPPA	0.3840	0.6189	1.0000

Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods.
Non-linear Estimation of 3-parameter GEV Model.: for Maximum NEGATIVE Temperature (Deg-F).

MODEL Procedure

Model Summary

Model Variables	1
Parameters	4
RANGE Variable	YEAR
Equations	1
Number of Statements	4

Model Variables: PRMXTYR

Parameters: MXTNL1 GAMMA: -46.5(-1340) THETA: 2.703(45) KAPPA: 0.1264(3.7)

Equations: PRMXTYR

Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods.
Non-linear Estimation of 3-parameter GEV Model.: for Maximum NEGATIVE Temperature (Deg-F).

OBS	YEAR	_ESTYPE_	_TYPE_	_WEIGHT_	PRMXTYR	MXTYR
1	1950	OLS	ACTUAL	1	0.90175	-40.9183
2	1950	OLS	PREDICT	1	0.91283	-40.9183
3	1950	OLS	RESIDUAL	1	-0.01109	-40.9183
4	1951	OLS	ACTUAL	1	0.67467	-44.5976
5	1951	OLS	PREDICT	1	0.62007	-44.5976
6	1951	OLS	RESIDUAL	1	0.05461	-44.5976
7	1952	OLS	ACTUAL	1	0.76201	-43.1127
8	1952	OLS	PREDICT	1	0.77476	-43.1127
9	1952	OLS	RESIDUAL	1	-0.01275	-43.1127
10	1953	OLS	ACTUAL	1	0.48253	-45.6944
11	1953	OLS	PREDICT	1	0.47845	-45.6944
12	1953	OLS	RESIDUAL	1	0.00409	-45.6944
13	1954	OLS	ACTUAL	1	0.46507	-45.7266
14	1954	OLS	PREDICT	1	0.47407	-45.7266
15	1954	OLS	RESIDUAL	1	-0.00900	-45.7266
16	1955	OLS	ACTUAL	1	0.41266	-45.8405
17	1955	OLS	PREDICT	1	0.45856	-45.8405
18	1955	OLS	RESIDUAL	1	-0.04589	-45.8405
19	1956	OLS	ACTUAL	1	0.58734	-44.9376
20	1956	OLS	PREDICT	1	0.57807	-44.9376
21	1956	OLS	RESIDUAL	1	0.00926	-44.9376
22	1957	OLS	ACTUAL	1	0.97162	-39.5106
23	1957	OLS	PREDICT	1	0.95735	-39.5106
24	1957	OLS	RESIDUAL	1	0.01427	-39.5106
25	1958	OLS	ACTUAL	1	0.37773	-46.3200
26	1958	OLS	PREDICT	1	0.39283	-46.3200
27	1958	OLS	RESIDUAL	1	-0.01510	-46.3200
28	1959	OLS	ACTUAL	1	0.18559	-48.2742
29	1959	OLS	PREDICT	1	0.15302	-48.2742
30	1959	OLS	RESIDUAL	1	0.03257	-48.2742
31	1960	OLS	ACTUAL	1	0.83188	-42.3773
32	1960	OLS	PREDICT	1	0.83240	-42.3773
33	1960	OLS	RESIDUAL	1	-0.00052	-42.3773
34	1961	OLS	ACTUAL	1	0.25546	-47.2724
35	1961	OLS	PREDICT	1	0.26637	-47.2724
36	1961	OLS	RESIDUAL	1	-0.01091	-47.2724
37	1962	OLS	ACTUAL	1	0.72707	-43.4605
38	1962	OLS	PREDICT	1	0.74308	-43.4605
39	1962	OLS	RESIDUAL	1	-0.01601	-43.4605
40	1963	OLS	ACTUAL	1	0.81441	-42.6634
41	1963	OLS	PREDICT	1	0.81145	-42.6634
42	1963	OLS	RESIDUAL	1	0.00296	-42.6634
43	1964	OLS	ACTUAL	1	0.51747	-45.2679
44	1964	OLS	PREDICT	1	0.53546	-45.2679
45	1964	OLS	RESIDUAL	1	-0.01799	-45.2679
46	1965	OLS	ACTUAL	1	0.63974	-44.8386
47	1965	OLS	PREDICT	1	0.59051	-44.8386
48	1965	OLS	RESIDUAL	1	0.04923	-44.8386
49	1966	OLS	ACTUAL	1	0.36026	-46.7472
50	1966	OLS	PREDICT	1	0.33483	-46.7472
51	1966	OLS	RESIDUAL	1	0.02543	-46.7472
52	1967	OLS	ACTUAL	1	0.91921	-40.8227
53	1967	OLS	PREDICT	1	0.91675	-40.8227
54	1967	OLS	RESIDUAL	1	0.00247	-40.8227
55	1968	OLS	ACTUAL	1	0.93668	-40.6646
56	1968	OLS	PREDICT	1	0.92290	-40.6646
57	1968	OLS	RESIDUAL	1	0.01379	-40.6646
58	1969	OLS	ACTUAL	1	0.62227	-44.8695
59	1969	OLS	PREDICT	1	0.58665	-44.8695
60	1969	OLS	RESIDUAL	1	0.03562	-44.8695
61	1970	OLS	ACTUAL	1	0.34279	-46.8395
62	1970	OLS	PREDICT	1	0.32250	-46.8395
63	1970	OLS	RESIDUAL	1	0.02029	-46.8395

Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods.
Non-linear Estimation of 3-parameter GEV Model.: for Maximum NEGATIVE Temperature (Deg-F).

OBS	YEAR	_ESTYPE_	_TYPE_	_WEIGHT_	PRMXTYR	MXTYR
64	1971	OLS	ACTUAL	1	0.79694	-43.0352
65	1971	OLS	PREDICT	1	0.78143	-43.0352
66	1971	OLS	RESIDUAL	1	0.01552	-43.0352
67	1972	OLS	ACTUAL	1	0.86681	-41.4527
68	1972	OLS	PREDICT	1	0.88811	-41.4527
69	1972	OLS	RESIDUAL	1	-0.02130	-41.4527
70	1973	OLS	ACTUAL	1	0.55240	-45.1152
71	1973	OLS	PREDICT	1	0.55536	-45.1152
72	1973	OLS	RESIDUAL	1	-0.00296	-45.1152
73	1974	OLS	ACTUAL	1	0.77948	-43.0357
74	1974	OLS	PREDICT	1	0.78138	-43.0357
75	1974	OLS	RESIDUAL	1	-0.00191	-43.0357
76	1975	OLS	ACTUAL	1	0.65721	-44.6574
77	1975	OLS	PREDICT	1	0.61284	-44.6574
78	1975	OLS	RESIDUAL	1	0.04437	-44.6574
79	1976	OLS	ACTUAL	1	0.60480	-44.8893
80	1976	OLS	PREDICT	1	0.58416	-44.8893
81	1976	OLS	RESIDUAL	1	0.02064	-44.8893
82	1977	OLS	ACTUAL	1	0.15066	-48.4115
83	1977	OLS	PREDICT	1	0.13987	-48.4115
84	1977	OLS	RESIDUAL	1	0.01079	-48.4115
85	1978	OLS	ACTUAL	1	0.84934	-41.7090
86	1978	OLS	PREDICT	1	0.87440	-41.7090
87	1978	OLS	RESIDUAL	1	-0.02505	-41.7090
88	1979	OLS	ACTUAL	1	0.88428	-41.3919
89	1979	OLS	PREDICT	1	0.89118	-41.3919
90	1979	OLS	RESIDUAL	1	-0.00690	-41.3919
91	1980	OLS	ACTUAL	1	0.01092	-50.3768
92	1980	OLS	PREDICT	1	0.02390	-50.3768
93	1980	OLS	RESIDUAL	1	-0.01298	-50.3768
94	1981	OLS	ACTUAL	1	0.04585	-49.3495
95	1981	OLS	PREDICT	1	0.06799	-49.3495
96	1981	OLS	RESIDUAL	1	-0.02214	-49.3495
97	1982	OLS	ACTUAL	1	0.50000	-45.3700
98	1982	OLS	PREDICT	1	0.52199	-45.3700
99	1982	OLS	RESIDUAL	1	-0.02199	-45.3700
100	1983	OLS	ACTUAL	1	0.09825	-48.7163
101	1983	OLS	PREDICT	1	0.11302	-48.7163
102	1983	OLS	RESIDUAL	1	-0.01477	-48.7163
103	1984	OLS	ACTUAL	1	0.32533	-46.9387
104	1984	OLS	PREDICT	1	0.30938	-46.9387
105	1984	OLS	RESIDUAL	1	0.01594	-46.9387
106	1985	OLS	ACTUAL	1	0.53493	-45.1652
107	1985	OLS	PREDICT	1	0.54887	-45.1652
108	1985	OLS	RESIDUAL	1	-0.01394	-45.1652
109	1986	OLS	ACTUAL	1	0.13319	-48.6176
110	1986	OLS	PREDICT	1	0.12135	-48.6176
111	1986	OLS	RESIDUAL	1	0.01184	-48.6176
112	1987	OLS	ACTUAL	1	0.70961	-43.5032
113	1987	OLS	PREDICT	1	0.73900	-43.5032
114	1987	OLS	RESIDUAL	1	-0.02939	-43.5032
115	1988	OLS	ACTUAL	1	0.74454	-43.3276
116	1988	OLS	PREDICT	1	0.75553	-43.3276
117	1988	OLS	RESIDUAL	1	-0.01099	-43.3276
118	1989	OLS	ACTUAL	1	0.95415	-40.6421
119	1989	OLS	PREDICT	1	0.92374	-40.6421
120	1989	OLS	RESIDUAL	1	0.03041	-40.6421
121	1990	OLS	ACTUAL	1	0.98908	-39.0510
122	1990	OLS	PREDICT	1	0.96684	-39.0510
123	1990	OLS	RESIDUAL	1	0.02224	-39.0510
124	1991	OLS	ACTUAL	1	0.11572	-48.6652
125	1991	OLS	PREDICT	1	0.11729	-48.6652
126	1991	OLS	RESIDUAL	1	-0.00157	-48.6652

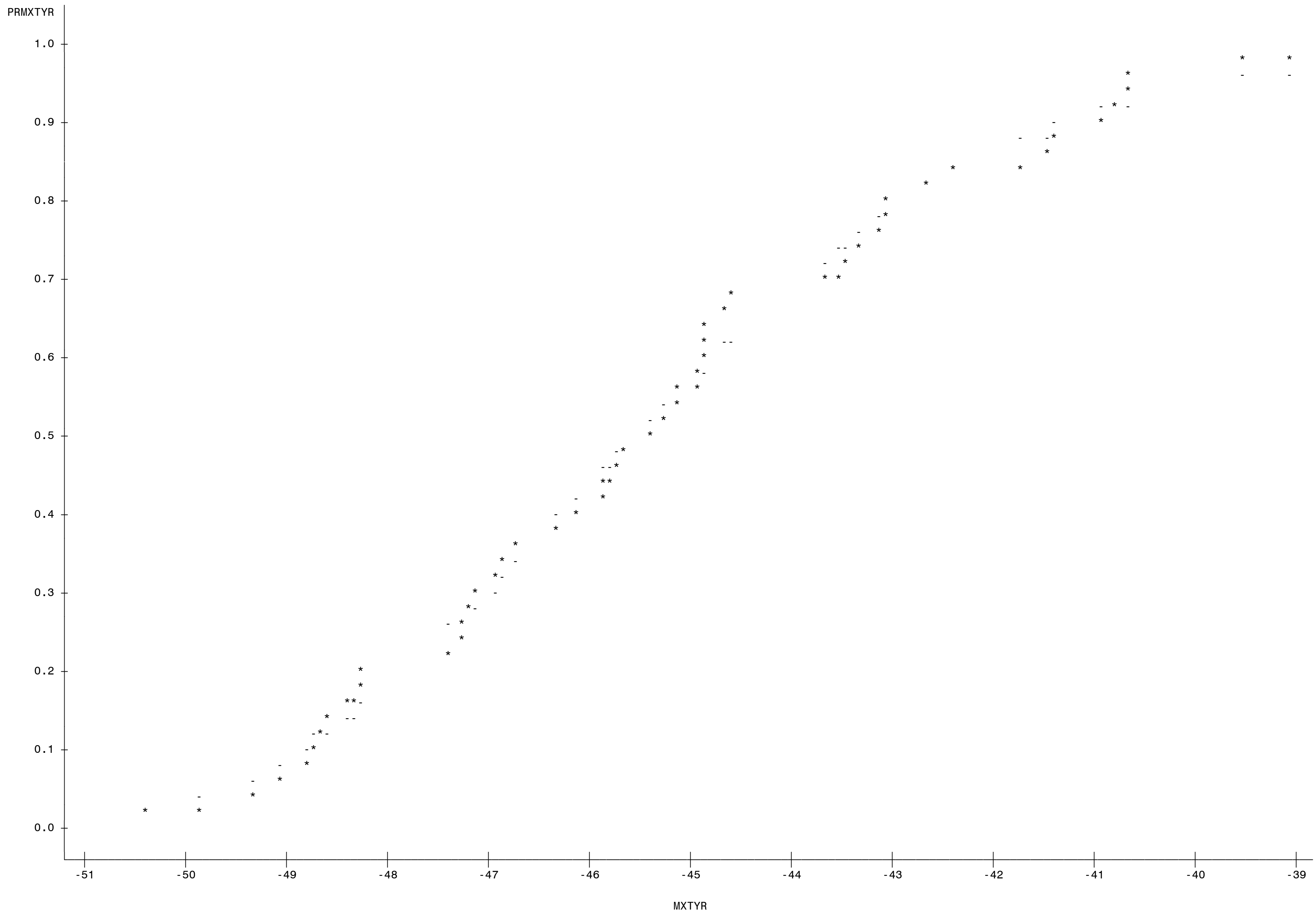
OBS	YEAR	_ESTYPE_	_TYPE_	_WEIGHT_	PRMXTYR	MXTYR
127	1992	OLS	ACTUAL	1	0.22052	-47.4024
128	1992	OLS	PREDICT	1	0.25018	-47.4024
129	1992	OLS	RESIDUAL	1	-0.02966	-47.4024
130	1993	OLS	ACTUAL	1	0.39520	-46.1631
131	1993	OLS	PREDICT	1	0.41435	-46.1631
132	1993	OLS	RESIDUAL	1	-0.01916	-46.1631
133	1994	OLS	ACTUAL	1	0.27293	-47.1736
134	1994	OLS	PREDICT	1	0.27889	-47.1736
135	1994	OLS	RESIDUAL	1	-0.00597	-47.1736
136	1995	OLS	ACTUAL	1	0.02838	-49.8793
137	1995	OLS	PREDICT	1	0.04117	-49.8793
138	1995	OLS	RESIDUAL	1	-0.01278	-49.8793
139	1996	OLS	ACTUAL	1	0.56987	-44.9600
140	1996	OLS	PREDICT	1	0.57524	-44.9600
141	1996	OLS	RESIDUAL	1	-0.00537	-44.9600
142	1997	OLS	ACTUAL	1	0.16812	-48.3607
143	1997	OLS	PREDICT	1	0.14466	-48.3607
144	1997	OLS	RESIDUAL	1	0.02346	-48.3607
145	1998	OLS	ACTUAL	1	0.69214	-43.6996
146	1998	OLS	PREDICT	1	0.71966	-43.6996
147	1998	OLS	RESIDUAL	1	-0.02752	-43.6996
148	1999	OLS	ACTUAL	1	0.06332	-49.0383
149	1999	OLS	PREDICT	1	0.08830	-49.0383
150	1999	OLS	RESIDUAL	1	-0.02498	-49.0383
151	2000	OLS	ACTUAL	1	0.08079	-48.8114
152	2000	OLS	PREDICT	1	0.10533	-48.8114
153	2000	OLS	RESIDUAL	1	-0.02454	-48.8114
154	2001	OLS	ACTUAL	1	0.29039	-47.1589
155	2001	OLS	PREDICT	1	0.28078	-47.1589
156	2001	OLS	RESIDUAL	1	0.00961	-47.1589
157	2002	OLS	ACTUAL	1	0.43013	-45.8350
158	2002	OLS	PREDICT	1	0.45930	-45.8350
159	2002	OLS	RESIDUAL	1	-0.02917	-45.8350
160	2003	OLS	ACTUAL	1	0.30786	-47.1264
161	2003	OLS	PREDICT	1	0.28495	-47.1264
162	2003	OLS	RESIDUAL	1	0.02291	-47.1264
163	2004	OLS	ACTUAL	1	0.20306	-48.2675
164	2004	OLS	PREDICT	1	0.15368	-48.2675
165	2004	OLS	RESIDUAL	1	0.04937	-48.2675
166	2005	OLS	ACTUAL	1	0.23799	-47.2984
167	2005	OLS	PREDICT	1	0.26311	-47.2984
168	2005	OLS	RESIDUAL	1	-0.02512	-47.2984
169	2006	OLS	ACTUAL	1	0.44760	-45.7944
170	2006	OLS	PREDICT	1	0.46484	-45.7944
171	2006	OLS	RESIDUAL	1	-0.01725	-45.7944

Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods.
Non-linear Estimation of 3-parameter GEV Model.: for Maximum NEGATIVE Temperature (Deg-F).

OBS	YEAR	MXTYR	PRMXTYR	PROBP
1	1950	-40.9183	0.90175	0.91283
2	1951	-44.5976	0.67467	0.62007
3	1952	-43.1127	0.76201	0.77476
4	1953	-45.6944	0.48253	0.47845
5	1954	-45.7266	0.46507	0.47407
6	1955	-45.8405	0.41266	0.45856
7	1956	-44.9376	0.58734	0.57807
8	1957	-39.5106	0.97162	0.95735
9	1958	-46.3200	0.37773	0.39283
10	1959	-48.2742	0.18559	0.15302
11	1960	-42.3773	0.83188	0.83240
12	1961	-47.2724	0.25546	0.26637
13	1962	-43.4605	0.72707	0.74308
14	1963	-42.6634	0.81441	0.81145
15	1964	-45.2679	0.51747	0.53546
16	1965	-44.8386	0.63974	0.59051
17	1966	-46.7472	0.36026	0.33483
18	1967	-40.8227	0.91921	0.91675
19	1968	-40.6646	0.93668	0.92290
20	1969	-44.8695	0.62227	0.58665
21	1970	-46.8395	0.34279	0.32250
22	1971	-43.0352	0.79694	0.78143
23	1972	-41.4527	0.86681	0.88811
24	1973	-45.1152	0.55240	0.55536
25	1974	-43.0357	0.77948	0.78138
26	1975	-44.6574	0.65721	0.61284
27	1976	-44.8893	0.60480	0.58416
28	1977	-48.4115	0.15066	0.13987
29	1978	-41.7090	0.84934	0.87440
30	1979	-41.3919	0.88428	0.89118
31	1980	-50.3768	0.01092	0.02390
32	1981	-49.3495	0.04585	0.06799
33	1982	-45.3700	0.50000	0.52199
34	1983	-48.7163	0.09825	0.11302
35	1984	-46.9387	0.32533	0.30938
36	1985	-45.1652	0.53493	0.54887
37	1986	-48.6176	0.13319	0.12135
38	1987	-43.5032	0.70961	0.73900
39	1988	-43.3276	0.74454	0.75553
40	1989	-40.6421	0.95415	0.92374
41	1990	-39.0510	0.98908	0.96684
42	1991	-48.6652	0.11572	0.11729
43	1992	-47.4024	0.22052	0.25018
44	1993	-46.1631	0.39520	0.41435
45	1994	-47.1736	0.27293	0.27889
46	1995	-49.8793	0.02838	0.04117
47	1996	-44.9600	0.56987	0.57524
48	1997	-48.3607	0.16812	0.14466
49	1998	-43.6996	0.69214	0.71966
50	1999	-49.0383	0.06332	0.08830
51	2000	-48.8114	0.08079	0.10533
52	2001	-47.1589	0.29039	0.28078
53	2002	-45.8350	0.43013	0.45930
54	2003	-47.1264	0.30786	0.28495
55	2004	-48.2675	0.20306	0.15368
56	2005	-47.2984	0.23799	0.26311
57	2006	-45.7944	0.44760	0.46484

Maximum/Minimum Daily SysAvg Temperatures (Un-Rounded).
Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods.
Non-linear Estimation of 3-parameter GEV Model.: for Maximum NEGATIVE Temperature (Deg-F).

Plot of PRMXTYR*MXTYR. Symbol used is '*'.
Plot of PROBP*MXTYR. Symbol used is '-'.



NOTE: 22 obs hidden.

Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods.
Non-linear Estimation of 3-parameter GEV Model.: for Maximum NEGATIVE Temperature (Deg-F).

OBS	_NAME_	_TYPE_	_NUSED_	GAMMA	THETA	KAPPA
1		OLS	57	-46.5027	2.70259	0.12636
2	GAMMA	OLS	57	0.0012	-0.00005	0.00046
3	THETA	OLS	57	-0.0000	0.00359	0.00127
4	KAPPA	OLS	57	0.0005	0.00127	0.00118

Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods.
Est'd CDFs and Logarithms of 'Empirical CDF rel. to Fitted CDF' values by Models.

OBS	YEAR	MXTYR	QUANTILE	PRMXTYR	PROBP1	LGPRRAT1
1	1950	-40.9183	3	0.90175	0.91283	-0.01222
2	1951	-44.5976	3	0.67467	0.62007	0.08440
3	1952	-43.1127	3	0.76201	0.77476	-0.01659
4	1953	-45.6944	2	0.48253	0.47845	0.00850
5	1954	-45.7266	2	0.46507	0.47407	-0.01917
6	1955	-45.8405	2	0.41266	0.45856	-0.10545
7	1956	-44.9376	2	0.58734	0.57807	0.01590
8	1957	-39.5106	3	0.97162	0.95735	0.01479
9	1958	-46.3200	2	0.37773	0.39283	-0.03920
10	1959	-48.2742	1	0.18559	0.15302	0.19297
11	1960	-42.3773	3	0.83188	0.83240	-0.00063
12	1961	-47.2724	1	0.25546	0.26637	-0.04181
13	1962	-43.4605	3	0.72707	0.74308	-0.02178
14	1963	-42.6634	3	0.81441	0.81145	0.00364
15	1964	-45.2679	2	0.51747	0.53546	-0.03418
16	1965	-44.8386	2	0.63974	0.59051	0.08007
17	1966	-46.7472	2	0.36026	0.33483	0.07321
18	1967	-40.8227	3	0.91921	0.91675	0.00269
19	1968	-40.6646	3	0.93668	0.92290	0.01483
20	1969	-44.8695	2	0.62227	0.58665	0.05895
21	1970	-46.8395	2	0.34279	0.32250	0.06101
22	1971	-43.0352	3	0.79694	0.78143	0.01966
23	1972	-41.4527	3	0.86681	0.88811	-0.02427
24	1973	-45.1152	2	0.55240	0.55536	-0.00534
25	1974	-43.0357	3	0.77948	0.78138	-0.00244
26	1975	-44.6574	2	0.65721	0.61284	0.06990
27	1976	-44.8893	2	0.60480	0.58416	0.03473
28	1977	-48.4115	1	0.15066	0.13987	0.07430
29	1978	-41.7090	3	0.84934	0.87440	-0.02907
30	1979	-41.3919	3	0.88428	0.89118	-0.00777
31	1980	-50.3768	1	0.01092	0.02390	-0.78343
32	1981	-49.3495	1	0.04585	0.06799	-0.39400
33	1982	-45.3700	2	0.50000	0.52199	-0.04304
34	1983	-48.7163	1	0.09825	0.11302	-0.14002
35	1984	-46.9387	1	0.32533	0.30938	0.05025
36	1985	-45.1652	2	0.53493	0.54887	-0.02573
37	1986	-48.6176	1	0.13319	0.12135	0.09306
38	1987	-43.5032	3	0.70961	0.73900	-0.04059
39	1988	-43.3276	3	0.74454	0.75553	-0.01465
40	1989	-40.6421	3	0.95415	0.92374	0.03239
41	1990	-39.0510	3	0.98908	0.96684	0.02274
42	1991	-48.6652	1	0.11572	0.11729	-0.01349
43	1992	-47.4024	1	0.22052	0.25018	-0.12619
44	1993	-46.1631	2	0.39520	0.41435	-0.04733
45	1994	-47.1736	1	0.27293	0.27889	-0.02163
46	1995	-49.8793	1	0.02838	0.04117	-0.37180
47	1996	-44.9600	2	0.56987	0.57524	-0.00938
48	1997	-48.3607	1	0.16812	0.14466	0.15032
49	1998	-43.6996	3	0.69214	0.71966	-0.03898
50	1999	-49.0383	1	0.06332	0.08830	-0.33256
51	2000	-48.8114	1	0.08079	0.10533	-0.26529
52	2001	-47.1589	1	0.29039	0.28078	0.03367
53	2002	-45.8350	2	0.43013	0.45930	-0.06562
54	2003	-47.1264	1	0.30786	0.28495	0.07735
55	2004	-48.2675	1	0.20306	0.15368	0.27859
56	2005	-47.2984	1	0.23799	0.26311	-0.10033
57	2006	-45.7944	2	0.44760	0.46484	-0.03781

Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods.
Stats for Logarithms of 'Empirical CDF rel. to Fitted CDF' values by Models to calc. RMSE of Prop. Model Spec

Analysis Variable : LGPRRAT1 Log(PrMxTYr/ProbP1)- GEV

N	Mean	Std Dev	Minimum	Maximum	Variance	USS
57	-0.0295413	0.1531354	-0.7834254	0.2785932	0.0234505	1.3629689

Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods.
Stats By Quantile for Logarithms of 'Empirical CDF rel. to Fitted CDF' values by Models to calc. RMSE of Prop. Model Spec

Analysis Variable : LGPRRAT1 Log(PrMxTYr/ProbP1)- GEV

QUANTILE=1

N	Mean	Std Dev	Minimum	Maximum	Variance	USS
19	-0.0863177	0.2534104	-0.7834254	0.2785932	0.0642168	1.2974668

QUANTILE=2

N	Mean	Std Dev	Minimum	Maximum	Variance	USS
19	-0.0015774	0.0527769	-0.1054493	0.0800692	0.0027854	0.0501846

QUANTILE=3

N	Mean	Std Dev	Minimum	Maximum	Variance	USS
19	-0.000728883	0.0291618	-0.0405884	0.0844017	0.000850412	0.0153175

CONTENTS PROCEDURE

Data Set Name:	OUT2.DLYSYS_D	Observations:	21000
Member Type:	DATA	Variables:	4
Engine:	V612	Indexes:	0
Created:	13:43 Friday, July 20, 2007	Observation Length:	32
Last Modified:	13:43 Friday, July 20, 2007	Deleted Observations:	0
Protection:		Compressed:	NO
Data Set Type:		Sorted:	NO
Label:			

-----Engine/Host Dependent Information-----

Data Set Page Size:	8192
Number of Data Set Pages:	83
File Format:	607
First Data Page:	1
Max Obs per Page:	254
Obs in First Data Page:	229

-----Alphabetic List of Variables and Attributes-----

#	Variable	Type	Len	Pos	Format	Informat	Label
4	AVG	Num	8	24			
3	CDD	Num	8	16			
1	DATE	Num	8	0	YYMMDD8.	YYMMDD.	DATE
2	HDD	Num	8	8			

Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods.

Calc. Means and Standard Deviantions to use as Starting Values in Non-Linear Estimations.

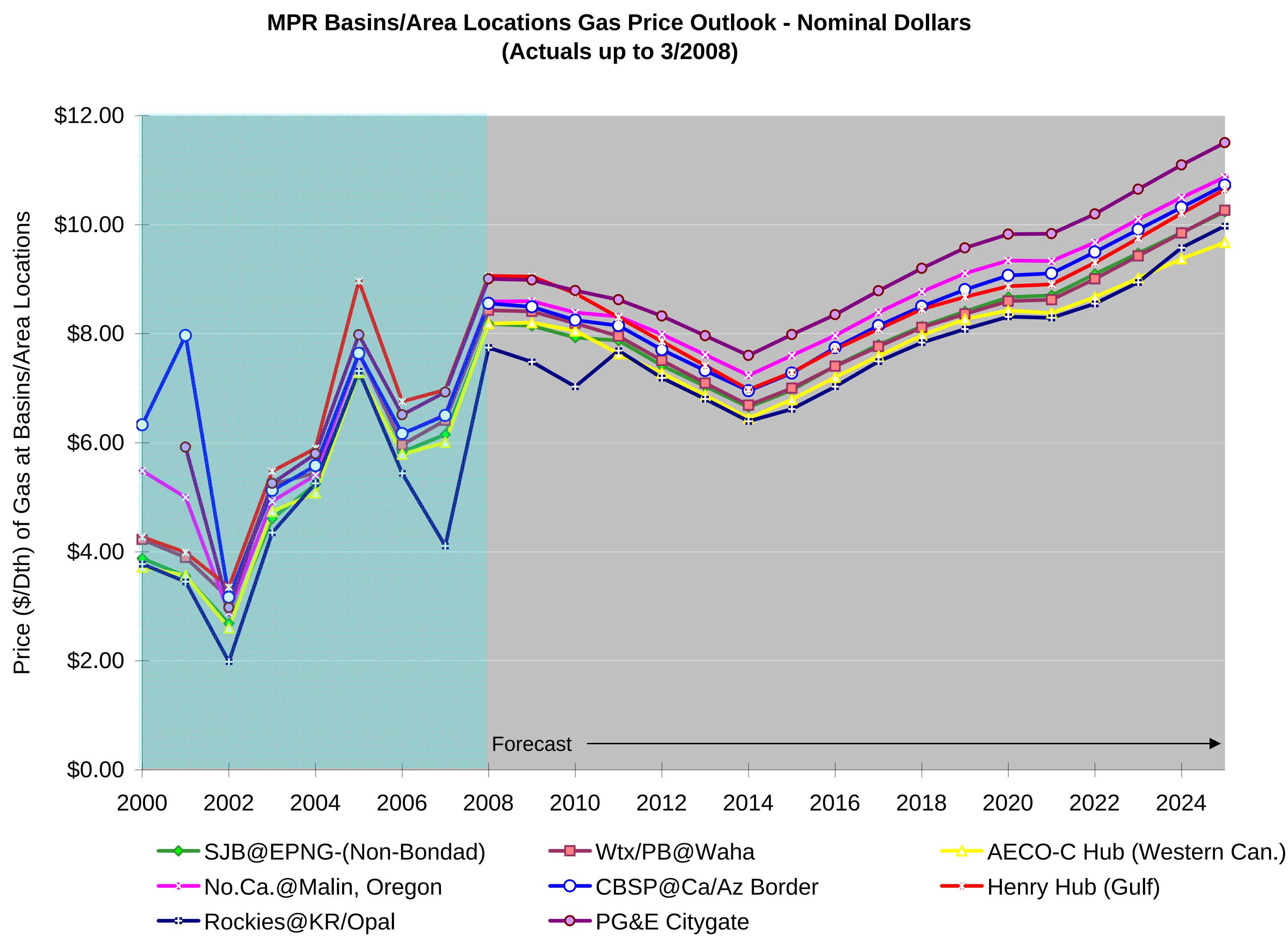
Variable	N	Mean	Std Dev	Minimum	Maximum
MXT_1	57	-47.3488728	3.3751385	-56.1531833	-39.5106000
MXT_2	57	-49.6120792	3.3405536	-56.1423333	-40.6421000
MXT_3	57	-50.8596500	2.8398266	-57.6774333	-45.4270333
MXT_4	57	-54.0615754	3.1150843	-61.2214667	-47.3570000
MXT_5	57	-58.3959541	3.0029136	-66.8709500	-52.5155000
MXT_6	57	-62.8617947	2.9484778	-68.4139500	-57.2890333
MXT_7	57	-69.6900942	1.9448986	-74.6935667	-66.1542500
MXT_8	57	-69.9916719	2.1045850	-74.6374000	-64.4888500
MXT_9	57	-66.3543137	2.2864658	-71.7447667	-61.0837667
MXT_10	57	-60.0418085	3.1060017	-65.4058000	-49.2473000
MXT_11	57	-52.3951658	3.1802632	-60.5064000	-45.2679167
MXT_12	57	-48.0039453	3.4477349	-53.2783000	-39.0510333
MXTYR	57	-45.2832570	2.7908621	-50.3768000	-39.0510333

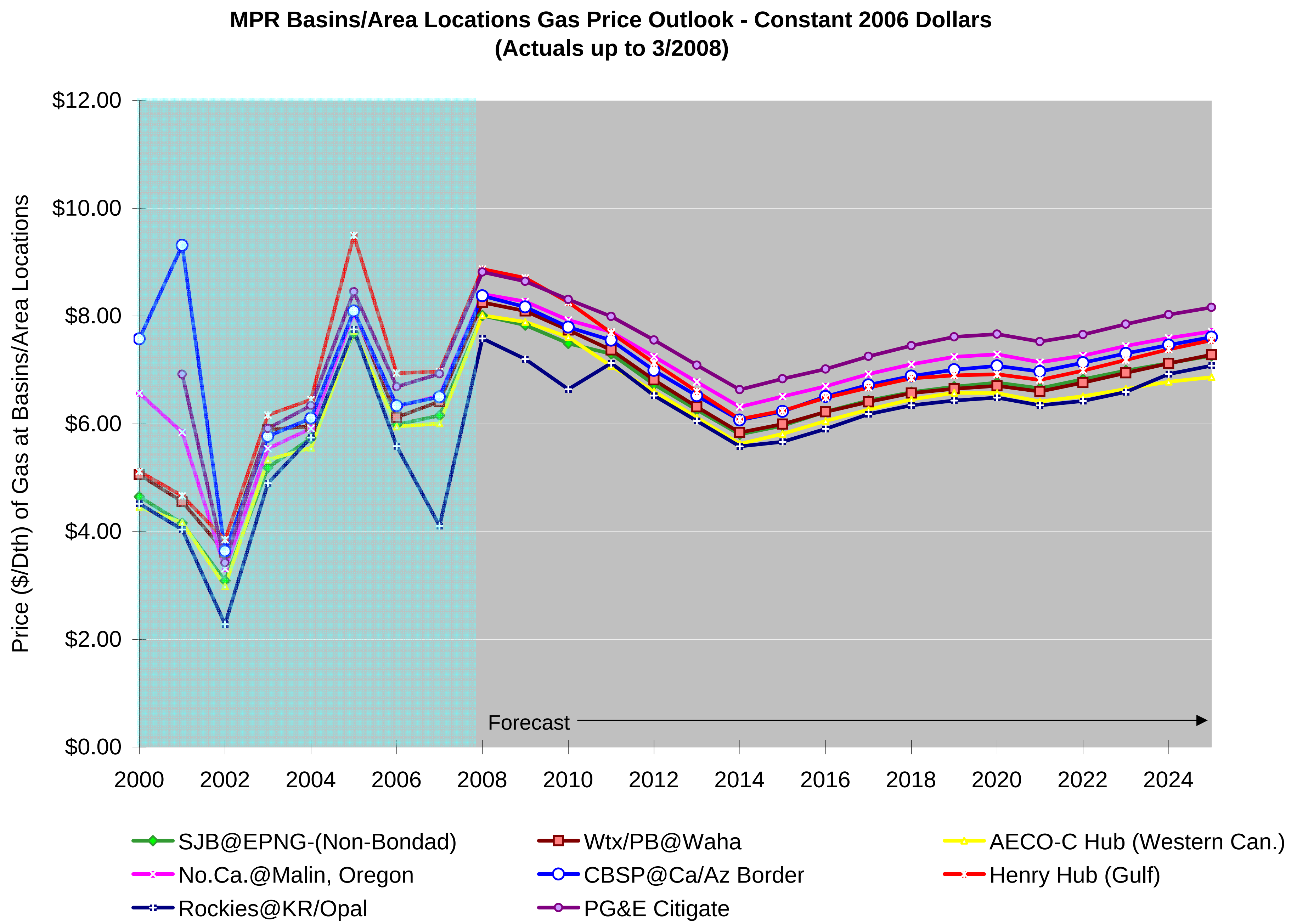
2008 CALIFORNIA GAS REPORT

GAS PRICE FORECAST
JULY 2008

The Gas Company

A Sempra Energy utility℠


MPR Basins/Area Locations Gas Price Outlook - Nominal Dollars
(Actuals up to 3/2008)
Price ($/Dth) of Gas at Basins/Area Locations
$12.00
$10.00
$8.00
$6.00
$4.00
$2.00
$0.00
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
2024
Forecast
SJB@EPNG-(Non-Bondad)
Wtx/PB@Waha
AECO-C Hub (Western Can.)
No.Ca.@Malin, Oregon
CBSP@Ca/Az Border
Henry Hub (Gulf)
Rockies@KR/Opal
PG&E Citygate


MPR Basins/Area Locations Gas Price Outlook - Constant 2006 Dollars
(Actuals up to 3/2008)
Price ($/Dth) of Gas at Basins/Area Locations
$12.00
$10.00
$8.00
$6.00
$4.00
$2.00
$0.00
Forecast
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
2024
SJB@EPNG-(Non-Bondad)
Wtx/PB@Waha
AECO-C Hub (Western Can.)
No.Ca.@Malin, Oregon
CBSP@Ca/Az Border
Henry Hub (Gulf)
Rockies@KR/Opal
PG&E Citigate

LONG TERM OUTLOOK for "SPOT" Gas: San Juan Basin
($/Dth, @San Juan Basin into EPNG's System-Non-Bondad Receipt Points)
($/Dth Difference, San Juan Basin Basis Swap to Price at Henry Hub)

YEAR		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr Avg.
2005	Price	5.46	5.49	6.18	6.36	5.58	5.80	6.33	7.62	9.23	10.48	7.50	11.03	**7.26**
	Difference	-0.69	-0.62	-0.75	-0.84	-0.91	-1.35	-1.27	-1.58	-4.57	-3.02	-2.82	-2.13	-1.71
2006	Price	7.33	6.53	5.70	5.81	5.15	5.46	5.54	6.40	4.44	5.10	6.13	6.38	**5.83**
	Difference	-1.39	-1.11	-1.18	-1.34	-1.13	-0.76	-0.51	-0.84	-0.57	-0.61	-1.19	-0.50	-0.93
2007	Price	6.19	6.91	5.89	6.71	6.70	6.57	5.50	5.57	5.26	6.25	5.73	6.56	**6.15**
	Difference	-0.24	-1.12	-1.21	-0.88	-0.93	-0.85	-0.71	-0.70	-0.79	-0.45	-1.36	-0.56	-0.82
2008	Price	7.43	7.86	8.09	**7.98**	**8.02**	**8.09**	**8.31**	**8.37**	**8.38**	**8.22**	**8.56**	**8.89**	**8.18**
	Difference	-0.51	-0.56	-0.87	-1.01	-1.00	-0.99	-0.84	-0.84	-0.84	-1.08	-1.01	-1.01	-0.88
2009	Price	**9.11**	**9.08**	**8.83**	**7.70**	**7.63**	**7.68**	**7.74**	**7.79**	**7.80**	**7.87**	**8.08**	**8.41**	**8.14**
	Difference	-1.01	-1.01	-1.01	-0.86	-0.86	-0.86	-0.86	-0.86	-0.86	-0.86	-0.92	-0.92	-0.91
2010	Price	**8.64**	**8.63**	**8.40**	**7.57**	**7.52**	**7.57**	**7.63**	**7.68**	**7.69**	**7.76**	**7.87**	**8.19**	**7.93**
	Difference	-0.92	-0.92	-0.92	-0.74	-0.74	-0.74	-0.74	-0.74	-0.74	-0.74	-0.90	-0.90	-0.81
2011	Price	**8.55**	**8.59**	**8.35**	**7.48**	**7.44**	**7.49**	**7.58**	**7.62**	**7.64**	**7.67**	**7.90**	**8.20**	**7.88**
	Difference	-0.48	-0.43	-0.45	-0.41	-0.42	-0.42	-0.39	-0.40	-0.39	-0.41	-0.44	-0.45	-0.42
2012	Price	**8.08**	**8.10**	**7.85**	**7.03**	**7.00**	**7.05**	**7.15**	**7.18**	**7.18**	**7.22**	**7.43**	**7.72**	**7.42**
	Difference	-0.47	-0.44	-0.48	-0.44	-0.44	-0.44	-0.40	-0.41	-0.42	-0.44	-0.47	-0.47	-0.44
2013	Price	**7.66**	**7.68**	**7.45**	**6.67**	**6.63**	**6.69**	**6.78**	**6.81**	**6.82**	**6.84**	**7.04**	**7.32**	**7.03**
	Difference	-0.41	-0.38	-0.42	-0.38	-0.39	-0.37	-0.35	-0.35	-0.36	-0.38	-0.42	-0.41	-0.38
2014	Price	**7.24**	**7.27**	**7.03**	**6.31**	**6.28**	**6.32**	**6.42**	**6.44**	**6.45**	**6.48**	**6.66**	**6.91**	**6.65**
	Difference	-0.34	-0.31	-0.36	-0.32	-0.33	-0.32	-0.28	-0.30	-0.30	-0.32	-0.36	-0.36	-0.33
2015	Price	**7.59**	**7.61**	**7.38**	**6.60**	**6.58**	**6.62**	**6.73**	**6.76**	**6.74**	**6.77**	**6.98**	**7.23**	**6.97**
	Difference	-0.34	-0.31	-0.35	-0.33	-0.32	-0.32	-0.27	-0.28	-0.31	-0.33	-0.35	-0.37	-0.32
2016	Price	**8.04**	**8.07**	**7.84**	**7.03**	**6.99**	**7.05**	**7.14**	**7.18**	**7.19**	**7.21**	**7.44**	**7.71**	**7.41**
	Difference	-0.35	-0.31	-0.34	-0.30	-0.31	-0.30	-0.26	-0.27	-0.27	-0.31	-0.32	-0.34	-0.31
2017	Price	**8.48**	**8.51**	**8.25**	**7.41**	**7.36**	**7.42**	**7.51**	**7.55**	**7.57**	**7.59**	**7.83**	**8.11**	**7.80**
	Difference	-0.32	-0.28	-0.32	-0.28	-0.29	-0.28	-0.25	-0.26	-0.25	-0.29	-0.30	-0.32	-0.29
2018	Price	**8.87**	**8.88**	**8.61**	**7.72**	**7.68**	**7.74**	**7.84**	**7.86**	**7.88**	**7.92**	**8.17**	**8.47**	**8.14**
	Difference	-0.33	-0.31	-0.34	-0.32	-0.32	-0.32	-0.28	-0.30	-0.30	-0.31	-0.33	-0.34	-0.32
2019	Price	**9.14**	**9.17**	**8.90**	**7.97**	**7.95**	**8.02**	**8.11**	**8.15**	**8.15**	**8.18**	**8.44**	**8.75**	**8.41**
	Difference	-0.29	-0.26	-0.29	-0.27	-0.26	-0.25	-0.22	-0.23	-0.24	-0.27	-0.28	-0.28	-0.26
2020	Price	**9.42**	**9.44**	**9.17**	**8.22**	**8.18**	**8.25**	**8.35**	**8.39**	**8.41**	**8.45**	**8.70**	**9.04**	**8.67**
	Difference	-0.22	-0.21	-0.23	-0.21	-0.21	-0.21	-0.16	-0.18	-0.17	-0.20	-0.21	-0.21	-0.20
2021	Price	**9.47**	**9.49**	**9.21**	**8.26**	**8.22**	**8.29**	**8.40**	**8.42**	**8.43**	**8.47**	**8.74**	**9.06**	**8.70**
	Difference	-0.22	-0.19	-0.23	-0.21	-0.21	-0.20	-0.15	-0.18	-0.19	-0.21	-0.21	-0.22	-0.20
2022	Price	**9.88**	**9.91**	**9.63**	**8.63**	**8.58**	**8.66**	**8.80**	**8.80**	**8.81**	**8.84**	**9.13**	**9.46**	**9.09**
	Difference	-0.24	-0.20	-0.24	-0.22	-0.22	-0.21	-0.14	-0.19	-0.19	-0.23	-0.23	-0.24	-0.21
2023	Price	**10.31**	**10.35**	**10.04**	**9.00**	**8.97**	**9.03**	**9.19**	**9.18**	**9.17**	**9.20**	**9.49**	**9.83**	**9.48**
	Difference	-0.29	-0.25	-0.29	-0.27	-0.26	-0.26	-0.17	-0.24	-0.27	-0.30	-0.31	-0.34	-0.27
2024	Price	**10.71**	**10.74**	**10.43**	**9.34**	**9.31**	**9.39**	**9.59**	**9.55**	**9.53**	**9.58**	**9.87**	**10.22**	**9.85**
	Difference	-0.39	-0.36	-0.39	-0.36	-0.35	-0.34	-0.22	-0.32	-0.34	-0.37	-0.39	-0.42	-0.35
2025	Price	**11.13**	**11.18**	**10.86**	**9.72**	**9.68**	**9.78**	**9.88**	**9.91**	**9.90**	**9.94**	**10.25**	**10.62**	**10.24**
	Difference	-0.44	-0.39	-0.43	-0.40	-0.39	-0.37	-0.35	-0.37	-0.40	-0.43	-0.45	-0.47	-0.41
2026	Price	**11.50**	**11.54**	**11.20**	**10.03**	**9.98**	**10.08**	**10.21**	**10.24**	**10.23**	**10.27**	**10.58**	**10.98**	**10.57**
	Difference	-0.49	-0.45	-0.49	-0.46	-0.46	-0.42	-0.37	-0.41	-0.44	-0.48	-0.50	-0.51	-0.46
2027	Price	**11.81**	**11.87**	**11.53**	**10.34**	**10.28**	**10.36**	**10.51**	**10.53**	**10.51**	**10.56**	**10.87**	**11.27**	**10.87**
	Difference	-0.58	-0.52	-0.55	-0.50	-0.51	-0.50	-0.43	-0.48	-0.52	-0.55	-0.59	-0.61	-0.53
2028	Price	**12.27**	**12.32**	**11.97**	**10.74**	**10.68**	**10.76**	**10.93**	**10.95**	**10.92**	**10.98**	**11.29**	**11.71**	**11.29**
	Difference	-0.58	-0.52	-0.55	-0.49	-0.50	-0.50	-0.41	-0.46	-0.51	-0.54	-0.59	-0.61	-0.52
2029	Price	**12.83**	**12.89**	**12.52**	**11.24**	**11.18**	**11.26**	**11.45**	**11.46**	**11.43**	**11.50**	**11.82**	**12.27**	**11.82**
	Difference	-0.46	-0.40	-0.44	-0.38	-0.39	-0.39	-0.29	-0.36	-0.39	-0.42	-0.47	-0.48	-0.40
2030	Price	**13.37**	**13.43**	**13.05**	**11.72**	**11.65**	**11.73**	**11.93**	**11.94**	**11.92**	**11.99**	**12.33**	**12.80**	**12.32**
	Difference	-0.33	-0.27	-0.30	-0.26	-0.27	-0.27	-0.17	-0.23	-0.27	-0.29	-0.33	-0.33	-0.28

NOTES:

1/ Jan.'00-Mar.'08 monthly actuals are simple averages of mid-range estimate of the low and high prices reported each business day by Gas Daily in their "Daily Price Survey."

2/ Forecasted price levels for Apr.'08 through Dec.'30 are the sum of Henry Hub projected price plus basis swap from NYMEX Clearport(sm).

3/ Source for gas price data: Gas Daily's "Daily Price Survey" for REGION--"New Mexico-San Juan Basin" and LOCATION--"El Paso, San Juan Basin".
Monthly prices are calculated from data reported in Platts Gas Daily--published by the McGraw-Hill Companies, Inc.
From the daily low and high prices reported under the heading "Common," the mid-range, or simple average, of these was calculated for each day.
These daily mid-range values were subsequently averaged over the number of days reported for each respective calendar month to arrive at the monthly historical prices used for each price series.

LONG TERM OUTLOOK for "SPOT" Gas: Permian Basin/West Texas @Waha
($/Dth Price, @Permian/West Texas at Waha Receipt Points into INTRA-State P/L's)
($/Dth Difference, Waha Basis Swap to Price at Henry Hub)

YEAR		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr Avg.
2005	Price	5.53	5.64	6.36	6.57	5.87	6.58	7.02	8.45	10.10	10.99	7.55	11.15	**7.65**
	Difference	-0.62	-0.47	-0.57	-0.63	5.48	5.79	-0.58	-0.75	-3.71	-2.51	-2.77	-2.00	-0.28
2006	Price	7.35	6.63	5.75	5.90	5.35	5.69	5.73	6.65	4.55	5.27	6.24	6.42	**5.96**
	Difference	-1.37	-1.01	-1.13	-1.26	-0.93	-0.52	-0.33	-0.58	-0.46	-0.44	-1.08	-0.46	-0.80
2007	Price	6.32	7.06	6.18	7.00	7.23	6.97	5.88	5.93	5.44	6.47	5.88	6.60	**6.41**
	Difference	-0.12	-0.96	-0.92	-0.59	-0.41	-0.45	-0.33	-0.34	-0.60	-0.23	-1.22	-0.52	-0.56
2008	Price	7.53	7.97	8.36	**8.22**	**8.31**	**8.45**	**8.72**	**8.80**	**8.61**	**8.48**	**8.63**	**9.07**	**8.43**
	Difference	-0.41	-0.45	-0.60	-0.77	-0.71	-0.63	-0.44	-0.41	-0.61	-0.82	-0.94	-0.82	-0.63
2009	Price	**9.35**	**9.34**	**9.18**	**7.95**	**7.88**	**7.93**	**8.06**	**8.11**	**8.12**	**8.09**	**8.29**	**8.62**	**8.41**
	Difference	-0.76	-0.75	-0.66	-0.61	-0.61	-0.61	-0.54	-0.54	-0.54	-0.64	-0.71	-0.71	-0.64
2010	Price	**8.85**	**8.85**	**8.61**	**7.84**	**7.79**	**7.84**	**7.90**	**7.95**	**7.96**	**8.03**	**8.17**	**8.49**	**8.19**
	Difference	-0.71	-0.71	-0.71	-0.47	-0.47	-0.47	-0.47	-0.47	-0.47	-0.47	-0.60	-0.60	-0.55
2011	Price	**8.66**	**8.65**	**8.42**	**7.53**	**7.52**	**7.57**	**7.65**	**7.69**	**7.70**	**7.77**	**7.98**	**8.30**	**7.95**
	Difference	-0.36	-0.37	-0.37	-0.36	-0.33	-0.34	-0.32	-0.32	-0.33	-0.32	-0.36	-0.35	-0.35
2012	Price	**8.18**	**8.18**	**7.96**	**7.12**	**7.10**	**7.14**	**7.22**	**7.27**	**7.27**	**7.33**	**7.53**	**7.83**	**7.51**
	Difference	-0.36	-0.36	-0.37	-0.36	-0.34	-0.35	-0.32	-0.32	-0.33	-0.33	-0.37	-0.36	-0.35
2013	Price	**7.73**	**7.72**	**7.51**	**6.72**	**6.70**	**6.75**	**6.82**	**6.87**	**6.87**	**6.92**	**7.11**	**7.39**	**7.09**
	Difference	-0.34	-0.34	-0.35	-0.33	-0.32	-0.32	-0.30	-0.29	-0.30	-0.31	-0.34	-0.34	-0.32
2014	Price	**7.28**	**7.28**	**7.08**	**6.34**	**6.32**	**6.37**	**6.43**	**6.48**	**6.48**	**6.53**	**6.71**	**6.97**	**6.69**
	Difference	-0.30	-0.30	-0.31	-0.29	-0.29	-0.28	-0.26	-0.26	-0.27	-0.27	-0.30	-0.30	-0.29
2015	Price	**7.63**	**7.63**	**7.42**	**6.64**	**6.62**	**6.66**	**6.74**	**6.78**	**6.77**	**6.83**	**7.03**	**7.29**	**7.00**
	Difference	-0.29	-0.30	-0.30	-0.30	-0.28	-0.29	-0.26	-0.26	-0.28	-0.28	-0.30	-0.31	-0.29
2016	Price	**8.07**	**8.06**	**7.84**	**7.00**	**6.99**	**7.05**	**7.13**	**7.18**	**7.17**	**7.23**	**7.44**	**7.72**	**7.41**
	Difference	-0.32	-0.33	-0.34	-0.33	-0.31	-0.31	-0.28	-0.28	-0.29	-0.29	-0.31	-0.32	-0.31
2017	Price	**8.45**	**8.44**	**8.22**	**7.36**	**7.34**	**7.41**	**7.48**	**7.52**	**7.53**	**7.57**	**7.79**	**8.10**	**7.77**
	Difference	-0.34	-0.35	-0.35	-0.33	-0.32	-0.30	-0.28	-0.29	-0.29	-0.32	-0.33	-0.33	-0.32
2018	Price	**8.85**	**8.84**	**8.60**	**7.69**	**7.67**	**7.72**	**7.81**	**7.85**	**7.84**	**7.91**	**8.13**	**8.45**	**8.11**
	Difference	-0.34	-0.35	-0.36	-0.35	-0.33	-0.33	-0.31	-0.32	-0.33	-0.33	-0.36	-0.36	-0.34
2019	Price	**9.11**	**9.11**	**8.86**	**7.90**	**7.91**	**7.97**	**8.05**	**8.10**	**8.10**	**8.15**	**8.39**	**8.72**	**8.36**
	Difference	-0.32	-0.32	-0.34	-0.34	-0.30	-0.29	-0.28	-0.28	-0.29	-0.30	-0.33	-0.32	-0.31
2020	Price	**9.36**	**9.35**	**9.11**	**8.14**	**8.13**	**8.18**	**8.27**	**8.33**	**8.32**	**8.39**	**8.63**	**8.97**	**8.60**
	Difference	-0.29	-0.29	-0.30	-0.29	-0.27	-0.27	-0.25	-0.24	-0.26	-0.26	-0.29	-0.27	-0.27
2021	Price	**9.39**	**9.38**	**9.13**	**8.17**	**8.15**	**8.20**	**8.29**	**8.34**	**8.35**	**8.41**	**8.66**	**8.98**	**8.62**
	Difference	-0.29	-0.29	-0.31	-0.29	-0.28	-0.28	-0.26	-0.26	-0.26	-0.27	-0.29	-0.30	-0.28
2022	Price	**9.81**	**9.80**	**9.54**	**8.52**	**8.51**	**8.58**	**8.66**	**8.72**	**8.72**	**8.78**	**9.04**	**9.39**	**9.01**
	Difference	-0.31	-0.32	-0.32	-0.33	-0.30	-0.29	-0.28	-0.27	-0.28	-0.29	-0.31	-0.31	-0.30
2023	Price	**10.27**	**10.26**	**9.99**	**8.93**	**8.93**	**8.97**	**9.06**	**9.12**	**9.13**	**9.18**	**9.46**	**9.82**	**9.43**
	Difference	-0.33	-0.34	-0.35	-0.34	-0.30	-0.32	-0.30	-0.30	-0.31	-0.32	-0.34	-0.35	-0.32
2024	Price	**10.74**	**10.72**	**10.43**	**9.32**	**9.32**	**9.36**	**9.47**	**9.54**	**9.53**	**9.60**	**9.89**	**10.25**	**9.85**
	Difference	-0.36	-0.38	-0.39	-0.38	-0.34	-0.36	-0.33	-0.32	-0.34	-0.35	-0.37	-0.39	-0.36
2025	Price	**11.18**	**11.17**	**10.87**	**9.71**	**9.71**	**9.78**	**9.88**	**9.94**	**9.94**	**10.00**	**10.30**	**10.68**	**10.26**
	Difference	-0.39	-0.40	-0.41	-0.41	-0.37	-0.37	-0.34	-0.34	-0.36	-0.38	-0.40	-0.41	-0.38
2026	Price	**11.57**	**11.56**	**11.25**	**10.05**	**10.03**	**10.11**	**10.23**	**10.28**	**10.27**	**10.35**	**10.66**	**11.06**	**10.62**
	Difference	-0.42	-0.43	-0.44	-0.44	-0.40	-0.39	-0.36	-0.38	-0.39	-0.39	-0.42	-0.44	-0.41
2027	Price	**11.82**	**11.81**	**11.52**	**10.32**	**10.31**	**10.37**	**10.48**	**10.54**	**10.54**	**10.63**	**10.91**	**11.31**	**10.88**
	Difference	-0.57	-0.58	-0.56	-0.52	-0.48	-0.50	-0.47	-0.47	-0.49	-0.48	-0.54	-0.56	-0.52
2028	Price	**12.31**	**12.30**	**11.99**	**10.74**	**10.73**	**10.78**	**10.90**	**10.97**	**10.97**	**11.06**	**11.37**	**11.79**	**11.33**
	Difference	-0.53	-0.54	-0.53	-0.49	-0.45	-0.47	-0.44	-0.44	-0.46	-0.45	-0.50	-0.52	-0.49
2029	Price	**12.90**	**12.88**	**12.56**	**11.26**	**11.25**	**11.30**	**11.43**	**11.49**	**11.50**	**11.60**	**11.93**	**12.36**	**11.87**
	Difference	-0.39	-0.41	-0.40	-0.36	-0.32	-0.35	-0.31	-0.32	-0.33	-0.31	-0.36	-0.38	-0.35
2030	Price	**13.44**	**13.42**	**13.09**	**11.75**	**11.74**	**11.79**	**11.91**	**11.98**	**11.99**	**12.10**	**12.46**	**12.90**	**12.38**
	Difference	-0.26	-0.28	-0.27	-0.23	-0.19	-0.22	-0.19	-0.19	-0.20	-0.18	-0.21	-0.23	-0.22

NOTES:

1/ Jan.'00-Mar.'08 monthly actuals are simple averages of mid-range estimate of the low and high prices reported each business day by Gas Daily in their "Daily Price Survey."

2/ Forecasted price levels for Apr.'08 through Dec.'30 are the sum of Henry Hub projected price plus basis swap from NYMEX Clearport(sm).

3/ Source for gas price data: Gas Daily's "Daily Price Survey" for REGION--"Permian Basin Area" and LOCATION--"Tex Intras, Waha area".
Monthly prices are calculated from data reported in Platts Gas Daily--published by the McGraw-Hill Companies, Inc.
From the daily low and high prices reported under the heading "Common," the mid-range, or simple average, of these was calculated for each day.
These daily mid-range values were subsequently averaged over the number of days reported for each respective calendar month to arrive at the monthly historical prices used for each price series.

LONG TERM OUTLOOK for "SPOT" Gas: Alberta Canada/AECO-C
(US-$/Dth Price, @NOVA/AECO-C Hub, Western Canada)
($/Dth Difference, Alberta Basis Swap to Price at Henry Hub)

YEAR		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr Avg.
2005	Price	5.31	5.30	6.06	6.33	5.60	5.91	6.18	7.63	9.48	10.74	7.98	10.95	**7.29**
	Difference	-0.83	-0.81	-0.87	-0.87	-0.89	-1.24	-1.43	-1.57	-4.32	-2.76	-2.35	-2.20	-1.68
2006	Price	7.51	6.52	5.74	5.82	5.11	5.26	5.13	5.88	4.27	5.15	6.77	6.35	**5.79**
	Difference	-1.21	-1.12	-1.14	-1.34	-1.17	-0.96	-0.93	-1.36	-0.74	-0.56	-0.54	-0.53	-0.97
2007	Price	5.89	6.77	6.27	6.66	6.62	6.18	5.16	4.77	4.94	6.05	6.33	6.46	**6.01**
	Difference	-0.54	-1.26	-0.83	-0.93	-1.02	-1.24	-1.05	-1.50	-1.11	-0.65	-0.76	-0.66	-0.96
2008	Price	7.22	7.81	8.28	**8.01**	**8.05**	**8.11**	**8.21**	**8.26**	**8.27**	**8.39**	**8.66**	**8.98**	**8.19**
	Difference	-0.72	-0.62	-0.68	-0.97	-0.97	-0.97	-0.95	-0.95	-0.95	-0.91	-0.91	-0.91	-0.87
2009	Price	**9.20**	**9.18**	**8.93**	**7.72**	**7.65**	**7.70**	**7.76**	**7.81**	**7.82**	**7.89**	**8.22**	**8.55**	**8.20**
	Difference	-0.91	-0.91	-0.91	-0.84	-0.84	-0.84	-0.84	-0.84	-0.84	-0.84	-0.78	-0.78	-0.85
2010	Price	**8.78**	**8.77**	**8.54**	**7.65**	**7.60**	**7.65**	**7.71**	**7.76**	**7.77**	**7.84**	**8.12**	**8.44**	**8.05**
	Difference	-0.78	-0.78	-0.78	-0.66	-0.66	-0.66	-0.66	-0.66	-0.66	-0.66	-0.65	-0.65	-0.69
2011	Price	**8.23**	**8.30**	**8.16**	**7.28**	**7.24**	**7.28**	**7.33**	**7.36**	**7.39**	**7.44**	**7.68**	**7.92**	**7.63**
	Difference	-0.79	-0.72	-0.64	-0.61	-0.61	-0.63	-0.64	-0.66	-0.64	-0.65	-0.66	-0.73	-0.67
2012	Price	**7.88**	**7.89**	**7.78**	**6.94**	**6.90**	**6.94**	**6.99**	**7.03**	**7.05**	**7.10**	**7.31**	**7.54**	**7.28**
	Difference	-0.67	-0.66	-0.55	-0.54	-0.54	-0.55	-0.55	-0.56	-0.55	-0.56	-0.59	-0.66	-0.58
2013	Price	**7.42**	**7.47**	**7.31**	**6.56**	**6.52**	**6.55**	**6.60**	**6.63**	**6.67**	**6.71**	**6.90**	**7.12**	**6.87**
	Difference	-0.64	-0.59	-0.55	-0.50	-0.50	-0.51	-0.52	-0.54	-0.50	-0.52	-0.55	-0.61	-0.55
2014	Price	**6.98**	**7.00**	**6.89**	**6.15**	**6.13**	**6.14**	**6.18**	**6.22**	**6.26**	**6.30**	**6.47**	**6.66**	**6.45**
	Difference	-0.60	-0.58	-0.51	-0.48	-0.47	-0.51	-0.52	-0.52	-0.49	-0.50	-0.54	-0.61	-0.53
2015	Price	**7.36**	**7.37**	**7.27**	**6.48**	**6.45**	**6.46**	**6.51**	**6.54**	**6.60**	**6.64**	**6.81**	**7.01**	**6.79**
	Difference	-0.57	-0.55	-0.46	-0.45	-0.45	-0.49	-0.49	-0.50	-0.45	-0.47	-0.51	-0.58	-0.50
2016	Price	**7.78**	**7.80**	**7.71**	**6.88**	**6.84**	**6.85**	**6.90**	**6.94**	**7.00**	**7.04**	**7.24**	**7.45**	**7.20**
	Difference	-0.61	-0.59	-0.47	-0.46	-0.46	-0.50	-0.51	-0.51	-0.46	-0.48	-0.52	-0.59	-0.51
2017	Price	**8.21**	**8.24**	**8.12**	**7.25**	**7.21**	**7.24**	**7.29**	**7.33**	**7.35**	**7.40**	**7.60**	**7.87**	**7.59**
	Difference	-0.58	-0.55	-0.45	-0.43	-0.44	-0.46	-0.48	-0.48	-0.47	-0.48	-0.52	-0.56	-0.49
2018	Price	**8.64**	**8.63**	**8.49**	**7.59**	**7.57**	**7.59**	**7.63**	**7.68**	**7.73**	**7.79**	**8.02**	**8.27**	**7.97**
	Difference	-0.55	-0.56	-0.47	-0.44	-0.43	-0.47	-0.48	-0.49	-0.44	-0.45	-0.47	-0.54	-0.48
2019	Price	**8.93**	**8.95**	**8.80**	**7.88**	**7.85**	**7.89**	**7.93**	**7.99**	**8.03**	**8.09**	**8.32**	**8.57**	**8.27**
	Difference	-0.50	-0.48	-0.39	-0.37	-0.36	-0.38	-0.39	-0.39	-0.35	-0.36	-0.40	-0.47	-0.40
2020	Price	**9.12**	**9.13**	**8.97**	**8.05**	**7.97**	**8.00**	**8.05**	**8.11**	**8.16**	**8.23**	**8.52**	**8.77**	**8.42**
	Difference	-0.52	-0.51	-0.43	-0.39	-0.42	-0.45	-0.47	-0.46	-0.42	-0.42	-0.40	-0.48	-0.45
2021	Price	**9.08**	**9.08**	**8.93**	**7.98**	**7.94**	**7.99**	**8.04**	**8.10**	**8.12**	**8.16**	**8.45**	**8.69**	**8.38**
	Difference	-0.61	-0.60	-0.51	-0.49	-0.49	-0.49	-0.51	-0.50	-0.49	-0.52	-0.50	-0.59	-0.52
2022	Price	**9.37**	**9.41**	**9.26**	**8.26**	**8.19**	**8.28**	**8.34**	**8.39**	**8.38**	**8.45**	**8.75**	**8.99**	**8.67**
	Difference	-0.75	-0.70	-0.60	-0.59	-0.62	-0.58	-0.60	-0.60	-0.62	-0.62	-0.61	-0.71	-0.63
2023	Price	**9.86**	**9.87**	**9.72**	**8.65**	**8.59**	**8.57**	**8.62**	**8.66**	**8.65**	**8.71**	**9.00**	**9.29**	**9.02**
	Difference	-0.75	-0.73	-0.61	-0.62	-0.63	-0.72	-0.74	-0.76	-0.78	-0.79	-0.80	-0.88	-0.73
2024	Price	**10.20**	**10.23**	**10.00**	**8.94**	**8.86**	**8.93**	**8.98**	**9.04**	**9.06**	**9.13**	**9.41**	**9.73**	**9.38**
	Difference	-0.90	-0.86	-0.82	-0.77	-0.80	-0.80	-0.82	-0.83	-0.81	-0.82	-0.85	-0.91	-0.83
2025	Price	**10.55**	**10.60**	**10.34**	**9.22**	**9.13**	**9.22**	**9.28**	**9.33**	**9.34**	**9.43**	**9.68**	**10.02**	**9.68**
	Difference	-1.03	-0.97	-0.95	-0.91	-0.94	-0.93	-0.95	-0.96	-0.96	-0.95	-1.02	-1.08	-0.97
2026	Price	**10.79**	**10.85**	**10.59**	**9.45**	**9.35**	**9.45**	**9.52**	**9.57**	**9.57**	**9.65**	**9.91**	**10.25**	**9.91**
	Difference	-1.20	-1.13	-1.09	-1.03	-1.09	-1.05	-1.07	-1.08	-1.09	-1.10	-1.18	-1.24	-1.11
2027	Price	**11.20**	**11.27**	**11.01**	**9.84**	**9.75**	**9.82**	**9.90**	**9.96**	**9.95**	**10.04**	**10.29**	**10.63**	**10.30**
	Difference	-1.19	-1.12	-1.07	-0.99	-1.04	-1.04	-1.05	-1.05	-1.07	-1.07	-1.17	-1.25	-1.09
2028	Price	**11.65**	**11.72**	**11.45**	**10.23**	**10.15**	**10.22**	**10.29**	**10.35**	**10.36**	**10.44**	**10.69**	**11.05**	**10.72**
	Difference	-1.19	-1.11	-1.07	-1.00	-1.03	-1.04	-1.05	-1.06	-1.06	-1.07	-1.18	-1.26	-1.09
2029	Price	**12.13**	**12.21**	**11.94**	**10.67**	**10.59**	**10.67**	**10.74**	**10.81**	**10.80**	**10.89**	**11.15**	**11.53**	**11.18**
	Difference	-1.16	-1.08	-1.02	-0.96	-0.99	-0.98	-1.00	-1.00	-1.02	-1.03	-1.14	-1.21	-1.05
2030	Price	**12.59**	**12.66**	**12.40**	**11.07**	**10.98**	**11.06**	**11.14**	**11.21**	**11.21**	**11.27**	**11.56**	**11.97**	**11.59**
	Difference	-1.11	-1.03	-0.96	-0.91	-0.94	-0.95	-0.96	-0.97	-0.98	-1.01	-1.11	-1.16	-1.01

NOTES:

1/ Jan.'00-Mar.'08 monthly actuals are simple averages of mid-range estimate of the low and high prices reported each business day by Gas Daily in their "Daily Price Survey."

2/ Forecasted price levels for Apr.'08 through Dec.'30 are the sum of Henry Hub projected price plus basis swap from NYMEX Clearport(sm).

3/ Source for gas price data: Gas Daily's "Daily Price Survey" for REGION--"Canadian Gas" and LOCATION--"NOVA (AECO-C, NIT)".
Monthly prices are calculated from data reported in Platts Gas Daily--published by the McGraw-Hill Companies, Inc.
From the daily low and high prices reported under the heading "Common," the mid-range, or simple average, of these was calculated for each day.
These daily mid-range values were subsequently averaged over the number of days reported for each respective calendar month to arrive at the monthly historical prices used for each price series.

LONG TERM OUTLOOK for "SPOT" Gas: Rocky Mountains
($/Dth Price, Rockies @ Kern River/Opal Plant)
(US-$/Dth Difference, Rockies Basis Swap to Price at Henry Hub)

YEAR		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr Avg.
2005	Price	5.47	5.51	6.25	6.48	5.68	5.95	6.44	7.69	9.43	10.69	7.57	10.66	**7.32**
	Difference	-0.67	-0.60	-0.67	-0.73	-0.81	-1.20	-1.17	-1.52	-4.37	-2.81	-2.76	-2.50	-1.65
2006	Price	7.37	6.54	5.73	5.73	5.15	5.34	5.33	6.02	3.70	4.59	4.89	4.87	**5.44**
	Difference	-1.35	-1.10	-1.14	-1.43	-1.13	-0.87	-0.73	-1.22	-1.31	-1.12	-2.43	-2.01	-1.32
2007	Price	5.93	6.35	4.95	4.79	3.94	2.75	3.78	3.16	1.11	2.75	3.77	6.00	**4.11**
	Difference	-0.50	-1.68	-2.15	-2.80	-3.70	-4.67	-2.43	-3.11	-4.93	-3.94	-3.32	-1.12	-2.86
2008	Price	7.25	7.69	7.95	**7.58**	**7.59**	**7.70**	**7.81**	**7.87**	**7.63**	**7.53**	**7.88**	**8.47**	**7.75**
	Difference	-0.69	-0.73	-1.01	-1.41	-1.43	-1.38	-1.34	-1.34	-1.58	-1.76	-1.68	-1.43	-1.32
2009	Price	**8.92**	**8.89**	**8.47**	**6.88**	**6.80**	**6.89**	**6.93**	**6.98**	**6.99**	**6.73**	**7.48**	**7.85**	**7.48**
	Difference	-1.19	-1.21	-1.37	-1.68	-1.69	-1.64	-1.67	-1.67	-1.67	-2.00	-1.52	-1.49	-1.57
2010	Price	**8.06**	**8.08**	**7.82**	**6.43**	**6.38**	**6.43**	**6.49**	**6.54**	**6.55**	**6.62**	**7.31**	**7.63**	**7.03**
	Difference	-1.50	-1.48	-1.50	-1.88	-1.88	-1.88	-1.88	-1.88	-1.88	-1.88	-1.46	-1.46	-1.71
2011	Price	**8.34**	**8.37**	**8.21**	**7.34**	**7.25**	**7.29**	**7.35**	**7.38**	**7.46**	**7.51**	**7.76**	**8.05**	**7.69**
	Difference	-0.69	-0.65	-0.59	-0.55	-0.61	-0.62	-0.62	-0.64	-0.57	-0.58	-0.58	-0.60	-0.61
2012	Price	**7.90**	**7.92**	**7.67**	**6.82**	**6.77**	**6.82**	**6.87**	**6.91**	**6.94**	**6.98**	**7.21**	**7.48**	**7.19**
	Difference	-0.65	-0.62	-0.66	-0.65	-0.67	-0.67	-0.67	-0.68	-0.66	-0.68	-0.69	-0.71	-0.67
2013	Price	**7.46**	**7.48**	**7.24**	**6.45**	**6.41**	**6.46**	**6.52**	**6.54**	**6.57**	**6.61**	**6.82**	**7.08**	**6.80**
	Difference	-0.60	-0.59	-0.63	-0.60	-0.61	-0.61	-0.61	-0.63	-0.60	-0.62	-0.63	-0.65	-0.61
2014	Price	**7.02**	**7.02**	**6.77**	**6.03**	**6.01**	**6.07**	**6.14**	**6.16**	**6.19**	**6.22**	**6.43**	**6.67**	**6.39**
	Difference	-0.57	-0.56	-0.63	-0.60	-0.59	-0.58	-0.56	-0.58	-0.55	-0.58	-0.58	-0.60	-0.58
2015	Price	**7.32**	**7.32**	**7.07**	**6.27**	**6.23**	**6.24**	**6.28**	**6.32**	**6.38**	**6.41**	**6.65**	**6.89**	**6.62**
	Difference	-0.60	-0.60	-0.66	-0.66	-0.67	-0.71	-0.72	-0.72	-0.67	-0.69	-0.68	-0.71	-0.67
2016	Price	**7.69**	**7.76**	**7.49**	**6.68**	**6.60**	**6.61**	**6.69**	**6.70**	**6.81**	**6.84**	**7.10**	**7.38**	**7.03**
	Difference	-0.70	-0.63	-0.68	-0.65	-0.70	-0.74	-0.72	-0.75	-0.65	-0.68	-0.66	-0.67	-0.68
2017	Price	**8.19**	**8.21**	**7.95**	**7.07**	**7.05**	**7.13**	**7.21**	**7.23**	**7.25**	**7.29**	**7.52**	**7.81**	**7.49**
	Difference	-0.61	-0.58	-0.62	-0.62	-0.61	-0.57	-0.56	-0.58	-0.57	-0.60	-0.61	-0.62	-0.59
2018	Price	**8.60**	**8.61**	**8.34**	**7.40**	**7.38**	**7.43**	**7.51**	**7.53**	**7.57**	**7.62**	**7.87**	**8.17**	**7.84**
	Difference	-0.59	-0.58	-0.62	-0.64	-0.62	-0.63	-0.61	-0.64	-0.61	-0.62	-0.63	-0.64	-0.62
2019	Price	**8.84**	**8.87**	**8.59**	**7.56**	**7.58**	**7.69**	**7.77**	**7.80**	**7.84**	**7.88**	**8.16**	**8.46**	**8.09**
	Difference	-0.59	-0.56	-0.60	-0.69	-0.63	-0.57	-0.56	-0.57	-0.55	-0.57	-0.56	-0.58	-0.59
2020	Price	**9.11**	**9.13**	**8.85**	**7.89**	**7.78**	**7.82**	**7.92**	**7.92**	**8.07**	**8.13**	**8.42**	**8.72**	**8.31**
	Difference	-0.54	-0.51	-0.55	-0.55	-0.61	-0.63	-0.60	-0.65	-0.51	-0.52	-0.50	-0.53	-0.56
2021	Price	**9.11**	**9.16**	**8.84**	**7.91**	**7.81**	**7.87**	**7.91**	**7.96**	**7.99**	**8.04**	**8.42**	**8.48**	**8.29**
	Difference	-0.57	-0.52	-0.60	-0.56	-0.61	-0.62	-0.64	-0.64	-0.62	-0.64	-0.53	-0.80	-0.61
2022	Price	**9.17**	**9.23**	**8.96**	**8.21**	**8.15**	**8.20**	**8.25**	**8.31**	**8.34**	**8.39**	**8.66**	**8.74**	**8.55**
	Difference	-0.95	-0.89	-0.90	-0.64	-0.65	-0.67	-0.68	-0.68	-0.66	-0.68	-0.69	-0.96	-0.75
2023	Price	**9.65**	**9.54**	**9.24**	**8.60**	**8.43**	**8.47**	**8.52**	**8.57**	**8.72**	**8.78**	**9.24**	**9.56**	**8.94**
	Difference	-0.95	-1.06	-1.09	-0.67	-0.80	-0.82	-0.84	-0.85	-0.71	-0.72	-0.57	-0.60	-0.81
2024	Price	**10.48**	**10.51**	**10.20**	**9.11**	**8.98**	**9.05**	**9.17**	**9.19**	**9.26**	**9.33**	**9.66**	**9.99**	**9.58**
	Difference	-0.62	-0.58	-0.62	-0.59	-0.69	-0.68	-0.64	-0.67	-0.62	-0.62	-0.61	-0.65	-0.63
2025	Price	**10.86**	**10.94**	**10.61**	**9.49**	**9.35**	**9.46**	**9.58**	**9.64**	**9.66**	**9.72**	**10.03**	**10.39**	**9.98**
	Difference	-0.71	-0.64	-0.67	-0.63	-0.72	-0.68	-0.64	-0.65	-0.64	-0.65	-0.67	-0.71	-0.67
2026	Price	**11.24**	**11.31**	**10.97**	**9.82**	**9.70**	**9.82**	**9.92**	**9.99**	**10.00**	**10.05**	**10.36**	**10.75**	**10.33**
	Difference	-0.75	-0.68	-0.72	-0.66	-0.74	-0.69	-0.66	-0.67	-0.67	-0.70	-0.72	-0.74	-0.70
2027	Price	**11.71**	**11.77**	**11.45**	**10.24**	**10.17**	**10.24**	**10.33**	**10.39**	**10.39**	**10.45**	**10.76**	**11.16**	**10.76**
	Difference	-0.68	-0.62	-0.63	-0.60	-0.62	-0.62	-0.62	-0.62	-0.63	-0.66	-0.70	-0.72	-0.64
2028	Price	**12.16**	**12.22**	**11.88**	**10.62**	**10.56**	**10.64**	**10.73**	**10.79**	**10.79**	**10.85**	**11.16**	**11.58**	**11.17**
	Difference	-0.69	-0.62	-0.64	-0.61	-0.62	-0.62	-0.61	-0.62	-0.63	-0.67	-0.71	-0.73	-0.65
2029	Price	**12.70**	**12.76**	**12.40**	**11.10**	**11.04**	**11.12**	**11.22**	**11.27**	**11.28**	**11.34**	**11.67**	**12.11**	**11.67**
	Difference	-0.59	-0.53	-0.56	-0.53	-0.53	-0.53	-0.52	-0.54	-0.54	-0.58	-0.62	-0.63	-0.56
2030	Price	**13.21**	**13.27**	**12.90**	**11.54**	**11.49**	**11.57**	**11.66**	**11.72**	**11.73**	**11.80**	**12.13**	**12.59**	**12.13**
	Difference	-0.50	-0.43	-0.46	-0.44	-0.44	-0.44	-0.44	-0.45	-0.46	-0.49	-0.53	-0.54	-0.47

NOTES:

1/ Jan.'00-Mar.'08 monthly actuals are simple averages of mid-range estimate of the low and high prices reported each business day by Gas Daily in their "Daily Price Survey."

2/ Forecasted price levels for Apr.'08 through Dec.'30 are the sum of Henry Hub projected price plus basis swap from NYMEX Clearport(sm).

3/ Source for gas price data: Gas Daily's "Daily Price Survey" for REGION--"Rockies" and LOCATION--"Kern River/Opal Plant".
Monthly prices are calculated from data reported in Platts Gas Daily--published by the McGraw-Hill Companies, Inc.
From the daily low and high prices reported under the heading "Common," the mid-range, or simple average, of these was calculated for each day.
These daily mid-range values were subsequently averaged over the number of days reported for each respective calendar month to arrive at the monthly historical prices used for each price series.

LONG TERM OUTLOOK for "SPOT" Gas: Northern California @ Malin, Oregon
($/Dth Price, @PG&E's Line #400 at Ca./Or. Border)
(US-$/Dth Difference, Malin Basis Swap to Price at Henry Hub)

YEAR		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr Avg.
2005	Price	5.66	5.66	6.44	6.65	5.83	6.07	6.54	7.98	9.75	11.03	8.25	11.55	7.62
	Difference	-0.48	-0.46	-0.49	-0.55	-0.66	-1.09	-1.06	-1.22	-4.05	-2.46	-2.08	-1.60	-1.35
2006	Price	7.79	6.74	5.92	6.03	5.33	5.58	5.74	6.59	4.75	5.51	7.04	6.87	6.16
	Difference	-0.93	-0.90	-0.95	-1.13	-0.94	-0.63	-0.32	-0.65	-0.26	-0.20	-0.28	0.00	-0.60
2007	Price	6.45	7.16	6.55	6.96	7.06	6.71	5.90	5.75	5.55	6.56	6.70	6.89	6.52
	Difference	0.01	-0.86	-0.55	-0.63	-0.57	-0.71	-0.31	-0.51	-0.49	-0.14	-0.40	-0.24	-0.45
2008	Price	7.62	8.16	8.55	8.35	8.39	8.50	8.70	8.78	8.72	8.79	9.10	9.43	8.59
	Difference	-0.32	-0.26	-0.41	-0.64	-0.63	-0.58	-0.45	-0.43	-0.50	-0.50	-0.47	-0.47	-0.47
2009	Price	9.63	9.61	9.35	8.06	8.00	8.07	8.15	8.22	8.22	8.28	8.62	8.96	8.60
	Difference	-0.48	-0.48	-0.49	-0.51	-0.49	-0.46	-0.45	-0.44	-0.44	-0.45	-0.38	-0.37	-0.45
2010	Price	9.19	9.18	8.93	7.91	7.88	7.95	8.02	8.08	8.08	8.14	8.47	8.80	8.39
	Difference	-0.37	-0.37	-0.39	-0.39	-0.38	-0.36	-0.35	-0.34	-0.35	-0.35	-0.30	-0.29	-0.35
2011	Price	8.97	9.05	8.82	7.95	7.89	7.88	7.96	7.99	8.06	8.14	8.40	8.70	8.32
	Difference	-0.05	0.02	0.02	0.06	0.03	-0.02	-0.01	-0.03	0.04	0.05	0.05	0.05	0.02
2012	Price	8.63	8.66	8.44	7.62	7.57	7.57	7.66	7.69	7.76	7.83	8.06	8.36	7.99
	Difference	0.09	0.12	0.11	0.15	0.13	0.09	0.11	0.10	0.16	0.17	0.16	0.17	0.13
2013	Price	8.23	8.27	8.04	7.27	7.21	7.22	7.29	7.32	7.40	7.46	7.69	7.96	7.61
	Difference	0.17	0.21	0.18	0.22	0.19	0.15	0.17	0.15	0.22	0.23	0.23	0.23	0.20
2014	Price	7.83	7.85	7.64	6.91	6.86	6.86	6.93	6.96	7.03	7.09	7.30	7.56	7.24
	Difference	0.24	0.27	0.25	0.28	0.25	0.21	0.24	0.22	0.28	0.29	0.28	0.29	0.26
2015	Price	8.20	8.24	8.01	7.27	7.22	7.21	7.29	7.32	7.39	7.46	7.67	7.94	7.60
	Difference	0.27	0.32	0.29	0.34	0.32	0.26	0.28	0.27	0.34	0.35	0.34	0.34	0.31
2016	Price	8.61	8.63	8.41	7.63	7.56	7.56	7.64	7.67	7.75	7.81	8.04	8.32	7.97
	Difference	0.22	0.25	0.23	0.29	0.26	0.20	0.23	0.22	0.29	0.29	0.28	0.28	0.25
2017	Price	9.07	9.10	8.86	8.03	7.97	7.98	8.06	8.10	8.14	8.21	8.45	8.75	8.39
	Difference	0.28	0.31	0.28	0.34	0.31	0.27	0.30	0.29	0.32	0.33	0.32	0.32	0.31
2018	Price	9.49	9.50	9.25	8.37	8.31	8.32	8.39	8.44	8.52	8.61	8.87	9.17	8.77
	Difference	0.30	0.31	0.29	0.34	0.30	0.27	0.28	0.28	0.35	0.37	0.37	0.36	0.32
2019	Price	9.84	9.86	9.61	8.69	8.62	8.66	8.73	8.78	8.84	8.92	9.21	9.53	9.11
	Difference	0.41	0.43	0.42	0.45	0.41	0.39	0.41	0.41	0.46	0.47	0.49	0.49	0.44
2020	Price	10.10	10.11	9.85	8.90	8.83	8.85	8.96	9.00	9.08	9.17	9.47	9.80	9.34
	Difference	0.45	0.46	0.45	0.46	0.43	0.40	0.44	0.43	0.50	0.53	0.55	0.56	0.47
2021	Price	10.09	10.10	9.85	8.90	8.82	8.86	8.96	9.00	9.05	9.14	9.45	9.78	9.33
	Difference	0.41	0.42	0.42	0.44	0.39	0.38	0.41	0.40	0.44	0.46	0.50	0.50	0.43
2022	Price	10.45	10.49	10.22	9.22	9.14	9.19	9.31	9.33	9.38	9.46	9.79	10.12	9.68
	Difference	0.33	0.37	0.36	0.38	0.33	0.32	0.37	0.34	0.38	0.39	0.44	0.42	0.37
2023	Price	10.96	10.98	10.71	9.65	9.57	9.59	9.76	9.75	9.77	9.84	10.15	10.48	10.10
	Difference	0.36	0.38	0.38	0.38	0.35	0.30	0.39	0.33	0.34	0.33	0.35	0.32	0.35
2024	Price	11.37	11.39	11.06	9.98	9.92	9.98	10.21	10.15	10.17	10.25	10.59	10.95	10.50
	Difference	0.27	0.30	0.24	0.27	0.26	0.25	0.41	0.29	0.29	0.30	0.32	0.31	0.29
2025	Price	11.78	11.83	11.49	10.34	10.28	10.36	10.46	10.49	10.52	10.62	10.97	11.36	10.87
	Difference	0.20	0.26	0.20	0.22	0.21	0.21	0.24	0.21	0.22	0.24	0.27	0.26	0.23
2026	Price	12.14	12.18	11.84	10.65	10.56	10.65	10.80	10.82	10.85	10.94	11.31	11.71	11.20
	Difference	0.15	0.20	0.15	0.17	0.13	0.14	0.21	0.17	0.18	0.19	0.22	0.21	0.18
2027	Price	12.42	12.46	12.11	10.89	10.81	10.88	11.05	11.07	11.08	11.18	11.55	11.98	11.46
	Difference	0.02	0.07	0.03	0.05	0.02	0.02	0.11	0.06	0.05	0.08	0.09	0.10	0.06
2028	Price	12.90	12.92	12.58	11.32	11.22	11.30	11.48	11.51	11.51	11.63	11.99	12.44	11.90
	Difference	0.06	0.08	0.06	0.09	0.04	0.04	0.14	0.10	0.09	0.12	0.12	0.13	0.09
2029	Price	13.46	13.50	13.15	11.83	11.74	11.81	12.00	12.02	12.03	12.16	12.53	13.00	12.44
	Difference	0.17	0.21	0.19	0.21	0.17	0.16	0.26	0.21	0.21	0.25	0.24	0.26	0.21
2030	Price	14.01	14.03	13.68	12.31	12.21	12.28	12.48	12.50	12.52	12.63	13.03	13.52	12.93
	Difference	0.31	0.33	0.32	0.33	0.28	0.27	0.38	0.33	0.33	0.35	0.36	0.39	0.33

NOTES:

1/ Jan.'00-Mar.'08 monthly actuals are simple averages of mid-range estimate of the low and high prices reported each business day by Gas Daily in their "Daily Price Survey."

2/ Forecasted price levels for Apr.'08 through Dec.'30 are the sum of Henry Hub projected price plus basis swap from NYMEX Clearport(sm).

3/ Source for gas price data: Gas Daily's "Daily Price Survey" for REGION--"Others" and LOCATION--"Malin".
Monthly prices are calculated from data reported in Platts Gas Daily--published by the McGraw-Hill Companies, Inc.
From the daily low and high prices reported under the heading "Common," the mid-range, or simple average, of these was calculated for each day.
These daily mid-range values were subsequently averaged over the number of days reported for each respective calendar month to arrive at the monthly historical prices used for each price series.

LONG TERM OUTLOOK for "SPOT" Gas: U.S. Gulf Coast/South Louisiana @ Henry Hub, Louisiana
($/Dth Price, @Henry Hub, So. Louisiana)

YEAR		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr Avg.
2005	Price	6.15	6.11	6.93	7.20	6.49	7.15	7.60	9.20	13.80	13.50	10.33	13.16	8.97
2006	Price	8.72	7.64	6.88	7.16	6.28	6.21	6.06	7.23	5.01	5.71	7.32	6.88	6.76
2007	Price	6.43	8.03	7.10	7.59	7.63	7.42	6.21	6.27	6.04	6.70	7.10	7.12	6.97
2008	Price	7.94	8.42	8.96	8.99	9.02	9.08	9.15	9.21	9.22	9.29	9.57	9.89	9.06
2009	Price	10.11	10.09	9.84	8.56	8.49	8.54	8.60	8.65	8.66	8.73	9.00	9.34	9.05
2010	Price	9.56	9.56	9.32	8.31	8.26	8.31	8.37	8.42	8.43	8.50	8.77	9.09	8.74
2011	Price	9.02	9.02	8.80	7.89	7.85	7.91	7.97	8.02	8.03	8.09	8.34	8.65	8.30
2012	Price	8.54	8.54	8.33	7.47	7.44	7.49	7.55	7.59	7.60	7.66	7.90	8.19	7.86
2013	Price	8.07	8.06	7.86	7.05	7.02	7.07	7.12	7.17	7.17	7.23	7.46	7.73	7.42
2014	Price	7.59	7.58	7.39	6.63	6.60	6.65	6.70	6.74	6.75	6.80	7.01	7.27	6.98
2015	Price	7.93	7.92	7.73	6.93	6.90	6.95	7.00	7.04	7.05	7.11	7.33	7.60	7.29
2016	Price	8.39	8.39	8.18	7.34	7.30	7.35	7.41	7.45	7.46	7.52	7.76	8.04	7.72
2017	Price	8.79	8.79	8.57	7.69	7.65	7.71	7.76	7.81	7.82	7.88	8.13	8.43	8.09
2018	Price	9.19	9.19	8.96	8.04	8.00	8.06	8.12	8.17	8.18	8.24	8.50	8.81	8.45
2019	Price	9.43	9.43	9.19	8.25	8.21	8.26	8.33	8.38	8.39	8.45	8.72	9.04	8.67
2020	Price	9.65	9.64	9.40	8.43	8.40	8.45	8.52	8.57	8.58	8.65	8.92	9.25	8.87
2021	Price	9.68	9.68	9.44	8.47	8.43	8.49	8.55	8.60	8.61	8.68	8.95	9.28	8.90
2022	Price	10.12	10.12	9.86	8.85	8.81	8.87	8.94	8.99	9.00	9.07	9.36	9.70	9.31
2023	Price	10.60	10.60	10.33	9.27	9.23	9.29	9.36	9.42	9.43	9.50	9.80	10.16	9.75
2024	Price	11.10	11.10	10.82	9.71	9.66	9.73	9.80	9.86	9.87	9.95	10.26	10.64	10.21
2025	Price	11.58	11.57	11.28	10.12	10.08	10.15	10.22	10.28	10.30	10.38	10.70	11.10	10.65
2026	Price	11.99	11.98	11.69	10.48	10.44	10.51	10.59	10.65	10.66	10.75	11.08	11.49	11.03
2027	Price	12.39	12.39	12.08	10.84	10.79	10.86	10.94	11.01	11.02	11.11	11.46	11.88	11.40
2028	Price	12.84	12.84	12.52	11.23	11.18	11.26	11.34	11.41	11.42	11.51	11.87	12.31	11.81
2029	Price	13.29	13.29	12.96	11.62	11.57	11.65	11.74	11.81	11.82	11.92	12.29	12.74	12.23
2030	Price	13.70	13.70	13.36	11.98	11.93	12.01	12.10	12.17	12.19	12.28	12.67	13.13	12.60

NOTES

1/ Jan.'00-Mar.'08 monthly actuals are simple averages of mid-range estimate of the low and high prices reported each business day by Gas Daily in their "Daily Price Survey."

2/ Source for gas price data: Gas Daily's "Daily Price Survey" for REGION--"Louisiana-Onshore South" and LOCATION--"Henry Hub".
Monthly prices are calculated from data reported in Platts Gas Daily--published by the McGraw-Hill Companies, Inc.
From the daily low and high prices reported under the heading "Common," the mid-range, or simple average, of these was calculated for each day.
These daily mid-range values were subsequently averaged over the number of days reported for each respective calendar month to arrive at the monthly historical prices used for each price series.

LONG TERM OUTLOOK for "SPOT" Gas: Sumas
($/Dth Price, Northwest Pipeline Corporation - Canadian Border @ Sumas
(US-$/Dth Difference, Sumas Basis Swap to Price at Henry Hub)

YEAR		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr Avg.
2005	Price	5.64	5.51	6.20	6.45	5.64	5.87	6.26	7.58	9.44	10.73	8.39	11.61	**7.44**
	Difference	-0.50	-0.61	-0.73	-0.75	-0.85	-1.29	-1.34	-1.63	-4.37	-2.77	-1.93	-1.55	-1.53
2006	Price	7.73	6.80	5.87	5.83	5.16	5.33	5.37	6.12	4.63	5.40	7.27	7.07	**6.05**
	Difference	-0.99	-0.85	-1.01	-1.32	-1.11	-0.88	-0.68	-1.11	-0.38	-0.32	-0.04	0.19	-0.71
2007	Price	6.56	7.18	6.53	6.81	6.85	6.40	5.56	5.38	5.32	6.66	7.49	7.54	**6.52**
	Difference	0.13	-0.84	-0.57	-0.78	-0.78	-1.02	-0.65	-0.88	-0.72	-0.03	0.39	0.42	-0.44
2008	Price	8.22	8.29	8.46	**8.04**	**8.04**	**8.12**	**8.38**	**8.46**	**8.47**	**8.89**	**9.82**	**10.16**	**8.61**
	Difference	0.28	-0.13	-0.50	-0.95	-0.98	-0.96	-0.77	-0.75	-0.75	-0.40	0.26	0.26	-0.45
2009	Price	**10.41**	**10.39**	**10.02**	**7.87**	**7.81**	**7.88**	**7.96**	**8.04**	**8.01**	**8.11**	**9.23**	**9.59**	**8.78**
	Difference	0.30	0.29	0.18	-0.70	-0.68	-0.65	-0.64	-0.61	-0.65	-0.62	0.23	0.25	-0.27
2010	Price	**9.80**	**9.80**	**9.48**	**7.86**	**7.81**	**7.87**	**7.93**	**7.98**	**7.98**	**8.05**	**8.77**	**9.09**	**8.53**
	Difference	0.24	0.24	0.15	-0.44	-0.44	-0.44	-0.44	-0.44	-0.44	-0.44	0.00	0.00	-0.21
2011	Price	**8.55**	**8.61**	**8.39**	**7.36**	**7.30**	**7.28**	**7.34**	**7.37**	**7.44**	**7.50**	**7.93**	**8.23**	**7.77**
	Difference	-0.47	-0.41	-0.40	-0.53	-0.56	-0.62	-0.63	-0.65	-0.59	-0.59	-0.42	-0.42	-0.53
2012	Price	**8.17**	**8.17**	**7.96**	**6.99**	**6.94**	**6.94**	**6.99**	**7.03**	**7.09**	**7.14**	**7.54**	**7.83**	**7.40**
	Difference	-0.37	-0.37	-0.37	-0.48	-0.50	-0.55	-0.55	-0.56	-0.51	-0.52	-0.36	-0.36	-0.46
2013	Price	**7.75**	**7.76**	**7.53**	**6.61**	**6.55**	**6.55**	**6.60**	**6.64**	**6.71**	**6.76**	**7.13**	**7.41**	**7.00**
	Difference	-0.31	-0.30	-0.33	-0.44	-0.47	-0.52	-0.52	-0.53	-0.46	-0.47	-0.32	-0.32	-0.42
2014	Price	**7.34**	**7.32**	**7.13**	**6.24**	**6.19**	**6.20**	**6.25**	**6.28**	**6.33**	**6.38**	**6.73**	**6.98**	**6.61**
	Difference	-0.24	-0.26	-0.27	-0.39	-0.41	-0.45	-0.45	-0.46	-0.42	-0.42	-0.28	-0.29	-0.36
2015	Price	**7.66**	**7.66**	**7.45**	**6.53**	**6.49**	**6.49**	**6.54**	**6.58**	**6.64**	**6.69**	**7.04**	**7.30**	**6.92**
	Difference	-0.27	-0.26	-0.28	-0.40	-0.41	-0.46	-0.46	-0.46	-0.41	-0.42	-0.29	-0.30	-0.37
2016	Price	**8.08**	**8.07**	**7.86**	**6.91**	**6.86**	**6.86**	**6.91**	**6.96**	**7.02**	**7.07**	**7.44**	**7.73**	**7.31**
	Difference	-0.31	-0.32	-0.32	-0.43	-0.44	-0.50	-0.50	-0.50	-0.44	-0.45	-0.32	-0.32	-0.40
2017	Price	**8.65**	**8.64**	**8.40**	**7.42**	**7.37**	**7.39**	**7.44**	**7.48**	**7.51**	**7.56**	**7.95**	**8.24**	**7.84**
	Difference	-0.14	-0.15	-0.17	-0.27	-0.29	-0.32	-0.32	-0.33	-0.31	-0.32	-0.18	-0.18	-0.25
2018	Price	**8.98**	**8.94**	**8.70**	**7.68**	**7.62**	**7.64**	**7.69**	**7.73**	**7.83**	**7.89**	**8.27**	**8.58**	**8.13**
	Difference	-0.21	-0.24	-0.26	-0.36	-0.38	-0.42	-0.43	-0.43	-0.35	-0.35	-0.23	-0.23	-0.32
2019	Price	**9.28**	**9.26**	**8.99**	**7.96**	**7.88**	**7.91**	**7.97**	**8.02**	**8.06**	**8.13**	**8.54**	**8.86**	**8.41**
	Difference	-0.15	-0.17	-0.20	-0.29	-0.33	-0.35	-0.36	-0.36	-0.32	-0.32	-0.18	-0.18	-0.27
2020	Price	**9.54**	**9.52**	**9.25**	**8.17**	**8.09**	**8.12**	**8.16**	**8.22**	**8.32**	**8.40**	**8.84**	**9.17**	**8.65**
	Difference	-0.11	-0.12	-0.15	-0.26	-0.31	-0.34	-0.35	-0.35	-0.26	-0.24	-0.08	-0.08	-0.22
2021	Price	**9.49**	**9.46**	**9.19**	**8.12**	**8.04**	**8.09**	**8.14**	**8.20**	**8.23**	**8.32**	**8.76**	**9.09**	**8.59**
	Difference	-0.19	-0.22	-0.24	-0.34	-0.39	-0.40	-0.41	-0.41	-0.39	-0.36	-0.19	-0.19	-0.31
2022	Price	**9.72**	**9.72**	**9.43**	**8.33**	**8.23**	**8.29**	**8.34**	**8.40**	**8.43**	**8.51**	**8.98**	**9.30**	**8.81**
	Difference	-0.40	-0.39	-0.43	-0.52	-0.57	-0.58	-0.60	-0.59	-0.57	-0.56	-0.37	-0.39	-0.50
2023	Price	**10.17**	**10.16**	**9.87**	**8.71**	**8.61**	**8.55**	**8.60**	**8.64**	**8.66**	**8.73**	**9.24**	**9.56**	**9.13**
	Difference	-0.43	-0.44	-0.46	-0.56	-0.62	-0.74	-0.76	-0.78	-0.77	-0.77	-0.57	-0.60	-0.63
2024	Price	**10.70**	**10.58**	**10.37**	**9.14**	**9.04**	**9.10**	**9.16**	**9.22**	**9.26**	**9.34**	**9.86**	**10.21**	**9.67**
	Difference	-0.40	-0.51	-0.45	-0.56	-0.62	-0.62	-0.64	-0.64	-0.62	-0.61	-0.40	-0.43	-0.54
2025	Price	**11.16**	**11.14**	**10.86**	**9.57**	**9.45**	**9.53**	**9.59**	**9.65**	**9.68**	**9.79**	**10.29**	**10.66**	**10.11**
	Difference	-0.42	-0.43	-0.42	-0.56	-0.62	-0.62	-0.63	-0.63	-0.62	-0.58	-0.41	-0.43	-0.53
2026	Price	**11.58**	**11.57**	**11.25**	**9.94**	**9.81**	**9.91**	**9.97**	**10.04**	**10.07**	**10.15**	**10.67**	**11.05**	**10.50**
	Difference	-0.41	-0.42	-0.43	-0.54	-0.62	-0.60	-0.62	-0.61	-0.60	-0.59	-0.41	-0.44	-0.52
2027	Price	**12.12**	**12.12**	**11.79**	**10.33**	**10.22**	**10.29**	**10.36**	**10.43**	**10.45**	**10.58**	**11.16**	**11.57**	**10.95**
	Difference	-0.27	-0.27	-0.29	-0.50	-0.57	-0.57	-0.59	-0.58	-0.57	-0.52	-0.30	-0.31	-0.45
2028	Price	**12.63**	**12.63**	**12.30**	**10.80**	**10.69**	**10.75**	**10.83**	**10.90**	**10.93**	**11.07**	**11.64**	**12.08**	**11.44**
	Difference	-0.21	-0.20	-0.22	-0.43	-0.49	-0.50	-0.51	-0.51	-0.49	-0.44	-0.23	-0.23	-0.37
2029	Price	**13.17**	**13.18**	**12.83**	**11.28**	**11.18**	**11.25**	**11.33**	**11.41**	**11.43**	**11.57**	**12.15**	**12.60**	**11.95**
	Difference	-0.12	-0.11	-0.12	-0.34	-0.39	-0.40	-0.41	-0.41	-0.40	-0.35	-0.14	-0.14	-0.28
2030	Price	**13.68**	**13.70**	**13.33**	**11.73**	**11.62**	**11.69**	**11.77**	**11.85**	**11.89**	**11.98**	**12.60**	**13.09**	**12.41**
	Difference	-0.02	0.00	-0.02	-0.25	-0.30	-0.32	-0.33	-0.32	-0.30	-0.30	-0.07	-0.05	-0.19

NOTES:

1/ Jan.'00-Mar.'08 monthly actuals are simple averages of mid-range estimate of the low and high prices reported each business day by Gas Daily in their "Daily Price Survey."

2/ Forecasted price levels for Apr.'08 through Dec.'30 are the sum of Henry Hub projected price plus basis swap from NYMEX Clearport(sm).

3/ Source for gas price data: Gas Daily's "Daily Price Survey" for REGION--"Others" and LOCATION--"Northwest, Can. Bdr. (Sumas)."
Monthly prices are calculated from data reported in Platts Gas Daily--published by the McGraw-Hill Companies, Inc.
From the daily low and high prices reported under the heading "Common," the mid-range, or simple average, of these was calculated for each day.
These daily mid-range values were subsequently averaged over the number of days reported for each respective calendar month to arrive at the monthly historical prices used for each price series.

LONG TERM OUTLOOK for "SPOT" Gas: Stanfield
($/Dth Price, Interconnect between Northwest and PG&E GT-NW @ Stanfield, OR.
(US-$/Dth Difference, Stanfield Basis to Henry Hub)

YEAR	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr Avg.
2005 Price	5.60	5.57	6.33	6.39	5.77	6.01	6.42	7.87	9.36	10.49	8.19	11.47	**7.46**
Difference	-0.55	-0.54	-0.59	-0.81	-0.72	-1.14	-1.18	-1.33	-4.45	-3.01	-2.13	-1.68	-1.51
2006 Price	7.72	6.52	5.88	5.97	5.25	5.46	5.47	6.24	4.37	5.37	6.98	6.83	**6.01**
Difference	-1.00	-1.13	-0.99	-1.18	-1.02	-0.75	-0.58	-0.99	-0.64	-0.35	-0.34	-0.04	-0.75
2007 Price	6.25	7.08	6.48	6.88	6.92	6.55	5.70	5.47	5.39	6.30	6.63	6.82	**6.37**
Difference	-0.19	-0.95	-0.62	-0.71	-0.71	-0.87	-0.51	-0.80	-0.65	-0.40	-0.46	-0.30	-0.60
2008 Price	7.56	8.08	8.61	**8.20**	**8.25**	**8.36**	**8.55**	**8.63**	**8.57**	**8.64**	**8.95**	**9.28**	**8.47**
Difference	-0.38	-0.34	-0.35	-0.78	-0.78	-0.72	-0.60	-0.58	-0.65	-0.65	-0.62	-0.62	-0.59
2009 Price	**9.49**	**9.46**	**9.20**	**7.91**	**7.85**	**7.93**	**8.00**	**8.07**	**8.07**	**8.13**	**8.47**	**8.81**	**8.45**
Difference	-0.63	-0.63	-0.64	-0.65	-0.64	-0.61	-0.59	-0.58	-0.59	-0.60	-0.53	-0.52	-0.60
2010 Price	**9.05**	**9.04**	**8.78**	**7.77**	**7.73**	**7.80**	**7.88**	**7.94**	**7.93**	**8.00**	**8.32**	**8.65**	**8.24**
Difference	-0.51	-0.52	-0.54	-0.54	-0.53	-0.51	-0.50	-0.49	-0.49	-0.50	-0.44	-0.44	-0.50
2011 Price	**8.83**	**8.90**	**8.67**	**7.80**	**7.74**	**7.74**	**7.81**	**7.84**	**7.92**	**7.99**	**8.25**	**8.56**	**8.17**
Difference	-0.20	-0.12	-0.12	-0.09	-0.11	-0.17	-0.15	-0.17	-0.11	-0.09	-0.09	-0.09	-0.13
2012 Price	**8.48**	**8.52**	**8.29**	**7.48**	**7.42**	**7.43**	**7.51**	**7.55**	**7.61**	**7.68**	**7.91**	**8.21**	**7.84**
Difference	-0.06	-0.03	-0.04	0.01	-0.01	-0.06	-0.03	-0.05	0.01	0.02	0.01	0.02	-0.02
2013 Price	**8.09**	**8.13**	**7.89**	**7.13**	**7.07**	**7.07**	**7.14**	**7.17**	**7.25**	**7.32**	**7.54**	**7.82**	**7.47**
Difference	0.02	0.06	0.03	0.07	0.05	0.00	0.02	0.00	0.08	0.09	0.08	0.09	0.05
2014 Price	**7.68**	**7.71**	**7.50**	**6.76**	**6.71**	**6.71**	**6.79**	**6.81**	**6.88**	**6.95**	**7.15**	**7.41**	**7.09**
Difference	0.10	0.12	0.10	0.13	0.11	0.06	0.09	0.07	0.13	0.15	0.14	0.14	0.11
2015 Price	**8.05**	**8.10**	**7.87**	**7.12**	**7.07**	**7.07**	**7.14**	**7.17**	**7.24**	**7.31**	**7.53**	**7.79**	**7.45**
Difference	0.13	0.17	0.14	0.19	0.17	0.12	0.14	0.13	0.19	0.20	0.20	0.19	0.16
2016 Price	**8.46**	**8.49**	**8.26**	**7.48**	**7.41**	**7.41**	**7.49**	**7.53**	**7.60**	**7.67**	**7.89**	**8.18**	**7.82**
Difference	0.07	0.10	0.09	0.15	0.11	0.06	0.08	0.07	0.14	0.15	0.13	0.14	0.11
2017 Price	**8.92**	**8.95**	**8.71**	**7.88**	**7.82**	**7.83**	**7.92**	**7.95**	**8.00**	**8.06**	**8.30**	**8.60**	**8.25**
Difference	0.13	0.16	0.14	0.19	0.17	0.13	0.15	0.14	0.18	0.18	0.18	0.18	0.16
2018 Price	**9.34**	**9.35**	**9.11**	**8.23**	**8.16**	**8.18**	**8.25**	**8.30**	**8.38**	**8.46**	**8.72**	**9.03**	**8.62**
Difference	0.15	0.16	0.15	0.19	0.16	0.12	0.13	0.13	0.20	0.22	0.22	0.22	0.17
2019 Price	**9.69**	**9.71**	**9.46**	**8.55**	**8.48**	**8.51**	**8.59**	**8.64**	**8.70**	**8.78**	**9.06**	**9.38**	**8.96**
Difference	0.26	0.29	0.27	0.30	0.27	0.24	0.26	0.26	0.31	0.33	0.34	0.34	0.29
2020 Price	**9.95**	**9.96**	**9.70**	**8.75**	**8.68**	**8.71**	**8.81**	**8.85**	**8.94**	**9.03**	**9.32**	**9.66**	**9.20**
Difference	0.30	0.32	0.30	0.32	0.28	0.25	0.29	0.28	0.36	0.38	0.41	0.41	0.33
2021 Price	**9.95**	**9.95**	**9.71**	**8.76**	**8.67**	**8.72**	**8.81**	**8.85**	**8.91**	**8.99**	**9.31**	**9.63**	**9.19**
Difference	0.26	0.28	0.27	0.29	0.25	0.23	0.26	0.25	0.29	0.31	0.36	0.35	0.28
2022 Price	**10.31**	**10.34**	**10.07**	**9.08**	**8.99**	**9.04**	**9.16**	**9.18**	**9.24**	**9.32**	**9.65**	**9.97**	**9.53**
Difference	0.19	0.22	0.21	0.23	0.18	0.17	0.23	0.19	0.24	0.25	0.29	0.27	0.22
2023 Price	**10.81**	**10.84**	**10.56**	**9.50**	**9.43**	**9.44**	**9.61**	**9.60**	**9.62**	**9.69**	**10.00**	**10.34**	**9.95**
Difference	0.21	0.24	0.23	0.23	0.20	0.15	0.25	0.18	0.19	0.19	0.20	0.17	0.20
2024 Price	**11.22**	**11.25**	**10.91**	**9.83**	**9.78**	**9.83**	**10.07**	**10.00**	**10.02**	**10.10**	**10.44**	**10.80**	**10.35**
Difference	0.12	0.15	0.09	0.12	0.11	0.10	0.27	0.14	0.15	0.15	0.18	0.16	0.15
2025 Price	**11.63**	**11.68**	**11.34**	**10.19**	**10.14**	**10.21**	**10.32**	**10.35**	**10.37**	**10.47**	**10.83**	**11.21**	**10.73**
Difference	0.06	0.11	0.06	0.07	0.06	0.07	0.09	0.06	0.08	0.09	0.13	0.12	0.08
2026 Price	**11.99**	**12.04**	**11.69**	**10.51**	**10.42**	**10.50**	**10.65**	**10.68**	**10.70**	**10.79**	**11.16**	**11.56**	**11.06**
Difference	0.00	0.05	0.01	0.02	-0.02	0.00	0.06	0.03	0.04	0.05	0.07	0.07	0.03
2027 Price	**12.27**	**12.31**	**11.96**	**10.74**	**10.66**	**10.73**	**10.90**	**10.92**	**10.93**	**11.04**	**11.40**	**11.83**	**11.31**
Difference	-0.12	-0.08	-0.12	-0.10	-0.13	-0.13	-0.04	-0.09	-0.09	-0.07	-0.06	-0.05	-0.09
2028 Price	**12.75**	**12.77**	**12.44**	**11.17**	**11.08**	**11.15**	**11.34**	**11.36**	**11.37**	**11.48**	**11.85**	**12.29**	**11.75**
Difference	-0.09	-0.06	-0.08	-0.06	-0.10	-0.10	-0.01	-0.05	-0.06	-0.03	-0.03	-0.02	-0.06
2029 Price	**13.32**	**13.35**	**13.00**	**11.68**	**11.59**	**11.66**	**11.85**	**11.87**	**11.88**	**12.02**	**12.39**	**12.85**	**12.29**
Difference	0.02	0.06	0.04	0.06	0.02	0.01	0.11	0.06	0.06	0.10	0.10	0.11	0.06
2030 Price	**13.86**	**13.88**	**13.53**	**12.16**	**12.06**	**12.13**	**12.33**	**12.35**	**12.37**	**12.49**	**12.88**	**13.38**	**12.79**
Difference	0.16	0.19	0.18	0.18	0.14	0.12	0.23	0.18	0.18	0.21	0.21	0.24	0.19

NOTES:

1/ Jan.'00-Mar.'08 monthly actuals are simple averages of mid-range estimate of the low and high prices reported each business day by Gas Daily in their "Daily Price Survey."

2/ Forecasted price levels for Apr.'08 through Dec.'30 are the sum of Henry Hub projected price plus basis swap from NYMEX Clearport(sm). -$0.15

3/ Source for gas price data: Gas Daily's "Daily Price Survey" for REGION--"Others" and LOCATION--"Stanfield, OR"
Monthly prices are calculated from data reported in Platts Gas Daily--published by the McGraw-Hill Companies, Inc.
From the daily low and high prices reported under the heading "Common," the mid-range, or simple average, of these was calculated for each day.
These daily mid-range values were subsequently averaged over the number of days reported for each respective calendar month to arrive at the monthly historical prices used for each price series.

LONG TERM OUTLOOK for "SPOT" Gas: Southern California Gas
($/Dth Price @ California Border Spot Price)
($/Dth Difference, SoCal Border Basis to Price at Henry Hub

YEAR		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr Avg.
2005	Price	5.71	5.73	6.50	6.72	5.92	6.17	6.75	8.01	9.72	11.04	7.87	11.57	**7.64**
	Difference	-0.44	-0.38	-0.43	-0.49	-0.57	-0.99	-0.86	-1.19	-4.08	-2.46	-2.46	-1.59	-1.33
2006	Price	7.71	6.82	5.92	6.07	5.41	5.79	5.97	6.75	4.80	5.47	6.44	6.85	**6.17**
	Difference	-1.01	-0.83	-0.95	-1.09	-0.86	-0.42	-0.09	-0.48	-0.21	-0.24	-0.87	-0.03	-0.59
2007	Price	6.45	7.19	6.23	6.99	7.18	6.88	6.01	5.82	5.57	6.59	6.17	6.89	**6.50**
	Difference	0.02	-0.83	-0.87	-0.60	-0.46	-0.54	-0.20	-0.44	-0.48	-0.11	-0.93	-0.23	-0.47
2008	Price	7.67	8.17	8.50	**8.34**	**8.40**	**8.57**	**8.78**	**8.86**	**8.74**	**8.67**	**8.73**	**9.24**	**8.56**
	Difference	-0.27	-0.25	-0.46	-0.65	-0.63	-0.51	-0.37	-0.34	-0.47	-0.62	-0.84	-0.65	-0.51
2009	Price	**9.51**	**9.50**	**9.26**	**8.03**	**7.95**	**8.00**	**8.12**	**8.18**	**8.18**	**8.13**	**8.34**	**8.69**	**8.49**
	Difference	-0.60	-0.59	-0.58	-0.54	-0.54	-0.54	-0.47	-0.47	-0.48	-0.60	-0.65	-0.64	-0.56
2010	Price	**8.88**	**8.89**	**8.67**	**7.91**	**7.87**	**7.92**	**7.98**	**8.03**	**8.04**	**8.10**	**8.19**	**8.51**	**8.25**
	Difference	-0.68	-0.67	-0.66	-0.39	-0.39	-0.39	-0.39	-0.39	-0.39	-0.39	-0.58	-0.58	-0.49
2011	Price	**8.80**	**8.85**	**8.60**	**7.75**	**7.69**	**7.74**	**7.86**	**7.90**	**7.93**	**7.97**	**8.20**	**8.50**	**8.15**
	Difference	-0.23	-0.17	-0.20	-0.14	-0.16	-0.16	-0.11	-0.11	-0.10	-0.11	-0.14	-0.15	-0.15
2012	Price	**8.35**	**8.37**	**8.12**	**7.31**	**7.27**	**7.32**	**7.44**	**7.48**	**7.50**	**7.54**	**7.74**	**8.03**	**7.71**
	Difference	-0.20	-0.17	-0.21	-0.16	-0.17	-0.17	-0.10	-0.11	-0.10	-0.12	-0.16	-0.16	-0.15
2013	Price	**7.93**	**7.97**	**7.72**	**6.96**	**6.91**	**6.96**	**7.07**	**7.11**	**7.13**	**7.16**	**7.37**	**7.64**	**7.33**
	Difference	-0.13	-0.10	-0.14	-0.10	-0.11	-0.11	-0.05	-0.06	-0.05	-0.06	-0.09	-0.09	-0.09
2014	Price	**7.53**	**7.57**	**7.31**	**6.61**	**6.56**	**6.60**	**6.72**	**6.74**	**6.77**	**6.81**	**6.99**	**7.24**	**6.95**
	Difference	-0.06	-0.01	-0.08	-0.02	-0.04	-0.05	0.02	0.00	0.02	0.01	-0.02	-0.03	-0.02
2015	Price	**7.88**	**7.91**	**7.66**	**6.90**	**6.87**	**6.91**	**7.04**	**7.07**	**7.08**	**7.12**	**7.33**	**7.58**	**7.28**
	Difference	-0.05	-0.02	-0.07	-0.03	-0.03	-0.04	0.04	0.03	0.03	0.02	0.01	-0.02	-0.01
2016	Price	**8.36**	**8.39**	**8.15**	**7.36**	**7.31**	**7.35**	**7.48**	**7.53**	**7.55**	**7.58**	**7.81**	**8.09**	**7.75**
	Difference	-0.03	0.00	-0.03	0.02	0.01	0.00	0.07	0.08	0.09	0.06	0.05	0.05	0.03
2017	Price	**8.80**	**8.84**	**8.57**	**7.75**	**7.68**	**7.75**	**7.86**	**7.91**	**7.94**	**7.97**	**8.21**	**8.50**	**8.15**
	Difference	0.01	0.05	0.00	0.06	0.03	0.05	0.09	0.10	0.12	0.09	0.08	0.07	0.06
2018	Price	**9.21**	**9.23**	**8.95**	**8.07**	**8.02**	**8.06**	**8.19**	**8.23**	**8.27**	**8.33**	**8.58**	**8.89**	**8.50**
	Difference	0.02	0.04	-0.01	0.03	0.02	0.01	0.08	0.07	0.10	0.09	0.08	0.08	0.05
2019	Price	**9.51**	**9.54**	**9.27**	**8.36**	**8.33**	**8.39**	**8.49**	**8.54**	**8.57**	**8.61**	**8.88**	**9.19**	**8.81**
	Difference	0.08	0.12	0.08	0.12	0.12	0.12	0.16	0.16	0.18	0.16	0.16	0.15	0.13
2020	Price	**9.80**	**9.81**	**9.54**	**8.62**	**8.56**	**8.61**	**8.74**	**8.78**	**8.83**	**8.89**	**9.15**	**9.49**	**9.07**
	Difference	0.16	0.17	0.14	0.18	0.17	0.16	0.22	0.21	0.25	0.25	0.23	0.25	0.20
2021	Price	**9.84**	**9.86**	**9.58**	**8.65**	**8.60**	**8.66**	**8.78**	**8.82**	**8.85**	**8.91**	**9.19**	**9.51**	**9.11**
	Difference	0.16	0.18	0.14	0.19	0.17	0.17	0.23	0.22	0.24	0.23	0.24	0.23	0.20
2022	Price	**10.26**	**10.30**	**10.00**	**9.03**	**8.97**	**9.04**	**9.19**	**9.20**	**9.24**	**9.29**	**9.59**	**9.91**	**9.50**
	Difference	0.14	0.18	0.14	0.18	0.16	0.17	0.25	0.21	0.24	0.22	0.23	0.21	0.19
2023	Price	**10.73**	**10.77**	**10.46**	**9.42**	**9.38**	**9.43**	**9.61**	**9.61**	**9.62**	**9.66**	**9.96**	**10.30**	**9.91**
	Difference	0.13	0.17	0.12	0.15	0.15	0.14	0.24	0.19	0.19	0.16	0.16	0.14	0.16
2024	Price	**11.16**	**11.18**	**10.86**	**9.80**	**9.75**	**9.82**	**10.05**	**10.00**	**10.01**	**10.08**	**10.39**	**10.73**	**10.32**
	Difference	0.06	0.09	0.04	0.09	0.09	0.09	0.24	0.14	0.14	0.13	0.12	0.09	0.11
2025	Price	**11.61**	**11.65**	**11.32**	**10.19**	**10.14**	**10.23**	**10.34**	**10.39**	**10.40**	**10.47**	**10.80**	**11.17**	**10.73**
	Difference	0.03	0.08	0.04	0.07	0.06	0.09	0.12	0.11	0.10	0.09	0.09	0.07	0.08
2026	Price	**12.00**	**12.03**	**11.68**	**10.53**	**10.46**	**10.57**	**10.71**	**10.75**	**10.76**	**10.83**	**11.16**	**11.57**	**11.09**
	Difference	0.01	0.05	0.00	0.05	0.02	0.06	0.12	0.10	0.10	0.08	0.07	0.07	0.06
2027	Price	**12.43**	**12.48**	**12.13**	**10.92**	**10.86**	**10.93**	**11.09**	**11.12**	**11.11**	**11.19**	**11.53**	**11.95**	**11.48**
	Difference	0.04	0.09	0.05	0.09	0.07	0.06	0.15	0.11	0.09	0.08	0.07	0.07	0.08
2028	Price	**12.90**	**12.94**	**12.58**	**11.33**	**11.27**	**11.34**	**11.51**	**11.55**	**11.54**	**11.62**	**11.97**	**12.40**	**11.91**
	Difference	0.05	0.10	0.07	0.10	0.09	0.08	0.17	0.14	0.11	0.11	0.09	0.09	0.10
2029	Price	**13.48**	**13.53**	**13.15**	**11.86**	**11.78**	**11.86**	**12.05**	**12.07**	**12.07**	**12.16**	**12.52**	**12.98**	**12.46**
	Difference	0.19	0.24	0.19	0.24	0.21	0.21	0.31	0.26	0.25	0.25	0.23	0.24	0.23
2030	Price	**14.04**	**14.09**	**13.70**	**12.35**	**12.27**	**12.35**	**12.55**	**12.57**	**12.57**	**12.67**	**13.05**	**13.53**	**12.98**
	Difference	0.34	0.39	0.34	0.37	0.35	0.34	0.45	0.40	0.39	0.39	0.38	0.40	0.38

NOTES:

1/ Jan.'00-Mar.'08 monthly actuals are simple averages of mid-range estimate of the low and high prices reported each business day by Gas Daily in their "Daily Price Survey."

2/ Forecasted price levels for Apr.'08 through Dec.'30 are the sum of Henry Hub projected price plus basis swap from NYMEX Clearport(sm).

3/ Source for gas price data: Gas Daily's "Daily Price Survey" for REGION--"Others" and LOCATION--"SoCal gas, large pkgs".
Monthly prices are calculated from data reported in Platts Gas Daily--published by the McGraw-Hill Companies, Inc.
From the daily low and high prices reported under the heading "Common," the mid-range, or simple average, of these was calculated for each day.
These daily mid-range values were subsequently averaged over the number of days reported for each respective calendar month to arrive at the monthly historical prices used for each price series.

LONG TERM OUTLOOK for PG&E Citygate
($/Dth Price @ Pacific Gas & Electric Citygate)
($/Dth Difference, PG&E Citygate Basis to Price at Henry Hub

YEAR		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr Avg.
2005	Price	6.05	6.05	6.87	7.06	6.22	6.39	6.79	8.22	10.07	11.43	8.63	11.99	**7.98**
	Difference	-0.09	-0.06	-0.05	-0.15	-0.27	-0.76	-0.82	-0.98	-3.73	-2.07	-1.70	-1.17	-0.99
2006	Price	8.11	7.02	6.34	6.43	5.73	5.99	6.16	7.15	5.16	5.61	7.25	7.20	**6.51**
	Difference	-0.61	-0.62	-0.54	-0.72	-0.55	-0.23	0.11	-0.08	0.15	-0.11	-0.07	0.32	-0.25
2007	Price	6.83	7.60	6.94	7.41	7.53	7.15	6.31	6.06	5.99	7.00	7.11	7.22	**6.93**
	Difference	0.39	-0.43	-0.15	-0.18	-0.11	-0.27	0.10	-0.21	-0.06	0.30	0.01	0.10	-0.04
2008	Price	7.92	8.51	9.00	**8.80**	**8.85**	**8.97**	**9.13**	**9.22**	**9.19**	**9.22**	**9.49**	**9.82**	**9.01**
	Difference	-0.02	0.09	0.04	-0.19	-0.18	-0.12	-0.02	0.01	-0.03	-0.08	-0.08	-0.08	-0.05
2009	Price	**9.91**	**9.89**	**9.69**	**8.54**	**8.46**	**8.52**	**8.59**	**8.65**	**8.65**	**8.67**	**8.94**	**9.28**	**8.99**
	Difference	-0.20	-0.20	-0.14	-0.02	-0.02	-0.02	-0.01	0.00	0.00	-0.06	-0.06	-0.05	-0.07
2010	Price	**9.49**	**9.49**	**9.26**	**8.42**	**8.37**	**8.42**	**8.48**	**8.53**	**8.54**	**8.60**	**8.80**	**9.12**	**8.79**
	Difference	-0.07	-0.07	-0.06	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.03	0.03	0.05
2011	Price	**9.24**	**9.31**	**9.08**	**8.24**	**8.18**	**8.18**	**8.28**	**8.32**	**8.39**	**8.48**	**8.73**	**9.05**	**8.62**
	Difference	0.22	0.29	0.29	0.35	0.32	0.27	0.31	0.30	0.37	0.39	0.39	0.40	0.33
2012	Price	**8.94**	**8.97**	**8.74**	**7.95**	**7.89**	**7.90**	**8.00**	**8.04**	**8.12**	**8.20**	**8.43**	**8.75**	**8.33**
	Difference	0.39	0.43	0.41	0.48	0.45	0.41	0.46	0.45	0.52	0.54	0.53	0.55	0.47
2013	Price	**8.55**	**8.59**	**8.35**	**7.60**	**7.54**	**7.56**	**7.65**	**7.68**	**7.76**	**7.84**	**8.07**	**8.36**	**7.96**
	Difference	0.49	0.53	0.49	0.55	0.52	0.49	0.52	0.51	0.59	0.61	0.61	0.63	0.55
2014	Price	**8.17**	**8.19**	**7.98**	**7.26**	**7.21**	**7.21**	**7.30**	**7.33**	**7.41**	**7.49**	**7.70**	**7.97**	**7.60**
	Difference	0.59	0.61	0.58	0.63	0.61	0.57	0.61	0.59	0.66	0.69	0.69	0.70	0.63
2015	Price	**8.56**	**8.60**	**8.36**	**7.63**	**7.59**	**7.58**	**7.67**	**7.70**	**7.79**	**7.87**	**8.10**	**8.37**	**7.98**
	Difference	0.63	0.67	0.63	0.70	0.69	0.63	0.67	0.66	0.74	0.76	0.77	0.78	0.69
2016	Price	**8.97**	**8.99**	**8.76**	**8.00**	**7.92**	**7.92**	**8.02**	**8.06**	**8.14**	**8.22**	**8.46**	**8.76**	**8.35**
	Difference	0.58	0.61	0.59	0.66	0.62	0.57	0.61	0.61	0.68	0.70	0.70	0.72	0.64
2017	Price	**9.45**	**9.48**	**9.23**	**8.41**	**8.35**	**8.36**	**8.45**	**8.49**	**8.55**	**8.63**	**8.89**	**9.20**	**8.79**
	Difference	0.66	0.69	0.66	0.72	0.69	0.65	0.68	0.68	0.73	0.75	0.76	0.77	0.70
2018	Price	**9.89**	**9.89**	**9.65**	**8.79**	**8.71**	**8.73**	**8.83**	**8.87**	**8.96**	**9.06**	**9.33**	**9.66**	**9.20**
	Difference	0.70	0.70	0.69	0.75	0.71	0.67	0.71	0.71	0.79	0.83	0.84	0.85	0.75
2019	Price	**10.28**	**10.29**	**10.04**	**9.14**	**9.06**	**9.10**	**9.20**	**9.26**	**9.32**	**9.42**	**9.72**	**10.05**	**9.57**
	Difference	0.85	0.87	0.85	0.89	0.85	0.83	0.87	0.88	0.94	0.97	1.00	1.01	0.90
2020	Price	**10.55**	**10.55**	**10.29**	**9.36**	**9.28**	**9.32**	**9.44**	**9.50**	**9.58**	**9.69**	**9.99**	**10.34**	**9.83**
	Difference	0.91	0.91	0.89	0.92	0.88	0.86	0.92	0.93	1.00	1.05	1.07	1.10	0.95
2021	Price	**10.56**	**10.57**	**10.32**	**9.38**	**9.29**	**9.34**	**9.46**	**9.51**	**9.57**	**9.68**	**10.00**	**10.35**	**9.83**
	Difference	0.88	0.89	0.88	0.92	0.86	0.85	0.91	0.90	0.96	1.00	1.05	1.07	0.93
2022	Price	**10.95**	**10.97**	**10.71**	**9.72**	**9.62**	**9.68**	**9.83**	**9.86**	**9.92**	**10.02**	**10.36**	**10.70**	**10.20**
	Difference	0.83	0.86	0.84	0.87	0.82	0.81	0.90	0.87	0.92	0.95	1.01	1.00	0.89
2023	Price	**11.48**	**11.49**	**11.22**	**10.17**	**10.08**	**10.12**	**10.29**	**10.30**	**10.34**	**10.43**	**10.77**	**11.12**	**10.65**
	Difference	0.88	0.90	0.88	0.90	0.85	0.82	0.93	0.88	0.91	0.93	0.97	0.95	0.90
2024	Price	**11.91**	**11.96**	**11.62**	**10.56**	**10.50**	**10.55**	**10.78**	**10.75**	**10.79**	**10.90**	**11.24**	**11.61**	**11.10**
	Difference	0.81	0.86	0.80	0.85	0.83	0.82	0.97	0.89	0.92	0.95	0.98	0.97	0.89
2025	Price	**12.37**	**12.43**	**12.08**	**10.95**	**10.89**	**10.97**	**11.08**	**11.13**	**11.18**	**11.29**	**11.66**	**12.05**	**11.51**
	Difference	0.79	0.86	0.80	0.83	0.81	0.82	0.86	0.84	0.88	0.91	0.96	0.95	0.86
2026	Price	**12.75**	**12.81**	**12.45**	**11.29**	**11.20**	**11.29**	**11.45**	**11.49**	**11.54**	**11.65**	**12.02**	**12.44**	**11.86**
	Difference	0.76	0.83	0.76	0.81	0.76	0.79	0.86	0.84	0.88	0.90	0.94	0.95	0.84
2027	Price	**13.19**	**13.25**	**12.89**	**11.72**	**11.64**	**11.69**	**11.87**	**11.90**	**11.93**	**12.05**	**12.41**	**12.85**	**12.28**
	Difference	0.79	0.86	0.81	0.88	0.85	0.83	0.92	0.89	0.91	0.94	0.95	0.98	0.88
2028	Price	**13.70**	**13.75**	**13.38**	**12.17**	**12.08**	**12.14**	**12.33**	**12.37**	**12.40**	**12.52**	**12.89**	**13.34**	**12.76**
	Difference	0.86	0.91	0.87	0.94	0.90	0.89	0.99	0.96	0.98	1.01	1.02	1.03	0.95
2029	Price	**14.32**	**14.37**	**13.99**	**12.72**	**12.63**	**12.69**	**12.89**	**12.92**	**12.97**	**13.09**	**13.48**	**13.95**	**13.34**
	Difference	1.02	1.08	1.03	1.10	1.06	1.04	1.15	1.11	1.14	1.18	1.19	1.21	1.11
2030	Price	**14.92**	**14.95**	**14.57**	**13.25**	**13.16**	**13.21**	**13.42**	**13.46**	**13.50**	**13.64**	**14.04**	**14.54**	**13.89**
	Difference	1.21	1.25	1.22	1.27	1.23	1.20	1.32	1.28	1.31	1.35	1.37	1.40	1.29

NOTES:

1/ Jan.'00-Mar.'08 monthly actuals are simple averages of mid-range estimate of the low and high prices reported each business day by Gas Daily in their "Daily Price Survey."

2/ Forecasted price levels for Apr.'08 through Dec.'30 are the sum of Henry Hub projected price plus basis swap from NYMEX Clearport(sm).

3/ Source for gas price data: Gas Daily's "Daily Price Survey" for REGION--"California" and LOCATION--"PG&E city-gate".
Monthly prices are calculated from data reported in Platts Gas Daily--published by the McGraw-Hill Companies, Inc.
From the daily low and high prices reported under the heading "Common," the mid-range, or simple average, of these was calculated for each day.
These daily mid-range values were subsequently averaged over the number of days reported for each respective calendar month to arrive at the monthly historical prices used for each price series.

Commodity Price of San Juan Basin via EPNG Dlvd. to Ca/Az
($/Dth @ Ca/Az Border)

YEAR	Supply Component	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr Avg.
2005	SJB to Ca/Az via EPNG	5.66	5.70	6.40	6.59	5.78	6.02	6.56	7.89	9.56	10.85	7.77	11.42	**7.52**
	M/L Fuel + Commodity Transp.	0.20	0.20	0.23	0.23	0.21	0.21	0.23	0.28	0.33	0.37	0.27	0.39	0.26
2006	SJB to Ca/Az via EPNG	7.53	6.72	5.86	5.98	5.29	5.62	5.70	6.58	4.57	5.24	6.30	6.56	**6.00**
	M/L Fuel + Commodity Transp.	0.20	0.18	0.16	0.16	0.15	0.16	0.16	0.18	0.13	0.15	0.17	0.18	0.17
2007	SJB to Ca/Az via EPNG	6.39	7.13	6.08	6.93	6.92	6.78	5.68	5.75	5.43	6.45	5.92	6.77	**6.35**
	M/L Fuel + Commodity Transp.	0.20	0.22	0.19	0.22	0.22	0.21	0.18	0.18	0.17	0.20	0.19	0.21	0.20
2008	SJB to Ca/Az via EPNG	7.66	8.11	8.34	**8.23**	**8.27**	**8.34**	**8.57**	**8.63**	**8.64**	**8.47**	**8.83**	**9.16**	**8.44**
	M/L Fuel + Commodity Transp.	0.23	0.24	0.25	0.25	0.25	0.25	0.26	0.26	0.26	0.25	0.26	0.27	0.25
2009	SJB to Ca/Az via EPNG	**9.39**	**9.36**	**9.10**	**7.94**	**7.86**	**7.92**	**7.98**	**8.03**	**8.04**	**8.11**	**8.33**	**8.67**	**8.39**
	M/L Fuel + Commodity Transp.	0.28	0.28	0.27	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.25	0.26	0.25
2010	SJB to Ca/Az via EPNG	**8.90**	**8.90**	**8.66**	**7.80**	**7.75**	**7.81**	**7.87**	**7.92**	**7.93**	**8.00**	**8.12**	**8.45**	**8.18**
	M/L Fuel + Commodity Transp.	0.27	0.27	0.26	0.24	0.23	0.24	0.24	0.24	0.24	0.24	0.24	0.25	0.25
2011	SJB to Ca/Az via EPNG	**8.81**	**8.85**	**8.61**	**7.71**	**7.67**	**7.73**	**7.81**	**7.86**	**7.87**	**7.91**	**8.15**	**8.46**	**8.12**
	M/L Fuel + Commodity Transp.	0.26	0.26	0.26	0.23	0.23	0.23	0.24	0.24	0.24	0.24	0.25	0.25	0.24
2012	SJB to Ca/Az via EPNG	**8.33**	**8.35**	**8.10**	**7.25**	**7.22**	**7.27**	**7.37**	**7.41**	**7.41**	**7.45**	**7.66**	**7.96**	**7.65**
	M/L Fuel + Commodity Transp.	0.25	0.25	0.24	0.22	0.22	0.22	0.22	0.23	0.23	0.23	0.23	0.24	0.23
2013	SJB to Ca/Az via EPNG	**7.90**	**7.92**	**7.68**	**6.88**	**6.84**	**6.91**	**6.99**	**7.03**	**7.03**	**7.06**	**7.26**	**7.55**	**7.25**
	M/L Fuel + Commodity Transp.	0.24	0.24	0.23	0.21	0.21	0.21	0.21	0.21	0.21	0.22	0.22	0.23	0.22
2014	SJB to Ca/Az via EPNG	**7.47**	**7.50**	**7.25**	**6.51**	**6.47**	**6.52**	**6.62**	**6.64**	**6.65**	**6.68**	**6.87**	**7.13**	**6.86**
	M/L Fuel + Commodity Transp.	0.23	0.23	0.22	0.20	0.20	0.20	0.20	0.20	0.20	0.21	0.21	0.22	0.21
2015	SJB to Ca/Az via EPNG	**7.83**	**7.85**	**7.61**	**6.81**	**6.79**	**6.83**	**6.95**	**6.97**	**6.96**	**6.99**	**7.20**	**7.45**	**7.19**
	M/L Fuel + Commodity Transp.	0.24	0.24	0.23	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.22	0.23	0.22
2016	SJB to Ca/Az via EPNG	**8.29**	**8.33**	**8.08**	**7.26**	**7.21**	**7.27**	**7.37**	**7.41**	**7.41**	**7.43**	**7.67**	**7.95**	**7.64**
	M/L Fuel + Commodity Transp.	0.25	0.25	0.24	0.22	0.22	0.22	0.22	0.23	0.23	0.23	0.23	0.24	0.23
2017	SJB to Ca/Az via EPNG	**8.74**	**8.77**	**8.50**	**7.64**	**7.59**	**7.66**	**7.75**	**7.78**	**7.80**	**7.83**	**8.07**	**8.36**	**8.04**
	M/L Fuel + Commodity Transp.	0.26	0.26	0.26	0.23	0.23	0.23	0.23	0.24	0.24	0.24	0.24	0.25	0.24
2018	SJB to Ca/Az via EPNG	**9.14**	**9.15**	**8.88**	**7.96**	**7.92**	**7.98**	**8.08**	**8.11**	**8.12**	**8.17**	**8.42**	**8.73**	**8.39**
	M/L Fuel + Commodity Transp.	0.27	0.27	0.27	0.24	0.24	0.24	0.24	0.24	0.24	0.25	0.25	0.26	0.25
2019	SJB to Ca/Az via EPNG	**9.42**	**9.45**	**9.17**	**8.22**	**8.20**	**8.27**	**8.36**	**8.40**	**8.40**	**8.43**	**8.70**	**9.02**	**8.67**
	M/L Fuel + Commodity Transp.	0.28	0.28	0.27	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.26	0.27	0.26
2020	SJB to Ca/Az via EPNG	**9.71**	**9.72**	**9.45**	**8.48**	**8.44**	**8.50**	**8.61**	**8.65**	**8.67**	**8.71**	**8.97**	**9.31**	**8.94**
	M/L Fuel + Commodity Transp.	0.29	0.29	0.28	0.25	0.25	0.26	0.26	0.26	0.26	0.26	0.27	0.28	0.27
2021	SJB to Ca/Az via EPNG	**9.76**	**9.78**	**9.49**	**8.52**	**8.47**	**8.54**	**8.66**	**8.68**	**8.69**	**8.73**	**9.01**	**9.33**	**8.97**
	M/L Fuel + Commodity Transp.	0.29	0.29	0.28	0.26	0.25	0.26	0.26	0.26	0.26	0.26	0.27	0.28	0.27
2022	SJB to Ca/Az via EPNG	**10.18**	**10.22**	**9.92**	**8.89**	**8.85**	**8.93**	**9.07**	**9.07**	**9.08**	**9.11**	**9.41**	**9.75**	**9.37**
	M/L Fuel + Commodity Transp.	0.30	0.30	0.29	0.27	0.26	0.27	0.27	0.27	0.27	0.27	0.28	0.29	0.28
2023	SJB to Ca/Az via EPNG	**10.63**	**10.66**	**10.35**	**9.27**	**9.24**	**9.31**	**9.47**	**9.46**	**9.45**	**9.48**	**9.78**	**10.13**	**9.77**
	M/L Fuel + Commodity Transp.	0.31	0.31	0.31	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.29	0.30	0.29
2024	SJB to Ca/Az via EPNG	**11.04**	**11.07**	**10.74**	**9.63**	**9.60**	**9.68**	**9.88**	**9.84**	**9.82**	**9.87**	**10.17**	**10.53**	**10.15**
	M/L Fuel + Commodity Transp.	0.32	0.33	0.32	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.30	0.31	0.30
2025	SJB to Ca/Az via EPNG	**11.47**	**11.52**	**11.18**	**10.02**	**9.98**	**10.08**	**10.18**	**10.22**	**10.20**	**10.25**	**10.56**	**10.95**	**10.55**
	M/L Fuel + Commodity Transp.	0.34	0.34	0.33	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.31	0.32	0.31
2025	SJB to Ca/Az via EPNG	**11.84**	**11.88**	**11.54**	**10.33**	**10.28**	**10.39**	**10.52**	**10.56**	**10.54**	**10.58**	**10.90**	**11.31**	**10.89**
	M/L Fuel + Commodity Transp.	0.35	0.35	0.34	0.31	0.30	0.31	0.31	0.31	0.31	0.31	0.32	0.33	0.32
2025	SJB to Ca/Az via EPNG	**12.17**	**12.23**	**11.88**	**10.65**	**10.59**	**10.67**	**10.83**	**10.85**	**10.83**	**10.88**	**11.20**	**11.61**	**11.20**
	M/L Fuel + Commodity Transp.	0.36	0.36	0.35	0.31	0.31	0.31	0.32	0.32	0.32	0.32	0.33	0.34	0.33
2025	SJB to Ca/Az via EPNG	**12.64**	**12.69**	**12.33**	**11.06**	**11.00**	**11.08**	**11.26**	**11.28**	**11.25**	**11.31**	**11.63**	**12.06**	**11.63**
	M/L Fuel + Commodity Transp.	0.37	0.37	0.36	0.33	0.32	0.33	0.33	0.33	0.33	0.33	0.34	0.35	0.34
2025	SJB to Ca/Az via EPNG	**13.22**	**13.28**	**12.90**	**11.58**	**11.52**	**11.60**	**11.79**	**11.80**	**11.78**	**11.85**	**12.18**	**12.63**	**12.18**
	M/L Fuel + Commodity Transp.	0.38	0.39	0.38	0.34	0.34	0.34	0.35	0.35	0.35	0.35	0.36	0.37	0.36
2025	SJB to Ca/Az via EPNG	**13.77**	**13.83**	**13.44**	**12.07**	**12.00**	**12.09**	**12.29**	**12.30**	**12.27**	**12.35**	**12.71**	**13.18**	**12.69**
	M/L Fuel + Commodity Transp.	0.40	0.40	0.39	0.35	0.35	0.35	0.36	0.36	0.36	0.36	0.37	0.38	0.37

NOTES:

1/ SJB_Spot-Commodity@Ca/Az = (SJB_Spot_@EPNG_SCG) + (M/L Fuel) + (Commodity Transportation Charges)

2/ Formula for "Mainline Fuel Costs, $/Dth" = (%_Fuel) x (SJB_Spot_@EPNG_SCG) / (1 - %_Fuel).

Commodity Transportation Charge of San Juan Basin via EPNG Dlvd. to Ca/Az
($/Dth to Ca/Az Border via EPNG's System)
"In-Kind" Volume Shrinkage for Mainline Compressor Fuel Usage
(% of Gas Delivered to EPNG's System)

YEAR	Supply Component	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr Avg.
2005	Commodity Transp.	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018
	M/L Fuel	3.27%	3.27%	3.27%	3.27%	3.27%	3.27%	3.27%	3.27%	3.27%	3.27%	3.27%	3.27%	
2006	Commodity Transp.	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018
	M/L Fuel	2.46%	2.46%	2.46%	2.46%	2.46%	2.46%	2.46%	2.46%	2.46%	2.46%	2.46%	2.46%	
2007	Commodity Transp.	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018
	M/L Fuel	2.87%	2.87%	2.87%	2.87%	2.87%	2.87%	2.87%	2.87%	2.87%	2.87%	2.87%	2.87%	
2008	Commodity Transp.	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
	M/L Fuel	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	
2009	Commodity Transp.	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
	M/L Fuel	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	
2010	Commodity Transp.	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
	M/L Fuel	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	
2011	Commodity Transp.	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
	M/L Fuel	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	
2012	Commodity Transp.	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
	M/L Fuel	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	
2013	Commodity Transp.	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
	M/L Fuel	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	
2014	Commodity Transp.	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
	M/L Fuel	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	
2015	Commodity Transp.	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
	M/L Fuel	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	
2016	Commodity Transp.	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
	M/L Fuel	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	
2017	Commodity Transp.	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
	M/L Fuel	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	
2018	Commodity Transp.	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
	M/L Fuel	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	
2019	Commodity Transp.	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
	M/L Fuel	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	
2020	Commodity Transp.	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
	M/L Fuel	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	
2021	Commodity Transp.	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
	M/L Fuel	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	
2022	Commodity Transp.	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
	M/L Fuel	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	
2023	Commodity Transp.	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
	M/L Fuel	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	
2024	Commodity Transp.	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
	M/L Fuel	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	
2025	Commodity Transp.	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
	M/L Fuel	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	
2026	Commodity Transp.	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
	M/L Fuel	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	
2027	Commodity Transp.	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
	M/L Fuel	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	
2028	Commodity Transp.	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
	M/L Fuel	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	
2029	Commodity Transp.	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
	M/L Fuel	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	
2030	Commodity Transp.	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
	M/L Fuel	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	2.74%	

NOTES:

1/ Post Dec.'05 (Forecast) assumes 2.46% for "In-Kind" Mainline Fuel Shrinkage and 1.80¢/Dth Commodity Transportation charges.

Sempra Utilities Retail CORE Commodity Weighted-Average-Cost-of-Gas (WACOG) for Purchases
SoCalGas Actual to 10/2007, SEU Forecast starting 11/2007)
($/Dth @ Ca/Az Border)

YEAR	Supply Component	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yr Avg.
2005	Wacog for Purchase	5.85	5.78	5.64	6.53	6.60	5.71	6.49	6.40	8.49	10.04	10.71	8.42	7.22
2006	Wacog for Purchase	9.16	7.11	6.42	5.83	6.12	5.05	5.40	6.22	6.46	3.92	6.80	6.54	6.25
2007	Wacog for Purchase	6.07	6.89	7.21	6.30	7.07	7.24	6.69	5.43	5.05	5.50	6.23	5.92	6.30
2008	Wacog for Purchase	6.78	7.65	8.64	8.95	**8.36**	**8.45**	**8.66**	**8.72**	**8.68**	**8.54**	**8.84**	**9.21**	**8.46**
2009	Wacog for Purchase	**9.46**	**9.44**	**9.19**	**8.01**	**7.93**	**7.98**	**8.05**	**8.11**	**8.12**	**8.14**	**8.39**	**8.73**	**8.46**
2010	Wacog for Purchase	**8.95**	**8.95**	**8.72**	**7.86**	**7.81**	**7.86**	**7.92**	**7.97**	**7.98**	**8.05**	**8.21**	**8.53**	**8.24**
2011	Wacog for Purchase	**8.87**	**8.91**	**8.68**	**7.81**	**7.77**	**7.82**	**7.91**	**7.95**	**7.97**	**8.01**	**8.24**	**8.54**	**8.21**
2012	Wacog for Purchase	**8.42**	**8.44**	**8.20**	**7.37**	**7.34**	**7.39**	**7.48**	**7.52**	**7.53**	**7.56**	**7.77**	**8.06**	**7.76**
2013	Wacog for Purchase	**8.00**	**8.02**	**7.79**	**7.01**	**6.98**	**7.03**	**7.12**	**7.15**	**7.16**	**7.19**	**7.39**	**7.66**	**7.38**
2014	Wacog for Purchase	**7.59**	**7.61**	**7.38**	**6.66**	**6.62**	**6.67**	**6.76**	**6.78**	**6.79**	**6.83**	**7.01**	**7.26**	**7.00**
2015	Wacog for Purchase	**7.94**	**7.96**	**7.73**	**6.95**	**6.92**	**6.96**	**7.07**	**7.10**	**7.09**	**7.13**	**7.34**	**7.58**	**7.31**
2016	Wacog for Purchase	**8.39**	**8.42**	**8.19**	**7.38**	**7.34**	**7.39**	**7.49**	**7.53**	**7.54**	**7.56**	**7.79**	**8.06**	**7.76**
2017	Wacog for Purchase	**8.83**	**8.86**	**8.61**	**7.77**	**7.72**	**7.78**	**7.87**	**7.91**	**7.93**	**7.96**	**8.19**	**8.47**	**8.16**
2018	Wacog for Purchase	**9.23**	**9.25**	**8.99**	**8.08**	**8.05**	**8.10**	**8.20**	**8.23**	**8.25**	**8.30**	**8.54**	**8.84**	**8.51**
2019	Wacog for Purchase	**9.51**	**9.54**	**9.28**	**8.34**	**8.33**	**8.39**	**8.48**	**8.52**	**8.53**	**8.57**	**8.82**	**9.14**	**8.79**
2020	Wacog for Purchase	**9.80**	**9.81**	**9.55**	**8.60**	**8.56**	**8.62**	**8.72**	**8.76**	**8.79**	**8.84**	**9.09**	**9.42**	**9.05**
2021	Wacog for Purchase	**9.84**	**9.86**	**9.59**	**8.64**	**8.60**	**8.66**	**8.76**	**8.80**	**8.81**	**8.85**	**9.13**	**9.43**	**9.08**
2022	Wacog for Purchase	**10.24**	**10.27**	**9.99**	**9.01**	**8.96**	**9.04**	**9.16**	**9.18**	**9.19**	**9.23**	**9.51**	**9.82**	**9.47**
2023	Wacog for Purchase	**10.69**	**10.71**	**10.41**	**9.39**	**9.35**	**9.41**	**9.55**	**9.56**	**9.56**	**9.60**	**9.90**	**10.24**	**9.86**
2024	Wacog for Purchase	**11.13**	**11.16**	**10.85**	**9.77**	**9.73**	**9.80**	**9.98**	**9.96**	**9.95**	**10.00**	**10.30**	**10.65**	**10.27**
2025	Wacog for Purchase	**11.56**	**11.61**	**11.28**	**10.15**	**10.10**	**10.20**	**10.30**	**10.34**	**10.33**	**10.39**	**10.69**	**11.06**	**10.67**
2026	Wacog for Purchase	**11.94**	**11.97**	**11.64**	**10.47**	**10.41**	**10.52**	**10.64**	**10.68**	**10.67**	**10.72**	**11.03**	**11.43**	**11.01**
2027	Wacog for Purchase	**12.28**	**12.33**	**12.00**	**10.80**	**10.75**	**10.82**	**10.97**	**10.99**	**10.98**	**11.04**	**11.34**	**11.75**	**11.34**
2028	Wacog for Purchase	**12.75**	**12.79**	**12.45**	**11.21**	**11.16**	**11.23**	**11.39**	**11.42**	**11.40**	**11.46**	**11.78**	**12.19**	**11.77**
2029	Wacog for Purchase	**13.32**	**13.37**	**13.01**	**11.73**	**11.67**	**11.74**	**11.91**	**11.93**	**11.92**	**11.99**	**12.32**	**12.76**	**12.31**
2030	Wacog for Purchase	**13.87**	**13.92**	**13.54**	**12.21**	**12.15**	**12.22**	**12.40**	**12.42**	**12.41**	**12.49**	**12.84**	**13.30**	**12.81**

NOTES:

1/ "Wacog for Purchases" projections based on the equation: WACOG_Purch@Ca/Az =
(SJ_Spot-Commodity@Ca/Az * SJ %) + (Permian_Spot-Commodity@Ca/Az * Permian %) + (CBSP * CBSP %) + (Rockies * Rockies %)
+ (AECO + AECO %) plus Interstate Pipeline Demand charges.

2/ Source: Jan.'00-Oct.'07 data of SoCalGas' Weighted Average Cost of Gas is from Gas Accounting's PGA Reports (Adjusted Single Porfolio WACOG to Price gas costs for PGA Balancing Accounts.) Interstate Pipeline Demand or Capacity Reservation charges are included, but FF&U and Core Brokerage Fees are NOT included.

MPR Henry Hub Nominal Gas Price Forecast

Year	Chained Price Index 2006	3-Way HH Average 2006 $/MMBTU	5-Way HH Average 2006 $/MMBTU	Henry Hub Nominal $/MMBTU	3-Year Transition	
2006	0.9740	$7.42	$7.16			
2007	1.0000	$6.39	$6.67			
2008	1.0216	$6.88	$7.33	$9.06		
2009	1.0395	$6.40	$6.46	$9.05		
2010	1.0584	$6.14	$6.10	$8.74	$8.74	<= Futures
2011	1.0794	$6.06	$6.01	$8.30	$8.30	
2012	1.1022	$6.08	$5.99	$7.86	$7.86	
2013	1.1238	$6.05	$5.96	$7.42	$7.42	
2014	1.1459	$6.12	$6.09	$6.98	$6.98	<= Fundamental
2015	1.1682	$6.20	$6.24	$7.29	-$0.44	<= Annual Change
2016	1.1903	$6.41	$6.48	$7.72		
2017	1.2124	$6.59	$6.67	$8.09		
2018	1.2349	$6.79	$6.84	$8.45		
2019	1.2576	$6.92	$6.90	$8.67		
2020	1.2818	$6.93	$6.92	$8.87		
2021	1.3068	$6.90	$6.81	$8.90		
2022	1.3317	$7.08	$6.99	$9.31		
2023	1.3571	$7.27	$7.19	$9.75		
2024	1.3830	$7.47	$7.38	$10.21		
2025	1.4097	$7.67	$7.55	$10.65		
2026	1.4371	$7.85	$7.67	$11.03		
2027	1.4645	$7.95	$7.78	$11.40		
2028	1.4920	$8.11	$7.92	$11.81		
2029	1.5197	$8.25	$8.05	$12.23		
2030	1.5480	$8.37	$8.14	$12.60		

MPR Henry Hub Nominal Gas Price Forecast

I. Energy Information Administration - EIA

	Henry Hub 2006 $/MMBtu
2006	$6.73
2007	$6.78
2008	$7.23
2009	$7.35
2010	$6.90
2011	$6.56
2012	$6.37
2013	$6.16
2014	$5.99
2015	$5.87
2016	$5.82
2017	$5.89
2018	$5.97
2019	$6.05
2020	$5.95
2021	$5.82
2022	$5.95
2023	$6.08
2024	$6.25
2025	$6.39
2026	$6.56
2027	$6.61
2028	$6.86
2029	$7.06
2030	$7.22
	$7.22

Report #: DOE/EIA-0383 (2008)

Released Date: March 2008 (Revised to include the impact of H.R.6,
Energy Independence and Security Act of 2007 enacted in December 2007)

MPR Henry Hub Nominal Gas Price Forecast

II. Consultants

	Henry Hub 2006 $/MMBTU
2006	6.76
2007	7.08
2008	8.00
2009	6.54
2010	6.05
2011	5.94
2012	5.86
2013	5.84
2014	6.05
2015	6.30
2016	6.59
2017	6.79
2018	6.93
2019	6.86
2020	6.90
2021	6.69
2022	6.85
2023	7.06
2024	7.24
2025	7.37
2026	7.41
2027	7.53
2028	7.63
2029	7.73
2030	7.79

Forecasts from CERA, PIRA and WoodMackenzie were averaged.

MPR Henry Hub Nominal Gas Price Forecast

III. California Energy Commission

	Henry Hub 2006 $/Mcf	Henry Hub 2006 $/MMBtu
2006	9.07	8.77
2007	5.50	5.32
2008	5.58	5.40
2009	5.51	5.32
2010	5.65	5.46
2011	5.89	5.69
2012	6.21	6.00
2013	6.36	6.15
2014	6.54	6.32
2015	6.66	6.44
2016	7.06	6.82
2017	7.35	7.10
2018	7.73	7.47
2019	8.11	7.84
2020	8.24	7.96
2021	8.48	8.19
2022	8.72	8.43
2023	8.98	8.68
2024	9.24	8.92
2025	9.58	9.25
2026	9.92	9.58
2027	10.05	9.71
2028	10.18	9.83
2029	10.32	9.97
2030	10.47	10.11

Source:
From: Leon Brathwaite [Lbrathwa@energy.state.ca.us]
Sent: Wed 3/19/2008 1:04 PM

Chained price index--US Gross Domestic Product (2000=100)
Data through 2018q4 from Global Insight's Feb 2008 Control Forecast of the US Economy (CTL0208).
Data starting in 2019q1 based on percentage growth rates from Global Insight's 3rd Quarter
2007 Long Term Forecast of the US Economy (T300807; based on Aug07 ST, released 9-25-07).
forecast shown below used in 2008 California Gas Report

Quarter	JPGDP	Year	JPGDP Annual Average	%Change	JPGDP 2007=1.00
1980q1	52.209	1980	54.062		
1980q2	53.362	1981	59.128	9.37%	0.4941
1980q3	54.572	1982	62.738	6.10%	0.5242
1980q4	56.105	1983	65.214	3.95%	0.5449
1981q1	57.566	1984	67.665	3.76%	0.5654
1981q2	58.582	1985	69.724	3.04%	0.5826
1981q3	59.661	1986	71.269	2.22%	0.5955
1981q4	60.704	1987	73.204	2.72%	0.6117
1982q1	61.563	1988	75.706	3.42%	0.6326
1982q2	62.330	1989	78.569	3.78%	0.6565
1982q3	63.193	1990	81.614	3.88%	0.6820
1982q4	63.866	1991	84.457	3.48%	0.7057
1983q1	64.413	1992	86.402	2.30%	0.7220
1983q2	64.881	1993	88.391	2.30%	0.7386
1983q3	65.542	1994	90.265	2.12%	0.7542
1983q4	66.020	1995	92.115	2.05%	0.7697
1984q1	66.838	1996	93.859	1.89%	0.7843
1984q2	67.439	1997	95.415	1.66%	0.7973
1984q3	67.989	1998	96.475	1.11%	0.8061
1984q4	68.392	1999	97.868	1.44%	0.8178
1985q1	69.180	2000	100.000	2.18%	0.8356
1985q2	69.542	2001	102.402	2.40%	0.8556
1985q3	69.876	2002	104.193	1.75%	0.8706
1985q4	70.299	2003	106.410	2.13%	0.8891
1986q1	70.660	2004	109.462	2.87%	0.9146
1986q2	71.001	2005	113.005	3.24%	0.9442
1986q3	71.455	2006	116.568	3.15%	0.9740
1986q4	71.960	**2007**	**119.678**	**2.67%**	**1.0000**
1987q1	72.514	2008	122.267	2.16%	1.0216
1987q2	72.904	2009	124.406	1.75%	1.0395
1987q3	73.450	2010	126.661	1.81%	1.0584
1987q4	73.948	2011	129.185	1.99%	1.0794
1988q1	74.564	2012	131.907	2.11%	1.1022
1988q2	75.296	2013	134.497	1.96%	1.1238
1988q3	76.178	2014	137.143	1.97%	1.1459
1988q4	76.786	2015	139.806	1.94%	1.1682
1989q1	77.588	2016	142.456	1.90%	1.1903
1989q2	78.342	2017	145.096	1.85%	1.2124
1989q3	78.913	2018	147.796	1.86%	1.2349
1989q4	79.433	2019	150.511	1.84%	1.2576
1990q1	80.389	2020	153.408	1.92%	1.2818
1990q2	81.326	2021	156.394	1.95%	1.3068
1990q3	82.053	2022	159.379	1.91%	1.3317
1990q4	82.689	2023	162.411	1.90%	1.3571
1991q1	83.662	2024	165.514	1.91%	1.3830
1991q2	84.194	2025	168.713	1.93%	1.4097

Chained price index--US Gross Domestic Product (2000=100)
Data through 2018q4 from Global Insight's Feb 2008 Control Forecast of the US Economy (CTL0208).
Data starting in 2019q1 based on percentage growth rates from Global Insight's 3rd Quarter
2007 Long Term Forecast of the US Economy (T300807; based on Aug07 ST, released 9-25-07).
forecast shown below used in 2008 California Gas Report

Quarter	JPGDP
1991q3	84.772
1991q4	85.200
1992q1	85.766
1992q2	86.212
1992q3	86.587
1992q4	87.042
1993q1	87.729
1993q2	88.204
1993q3	88.599
1993q4	89.030
1994q1	89.598
1994q2	89.980
1994q3	90.525
1994q4	90.958
1995q1	91.554
1995q2	91.891
1995q3	92.281
1995q4	92.734
1996q1	93.302
1996q2	93.615
1996q3	94.064

Year	JPGDP Annual Average	%Change	JPGDP 2007=1.00
2026	171.983	1.94%	1.4371
2027	175.272	1.91%	1.4645
2028	178.556	1.87%	1.4920
2029	181.877	1.86%	1.5197
2030	185.262	1.86%	1.5480
2031	188.639	1.82%	1.5762
2032	192.038	1.80%	1.6046
2033	195.384	1.74%	1.6326
2034	198.780	1.74%	1.6610
2035	202.245	1.74%	1.6899
2036	205.797	1.76%	1.7196
2037	209.373	1.74%	1.7495

2008 CALIFORNIA GAS REPORT

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LONG TERM OUTLOOK for Propane Prices
(Nominal $/Dth, Wholesale @Los Angeles Basin)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YR. AVG.
2000	6.24	6.77	6.71	5.86	5.36	5.38	5.58	6.26	7.64	8.22	8.29	12.26	7.05
2001	12.61	10.25	9.15	6.95	7.56	5.89	4.83	5.34	5.58	5.23	5.09	4.76	6.94
2002	4.46	4.10	4.13	4.15	3.81	3.61	3.53	3.69	5.61	6.33	6.27	6.81	4.71
2003	7.42	8.03	8.70	6.62	5.97	6.17	5.47	5.92	6.19	6.44	7.47	8.50	6.91
2004	9.30	9.14	8.29	6.14	6.65	6.54	7.34	9.02	9.32	10.77	11.32	11.22	8.76
2005	10.48	10.29	10.21	10.29	10.06	9.21	9.62	10.24	12.80	14.59	13.47	13.73	11.25
2006	14.04	12.22	12.53	13.80	12.73	11.57	12.37	12.62	12.02	12.24	13.08	13.76	12.75
2007	14.66	14.64	13.53	11.69	11.89	11.64	12.10	12.78	13.77	16.46	18.10	18.79	14.17
2008	20.35	19.00	17.71	18.49	17.42	16.15	15.51	16.55	18.61	17.71	18.59	19.63	17.98
2009	19.78	18.60	17.76	17.05	16.06	14.89	14.59	15.58	17.51	16.97	17.82	18.81	17.12
2010	19.08	17.94	17.13	16.59	15.63	14.49	14.11	15.07	16.94	16.59	17.42	18.40	16.62
2011	18.78	17.66	16.86	16.21	15.27	14.15	13.79	14.72	16.55	16.32	17.13	18.09	16.29
2012	18.39	17.29	16.50	15.79	14.87	13.79	13.42	14.33	16.11	15.96	16.76	17.70	15.91
2013	18.05	16.97	16.20	15.43	14.53	13.47	13.11	13.99	15.73	15.67	16.45	17.37	15.58
2014	17.73	16.67	15.91	15.09	14.21	13.17	12.80	13.67	15.36	15.38	16.15	17.06	15.27
2015	17.78	16.71	15.95	15.07	14.19	13.15	12.78	13.64	15.34	15.41	16.18	17.08	15.27
2016	17.89	16.82	16.05	15.11	14.23	13.19	12.82	13.68	15.38	15.49	16.26	17.18	15.34
2017	18.14	17.05	16.28	15.30	14.41	13.36	12.98	13.85	15.57	15.70	16.48	17.40	15.54
2018	18.52	17.41	16.62	15.60	14.70	13.62	13.23	14.13	15.88	16.01	16.81	17.75	15.86
2019	18.86	17.73	16.93	15.89	14.97	13.88	13.49	14.40	16.18	16.31	17.13	18.09	16.16
2020	19.17	18.03	17.21	16.15	15.21	14.10	13.70	14.62	16.44	16.59	17.41	18.39	16.42
2021	19.37	18.21	17.39	16.29	15.34	14.22	13.82	14.75	16.58	16.75	17.59	18.57	16.57
2022	19.79	18.60	17.76	16.63	15.67	14.52	14.11	15.07	16.93	17.11	17.96	18.97	16.93
2023	20.28	19.06	18.20	17.05	16.06	14.89	14.46	15.44	17.36	17.52	18.40	19.43	17.35
2024	20.74	19.50	18.61	17.43	16.42	15.22	14.79	15.79	17.75	17.92	18.81	19.87	17.74
2025	21.24	19.97	19.06	17.86	16.82	15.59	15.16	16.18	18.19	18.34	19.26	20.34	18.17
2026	21.69	20.39	19.47	18.24	17.18	15.92	15.48	16.53	18.58	18.74	19.67	20.77	18.56
2027	21.69	20.39	19.46	18.18	17.12	15.87	15.42	16.46	18.50	18.72	19.66	20.76	18.52
2028	22.20	20.87	19.92	18.60	17.52	16.24	15.79	16.85	18.94	19.16	20.12	21.24	18.95
2029	22.77	21.41	20.44	19.10	17.99	16.67	16.21	17.30	19.45	19.66	20.64	21.80	19.45
2030	23.24	21.85	20.86	19.49	18.36	17.02	16.54	17.66	19.85	20.07	21.07	22.25	19.86

NOTES:

1/ Jan. '95-Mar '08 reported monthly actuals from data reported in "Butane/Propane News" publications.

LONG TERM OUTLOOK for Butane Prices
(Nominal $/Dth, Wholesale @Los Angeles Basin)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YR. AVG.
2000	5.73	5.43	4.55	3.45	3.39	3.99	4.91	4.78	4.95	4.95	7.11	7.81	5.09
2001	8.04	6.60	6.56	5.86	5.91	5.08	3.69	3.75	3.53	3.61	3.40	2.99	4.92
2002	2.96	2.95	2.95	2.86	2.82	2.82	2.94	2.99	3.14	4.00	5.14	5.81	3.45
2003	6.21	6.69	5.52	4.66	3.80	3.87	4.01	4.25	4.50	4.94	6.13	6.99	5.13
2004	7.51	6.41	5.27	5.17	5.80	5.98	6.14	6.92	7.48	9.00	10.02	9.57	7.11
2005	9.17	8.75	8.13	8.24	7.62	7.25	7.96	8.02	9.83	12.06	12.06	12.67	9.31
2006	13.59	11.89	9.47	9.51	10.01	9.41	10.06	10.18	9.73	8.74	9.21	10.81	10.22
2007	9.90	10.40	9.72	9.71	9.82	9.62	9.43	9.52	10.49	11.82	17.11	17.11	11.22
2008	17.56	14.44	14.03	14.26	14.35	14.28	13.34	13.77	14.94	14.13	15.92	17.10	14.84
2009	17.28	15.61	13.01	13.02	13.10	13.04	12.46	12.87	13.95	13.47	15.18	16.31	14.11
2010	16.56	14.96	12.46	12.61	12.69	12.63	11.99	12.38	13.43	13.14	14.81	15.90	13.63
2011	16.23	14.67	12.22	12.26	12.34	12.28	11.66	12.04	13.06	12.88	14.52	15.59	13.31
2012	15.81	14.28	11.90	11.87	11.95	11.89	11.29	11.66	12.64	12.55	14.15	15.20	12.93
2013	15.44	13.95	11.62	11.53	11.61	11.56	10.96	11.32	12.28	12.27	13.83	14.86	12.60
2014	15.08	13.62	11.35	11.21	11.28	11.23	10.64	10.99	11.92	12.01	13.53	14.53	12.28
2015	15.10	13.64	11.37	11.17	11.24	11.19	10.61	10.96	11.88	12.01	13.54	14.54	12.27
2016	15.18	13.72	11.43	11.19	11.26	11.21	10.63	10.98	11.91	12.08	13.61	14.62	12.32
2017	15.39	13.91	11.59	11.33	11.40	11.35	10.76	11.12	12.06	12.24	13.79	14.82	12.48
2018	15.73	14.21	11.84	11.57	11.64	11.59	10.98	11.34	12.30	12.49	14.08	15.12	12.74
2019	16.03	14.48	12.06	11.78	11.86	11.81	11.20	11.56	12.54	12.73	14.35	15.41	12.98
2020	16.29	14.72	12.26	11.97	12.05	11.99	11.37	11.74	12.74	12.94	14.59	15.67	13.19
2021	16.44	14.85	12.37	12.06	12.13	12.08	11.45	11.83	12.83	13.06	14.72	15.81	13.30
2022	16.80	15.18	12.65	12.32	12.40	12.34	11.71	12.09	13.11	13.34	15.04	16.15	13.60
2023	17.24	15.58	12.98	12.65	12.73	12.67	12.01	12.41	13.46	13.68	15.42	16.56	13.95
2024	17.65	15.95	13.28	12.94	13.02	12.97	12.30	12.70	13.78	14.00	15.78	16.95	14.28
2025	18.09	16.35	13.62	13.27	13.35	13.30	12.62	13.03	14.13	14.34	16.16	17.36	14.63
2026	18.49	16.71	13.92	13.56	13.65	13.59	12.89	13.31	14.44	14.66	16.52	17.74	14.96
2027	18.45	16.67	13.89	13.48	13.57	13.51	12.81	13.23	14.35	14.63	16.49	17.71	14.90
2028	18.90	17.08	14.23	13.81	13.90	13.84	13.13	13.56	14.71	14.98	16.88	18.13	15.26
2029	19.42	17.55	14.62	14.20	14.29	14.23	13.50	13.94	15.12	15.39	17.34	18.63	15.69
2030	19.83	17.92	14.93	14.51	14.60	14.54	13.79	14.24	15.45	15.72	17.72	19.03	16.02

NOTES:

1/ Jan. '95-Mar '08 reported monthly actuals from data reported in "Butane/Propane News" publications.

OIL AND PRODUCTS PRICE FORECAST (2008-2030) - BASE CASE
(Forecast in 2007 Dollars Per Barrel)

				No. 6 Fuel Oil a/			No. 2		
Year / Quarter	RAC	WTI	Kern River	0.5%S	1.0%S	2.0%S	Fuel Oil a/	Propane a/	Butane a/
2001 (Actual)	22.95	25.89	18.57	24.31	19.31	18.46	34.17	26.61	21.28
2002 (Actual)	24.02	26.09	21.06	24.81	22.68	21.75	31.19	18.06	14.91
2003 (Actual)	28.60	31.11	25.73	29.36	27.55	25.57	36.78	26.17	22.09
2004 (Actual)	36.91	41.42	32.80	31.18	30.65	29.41	53.03	33.35	30.75
2005 (Actual)	50.32	56.44	44.85	42.34	42.02	41.28	73.83	43.15	40.29
2006 - Q1 (Actual)	56.18	63.28	51.72	53.50	53.00	50.65	80.22	49.60	50.40
2006 - Q2 (Actual)	64.52	70.40	59.09	56.62	56.13	53.70	96.54	48.71	41.72
2006 - Q3 (Actual)	65.12	70.38	58.50	54.01	53.49	51.02	89.84	47.33	43.22
2006 - Q4 (Actual)	54.53	59.94	48.17	48.36	47.83	45.34	79.30	49.97	41.46
	60.09	66.00	54.37	53.12	52.61	50.18	86.48	48.90	44.20
2007 - Q1 (Actual)	53.99	57.99	47.05	51.41	50.91	48.53	81.51	54.77	43.29
2007 - Q2 (Actual)	62.45	64.90	55.01	58.50	58.00	55.56	91.53	45.03	42.03
2007 - Q3 (Actual)	71.38	75.48	65.44	63.22	62.72	60.36	93.71	49.41	42.45
2007 - Q4 (Actual)	83.96	90.66	78.27	79.45	78.95	76.44	108.64	68.22	66.39
	67.95	72.26	61.44	63.14	62.64	60.22	93.85	54.36	48.54
2008 - Q1 (Actual)	89.18	98.10	84.95	81.46	80.96	78.46	117.94	72.96	66.37
2008 - Q2	86.43	95.08	76.03	80.92	76.30	73.06	120.60	65.28	60.64
2008 - Q3	85.62	94.19	75.32	80.16	75.58	72.37	119.47	63.24	59.19
2008 - Q4	84.99	93.49	74.76	79.57	75.02	71.84	118.59	69.58	66.15
	86.56	95.21	77.76	80.53	76.97	73.93	119.15	67.76	63.09
2009	82.26	90.48	72.35	77.01	72.61	69.53	114.77	63.18	58.72
2010	79.78	87.76	70.18	74.69	70.42	67.43	111.32	60.23	55.71
2011	78.04	85.84	68.64	73.06	68.88	65.96	108.88	57.91	53.36
2012	76.53	84.19	67.32	71.65	67.56	64.69	106.79	55.38	50.76
2013	75.33	82.87	66.26	70.53	66.50	63.67	105.11	53.19	48.51
2014	74.20	81.61	65.26	69.46	65.49	62.71	103.52	51.11	46.37
2015	73.22	80.55	64.41	68.55	64.64	61.89	102.17	50.16	45.45
2016	72.40	79.64	63.69	67.78	63.91	61.20	101.02	49.44	44.77
2017	72.59	79.85	63.85	67.96	64.08	61.35	101.28	49.18	44.54
2018	73.55	80.90	64.69	68.85	64.92	62.16	102.62	49.26	44.63
2019	74.67	82.14	65.68	69.91	65.91	63.11	104.19	49.28	44.67
2020	75.59	83.15	66.49	70.77	66.73	63.89	105.47	49.14	44.53
2021	76.37	84.01	67.18	71.50	67.42	64.55	106.56	48.66	44.04
2022	77.47	85.22	68.15	72.53	68.39	65.48	108.10	48.76	44.17
2023	78.90	86.79	69.40	73.87	69.65	66.69	110.09	49.04	44.46
2024	80.15	88.16	70.50	75.03	70.75	67.74	111.83	49.21	44.66
2025	81.65	89.81	71.82	76.44	72.07	69.01	113.92	49.44	44.91
2026	83.05	91.36	73.05	77.75	73.31	70.20	115.88	49.54	45.02
2027	81.88	90.07	72.03	76.66	72.28	69.21	114.25	48.51	44.01
2028	83.34	91.67	73.30	78.02	73.56	70.44	116.28	48.74	44.26
2029	84.95	93.45	74.72	79.53	74.99	71.80	118.53	49.11	44.66
2030	86.02	94.63	75.67	80.54	75.94	72.71	120.03	49.21	44.78

a/ Los Angeles Basin (wholesale prices).

POSTED OIL PRICES (Nominal Dollars)

Source: RAC - EIA Weekly Petroleum Status Report. WTI, KR, No. 6 and No. 2 - Platts Oilgram Price Report. Propane and Butane - BPN Weekly Propane Newsletter

				Crude Oil			No. 6 Fuel Oil a/			No. 2 Fuel Oil			3.836	4.326
Year	Month	Quarter	YearQtr	RAC ($/Bbl)	WTI ($/Bbl)	Kern River ($/Bbl)	0.5%S ($/Bbl)	1.0%S ($/Bbl)	2.0%S ($/Bbl)	LA ($/Bbl)	Propane Ave. ($/Bbl)	Butane Ave. ($/Bbl)	Propane Ave. ($/Dth)	Butane Ave. ($/Dth)
1995	1	1	1995q1	16.54	18.02	12.46	16.70	15.70		20.88	20.37	15.75	5.31	3.64
1995	2	1	1995q1	17.18	18.53	12.89	16.66	15.67		21.78	18.69	12.18	4.87	2.82
1995	3	1	1995q1	17.27	18.55	13.35	17.48	16.48		22.23	17.43	10.50	4.54	2.43
1995	4	2	1995q2	18.44	19.88	14.34	17.28	16.28		23.26	18.27	8.40	4.76	1.94
1995	5	2	1995q2	18.60	19.74	15.41	17.65	16.65		22.52	17.22	9.03	4.49	2.09
1995	6	2	1995q2	17.69	18.42	15.15	17.66	16.66		22.04	16.17	9.03	4.22	2.09
1995	7	3	1995q3	16.68	17.30	14.21	16.11	15.11		22.55	15.54	9.03	4.05	2.09
1995	8	3	1995q3	16.75	18.03	13.72	15.50	14.49		23.00	14.49	8.82	3.78	2.04
1995	9	3	1995q3	16.91	18.21	13.73	15.50	14.38		23.23	16.38	9.45	4.27	2.18
1995	10	4	1995q4	16.56	17.44	12.73	15.50	14.38		23.98	17.85	10.29	4.65	2.38
1995	11	4	1995q4	16.61	18.00	12.19	15.50	14.38		24.36	19.32	12.81	5.04	2.96
1995	12	4	1995q4	17.57	19.02	12.79	16.34	15.32		24.68	17.85	16.59	4.65	3.83
1996	1	1	1996q1	17.75	18.80	14.02	17.66	16.71		25.47	20.79	16.38	5.42	3.79
1996	2	1	1996q1	17.95	19.09	14.21	17.34	16.59		23.55	18.90	16.38	4.93	3.79
1996	3	1	1996q1	19.71	21.33	16.46	17.48	16.33		26.90	18.69	11.55	4.87	2.67
1996	4	2	1996q2	21.60	23.51	17.87	18.72	17.47		37.72	18.69	10.29	4.87	2.38
1996	5	2	1996q2	20.63	21.24	14.65	19.07	17.82		36.34	16.80	10.29	4.38	2.38
1996	6	2	1996q2	19.15	20.45	13.85	18.07	16.82		31.10	14.49	9.03	3.78	2.09
1996	7	3	1996q3	19.75	21.32	13.76	17.57	16.49		29.15	14.49	9.03	3.78	2.09
1996	8	3	1996q3	20.41	21.93	13.73	17.75	16.75		29.53	15.33	10.92	4.00	2.52
1996	9	3	1996q3	22.11	24.00	15.76	18.39	17.39		32.31	17.85	14.49	4.65	3.35
1996	10	4	1996q4	23.11	24.90	17.13	18.68	17.64		34.27	24.15	18.27	6.30	4.22
1996	11	4	1996q4	22.85	23.72	16.70	18.75	17.50		30.98	25.20	20.58	6.57	4.76
1996	12	4	1996q4	23.30	25.41	18.13	18.75	17.50		30.03	29.40	21.84	7.66	5.05
1997	1	1	1997q1	23.62	25.13	18.80	18.25	17.00		34.44	27.51	21.63	7.17	5.00
1997	2	1	1997q1	21.65	22.19	14.56	18.43	17.18		33.22	24.15	20.79	6.30	4.81
1997	3	1	1997q1	19.82	20.96	14.58	18.11	16.65		31.51	22.05	13.02	5.75	3.01
1997	4	2	1997q2	18.36	19.75	14.20	16.99	15.41		30.69	17.64	12.81	4.60	2.96
1997	5	2	1997q2	18.84	20.91	14.60	16.36	14.86		26.05	14.28	11.97	3.72	2.77
1997	6	2	1997q2	17.87	19.28	13.51	16.95	15.45		23.41	14.28	12.39	3.72	2.86
1997	7	3	1997q3	17.88	19.63	13.52	17.76	16.26		23.90	14.49	12.18	3.78	2.82
1997	8	3	1997q3	18.23	19.93	14.67	17.33	16.24		28.52	15.75	12.18	4.11	2.82
1997	9	3	1997q3	18.20	19.78	14.75	16.50	15.50		27.04	15.96	14.49	4.16	3.35
1997	10	4	1997q4	19.26	21.27	15.98	17.34	16.34		28.68	17.85	21.63	4.65	5.00
1997	11	4	1997q4	18.61	20.18	14.50	17.92	16.64		29.55	19.74	18.69	5.15	4.32
1997	12	4	1997q4	17.00	18.30	12.70	16.86	15.36		25.24	18.06	19.32	4.71	4.47
1998	1	1	1998q1	15.14	16.69	10.41	14.64	13.09		23.76	18.48	18.90	4.82	4.37
1998	2	1	1998q1	14.03	16.07	8.92	13.07	11.48		20.95	19.32	14.07	5.04	3.25
1998	3	1	1998q1	12.87	15.10	7.47	11.95	10.27		20.38	15.75	10.92	4.11	2.52

POSTED OIL PRICES (Nominal Dollars)

Source: RAC - EIA Weekly Petroleum Status Report. WTI, KR, No. 6 and No. 2 - Platts Oilgram Price Report. Propane and Butane - BPN Weekly Propane Newsletter

				Crude Oil				No. 6		No. 2				
						Kern		Fuel Oil a/		Fuel Oil			3.836	4.326
				RAC	WTI	River	0.5%S	1.0%S	2.0%S	LA	Propane Ave.	Butane Ave.	Propane Ave.	Butane Ave.
Year	Month	Quarter	YearQtr	($/Bbl)	($/Bbl)	($/Bbl)	($/Bbl)	($/Bbl)	($/Bbl)	($/Bbl)	($/Bbl)	($/Bbl)	($/Dth)	($/Dth)
1998	4	2	1998q2	13.10	15.43	7.89	11.75	10.13		22.16	14.49	7.98	3.78	1.84
1998	5	2	1998q2	13.01	14.93	7.91	11.75	11.23		21.66	14.49	9.87	3.78	2.28
1998	6	2	1998q2	11.98	13.69	7.42	11.75	11.13		19.61	13.02	9.66	3.39	2.23
1998	7	3	1998q3	11.92	14.12	8.31	11.75	11.13		19.74	11.13	8.40	2.90	1.94
1998	8	3	1998q3	11.79	13.39	8.31	11.51	10.89		19.44	10.92	7.98	2.85	1.84
1998	9	3	1998q3	13.04	14.97	9.34	11.00	10.38		20.26	10.92	8.40	2.85	1.94
1998	10	4	1998q4	12.64	14.42	9.63	11.00	10.38		20.14	11.76	9.66	3.07	2.23
1998	11	4	1998q4	11.59	12.95	8.40	11.00	10.38		19.52	14.28	12.60	3.72	2.91
1998	12	4	1998q4	9.84	11.29	6.66	9.74	9.49		16.51	14.70	12.39	3.83	2.86
1999	1	1	1999q1	10.47	12.48	7.18	9.63	9.38		17.43	18.48	11.97	4.82	2.77
1999	2	1	1999q1	10.50	12.00	7.06	9.63	9.38		16.50	15.89	10.95	4.14	2.53
1999	3	1	1999q1	12.30	14.66	8.53	9.85	9.51		25.02	14.69	9.55	3.83	2.21
1999	4	2	1999q2	14.92	17.34	10.82	11.23	10.89		24.49	16.35	9.45	4.26	2.18
1999	5	2	1999q2	15.97	17.74	11.75	11.64	11.30		22.71	14.47	9.64	3.77	2.23
1999	6	2	1999q2	16.06	17.90	11.24	13.60	13.35	13.06	28.25	12.72	10.66	3.32	2.46
1999	7	3	1999q3	17.94	20.08	13.28	13.43	13.40	13.18	28.88	12.80	12.36	3.34	2.86
1999	8	3	1999q3	19.56	21.27	15.06	16.17	15.91	15.43	30.07	14.42	13.53	3.76	3.13
1999	9	3	1999q3	21.68	23.88	17.82	19.61	19.26	18.92	28.52	17.19	14.30	4.48	3.31
1999	10	4	1999q4	21.93	22.69	18.15	20.27	19.54	19.11	29.71	20.23	18.99	5.27	4.39
1999	11	4	1999q4	23.11	24.88	18.82	19.86	19.45	19.20	33.64	20.58	21.39	5.36	4.94
1999	12	4	1999q4	24.51	26.11	20.20	20.75	20.50	20.25	32.05	20.99	23.77	5.47	5.49
2000	1	1	2000q1	25.49	27.26	21.01	21.01	20.39	20.14	35.96	23.95	24.78	6.24	5.73
2000	2	1	2000q1	27.55	29.39	23.10	21.00	20.75	20.75	37.23	25.97	23.48	6.77	5.43
2000	3	1	2000q1	28.28	29.86	24.13	22.58	21.28	21.02	39.95	25.73	19.69	6.71	4.55
2000	4	2	2000q2	24.97	25.78	20.18	22.64	21.34	20.91	34.12	22.48	14.93	5.86	3.45
2000	5	2	2000q2	26.46	28.80	23.04	23.48	22.03	21.77	33.80	20.58	14.66	5.36	3.39
2000	6	2	2000q2	29.13	31.88	25.86	23.75	23.00	22.75	35.21	20.64	17.26	5.38	3.99
2000	7	3	2000q3	28.73	29.71	25.03	23.75	23.00	22.75	37.52	21.42	21.22	5.58	4.91
2000	8	3	2000q3	29.01	31.33	26.08	23.75	23.00	22.75	44.57	24.02	20.67	6.26	4.78
2000	9	3	2000q3	31.08	33.89	28.59	23.75	23.00	22.75	50.45	29.32	21.42	7.64	4.95
2000	10	4	2000q4	30.58	33.02	26.43	24.19	23.68	23.39	48.99	31.55	21.42	8.22	4.95
2000	11	4	2000q4	30.92	34.40	26.96	24.88	24.63	24.25	50.61	31.79	30.76	8.29	7.11
2000	12	4	2000q4	26.31	28.35	18.09	25.71	24.47	24.06	44.17	47.02	33.78	12.26	7.81
2001	1	1	2001q1	25.45	29.56	17.41	26.67	22.92	22.40	37.56	48.35	34.79	12.61	8.04
2001	2	1	2001q1	26.09	29.56	21.65	28.50	22.75	22.25	37.87	39.34	28.56	10.25	6.60
2001	3	1	2001q1	24.05	27.18	20.74	27.11	21.69	21.06	36.44	35.09	28.36	9.15	6.56
2001	4	2	2001q2	23.87	27.40	21.27	23.40	18.40	17.40	36.84	26.68	25.35	6.95	5.86
2001	5	2	2001q2	25.31	28.61	21.83	23.25	18.25	17.40	37.35	29.01	25.55	7.56	5.91
2001	6	2	2001q2	24.92	27.57	21.32	23.25	18.25	17.25	37.68	22.60	21.99	5.89	5.08

POSTED OIL PRICES (Nominal Dollars)

Source: RAC - EIA Weekly Petroleum Status Report. WTI, KR, No. 6 and No. 2 - Platts Oilgram Price Report. Propane and Butane - BPN Weekly Propane Newsletter

				Crude Oil			No. 6			No. 2				
						Kern	Fuel Oil a/			Fuel Oil			3.836	4.326
				RAC	WTI	River	0.5%S	1.0%S	2.0%S	LA	Propane Ave.	Butane Ave.	Propane Ave.	Butane Ave.
Year	Month	Quarter	YearQtr	($/Bbl)	($/Bbl)	($/Bbl)	($/Bbl)	($/Bbl)	($/Bbl)	($/Bbl)	($/Bbl)	($/Bbl)	($/Dth)	($/Dth)
2001	7	3	2001q3	23.76	26.43	19.76	23.25	18.25	17.25	33.18	18.53	15.96	4.83	3.69
2001	8	3	2001q3	24.44	27.40	19.78	23.25	18.25	17.25	35.85	20.47	16.22	5.34	3.75
2001	9	3	2001q3	23.73	26.08	18.93	23.25	18.25	17.50	37.04	21.42	15.27	5.58	3.53
2001	10	4	2001q4	20.04	22.08	15.00	23.25	18.25	17.25	30.48	20.04	15.61	5.23	3.61
2001	11	4	2001q4	17.24	19.59	12.90	23.25	18.25	17.25	26.19	19.54	14.73	5.09	3.40
2001	12	4	2001q4	16.52	19.27	12.26	23.25	18.25	17.25	23.61	18.28	12.94	4.76	2.99
2002	1	1	2002q1	17.38	19.68	13.06	23.25	18.25	17.25	23.91	17.10	12.81	4.46	2.96
2002	2	1	2002q1	18.43	20.66	14.44	23.25	18.25	17.50	25.88	15.74	12.75	4.10	2.95
2002	3	1	2002q1	22.00	24.35	18.24	23.25	18.25	17.25	30.87	15.82	12.74	4.13	2.95
2002	4	2	2002q2	24.10	26.26	21.59	23.93	21.20	20.13	30.62	15.90	12.37	4.15	2.86
2002	5	2	2002q2	25.03	27.06	23.08	24.25	22.75	21.75	29.72	14.61	12.19	3.81	2.82
2002	6	2	2002q2	24.05	25.50	20.94	24.25	22.75	21.75	30.55	13.86	12.21	3.61	2.82
2002	7	3	2002q3	25.16	26.92	23.12	24.25	22.89	22.04	30.69	13.53	12.71	3.53	2.94
2002	8	3	2002q3	26.19	28.34	24.86	24.25	23.25	22.75	34.09	14.14	12.95	3.69	2.99
2002	9	3	2002q3	27.66	29.71	26.05	26.42	25.80	24.83	36.28	21.53	13.59	5.61	3.14
2002	10	4	2002q4	26.70	28.87	23.85	26.88	26.25	25.25	34.75	24.27	17.31	6.33	4.00
2002	11	4	2002q4	24.60	26.29	20.21	26.88	26.25	25.25	32.42	24.07	22.23	6.27	5.14
2002	12	4	2002q4	26.93	29.45	23.22	26.88	26.25	25.25	34.52	26.11	25.12	6.81	5.81
2003	1	1	2003q1	30.52	32.99	27.43	30.45	28.82	26.85	36.19	28.48	26.88	7.42	6.21
2003	2	1	2003q1	33.00	35.75	30.42	30.44	29.31	27.65	44.23	30.82	28.93	8.03	6.69
2003	3	1	2003q1	30.65	33.43	28.63	33.67	30.07	25.77	42.13	33.39	23.89	8.70	5.52
2003	4	2	2003q2	26.02	28.26	22.17	28.21	26.38	24.64	32.89	25.41	20.16	6.62	4.66
2003	5	2	2003q2	25.74	28.14	22.58	26.23	24.23	22.23	30.98	22.89	16.42	5.97	3.80
2003	6	2	2003q2	27.92	30.66	26.22	29.06	27.06	25.06	33.08	23.68	16.75	6.17	3.87
2003	7	3	2003q3	28.55	30.70	26.12	32.86	30.86	28.86	35.73	21.00	17.35	5.47	4.01
2003	8	3	2003q3	29.15	31.59	26.61	29.62	27.62	25.67	39.84	22.72	18.38	5.92	4.25
2003	9	3	2003q3	26.39	28.25	23.68	29.30	27.30	25.30	32.82	23.73	19.48	6.19	4.50
2003	10	4	2003q4	27.75	30.30	24.55	28.31	26.44	24.41	35.28	24.70	21.38	6.44	4.94
2003	11	4	2003q4	28.28	31.06	24.60	27.92	26.86	25.59	36.96	28.67	26.51	7.47	6.13
2003	12	4	2003q4	29.28	32.14	25.77	26.24	25.62	24.86	39.68	32.60	30.24	8.50	6.99
2004	1	1	2004q1	30.93	34.24	26.67	28.85	28.35	27.10	40.29	35.66	32.51	9.30	7.51
2004	2	1	2004q1	31.72	34.74	29.05	26.93	26.43	25.18	47.90	35.07	27.72	9.14	6.41
2004	3	1	2004q1	33.10	36.71	30.53	27.33	26.82	25.60	45.05	31.82	22.79	8.29	5.27
2004	4	2	2004q2	33.47	36.69	30.12	28.90	28.40	27.15	54.53	23.56	22.39	6.14	5.17
2004	5	2	2004q2	36.32	40.24	33.94	30.31	29.81	28.51	56.65	25.52	25.10	6.65	5.80
2004	6	2	2004q2	34.59	38.00	32.05	32.22	31.74	30.49	49.08	25.10	25.88	6.54	5.98
2004	7	3	2004q3	36.68	40.79	33.28	31.17	30.67	29.42	52.72	28.17	26.57	7.34	6.14
2004	8	3	2004q3	40.30	44.90	36.82	31.90	31.40	30.15	56.81	34.60	29.93	9.02	6.92
2004	9	3	2004q3	41.35	45.90	34.61	31.60	31.10	29.85	59.46	35.75	32.34	9.32	7.48

POSTED OIL PRICES (Nominal Dollars)

Source: RAC - EIA Weekly Petroleum Status Report. WTI, KR, No. 6 and No. 2 - Platts Oilgram Price Report. Propane and Butane - BPN Weekly Propane Newsletter

				Crude Oil			No. 6			No. 2				
						Kern	Fuel Oil a/			Fuel Oil			3.836	4.326
				RAC	WTI	River	0.5%S	1.0%S	2.0%S	LA	Propane Ave.	Butane Ave.	Propane Ave.	Butane Ave.
Year	Month	Quarter	YearQtr	($/Bbl)	($/Bbl)	($/Bbl)	($/Bbl)	($/Bbl)	($/Bbl)	($/Bbl)	($/Bbl)	($/Bbl)	($/Dth)	($/Dth)
2004	10	4	2004q4	46.13	53.24	40.45	39.95	39.33	38.20	66.33	41.33	38.93	10.77	9.00
2004	11	4	2004q4	41.77	48.44	35.03	34.80	34.21	32.92	59.27	43.42	43.37	11.32	10.02
2004	12	4	2004q4	36.60	43.20	29.06	30.21	29.52	28.29	52.06	43.03	41.41	11.22	9.57
2005	1	1	2005q1	39.01	46.83	31.84	30.17	30.02	29.64	53.89	40.22	39.69	10.48	9.17
2005	2	1	2005q1	41.05	47.94	33.07	30.31	30.80	32.05	61.83	39.48	37.84	10.29	8.75
2005	3	1	2005q1	46.77	54.33	40.07	34.53	35.03	36.28	70.25	39.17	35.18	10.21	8.13
2005	4	2	2005q2	46.67	52.89	40.24	42.29	41.76	40.69	73.70	39.48	35.66	10.29	8.24
2005	5	2	2005q2	44.74	49.84	37.56	43.30	42.80	41.57	66.11	38.59	32.97	10.06	7.62
2005	6	2	2005q2	50.30	56.36	44.72	41.48	40.97	39.72	71.27	35.33	31.34	9.21	7.25
2005	7	3	2005q3	53.88	58.68	48.47	41.80	41.30	40.05	75.06	36.92	34.44	9.62	7.96
2005	8	3	2005q3	59.29	64.96	54.88	44.45	43.74	42.45	86.86	39.27	34.70	10.24	8.02
2005	9	3	2005q3	60.18	65.52	56.42	52.10	51.71	50.60	90.35	49.10	42.50	12.80	9.83
2005	10	4	2005q4	57.17	62.28	53.37	50.95	50.50	49.36	91.21	55.97	52.19	14.59	12.06
2005	11	4	2005q4	52.13	58.27	48.84	47.97	47.47	46.22	73.03	51.66	52.19	13.47	12.06
2005	12	4	2005q4	52.51	59.41	48.67	48.67	48.17	46.71	72.35	52.67	54.81	13.73	12.67
2006	1	1	2006q1	57.32	65.46	54.01	52.98	52.48	50.40	79.41	53.87	58.80	14.04	13.59
2006	2	1	2006q1	54.85	61.57	50.65	53.73	53.21	50.84	78.02	46.88	51.45	12.22	11.89
2006	3	1	2006q1	56.37	62.82	50.50	53.80	53.31	50.72	83.21	48.05	40.95	12.53	9.47
2006	4	2	2006q2	62.97	69.46	58.13	56.86	56.37	53.86	95.06	52.92	41.16	13.80	9.51
2006	5	2	2006q2	65.35	70.87	59.62	58.78	58.28	56.01	99.64	48.83	43.31	12.73	10.01
2006	6	2	2006q2	65.25	70.88	59.51	54.23	53.74	51.23	94.93	44.39	40.70	11.57	9.41
2006	7	3	2006q3	68.87	74.38	62.52	57.91	57.41	54.91	91.61	47.46	43.52	12.37	10.06
2006	8	3	2006q3	67.56	73.01	60.94	54.79	54.29	51.83	96.42	48.41	44.05	12.62	10.18
2006	9	3	2006q3	58.93	63.74	52.03	49.32	48.77	46.32	81.49	46.12	42.08	12.02	9.73
2006	10	4	2006q4	54.09	58.82	46.55	48.30	47.80	45.30	74.28	46.94	37.80	12.24	8.74
2006	11	4	2006q4	53.51	59.03	47.07	48.61	48.11	45.59	79.56	50.19	39.85	13.08	9.21
2006	12	4	2006q4	55.99	61.96	50.90	48.16	47.59	45.12	84.08	52.79	46.75	13.76	10.81
2007	1	1	2007q1	50.74	54.14	43.42	48.51	48.01	45.51	75.80	56.23	42.84	14.66	9.90
2007	2	1	2007q1	54.42	59.20	48.27	52.13	51.63	49.13	83.16	56.18	44.99	14.64	10.40
2007	3	1	2007q1	56.80	60.63	49.46	53.58	53.08	50.95	85.56	51.91	42.04	13.53	9.72
2007	4	2	2007q2	60.65	63.85	53.48	55.33	54.83	52.33	91.43	44.84	42.00	11.69	9.71
2007	5	2	2007q2	61.64	63.40	53.79	61.24	60.74	58.26	88.95	45.62	42.47	11.89	9.82
2007	6	2	2007q2	65.07	67.44	57.76	58.94	58.44	56.09	94.21	44.65	41.62	11.64	9.62

QUARTERLY HISTORIC REGRESSION DATA

Year	RAC ('07 $/Dth)	WTX/PB ('07 $/Dth)	Seasons 1	2	3	Propane ('07 $/Dth)	Butane ('07 $/Dth)
199501	3.83	1.74	1	0	0	6.42	3.87
199502	4.10	1.79	0	1	0	5.85	2.66
199503	3.75	1.83	0	0	1	5.23	2.73
199504	3.76	2.57	0	0	0	6.17	3.95
199601	4.09	2.99	1	0	0	6.51	4.38
199602	4.52	2.64	0	1	0	5.55	2.92
199603	4.55	2.46	0	0	1	5.27	3.38
199604	5.04	3.70	0	0	0	8.67	5.93
199701	4.71	3.02	1	0	0	8.07	5.38
199702	3.97	2.52	0	1	0	5.04	3.60
199703	3.90	3.05	0	0	1	5.03	3.75
199704	3.92	3.33	0	0	0	6.04	5.74
199801	3.00	2.60	1	0	0	5.80	4.21
199802	2.71	2.68	0	1	0	4.54	2.63
199803	2.61	2.43	0	0	1	3.55	2.37
199804	2.41	2.30	0	0	0	4.37	3.30
199901	2.34	2.10	1	0	0	5.24	3.08
199902	3.31	2.62	0	1	0	4.63	2.81
199903	4.16	3.01	0	0	1	4.71	3.78
199904	4.86	2.93	0	0	0	6.53	6.01
200001	5.64	3.03	1	0	0	7.92	6.31
200002	5.55	4.20	0	1	0	6.64	4.33
200003	6.10	5.34	0	0	1	7.76	5.82
200004	6.01	7.62	0	0	0	11.40	7.87
200101	5.12	7.47	1	0	0	12.58	8.33
200102	4.98	5.04	0	1	0	7.96	6.57
200103	4.82	3.13	0	0	1	6.12	4.26
200104	3.59	2.63	0	0	0	5.83	3.87
200201	3.84	2.78	1	0	0	4.89	3.41
200202	4.84	3.61	0	1	0	4.44	3.26
200203	5.21	3.45	0	0	1	4.90	3.47
200204	5.13	4.61	0	0	0	7.38	5.68
200301	6.13	6.97	1	0	0	9.03	7.00
200302	5.17	5.99	0	1	0	6.96	5.05
200303	5.42	5.32	0	0	1	6.56	4.82
200304	5.47	5.29	0	0	0	8.14	6.10
200401	6.09	5.70	1	0	0	9.99	7.09
200402	6.58	6.19	0	1	0	6.78	6.19
200403	7.41	5.64	0	0	1	9.26	7.41
200404	7.74	6.28	0	0	0	11.96	10.36
200501	7.81	6.26	1	0	0	11.06	9.30
200502	8.68	6.75	0	1	0	10.49	8.20
200503	10.51	8.99	0	0	1	11.49	9.08
200504	9.73	10.36	0	0	0	14.57	12.83
200601	10.05	6.82	1	0	0	13.41	12.09
200602	11.44	5.81	0	1	0	13.06	9.92
200603	11.49	5.77	0	0	1	12.62	10.22
200604	9.58	6.08	0	0	0	13.27	9.76
200701	9.38	6.57	1	0	0	14.39	10.09
200702	10.78	7.07	0	1	0	11.75	9.73
200703	12.29	5.74	0	0	1	12.86	9.80
200704	14.37	6.27	0	0	0	17.65	15.23
200801	14.88	7.84	1	0	0	18.75	15.12

Btu Content Used: RAC=5.8, Propane=3.836, Butane =4.326

Propane Quarterly Regression 1995Q1-2008Q1

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.9718
R Square	0.9444
Adjusted R Square	0.9385
Standard Error	0.9056
Observations	53

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	5	654.5830	130.9166	159.6227	2.77175E-28
Residual	47	38.5476	0.8202		
Total	52	693.1307			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	1.8920	0.3927	4.8175	0.0000	1.1019	2.6821	1.1019	2.6821
RAC ('07 $/Dth)	0.8775	0.0631	13.9133	0.0000	0.7506	1.0043	0.7506	1.0043
WTX/PB ('07 $/Dth)	0.4031	0.0932	4.3245	0.0001	0.2156	0.5906	0.2156	0.5906
1	0.3398	0.3492	0.9732	0.3355	-0.3627	1.0424	-0.3627	1.0424
2	-1.6214	0.3570	-4.5415	0.0000	-2.3396	-0.9032	-2.3396	-0.9032
3	-1.8492	0.3600	-5.1372	0.0000	-2.5734	-1.1251	-2.5734	-1.1251
4	0							

Butane Quarterly Regression 1995Q1-2008Q1

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.9795
R Square	0.9594
Adjusted R Square	0.9550
Standard Error	0.6895
Observations	53

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	5	527.4025	105.4805	221.8876	1.78523E-31
Residual	47	22.3428	0.4754		
Total	52	549.7452			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.6634	0.2990	2.2188	0.0314	0.0619	1.2649	0.0619	1.2649
RAC ('07 $/Dth)	0.7747	0.0480	16.1357	0.0000	0.6781	0.8713	0.6781	0.8713
WTX/PB ('07 $/Dth)	0.3873	0.0710	5.4575	0.0000	0.2445	0.5300	0.2445	0.5300
1	-0.1766	0.2659	-0.6644	0.5097	-0.7115	0.3582	-0.7115	0.3582
2	-1.7049	0.2718	-6.2724	0.0000	-2.2517	-1.1581	-2.2517	-1.1581
3	-1.7848	0.2741	-6.5128	0.0000	-2.3362	-1.2335	-2.3362	-1.2335
4	0							

OIL AND PRODUCTS PRICE FORECAST (2008-2030) - BASE CASE

							3.836	4.326
Year	Qtr	YrQtr	RAC ($/Dth)	WTX/PB ($/Dth)	RAC ('07 $/Dth)	WTx/PB Interstate Gas ('07-$/Dth)	OLS Estimate Calc. of Propane ('07 $/Dth)	OLS Estimate Calc. of Butane ('07 $/Dth)
2006	1	2006q1	9.69	6.58	10.05	6.82	13.80	10.91
2006	2	2006q2	11.12	5.65	11.44	5.81	12.65	10.07
2006	3	2006q3	11.23	5.64	11.48	5.77	12.44	10.01
2006	4	2006q4	9.40	5.98	9.57	6.08	12.75	10.44
2007	1	2007q1	9.28	6.52	9.35	6.57	13.09	10.28
2007	2	2007q2	10.43	7.07	10.44	7.07	12.29	9.79
2007	3	2007q3	10.52	5.75	10.50	5.74	11.57	9.24
2007	4	2007q4	10.57	6.31	10.49	6.27	13.62	11.22
2008	1	2008q1	10.21	7.95	10.06	7.84	14.22	11.32
2008	2	2008q2	15.38	8.90	15.08	8.72	17.02	14.02
2008	3	2008q3	14.90	9.35	14.55	9.12	16.48	13.68
2008	4	2008q4	14.76	9.29	14.36	9.04	18.14	15.29
2009	1	2009q1	14.18	9.84	13.73	9.52	18.12	14.81
2009	2	2009q2	14.18	8.13	13.67	7.84	15.43	12.59
2009	3	2009q3	14.18	8.45	13.61	8.11	15.26	12.57
2009	4	2009q4	14.18	8.54	13.55	8.16	17.08	14.33
2010	1	2010q1	13.76	9.02	13.08	8.58	17.17	13.95
2010	2	2010q2	13.76	7.97	13.03	7.55	14.74	11.97
2010	3	2010q3	13.76	8.08	12.97	7.62	14.49	11.88
2010	4	2010q4	13.76	8.39	12.91	7.88	16.40	13.72
2011	1	2011q1	13.45	8.85	12.56	8.27	16.58	13.42
2011	2	2011q2	13.45	7.73	12.50	7.18	14.13	11.42
2011	3	2011q3	13.45	7.87	12.43	7.27	13.88	11.33
2011	4	2011q4	13.45	8.23	12.37	7.56	15.79	13.17
2012	1	2012q1	13.20	8.37	12.06	7.65	15.90	12.79
2012	2	2012q2	13.20	7.30	12.00	6.64	13.48	10.83
2012	3	2012q3	13.20	7.43	11.94	6.73	13.23	10.74
2012	4	2012q4	13.20	7.76	11.89	6.99	15.14	12.58
2013	1	2013q1	12.99	7.91	11.64	7.08	15.30	12.25
2013	2	2013q2	12.99	6.89	11.59	6.15	12.92	10.32
2013	3	2013q3	12.99	7.02	11.53	6.24	12.67	10.23
2013	4	2013q4	12.99	7.33	11.48	6.48	14.57	12.06
2014	1	2014q1	12.79	7.45	11.24	6.55	14.74	11.73
2014	2	2014q2	12.79	6.51	11.19	5.69	12.38	9.83
2014	3	2014q3	12.79	6.62	11.14	5.77	12.14	9.74
2014	4	2014q4	12.79	6.92	11.08	6.00	14.03	11.57
2015	1	2015q1	12.62	7.81	10.88	6.73	14.49	11.52
2015	2	2015q2	12.62	6.81	10.83	5.84	12.13	9.61
2015	3	2015q3	12.62	6.93	10.78	5.92	11.89	9.52
2015	4	2015q4	12.62	7.24	10.73	6.15	13.79	11.36
2016	1	2016q1	12.48	8.25	10.56	6.98	14.31	11.37
2016	2	2016q2	12.48	7.19	10.51	6.06	11.93	9.45
2016	3	2016q3	12.48	7.34	10.46	6.15	11.70	9.37
2016	4	2016q4	12.48	7.67	10.42	6.40	13.61	11.21
2017	1	2017q1	12.52	8.65	10.39	7.18	14.24	11.32
2017	2	2017q2	12.52	7.56	10.35	6.25	11.87	9.39
2017	3	2017q3	12.52	7.70	10.30	6.33	11.63	9.31
2017	4	2017q4	12.52	8.03	10.26	6.58	13.54	11.16
2018	1	2018q1	12.68	9.05	10.34	7.38	14.28	11.35
2018	2	2018q2	12.68	7.89	10.29	6.41	11.88	9.41
2018	3	2018q3	12.68	8.03	10.25	6.48	11.65	9.33
2018	4	2018q4	12.68	8.39	10.20	6.75	13.56	11.18
2019	1	2019q1	12.87	9.32	10.31	7.46	14.28	11.36
2019	2	2019q2	12.87	8.13	10.26	6.48	11.89	9.42

OIL AND PRODUCTS PRICE FORECAST (2008-2030) - BASE CASE

Year	Qtr	YrQtr	RAC ($/Dth)	WTX/PB ($/Dth)	RAC ('07 $/Dth)	WTx/PB Interstate Gas ('07-$/Dth)	OLS Estimate Calc. of Propane ('07 $/Dth)	OLS Estimate Calc. of Butane ('07 $/Dth)
							3.836	4.326
2019	3	2019q3	12.87	8.28	10.21	6.57	11.65	9.34
2019	4	2019q4	12.87	8.65	10.17	6.83	13.57	11.19
2020	1	2020q1	13.03	9.57	10.24	7.52	14.25	11.33
2020	2	2020q2	13.03	8.36	10.19	6.54	11.85	9.39
2020	3	2020q3	13.03	8.51	10.14	6.62	11.61	9.30
2020	4	2020q4	13.03	8.89	10.10	6.89	13.53	11.15
2021	1	2021q1	13.17	9.61	10.15	7.40	14.12	11.21
2021	2	2021q2	13.17	8.38	10.10	6.43	11.73	9.27
2021	3	2021q3	13.17	8.53	10.05	6.51	11.49	9.19
2021	4	2021q4	13.17	8.92	10.01	6.78	13.40	11.04
2022	1	2022q1	13.36	10.04	10.10	7.59	14.15	11.25
2022	2	2022q2	13.36	8.75	10.05	6.59	11.75	9.30
2022	3	2022q3	13.36	8.91	10.01	6.68	11.52	9.22
2022	4	2022q4	13.36	9.31	9.96	6.95	13.43	11.07
2023	1	2023q1	13.60	10.51	10.09	7.80	14.23	11.33
2023	2	2023q2	13.60	9.17	10.05	6.77	11.82	9.37
2023	3	2023q3	13.60	9.33	10.00	6.86	11.58	9.28
2023	4	2023q4	13.60	9.74	9.95	7.13	13.50	11.14
2024	1	2024q1	13.82	10.98	10.06	7.99	14.28	11.38
2024	2	2024q2	13.82	9.57	10.02	6.94	11.86	9.41
2024	3	2024q3	13.82	9.75	9.97	7.03	11.63	9.33
2024	4	2024q4	13.82	10.18	9.92	7.31	13.55	11.18
2025	1	2025q1	14.08	11.44	10.06	8.17	14.35	11.44
2025	2	2025q2	14.08	9.98	10.01	7.10	11.91	9.46
2025	3	2025q3	14.08	10.17	9.96	7.19	11.68	9.38
2025	4	2025q4	14.08	10.61	9.92	7.47	13.60	11.24
2026	1	2026q1	14.32	11.83	10.03	8.29	14.38	11.47
2026	2	2026q2	14.32	10.32	9.99	7.20	11.94	9.48
2026	3	2026q3	14.32	10.51	9.94	7.30	11.71	9.41
2026	4	2026q4	14.32	10.98	9.89	7.59	13.63	11.27
2027	1	2027q1	14.12	12.11	9.71	8.32	14.10	11.23
2027	2	2027q2	14.12	10.60	9.66	7.25	11.67	9.25
2027	3	2027q3	14.12	10.78	9.62	7.34	11.44	9.17
2027	4	2027q4	14.12	11.25	9.57	7.63	13.37	11.04
2028	1	2028q1	14.37	12.60	9.70	8.50	14.17	11.29
2028	2	2028q2	14.37	11.03	9.65	7.41	11.73	9.31
2028	3	2028q3	14.37	11.22	9.61	7.50	11.50	9.23
2028	4	2028q4	14.37	11.72	9.57	7.80	13.43	11.09
2029	1	2029q1	14.65	13.20	9.70	8.74	14.27	11.39
2029	2	2029q2	14.65	11.56	9.66	7.62	11.82	9.39
2029	3	2029q3	14.65	11.75	9.62	7.72	11.59	9.32
2029	4	2029q4	14.65	12.29	9.57	8.03	13.53	11.19
2030	1	2030q1	14.83	13.75	9.65	8.94	14.30	11.42
2030	2	2030q2	14.83	12.05	9.60	7.80	11.84	9.42
2030	3	2030q3	14.83	12.25	9.56	7.89	11.61	9.34
2030	4	2030q4	14.83	12.82	9.52	8.23	13.56	11.22

a/ Los Angeles Basin (wholesale prices).

2008 CALIFORNIA GAS REPORT

SERVICE AREA ECONOMIC FORECAST
JULY 2008

The Gas Company

A Sempra Energy utility℠

SOUTHERN CALIFORNIA GAS COMPANY SERVICE AREA ECONOMIC FORECAST

(based on Global Insight's "Winter 2008" and "Autumn 2007 Long Term" Regional Forecasts)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
EMPLOYMENT (1000's)													
Total	8,217.7	8,398.5	8,435.7	8,403.5	8,478.9	8,598.9	8,709.9	8,818.3	8,908.3	8,986.2	9,053.6	9,118.2	9,179.3
Agriculture	215.5	218.5	224.4	221.8	225.0	229.5	233.9	238.3	242.5	246.4	250.0	253.3	256.6
Total Non-farm	8,002.2	8,180.0	8,211.3	8,181.7	8,253.9	8,369.3	8,476.0	8,580.0	8,665.8	8,739.8	8,803.6	8,864.9	8,922.7
Mining	16.6	18.3	19.0	19.5	19.6	19.3	18.9	18.4	17.7	17.0	16.4	15.9	15.4
Construction	458.7	485.1	460.7	428.4	414.4	415.7	417.8	426.5	436.2	444.6	451.7	458.5	464.7
Manufacturing	890.8	884.9	863.3	856.8	845.8	848.4	853.6	857.8	859.2	860.9	863.2	867.4	873.5
Transportation, Information, Utilities	557.7	561.4	567.6	564.7	573.0	581.0	593.2	604.0	614.8	623.0	630.6	639.1	646.7
Trade	1,419.6	1,459.9	1,476.3	1,471.2	1,486.2	1,498.8	1,509.7	1,522.4	1,532.7	1,540.9	1,546.8	1,552.3	1,556.2
Retail	985.3	1,010.2	1,013.1	1,004.1	1,017.0	1,025.7	1,031.5	1,040.2	1,047.5	1,052.9	1,057.0	1,060.1	1,061.0
Wholesale (including warehousing)	434.3	449.7	463.3	467.1	469.2	473.1	478.1	482.2	485.2	488.0	489.8	492.3	495.3
Restaurants	564.7	585.3	597.4	592.1	599.7	604.9	608.3	613.4	617.7	620.9	623.3	625.1	625.7
Finance, Insurance & Real Estate	499.5	507.7	490.5	478.6	488.9	502.4	512.6	523.0	530.3	533.6	534.8	534.5	531.7
Services	2,178.8	2,244.2	2,277.3	2,312.2	2,358.1	2,415.1	2,466.0	2,501.2	2,530.5	2,562.5	2,593.1	2,621.8	2,652.8
Accomodation	94.7	96.4	98.8	100.4	101.7	102.8	104.4	105.9	107.1	107.9	108.6	109.3	109.9
Personal & Laundry Services	81.3	82.9	84.5	85.2	84.5	83.7	83.5	83.8	84.3	84.6	84.8	85.1	85.5
Professional & Business Services	1,084.0	1,130.6	1,137.9	1,150.8	1,183.8	1,232.9	1,273.8	1,294.9	1,309.7	1,329.7	1,349.1	1,367.9	1,387.7
Health & Social Services	707.0	719.8	738.3	756.2	770.1	780.0	789.1	800.3	812.0	822.1	831.8	839.9	849.1
Misc. Services	211.8	214.5	217.8	219.6	217.9	215.8	215.2	216.2	217.3	218.1	218.7	219.5	220.5
Government & Education	1,415.7	1,433.4	1,459.0	1,458.2	1,468.1	1,483.6	1,496.0	1,513.4	1,526.8	1,536.5	1,543.6	1,550.1	1,556.0
OTHER INDICATORS													
Southern California Consumer Inflation*	4.5%	4.3%	3.3%	1.7%	1.7%	2.0%	1.9%	2.0%	1.9%	2.0%	2.1%	2.0%	2.0%
Inflation--US Gross Domestic Product**	3.2%	3.2%	2.7%	2.2%	1.8%	1.8%	2.0%	2.1%	2.0%	2.0%	1.9%	1.9%	1.9%
Housing Permits, Single-Family***	87,358	66,279	38,353	22,146	35,107	59,423	67,679	70,528	71,817	72,839	73,230	73,200	72,366
Housing Permits, Multi-Family***	27,775	31,116	27,150	20,129	26,535	32,883	35,989	37,310	38,911	40,548	41,651	42,456	43,344

* Consumer Price Index for Greater Los Angeles area (Los Angeles, Orange, and Riverside Counties)

** Chained Price Index--US GDP. Through 2018 from Global Insight Feb 2008 US forecast; after 2018 from Global Insight 3rd Quarter 2007 (9-25-07) US long-term forecast

*** New-permit totals for 12 counties: Fresno, Imperial, Kern, Kings, Los Angeles, Orange, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, Tulare, and Ventura.

SOUTHERN CALIFORNIA GAS COMPANY SERVICE AREA ECONOMIC FORECAST

(based on Global Insight's "Winter 2008" and "Autumn 2007 Long Term" Regional Forecasts)

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
EMPLOYMENT (1000's)													
Total	9,240.9	9,303.9	9,369.1	9,427.4	9,496.9	9,571.9	9,650.0	9,727.0	9,804.2	9,885.5	9,964.1	10,042.5	10,123.0
Agriculture	259.8	262.8	266.0	269.0	272.2	275.5	278.8	282.1	285.5	288.9	292.3	295.7	299.1
Total Non-farm	8,981.2	9,041.1	9,103.1	9,158.4	9,224.7	9,296.5	9,371.3	9,444.9	9,518.8	9,596.5	9,671.8	9,746.8	9,823.9
Mining	15.0	14.7	14.6	14.6	14.6	14.6	14.6	14.6	14.5	14.5	14.5	14.5	14.4
Construction	470.7	476.5	481.8	486.3	491.6	497.3	503.6	511.3	520.3	531.7	542.6	553.2	563.8
Manufacturing	876.8	875.9	872.9	868.2	862.7	858.7	855.8	853.8	853.1	853.0	852.9	852.5	852.1
Transportation, Information, Utilities	653.0	659.8	665.7	674.2	684.3	695.1	706.2	717.9	730.6	744.5	758.6	773.0	787.6
Trade	1,562.0	1,570.4	1,578.9	1,588.3	1,599.2	1,609.7	1,619.5	1,627.6	1,634.7	1,642.8	1,652.0	1,661.1	1,668.4
Retail	1,062.8	1,066.4	1,070.9	1,076.2	1,081.6	1,086.7	1,091.5	1,095.6	1,099.9	1,105.2	1,111.3	1,117.1	1,121.6
Wholesale (including warehousing)	499.2	504.1	508.0	512.1	517.6	522.9	528.0	532.0	534.8	537.6	540.8	544.0	546.8
Restaurants	626.7	628.8	631.5	634.6	637.8	640.8	643.7	646.1	648.6	651.7	655.3	658.8	661.4
Finance, Insurance & Real Estate	529.6	529.5	530.8	532.7	534.4	535.2	536.6	538.3	539.8	540.6	540.9	542.4	544.8
Services	2,685.9	2,718.2	2,752.0	2,785.7	2,823.4	2,865.2	2,907.8	2,948.1	2,986.2	3,023.0	3,056.5	3,089.6	3,123.8
Accomodation	110.5	111.4	112.3	113.2	114.1	114.9	115.7	116.5	117.3	118.2	119.1	120.1	120.9
Personal & Laundry Services	85.7	86.0	86.3	86.6	86.9	87.3	87.7	87.9	88.3	88.7	89.1	89.4	89.7
Professional & Business Services	1,410.0	1,431.0	1,453.6	1,474.6	1,500.6	1,530.8	1,562.7	1,593.5	1,623.1	1,650.3	1,674.5	1,699.6	1,727.5
Health & Social Services	858.8	868.1	877.3	887.9	897.6	907.0	915.8	923.4	930.0	937.0	944.0	949.9	954.5
Misc. Services	221.0	221.8	222.5	223.4	224.2	225.1	226.0	226.7	227.6	228.7	229.8	230.6	231.2
Government & Education	1,561.4	1,567.1	1,574.8	1,573.8	1,576.7	1,580.0	1,583.4	1,587.3	1,590.9	1,594.8	1,598.5	1,601.8	1,607.7
OTHER INDICATORS													
Southern California Consumer Inflation*	2.0%	1.9%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Inflation--US Gross Domestic Product**	1.9%	1.8%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%	1.9%
Housing Permits, Single-Family***	71,956	71,536	71,020	70,254	69,699	68,906	69,018	70,170	70,346	68,590	65,993	65,008	65,393
Housing Permits, Multi-Family***	44,308	45,113	45,632	46,218	46,902	47,517	48,156	48,695	49,585	50,373	50,887	51,380	52,072

* Consumer Price Index for Greater Los Angeles area (Los Angeles, Orange, and Riverside Counties)

** Chained Price Index--US GDP. Through 2018 from Global Insight Feb 2008 US forecast; after 2018 from Global Insight 3rd Quarter 2007 (9-25-07) US long-term forecast