2014 California Gas Report Redacted Workpapers

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2014 CALIFORNIA GAS REPORT

HISTORICAL DATA
JULY 2014

The Gas Company

A Sempra Energy utility™

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND SENDOUT - MMCF/DAY
RECORDED YEARS 2009 TO 2013

Line	CAPACITY AVAILABLE		2009	2010	2011	2012	2013
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		216	203	175	148	153
	Out-of-State Gas						
11	Other Out-of-State		2,397	2,445	2,452	2,728	2,514
12	Total Out-of-State Gas		2,397	2,445	2,452	2,728	2,514
13	TOTAL SUPPLY TAKEN		2,613	2,648	2,627	2,876	2,667
14	Net Underground Storage Withdrawal		8	(10)	(4)	(42)	106
15	TOTAL THROUGHPUT (1)(2)		2,621	2,638	2,623	2,834	2,773
	DELIVERIES BY END-USE (3)						
16	Core	Residential	645	673	696	644	646
17		Commercial	210	216	217	216	222
18		Industrial	59	61	61	61	62
19		NGV	26	27	28	29	31
20		Subtotal	940	977	1,002	950	961
21	Noncore	Commercial	56	59	60	60	60
22		Industrial	324	361	363	365	368
23		EOR Steaming	35	30	27	29	35
24		Electric Generation	811	768	726	922	848
25		Subtotal	1,226	1,218	1,176	1,376	1,311
26	Wholesale/International		412	412	407	477	465
27	Co. Use & LUAF		43	31	38	31	36
28	SYSTEM TOTAL-THROUGHPUT (1)(2)		2,621	2,638	2,623	2,834	2,773
	TRANSPORTATION AND EXCHANGE						
29	Core	All End Uses	20	25	29	35	45
30	Noncore	Commercial/Industrial	380	420	423	425	428
31		EOR Steaming	35	30	27	29	35
32		Electric Generation	811	768	726	922	848
33		Subtotal-Retail	1,246	1,243	1,205	1,411	1,356
34	Wholesale/International		412	412	407	477	465
35	TOTAL TRANSPORTATION & EXCHANGE		1,658	1,655	1,612	1,888	1,821
	CURTAILMENT (RETAIL & WHOLESALE)						
36		Core					
37		Noncore					
38		TOTAL - Curtailment					
39	REFUSAL						
40		Total BTU Factor (Dth/Mcf)	1.0273	1.0235	1.0209	1.0210	1.0266

NOTES:

(1) Exclude own-source gas supply of procurement by City of Long Beach. 2 2 1 1 2

(2) Deliveries by end-use includes sales, transportation, and exchange volumes.

(3) Data includes effect of prior period adjustments.

2014 CALIFORNIA GAS REPORT

FORECAST OF REQUIREMENTS
JULY 2014

The Gas Company

A Sempra Energy utility™

2014 CALIFORNIA GAS REPORT

FORECAST OF REQUIREMENTS - AVERAGE TEMPERATURE YEAR
JULY 2014

The Gas Company

A Sempra Energy utility™

TABLE 1-SCG

SOUTHERN CALIFORNIA GAS COMPAN

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DA
ESTIMATED YEARS 2012 THRU 2014

AVERAGE TEMPERATURE YEAR

LINE			2014	2015	2016	2017	2018	LINE
	CAPACITY AVAILABLE							
1	California Line 85 Zone (California Producers		160	160	160	160	160	1
2	California Coastal Zone (California Producers		150	150	150	150	150	2
	Out-of-State Gas							
3	Wheeler Ridge Zone (KR, MP, PG&E, OEHI) [1/]		765	765	765	765	765	3
4	Southern Zone (EPN,TGN,NBP) [2/]		1,210	1,210	1,210	1,210	1,210	4
5	Northern Zone (TW,EPN,QST, KR) [3/]		1,590	1,590	1,590	1,590	1,590	5
6	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	6
7	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	7
	GAS SUPPLY TAKEN							
8	California Source Gas		310	310	310	310	310	8
9	Out-of-State		2,494	2,406	2,404	2,390	2,383	9
10	TOTAL SUPPLY TAKEN		2,804	2,716	2,714	2,700	2,693	10
11	Net Underground Storage Withdrawa		0	0	0	0	0	11
12	TOTAL THROUGHPUT [4/]		2,804	2,716	2,714	2,700	2,693	12
	REQUIREMENTS FORECAST BY END-USE [5/]							
13	CORE [6/]	Residential	676	664	658	655	652	13
14		Commercial	226	227	228	230	230	14
15		Industrial	60	59	59	59	58	15
16		NGV	35	38	40	42	43	16
17		Subtotal-CORE	997	988	985	985	984	17
18	NONCORE	Commercial	48	46	44	43	41	18
19		Industrial	376	379	379	379	377	19
20		EOR Steaming	44	52	52	52	52	20
21		Electric Generation (EG)	863	789	785	773	777	21
22		Subtotal-NONCORE	1,331	1,266	1,260	1,246	1,247	22
23	WHOLESALE &	Core	192	192	193	194	196	23
24	INTERNATIONAL	Noncore Excl. EG	45	45	45	46	46	24
25		Electric Generation (EG)	204	190	196	194	186	25
26		Subtotal-WHOLESALE & INTL.	440	427	434	434	427	26
27		Co. Use & LUAF	36	35	35	35	35	27
28	SYSTEM TOTAL THROUGHPUT [4/]		2,804	2,716	2,714	2,700	2,693	28
	TRANSPORTATION AND EXCHANGE							
29	CORE	All End Uses	47	47	47	48	48	29
30	NONCORE	Commercial/Industrial	424	425	424	421	419	30
31		EOR Steaming	44	52	52	52	52	31
32		Electric Generation (EG)	863	789	785	773	777	32
33		Subtotal-RETAIL	1,378	1,313	1,307	1,294	1,295	33
	WHOLESALE &							
34	INTERNATIONAL	All End Uses	440	427	434	434	427	34
35	TOTAL TRANSPORTATION & EXCHANGE		1,818	1,740	1,741	1,728	1,723	35
	CURTAILMENT (RETAIL & WHOLESALE)							
36		Core	0	0	0	0	0	36
37		Noncore	0	0	0	0	0	37
38		TOTAL - Curtailment	0	0	0	0	0	38

NOTES:
1/ Wheeler Ridge Zone: KR & MP at Wheeler Ridge, PG&E at Kern Stn., OEHI at Gosford)
2/ Southern Zone (EPN at Ehrenberg, TGN at Otay Mesa, NBP at Blythe
3/ Northern Zone (TW at No. Needles, EPN at Topok, QST at No. Needles, KR at Kramer Jct.

4/ Excludes own-source gas supply of	1	1	1	1	1	
gas procurement by the City of Long Beach						
5/ Requirement forecast by end-use includes sales, transportation, and exchange volume						
6/ Core end-use demand exclusive of core aggregatio						
transportation (CAT) in MDth/d:	975	966	963	962	960	

TABLE 2-SCG

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED YEARS 2015 THRU 2030

AVERAGE TEMPERATURE YEAR

LINE			2019	2020	2025	2030	2035	LINE
	CAPACITY AVAILABLE							
1	California Line 85 Zone (California Producers		160	160	160	160	160	1
2	California Coastal Zone (California Producers		150	150	150	150	150	2
	Out-of-State Gas		0	0	0	0		
3	Wheeler Ridge Zone (KR, MP, PG&E, OEHI) [1/]		765	765	765	765	765	3
4	Southern Zone (EPN,TGN,NBP) [2/]		1,210	1,210	1,210	1,210	1,210	4
5	Northern Zone (TW,EPN,QST, KR) [3/]		1,590	1,590	1,590	1,590	1,590	5
6	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	6
7	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	7
	GAS SUPPLY TAKEN							
8	California Source Gas		310	310	310	310	310	8
9	Out-of-State		2,369	2,341	2,355	2,339	2,344	9
10	TOTAL SUPPLY TAKEN		2,679	2,651	2,665	2,649	2,654	10
11	Net Underground Storage Withdrawa		0	0	0	0	0	11
12	TOTAL THROUGHPUT [4/]		2,679	2,651	2,665	2,649	2,654	12
	REQUIREMENTS FORECAST BY END-USE [5/]							
13	CORE [6/]	Residential	647	638	619	612	611	13
14		Commercial	230	228	226	228	231	14
15		Industrial	57	55	48	43	41	15
16		NGV	45	46	54	59	64	16
17		Subtotal-CORE	979	968	947	943	947	17
18	NONCORE	Commercial	39	37	28	23	24	18
19		Industrial	373	367	351	341	336	19
20		EOR Steaming	52	52	52	52	52	20
21		Electric Generation (EG)	774	770	821	819	817	21
22		Subtotal-NONCORE	1,239	1,226	1,252	1,235	1,228	22
23	WHOLESALE &	Core	197	197	203	210	218	23
24	INTERNATIONAL	Noncore Excl. EG	46	46	47	47	48	24
25		Electric Generation (EG)	183	180	181	179	178	25
26		Subtotal-WHOLESALE & INTL.	426	423	431	437	444	26
27		Co. Use & LUAF	35	34	35	34	34	27
28	SYSTEM TOTAL THROUGHPUT [4/]		2,679	2,651	2,665	2,649	2,654	28
	TRANSPORTATION AND EXCHANGE							
29	CORE	All End Uses	48	48	48	49	50	29
30	NONCORE	Commercial/Industrial	413	405	379	364	359	30
31		EOR Steaming	52	52	52	52	52	31
32		Electric Generation (EG)	774	770	821	819	817	32
33		Subtotal-RETAIL	1,287	1,274	1,301	1,284	1,279	33
	WHOLESALE &							
34	INTERNATIONAL	All End Uses	426	423	431	437	444	34
35	TOTAL TRANSPORTATION & EXCHANGE		1,713	1,697	1,732	1,721	1,723	35
	CURTAILMENT (RETAIL & WHOLESALE)							
36		Core	0	0	0	0	0	36
37		Noncore	0	0	0	0	0	37
38		TOTAL - Curtailment	0	0	0	0	0	38

NOTES:
1/ Wheeler Ridge Zone: KR & MP at Wheeler Ridge, PG&E at Kern Stn., OEHI at Gosford)
2/ Southern Zone (EPN at Ehrenberg, TGN at Otay Mesa, NBP at Blythe
3/ Northern Zone (TW at No. Needles, EPN at Topok, QST at No. Needles, KR at Kramer Jct.

4/ Excludes own-source gas supply of	1	1	1	0	0	
gas procurement by the City of Long Beach						
5/ Requirement forecast by end-use includes sales, transportation, and exchange volume						
6/ Core end-use demand exclusive of core aggregatio						
transportation (CAT) in MDth/d:	956	944	922	918	921	

Work Paper: TABLE 1-SCG

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2014

AVERAGE TEMPERATURE with BASE HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	CAPACITY AVAILABLE															
1	California Line 85 Zone (California Producers)		160	160	160	160	160	160	160	160	160	160	160	160	160	1
2	California Coastal Zone (California Producers		150	150	150	150	150	150	150	150	150	150	150	150	150	2
	Out-of-State Gas															
3	Wheeler Ridge Zone (KR, MP, PG&E, OEHI) 1/		765	765	765	765	765	765	765	765	765	765	765	765	765	3
4	Southern Zone (EPN,TGN,NBP) 2/		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	4
5	Northern Zone (TW,EPN,QST, KR) 3/		1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	5
6	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	6
7	TOTAL CAPACITY AVAILABLE		3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	7
	GAS SUPPLY TAKEN															
8	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	8
9	Out-of-State		2,973	2,951	2,498	2,369	2,140	2,150	2,502	2,548	2,388	2,064	2,411	2,960	2,494	9
10	TOTAL SUPPLY TAKEN		3,283	3,261	2,808	2,679	2,450	2,460	2,812	2,858	2,698	2,374	2,721	3,270	2,804	10
11	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	11
12	TOTAL THROUGHPUT 4/		3,283	3,261	2,808	2,679	2,450	2,460	2,812	2,858	2,698	2,374	2,721	3,270	2,804	12
	REQUIREMENTS FORECAST BY END-USE 5/															
13	CORE 6/	Residential	1,120	1,042	862	713	496	400	368	367	374	462	769	1,158	676	13
14		Commercial	300	306	244	221	203	191	167	162	181	180	263	306	226	14
15		Industrial	68	71	58	59	56	56	53	55	59	58	61	63	60	15
16		NGV	37	39	38	33	34	32	33	34	34	37	34	33	35	16
17		Subtotal-CORE	1,525	1,458	1,202	1,026	789	679	620	618	648	737	1,128	1,561	997	17
18	NONCORE	Commercial	57	56	51	47	43	40	40	42	50	46	48	56	48	18
19		Industrial	390	383	374	379	376	377	375	391	386	374	358	349	376	19
20		EOR Steaming	43	43	43	43	43	43	46	46	46	46	46	46	44	20
21		Electric Generation (EG)	739	763	673	735	797	910	1,229	1,262	1,075	777	704	680	863	21
22		Subtotal-NONCORE	1,229	1,244	1,141	1,205	1,259	1,370	1,690	1,741	1,556	1,242	1,156	1,131	1,331	22
23	WHOLESALE &	Core	283	288	233	206	155	131	122	119	126	142	210	291	192	23
24	INTERNATIONAL	Noncore Excl. EG	45	48	45	45	44	45	44	43	43	43	45	44	45	24
25		Electric Generation (EG)	158	180	151	162	171	203	300	301	290	179	147	201	204	25
26		Subtotal-WHOLESALE & IN	487	516	429	413	370	379	466	462	459	364	402	537	440	26
27		Co. Use & LUAF	43	42	36	35	32	32	37	37	35	31	35	42	36	27
28	SYSTEM TOTAL THROUGHPUT 4/		3,283	3,261	2,808	2,679	2,450	2,460	2,812	2,858	2,698	2,374	2,721	3,270	2,804	28
	TRANSPORTATION AND EXCHANGE															
29	CORE	All End Uses	61	62	51	46	41	38	35	35	38	39	53	62	47	29
30	NONCORE	Commercial/Industrial	447	438	425	427	419	417	414	434	435	419	406	405	424	30
31		EOR Steaming	43	43	43	43	43	43	46	46	46	46	46	46	44	31
32		Electric Generation (EG)	739	763	673	735	797	910	1,229	1,262	1,075	777	704	680	863	32
33		Subtotal-RETAIL	1,290	1,306	1,192	1,250	1,300	1,408	1,724	1,776	1,594	1,281	1,209	1,193	1,378	33
34	WHOLESALE & INTERNATIONAL	All End Uses	487	516	429	413	370	379	466	462	459	364	402	537	440	34
35	TOTAL TRANSPORTATION & EXCHANGE		1,777	1,823	1,621	1,663	1,670	1,788	2,190	2,238	2,054	1,645	1,611	1,730	1,818	35
	CURTAILMENT (RETAIL & WHOLESALE)															
36		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	36
37		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	37
38		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	38

NOTES:
1/ Wheeler Ridge Zone: KR & MP at Wheeler Ridge, PG&E at Kern Stn., OEHI at Gosford)
2/ Southern Zone (EPN at Ehrenberg, TGN at Otay Mesa, NBP at Blythe)
3/ Northern Zone (TW at No. Needles, EPN at Topok, QST at No. Needles, KR at Kramer Jct.)

4/ Excludes own-source gas supply of gas procurement by the City of Long Beach	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	
5/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.														
6/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,503	1,433	1,182	1,006	768	658	601	598	626	716	1,104	1,538	975	

Work Paper: TABLE 1-SCG

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
	CAPACITY AVAILABLE															
1	California Line 85 Zone (California Producers)		160	160	160	160	160	160	160	160	160	160	160	160	160	1
2	California Coastal Zone (California Producers)		150	150	150	150	150	150	150	150	150	150	150	150	150	2
	Out-of-State Gas															
3	Wheeler Ridge Zone (KR, MP, PG&E, OEHI) 1/		765	765	765	765	765	765	765	765	765	765	765	765	765	3
4	Southern Zone (EPN,TGN,NBP) 2/		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	4
5	Northern Zone (TW,EPN,QST, KR) 3/		1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	5
6	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	6
7	TOTAL CAPACITY AVAILABLE		3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	7
	GAS SUPPLY TAKEN															
8	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	8
9	Out-of-State		2,866	2,774	2,442	2,274	2,002	2,005	2,344	2,377	2,286	2,111	2,417	2,993	2,406	9
10	TOTAL SUPPLY TAKEN		3,176	3,084	2,752	2,584	2,312	2,315	2,654	2,687	2,596	2,421	2,727	3,303	2,716	10
11	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	11
12	TOTAL THROUGHPUT 4/		3,176	3,084	2,752	2,584	2,312	2,315	2,654	2,687	2,596	2,421	2,727	3,303	2,716	12
	REQUIREMENTS FORECAST BY END-USE 5/															
13	CORE 6/	Residential	1,101	1,024	848	701	487	393	362	361	368	454	756	1,138	664	13
14		Commercial	300	307	244	221	204	191	167	163	181	180	263	307	227	14
15		Industrial	67	71	58	58	56	56	53	55	58	58	61	63	59	15
16		NGV	40	42	41	37	37	35	36	37	37	39	36	36	38	16
17		Subtotal-CORE	1,509	1,444	1,191	1,017	784	675	617	615	645	732	1,117	1,543	988	17
18	NONCORE	Commercial	55	53	49	45	41	38	38	41	48	44	46	54	46	18
19		Industrial	387	387	381	384	381	382	378	395	389	376	360	351	379	19
20		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	20
21		Electric Generation (EG)	663	630	633	658	686	783	1,084	1,096	974	816	706	721	789	21
22		Subtotal-NONCORE	1,157	1,122	1,115	1,139	1,160	1,255	1,552	1,583	1,462	1,288	1,165	1,178	1,266	22
23	WHOLESALE &	Core	284	288	234	206	156	132	122	119	126	142	211	291	192	23
24	INTERNATIONAL	Noncore Excl. EG	46	50	46	46	44	45	44	44	44	43	46	45	45	24
25		Electric Generation (EG)	139	140	131	142	139	179	285	291	285	185	154	202	190	25
26		Subtotal-WHOLESALE & INT	469	477	410	394	339	355	451	453	455	370	411	539	427	26
27		Co. Use & LUAF	41	40	36	34	30	30	34	35	34	31	35	43	35	27
28	SYSTEM TOTAL THROUGHPUT 4/		3,176	3,084	2,752	2,584	2,312	2,315	2,654	2,687	2,596	2,421	2,727	3,303	2,716	28
	TRANSPORTATION AND EXCHANGE															
29	CORE	All End Uses	61	62	52	46	41	38	35	35	39	40	53	62	47	29
30	NONCORE	Commercial/Industrial	442	441	430	430	422	420	417	436	436	420	407	405	425	30
31		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	31
32		Electric Generation (EG)	663	630	633	658	686	783	1,084	1,096	974	816	706	721	789	32
33		Subtotal-RETAIL	1,218	1,185	1,166	1,185	1,201	1,293	1,587	1,619	1,501	1,328	1,218	1,240	1,313	33
34	WHOLESALE & INTERNATIONAL	All End Uses	469	477	410	394	339	355	451	453	455	370	411	539	427	34
35	TOTAL TRANSPORTATION & EXCHANGE		1,688	1,662	1,577	1,579	1,540	1,648	2,038	2,072	1,955	1,698	1,629	1,779	1,740	35
	CURTAILMENT (RETAIL & WHOLESALE)															
36		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	36
37		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	37
38		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	38

NOTES:
1/ Wheeler Ridge Zone: KR & MP at Wheeler Ridge, PG&E at Kern Stn., OEHI at Gosford)
2/ Southern Zone (EPN at Ehrenberg, TGN at Otay Mesa, NBP at Blythe)
3/ Northern Zone (TW at No. Needles, EPN at Topok, QST at No. Needles, KR at Kramer Jct.)

4/ Excludes own-source gas supply of gas procurement by the City of Long Beach	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	
5/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.														
6/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,486	1,418	1,170	997	762	654	598	595	622	710	1,092	1,520	966	

Work Paper: TABLE 1-SCG

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2016

AVERAGE TEMPERATURE with BASE HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	CAPACITY AVAILABLE															
1	California Line 85 Zone (California Producers)		160	160	160	160	160	160	160	160	160	160	160	160	160	1
2	California Coastal Zone (California Producers)		150	150	150	150	150	150	150	150	150	150	150	150	150	2
	Out-of-State Gas															
3	Wheeler Ridge Zone (KR, MP, PG&E, OEHI) [1/]		765	765	765	765	765	765	765	765	765	765	765	765	765	3
4	Southern Zone (EPN,TGN,NBP) [2/]		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	4
5	Northern Zone (TW,EPN,QST, KR) [3/]		1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	5
6	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	6
7	TOTAL CAPACITY AVAILABLE		3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	7
	GAS SUPPLY TAKEN															
8	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	8
9	Out-of-State		2,925	2,679	2,413	2,241	1,992	1,996	2,347	2,411	2,318	2,121	2,433	2,969	2,404	9
10	TOTAL SUPPLY TAKEN		3,235	2,989	2,723	2,551	2,302	2,306	2,657	2,721	2,628	2,431	2,743	3,279	2,714	10
11	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	11
12	TOTAL THROUGHPUT [4/]		3,235	2,989	2,723	2,551	2,302	2,306	2,657	2,721	2,628	2,431	2,743	3,279	2,714	12
	REQUIREMENTS FORECAST BY END-USE [5/]															
13	CORE [6/]	Residential	1,093	982	842	697	484	391	359	358	366	451	751	1,130	658	13
14		Commercial	302	298	245	222	205	193	168	164	183	181	265	308	228	14
15		Industrial	68	69	58	58	56	56	53	55	58	58	61	63	59	15
16		NGV	43	43	44	39	39	37	38	39	40	41	38	37	40	16
17		Subtotal-CORE	1,506	1,392	1,189	1,016	784	676	618	616	646	732	1,115	1,539	985	17
18	NONCORE	Commercial	53	50	47	44	40	37	37	39	46	42	45	52	44	18
19		Industrial	389	384	383	385	380	381	378	395	389	376	360	351	379	19
20		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	20
21		Electric Generation (EG)	708	605	605	629	674	769	1,077	1,120	990	818	715	695	785	21
22		Subtotal-NONCORE	1,202	1,091	1,087	1,110	1,146	1,239	1,543	1,607	1,476	1,288	1,172	1,149	1,260	22
23	WHOLESALE &	Core	286	281	235	208	157	133	123	120	127	143	212	294	193	23
24	INTERNATIONAL	Noncore Excl. EG	46	48	46	46	45	45	44	44	44	43	46	45	45	24
25		Electric Generation (EG)	154	138	130	138	141	184	294	300	301	193	162	208	196	25
26		Subtotal-WHOLESALE & INT	486	467	412	392	342	361	462	463	472	379	420	547	434	26
27		Co. Use & LUAF	42	39	35	33	30	30	34	35	34	32	36	43	35	27
28	SYSTEM TOTAL THROUGHPUT [4/]		3,235	2,989	2,723	2,551	2,302	2,306	2,657	2,721	2,628	2,431	2,743	3,279	2,714	28
	TRANSPORTATION AND EXCHANGE															
29	CORE	All End Uses	62	61	52	46	42	39	35	36	39	40	54	63	47	29
30	NONCORE	Commercial/Industrial	442	434	430	429	420	418	415	434	435	418	405	403	424	30
31		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	31
32		Electric Generation (EG)	708	605	605	629	674	769	1,077	1,120	990	818	715	695	785	32
33		Subtotal-RETAIL	1,263	1,151	1,139	1,156	1,188	1,278	1,579	1,642	1,515	1,328	1,225	1,212	1,307	33
34	WHOLESALE & INTERNATIONAL	All End Uses	486	467	412	392	342	361	462	463	472	379	420	547	434	34
35	TOTAL TRANSPORTATION & EXCHANGE		1,749	1,618	1,550	1,548	1,530	1,639	2,040	2,106	1,987	1,707	1,645	1,759	1,741	35
	CURTAILMENT (RETAIL & WHOLESALE)															
36		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	36
37		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	37
38		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	38

NOTES:
1/ Wheeler Ridge Zone: KR & MP at Wheeler Ridge, PG&E at Kern Stn., OEHI at Gosford)
2/ Southern Zone (EPN at Ehrenberg, TGN at Otay Mesa, NBP at Blythe)
3/ Northern Zone (TW at No. Needles, EPN at Topok, QST at No. Needles, KR at Kramer Jct.)

4/ Excludes own-source gas supply of gas procurement by the City of Long Beach	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	
5/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.														
6/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,482	1,367	1,168	995	762	654	598	596	623	710	1,090	1,516	963	

Work Paper: TABLE 1-SCG

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2017

AVERAGE TEMPERATURE with BASE HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	CAPACITY AVAILABLE															
1	California Line 85 Zone (California Producers)		160	160	160	160	160	160	160	160	160	160	160	160	160	1
2	California Coastal Zone (California Producers)		150	150	150	150	150	150	150	150	150	150	150	150	150	2
	Out-of-State Gas															
3	Wheeler Ridge Zone (KR, MP, PG&E, OEHI) [1/]		765	765	765	765	765	765	765	765	765	765	765	765	765	3
4	Southern Zone (EPN,TGN,NBP) [2/]		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	4
5	Northern Zone (TW,EPN,QST, KR) [3/]		1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	5
6	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	6
7	TOTAL CAPACITY AVAILABLE		3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	7
	GAS SUPPLY TAKEN															
8	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	8
9	Out-of-State		2,847	2,764	2,423	2,266	1,986	1,997	2,322	2,357	2,266	2,059	2,435	2,972	2,390	9
10	TOTAL SUPPLY TAKEN		3,157	3,074	2,733	2,576	2,296	2,307	2,632	2,667	2,576	2,369	2,745	3,282	2,700	10
11	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	11
12	TOTAL THROUGHPUT [4/]		3,157	3,074	2,733	2,576	2,296	2,307	2,632	2,667	2,576	2,369	2,745	3,282	2,700	12
	REQUIREMENTS FORECAST BY END-USE [5/]															
13	CORE [6/]	Residential	1,085	1,009	836	691	480	388	356	355	363	448	745	1,122	655	13
14		Commercial	303	310	247	224	206	194	169	165	184	182	266	310	230	14
15		Industrial	67	70	57	57	55	55	52	54	58	57	60	62	59	15
16		NGV	45	46	46	40	41	38	39	41	41	43	40	39	42	16
17		Subtotal-CORE	1,500	1,436	1,185	1,013	782	675	617	615	645	730	1,112	1,533	985	17
18	NONCORE	Commercial	51	50	45	42	38	36	36	38	44	41	43	50	43	18
19		Industrial	387	388	382	385	380	381	377	394	387	374	359	350	379	19
20		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	20
21		Electric Generation (EG)	650	623	621	649	671	771	1,056	1,073	952	770	720	704	773	21
22		Subtotal-NONCORE	1,140	1,112	1,100	1,128	1,141	1,239	1,521	1,556	1,435	1,237	1,174	1,156	1,246	22
23	WHOLESALE &	Core	287	291	236	209	158	133	123	121	128	144	214	295	194	23
24	INTERNATIONAL	Noncore Excl. EG	46	50	46	46	45	45	45	44	45	44	46	46	46	24
25		Electric Generation (EG)	143	144	131	147	141	184	292	296	290	183	164	210	194	25
26		Subtotal-WHOLESALE & INT	477	485	413	402	343	363	460	461	462	371	424	551	434	26
27		Co. Use & LUAF	41	40	35	33	30	30	34	35	33	31	36	43	35	27
28	SYSTEM TOTAL THROUGHPUT [4/]		3,157	3,074	2,733	2,576	2,296	2,307	2,632	2,667	2,576	2,369	2,745	3,282	2,700	28
	TRANSPORTATION AND EXCHANGE															
29	CORE	All End Uses	62	63	52	46	42	39	36	36	40	40	54	63	48	29
30	NONCORE	Commercial/Industrial	438	437	428	427	418	416	413	432	431	415	402	400	421	30
31		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	31
32		Electric Generation (EG)	650	623	621	649	671	771	1,056	1,073	952	770	720	704	773	32
33		Subtotal-RETAIL	1,202	1,176	1,152	1,174	1,183	1,278	1,557	1,593	1,475	1,278	1,228	1,219	1,294	33
34	WHOLESALE & INTERNATIONAL	All End Uses	477	485	413	402	343	363	460	461	462	371	424	551	434	34
35	TOTAL TRANSPORTATION & EXCHANGE		1,679	1,661	1,565	1,577	1,526	1,641	2,017	2,053	1,937	1,649	1,652	1,770	1,728	35
	CURTAILMENT (RETAIL & WHOLESALE)															
36		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	36
37		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	37
38		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	38

NOTES:
1/ Wheeler Ridge Zone: KR & MP at Wheeler Ridge, PG&E at Kern Stn., OEHI at Gosford)
2/ Southern Zone (EPN at Ehrenberg, TGN at Otay Mesa, NBP at Blythe)
3/ Northern Zone (TW at No. Needles, EPN at Topok, QST at No. Needles, KR at Kramer Jct.)

4/ Excludes own-source gas supply of gas procurement by the City of Long Beach	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	
5/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.														
6/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,476	1,410	1,163	992	760	653	597	594	622	708	1,086	1,509	962	

Work Paper: TABLE 1-SCG

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2018

AVERAGE TEMPERATURE with BASE HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	CAPACITY AVAILABLE															
1	California Line 85 Zone (California Producers)		160	160	160	160	160	160	160	160	160	160	160	160	160	1
2	California Coastal Zone (California Producers)		150	150	150	150	150	150	150	150	150	150	150	150	150	2
	Out-of-State Gas															
3	Wheeler Ridge Zone (KR, MP, PG&E, OEHI) [1/]		765	765	765	765	765	765	765	765	765	765	765	765	765	3
4	Southern Zone (EPN,TGN,NBP) [2/]		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	4
5	Northern Zone (TW,EPN,QST, KR) [3/]		1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	5
6	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	6
7	TOTAL CAPACITY AVAILABLE		3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	7
	GAS SUPPLY TAKEN															
8	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	8
9	Out-of-State		2,852	2,764	2,435	2,264	1,972	1,996	2,269	2,308	2,233	2,103	2,438	2,982	2,383	9
10	TOTAL SUPPLY TAKEN		3,162	3,074	2,745	2,574	2,282	2,306	2,579	2,618	2,543	2,413	2,748	3,292	2,693	10
11	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	11
12	TOTAL THROUGHPUT [4/]		3,162	3,074	2,745	2,574	2,282	2,306	2,579	2,618	2,543	2,413	2,748	3,292	2,693	12
	REQUIREMENTS FORECAST BY END-USE [5/]															
13	CORE [6/]	Residential	1,080	1,005	832	688	478	386	355	354	361	446	742	1,117	652	13
14		Commercial	304	311	247	224	206	194	170	165	184	183	267	311	230	14
15		Industrial	66	69	57	57	55	55	51	54	57	57	60	62	58	15
16		NGV	46	48	48	42	42	40	41	42	43	45	41	40	43	16
17		Subtotal-CORE	1,497	1,434	1,184	1,011	782	675	617	615	646	730	1,110	1,530	984	17
18	NONCORE	Commercial	49	48	44	41	37	34	34	36	43	39	41	48	41	18
19		Industrial	386	386	381	383	378	379	376	392	386	373	358	349	377	19
20		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	20
21		Electric Generation (EG)	655	624	631	653	661	770	1,054	1,068	964	796	720	712	777	21
22		Subtotal-NONCORE	1,142	1,110	1,108	1,128	1,128	1,235	1,516	1,549	1,444	1,260	1,171	1,161	1,247	22
23	WHOLESALE &	Core	289	293	238	210	159	134	124	121	128	145	215	297	196	23
24	INTERNATIONAL	Noncore Excl. EG	47	50	46	47	45	46	45	44	45	44	46	46	46	24
25		Electric Generation (EG)	145	146	133	144	139	185	243	254	247	202	169	216	186	25
26		Subtotal-WHOLESALE & INT	481	490	417	401	342	365	412	419	420	391	430	559	427	26
27		Co. Use & LUAF	41	40	36	33	30	30	33	34	33	31	36	43	35	27
28	SYSTEM TOTAL THROUGHPUT [4/]		3,162	3,074	2,745	2,574	2,282	2,306	2,579	2,618	2,543	2,413	2,748	3,292	2,693	28
	TRANSPORTATION AND EXCHANGE															
29	CORE	All End Uses	62	63	53	47	42	39	36	37	40	41	54	63	48	29
30	NONCORE	Commercial/Industrial	435	434	425	424	415	414	410	429	428	412	399	397	419	30
31		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	31
32		Electric Generation (EG)	655	624	631	653	661	770	1,054	1,068	964	796	720	712	777	32
33		Subtotal-RETAIL	1,205	1,173	1,161	1,175	1,171	1,275	1,552	1,586	1,484	1,301	1,226	1,224	1,295	33
34	WHOLESALE & INTERNATIONAL	All End Uses	481	490	417	401	342	365	412	419	420	391	430	559	427	34
35	TOTAL TRANSPORTATION & EXCHANGE		1,686	1,663	1,578	1,576	1,513	1,640	1,964	2,005	1,904	1,692	1,656	1,783	1,723	35
	CURTAILMENT (RETAIL & WHOLESALE)															
36		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	36
37		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	37
38		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	38

NOTES:
1/ Wheeler Ridge Zone: KR & MP at Wheeler Ridge, PG&E at Kern Stn., OEHI at Gosford)
2/ Southern Zone (EPN at Ehrenberg, TGN at Otay Mesa, NBP at Blythe)
3/ Northern Zone (TW at No. Needles, EPN at Topok, QST at No. Needles, KR at Kramer Jct.)

4/ Excludes own-source gas supply of gas procurement by the City of Long Beach	1	1	1	1	1	1	1	1	1	1	1	1	1	
5/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.														
6/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,473	1,407	1,161	990	759	652	597	594	622	708	1,084	1,505	960	

Work Paper: TABLE 2-SCG

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2019

AVERAGE TEMPERATURE with BASE HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	CAPACITY AVAILABLE															
1	California Line 85 Zone (California Producers)		160	160	160	160	160	160	160	160	160	160	160	160	160	1
2	California Coastal Zone (California Producers)		150	150	150	150	150	150	150	150	150	150	150	150	150	2
	Out-of-State Gas															
3	Wheeler Ridge Zone (KR, MP, PG&E, OEHI) [1/]		765	765	765	765	765	765	765	765	765	765	765	765	765	3
4	Southern Zone (EPN,TGN,NBP) [2/]		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	4
5	Northern Zone (TW,EPN,QST, KR) [3/]		1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	5
6	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	6
7	TOTAL CAPACITY AVAILABLE		3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	7
	GAS SUPPLY TAKEN															
8	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	8
9	Out-of-State		2,849	2,760	2,416	2,225	1,979	1,991	2,249	2,289	2,232	2,087	2,405	2,955	2,369	9
10	TOTAL SUPPLY TAKEN		3,159	3,070	2,726	2,535	2,289	2,301	2,559	2,599	2,542	2,397	2,715	3,265	2,679	10
11	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	11
12	TOTAL THROUGHPUT [4/]		3,159	3,070	2,726	2,535	2,289	2,301	2,559	2,599	2,542	2,397	2,715	3,265	2,679	12
	REQUIREMENTS FORECAST BY END-USE [5/]															
13	CORE [6/]	Residential	1,072	997	826	683	475	383	352	351	359	442	737	1,108	647	13
14		Commercial	304	311	247	224	206	194	170	165	184	183	267	310	230	14
15		Industrial	65	68	56	56	54	54	51	53	56	56	59	61	57	15
16		NGV	48	50	49	44	44	42	43	44	45	46	43	42	45	16
17		Subtotal-CORE	1,489	1,427	1,178	1,006	779	672	615	613	643	727	1,105	1,521	979	17
18	NONCORE	Commercial	47	46	42	39	35	33	33	35	41	38	40	46	39	18
19		Industrial	384	383	378	380	375	376	372	388	381	369	353	344	373	19
20		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	20
21		Electric Generation (EG)	663	631	624	629	677	774	1,044	1,065	964	797	705	702	774	21
22		Subtotal-NONCORE	1,145	1,112	1,096	1,100	1,138	1,234	1,500	1,540	1,438	1,255	1,150	1,145	1,239	22
23	WHOLESALE &	Core	291	295	239	211	159	135	125	122	129	146	216	299	197	23
24	INTERNATIONAL	Noncore Excl. EG	47	51	47	47	45	46	45	44	45	44	46	46	46	24
25		Electric Generation (EG)	146	145	132	137	137	183	240	246	254	194	162	212	183	25
26		Subtotal-WHOLESALE & INT	484	491	417	396	342	364	410	412	428	384	425	557	426	26
27		Co. Use & LUAF	41	40	35	33	30	30	33	34	33	31	35	42	35	27
28	SYSTEM TOTAL THROUGHPUT [4/]		3,159	3,070	2,726	2,535	2,289	2,301	2,559	2,599	2,542	2,397	2,715	3,265	2,679	28
	TRANSPORTATION AND EXCHANGE															
29	CORE	All End Uses	62	64	53	47	43	40	36	37	40	41	54	64	48	29
30	NONCORE	Commercial/Industrial	430	429	419	419	410	408	405	423	422	406	393	390	413	30
31		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	31
32		Electric Generation (EG)	663	631	624	629	677	774	1,044	1,065	964	797	705	702	774	32
33		Subtotal-RETAIL	1,208	1,176	1,149	1,147	1,181	1,274	1,536	1,577	1,478	1,296	1,205	1,208	1,287	33
34	WHOLESALE & INTERNATIONAL	All End Uses	484	491	417	396	342	364	410	412	428	384	425	557	426	34
35	TOTAL TRANSPORTATION & EXCHANGE		1,692	1,667	1,566	1,542	1,523	1,638	1,947	1,989	1,906	1,680	1,629	1,765	1,713	35
	CURTAILMENT (RETAIL & WHOLESALE)															
36		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	36
37		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	37
38		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	38

NOTES:
1/ Wheeler Ridge Zone: KR & MP at Wheeler Ridge, PG&E at Kern Stn., OEHI at Gosford)
2/ Southern Zone (EPN at Ehrenberg, TGN at Otay Mesa, NBP at Blythe)
3/ Northern Zone (TW at No. Needles, EPN at Topok, QST at No. Needles, KR at Kramer Jct.)

4/ Excludes own-source gas supply of gas procurement by the City of Long Beach	1	1	1	1	1	1	1	1	1	1	1	1	1	
5/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.														
6/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,464	1,399	1,155	985	755	650	594	592	619	704	1,078	1,497	956	

Work Paper: TABLE 2-SCG

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
	CAPACITY AVAILABLE															
1	California Line 85 Zone (California Producers)		160	160	160	160	160	160	160	160	160	160	160	160	160	1
2	California Coastal Zone (California Producers)		150	150	150	150	150	150	150	150	150	150	150	150	150	2
	Out-of-State Gas															
3	Wheeler Ridge Zone (KR, MP, PG&E, OEHI) [1/]		765	765	765	765	765	765	765	765	765	765	765	765	765	3
4	Southern Zone (EPN,TGN,NBP) [2/]		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	4
5	Northern Zone (TW,EPN,QST, KR) [3/]		1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	5
6	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	6
7	TOTAL CAPACITY AVAILABLE		3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	7
	GAS SUPPLY TAKEN															
8	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	8
9	Out-of-State		2,837	2,640	2,396	2,222	1,965	1,963	2,213	2,268	2,187	2,043	2,397	2,966	2,341	9
10	TOTAL SUPPLY TAKEN		3,147	2,950	2,706	2,532	2,275	2,273	2,523	2,578	2,497	2,353	2,707	3,276	2,651	10
11	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	11
12	TOTAL THROUGHPUT [4/]		3,147	2,950	2,706	2,532	2,275	2,273	2,523	2,578	2,497	2,353	2,707	3,276	2,651	12
	REQUIREMENTS FORECAST BY END-USE [5/]															
13	CORE [6/]	Residential	1,060	952	816	675	469	379	348	347	355	438	728	1,096	638	13
14		Commercial	302	299	246	223	205	194	169	165	183	182	266	309	228	14
15		Industrial	63	64	54	54	52	52	49	51	54	54	57	59	55	15
16		NGV	50	50	51	45	45	43	44	45	46	48	44	43	46	16
17		Subtotal-CORE	1,475	1,365	1,168	998	772	667	610	608	638	721	1,095	1,507	968	17
18	NONCORE	Commercial	45	42	40	37	33	31	31	33	39	36	38	44	37	18
19		Industrial	377	372	371	373	369	370	366	382	375	363	348	339	367	19
20		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	20
21		Electric Generation (EG)	669	607	626	640	675	766	1,022	1,058	944	779	718	727	770	21
22		Subtotal-NONCORE	1,143	1,072	1,088	1,102	1,129	1,219	1,471	1,525	1,410	1,230	1,155	1,162	1,226	22
23	WHOLESALE &	Core	292	286	240	212	160	135	125	123	130	146	217	300	197	23
24	INTERNATIONAL	Noncore Excl. EG	47	49	47	47	46	46	46	45	45	44	47	46	46	24
25		Electric Generation (EG)	149	139	129	140	139	175	237	245	242	180	158	218	180	25
26		Subtotal-WHOLESALE & INT	489	475	416	399	344	357	408	412	417	370	422	564	423	26
27		Co. Use & LUAF	41	38	35	33	30	30	33	33	32	31	35	43	34	27
28	SYSTEM TOTAL THROUGHPUT [4/]		3,147	2,950	2,706	2,532	2,275	2,273	2,523	2,578	2,497	2,353	2,707	3,276	2,651	28
	TRANSPORTATION AND EXCHANGE															
29	CORE	All End Uses	62	61	53	47	43	40	36	37	40	41	54	63	48	29
30	NONCORE	Commercial/Industrial	422	414	410	410	402	401	397	415	414	399	386	383	405	30
31		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	31
32		Electric Generation (EG)	669	607	626	640	675	766	1,022	1,058	944	779	718	727	770	32
33		Subtotal-RETAIL	1,205	1,134	1,141	1,149	1,171	1,259	1,508	1,562	1,450	1,271	1,209	1,225	1,274	33
34	WHOLESALE & INTERNATIONAL	All End Uses	489	475	416	399	344	357	408	412	417	370	422	564	423	34
35	TOTAL TRANSPORTATION & EXCHANGE		1,693	1,608	1,557	1,548	1,516	1,616	1,916	1,974	1,867	1,641	1,632	1,789	1,697	35
	CURTAILMENT (RETAIL & WHOLESALE)															
36		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	36
37		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	37
38		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	38

NOTES:
1/ Wheeler Ridge Zone: KR & MP at Wheeler Ridge, PG&E at Kern Stn., OEHI at Gosford)
2/ Southern Zone (EPN at Ehrenberg, TGN at Otay Mesa, NBP at Blythe)
3/ Northern Zone (TW at No. Needles, EPN at Topok, QST at No. Needles, KR at Kramer Jct.)

4/ Excludes own-source gas supply of gas procurement by the City of Long Beach	1	1	1	1	1	1	1	1	1	1	1	1	1	
5/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.														
6/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,451	1,339	1,144	976	749	644	589	587	614	698	1,068	1,482	944	

Work Paper: TABLE 2-SCG

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
	CAPACITY AVAILABLE															
1	California Line 85 Zone (California Producers)		160	160	160	160	160	160	160	160	160	160	160	160	160	1
2	California Coastal Zone (California Producers)		150	150	150	150	150	150	150	150	150	150	150	150	150	2
	Out-of-State Gas															
3	Wheeler Ridge Zone (KR, MP, PG&E, OEHI) [1/]		765	765	765	765	765	765	765	765	765	765	765	765	765	3
4	Southern Zone (EPN,TGN,NBP) [2/]		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	4
5	Northern Zone (TW,EPN,QST, KR) [3/]		1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	5
6	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	6
7	TOTAL CAPACITY AVAILABLE		3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	7
	GAS SUPPLY TAKEN															
8	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	8
9	Out-of-State		2,840	2,743	2,393	2,214	1,960	1,976	2,175	2,240	2,219	2,083	2,444	2,985	2,355	9
10	TOTAL SUPPLY TAKEN		3,150	3,053	2,703	2,524	2,270	2,286	2,485	2,550	2,529	2,393	2,754	3,295	2,665	10
11	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	11
12	TOTAL THROUGHPUT [4/]		3,150	3,053	2,703	2,524	2,270	2,286	2,485	2,550	2,529	2,393	2,754	3,295	2,665	12
	REQUIREMENTS FORECAST BY END-USE [5/]															
13	CORE [6/]	Residential	1,025	954	790	653	454	366	337	336	343	423	704	1,060	619	13
14		Commercial	299	306	243	220	203	191	167	163	181	179	262	305	226	14
15		Industrial	55	58	47	47	46	45	43	45	47	47	50	51	48	15
16		NGV	58	60	59	52	52	50	51	52	53	55	51	50	54	16
17		Subtotal-CORE	1,436	1,377	1,139	973	755	652	597	595	625	705	1,067	1,466	947	17
18	NONCORE	Commercial	34	33	30	28	25	24	24	25	29	27	28	33	28	18
19		Industrial	359	359	353	356	352	353	350	365	359	348	334	326	351	19
20		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	20
21		Electric Generation (EG)	732	693	671	678	713	810	1,018	1,061	1,007	845	809	807	821	21
22		Subtotal-NONCORE	1,177	1,137	1,106	1,114	1,142	1,238	1,443	1,503	1,447	1,271	1,222	1,218	1,252	22
23	WHOLESALE &	Core	300	304	246	218	164	139	129	126	133	150	223	308	203	23
24	INTERNATIONAL	Noncore Excl. EG	48	51	47	48	46	47	46	45	46	45	47	47	47	24
25		Electric Generation (EG)	148	144	130	139	134	180	238	248	246	190	158	213	181	25
26		Subtotal-WHOLESALE & INT	496	500	424	404	345	365	413	419	424	385	429	568	431	26
27		Co. Use & LUAF	41	40	35	33	29	30	32	33	33	31	36	43	35	27
28	SYSTEM TOTAL THROUGHPUT [4/]		3,150	3,053	2,703	2,524	2,270	2,286	2,485	2,550	2,529	2,393	2,754	3,295	2,665	28
	TRANSPORTATION AND EXCHANGE															
29	CORE	All End Uses	62	63	53	47	43	40	36	37	41	42	54	63	48	29
30	NONCORE	Commercial/Industrial	393	392	383	384	377	377	373	390	388	375	362	359	379	30
31		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	31
32		Electric Generation (EG)	732	693	671	678	713	810	1,018	1,061	1,007	845	809	807	821	32
33		Subtotal-RETAIL	1,239	1,200	1,159	1,161	1,185	1,278	1,479	1,540	1,488	1,313	1,277	1,281	1,301	33
34	WHOLESALE & INTERNATIONAL	All End Uses	496	500	424	404	345	365	413	419	424	385	429	568	431	34
35	TOTAL TRANSPORTATION & EXCHANGE		1,735	1,700	1,583	1,565	1,530	1,644	1,892	1,959	1,912	1,698	1,705	1,849	1,732	35
	CURTAILMENT (RETAIL & WHOLESALE)															
36		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	36
37		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	37
38		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	38

NOTES:
1/ Wheeler Ridge Zone: KR & MP at Wheeler Ridge, PG&E at Kern Stn., OEHI at Gosford)
2/ Southern Zone (EPN at Ehrenberg, TGN at Otay Mesa, NBP at Blythe)
3/ Northern Zone (TW at No. Needles, EPN at Topok, QST at No. Needles, KR at Kramer Jct.)

4/ Excludes own-source gas supply of gas procurement by the City of Long Beach	1	1	1	1	1	1	1	1	1	1	1	1	1	
5/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.														
6/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,411	1,349	1,114	950	731	629	576	573	600	681	1,040	1,440	922	

Work Paper: TABLE 2-SCG

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
	CAPACITY AVAILABLE															
1	California Line 85 Zone (California Producers)		160	160	160	160	160	160	160	160	160	160	160	160	160	1
2	California Coastal Zone (California Producers)		150	150	150	150	150	150	150	150	150	150	150	150	150	2
	Out-of-State Gas															
3	Wheeler Ridge Zone (KR, MP, PG&E, OEHI) [1/]		765	765	765	765	765	765	765	765	765	765	765	765	765	3
4	Southern Zone (EPN,TGN,NBP) [2/]		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	4
5	Northern Zone (TW,EPN,QST, KR) [3/]		1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	5
6	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	6
7	TOTAL CAPACITY AVAILABLE		3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	7
	GAS SUPPLY TAKEN															
8	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	8
9	Out-of-State		2,824	2,727	2,379	2,199	1,946	1,961	2,160	2,225	2,204	2,068	2,430	2,970	2,339	9
10	TOTAL SUPPLY TAKEN		3,134	3,037	2,689	2,509	2,256	2,271	2,470	2,535	2,514	2,378	2,740	3,280	2,649	10
11	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	11
12	TOTAL THROUGHPUT [4/]		3,134	3,037	2,689	2,509	2,256	2,271	2,470	2,535	2,514	2,378	2,740	3,280	2,649	12
	REQUIREMENTS FORECAST BY END-USE [5/]															
13	CORE [6/]	Residential	1,014	943	781	646	449	362	333	332	339	419	697	1,048	612	13
14		Commercial	302	309	245	223	205	193	168	164	183	181	265	309	228	14
15		Industrial	49	52	42	42	41	41	38	40	42	42	44	46	43	15
16		NGV	64	66	65	58	58	55	56	58	59	61	57	56	59	16
17		Subtotal-CORE	1,429	1,371	1,134	969	753	651	596	595	624	704	1,063	1,458	943	17
18	NONCORE	Commercial	28	27	25	23	21	19	19	21	24	22	23	27	23	18
19		Industrial	349	349	343	346	342	343	339	354	348	337	324	317	341	19
20		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	20
21		Electric Generation (EG)	730	691	669	676	711	807	1,015	1,059	1,005	842	806	805	819	21
22		Subtotal-NONCORE	1,159	1,119	1,088	1,097	1,125	1,222	1,426	1,485	1,429	1,254	1,206	1,200	1,235	22
23	WHOLESALE &	Core	310	314	255	225	170	144	133	131	138	156	231	319	210	23
24	INTERNATIONAL	Noncore Excl. EG	48	52	48	48	47	47	46	46	46	45	48	47	47	24
25		Electric Generation (EG)	146	142	128	137	133	178	237	246	244	188	157	211	179	25
26		Subtotal-WHOLESALE & INT	505	509	431	411	349	369	416	423	428	390	435	578	437	26
27		Co. Use & LUAF	41	39	35	33	29	29	32	33	33	31	36	43	34	27
28	SYSTEM TOTAL THROUGHPUT [4/]		3,134	3,037	2,689	2,509	2,256	2,271	2,470	2,535	2,514	2,378	2,740	3,280	2,649	28
	TRANSPORTATION AND EXCHANGE															
29	CORE	All End Uses	63	64	54	48	44	41	37	38	42	43	55	64	49	29
30	NONCORE	Commercial/Industrial	377	376	368	369	363	363	359	374	372	360	347	344	364	30
31		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	31
32		Electric Generation (EG)	730	691	669	676	711	807	1,015	1,059	1,005	842	806	805	819	32
33		Subtotal-RETAIL	1,222	1,183	1,143	1,144	1,169	1,262	1,463	1,523	1,470	1,296	1,261	1,265	1,284	33
34	WHOLESALE & INTERNATIONAL	All End Uses	505	509	431	411	349	369	416	423	428	390	435	578	437	34
35	TOTAL TRANSPORTATION & EXCHANGE		1,727	1,692	1,574	1,555	1,518	1,632	1,879	1,946	1,899	1,686	1,696	1,843	1,721	35
	CURTAILMENT (RETAIL & WHOLESALE)															
36		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	36
37		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	37
38		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	38

NOTES:
1/ Wheeler Ridge Zone: KR & MP at Wheeler Ridge, PG&E at Kern Stn., OEHI at Gosford)
2/ Southern Zone (EPN at Ehrenberg, TGN at Otay Mesa, NBP at Blythe)
3/ Northern Zone (TW at No. Needles, EPN at Topok, QST at No. Needles, KR at Kramer Jct.)

4/ Excludes own-source gas supply of gas procurement by the City of Long Beach	0	0	0	0	0	0	0	0	0	0	0	0	0	
5/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.														
6/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,402	1,341	1,109	945	728	627	574	571	598	679	1,034	1,431	918	

Work Paper: TABLE 2-SCG

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2035

AVERAGE TEMPERATURE with BASE HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	CAPACITY AVAILABLE															
1	California Line 85 Zone (California Producers)		160	160	160	160	160	160	160	160	160	160	160	160	160	1
2	California Coastal Zone (California Producers)		150	150	150	150	150	150	150	150	150	150	150	150	150	2
	Out-of-State Gas															
3	Wheeler Ridge Zone (KR, MP, PG&E, OEHI) [1/]		765	765	765	765	765	765	765	765	765	765	765	765	765	3
4	Southern Zone (EPN,TGN,NBP) [2/]		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	4
5	Northern Zone (TW,EPN,QST, KR) [3/]		1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	5
6	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	6
7	TOTAL CAPACITY AVAILABLE		3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	7
	GAS SUPPLY TAKEN															
8	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	8
9	Out-of-State		2,833	2,737	2,385	2,204	1,950	1,964	2,162	2,226	2,206	2,071	2,436	2,979	2,344	9
10	TOTAL SUPPLY TAKEN		3,143	3,047	2,695	2,514	2,260	2,274	2,472	2,536	2,516	2,381	2,746	3,289	2,654	10
11	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	11
12	TOTAL THROUGHPUT [4/]		3,143	3,047	2,695	2,514	2,260	2,274	2,472	2,536	2,516	2,381	2,746	3,289	2,654	12
	REQUIREMENTS FORECAST BY END-USE [5/]															
13	CORE [6/]	Residential	1,013	943	780	645	449	362	333	332	339	418	696	1,047	611	13
14		Commercial	305	312	248	225	207	195	170	166	185	183	268	312	231	14
15		Industrial	47	49	40	40	39	39	36	38	40	40	42	44	41	15
16		NGV	69	71	70	62	62	59	61	63	64	66	61	60	64	16
17		Subtotal-CORE	1,433	1,375	1,139	972	757	655	600	598	628	708	1,067	1,462	947	17
18	NONCORE	Commercial	28	28	25	23	21	20	20	21	25	23	24	28	24	18
19		Industrial	344	343	338	341	337	338	334	348	342	332	319	312	336	19
20		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	20
21		Electric Generation (EG)	729	690	667	674	709	806	1,013	1,057	1,003	841	805	803	817	21
22		Subtotal-NONCORE	1,153	1,112	1,082	1,090	1,119	1,215	1,419	1,477	1,422	1,247	1,199	1,195	1,228	22
23	WHOLESALE &	Core	321	325	264	233	176	150	138	136	143	162	240	331	218	23
24	INTERNATIONAL	Noncore Excl. EG	49	53	48	49	47	48	47	46	47	46	48	48	48	24
25		Electric Generation (EG)	145	141	127	136	132	177	236	245	243	187	156	210	178	25
26		Subtotal-WHOLESALE & INT	516	519	439	418	355	375	421	428	433	395	444	589	444	26
27		Co. Use & LUAF	41	40	35	33	29	30	32	33	33	31	36	43	34	27
28	SYSTEM TOTAL THROUGHPUT [4/]		3,143	3,047	2,695	2,514	2,260	2,274	2,472	2,536	2,516	2,381	2,746	3,289	2,654	28
	TRANSPORTATION AND EXCHANGE															
29	CORE	All End Uses	64	65	55	48	44	41	38	39	43	44	56	65	50	29
30	NONCORE	Commercial/Industrial	372	371	363	364	358	358	353	369	367	355	343	340	359	30
31		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	31
32		Electric Generation (EG)	729	690	667	674	709	806	1,013	1,057	1,003	841	805	803	817	32
33		Subtotal-RETAIL	1,217	1,178	1,137	1,139	1,163	1,256	1,456	1,516	1,464	1,291	1,256	1,260	1,279	33
34	WHOLESALE & INTERNATIONAL	All End Uses	516	519	439	418	355	375	421	428	433	395	444	589	444	34
35	TOTAL TRANSPORTATION & EXCHANGE		1,732	1,697	1,577	1,557	1,518	1,631	1,878	1,944	1,898	1,686	1,699	1,849	1,723	35
	CURTAILMENT (RETAIL & WHOLESALE)															
36		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	36
37		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	37
38		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	38

NOTES:
1/ Wheeler Ridge Zone: KR & MP at Wheeler Ridge, PG&E at Kern Stn., OEHI at Gosford)
2/ Southern Zone (EPN at Ehrenberg, TGN at Otay Mesa, NBP at Blythe)
3/ Northern Zone (TW at No. Needles, EPN at Topok, QST at No. Needles, KR at Kramer Jct.)

4/ Excludes own-source gas supply of gas procurement by the City of Long Beach	0	0	0	0	0	0	0	0	0	0	0	0	0	
5/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.														
6/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,406	1,345	1,112	949	731	630	577	574	601	682	1,037	1,434	921	

2014 CALIFORNIA GAS REPORT

FORECAST OF REQUIREMENTS - COLD TEMPERATURE YEAR
JULY 2014

TABLE 3-SCG

SOUTHERN CALIFORNIA GAS COMPAN

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DA
ESTIMATED YEARS 2014 THRU 2018

COLD TEMPERATURE YEAR & DRY HYDRO YEAF

LINE			2014	2015	2016	2017	2018	LINE
	CAPACITY AVAILABLE							
1	California Line 85 Zone (California Producers		160	160	160	160	160	1
2	California Coastal Zone (California Producers		150	150	150	150	150	2
	Out-of-State Gas							
3	Wheeler Ridge Zone (KR, MP, PG&E, OEHI) [1/]		765	765	765	765	765	3
4	Southern Zone (EPN,TGN,NBP) [2/]		1,210	1,210	1,210	1,210	1,210	4
5	Northern Zone (TW,EPN,QST, KR) [3/]		1,590	1,590	1,590	1,590	1,590	5
6	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	6
7	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	7
	GAS SUPPLY TAKEN							
8	California Source Gas		310	310	310	310	310	8
9	Out-of-State		2,591	2,581	2,581	2,560	2,563	9
10	TOTAL SUPPLY TAKEN		2,901	2,891	2,891	2,870	2,873	10
11	Net Underground Storage Withdrawa		0	0	0	0	0	11
12	TOTAL THROUGHPUT [4/]		2,901	2,891	2,891	2,870	2,873	12
	REQUIREMENTS FORECAST BY END-USE [5/]							
13	CORE [6/]	Residential	742	730	723	719	716	13
14		Commercial	239	240	241	242	243	14
15		Industrial	61	61	61	60	59	15
16		NGV	35	38	40	42	43	16
17		Subtotal-CORE	1,078	1,068	1,064	1,063	1,062	17
18	NONCORE	Commercial	49	47	45	44	42	18
19		Industrial	376	379	379	379	377	19
20		EOR Steaming	44	52	52	52	52	20
21		Electric Generation (EG)	863	857	854	838	848	21
22		Subtotal-NONCORE	1,332	1,335	1,330	1,312	1,319	22
23	WHOLESALE &	Core	205	205	206	208	209	23
24	INTERNATIONAL	Noncore Excl. EG	45	45	45	46	46	24
25		Electric Generation (EG)	204	199	208	204	200	25
26		Subtotal-WHOLESALE & INTL.	453	450	459	457	455	26
27		Co. Use & LUAF	38	38	38	37	37	27
28	SYSTEM TOTAL THROUGHPUT [4/]		2,901	2,891	2,891	2,870	2,873	28
	TRANSPORTATION AND EXCHANGE							
29	CORE	All End Uses	49	49	50	50	51	29
30	NONCORE	Commercial/Industrial	425	427	425	423	420	30
31		EOR Steaming	44	52	52	52	52	31
32		Electric Generation (EG)	863	857	854	838	848	32
33		Subtotal-RETAIL	1,381	1,384	1,380	1,362	1,370	33
	WHOLESALE &							
34	INTERNATIONAL	All End Uses	453	450	459	457	455	34
35	TOTAL TRANSPORTATION & EXCHANGE		1,835	1,834	1,839	1,820	1,824	35
	CURTAILMENT (RETAIL & WHOLESALE)							
36		Core	0	0	0	0	0	36
37		Noncore	0	0	0	0	0	37
38		TOTAL - Curtailment	0	0	0	0	0	38

NOTES:
1/ Wheeler Ridge Zone: KR & MP at Wheeler Ridge, PG&E at Kern Stn., OEHI at Gosford)
2/ Southern Zone (EPN at Ehrenberg, TGN at Otay Mesa, NBP at Blythe
3/ Northern Zone (TW at No. Needles, EPN at Topok, QST at No. Needles, KR at Kramer Jct.

4/ Excludes own-source gas supply of	1.1	0.9	0.8	0.8	0.8	
gas procurement by the City of Long Beach						
5/ Requirement forecast by end-use includes sales, transportation, and exchange volume						
6/ Core end-use demand exclusive of core aggregatio						
transportation (CAT) in MDth/d:	1,056	1,046	1,041	1,040	1,039	

TABLE 4-SCG

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED YEARS 2019 THRU 2035

COLD TEMPERATURE YEAR & DRY HYDRO YEAR

LINE			2019	2020	2025	2030	2035	LINE
	CAPACITY AVAILABLE							
1	California Line 85 Zone (California Producers		160	160	160	160	160	1
2	California Coastal Zone (California Producers		150	150	150	150	150	2
	Out-of-State Gas		0	0	0	0		
3	Wheeler Ridge Zone (KR, MP, PG&E, OEHI) [1/]		765	765	765	765	765	3
4	Southern Zone (EPN,TGN,NBP) [2/]		1,210	1,210	1,210	1,210	1,210	4
5	Northern Zone (TW,EPN,QST, KR) [3/]		1,590	1,590	1,590	1,590	1,590	5
6	Total Out-of-State Gas		3,565	3,565	3,565	3,565	3,565	6
7	TOTAL CAPACITY AVAILABLE		3,875	3,875	3,875	3,875	3,875	7
	GAS SUPPLY TAKEN							
8	California Source Gas		310	310	310	310	310	8
9	Out-of-State		2,550	2,518	2,532	2,517	2,523	9
10	TOTAL SUPPLY TAKEN		2,860	2,828	2,842	2,827	2,833	10
11	Net Underground Storage Withdrawa		0	0	0	0	0	11
12	TOTAL THROUGHPUT [4/]		2,860	2,828	2,842	2,827	2,833	12
	REQUIREMENTS FORECAST BY END-USE [5/]							
13	CORE [6/]	Residential	711	701	680	672	672	13
14		Commercial	243	241	239	241	244	14
15		Industrial	58	56	49	44	42	15
16		NGV	45	46	54	59	64	16
17		Subtotal-CORE	1,057	1,045	1,021	1,017	1,022	17
18	NONCORE	Commercial	41	39	30	24	25	18
19		Industrial	373	367	351	341	336	19
20		EOR Steaming	52	52	52	52	52	20
21		Electric Generation (EG)	848	840	895	893	891	21
22		Subtotal-NONCORE	1,313	1,297	1,327	1,310	1,303	22
23	WHOLESALE &	Core	210	210	217	224	232	23
24	INTERNATIONAL	Noncore Excl. EG	46	46	47	48	48	24
25		Electric Generation (EG)	196	192	193	192	191	25
26		Subtotal-WHOLESALE & INTL.	452	449	457	463	471	26
27		Co. Use & LUAF	37	37	37	37	37	27
28	SYSTEM TOTAL THROUGHPUT [4/]		2,860	2,828	2,842	2,827	2,833	28
	TRANSPORTATION AND EXCHANGE							
29	CORE	All End Uses	51	50	51	52	53	29
30	NONCORE	Commercial/Industrial	414	406	381	365	360	30
31		EOR Steaming	52	52	52	52	52	31
32		Electric Generation (EG)	848	840	895	893	891	32
33		Subtotal-RETAIL	1,364	1,348	1,378	1,361	1,356	33
	WHOLESALE &							
34	INTERNATIONAL	All End Uses	452	449	457	463	471	34
35	TOTAL TRANSPORTATION & EXCHANGE		1,816	1,797	1,835	1,825	1,827	35
	CURTAILMENT (RETAIL & WHOLESALE)							
36		Core	0	0	0	0	0	36
37		Noncore	0	0	0	0	0	37
38		TOTAL - Curtailment	0	0	0	0	0	38

NOTES:
1/ Wheeler Ridge Zone: KR & MP at Wheeler Ridge, PG&E at Kern Stn., OEHI at Gosford)
2/ Southern Zone (EPN at Ehrenberg, TGN at Otay Mesa, NBP at Blythe
3/ Northern Zone (TW at No. Needles, EPN at Topok, QST at No. Needles, KR at Kramer Jct.

4/ Excludes own-source gas supply of	0.7	0.7	0.5	0.5	0.5	
gas procurement by the City of Long Beach						
5/ Requirement forecast by end-use includes sales, transportation, and exchange volume						
6/ Core end-use demand exclusive of core aggregatio						
transportation (CAT) in MDth/d:	1,033	1,021	997	991	995	

Work Paper: TABLE 3-SCG

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2014

COLD TEMPERATURE with DRY HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	CAPACITY AVAILABLE															
1	California Line 85 Zone (California Producers)		160	160	160	160	160	160	160	160	160	160	160	160	160	1
2	California Coastal Zone (California Producers		150	150	150	150	150	150	150	150	150	150	150	150	150	2
	Out-of-State Gas															
3	Wheeler Ridge Zone (KR, MP, PG&E, OEHI) 1/		765	765	765	765	765	765	765	765	765	765	765	765	765	3
4	Southern Zone (EPN,TGN,NBP) 2/		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	4
5	Northern Zone (TW,EPN,QST, KR) 3/		1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	5
6	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	6
7	TOTAL CAPACITY AVAILABLE		3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	7
	GAS SUPPLY TAKEN															
8	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	8
9	Out-of-State		3,181	3,201	2,634	2,484	2,182	2,161	2,501	2,553	2,392	2,096	2,544	3,191	2,591	9
10	TOTAL SUPPLY TAKEN		3,491	3,511	2,944	2,794	2,492	2,471	2,811	2,863	2,702	2,406	2,854	3,501	2,901	10
11	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	11
12	TOTAL THROUGHPUT 4/		3,491	3,511	2,944	2,794	2,492	2,471	2,811	2,863	2,702	2,406	2,854	3,501	2,901	12
	REQUIREMENTS FORECAST BY END-USE 5/															
13	CORE 6/	Residential	1,258	1,226	953	798	523	405	368	367	376	487	860	1,317	742	13
14		Commercial	329	333	261	232	212	196	167	162	184	183	283	337	239	14
15		Industrial	71	74	59	59	57	57	53	56	60	60	63	66	61	15
16		NGV	37	39	38	33	34	32	33	34	34	37	34	33	35	16
17		Subtotal-CORE	1,696	1,672	1,311	1,122	825	689	621	619	653	767	1,240	1,753	1,078	17
18	NONCORE	Commercial	60	58	53	49	43	40	40	42	50	46	50	59	49	18
19		Industrial	390	383	374	379	376	377	375	391	386	374	358	349	376	19
20		EOR Steaming	43	43	43	43	43	43	46	46	46	46	46	46	44	20
21		Electric Generation (EG)	739	763	673	735	797	910	1,229	1,262	1,075	777	704	680	863	21
22		Subtotal-NONCORE	1,232	1,247	1,143	1,206	1,259	1,370	1,690	1,741	1,556	1,242	1,157	1,134	1,332	22
23	WHOLESALE &	Core	315	318	257	222	161	131	120	122	124	144	228	324	205	23
24	INTERNATIONAL	Noncore Excl. EG	45	49	45	46	44	45	44	43	44	43	45	45	45	24
25		Electric Generation (EG)	158	180	151	162	171	203	300	301	290	179	147	201	204	25
26		Subtotal-WHOLESALE & IN	519	547	452	429	375	379	463	466	458	366	419	569	453	26
27		Co. Use & LUAF	45	46	38	36	32	32	36	37	35	31	37	45	38	27
28	SYSTEM TOTAL THROUGHPUT 4/		3,491	3,511	2,944	2,794	2,492	2,471	2,811	2,863	2,702	2,406	2,854	3,501	2,901	28
	TRANSPORTATION AND EXCHANGE															
29	CORE	All End Uses	66	67	55	48	43	39	35	35	39	40	56	68	49	29
30	NONCORE	Commercial/Industrial	450	441	427	428	420	417	414	434	435	420	408	408	425	30
31		EOR Steaming	43	43	43	43	43	43	46	46	46	46	46	46	44	31
32		Electric Generation (EG)	739	763	673	735	797	910	1,229	1,262	1,075	777	704	680	863	32
33		Subtotal-RETAIL	1,298	1,315	1,197	1,254	1,302	1,409	1,724	1,776	1,595	1,282	1,214	1,201	1,381	33
34	WHOLESALE & INTERNATIONAL	All End Uses	519	547	452	429	375	379	463	466	458	366	419	569	453	34
35	TOTAL TRANSPORTATION & EXCHANGE		1,817	1,861	1,649	1,684	1,677	1,788	2,188	2,242	2,053	1,648	1,633	1,771	1,835	35
	CURTAILMENT (RETAIL & WHOLESALE)															
36		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	36
37		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	37
38		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	38

NOTES:
1/ Wheeler Ridge Zone: KR & MP at Wheeler Ridge, PG&E at Kern Stn., OEHI at Gosford)
2/ Southern Zone (EPN at Ehrenberg, TGN at Otay Mesa, NBP at Blythe)
3/ Northern Zone (TW at No. Needles, EPN at Topok, QST at No. Needles, KR at Kramer Jct.)

4/ Excludes own-source gas supply of gas procurement by the City of Long Beach	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	
5/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.														
6/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,673	1,647	1,290	1,103	803	668	602	599	631	746	1,215	1,730	1,056	

Work Paper: TABLE 3-SCG

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
	CAPACITY AVAILABLE															
1	California Line 85 Zone (California Producers)		160	160	160	160	160	160	160	160	160	160	160	160	160	1
2	California Coastal Zone (California Producers)		150	150	150	150	150	150	150	150	150	150	150	150	150	2
	Out-of-State Gas															
3	Wheeler Ridge Zone (KR, MP, PG&E, OEHI) [1/]		765	765	765	765	765	765	765	765	765	765	765	765	765	3
4	Southern Zone (EPN,TGN,NBP) [2/]		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	4
5	Northern Zone (TW,EPN,QST, KR) [3/]		1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	5
6	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	6
7	TOTAL CAPACITY AVAILABLE		3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	7
	GAS SUPPLY TAKEN															
8	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	8
9	Out-of-State		3,174	3,072	2,613	2,440	2,117	2,112	2,457	2,508	2,371	2,214	2,611	3,297	2,581	9
10	TOTAL SUPPLY TAKEN		3,484	3,382	2,923	2,750	2,427	2,422	2,767	2,818	2,681	2,524	2,921	3,607	2,891	10
11	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	11
12	TOTAL THROUGHPUT [4/]		3,484	3,382	2,923	2,750	2,427	2,422	2,767	2,818	2,681	2,524	2,921	3,607	2,891	12
	REQUIREMENTS FORECAST BY END-USE [5/]															
13	CORE [6/]	Residential	1,237	1,205	937	784	514	398	362	361	370	479	846	1,295	730	13
14		Commercial	329	334	261	232	212	196	168	163	184	184	283	337	240	14
15		Industrial	71	74	59	59	57	56	53	55	59	59	62	65	61	15
16		NGV	40	42	41	37	37	35	36	37	37	39	36	36	38	16
17		Subtotal-CORE	1,677	1,654	1,298	1,112	819	686	618	616	650	761	1,228	1,733	1,068	17
18	NONCORE	Commercial	58	56	51	47	42	39	38	41	48	44	48	57	47	18
19		Industrial	387	387	381	384	381	382	378	395	389	376	360	351	379	19
20		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	20
21		Electric Generation (EG)	739	667	658	696	744	866	1,191	1,219	1,053	874	759	794	857	21
22		Subtotal-NONCORE	1,236	1,162	1,142	1,179	1,218	1,338	1,660	1,707	1,541	1,346	1,219	1,254	1,335	22
23	WHOLESALE &	Core	316	318	257	223	161	131	120	123	124	144	228	324	205	23
24	INTERNATIONAL	Noncore Excl. EG	46	50	46	46	44	45	44	44	44	43	46	46	45	24
25		Electric Generation (EG)	164	153	142	154	153	191	289	292	286	197	163	204	199	25
26		Subtotal-WHOLESALE & INT	526	521	444	423	358	367	453	458	455	384	436	573	450	26
27		Co. Use & LUAF	45	44	38	36	32	31	36	37	35	33	38	47	38	27
28	SYSTEM TOTAL THROUGHPUT [4/]		3,484	3,382	2,923	2,750	2,427	2,422	2,767	2,818	2,681	2,524	2,921	3,607	2,891	28
	TRANSPORTATION AND EXCHANGE															
29	CORE	All End Uses	66	68	55	48	43	39	35	35	39	40	57	68	49	29
30	NONCORE	Commercial/Industrial	445	443	432	431	422	420	417	436	436	421	408	408	427	30
31		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	31
32		Electric Generation (EG)	739	667	658	696	744	866	1,191	1,219	1,053	874	759	794	857	32
33		Subtotal-RETAIL	1,302	1,230	1,197	1,227	1,260	1,377	1,695	1,742	1,580	1,387	1,276	1,322	1,384	33
34	WHOLESALE & INTERNATIONAL	All End Uses	526	521	444	423	358	367	453	458	455	384	436	573	450	34
35	TOTAL TRANSPORTATION & EXCHANGE		1,828	1,751	1,641	1,650	1,619	1,744	2,148	2,201	2,035	1,771	1,712	1,895	1,834	35
	CURTAILMENT (RETAIL & WHOLESALE)															
36		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	36
37		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	37
38		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	38

NOTES:
1/ Wheeler Ridge Zone: KR & MP at Wheeler Ridge, PG&E at Kern Stn., OEHI at Gosford)
2/ Southern Zone (EPN at Ehrenberg, TGN at Otay Mesa, NBP at Blythe)
3/ Northern Zone (TW at No. Needles, EPN at Topok, QST at No. Needles, KR at Kramer Jct.)

4/ Excludes own-source gas supply of gas procurement by the City of Long Beach	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	
5/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.														
6/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,654	1,629	1,276	1,092	797	664	599	596	627	740	1,202	1,709	1,046	

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SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2016

COLD TEMPERATURE with DRY HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	CAPACITY AVAILABLE															
1	California Line 85 Zone (California Producers)		160	160	160	160	160	160	160	160	160	160	160	160	160	1
2	California Coastal Zone (California Producers)		150	150	150	150	150	150	150	150	150	150	150	150	150	2
	Out-of-State Gas															
3	Wheeler Ridge Zone (KR, MP, PG&E, OEHI) [1/]		765	765	765	765	765	765	765	765	765	765	765	765	765	3
4	Southern Zone (EPN,TGN,NBP) [2/]		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	4
5	Northern Zone (TW,EPN,QST, KR) [3/]		1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	5
6	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	6
7	TOTAL CAPACITY AVAILABLE		3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	7
	GAS SUPPLY TAKEN															
8	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	8
9	Out-of-State		3,235	2,978	2,597	2,410	2,109	2,101	2,475	2,542	2,409	2,221	2,633	3,253	2,581	9
10	TOTAL SUPPLY TAKEN		3,545	3,288	2,907	2,720	2,419	2,411	2,785	2,852	2,719	2,531	2,943	3,563	2,891	10
11	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	11
12	TOTAL THROUGHPUT [4/]		3,545	3,288	2,907	2,720	2,419	2,411	2,785	2,852	2,719	2,531	2,943	3,563	2,891	12
	REQUIREMENTS FORECAST BY END-USE [5/]															
13	CORE [6/]	Residential	1,229	1,156	930	779	511	396	360	359	367	476	840	1,287	723	13
14		Commercial	331	324	262	233	213	198	169	164	186	185	285	339	241	14
15		Industrial	71	71	59	59	57	56	53	55	59	59	62	65	61	15
16		NGV	43	43	44	39	39	37	38	39	40	41	38	37	40	16
17		Subtotal-CORE	1,673	1,594	1,296	1,110	820	687	619	617	651	761	1,226	1,728	1,064	17
18	NONCORE	Commercial	56	52	49	45	40	37	37	39	46	43	46	55	45	18
19		Industrial	389	384	383	385	380	381	378	395	389	376	360	351	379	19
20		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	20
21		Electric Generation (EG)	781	651	637	669	732	849	1,199	1,244	1,076	872	770	749	854	21
22		Subtotal-NONCORE	1,277	1,139	1,121	1,151	1,204	1,318	1,665	1,730	1,563	1,342	1,228	1,206	1,330	22
23	WHOLESALE &	Core	318	311	259	224	162	132	121	124	125	145	230	326	206	23
24	INTERNATIONAL	Noncore Excl. EG	47	48	46	46	45	45	44	44	44	43	46	45	45	24
25		Electric Generation (EG)	184	153	147	154	158	198	299	301	301	206	176	211	208	25
26		Subtotal-WHOLESALE & INT	549	512	452	424	365	375	464	468	470	394	452	583	459	26
27		Co. Use & LUAF	46	43	38	35	31	31	36	37	35	33	38	46	38	27
28	SYSTEM TOTAL THROUGHPUT [4/]		3,545	3,288	2,907	2,720	2,419	2,411	2,785	2,852	2,719	2,531	2,943	3,563	2,891	28
	TRANSPORTATION AND EXCHANGE															
29	CORE	All End Uses	67	66	55	48	43	40	35	36	40	41	57	68	50	29
30	NONCORE	Commercial/Industrial	445	437	432	430	420	418	415	434	435	419	406	406	425	30
31		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	31
32		Electric Generation (EG)	781	651	637	669	732	849	1,199	1,244	1,076	872	770	749	854	32
33		Subtotal-RETAIL	1,344	1,205	1,176	1,199	1,247	1,358	1,701	1,766	1,602	1,383	1,285	1,275	1,380	33
34	WHOLESALE & INTERNATIONAL	All End Uses	549	512	452	424	365	375	464	468	470	394	452	583	459	34
35	TOTAL TRANSPORTATION & EXCHANGE		1,893	1,717	1,628	1,623	1,612	1,733	2,165	2,234	2,072	1,778	1,737	1,858	1,839	35
	CURTAILMENT (RETAIL & WHOLESALE)															
36		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	36
37		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	37
38		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	38

NOTES:
1/ Wheeler Ridge Zone: KR & MP at Wheeler Ridge, PG&E at Kern Stn., OEHI at Gosford)
2/ Southern Zone (EPN at Ehrenberg, TGN at Otay Mesa, NBP at Blythe)
3/ Northern Zone (TW at No. Needles, EPN at Topok, QST at No. Needles, KR at Kramer Jct.)

4/ Excludes own-source gas supply of gas procurement by the City of Long Beach	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	
5/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.														
6/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,649	1,569	1,274	1,090	797	664	599	596	628	739	1,199	1,704	1,041	

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SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2017

COLD TEMPERATURE with DRY HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	CAPACITY AVAILABLE															
1	California Line 85 Zone (California Producers)		160	160	160	160	160	160	160	160	160	160	160	160	160	1
2	California Coastal Zone (California Producers)		150	150	150	150	150	150	150	150	150	150	150	150	150	2
	Out-of-State Gas															
3	Wheeler Ridge Zone (KR, MP, PG&E, OEHI) [1/]		765	765	765	765	765	765	765	765	765	765	765	765	765	3
4	Southern Zone (EPN,TGN,NBP) [2/]		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	4
5	Northern Zone (TW,EPN,QST, KR) [3/]		1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	5
6	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	6
7	TOTAL CAPACITY AVAILABLE		3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	7
	GAS SUPPLY TAKEN															
8	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	8
9	Out-of-State		3,131	3,062	2,609	2,443	2,125	2,096	2,447	2,457	2,352	2,153	2,618	3,252	2,560	9
10	TOTAL SUPPLY TAKEN		3,441	3,372	2,919	2,753	2,435	2,406	2,757	2,767	2,662	2,463	2,928	3,562	2,870	10
11	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	11
12	TOTAL THROUGHPUT [4/]		3,441	3,372	2,919	2,753	2,435	2,406	2,757	2,767	2,662	2,463	2,928	3,562	2,870	12
	REQUIREMENTS FORECAST BY END-USE [5/]															
13	CORE [6/]	Residential	1,219	1,188	923	773	507	393	357	356	364	472	833	1,276	719	13
14		Commercial	333	337	264	235	214	199	170	165	187	186	287	341	242	14
15		Industrial	70	73	58	58	56	56	52	55	58	59	62	65	60	15
16		NGV	45	46	46	40	41	38	39	41	41	43	40	39	42	16
17		Subtotal-CORE	1,666	1,644	1,291	1,106	818	685	618	616	651	759	1,221	1,720	1,063	17
18	NONCORE	Commercial	54	52	47	44	39	36	36	38	44	41	45	53	44	18
19		Industrial	387	388	382	385	380	381	377	394	387	374	359	350	379	19
20		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	20
21		Electric Generation (EG)	708	664	657	700	746	847	1,175	1,164	1,033	821	765	755	838	21
22		Subtotal-NONCORE	1,201	1,155	1,138	1,180	1,217	1,315	1,639	1,647	1,516	1,288	1,220	1,210	1,312	22
23	WHOLESALE &	Core	319	322	260	225	163	133	121	124	126	146	231	328	208	23
24	INTERNATIONAL	Noncore Excl. EG	46	50	46	47	45	46	45	44	45	44	46	46	46	24
25		Electric Generation (EG)	162	156	145	159	161	196	297	299	290	194	172	212	204	25
26		Subtotal-WHOLESALE & INT	528	529	451	431	369	375	463	468	461	383	449	585	457	26
27		Co. Use & LUAF	45	44	38	36	32	31	36	36	35	32	38	46	37	27
28	SYSTEM TOTAL THROUGHPUT [4/]		3,441	3,372	2,919	2,753	2,435	2,406	2,757	2,767	2,662	2,463	2,928	3,562	2,870	28
	TRANSPORTATION AND EXCHANGE															
29	CORE	All End Uses	67	69	56	49	44	40	36	36	40	41	58	69	50	29
30	NONCORE	Commercial/Industrial	441	440	429	428	418	416	413	432	431	416	404	403	423	30
31		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	31
32		Electric Generation (EG)	708	664	657	700	746	847	1,175	1,164	1,033	821	765	755	838	32
33		Subtotal-RETAIL	1,268	1,224	1,194	1,229	1,260	1,355	1,675	1,683	1,556	1,329	1,278	1,279	1,362	33
34	WHOLESALE & INTERNATIONAL	All End Uses	528	529	451	431	369	375	463	468	461	383	449	585	457	34
35	TOTAL TRANSPORTATION & EXCHANGE		1,797	1,753	1,645	1,660	1,629	1,730	2,139	2,151	2,017	1,713	1,727	1,864	1,820	35
	CURTAILMENT (RETAIL & WHOLESALE)															
36		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	36
37		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	37
38		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	38

NOTES:
1/ Wheeler Ridge Zone: KR & MP at Wheeler Ridge, PG&E at Kern Stn., OEHI at Gosford)
2/ Southern Zone (EPN at Ehrenberg, TGN at Otay Mesa, NBP at Blythe)
3/ Northern Zone (TW at No. Needles, EPN at Topok, QST at No. Needles, KR at Kramer Jct.)

4/ Excludes own-source gas supply of gas procurement by the City of Long Beach	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	
5/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.														
6/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,642	1,618	1,268	1,086	795	663	598	595	627	737	1,195	1,696	1,040	

Work Paper: TABLE 3-SCG

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2018

COLD TEMPERATURE with DRY HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	CAPACITY AVAILABLE															
1	California Line 85 Zone (California Producers)		160	160	160	160	160	160	160	160	160	160	160	160	160	1
2	California Coastal Zone (California Producers)		150	150	150	150	150	150	150	150	150	150	150	150	150	2
	Out-of-State Gas															
3	Wheeler Ridge Zone (KR, MP, PG&E, OEHI) [1/]		765	765	765	765	765	765	765	765	765	765	765	765	765	3
4	Southern Zone (EPN,TGN,NBP) [2/]		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	4
5	Northern Zone (TW,EPN,QST, KR) [3/]		1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	5
6	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	6
7	TOTAL CAPACITY AVAILABLE		3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	7
	GAS SUPPLY TAKEN															
8	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	8
9	Out-of-State		3,146	3,073	2,637	2,452	2,102	2,110	2,408	2,447	2,339	2,197	2,625	3,249	2,563	9
10	TOTAL SUPPLY TAKEN		3,456	3,383	2,947	2,762	2,412	2,420	2,718	2,757	2,649	2,507	2,935	3,559	2,873	10
11	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	11
12	TOTAL THROUGHPUT [4/]		3,456	3,383	2,947	2,762	2,412	2,420	2,718	2,757	2,649	2,507	2,935	3,559	2,873	12
	REQUIREMENTS FORECAST BY END-USE [5/]															
13	CORE [6/]	Residential	1,214	1,183	919	770	505	391	356	354	363	470	830	1,271	716	13
14		Commercial	333	338	264	235	215	199	171	165	187	186	287	341	243	14
15		Industrial	69	72	58	58	56	55	51	54	58	58	61	64	59	15
16		NGV	46	48	48	42	42	40	41	42	43	45	41	40	43	16
17		Subtotal-CORE	1,663	1,641	1,289	1,105	817	685	619	616	651	759	1,220	1,717	1,062	17
18	NONCORE	Commercial	52	50	46	42	37	35	34	36	43	40	43	51	42	18
19		Industrial	386	386	381	383	378	379	376	392	386	373	358	349	377	19
20		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	20
21		Electric Generation (EG)	718	671	674	701	727	855	1,184	1,198	1,067	846	766	751	848	21
22		Subtotal-NONCORE	1,207	1,159	1,152	1,178	1,194	1,320	1,646	1,679	1,547	1,310	1,218	1,202	1,319	22
23	WHOLESALE &	Core	321	324	261	227	164	134	122	125	127	147	232	330	209	23
24	INTERNATIONAL	Noncore Excl. EG	47	51	47	47	45	46	45	44	45	44	47	46	46	24
25		Electric Generation (EG)	172	164	159	170	160	203	251	256	245	214	180	218	200	25
26		Subtotal-WHOLESALE & INT	541	538	467	444	369	383	418	426	416	405	459	594	455	26
27		Co. Use & LUAF	45	44	38	36	31	31	35	36	34	33	38	46	37	27
28	SYSTEM TOTAL THROUGHPUT [4/]		3,456	3,383	2,947	2,762	2,412	2,420	2,718	2,757	2,649	2,507	2,935	3,559	2,873	28
	TRANSPORTATION AND EXCHANGE															
29	CORE	All End Uses	68	69	56	49	44	40	36	37	40	42	58	69	51	29
30	NONCORE	Commercial/Industrial	438	437	426	426	416	414	410	429	428	413	401	400	420	30
31		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	31
32		Electric Generation (EG)	718	671	674	701	727	855	1,184	1,198	1,067	846	766	751	848	32
33		Subtotal-RETAIL	1,275	1,228	1,208	1,227	1,238	1,361	1,682	1,715	1,588	1,352	1,276	1,272	1,370	33
34	WHOLESALE & INTERNATIONAL	All End Uses	541	538	467	444	369	383	418	426	416	405	459	594	455	34
35	TOTAL TRANSPORTATION & EXCHANGE		1,816	1,767	1,675	1,670	1,607	1,744	2,101	2,141	2,004	1,757	1,735	1,866	1,824	35
	CURTAILMENT (RETAIL & WHOLESALE)															
36		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	36
37		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	37
38		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	38

NOTES:
1/ Wheeler Ridge Zone: KR & MP at Wheeler Ridge, PG&E at Kern Stn., OEHI at Gosford)
2/ Southern Zone (EPN at Ehrenberg, TGN at Otay Mesa, NBP at Blythe)
3/ Northern Zone (TW at No. Needles, EPN at Topok, QST at No. Needles, KR at Kramer Jct.)

4/ Excludes own-source gas supply of gas procurement by the City of Long Beach	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	
5/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.														
6/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,638	1,614	1,266	1,084	794	662	598	595	627	736	1,193	1,692	1,039	

Work Paper: TABLE 4-SCG

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2019

COLD TEMPERATURE with DRY HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	CAPACITY AVAILABLE															
1	California Line 85 Zone (California Producers)		160	160	160	160	160	160	160	160	160	160	160	160	160	1
2	California Coastal Zone (California Producers)		150	150	150	150	150	150	150	150	150	150	150	150	150	2
	Out-of-State Gas															
3	Wheeler Ridge Zone (KR, MP, PG&E, OEHI) [1/]		765	765	765	765	765	765	765	765	765	765	765	765	765	3
4	Southern Zone (EPN,TGN,NBP) [2/]		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	4
5	Northern Zone (TW,EPN,QST, KR) [3/]		1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	5
6	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	6
7	TOTAL CAPACITY AVAILABLE		3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	7
	GAS SUPPLY TAKEN															
8	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	8
9	Out-of-State		3,142	3,066	2,611	2,401	2,110	2,099	2,391	2,436	2,341	2,186	2,596	3,242	2,550	9
10	TOTAL SUPPLY TAKEN		3,452	3,376	2,921	2,711	2,420	2,409	2,701	2,746	2,651	2,496	2,906	3,552	2,860	10
11	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	11
12	TOTAL THROUGHPUT [4/]		3,452	3,376	2,921	2,711	2,420	2,409	2,701	2,746	2,651	2,496	2,906	3,552	2,860	12
	REQUIREMENTS FORECAST BY END-USE [5/]															
13	CORE [6/]	Residential	1,205	1,174	912	764	501	388	353	351	360	466	824	1,261	711	13
14		Commercial	333	338	264	235	215	199	170	165	187	186	287	341	243	14
15		Industrial	68	71	57	57	55	54	51	53	57	57	60	63	58	15
16		NGV	48	50	49	44	44	42	43	44	45	46	43	42	45	16
17		Subtotal-CORE	1,654	1,632	1,283	1,099	814	683	616	614	649	756	1,213	1,707	1,057	17
18	NONCORE	Commercial	50	48	44	40	36	33	33	35	41	38	41	49	41	18
19		Industrial	384	383	378	380	375	376	372	388	381	369	353	344	373	19
20		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	20
21		Electric Generation (EG)	728	679	668	675	744	852	1,174	1,198	1,070	853	755	760	848	21
22		Subtotal-NONCORE	1,213	1,163	1,141	1,147	1,206	1,312	1,630	1,673	1,544	1,311	1,201	1,205	1,313	22
23	WHOLESALE &	Core	323	326	263	228	165	135	123	126	127	148	234	332	210	23
24	INTERNATIONAL	Noncore Excl. EG	47	51	47	47	45	46	45	44	45	44	47	46	46	24
25		Electric Generation (EG)	170	160	151	155	158	202	251	252	252	205	173	216	196	25
26		Subtotal-WHOLESALE & INT	540	537	460	430	368	383	420	423	425	397	453	594	452	26
27		Co. Use & LUAF	45	44	38	35	31	31	35	36	34	32	38	46	37	27
28	SYSTEM TOTAL THROUGHPUT [4/]		3,452	3,376	2,921	2,711	2,420	2,409	2,701	2,746	2,651	2,496	2,906	3,552	2,860	28
	TRANSPORTATION AND EXCHANGE															
29	CORE	All End Uses	68	69	56	49	44	40	36	37	41	42	58	69	51	29
30	NONCORE	Commercial/Industrial	433	432	421	420	410	408	405	423	422	407	394	393	414	30
31		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	31
32		Electric Generation (EG)	728	679	668	675	744	852	1,174	1,198	1,070	853	755	760	848	32
33		Subtotal-RETAIL	1,280	1,232	1,197	1,196	1,250	1,352	1,666	1,710	1,584	1,353	1,259	1,274	1,364	33
34	WHOLESALE & INTERNATIONAL	All End Uses	540	537	460	430	368	383	420	423	425	397	453	594	452	34
35	TOTAL TRANSPORTATION & EXCHANGE		1,821	1,768	1,657	1,626	1,619	1,736	2,086	2,133	2,009	1,750	1,713	1,868	1,816	35
	CURTAILMENT (RETAIL & WHOLESALE)															
36		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	36
37		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	37
38		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	38

NOTES:
1/ Wheeler Ridge Zone: KR & MP at Wheeler Ridge, PG&E at Kern Stn., OEHI at Gosford)
2/ Southern Zone (EPN at Ehrenberg, TGN at Otay Mesa, NBP at Blythe)
3/ Northern Zone (TW at No. Needles, EPN at Topok, QST at No. Needles, KR at Kramer Jct.)

4/ Excludes own-source gas supply of gas procurement by the City of Long Beach	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	
5/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.														
6/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,629	1,605	1,259	1,078	790	659	596	592	624	733	1,186	1,682	1,033	

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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
	CAPACITY AVAILABLE															
1	California Line 85 Zone (California Producers)		160	160	160	160	160	160	160	160	160	160	160	160	160	1
2	California Coastal Zone (California Producers)		150	150	150	150	150	150	150	150	150	150	150	150	150	2
	Out-of-State Gas															
3	Wheeler Ridge Zone (KR, MP, PG&E, OEHI) [1/]		765	765	765	765	765	765	765	765	765	765	765	765	765	3
4	Southern Zone (EPN,TGN,NBP) [2/]		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	4
5	Northern Zone (TW,EPN,QST, KR) [3/]		1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	5
6	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	6
7	TOTAL CAPACITY AVAILABLE		3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	7
	GAS SUPPLY TAKEN															
8	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	8
9	Out-of-State		3,121	2,941	2,598	2,408	2,094	2,063	2,358	2,398	2,285	2,135	2,587	3,235	2,518	9
10	TOTAL SUPPLY TAKEN		3,431	3,251	2,908	2,718	2,404	2,373	2,668	2,708	2,595	2,445	2,897	3,545	2,828	10
11	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	11
12	TOTAL THROUGHPUT [4/]		3,431	3,251	2,908	2,718	2,404	2,373	2,668	2,708	2,595	2,445	2,897	3,545	2,828	12
	REQUIREMENTS FORECAST BY END-USE [5/]															
13	CORE [6/]	Residential	1,191	1,120	902	755	495	384	349	348	356	461	814	1,247	701	13
14		Commercial	332	325	263	234	214	198	170	165	186	185	286	340	241	14
15		Industrial	66	66	55	55	53	52	49	51	55	55	58	61	56	15
16		NGV	50	50	51	45	45	43	44	45	46	48	44	43	46	16
17		Subtotal-CORE	1,639	1,562	1,271	1,089	807	677	612	609	644	750	1,203	1,691	1,045	17
18	NONCORE	Commercial	47	45	42	38	34	31	31	33	39	36	39	47	39	18
19		Industrial	377	372	371	373	369	370	366	382	375	363	348	339	367	19
20		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	20
21		Electric Generation (EG)	732	662	675	693	740	835	1,157	1,174	1,034	827	767	772	840	21
22		Subtotal-NONCORE	1,208	1,130	1,139	1,157	1,195	1,288	1,606	1,640	1,500	1,278	1,206	1,209	1,297	22
23	WHOLESALE &	Core	324	316	264	229	165	135	123	126	128	148	235	333	210	23
24	INTERNATIONAL	Noncore Excl. EG	48	49	47	48	46	46	46	45	45	44	47	47	46	24
25		Electric Generation (EG)	167	152	149	160	160	195	246	252	244	192	169	219	192	25
26		Subtotal-WHOLESALE & INT	539	518	460	437	371	376	415	423	418	385	450	599	449	26
27		Co. Use & LUAF	45	42	38	35	31	31	35	35	34	32	38	46	37	27
28	SYSTEM TOTAL THROUGHPUT [4/]		3,431	3,251	2,908	2,718	2,404	2,373	2,668	2,708	2,595	2,445	2,897	3,545	2,828	28
	TRANSPORTATION AND EXCHANGE															
29	CORE	All End Uses	67	66	56	49	44	40	36	37	41	42	58	69	50	29
30	NONCORE	Commercial/Industrial	425	416	412	412	403	401	397	415	414	399	387	386	406	30
31		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	31
32		Electric Generation (EG)	732	662	675	693	740	835	1,157	1,174	1,034	827	767	772	840	32
33		Subtotal-RETAIL	1,276	1,196	1,195	1,206	1,239	1,328	1,642	1,677	1,541	1,320	1,264	1,278	1,348	33
34	WHOLESALE & INTERNATIONAL	All End Uses	539	518	460	437	371	376	415	423	418	385	450	599	449	34
35	TOTAL TRANSPORTATION & EXCHANGE		1,815	1,714	1,655	1,642	1,609	1,705	2,057	2,100	1,959	1,705	1,714	1,877	1,797	35
	CURTAILMENT (RETAIL & WHOLESALE)															
36		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	36
37		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	37
38		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	38

NOTES:
1/ Wheeler Ridge Zone: KR & MP at Wheeler Ridge, PG&E at Kern Stn., OEHI at Gosford)
2/ Southern Zone (EPN at Ehrenberg, TGN at Otay Mesa, NBP at Blythe)
3/ Northern Zone (TW at No. Needles, EPN at Topok, QST at No. Needles, KR at Kramer Jct.)

4/ Excludes own-source gas supply of gas procurement by the City of Long Beach	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	
5/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.														
6/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,613	1,535	1,248	1,068	783	654	591	588	619	727	1,175	1,665	1,021	

Work Paper: TABLE 4-SCG

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
	CAPACITY AVAILABLE															
1	California Line 85 Zone (California Producers)		160	160	160	160	160	160	160	160	160	160	160	160	160	1
2	California Coastal Zone (California Producers)		150	150	150	150	150	150	150	150	150	150	150	150	150	2
	Out-of-State Gas															
3	Wheeler Ridge Zone (KR, MP, PG&E, OEHI) [1/]		765	765	765	765	765	765	765	765	765	765	765	765	765	3
4	Southern Zone (EPN,TGN,NBP) [2/]		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	4
5	Northern Zone (TW,EPN,QST, KR) [3/]		1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	5
6	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	6
7	TOTAL CAPACITY AVAILABLE		3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	7
	GAS SUPPLY TAKEN															
8	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	8
9	Out-of-State		3,139	3,075	2,627	2,418	2,113	2,094	2,273	2,321	2,275	2,208	2,620	3,254	2,532	9
10	TOTAL SUPPLY TAKEN		3,449	3,385	2,937	2,728	2,423	2,404	2,583	2,631	2,585	2,518	2,930	3,564	2,842	10
11	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	11
12	TOTAL THROUGHPUT [4/]		3,449	3,385	2,937	2,728	2,423	2,404	2,583	2,631	2,585	2,518	2,930	3,564	2,842	12
	REQUIREMENTS FORECAST BY END-USE [5/]															
13	CORE [6/]	Residential	1,152	1,122	872	730	479	371	337	336	344	446	787	1,206	680	13
14		Commercial	327	332	260	231	211	196	168	163	184	183	282	335	239	14
15		Industrial	58	60	48	48	46	46	43	45	48	48	51	53	49	15
16		NGV	58	60	59	52	52	50	51	52	53	55	51	50	54	16
17		Subtotal-CORE	1,595	1,574	1,239	1,061	788	662	599	596	630	733	1,172	1,645	1,021	17
18	NONCORE	Commercial	37	36	32	29	26	24	24	25	29	27	30	36	30	18
19		Industrial	359	359	353	356	352	353	350	365	359	348	334	326	351	19
20		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	20
21		Electric Generation (EG)	816	777	759	759	805	897	1,100	1,127	1,053	933	846	855	895	21
22		Subtotal-NONCORE	1,264	1,223	1,196	1,196	1,234	1,326	1,525	1,569	1,493	1,360	1,262	1,268	1,327	22
23	WHOLESALE &	Core	333	336	271	235	170	139	127	130	131	152	241	342	217	23
24	INTERNATIONAL	Noncore Excl. EG	48	52	48	48	46	47	46	45	46	45	47	47	47	24
25		Electric Generation (EG)	164	157	146	152	153	199	253	257	251	195	170	216	193	25
26		Subtotal-WHOLESALE & INT	546	545	465	435	369	385	426	432	428	393	459	605	457	26
27		Co. Use & LUAF	45	44	38	35	31	31	34	34	34	33	38	46	37	27
28	SYSTEM TOTAL THROUGHPUT [4/]		3,449	3,385	2,937	2,728	2,423	2,404	2,583	2,631	2,585	2,518	2,930	3,564	2,842	28
	TRANSPORTATION AND EXCHANGE															
29	CORE	All End Uses	67	69	56	49	44	40	36	37	41	42	58	69	51	29
30	NONCORE	Commercial/Industrial	396	394	385	386	378	377	373	390	388	375	364	362	381	30
31		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	31
32		Electric Generation (EG)	816	777	759	759	805	897	1,100	1,127	1,053	933	846	855	895	32
33		Subtotal-RETAIL	1,331	1,291	1,252	1,245	1,279	1,366	1,561	1,606	1,534	1,402	1,320	1,337	1,378	33
34	WHOLESALE & INTERNATIONAL	All End Uses	546	545	465	435	369	385	426	432	428	393	459	605	457	34
35	TOTAL TRANSPORTATION & EXCHANGE		1,877	1,836	1,717	1,680	1,647	1,751	1,987	2,038	1,962	1,795	1,778	1,942	1,835	35
	CURTAILMENT (RETAIL & WHOLESALE)															
36		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	36
37		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	37
38		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	38

NOTES:
1/ Wheeler Ridge Zone: KR & MP at Wheeler Ridge, PG&E at Kern Stn., OEHI at Gosford)
2/ Southern Zone (EPN at Ehrenberg, TGN at Otay Mesa, NBP at Blythe)
3/ Northern Zone (TW at No. Needles, EPN at Topok, QST at No. Needles, KR at Kramer Jct.)

4/ Excludes own-source gas supply of gas procurement by the City of Long Beach	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	
5/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.														
6/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,568	1,546	1,214	1,039	764	638	577	574	604	709	1,143	1,618	997	

Work Paper: TABLE 4-SCG

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
	CAPACITY AVAILABLE															
1	California Line 85 Zone (California Producers)		160	160	160	160	160	160	160	160	160	160	160	160	160	1
2	California Coastal Zone (California Producers)		150	150	150	150	150	150	150	150	150	150	150	150	150	2
	Out-of-State Gas															
3	Wheeler Ridge Zone (KR, MP, PG&E, OEHI) [1/]		765	765	765	765	765	765	765	765	765	765	765	765	765	3
4	Southern Zone (EPN,TGN,NBP) [2/]		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	4
5	Northern Zone (TW,EPN,QST, KR) [3/]		1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	5
6	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	6
7	TOTAL CAPACITY AVAILABLE		3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	7
	GAS SUPPLY TAKEN															
8	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	8
9	Out-of-State		3,123	3,059	2,613	2,402	2,099	2,080	2,257	2,306	2,258	2,193	2,605	3,238	2,517	9
10	TOTAL SUPPLY TAKEN		3,433	3,369	2,923	2,712	2,409	2,390	2,567	2,616	2,568	2,503	2,915	3,548	2,827	10
11	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	11
12	TOTAL THROUGHPUT [4/]		3,433	3,369	2,923	2,712	2,409	2,390	2,567	2,616	2,568	2,503	2,915	3,548	2,827	12
	REQUIREMENTS FORECAST BY END-USE [5/]															
13	CORE [6/]	Residential	1,140	1,110	863	722	474	367	334	332	340	441	779	1,193	672	13
14		Commercial	331	336	263	234	213	198	169	164	186	185	285	339	241	14
15		Industrial	52	54	43	43	41	41	38	40	43	43	45	48	44	15
16		NGV	64	66	65	58	58	55	56	58	59	61	57	56	59	16
17		Subtotal-CORE	1,586	1,566	1,234	1,057	786	661	598	595	629	731	1,166	1,635	1,017	17
18	NONCORE	Commercial	30	30	26	24	21	20	19	21	24	23	25	30	24	18
19		Industrial	349	349	343	346	342	343	339	354	348	337	324	317	341	19
20		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	20
21		Electric Generation (EG)	814	775	757	757	803	895	1,097	1,125	1,051	931	844	853	893	21
22		Subtotal-NONCORE	1,246	1,205	1,178	1,179	1,217	1,309	1,508	1,551	1,474	1,343	1,245	1,251	1,310	22
23	WHOLESALE &	Core	345	347	280	242	175	144	131	134	136	158	250	354	224	23
24	INTERNATIONAL	Noncore Excl. EG	49	52	48	49	47	47	46	46	46	45	48	48	48	24
25		Electric Generation (EG)	163	155	145	150	152	197	252	256	250	194	168	215	192	25
26		Subtotal-WHOLESALE & INT	556	555	473	442	374	389	429	436	432	397	466	616	463	26
27		Co. Use & LUAF	45	44	38	35	31	31	33	34	33	32	38	46	37	27
28	SYSTEM TOTAL THROUGHPUT [4/]		3,433	3,369	2,923	2,712	2,409	2,390	2,567	2,616	2,568	2,503	2,915	3,548	2,827	28
	TRANSPORTATION AND EXCHANGE															
29	CORE	All End Uses	68	70	57	50	45	41	37	38	42	43	59	70	52	29
30	NONCORE	Commercial/Industrial	380	378	369	370	363	363	359	374	372	360	349	347	365	30
31		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	31
32		Electric Generation (EG)	814	775	757	757	803	895	1,097	1,125	1,051	931	844	853	893	32
33		Subtotal-RETAIL	1,314	1,274	1,235	1,229	1,262	1,351	1,545	1,589	1,517	1,386	1,304	1,321	1,361	33
34	WHOLESALE & INTERNATIONAL	All End Uses	556	555	473	442	374	389	429	436	432	397	466	616	463	34
35	TOTAL TRANSPORTATION & EXCHANGE		1,870	1,829	1,708	1,670	1,636	1,739	1,974	2,025	1,949	1,783	1,770	1,937	1,825	35
	CURTAILMENT (RETAIL & WHOLESALE)															
36		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	36
37		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	37
38		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	38

NOTES:
1/ Wheeler Ridge Zone: KR & MP at Wheeler Ridge, PG&E at Kern Stn., OEHI at Gosford)
2/ Southern Zone (EPN at Ehrenberg, TGN at Otay Mesa, NBP at Blythe)
3/ Northern Zone (TW at No. Needles, EPN at Topok, QST at No. Needles, KR at Kramer Jct.)

4/ Excludes own-source gas supply of gas procurement by the City of Long Beach	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	
5/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.														
6/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,558	1,536	1,208	1,034	761	636	575	572	602	706	1,137	1,607	991	

Work Paper: TABLE 4-SCG

SOUTHERN CALIFORNIA GAS COMPANY

ANNUAL GAS SUPPLY AND REQUIREMENTS - MMCF/DAY
ESTIMATED FOR YEAR: 2035

COLD TEMPERATURE with DRY HYDRO YEAR

LINE			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg	LINE
	CAPACITY AVAILABLE															
1	California Line 85 Zone (California Producers)		160	160	160	160	160	160	160	160	160	160	160	160	160	1
2	California Coastal Zone (California Producers)		150	150	150	150	150	150	150	150	150	150	150	150	150	2
	Out-of-State Gas															
3	Wheeler Ridge Zone (KR, MP, PG&E, OEHI) [1/]		765	765	765	765	765	765	765	765	765	765	765	765	765	3
4	Southern Zone (EPN,TGN,NBP) [2/]		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	4
5	Northern Zone (TW,EPN,QST, KR) [3/]		1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	1,590	5
6	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	6
7	TOTAL CAPACITY AVAILABLE		3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	3,725	7
	GAS SUPPLY TAKEN															
8	California Source Gas		310	310	310	310	310	310	310	310	310	310	310	310	310	8
9	Out-of-State		3,132	3,069	2,620	2,408	2,102	2,082	2,259	2,307	2,260	2,197	2,612	3,249	2,523	9
10	TOTAL SUPPLY TAKEN		3,442	3,379	2,930	2,718	2,412	2,392	2,569	2,617	2,570	2,507	2,922	3,559	2,833	10
11	Net Underground Storage Withdrawal		0	0	0	0	0	0	0	0	0	0	0	0	0	11
12	TOTAL THROUGHPUT [4/]		3,442	3,379	2,930	2,718	2,412	2,392	2,569	2,617	2,570	2,507	2,922	3,559	2,833	12
	REQUIREMENTS FORECAST BY END-USE [5/]															
13	CORE [6/]	Residential	1,139	1,109	862	722	473	367	333	332	340	441	778	1,192	672	13
14		Commercial	334	339	265	236	216	200	171	166	188	187	288	342	244	14
15		Industrial	49	51	41	41	39	39	36	38	41	41	43	45	42	15
16		NGV	69	71	70	62	62	59	61	63	64	66	61	60	64	16
17		Subtotal-CORE	1,591	1,571	1,239	1,061	790	665	602	599	633	735	1,171	1,639	1,022	17
18	NONCORE	Commercial	31	30	27	25	22	20	20	21	25	23	25	31	25	18
19		Industrial	344	343	338	341	337	338	334	348	342	332	319	312	336	19
20		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	20
21		Electric Generation (EG)	812	773	755	755	801	893	1,095	1,123	1,049	929	842	851	891	21
22		Subtotal-NONCORE	1,239	1,198	1,172	1,173	1,211	1,303	1,500	1,543	1,467	1,336	1,238	1,245	1,303	22
23	WHOLESALE &	Core	357	359	290	251	182	150	136	140	142	164	259	366	232	23
24	INTERNATIONAL	Noncore Excl. EG	49	53	49	49	47	48	47	46	47	46	49	48	48	24
25		Electric Generation (EG)	162	154	144	149	151	196	251	255	249	193	167	214	191	25
26		Subtotal-WHOLESALE & INT	568	566	482	450	380	394	434	441	437	403	475	628	471	26
27		Co. Use & LUAF	45	44	38	35	31	31	33	34	33	33	38	46	37	27
28	SYSTEM TOTAL THROUGHPUT [4/]		3,442	3,379	2,930	2,718	2,412	2,392	2,569	2,617	2,570	2,507	2,922	3,559	2,833	28
	TRANSPORTATION AND EXCHANGE															
29	CORE	All End Uses	69	71	58	51	46	42	38	39	43	44	60	71	53	29
30	NONCORE	Commercial/Industrial	375	373	365	365	358	358	353	369	367	355	345	343	360	30
31		EOR Steaming	52	52	52	52	52	52	52	52	52	52	52	52	52	31
32		Electric Generation (EG)	812	773	755	755	801	893	1,095	1,123	1,049	929	842	851	891	32
33		Subtotal-RETAIL	1,308	1,269	1,230	1,223	1,257	1,345	1,538	1,582	1,510	1,380	1,298	1,316	1,356	33
34	WHOLESALE & INTERNATIONAL	All End Uses	568	566	482	450	380	394	434	441	437	403	475	628	471	34
35	TOTAL TRANSPORTATION & EXCHANGE		1,876	1,835	1,712	1,673	1,636	1,739	1,972	2,023	1,948	1,784	1,773	1,944	1,827	35
	CURTAILMENT (RETAIL & WHOLESALE)															
36		Core	0	0	0	0	0	0	0	0	0	0	0	0	0	36
37		Noncore	0	0	0	0	0	0	0	0	0	0	0	0	0	37
38		TOTAL - Curtailment	0	0	0	0	0	0	0	0	0	0	0	0	0	38

NOTES:
1/ Wheeler Ridge Zone: KR & MP at Wheeler Ridge, PG&E at Kern Stn., OEHI at Gosford)
2/ Southern Zone (EPN at Ehrenberg, TGN at Otay Mesa, NBP at Blythe)
3/ Northern Zone (TW at No. Needles, EPN at Topok, QST at No. Needles, KR at Kramer Jct.)

4/ Excludes own-source gas supply of gas procurement by the City of Long Beach	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	
5/ Requirement forecast by end-use includes sales, transportation, and exchange volumes.														
6/ Core end-use demand exclusive of core aggregation transportation (CAT) in MDth/d:	1,562	1,540	1,212	1,037	764	639	579	575	605	709	1,140	1,610	995	

2014 CALIFORNIA GAS REPORT

FORECAST OF REQUIREMENTS-DETAIL
JULY 2014

The Gas Company

A Sempra Energy utility™

2014 CALIFORNIA GAS REPORT

CUSTOMER FORECAST
JULY 2014

The Gas Company

A Sempra Energy utility™

2014 California Gas Report
Active Meter Forecast by Customer Class

Year	Active SF	Active MF	Active MM	Active Total Res	Active Com	Active Ind	Active Total	Growth
2000	3,158,252	1,597,527	44,860	4,800,639	185,845	22,071	5,008,555	69,255
2001	3,210,899	1,604,796	44,487	4,860,183	187,676	21,859	5,069,718	61,163
2002	3,268,930	1,612,709	44,215	4,925,855	189,804	21,396	5,137,054	67,336
2003	3,322,120	1,621,230	43,861	4,987,211	190,114	20,848	5,198,173	61,119
2004	3,377,588	1,633,083	43,540	5,054,210	191,291	20,734	5,266,235	68,062
2005	3,434,786	1,637,608	43,177	5,115,570	192,270	20,590	5,328,430	62,195
2006	3,488,997	1,647,654	42,695	5,179,346	192,321	20,307	5,391,974	63,544
2007	3,524,381	1,665,905	42,386	5,232,672	192,862	20,257	5,445,791	53,817
2008	3,531,044	1,681,864	42,026	5,254,934	191,906	20,140	5,466,979	21,188
2009	3,547,653	1,681,251	41,710	5,270,615	190,000	19,699	5,480,314	13,335
2010	3,570,361	1,697,335	41,485	5,309,182	188,141	19,346	5,516,668	36,354
2011	3,585,183	1,716,280	41,242	5,342,705	187,337	19,135	5,549,177	32,509
2012	3,598,669	1,730,663	41,038	5,370,370	186,996	18,989	5,576,355	27,178
2013	3,614,927	1,743,855	40,895	5,399,678	187,544	18,891	5,606,113	29,758
2014	3,632,822	1,750,780	40,661	5,424,263	188,058	19,018	5,631,340	25,227
2015	3,654,064	1,764,984	40,454	5,459,502	188,470	19,159	5,667,131	35,791
2016	3,679,590	1,781,848	40,248	5,501,686	188,979	19,238	5,709,903	42,773
2017	3,706,222	1,801,701	40,042	5,547,966	189,405	19,286	5,756,657	46,754
2018	3,733,731	1,823,152	39,838	5,596,721	189,592	19,332	5,805,645	48,988
2019	3,761,799	1,844,836	39,635	5,646,271	189,601	19,375	5,855,246	49,602
2020	3,790,167	1,866,404	39,433	5,696,004	189,572	19,378	5,904,954	49,708
2021	3,818,635	1,887,798	39,232	5,745,665	189,434	19,364	5,954,463	49,509
2022	3,846,994	1,908,841	39,032	5,794,867	189,320	19,342	6,003,529	49,066
2023	3,875,183	1,929,495	38,833	5,843,510	189,235	19,323	6,052,068	48,539
2024	3,903,431	1,949,908	38,635	5,891,974	189,175	19,312	6,100,461	48,392
2025	3,932,061	1,970,159	38,438	5,940,658	189,139	19,288	6,149,085	48,624
2026	3,961,142	1,990,418	38,242	5,989,801	189,131	19,244	6,198,176	49,091
2027	3,990,659	2,010,700	38,047	6,039,405	189,144	19,198	6,247,748	49,572
2028	4,020,390	2,030,840	37,852	6,089,082	189,167	19,148	6,297,397	49,649
2029	4,050,358	2,050,648	37,659	6,138,666	189,191	19,097	6,346,954	49,557
2030	4,080,491	2,070,228	37,467	6,188,186	189,239	19,053	6,396,478	49,524
2031	4,110,866	2,089,773	37,276	6,237,916	189,235	19,019	6,446,170	49,691
2032	4,141,326	2,109,225	37,086	6,287,637	189,225	18,986	6,495,848	49,678
2033	4,171,802	2,128,359	36,897	6,337,058	189,218	18,953	6,545,230	49,382
2034	4,202,252	2,147,286	36,709	6,386,246	189,229	18,933	6,594,408	49,178
2035	4,232,708	2,166,242	36,522	6,435,472	189,247	18,916	6,643,635	49,228

2014 CALIFORNIA GAS REPORT

EUFORECASTER
JULY 2014

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.
G

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

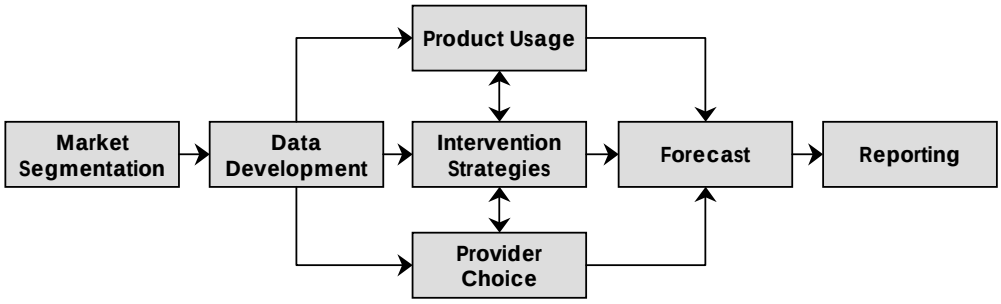
End Use Forecaster has other dimensions that capture factors affecting product demands. Perhaps the most important of these is End Use Forecaster's "vintaging" capability. Vintaging refers to product or service turnover that is a function of either physical lives or contract period. Accurate assessments 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.

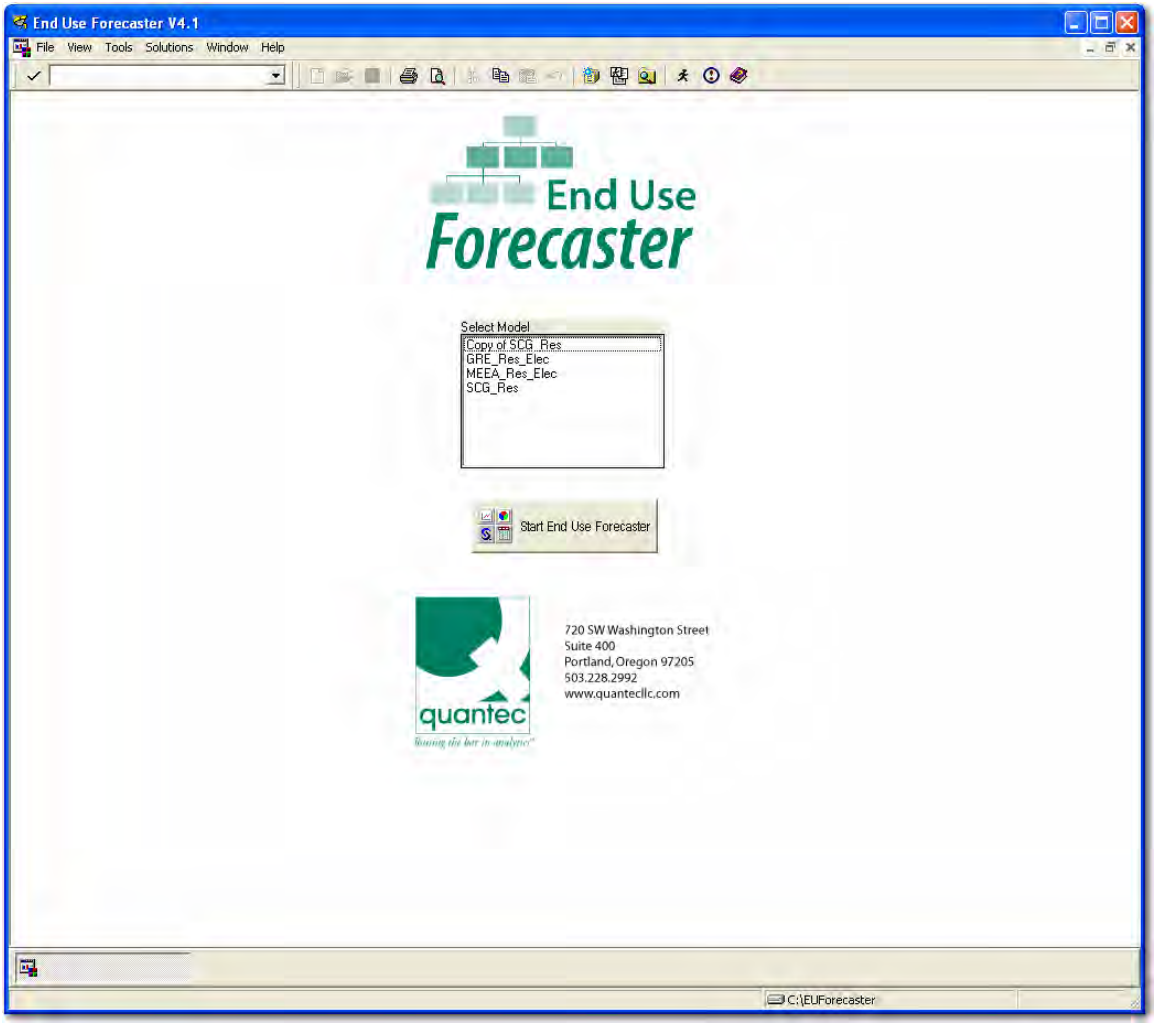
Figure 1. End Use Forecaster Modules and Structure



Interface Design

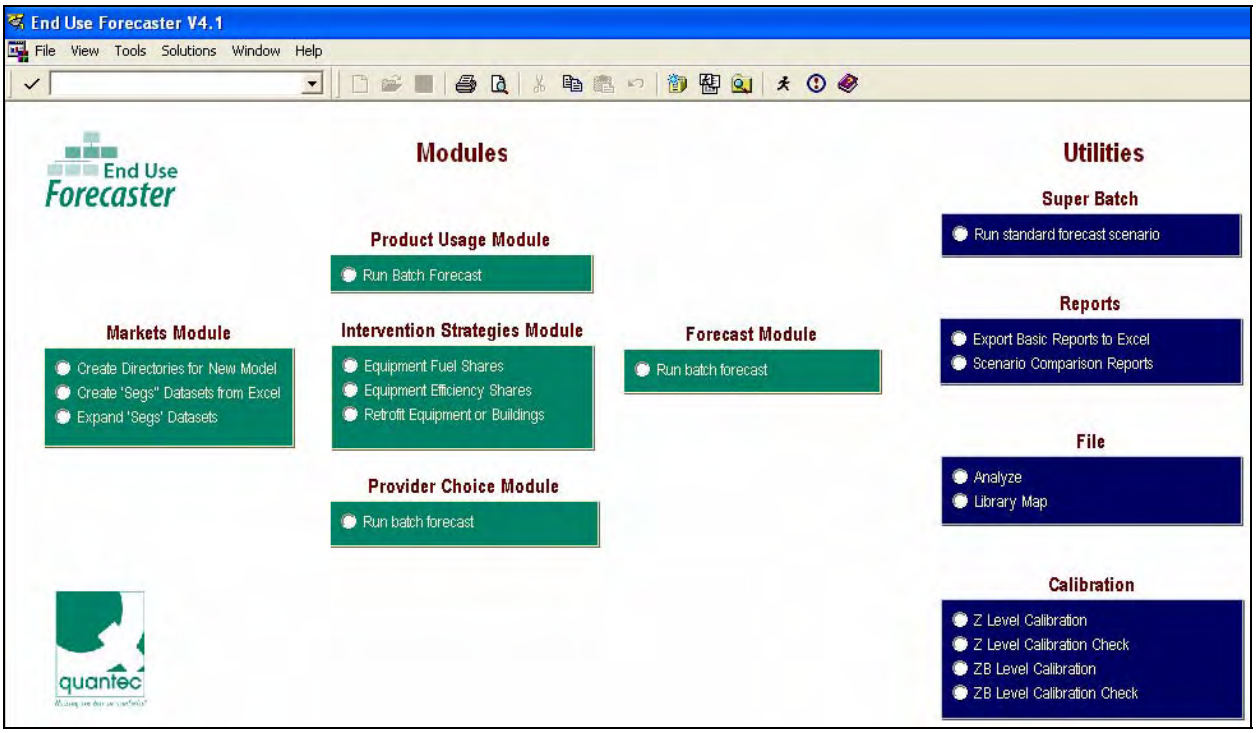
The user interface to the End Use Forecaster model is constructed using SAS/AF (Applications Facility). SAS/AF software provides dozens of predefined "classes" that enabled the development of End Use Forecaster. These classes include a wide selection of both visual and non-visual aspects. The visual 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



C

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.

[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

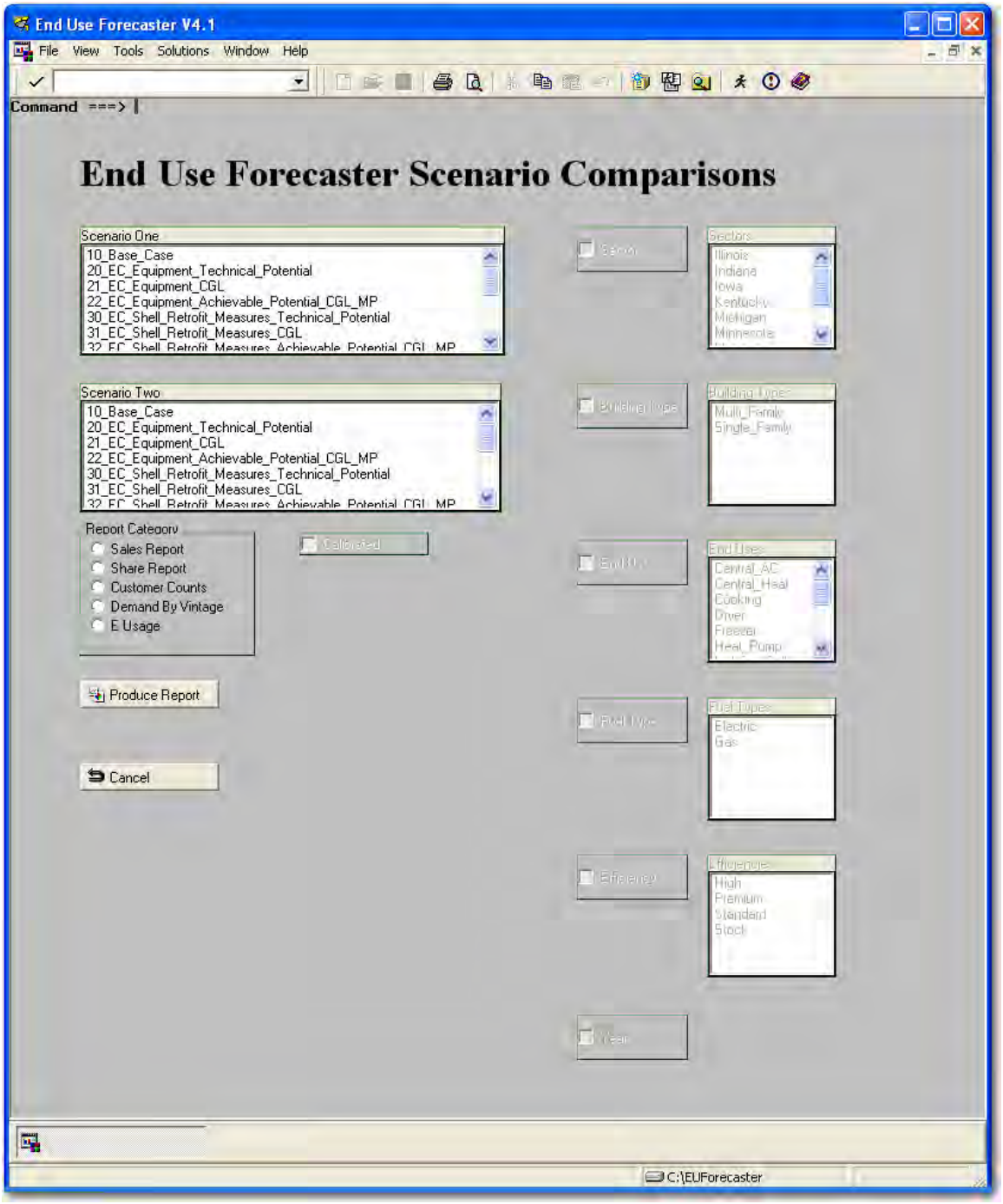
The Forecast Module incorporates all the information compiled from the other modules – Usage, Choice, and Intervention Strategies – related to the overall economic growth of the market segment and equipment lifetime (decay) functions to create the final forecast for a given scenario.

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

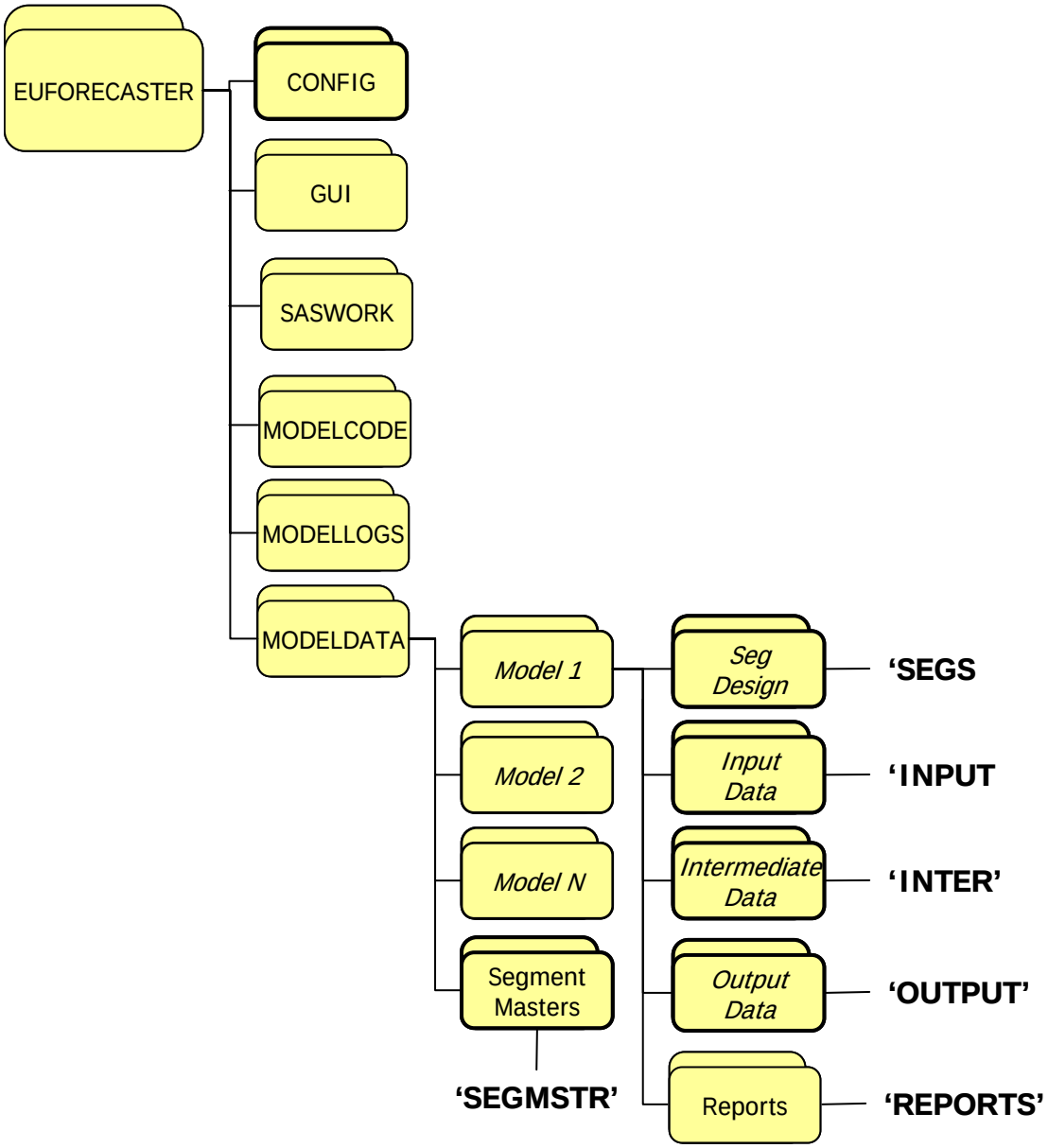
cases, where the documentation does not refer to a specific scenario, datasets are referred to with an **"_xx**" suffix, such as **saturations_xx**.

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

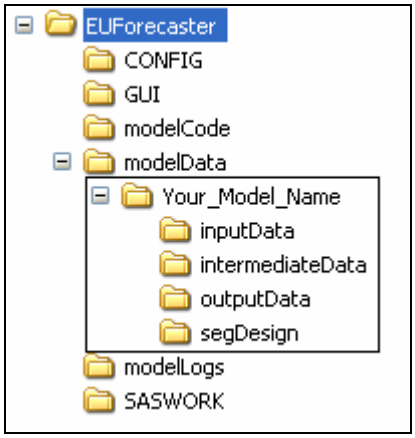
The execution of the first task – creation of a customized market segmentation design – is based on four steps, listed briefly below and then described in greater detail.

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.

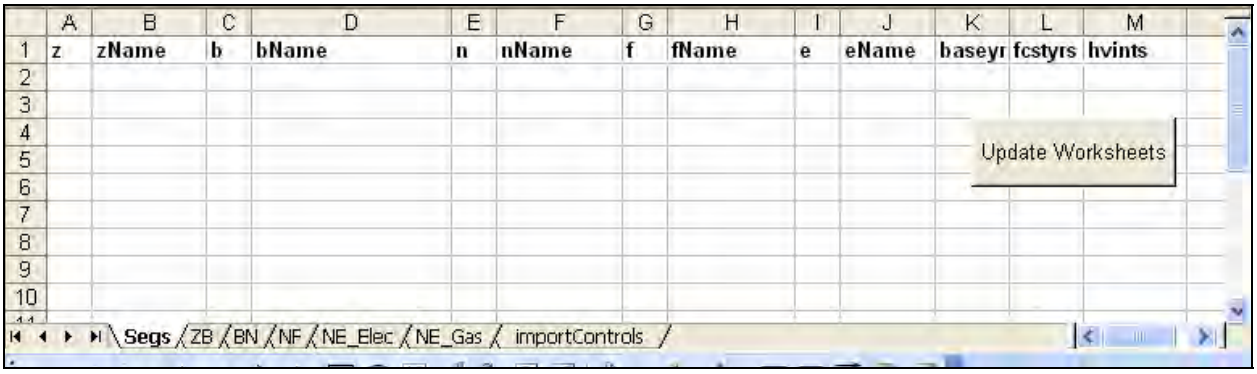
Table 3 summarizes the intended use of each of these dimensions. Note that while the model must include all five dimension, you are not required to use all of them. For example, suppose you want a design with alternative providers at Dimension 4 and do not wish to complicate the model with product/service 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_Met	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					

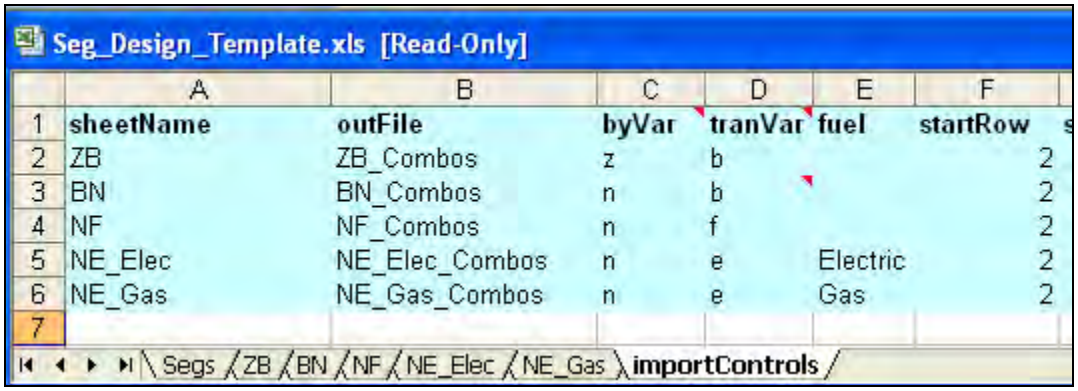
Segs | ZB | BN | NF | NE_Elec | NE_Gas | imp

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



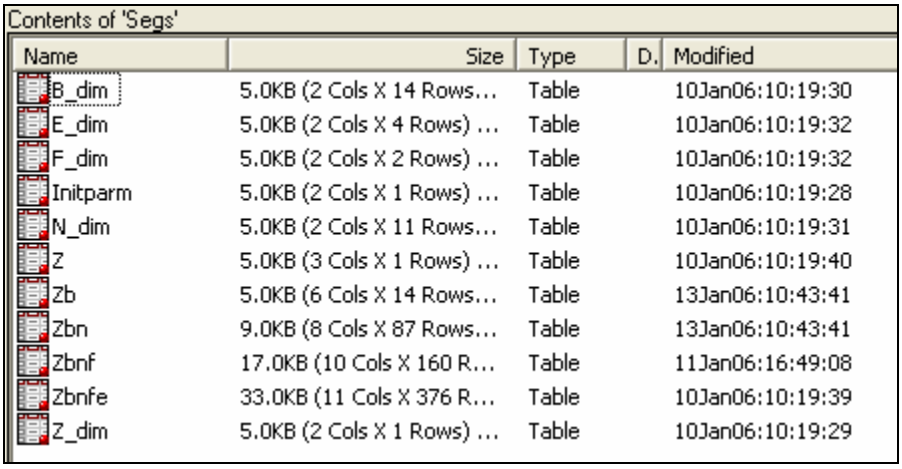
	A	B	C	D	E	F
1	**sheetName**	**outFile**	**byVar**	**tranVar**	**fuel**	**startRow**
2	ZB	ZB_Combos	z	b		2
3	BN	BN_Combos	n	b		2
4	NF	NF_Combos	n	f		2
5	NE_Elec	NE_Elec_Combos	n	e	Electric	2
6	NE_Gas	NE_Gas_Combos	n	e	Gas	2
7						

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.

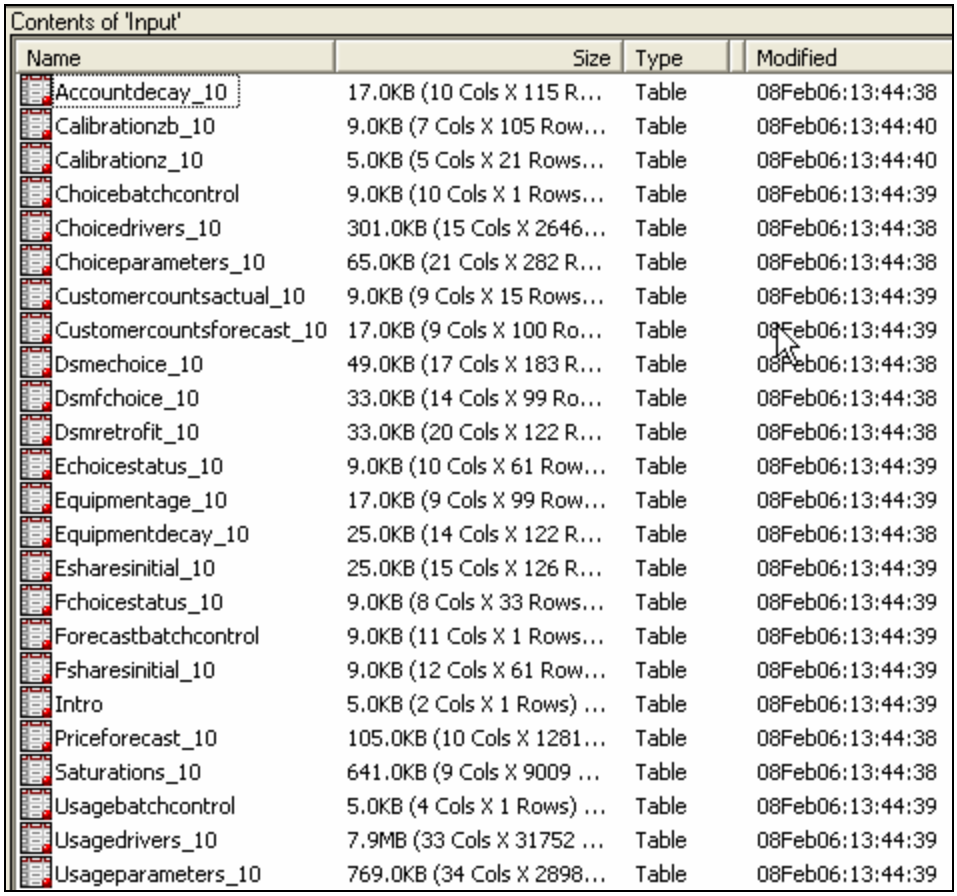
Figure 12. Contents of Segs Library



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



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"

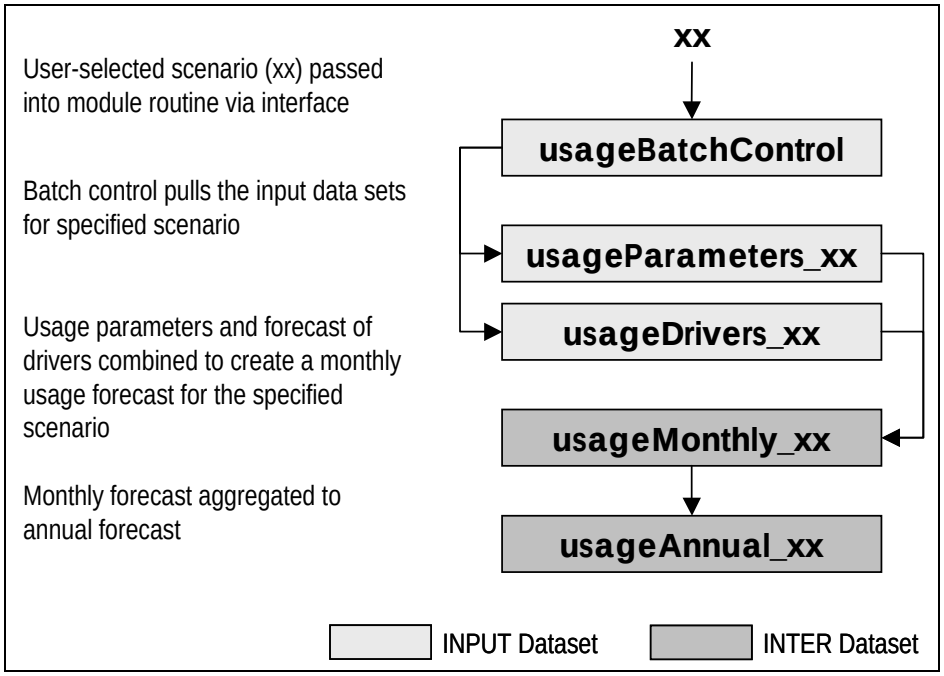


Table 5. Product Usage Module Data Library

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

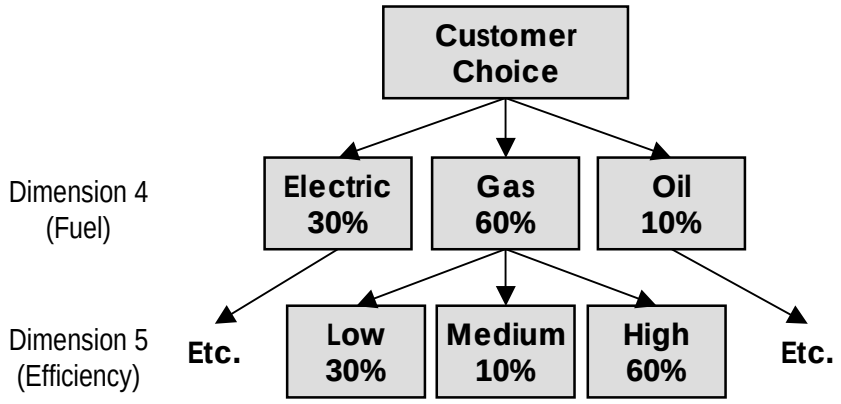
V. Provider Choice Module

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 wher

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

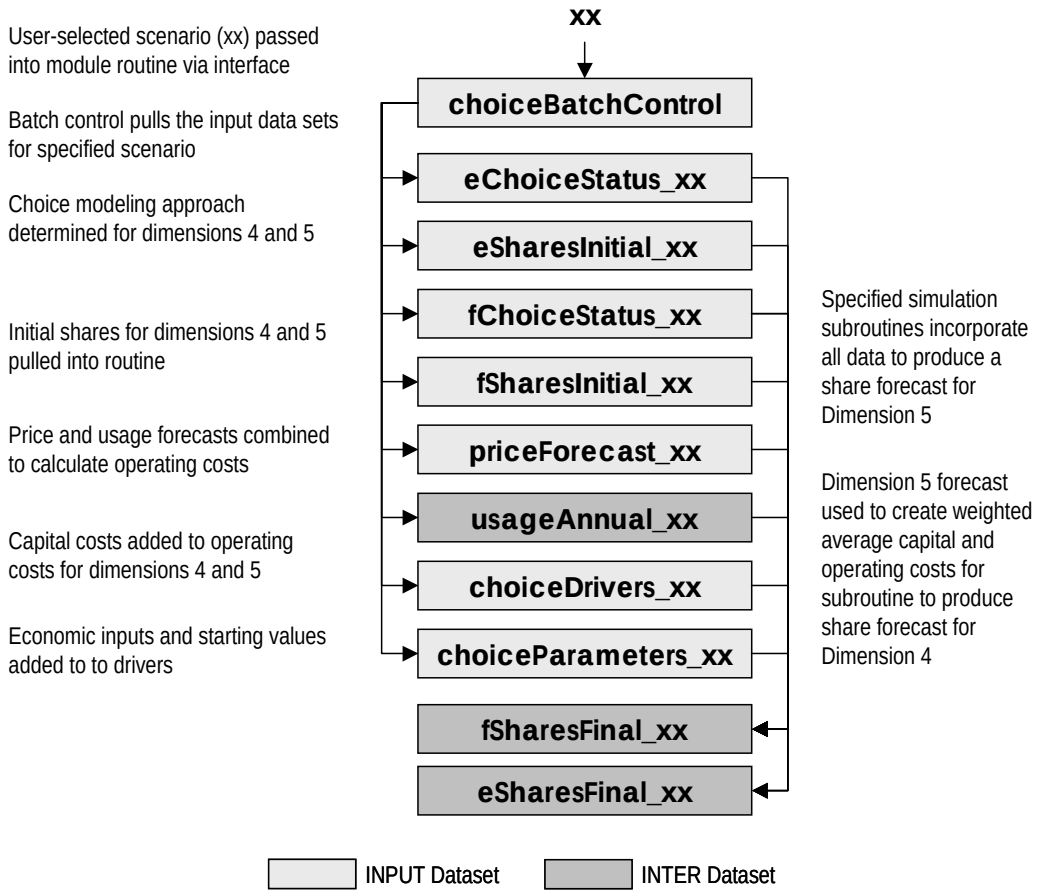
Figure 17 shows the data and analysis flow through the Provider Choice Module.

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**).

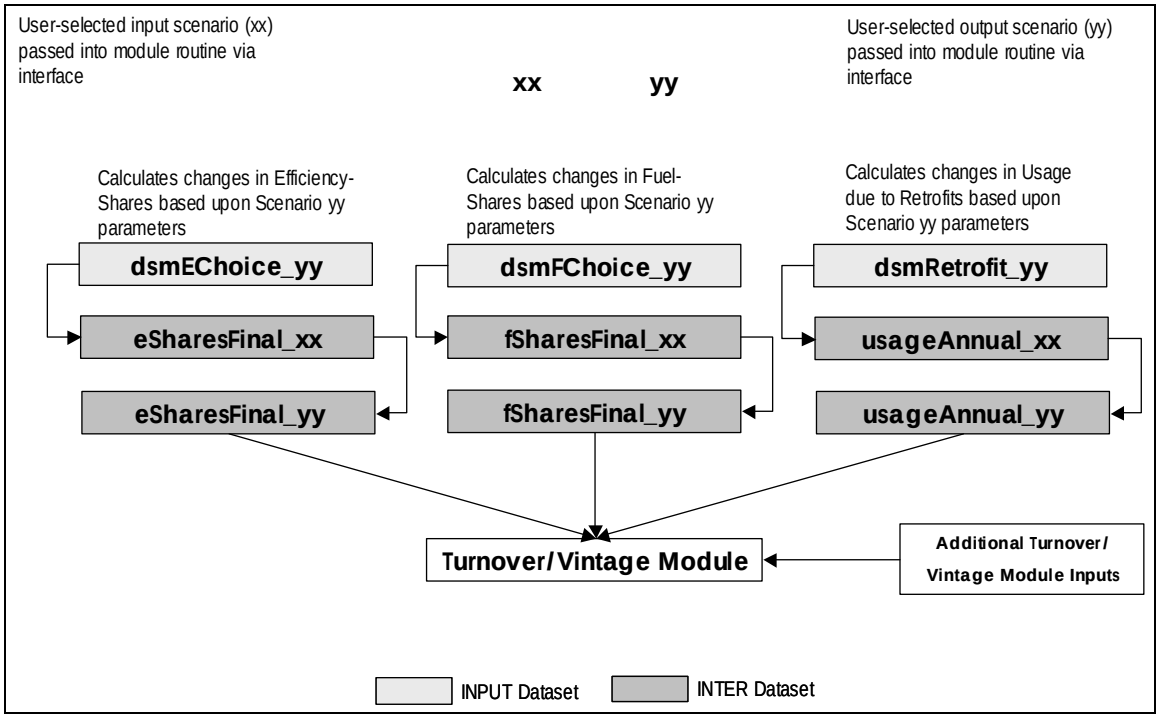
The Market Segmentation module creates base case files ("_10" files) where there is no intervention for each of these program categories. These files serve as templates that allow the user to create different scenarios of interest. To create strategies, you must copy these files to another scenario number 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

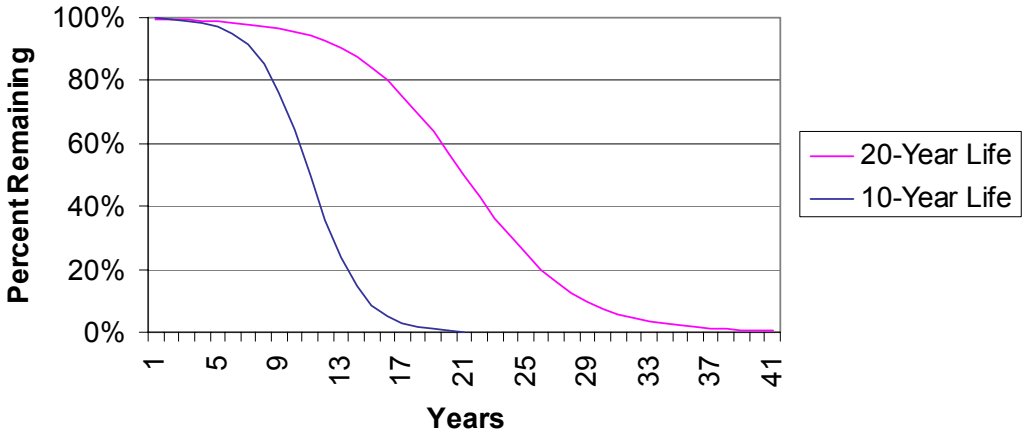
[3] These are discrete analogs to the continuous time distributions.

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:

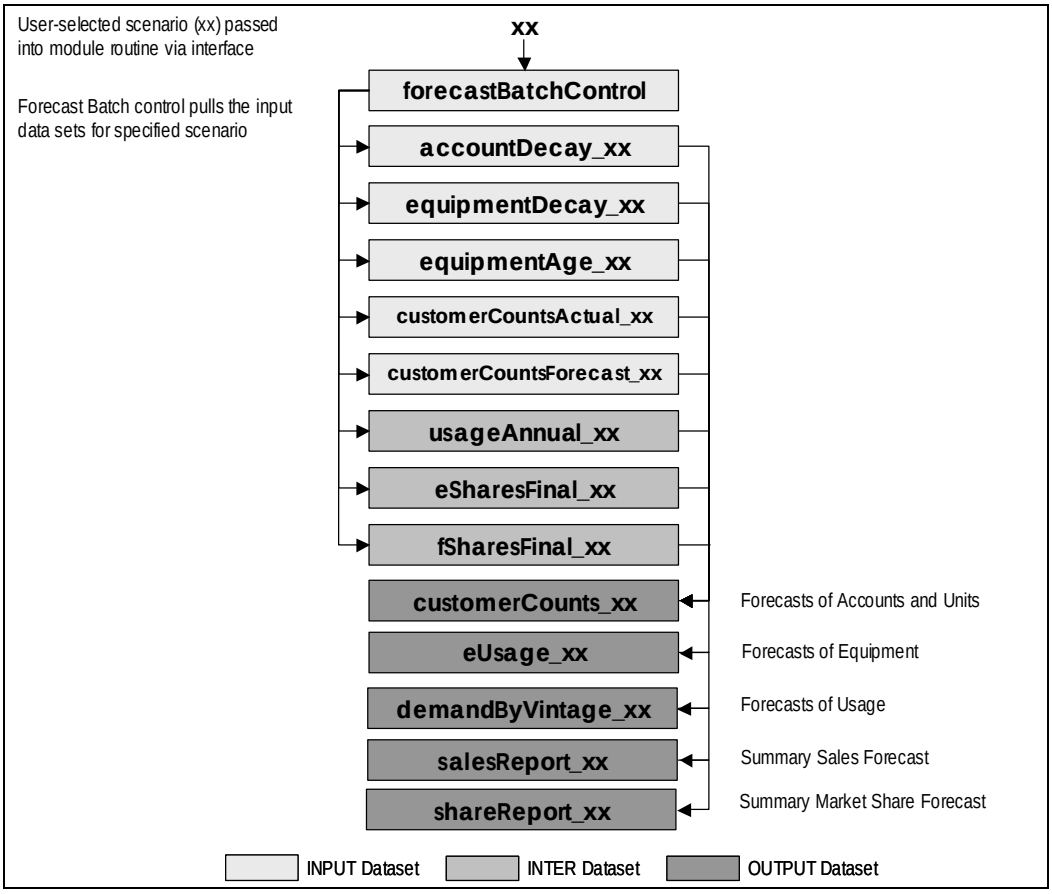
1. Merges all input data across Dimensions 1-3, including:
   - Existing accounts, plus a distribution of accounts across historical building vintages
   - New construction forecast, plus capture rates for new and conversion buildings
   - Dimension 3 saturation, equal to the number of Dimension 2 customers 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	

2014 CALIFORNIA GAS REPORT

RESIDENTIAL DEMAND FORECAST
JULY 2014

The Gas Company

A Sempra Energy utility™

Core Residential End-Use Model
2014 California Gas Report

Introduction:

SoCalGas used the End Use Forecaster model to generate annual gas demand forecasts for the residential market from 2014 through 2035. 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 2013 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. An adjustment to the forecast offsets the throughput by the energy efficiency savings. Annual conservation benefits associated with AMI are estimated by SoCalGas to represent 1% of the core gas throughput in the post deployment period .

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 2013 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 2013 data is in Figure 7.

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 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.

Fuel Costs and Price Elasticity:

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.

Electric Price Data:

The electricity price inputs consist of average prices (cents/kWh) and marginal prices (cents/kWh). The data were developed from the following source: CEC's California Energy Demand 2014-2024 Final Forecast, Dec 2013, #CEC 200-2013-004-SF, Vol 1 and 2.

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 2009 RASS Update. Please see Figures 16-19 for saturations, fuel, and efficiency shares.

AMI:

Benefits estimated by SoCalGas represent approximately 1% of core gas throughput in the post deployment year. The conservation benefits were incorporated in the forecast as a post-model adjustment.

RESIDENTIAL DATA

Southern California Gas Company
2014 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

ResAvg

Southern California Gas Company
2014 California Gas Report
Figure 3: Average-Temperature Year Demand Forecast

SOURCE	YEAR	MDTH1	MDTH2	MDTH3	MDTH4	MDTH5	MDTH6	MDTH7	MDTH8	MDTH9	MDTH10	MDTH11	MDTH12	TOTAL
Residential	**2013**	36245.40	30460.72	27919.34	22343.76	16047.32	12531.52	11910.37	11875.60	11731.94	14960.94	24099.36	37470.85	257,597
Residential	2014	35632.47	29945.61	27447.21	21965.91	15775.95	12319.61	11708.95	11674.78	11533.55	14707.94	23691.82	36837.19	253,241
Residential	2015	35029.91	29439.21	26983.06	21594.45	15509.17	12111.27	11510.95	11477.35	11338.51	14459.22	23291.18	36214.25	248,959
Residential	2016	34798.09	29244.39	26804.50	21451.55	15406.54	12031.13	11434.77	11401.40	11263.47	14363.53	23137.04	35974.60	247,311
Residential	2017	34524.79	29014.71	26593.98	21283.07	15285.54	11936.64	11344.97	11311.85	11175.01	14250.72	22955.33	35692.06	245,369
Residential	2018	34381.95	28894.66	26483.95	21195.01	15222.29	11887.25	11298.03	11265.05	11128.78	14191.76	22860.35	35544.39	244,353
Residential	2019	34115.54	28670.78	26278.74	21030.79	15104.35	11795.14	11210.49	11177.76	11042.55	14081.80	22683.22	35268.98	242,460
Residential	2020	33732.02	28348.47	25983.32	20794.36	14934.54	11662.54	11084.46	11052.10	10918.41	13923.49	22428.22	34872.49	239,734
Residential	2021	33460.93	28120.64	25774.50	20627.25	14814.52	11568.82	10995.38	10963.28	10830.66	13811.59	22247.98	34592.23	237,808
Residential	2022	33231.05	27927.45	25597.43	20485.53	14712.74	11489.34	10919.84	10887.96	10756.25	13716.71	22095.13	34354.57	236,174
Residential	2023	32966.39	27705.03	25393.57	20322.39	14595.57	11397.83	10832.87	10801.25	10670.59	13607.47	21919.16	34080.97	234,293
Residential	2024	32769.97	27539.96	25242.27	20201.30	14508.61	11329.92	10768.33	10736.90	10607.01	13526.39	21788.56	33877.91	232,897
Residential	2025	32618.64	27412.78	25125.69	20108.01	14441.60	11277.60	10718.60	10687.31	10558.03	13463.92	21687.94	33721.46	231,822
Residential	2026	32486.58	27301.80	25023.97	20026.60	14383.14	11231.94	10675.20	10644.04	10515.28	13409.41	21600.14	33584.94	230,883
Residential	2027	32385.86	27217.15	24946.39	19964.51	14338.54	11197.12	10642.10	10611.04	10482.68	13367.84	21533.17	33480.81	230,167
Residential	2028	32263.94	27114.69	24852.48	19889.36	14284.57	11154.97	10602.04	10571.10	10443.22	13317.52	21452.11	33354.78	229,301
Residential	2029	32268.40	27118.44	24855.91	19892.10	14286.54	11156.51	10603.51	10572.56	10444.66	13319.36	21455.07	33359.38	229,332
Residential	2030	32268.59	27118.60	24856.06	19892.22	14286.62	11156.58	10603.57	10572.62	10444.72	13319.44	21455.20	33359.58	229,334
Residential	2031	32269.54	27119.39	24856.79	19892.81	14287.04	11156.90	10603.88	10572.93	10445.03	13319.83	21455.83	33360.56	229,341
Residential	2032	32265.67	27116.14	24853.81	19890.42	14285.33	11155.56	10602.61	10571.66	10443.78	13318.23	21453.25	33356.56	229,313
Residential	2033	32265.45	27115.96	24853.64	19890.29	14285.23	11155.49	10602.54	10571.59	10443.71	13318.14	21453.11	33356.33	229,311
Residential	2034	32221.23	27078.80	24819.58	19863.03	14265.66	11140.20	10588.01	10557.10	10429.40	13299.89	21423.71	33310.62	228,997
Residential	2035	32239.48	27094.14	24833.64	19874.28	14273.74	11146.51	10594.01	10563.08	10435.30	13307.42	21435.84	33329.49	229,127

ResCol

Southern California Gas Company
2014 California Gas Report
Figure 4: Cold-Temperature Year Demand Forecast

SOURCE	YEAR	MDTH1	MDTH2	MDTH3	MDTH4	MDTH5	MDTH6	MDTH7	MDTH8	MDTH9	MDTH10	MDTH11	MDTH12	TOTAL
Residential	**2013**	40739.41	35838.39	30843.58	24989.87	16927.01	12693.73	11927.10	11883.77	11775.20	15765.85	26948.24	42645.79	282,978
Residential	2014	40050.48	35232.34	30321.99	24567.28	16640.76	12479.07	11725.40	11682.81	11576.07	15499.24	26492.53	41924.62	278,193
Residential	2015	39373.21	34636.54	29809.23	24151.83	16359.36	12268.04	11527.12	11485.25	11380.32	15237.14	26044.53	41215.66	273,488
Residential	2016	39112.65	34407.32	29611.96	23992.00	16251.10	12186.86	11450.84	11409.24	11305.01	15136.31	25872.17	40942.90	271,678
Residential	2017	38805.46	34137.10	29379.39	23803.57	16123.47	12091.14	11360.91	11319.64	11216.22	15017.43	25668.98	40621.34	269,545
Residential	2018	38644.91	33995.86	29257.84	23705.09	16056.75	12041.12	11313.90	11272.80	11169.81	14955.29	25562.77	40453.27	268,429
Residential	2019	38345.47	33732.44	29031.14	23521.41	15932.34	11947.82	11226.24	11185.46	11083.26	14839.42	25364.70	40139.83	266,350
Residential	2020	37914.40	33353.23	28704.77	23256.98	15753.23	11813.50	11100.03	11059.71	10958.67	14672.59	25079.56	39688.58	263,355
Residential	2021	37609.70	33085.18	28474.08	23070.08	15626.63	11718.56	11010.83	10970.83	10870.60	14554.68	24878.00	39369.62	261,239
Residential	2022	37351.31	32857.88	28278.46	22911.58	15519.27	11638.05	10935.18	10895.46	10795.91	14454.68	24707.08	39099.14	259,444
Residential	2023	37053.84	32596.20	28053.25	22729.11	15395.68	11545.37	10848.09	10808.68	10709.93	14339.56	24510.32	38787.76	257,378
Residential	2024	36833.07	32401.98	27886.10	22593.69	15303.95	11476.58	10783.46	10744.28	10646.12	14254.13	24364.28	38556.65	255,844
Residential	2025	36662.97	32252.35	27757.32	22489.35	15233.27	11423.58	10733.66	10694.67	10596.96	14188.30	24251.76	38378.59	254,663
Residential	2026	36514.54	32121.78	27644.95	22398.30	15171.60	11377.33	10690.20	10651.37	10554.06	14130.86	24153.58	38223.22	253,632
Residential	2027	36401.33	32022.18	27559.24	22328.86	15124.56	11342.05	10657.06	10618.34	10521.33	14087.05	24078.69	38104.71	252,845
Residential	2028	36264.30	31901.64	27455.49	22244.80	15067.62	11299.36	10616.94	10578.37	10481.73	14034.02	23988.05	37961.27	251,894
Residential	2029	36269.31	31906.04	27459.28	22247.87	15069.71	11300.92	10618.41	10579.83	10483.17	14035.95	23991.36	37966.51	251,928
Residential	2030	36269.52	31906.23	27459.45	22248.01	15069.79	11300.98	10618.47	10579.90	10483.24	14036.04	23991.51	37966.73	251,930
Residential	2031	36270.59	31907.17	27460.25	22248.66	15070.24	11301.32	10618.78	10580.21	10483.55	14036.45	23992.21	37967.85	251,937
Residential	2032	36266.24	31903.34	27456.96	22245.99	15068.43	11299.96	10617.51	10578.94	10482.29	14034.77	23989.33	37963.30	251,907
Residential	2033	36265.99	31903.13	27456.77	22245.84	15068.33	11299.89	10617.44	10578.87	10482.22	14034.67	23989.17	37963.04	251,905
Residential	2034	36216.29	31859.41	27419.15	22215.35	15047.68	11284.40	10602.89	10564.37	10467.85	14015.44	23956.29	37911.01	251,560
Residential	2035	36236.81	31877.45	27434.68	22227.94	15056.20	11290.79	10608.89	10570.35	10473.78	14023.38	23969.86	37932.49	251,703

ResHot

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Figure 5: Hot-Temperature Year Demand Forecast

SOURCE	YEAR	MDTH1	MDTH2	MDTH3	MDTH4	MDTH5	MDTH6	MDTH7	MDTH8	MDTH9	MDTH10	MDTH11	MDTH12	TOTAL
Residential	**2013**	30592.28	27008.39	24153.92	20215.26	15098.62	12217.13	11849.11	11814.45	11610.56	14344.73	21489.07	31831.43	232,225
Residential	2014	30074.94	26551.66	23745.46	19873.41	14843.29	12010.53	11648.74	11614.66	11414.22	14102.16	21125.67	31293.14	228,298
Residential	2015	29566.36	26102.66	23343.91	19537.34	14592.28	11807.43	11451.75	11418.25	11221.20	13863.68	20768.43	30763.95	224,437
Residential	2016	29370.70	25929.92	23189.43	19408.04	14495.72	11729.29	11375.96	11342.69	11146.94	13771.93	20630.99	30560.36	222,952
Residential	2017	29140.03	25726.27	23007.30	19255.62	14381.87	11637.17	11286.62	11253.60	11059.39	13663.77	20468.95	30320.35	221,201
Residential	2018	29019.46	25619.83	22912.11	19175.95	14322.37	11589.02	11239.92	11207.04	11013.63	13607.24	20384.27	30194.90	220,286
Residential	2019	28794.61	25421.32	22734.58	19027.37	14211.39	11499.23	11152.83	11120.21	10928.30	13501.81	20226.32	29960.94	218,579
Residential	2020	28470.90	25135.53	22479.00	18813.46	14051.63	11369.96	11027.45	10995.19	10805.44	13350.02	19998.94	29624.12	216,122
Residential	2021	28242.09	24933.53	22298.35	18662.27	13938.70	11278.58	10938.83	10906.83	10718.60	13242.73	19838.22	29386.05	214,385
Residential	2022	28048.07	24762.23	22145.15	18534.05	13842.94	11201.09	10863.68	10831.90	10644.96	13151.75	19701.92	29184.16	212,912
Residential	2023	27824.69	24565.02	21968.79	18386.45	13732.69	11111.89	10777.16	10745.63	10560.19	13047.01	19545.02	28951.73	211,216
Residential	2024	27658.90	24418.66	21837.89	18276.90	13650.87	11045.68	10712.95	10681.61	10497.27	12969.27	19428.56	28779.23	209,958
Residential	2025	27531.17	24305.89	21737.04	18192.49	13587.83	10994.67	10663.47	10632.28	10448.79	12909.38	19338.84	28646.33	208,988
Residential	2026	27419.71	24207.49	21649.04	18118.84	13532.82	10950.16	10620.30	10589.23	10406.49	12857.12	19260.55	28530.35	208,142
Residential	2027	27334.70	24132.44	21581.92	18062.66	13490.86	10916.21	10587.37	10556.40	10374.22	12817.25	19200.83	28441.90	207,497
Residential	2028	27231.80	24041.59	21500.68	17994.67	13440.08	10875.12	10547.52	10516.66	10335.17	12769.00	19128.55	28334.83	206,716
Residential	2029	27235.56	24044.91	21503.65	17997.15	13441.93	10876.62	10548.98	10518.12	10336.60	12770.77	19131.19	28338.74	206,744
Residential	2030	27235.72	24045.05	21503.77	17997.26	13442.01	10876.68	10549.04	10518.18	10336.66	12770.84	19131.31	28338.91	206,745
Residential	2031	27236.52	24045.76	21504.41	17997.79	13442.41	10877.00	10549.35	10518.49	10336.96	12771.22	19131.87	28339.74	206,752
Residential	2032	27233.26	24042.88	21501.83	17995.63	13440.80	10875.70	10548.08	10517.23	10335.72	12769.69	19129.57	28336.34	206,727
Residential	2033	27233.07	24042.71	21501.68	17995.51	13440.71	10875.62	10548.01	10517.16	10335.65	12769.60	19129.44	28336.15	206,725
Residential	2034	27195.75	24009.76	21472.21	17970.85	13422.29	10860.72	10533.56	10502.74	10321.49	12752.10	19103.23	28297.32	206,442
Residential	2035	27211.16	24023.36	21484.38	17981.03	13429.89	10866.87	10539.52	10508.69	10327.34	12759.32	19114.05	28313.35	206,559

ResBas

Southern California Gas Company
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Figure 6: Base-Temperature Year Demand Forecast

SOURCE	YEAR	MDTH1	MDTH2	MDTH3	MDTH4	MDTH5	MDTH6	MDTH7	MDTH8	MDTH9	MDTH10	MDTH11	MDTH12	TOTAL
Residential	**2013**	11327.16	10976.28	11419.65	12070.06	11500.26	11092.07	11710.21	11676.06	11257.52	12169.43	11152.34	11500.45	137,851
Residential	2014	11135.61	10790.66	11226.53	11865.95	11305.79	10904.50	11512.19	11478.61	11067.14	11963.64	10963.74	11305.97	135,520
Residential	2015	10947.30	10608.18	11036.69	11665.29	11114.60	10720.10	11317.51	11284.50	10879.99	11761.33	10778.34	11114.78	133,229
Residential	2016	10874.85	10537.98	10963.65	11588.09	11041.05	10649.15	11242.61	11209.82	10807.99	11683.49	10707.01	11041.23	132,347
Residential	2017	10789.44	10455.22	10877.54	11497.08	10954.33	10565.52	11154.31	11121.78	10723.11	11591.73	10622.92	10954.51	131,308
Residential	2018	10744.80	10411.96	10832.54	11449.51	10909.01	10521.80	11108.16	11075.76	10678.74	11543.77	10578.97	10909.19	130,764
Residential	2019	10661.55	10331.28	10748.60	11360.80	10824.48	10440.28	11022.09	10989.95	10596.00	11454.33	10497.00	10824.66	129,751
Residential	2020	10541.69	10215.14	10627.77	11233.08	10702.79	10322.91	10898.19	10866.40	10476.88	11325.56	10378.99	10702.97	128,292
Residential	2021	10456.97	10133.05	10542.36	11142.80	10616.78	10239.95	10810.60	10779.07	10392.68	11234.54	10295.58	10616.96	127,261
Residential	2022	10385.13	10063.43	10469.93	11066.25	10543.84	10169.60	10736.33	10705.02	10321.28	11157.36	10224.85	10544.02	126,387
Residential	2023	10302.42	9983.28	10386.55	10978.12	10459.87	10088.61	10650.83	10619.76	10239.08	11068.50	10143.42	10460.04	125,380
Residential	2024	10241.04	9923.80	10324.66	10912.71	10397.55	10028.49	10587.37	10556.49	10178.08	11002.55	10082.98	10397.72	124,633
Residential	2025	10193.75	9877.97	10276.98	10862.31	10349.53	9982.18	10538.47	10507.73	10131.07	10951.74	10036.42	10349.70	124,058
Residential	2026	10152.48	9837.98	10235.37	10818.34	10307.63	9941.77	10495.81	10465.19	10090.06	10907.40	9995.79	10307.80	123,556
Residential	2027	10121.00	9807.48	10203.64	10784.80	10275.67	9910.95	10463.27	10432.75	10058.77	10873.58	9964.79	10275.84	123,173
Residential	2028	10082.90	9770.56	10165.23	10744.20	10236.99	9873.64	10423.88	10393.47	10020.91	10832.65	9927.28	10237.16	122,709
Residential	2029	10084.29	9771.91	10166.63	10745.68	10238.40	9875.00	10425.32	10394.91	10022.29	10834.15	9928.65	10238.57	122,726
Residential	2030	10084.35	9771.97	10166.69	10745.74	10238.46	9875.06	10425.38	10394.97	10022.35	10834.21	9928.71	10238.63	122,727
Residential	2031	10084.65	9772.26	10166.99	10746.06	10238.77	9875.35	10425.69	10395.28	10022.65	10834.53	9929.00	10238.94	122,730
Residential	2032	10083.44	9771.08	10165.77	10744.77	10237.54	9874.16	10424.43	10394.03	10021.44	10833.23	9927.81	10237.71	122,715
Residential	2033	10083.37	9771.02	10165.70	10744.70	10237.47	9874.10	10424.36	10393.96	10021.38	10833.16	9927.75	10237.64	122,715
Residential	2034	10069.55	9757.63	10151.77	10729.97	10223.44	9860.57	10410.08	10379.72	10007.64	10818.31	9914.14	10223.61	122,546
Residential	2035	10075.26	9763.15	10157.52	10736.05	10229.23	9866.15	10415.98	10385.59	10013.31	10824.44	9919.76	10229.40	122,616

Southern California Gas Company
Figure 7: 2013 Historical Data

	Single Family	Multi Family 2-4 Units	Multi Family > 4 units	Master Meter	Sub Meter
Total Therm Sales	1,800,690,188	184,877,252	360,663,204	178,678,207	51,062,400
Meter Count					
Pre 1979 Customers	2,406,602	409,818	707,114	34,119	1,697
1979-2004 Customers	1,235,804	135,064	458,793	4,171	105
2005-2010 Customers	12,610	2,333	6,393	61	1
TOTAL					
Use Per Customer (UPC, Therms)					
OVERALL	493	338	308	4,659	28,337
Pre 1979	494	343	316	4,443	27,994
1979-2004	490	323	296	6,412	33,865
2005-2010	410	279	232	5,649	N/A
Price Elasticity	-0.105	-0.112	-0.071	-0.069	-0.105

Southern California Gas Company
Figure 8: Incremental Growth in Meter Counts by Class

Year	SF Meters	MF2 Meters	MF3 Meters	MM Meters	SM Meters
2014	21241.99	2,254	4,671	0	0
2015	25526.57	4,624	9,580	0	0
2016	26632.01	5,490	11,375	0	0
2017	27508.26	6,463	13,390	0	0
2018	28068.57	6,983	14,468	0	0
2019	28367.67	7,059	14,626	0	0
2020	28468.64	7,021	14,547	0	0
2021	28358.2	6,964	14,430	0	0
2022	28189.15	6,850	14,193	0	0
2023	28248.15	6,723	13,930	0	0
2024	28630.17	6,645	13,769	0	0
2025	29080.37	6,592	13,659	0	0
2026	29517.61	6,595	13,664	0	0
2027	29730.86	6,602	13,680	0	0
2028	29968.25	6,556	13,584	0	0
2029	30132.57	6,448	13,361	0	0
2030	30375.67	6,374	13,206	0	0
2031	30459.17	6,362	13,183	0	0
2032	30476.82	6,332	13,120	0	0
2033	30449.25	6,228	12,905	0	0
2034	30456.19	6,161	12,766	0	0
2035	30472.31	6,171	12,786	0	0

Note: The master meter and sub meter groups are expected to decline.
A decay rate was built into the model specification.
Master Meter and Submeter segments have no positive growth; this is reflected by "0."

Southern California Gas Company
2014 California Gas Report
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	-

Southern California Gas Company
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Average and Marginal Gas Prices ($/therm)

Year	Res Price Deflator	R SF Average Price	R SF Marginal Price	R MF2 Average Price	R MF2 Marginal Price	R MF3 Average Price	R MF3 Marginal Price	R MM Average Price	R MM Marginal Price	R SM Average Price	R SM Marginal Price
2013	100.0	0.9234	1.0805	0.8816	1.0805	0.8857	1.0805	0.8562	1.0805	0.8711	1.0805
2014	100.3	0.9718	1.1290	0.9300	1.1290	0.9342	1.1290	0.9046	1.1290	0.9195	1.1290
2015	102.0	1.0717	1.2289	1.0299	1.2289	1.0341	1.2289	1.0045	1.2289	1.0194	1.2289
2016	103.8	1.0720	1.2292	1.0303	1.2292	1.0344	1.2292	1.0048	1.2292	1.0197	1.2292
2017	105.7	1.1144	1.2716	1.0727	1.2716	1.0768	1.2716	1.0472	1.2716	1.0621	1.2716
2018	107.9	1.1317	1.2889	1.0900	1.2889	1.0941	1.2889	1.0645	1.2889	1.0794	1.2889
2019	109.9	1.1915	1.3487	1.1498	1.3487	1.1539	1.3487	1.1244	1.3487	1.1392	1.3487
2020	112.0	1.2968	1.4539	1.2550	1.4539	1.2591	1.4539	1.2296	1.4539	1.2445	1.4539
2021	114.3	1.3707	1.5279	1.3290	1.5279	1.3331	1.5279	1.3035	1.5279	1.3184	1.5279
2022	116.5	1.4321	1.5893	1.3904	1.5893	1.3945	1.5893	1.3649	1.5893	1.3798	1.5893
2023	118.7	1.5087	1.6658	1.4669	1.6658	1.4710	1.6658	1.4415	1.6658	1.4564	1.6658
2024	120.9	1.5636	1.7208	1.5219	1.7208	1.5260	1.7208	1.4965	1.7208	1.5113	1.7208
2025	123.3	1.6080	1.7652	1.5663	1.7652	1.5704	1.7652	1.5408	1.7652	1.5557	1.7652
2026	125.7	1.6483	1.8054	1.6065	1.8054	1.6106	1.8054	1.5811	1.8054	1.5959	1.8054
2027	128.2	1.6806	1.8378	1.6389	1.8378	1.6430	1.8378	1.6134	1.8378	1.6283	1.8378
2028	130.8	1.7247	1.8818	1.6829	1.8818	1.6870	1.8818	1.6575	1.8818	1.6723	1.8818
2029	133.4	1.7769	1.9340	1.7351	1.9340	1.7392	1.9340	1.7097	1.9340	1.7246	1.9340
2030	136.0	1.8228	1.9800	1.7810	1.9800	1.7852	1.9800	1.7556	1.9800	1.7705	1.9800
2031	138.8	1.8737	2.0308	1.8319	2.0308	1.8360	2.0308	1.8065	2.0308	1.8213	2.0308
2032	141.7	1.9298	2.0869	1.8880	2.0869	1.8921	2.0869	1.8626	2.0869	1.8775	2.0869
2033	144.7	1.9872	2.1444	1.9455	2.1444	1.9496	2.1444	1.9201	2.1444	1.9349	2.1444
2034	147.8	2.0669	2.2241	2.0252	2.2241	2.0293	2.2241	1.9997	2.2241	2.0146	2.2241
2035	151.0	2.1229	2.2800	2.0811	2.2800	2.0852	2.2800	2.0557	2.2800	2.0705	2.2800

Southern California Gas Company
Figure 9: Average and Marginal Electricity Prices (Cents/KWh)

Year	R SF Average Price	R SF Marginal Price	R MF2 Average Price	R MF2 Marginal Price	R MF3 Average Price	R MF3 Marginal Price	R MM Average Price	R MM Marginal Price	R SM Average Price	R SM Marginal Price
2013	16.63	25.16	15.88	24.02	15.95	24.14	15.42	15.94	15.69	17.65
2014	17.17	25.98	16.43	24.87	16.51	24.98	15.98	16.53	16.25	18.28
2015	17.59	26.61	16.90	25.58	16.97	25.68	16.49	17.05	16.73	18.83
2016	18.26	27.64	17.55	26.56	17.62	26.67	17.12	17.70	17.37	19.55
2017	18.74	28.36	18.04	27.30	18.11	27.40	17.61	18.21	17.86	20.10
2018	19.40	29.36	18.69	28.27	18.76	28.38	18.25	18.87	18.50	20.82
2019	19.99	30.25	19.29	29.19	19.36	29.30	18.86	19.51	19.11	21.51
2020	20.62	31.21	19.96	30.20	20.02	30.30	19.55	20.22	19.79	22.27
2021	21.22	32.11	20.57	31.13	20.64	31.23	20.18	20.87	20.41	22.97
2022	21.81	33.00	21.18	32.04	21.24	32.14	20.79	21.50	21.01	23.65
2023	22.41	33.91	21.79	32.98	21.85	33.07	21.41	22.14	21.64	24.35
2024	23.03	34.86	22.42	33.93	22.48	34.02	22.04	22.80	22.26	25.05
2025	23.70	35.86	23.08	34.93	23.15	35.02	22.71	23.48	22.93	25.80
2026	24.40	36.92	23.78	35.99	23.84	36.08	23.41	24.20	23.63	26.59
2027	25.12	38.02	24.50	37.07	24.56	37.17	24.12	24.94	24.34	27.39
2028	25.86	39.14	25.24	38.19	25.30	38.28	24.86	25.70	25.08	28.22
2029	26.63	40.30	26.00	39.35	26.07	39.44	25.62	26.50	25.85	29.09
2030	27.41	41.47	26.78	40.52	26.84	40.62	26.40	27.30	26.62	29.96
2031	28.23	42.72	27.60	41.77	27.66	41.86	27.22	28.14	27.44	30.88
2032	29.09	44.02	28.46	43.07	28.52	43.16	28.08	29.03	28.30	31.85
2033	29.99	45.38	29.36	44.42	29.42	44.52	28.97	29.96	29.20	32.86
2034	30.91	46.78	30.29	45.84	30.35	45.93	29.91	30.93	30.13	33.91
2035	31.87	48.23	31.24	47.28	31.31	47.37	30.86	31.91	31.09	34.98

Southern California Gas Company
2014 California Gas Report
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

Southern California Gas Company
2014 California Gas Report
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

Southern California Gas Company
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Figure 15: End Use Saturations
(based on 2009 RASS)

End Use	Vintage	Single Family	Multi Family 2-4 Units	Multi Family >4 Units	Master Meter	Sub Meter
Space Heat						
	Pre 1979	0.9847	0.9672	0.9178	0.7296	0.8173
	1979-2004	0.9915	0.9668	0.9424	0.7803	0.8853
	2005-2014	0.9985	0.9691	0.8323	0.8271	N/A
Water Heat						
	Pre 1979	0.9753	0.9064	0.6048	0.9658	0.9835
	1979-2004	0.9831	0.8911	0.6488	0.9935	1
	2005-2014	0.9612	0.8758	0.7649	0.9082	N/A
Cooking						
	Pre 1979	0.8089	0.7929	0.8623	0.5657	0.8728
	1979-2004	0.8606	0.8016	0.791	0.4696	0.866
	2005-2014	0.9465	0.8665	0.8996	0.3434	N/A
Drying						
	Pre 1979	0.6816	0.4894	0.1177	0.1616	0.4546
	1979-2004	0.7246	0.494	0.2484	0.0726	0.4868
	2005-2014	0.764	0.5434	0.4821	0.1922	N/A
Pool						
	Pre 1979	0.0664	0.0521	0.1045	0.1179	0.1179
	1979-2004	0.109	0.1308	0.1941	0.0053	0.0053
	2005-2014	0.0911	0.1308	0.1941	0.0053	N/A
Spa						
	Pre 1979	0.069	0.0526	0.0668	0.1329	0.1329
	1979-2004	0.1486	0.1923	0.2896	0.2012	0.2012
	2005-2014	0.1199	0.1923	0.2896	0.2012	N/A
Fireplace						
	Pre 1979	0.1193	0.2634	0.1519	0.1894	0.1894
	1979-2004	0.1663	0.6261	0.4775	0.4156	0.4156
	2005-2014	0.2179	0.6261	0.4775	0.4156	N/A
Barbecue						
	Pre 1979	0.1286	0.263	0.076	0.1875	0.0554
	1979-2004	0.2416	0.4739	0.0797	0.0797	0.1532
	2005-2014	0.3044	0.4405	0.1759	0.1759	N/A

Southern California Gas Company
Figure 16: Gas Fuel Shares (average)

End Use	Single Family	Multi Family 2-4 Units	Multi Family >4 Units	Master Meter	Sub Meter
Space Heating	0.9573	0.9399	0.8249	0.961	0.961
Water Heating	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	0.719	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

Southern California Gas Company
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Figure 14: Building Lives and Decay Rates

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

Southern California Gas Company
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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	
	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-base Yr	1	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-base Yr	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-base Yr	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-base Yr	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-base Yr	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-base Yr	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-base Yr	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-base Yr	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-base Yr	15	15	15	15	15	15	15	15	15	15	15

Southern California Gas Company
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Figure 18: Gas Efficiency Shares

Gas 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	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

2014 CALIFORNIA GAS REPORT

CORE COMMERCIAL AND INDUSTRIAL DEMAND FORECAST
JULY 2014

The Gas Company

A Sempra Energy utility™

Core Commercial and Industrial End Use Model
2014 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 2014 through 2035.

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 1,384 for an Average Year. The gas demand forecasts under Cold, Hot and Base temperature were then constructed based on Cold Year (Hdd = 1,677), Hot Year (Hdd=1,091) 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 core to noncore migration expected 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 2013 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 2013 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 1,384 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 Regional forecast released in 2014 and based on Global Insight's latest US Economic Forecast. The historical 2013 data comes from the California Employment Development Department.

Data Sources

The key set of information used to perform the modeling and to generate the forecast includes historical year 2013 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 2013 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 1,384 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 is based on Global Insight's Regional forecast.

C. Gas Price Data:

Average and marginal gas prices ($/Therm) were calculated from forecasts of the G-10 rate components. We used detailed consumption data on our core G-10 C&I, customers, to separate monthly consumption for customers by each respective C&I business type into the respective G-10 consumption tiers. (The most recent 12-month period, January 2013 through December 2013 was used.)

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 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 the SCE's *commercial* customer class were used from the California Energy Comission's staff report entitled *California Energy Demand 2014-2024 Final Forecast*, December 2013, number CEC-200-2013-004-SF, Vol#1 & Vol#2. Retail electricity price forecasts for the SCE commercial customer class was from the MID case assumptions for the SCE planning area may be found at http://www.energy.ca.gov/2013_energypolicy/documents/#reportsnomeeting. The electricity price forecast data were extrapolated from 2025 through 2035 applying the annual growth rate for 2022 relative to 2021 to the year 2024 prices and beyond.

For the G-10 core commercial market, the average electricity prices were set equal to 112% of the CEC's projections for the SCE commercial class. The marginal prices were calculated by multiplying each year's respective average price by a ratio. This ratio, 1.000, was estimated from an analysis of the SCE GS-2 rate schedule posted on their web-site in March 2006.

For the G-10 core industrial market, the retail price for this group was assumed to be at 88% of the retail price projected for SCE's commercial customer class. The marginal prices were calculated by multiplying each year's respective average price by a ratio. This ratio, 0.789, was estimated from an analysis of the SCE GS-2 rate schedule posted on their web-site in March 2006. (These customers were assumed to be large non-self-generation customers who also were on time-of-use rates.)

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

AMI

Annual conservation benefits associated with AMI are estimated by SoCalGas to represent 1% of core gas throughput in the post-deployment period.

The Core Commercial and the Core Industrial loads were reduced by AMI's projected savings

G10 COMMERCIAL DATA TABLES

Southern California Gas Company
2014 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
2014 California Gas Report
Marginal Electric Prices (Cents/KWh)

Year	Agriculture Marginal Price	College Marginal Price	Construction Marginal Price	Government Marginal Price	Health Marginal Price	Laundry Marginal Price	Lodging Marginal Price	Misc Marginal Price	Office Marginal Price	Restaurant Marginal Price	Retail Marginal Price	School Marginal Price	TCU Marginal Price	Warehouse Marginal Price
2013	0.6943	0.7065	0.6988	0.6713	0.6350	0.6560	0.5987	0.6286	0.6374	0.6908	0.6254	0.6190	0.6741	0.5696
2014	0.7198	0.7317	0.7242	0.6974	0.6620	0.6824	0.6265	0.6557	0.6643	0.7164	0.6526	0.6464	0.7001	0.5982
2015	0.7875	0.7997	0.7920	0.7642	0.7276	0.7488	0.6909	0.7212	0.7300	0.7839	0.7179	0.7115	0.7670	0.6616
2016	0.7894	0.8015	0.7939	0.7663	0.7300	0.7510	0.6936	0.7236	0.7324	0.7858	0.7203	0.7140	0.7691	0.6645
2017	0.8194	0.8317	0.8240	0.7960	0.7591	0.7804	0.7222	0.7526	0.7615	0.8158	0.7493	0.7429	0.7988	0.6926
2018	0.8453	0.8578	0.8499	0.8217	0.7845	0.8060	0.7471	0.7779	0.7869	0.8416	0.7745	0.7680	0.8245	0.7173
2019	0.8993	0.9120	0.9040	0.8751	0.8370	0.8590	0.7988	0.8303	0.8395	0.8955	0.8269	0.8202	0.8780	0.7683
2020	0.9937	1.0068	0.9985	0.9690	0.9301	0.9526	0.8910	0.9232	0.9326	0.9899	0.9197	0.9129	0.9720	0.8598
2021	1.0567	1.0700	1.0616	1.0314	0.9915	1.0146	0.9516	0.9845	0.9941	1.0528	0.9809	0.9740	1.0344	0.9196
2022	1.0999	1.1135	1.1049	1.0740	1.0332	1.0567	0.9922	1.0259	1.0358	1.0959	1.0223	1.0151	1.0771	0.9595
2023	1.1673	1.1813	1.1725	1.1408	1.0990	1.1231	1.0571	1.0916	1.1017	1.1632	1.0879	1.0806	1.1440	1.0236
2024	1.2134	1.2277	1.2187	1.1863	1.1436	1.1682	1.1007	1.1360	1.1463	1.2092	1.1322	1.1247	1.1895	1.0665
2025	1.2501	1.2648	1.2556	1.2224	1.1787	1.2040	1.1349	1.1710	1.1816	1.2458	1.1671	1.1595	1.2257	1.0999
2026	1.2875	1.3025	1.2930	1.2591	1.2144	1.2402	1.1696	1.2065	1.2173	1.2831	1.2025	1.1947	1.2625	1.1337
2027	1.3191	1.3344	1.3247	1.2900	1.2443	1.2707	1.1984	1.2362	1.2473	1.3146	1.2321	1.2241	1.2935	1.1618
2028	1.3585	1.3742	1.3643	1.3288	1.2820	1.3090	1.2350	1.2737	1.2850	1.3539	1.2695	1.2613	1.3323	1.1975
2029	1.4074	1.4234	1.4133	1.3770	1.3290	1.3567	1.2810	1.3206	1.3321	1.4027	1.3162	1.3079	1.3806	1.2426
2030	1.4509	1.4673	1.4570	1.4198	1.3708	1.3991	1.3217	1.3621	1.3740	1.4461	1.3577	1.3492	1.4235	1.2824
2031	1.4984	1.5152	1.5046	1.4666	1.4164	1.4454	1.3661	1.4075	1.4197	1.4935	1.4030	1.3943	1.4704	1.3259
2032	1.5462	1.5635	1.5526	1.5136	1.4621	1.4918	1.4105	1.4530	1.4655	1.5412	1.4484	1.4394	1.5175	1.3693
2033	1.5925	1.6102	1.5990	1.5589	1.5061	1.5366	1.4531	1.4967	1.5095	1.5873	1.4920	1.4828	1.5629	1.4107
2034	1.6589	1.6771	1.6657	1.6245	1.5702	1.6015	1.5157	1.5606	1.5737	1.6536	1.5557	1.5462	1.6286	1.4722
2035	1.7068	1.7254	1.7137	1.6714	1.6157	1.6479	1.5599	1.6059	1.6194	1.7013	1.6009	1.5912	1.6756	1.5153

Southern California Gas Company
2014 California Gas Report
Average Electric Prices (Cents/KWh)

Year	Agriculture Average Price	College Average Price	Construction Average Price	Government Average Price	Health Average Price	Laundry Average Price	Lodging Average Price	Misc Average Price	Office Average Price	Restaurant Average Price	Retail Average Price	School Average Price	TCU Average Price	Warehouse Average Price
2013	15.45	17.76	15.29	15.17	17.82	13.38	16.10	15.73	16.11	18.52	15.95	15.82	18.59	13.95
2014	16.11	18.40	15.96	15.84	18.48	14.07	16.76	16.43	16.79	19.19	16.64	16.52	19.27	14.67
2015	16.62	18.82	16.47	16.35	18.88	14.64	17.24	16.97	17.33	19.63	17.17	17.05	19.69	15.26
2016	17.26	19.54	17.11	16.99	19.61	15.22	17.91	17.63	18.00	20.37	17.84	17.71	20.44	15.88
2017	17.77	20.04	17.61	17.49	20.10	15.72	18.41	18.15	18.53	20.90	18.36	18.23	20.96	16.39
2018	18.43	20.72	18.26	18.14	20.78	16.35	19.07	18.83	19.21	21.61	19.04	18.91	21.67	17.04
2019	19.06	21.32	18.90	18.77	21.37	17.00	19.70	19.49	19.88	22.24	19.71	19.57	22.28	17.72
2020	19.78	21.93	19.62	19.49	21.97	17.80	20.38	20.26	20.63	22.87	20.46	20.32	22.91	18.56
2021	20.42	22.54	20.26	20.12	22.56	18.45	21.01	20.92	21.30	23.50	21.12	20.98	23.52	19.24
2022	21.04	23.16	20.87	20.73	23.17	19.04	21.62	21.56	21.94	24.15	21.76	21.61	24.16	19.86
2023	21.68	23.76	21.51	21.36	23.76	19.70	22.25	22.23	22.61	24.78	22.43	22.28	24.78	20.54
2024	22.32	24.41	22.14	21.99	24.40	20.32	22.89	22.89	23.28	25.45	23.09	22.93	25.44	21.19
2025	23.00	25.11	22.81	22.65	25.09	20.95	23.57	23.58	23.98	26.18	23.79	23.62	26.16	21.85
2026	23.71	25.84	23.51	23.35	25.82	21.61	24.28	24.31	24.72	26.95	24.52	24.34	26.92	22.54
2027	24.43	26.60	24.23	24.05	26.57	22.28	25.01	25.05	25.47	27.74	25.26	25.08	27.70	23.23
2028	25.18	27.38	24.97	24.79	27.34	22.98	25.76	25.82	26.25	28.55	26.03	25.84	28.51	23.96
2029	25.96	28.18	25.74	25.55	28.12	23.72	26.54	26.62	27.07	29.38	26.84	26.64	29.33	24.73
2030	26.74	28.99	26.52	26.32	28.93	24.46	27.33	27.43	27.89	30.23	27.65	27.45	30.16	25.51
2031	27.58	29.85	27.34	27.14	29.78	25.25	28.17	28.29	28.76	31.13	28.51	28.30	31.05	26.33
2032	28.45	30.76	28.21	27.99	30.67	26.07	29.05	29.19	29.67	32.07	29.41	29.19	31.98	27.18
2033	29.36	31.71	29.10	28.88	31.60	26.91	29.96	30.11	30.61	33.06	30.35	30.11	32.95	28.06
2034	30.31	32.67	30.05	29.81	32.56	27.82	30.92	31.09	31.61	34.07	31.33	31.09	33.95	29.01
2035	31.28	33.68	31.00	30.76	33.55	28.72	31.89	32.08	32.61	35.12	32.33	32.07	34.98	29.94

File: 2014 CGR SCG Commercial average and marginal GAS price.xls(Average electric price)

Southern California Gas Company
2014 California Gas Report
Average Gas Prices ($/therm)

Year	Agriculture Average Price	College Average Price	Construction Average Price	Government Average Price	Health Average Price	Laundry Average Price	Lodging Average Price	Misc Average Price	Office Average Price	Restaurant Average Price	Retail Average Price	School Average Price	TCU Average Price	Warehouse Average Price
2013	0.8246	0.7875	0.8121	0.7284	0.7351	0.7558	0.6661	0.6937	0.7103	0.8165	0.7032	0.6975	0.8196	0.6154
2014	0.8489	0.8114	0.8362	0.7534	0.7609	0.7805	0.6927	0.7197	0.7358	0.8408	0.7290	0.7237	0.8443	0.6429
2015	0.9183	0.8812	0.9058	0.8217	0.8282	0.8492	0.7589	0.7866	0.8035	0.9101	0.7962	0.7904	0.9130	0.7077
2016	0.9198	0.8826	0.9072	0.8235	0.8302	0.8509	0.7611	0.7887	0.8054	0.9116	0.7982	0.7926	0.9147	0.7103
2017	0.9505	0.9136	0.9381	0.8538	0.8600	0.8813	0.7905	0.8184	0.8354	0.9424	0.8280	0.8221	0.9452	0.7390
2018	0.9770	0.9402	0.9646	0.8799	0.8858	0.9076	0.8160	0.8441	0.8613	0.9688	0.8538	0.8478	0.9714	0.7641
2019	1.0322	0.9957	1.0200	0.9344	0.9395	0.9623	0.8689	0.8976	0.9153	1.0240	0.9074	0.9011	1.0261	0.8161
2020	1.1279	1.0918	1.1158	1.0294	1.0336	1.0575	0.9623	0.9916	1.0098	1.1196	1.0016	0.9948	1.1213	0.9085
2021	1.1921	1.1564	1.1802	1.0929	1.0963	1.1213	1.0242	1.0541	1.0728	1.1838	1.0642	1.0571	1.1850	0.9693
2022	1.2367	1.2014	1.2250	1.1366	1.1392	1.1653	1.0663	1.0968	1.1160	1.2284	1.1070	1.0995	1.2290	1.0103
2023	1.3056	1.2706	1.2940	1.2046	1.2063	1.2337	1.1326	1.1637	1.1835	1.2971	1.1741	1.1662	1.2973	1.0754
2024	1.3530	1.3184	1.3415	1.2512	1.2520	1.2805	1.1775	1.2092	1.2296	1.3445	1.2198	1.2115	1.3442	1.1193
2025	1.3911	1.3569	1.3798	1.2886	1.2885	1.3181	1.2131	1.2455	1.2664	1.3826	1.2562	1.2475	1.3818	1.1538
2026	1.4300	1.3962	1.4188	1.3265	1.3255	1.3564	1.2493	1.2822	1.3038	1.4214	1.2931	1.2841	1.4200	1.1888
2027	1.4630	1.4296	1.4521	1.3587	1.3567	1.3889	1.2796	1.3133	1.3354	1.4544	1.3243	1.3149	1.4525	1.2179
2028	1.5040	1.4711	1.4933	1.3988	1.3958	1.4293	1.3178	1.3521	1.3749	1.4953	1.3633	1.3534	1.4928	1.2548
2029	1.5545	1.5220	1.5439	1.4483	1.4443	1.4792	1.3653	1.4004	1.4238	1.5457	1.4118	1.4014	1.5426	1.3011
2030	1.5996	1.5675	1.5891	1.4925	1.4874	1.5237	1.4076	1.4433	1.4674	1.5907	1.4549	1.4441	1.5871	1.3421
2031	1.6487	1.6171	1.6385	1.5406	1.5345	1.5722	1.4537	1.4902	1.5149	1.6398	1.5020	1.4907	1.6356	1.3869
2032	1.6984	1.6673	1.6884	1.5892	1.5819	1.6211	1.5000	1.5373	1.5628	1.6894	1.5493	1.5375	1.6845	1.4317
2033	1.7466	1.7161	1.7368	1.6363	1.6277	1.6686	1.5446	1.5828	1.6090	1.7376	1.5950	1.5827	1.7319	1.4747
2034	1.8152	1.7853	1.8057	1.7036	1.6937	1.7364	1.6093	1.6485	1.6756	1.8061	1.6609	1.6480	1.7997	1.5377
2035	1.8651	1.8357	1.8557	1.7523	1.7411	1.7855	1.6555	1.6955	1.7235	1.8559	1.7082	1.6948	1.8487	1.5824

File: 2014 CGR SCG Commercial marginal GAS price.xls(Marginal Price)

Southern California Gas Company
2014 California Gas Report
Marginal Gas Prices ($/Therm)

Year	Agriculture Marginal Price	College Marginal Price	Construction Marginal Price	Government Marginal Price	Health Marginal Price	Laundry Marginal Price	Lodging Marginal Price	Misc Marginal Price	Office Marginal Price	Restaurant Marginal Price	Retail Marginal Price	School Marginal Price	TCU Marginal Price	Warehouse Marginal Price
2013	0.6943	0.7065	0.6988	0.6713	0.6350	0.6560	0.5987	0.6286	0.6374	0.6908	0.6254	0.6190	0.6741	0.5696
2014	0.7198	0.7317	0.7242	0.6974	0.6620	0.6824	0.6265	0.6557	0.6643	0.7164	0.6526	0.6464	0.7001	0.5982
2015	0.7875	0.7997	0.7920	0.7642	0.7276	0.7488	0.6909	0.7212	0.7300	0.7839	0.7179	0.7115	0.7670	0.6616
2016	0.7894	0.8015	0.7939	0.7663	0.7300	0.7510	0.6936	0.7236	0.7324	0.7858	0.7203	0.7140	0.7691	0.6645
2017	0.8194	0.8317	0.8240	0.7960	0.7591	0.7804	0.7222	0.7526	0.7615	0.8158	0.7493	0.7429	0.7988	0.6926
2018	0.8453	0.8578	0.8499	0.8217	0.7845	0.8060	0.7471	0.7779	0.7869	0.8416	0.7745	0.7680	0.8245	0.7173
2019	0.8993	0.9120	0.9040	0.8751	0.8370	0.8590	0.7988	0.8303	0.8395	0.8955	0.8269	0.8202	0.8780	0.7683
2020	0.9937	1.0068	0.9985	0.9690	0.9301	0.9526	0.8910	0.9232	0.9326	0.9899	0.9197	0.9129	0.9720	0.8598
2021	1.0567	1.0700	1.0616	1.0314	0.9915	1.0146	0.9516	0.9845	0.9941	1.0528	0.9809	0.9740	1.0344	0.9196
2022	1.0999	1.1135	1.1049	1.0740	1.0332	1.0567	0.9922	1.0259	1.0358	1.0959	1.0223	1.0151	1.0771	0.9595
2023	1.1673	1.1813	1.1725	1.1408	1.0990	1.1231	1.0571	1.0916	1.1017	1.1632	1.0879	1.0806	1.1440	1.0236
2024	1.2134	1.2277	1.2187	1.1863	1.1436	1.1682	1.1007	1.1360	1.1463	1.2092	1.1322	1.1247	1.1895	1.0665
2025	1.2501	1.2648	1.2556	1.2224	1.1787	1.2040	1.1349	1.1710	1.1816	1.2458	1.1671	1.1595	1.2257	1.0999
2026	1.2875	1.3025	1.2930	1.2591	1.2144	1.2402	1.1696	1.2065	1.2173	1.2831	1.2025	1.1947	1.2625	1.1337
2027	1.3191	1.3344	1.3247	1.2900	1.2443	1.2707	1.1984	1.2362	1.2473	1.3146	1.2321	1.2241	1.2935	1.1618
2028	1.3585	1.3742	1.3643	1.3288	1.2820	1.3090	1.2350	1.2737	1.2850	1.3539	1.2695	1.2613	1.3323	1.1975
2029	1.4074	1.4234	1.4133	1.3770	1.3290	1.3567	1.2810	1.3206	1.3321	1.4027	1.3162	1.3079	1.3806	1.2426
2030	1.4509	1.4673	1.4570	1.4198	1.3708	1.3991	1.3217	1.3621	1.3740	1.4461	1.3577	1.3492	1.4235	1.2824
2031	1.4984	1.5152	1.5046	1.4666	1.4164	1.4454	1.3661	1.4075	1.4197	1.4935	1.4030	1.3943	1.4704	1.3259
2032	1.5462	1.5635	1.5526	1.5136	1.4621	1.4918	1.4105	1.4530	1.4655	1.5412	1.4484	1.4394	1.5175	1.3693
2033	1.5925	1.6102	1.5990	1.5589	1.5061	1.5366	1.4531	1.4967	1.5095	1.5873	1.4920	1.4828	1.5629	1.4107
2034	1.6589	1.6771	1.6657	1.6245	1.5702	1.6015	1.5157	1.5606	1.5737	1.6536	1.5557	1.5462	1.6286	1.4722
2035	1.7068	1.7254	1.7137	1.6714	1.6157	1.6479	1.5599	1.6059	1.6194	1.7013	1.6009	1.5912	1.6756	1.5153

Southern California Gas Company
2014 California Gas Report

2013 Historical Data

Segment	2013 Therm Sales	2013 Meter Count	2013 Meter Count, Existing/Old customers	2013 Meter Count New Customers	Price Elasti
Office	72,043,877	41,501	41,280	221	-0.072
Restaurant	255,317,023	37,8243	37,419	405	-0.001
Retail	59,665,620	25,658	25,479	179	-0.032
Laundry	60,948,264	4,314	4,295	19	-0.026
Warehouse	20,262,445	7,772	7,731	41	-1E-08
School	39,215,810	6,745	6,717	28	-0.103
College	27,076,678	2,836	2,799	37	-0.09
Health	60,990,013	7,498	7,476	22	-0.052
Lodging	59,543,089	4,862	4,850	12	-0.013
Misc	77,071,655	34,769	34,499	270	-0.03
Government	26,488,972	3,692	3,671	21	-0.061
TCU	30,218,076	6,924	6,892	32	-0.062
Construction	7,739,525	5,572	5,528	44	-0.179
Agriculture	39,879,221	1,484	1,472	12	-0.059
Total	836,460,267	191,451			

Southern California Gas Company
Core Commercial Use Per Meter for New Customers (Therms)
2014 California Gas Report

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
2014 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

Southern California Gas Company

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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	u			bname	uname	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	c	d	e	bname	mname	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	u	f	e	bname	uname	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	2.353
10	2	2	2	Misc	Water_Heat	2.5883

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

b	m	s	e	bname	mname	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
2014 California Gas Report
Employment (in Millions)

YEAR	Office	Restaurant	Retail	Laundry	Warehouse	School	College	Health	Lodging	Misc	Government	TCU	Construction	Agriculture	Total
2013	1.12011	0.65405	0.93714	0.08682	0.43651	0.60622	0.1986849	0.83227	0.13032	0.21225	0.61076	0.50411	0.31487	0.22486	6.86895
2014	1.15023	0.66442	0.95196	0.08773	0.44620	0.60470	0.1981885	0.84886	0.13421	0.21449	0.60684	0.50970	0.33370	0.22135	6.97258
2015	1.20855	0.66914	0.95873	0.08708	0.45675	0.60810	0.1993011	0.86682	0.13656	0.21291	0.60798	0.51720	0.37135	0.22468	7.12514
2016	1.25031	0.67508	0.96723	0.08672	0.46888	0.61517	0.2016179	0.89104	0.13845	0.21202	0.61132	0.53424	0.41548	0.23008	7.29764
2017	1.28281	0.68061	0.97516	0.08698	0.48060	0.62306	0.2042042	0.91558	0.14032	0.21265	0.61608	0.54908	0.44698	0.23308	7.44719
2018	1.30578	0.68092	0.97560	0.08696	0.48912	0.63236	0.2072519	0.93783	0.14166	0.21261	0.62190	0.55970	0.45978	0.23502	7.54649
2019	1.32966	0.67930	0.97328	0.08649	0.49468	0.64071	0.2099888	0.95363	0.14225	0.21147	0.62721	0.56636	0.46581	0.23575	7.61659
2020	1.35405	0.67574	0.96819	0.08593	0.49869	0.64901	0.2127116	0.96334	0.14232	0.21009	0.63952	0.57125	0.47218	0.23570	7.67873
2021	1.37423	0.67056	0.96076	0.08555	0.50079	0.65780	0.215591	0.97187	0.14217	0.20916	0.64080	0.57535	0.47669	0.23553	7.71685
2022	1.39908	0.66573	0.95385	0.08526	0.50330	0.66685	0.2185563	0.98023	0.14196	0.20845	0.64741	0.57955	0.48079	0.23562	7.76664
2023	1.42750	0.66087	0.94688	0.08491	0.50545	0.67573	0.2214668	0.98804	0.14159	0.20759	0.65364	0.58288	0.48667	0.23594	7.81914
2024	1.45607	0.65727	0.94172	0.08471	0.50789	0.68491	0.2244754	0.99437	0.14132	0.20710	0.66038	0.58619	0.49365	0.23618	7.87623
2025	1.48580	0.65550	0.93918	0.08474	0.51117	0.69234	0.2269113	1.00214	0.14110	0.20718	0.66588	0.58879	0.50281	0.23632	7.93986
2026	1.51504	0.65654	0.94067	0.08495	0.51423	0.69722	0.2285108	1.01239	0.14127	0.20768	0.66926	0.59101	0.51320	0.23656	8.00853
2027	1.54371	0.65885	0.94399	0.08525	0.51704	0.70194	0.2300594	1.02404	0.14195	0.20842	0.67251	0.59210	0.52377	0.23691	8.08054
2028	1.56921	0.66241	0.94909	0.08567	0.51655	0.70668	0.2316126	1.03712	0.14300	0.20944	0.67576	0.59399	0.53328	0.23740	8.15121
2029	1.59362	0.66569	0.95379	0.08594	0.51649	0.71151	0.2331948	1.04995	0.14417	0.21012	0.67907	0.59630	0.54332	0.23800	8.22117
2030	1.61936	0.66888	0.95836	0.08612	0.51539	0.71558	0.2345268	1.06255	0.14523	0.21055	0.68763	0.59863	0.55536	0.23856	8.29671
2031	1.64395	0.67178	0.96250	0.08618	0.51412	0.71885	0.2356014	1.07540	0.14627	0.21069	0.68457	0.60070	0.56530	0.23904	8.35495
2032	1.67026	0.67483	0.96688	0.08633	0.51202	0.72237	0.2367527	1.08870	0.14736	0.21105	0.68682	0.60266	0.56968	0.23945	8.41517
2033	1.69551	0.67820	0.97170	0.08662	0.51112	0.72597	0.2379337	1.10226	0.14851	0.21176	0.68907	0.60343	0.57311	0.23990	8.47509
2034	1.71944	0.68167	0.97668	0.08686	0.50971	0.72967	0.2391473	1.11615	0.14959	0.21236	0.69139	0.60460	0.57921	0.24015	8.53663
2035	1.74274	0.68498	0.98142	0.08706	0.50863	0.73328	0.2403299	1.12840	0.15062	0.21284	0.69361	0.60484	0.58970	0.24024	8.59870

Southern California Gas Company
Gas Engine Forecast (Mdth)

Mdth

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2012	263	229	177	83	123	127	112	180	116	262	99	270	2043
2013	70	65	95	117	169	218	266	290	255	155	110	89	1899
2014	124	131	125	110	165	193	211	229	196	201	124	153	1962
2015	123	130	125	109	164	192	210	227	195	200	123	153	1952
2016	123	129	124	109	163	191	209	226	194	199	123	152	1943
2017	122	129	123	108	162	190	208	225	193	198	122	151	1933
2018	122	128	123	108	161	189	207	224	192	197	121	150	1923
2019	121	127	122	107	161	189	206	223	191	196	121	150	1914
2020	120	127	122	107	160	188	205	222	190	195	120	149	1904
2021	120	126	121	106	159	187	204	221	189	194	120	148	1894
2022	119	126	120	106	158	186	203	220	188	193	119	147	1885
2023	119	125	120	105	157	185	202	219	187	192	118	147	1876
2024	118	124	119	104	157	184	201	217	186	191	118	146	1866
2025	117	124	119	104	156	183	200	216	185	191	117	145	1857
2026	117	123	118	103	155	182	199	215	184	190	117	145	1848
2027	116	122	117	103	154	181	198	214	184	189	116	144	1838
2028	116	122	117	102	154	180	197	213	183	188	115	143	1829
2029	115	121	116	102	153	179	196	212	182	187	115	142	1820
2030	115	121	116	101	152	178	195	211	181	186	114	142	1811
2031	114	120	115	101	151	178	194	210	180	185	114	141	1802
2032	113	119	114	100	151	177	193	209	179	184	113	140	1793
2033	113	119	114	100	150	176	192	208	178	183	113	140	1784
2034	112	118	113	99	149	175	191	207	177	182	112	139	1775
2035	112	118	113	99	148	174	190	206	176	181	111	138	1766

Southern California Gas Company
GAS AC Forecast (Mdth)

Mdth

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2012	3.76	3.33	3.83	4.60	6.16	7.16	8.28	12.14	12.07	8.29	4.59	3.18	77.38
2013	3.01	2.64	4.36	5.41	7.86	8.28	10.58	9.99	9.92	5.99	4.77	3.28	76.08
2014	4.15	6.06	2.91	5.87	7.48	8.00	10.19	12.41	12.26	9.09	6.40	4.03	88.84
2015	3.77	5.51	2.64	5.34	6.80	7.28	9.27	11.28	11.14	8.26	5.82	3.66	80.77
2016	3.77	5.51	2.64	5.34	6.80	7.28	9.27	11.28	11.14	8.26	5.82	3.66	80.77
2017	3.77	5.51	2.64	5.34	6.80	7.28	9.27	11.28	11.14	8.26	5.82	3.66	80.77
2018	3.77	5.51	2.64	5.34	6.80	7.28	9.27	11.28	11.14	8.26	5.82	3.66	80.77
2019	3.77	5.51	2.64	5.34	6.80	7.28	9.27	11.28	11.14	8.26	5.82	3.66	80.77
2020	3.77	5.51	2.64	5.34	6.80	7.28	9.27	11.28	11.14	8.26	5.82	3.66	80.77
2021	3.77	5.51	2.64	5.34	6.80	7.28	9.27	11.28	11.14	8.26	5.82	3.66	80.77
2022	3.77	5.51	2.64	5.34	6.80	7.28	9.27	11.28	11.14	8.26	5.82	3.66	80.77
2023	3.77	5.51	2.64	5.34	6.80	7.28	9.27	11.28	11.14	8.26	5.82	3.66	80.77
2024	3.77	5.51	2.64	5.34	6.80	7.28	9.27	11.28	11.14	8.26	5.82	3.66	80.77
2025	3.77	5.51	2.64	5.34	6.80	7.28	9.27	11.28	11.14	8.26	5.82	3.66	80.77
2026	3.77	5.51	2.64	5.34	6.80	7.28	9.27	11.28	11.14	8.26	5.82	3.66	80.77
2027	3.77	5.51	2.64	5.34	6.80	7.28	9.27	11.28	11.14	8.26	5.82	3.66	80.77
2028	3.77	5.51	2.64	5.34	6.80	7.28	9.27	11.28	11.14	8.26	5.82	3.66	80.77
2029	3.77	5.51	2.64	5.34	6.80	7.28	9.27	11.28	11.14	8.26	5.82	3.66	80.77
2030	3.77	5.51	2.64	5.34	6.80	7.28	9.27	11.28	11.14	8.26	5.82	3.66	80.77
2031	3.77	5.51	2.64	5.34	6.80	7.28	9.27	11.28	11.14	8.26	5.82	3.66	80.77
2032	3.77	5.51	2.64	5.34	6.80	7.28	9.27	11.28	11.14	8.26	5.82	3.66	80.77
2033	3.77	5.51	2.64	5.34	6.80	7.28	9.27	11.28	11.14	8.26	5.82	3.66	80.77
2034	3.77	5.51	2.64	5.34	6.80	7.28	9.27	11.28	11.14	8.26	5.82	3.66	80.77
2035	3.77	5.51	2.64	5.34	6.80	7.28	9.27	11.28	11.14	8.26	5.82	3.66	80.77

Com10Avg

Southern California Gas Company
2014 California Gas Report
Average-Temperature Year Demand Forecast

SOURCE	YEAR	MDTH1	MDTH2	MDTH3	MDTH4	MDTH5	MDTH6	MDTH7	MDTH8	MDTH9	MDTH10	MDTH11	MDTH12	TOTAL
G10Commercial	**2013**	9520.18	8809.52	7708.17	6731.09	6347.07	5726.58	5093.72	4944.11	5383.75	5619.17	8043.08	9719.59	83646.03
G10Commercial	2014	9417.66	8673.20	7624.38	6680.01	6296.20	5683.46	5078.86	4919.86	5353.29	5504.85	7975.34	9588.81	82795.93
G10Commercial	2015	9424.80	8685.63	7633.91	6690.80	6306.99	5697.64	5094.05	4938.46	5372.39	5518.54	7984.50	9600.34	82948.04
G10Commercial	2016	9479.32	8741.71	7682.04	6735.19	6349.57	5740.72	5135.05	4982.03	5418.49	5560.18	8033.69	9660.35	83518.34
G10Commercial	2017	9529.24	8789.60	7723.84	6772.51	6385.40	5774.80	5166.54	5013.90	5452.38	5593.26	8077.03	9712.74	83991.26
G10Commercial	2018	9550.65	8811.11	7742.45	6789.46	6401.84	5791.19	5182.07	5030.17	5469.49	5609.16	8096.13	9735.97	84209.70
G10Commercial	2019	9540.44	8803.35	7735.31	6783.81	6396.78	5787.94	5179.88	5029.15	5467.98	5606.00	8088.32	9726.84	84145.81
G10Commercial	2020	9502.35	8768.19	7704.44	6756.71	6371.27	5764.88	5159.25	5009.12	5446.15	5583.67	8056.03	9688.02	83810.08
G10Commercial	2021	9460.14	8729.21	7670.20	6726.65	6342.95	5739.25	5136.31	4986.82	5421.90	5558.85	8020.22	9644.97	83437.49
G10Commercial	2022	9434.82	8705.86	7649.72	6708.67	6326.12	5724.10	5122.82	4973.76	5407.58	5544.21	7998.77	9619.20	83215.64
G10Commercial	2023	9399.66	8673.40	7621.21	6683.65	6302.60	5702.84	5103.81	4955.31	5387.47	5523.63	7968.96	9583.36	82905.88
G10Commercial	2024	9382.02	8657.16	7606.98	6671.15	6290.98	5692.45	5094.61	4946.43	5377.67	5513.61	7954.04	9565.44	82752.53
G10Commercial	2025	9378.96	8654.40	7604.60	6669.06	6289.28	5691.11	5093.57	4945.52	5376.45	5512.36	7951.52	9562.43	82729.26
G10Commercial	2026	9390.86	8665.50	7614.41	6677.66	6297.76	5699.05	5100.90	4952.79	5384.04	5520.14	7961.73	9574.74	82839.57
G10Commercial	2027	9413.12	8686.17	7632.63	6693.66	6313.27	5713.40	5114.02	4965.71	5397.72	5534.14	7980.74	9597.62	83042.22
G10Commercial	2028	9439.46	8710.63	7654.19	6712.58	6331.57	5730.30	5129.43	4980.87	5413.80	5550.61	8003.23	9624.69	83281.38
G10Commercial	2029	9461.07	8730.70	7671.89	6728.12	6346.63	5744.25	5142.19	4993.43	5427.10	5564.22	8021.69	9646.91	83478.19
G10Commercial	2030	9487.63	8755.35	7693.62	6747.19	6365.07	5761.27	5157.71	5008.69	5443.30	5580.81	8044.36	9674.20	83719.20
G10Commercial	2031	9502.14	8768.85	7705.54	6757.65	6375.31	5770.81	5166.49	5017.37	5452.42	5590.14	8056.79	9689.17	83852.67
G10Commercial	2032	9522.63	8787.89	7722.33	6772.39	6389.61	5784.06	5178.61	5029.31	5465.04	5603.07	8074.30	9710.25	84039.49
G10Commercial	2033	9546.17	8809.74	7741.59	6789.30	6405.98	5799.19	5192.44	5042.91	5479.46	5617.83	8094.39	9734.44	84253.44
G10Commercial	2034	9562.99	8825.37	7755.39	6801.42	6417.79	5810.16	5202.50	5052.83	5489.93	5628.54	8108.78	9751.77	84407.46
G10Commercial	2035	9584.66	8845.50	7773.14	6817.00	6432.89	5824.14	5215.28	5065.41	5503.24	5642.17	8127.30	9774.06	84604.80

Com10Col

Southern California Gas Company
2014 California Gas Report
Cold-Year Demand Forecast

SOURCE	YEAR	MDTH1	MDTH2	MDTH3	MDTH4	MDTH5	MDTH6	MDTH7	MDTH8	MDTH9	MDTH10	MDTH11	MDTH12	TOTAL
G10Commercial	**2013**	10419.49	9557.27	8226.44	7041.48	6597.27	5855.18	5102.90	4926.23	5468.43	5722.34	8644.20	10667.42	88228.66
G10Commercial	2014	10335.11	9441.37	8165.65	7018.93	6564.90	5834.62	5107.51	4919.86	5447.07	5617.95	8590.44	10553.56	87596.98
G10Commercial	2015	10342.36	9453.90	8175.24	7029.77	6575.72	5848.82	5122.70	4938.46	5466.18	5631.65	8599.68	10565.21	87749.69
G10Commercial	2016	10401.58	9513.90	8226.14	7075.89	6619.67	5892.67	5163.84	4982.03	5512.76	5673.87	8652.02	10630.16	88344.53
G10Commercial	2017	10456.08	9565.64	8270.65	7114.90	6656.85	5927.51	5195.48	5013.90	5547.12	5707.52	8698.43	10687.37	88841.46
G10Commercial	2018	10479.35	9588.70	8290.35	7132.54	6673.84	5944.20	5211.06	5030.17	5564.42	5723.65	8718.77	10712.55	89069.61
G10Commercial	2019	10467.95	9579.96	8282.52	7126.46	6668.42	5940.76	5208.84	5029.15	5562.78	5720.34	8710.18	10702.19	88999.56
G10Commercial	2020	10426.16	9541.69	8249.46	7097.99	6641.83	5917.09	5188.10	5009.12	5540.58	5697.56	8675.39	10659.46	88644.42
G10Commercial	2021	10379.85	9499.27	8212.80	7066.42	6612.31	5890.78	5165.02	4986.82	5515.90	5672.23	8636.83	10612.10	88250.35
G10Commercial	2022	10352.04	9473.84	8190.85	7047.51	6594.76	5875.23	5151.45	4973.76	5501.34	5657.28	8613.72	10583.72	88015.49
G10Commercial	2023	10313.45	9438.51	8160.32	7021.22	6570.22	5853.40	5132.34	4955.31	5480.87	5636.28	8581.61	10544.27	87687.80
G10Commercial	2024	10294.06	9420.80	8145.05	7008.08	6558.10	5842.72	5123.08	4946.43	5470.89	5626.04	8565.52	10524.52	87525.30
G10Commercial	2025	10290.65	9417.75	8142.47	7005.86	6556.30	5841.32	5122.03	4945.52	5469.64	5624.75	8562.77	10521.14	87500.20
G10Commercial	2026	10303.64	9429.76	8152.92	7014.86	6565.09	5849.43	5129.40	4952.79	5477.34	5632.66	8573.70	10534.58	87616.17
G10Commercial	2027	10327.97	9452.17	8172.37	7031.63	6581.21	5864.13	5142.58	4965.71	5491.23	5646.92	8594.10	10559.65	87829.69
G10Commercial	2028	10356.78	9478.70	8195.38	7051.46	6600.23	5881.44	5158.07	4980.87	5507.57	5663.70	8618.25	10589.32	88081.76
G10Commercial	2029	10380.41	9500.45	8214.27	7067.74	6615.88	5895.72	5170.89	4993.43	5521.07	5677.55	8638.06	10613.66	88289.13
G10Commercial	2030	10409.45	9527.19	8237.47	7087.73	6635.05	5913.15	5186.49	5008.69	5537.53	5694.45	8662.40	10643.56	88543.16
G10Commercial	2031	10425.30	9541.81	8250.18	7098.69	6645.68	5922.91	5195.31	5017.37	5546.78	5703.94	8675.72	10659.93	88683.63
G10Commercial	2032	10447.70	9562.44	8268.09	7114.14	6660.54	5936.47	5207.49	5029.31	5559.60	5717.11	8694.51	10683.02	88880.44
G10Commercial	2033	10473.44	9586.14	8288.66	7131.86	6677.56	5951.97	5221.38	5042.91	5574.25	5732.14	8716.09	10709.53	89105.92
G10Commercial	2034	10491.82	9603.08	8303.38	7144.55	6689.82	5963.19	5231.50	5052.83	5584.87	5743.04	8731.52	10728.50	89268.09
G10Commercial	2035	10515.52	9624.90	8322.32	7160.88	6705.52	5977.50	5244.34	5065.41	5598.39	5756.92	8751.40	10752.92	89476.03

Com10Hot

Southern California Gas Company
2014 California Gas Report
Hot Year Demand Forecast

SOURCE	YEAR	MDTH1	MDTH2	MDTH3	MDTH4	MDTH5	MDTH6	MDTH7	MDTH8	MDTH9	MDTH10	MDTH11	MDTH12	TOTAL
G10Commercial	**2013**	8578.93	8019.01	7141.50	6360.88	6056.11	5557.60	5051.23	4926.23	5289.86	5495.63	7411.25	8733.61	78621.84
G10Commercial	2014	8498.64	7906.53	7083.11	6339.85	6024.95	5537.70	5055.95	4919.86	5268.89	5391.75	7360.24	8624.05	78011.52
G10Commercial	2015	8505.67	7918.87	7092.57	6350.60	6035.70	5551.86	5071.14	4938.46	5287.98	5405.42	7369.32	8635.46	78163.05
G10Commercial	2016	8555.49	7971.03	7137.93	6393.24	6076.89	5594.20	5112.01	4982.03	5333.64	5446.49	7415.37	8690.54	78708.87
G10Commercial	2017	8600.82	8015.09	7177.04	6428.86	6111.37	5627.55	5143.39	5013.90	5367.12	5479.00	7455.63	8738.10	79157.87
G10Commercial	2018	8620.37	8035.05	7194.55	6445.13	6127.26	5643.64	5158.87	5030.17	5384.06	5494.68	7473.49	8759.38	79366.64
G10Commercial	2019	8611.33	8028.27	7188.10	6439.92	6122.54	5640.58	5156.72	5029.15	5382.65	5491.66	7466.47	8751.49	79308.90
G10Commercial	2020	8576.96	7996.21	7159.42	6414.19	6098.13	5618.11	5136.18	5009.12	5361.17	5469.79	7436.66	8716.57	78992.51
G10Commercial	2021	8538.87	7960.66	7127.60	6385.66	6071.03	5593.13	5113.34	4986.82	5337.29	5445.48	7403.60	8677.84	78641.32
G10Commercial	2022	8516.04	7939.39	7108.58	6368.59	6054.93	5578.38	5099.91	4973.76	5323.20	5431.14	7383.82	8654.68	78432.42
G10Commercial	2023	8484.30	7909.79	7082.11	6344.84	6032.42	5557.66	5080.99	4955.31	5303.40	5410.98	7356.30	8622.45	78140.55
G10Commercial	2024	8468.42	7895.01	7068.90	6332.99	6021.32	5547.55	5071.83	4946.43	5293.76	5401.17	7342.56	8606.37	77996.32
G10Commercial	2025	8465.71	7892.55	7066.73	6331.03	6019.73	5546.26	5070.80	4945.52	5292.58	5399.97	7340.28	8603.73	77974.88
G10Commercial	2026	8476.53	7902.74	7075.90	6339.24	6027.88	5554.03	5078.10	4952.79	5300.07	5407.61	7349.76	8614.89	78079.53
G10Commercial	2027	8496.70	7921.67	7092.90	6354.46	6042.78	5568.06	5091.17	4965.71	5313.56	5421.36	7367.38	8635.59	78271.36
G10Commercial	2028	8520.57	7944.07	7113.00	6372.47	6060.35	5584.56	5106.52	4980.87	5329.41	5437.53	7388.21	8660.07	78497.64
G10Commercial	2029	8540.16	7962.45	7129.51	6387.26	6074.82	5598.19	5119.23	4993.43	5342.52	5450.89	7405.32	8680.17	78683.95
G10Commercial	2030	8564.22	7985.02	7149.77	6405.41	6092.52	5614.81	5134.69	5008.69	5358.50	5467.17	7426.32	8704.84	78911.96
G10Commercial	2031	8577.40	7997.41	7160.90	6415.38	6102.36	5624.14	5143.43	5017.37	5367.49	5476.34	7437.85	8718.40	79038.46
G10Commercial	2032	8595.98	8014.85	7176.56	6429.40	6116.10	5637.09	5155.51	5029.31	5379.94	5489.03	7454.08	8737.47	79215.33
G10Commercial	2033	8617.31	8034.86	7194.53	6445.50	6131.82	5651.87	5169.28	5042.91	5394.16	5503.52	7472.70	8759.35	79417.80
G10Commercial	2034	8632.57	8049.19	7207.41	6457.03	6143.16	5662.59	5179.30	5052.83	5404.48	5514.03	7486.05	8775.04	79563.69
G10Commercial	2035	8652.21	8067.63	7223.97	6471.87	6157.67	5676.25	5192.03	5065.41	5417.61	5527.42	7503.21	8795.21	79750.47

Com10Bas

Southern California Gas Company
2014 California Gas Report
Base Year Demand Forecast

SOURCE	YEAR	MDTH1	MDTH2	MDTH3	MDTH4	MDTH5	MDTH6	MDTH7	MDTH8	MDTH9	MDTH10	MDTH11	MDTH12	TOTAL
G10Commercial	**2013**	5150.87	5153.83	5120.57	5092.32	5048.17	4994.91	4947.88	4926.23	4970.30	5072.64	5113.67	5132.50	60723.90
G10Commercial	2014	5078.21	5047.73	5066.68	5074.11	5019.25	4976.25	4952.84	4919.86	4950.05	4969.69	5067.76	5030.95	60153.37
G10Commercial	2015	5084.81	5059.71	5075.89	5084.70	5029.87	4990.34	4968.01	4938.46	4969.09	4983.32	5076.56	5041.91	60302.68
G10Commercial	2016	5117.14	5097.25	5110.94	5120.87	5065.92	5029.81	5008.36	4982.03	5013.12	5022.22	5110.88	5078.62	60757.19
G10Commercial	2017	5145.37	5127.02	5139.96	5150.17	5095.37	5060.36	5039.22	5013.90	5045.01	5052.63	5139.69	5108.22	61116.90
G10Commercial	2018	5158.01	5141.20	5153.40	5163.87	5109.23	5075.31	5054.49	5030.17	5061.30	5067.45	5152.90	5122.23	61289.57
G10Commercial	2019	5153.35	5138.09	5149.54	5160.29	5105.80	5072.98	5052.47	5029.15	5060.30	5064.98	5148.83	5118.95	61254.73
G10Commercial	2020	5132.81	5117.58	5129.01	5139.67	5085.46	5052.77	5032.35	5009.12	5040.11	5044.81	5128.29	5098.56	61010.53
G10Commercial	2021	5110.02	5094.82	5106.22	5116.80	5062.86	5030.31	5009.97	4986.82	5017.65	5022.38	5105.48	5075.90	60739.24
G10Commercial	2022	5096.45	5081.29	5092.66	5103.17	5049.48	5017.07	4996.82	4973.76	5004.43	5009.19	5091.92	5062.47	60578.72
G10Commercial	2023	5077.50	5062.38	5073.71	5084.15	5030.73	4998.46	4978.28	4955.31	4985.82	4990.61	5072.96	5043.67	60353.58
G10Commercial	2024	5068.13	5053.04	5064.35	5074.71	5021.55	4989.41	4969.32	4946.43	4976.79	4981.61	5063.59	5034.44	60243.38
G10Commercial	2025	5066.73	5051.68	5062.95	5073.23	5020.34	4988.34	4968.33	4945.52	4975.73	4980.57	5062.18	5033.17	60228.77
G10Commercial	2026	5073.51	5058.49	5069.74	5079.94	5027.31	4995.44	4975.51	4952.79	4982.84	4987.71	5068.96	5040.09	60312.32
G10Commercial	2027	5085.94	5070.96	5082.17	5092.31	5039.93	5008.20	4988.35	4965.71	4995.61	5000.50	5081.39	5052.66	60463.73
G10Commercial	2028	5100.61	5085.66	5096.85	5106.91	5054.79	5023.19	5003.42	4980.87	5010.61	5015.53	5096.05	5067.46	60641.96
G10Commercial	2029	5112.69	5097.77	5108.93	5118.91	5067.05	5035.59	5015.90	4993.43	5023.02	5027.97	5108.12	5079.67	60789.04
G10Commercial	2030	5127.46	5112.57	5123.71	5133.62	5082.02	5050.69	5031.08	5008.69	5038.13	5043.10	5122.90	5094.59	60968.57
G10Commercial	2031	5135.66	5120.80	5131.91	5141.75	5090.40	5059.20	5039.68	5017.37	5046.65	5051.65	5131.09	5102.92	61069.07
G10Commercial	2032	5147.12	5132.29	5143.38	5153.15	5102.04	5070.98	5051.54	5029.31	5058.44	5063.47	5142.55	5114.51	61208.76
G10Commercial	2033	5160.24	5145.44	5156.50	5166.20	5115.35	5084.41	5065.06	5042.91	5071.89	5076.94	5155.67	5127.77	61368.38
G10Commercial	2034	5169.68	5154.91	5165.96	5175.59	5124.98	5094.18	5074.91	5052.83	5081.67	5086.74	5165.12	5137.35	61483.92
G10Commercial	2035	5181.78	5167.04	5178.06	5187.63	5137.27	5106.59	5087.41	5065.41	5094.10	5099.20	5177.22	5149.58	61631.29

G10 Industrial DATA TABLES

Southern California Gas Company
2014 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

Southern California Gas Company
2014 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
2013	12.97	12.12	11.97	12.09	12.30	11.40	13.17	12.43	13.03	12.89	13.85
2014	13.47	12.64	12.49	12.61	12.81	11.94	13.67	12.94	13.53	13.39	14.34
2015	13.84	13.03	12.89	13.01	13.20	12.35	14.02	13.33	13.89	13.76	14.67
2016	14.37	13.54	13.40	13.51	13.71	12.84	14.56	13.84	14.42	14.28	15.22
2017	14.76	13.93	13.79	13.90	14.11	13.23	14.95	14.24	14.82	14.68	15.61
2018	15.28	14.44	14.30	14.42	14.62	13.74	15.47	14.75	15.34	15.19	16.14
2019	15.76	14.94	14.79	14.91	15.11	14.24	15.95	15.24	15.82	15.67	16.61
2020	16.28	15.49	15.36	15.47	15.66	14.83	16.46	15.79	16.33	16.19	17.08
2021	16.76	15.99	15.85	15.96	16.15	15.33	16.94	16.28	16.82	16.68	17.55
2022	17.24	16.46	16.33	16.43	16.63	15.80	17.42	16.76	17.30	17.15	18.03
2023	17.73	16.96	16.83	16.93	17.12	16.31	17.91	17.25	17.78	17.64	18.51
2024	18.23	17.46	17.32	17.42	17.62	16.80	18.41	17.75	18.29	18.14	19.01
2025	18.77	17.98	17.84	17.95	18.15	17.31	18.95	18.28	18.82	18.67	19.56
2026	19.33	18.53	18.39	18.49	18.70	17.84	19.52	18.83	19.39	19.23	20.14
2027	19.91	19.09	18.94	19.05	19.26	18.38	20.10	19.40	19.97	19.81	20.74
2028	20.51	19.66	19.52	19.63	19.85	18.95	20.71	19.99	20.57	20.40	21.35
2029	21.12	20.27	20.12	20.23	20.45	19.54	21.32	20.60	21.19	21.01	21.98
2030	21.74	20.88	20.73	20.84	21.06	20.13	21.95	21.21	21.81	21.63	22.61
2031	22.41	21.52	21.37	21.48	21.71	20.76	22.62	21.87	22.48	22.29	23.29
2032	23.10	22.20	22.04	22.15	22.39	21.42	23.32	22.55	23.17	22.98	24.00
2033	23.82	22.90	22.74	22.85	23.10	22.10	24.05	23.26	23.90	23.70	24.74
2034	24.57	23.63	23.47	23.59	23.84	22.83	24.80	24.00	24.65	24.44	25.50
2035	25.34	24.38	24.21	24.33	24.59	23.55	25.58	24.76	25.42	25.21	26.29

Year	Chemical	Fab_Metal	Food	Mining	Petroleum	Prim_Metal	Stone	Textile	Transport	Wood_Paper	Misc
2013	10.12	9.76	9.64	9.66	9.81	9.40	10.14	9.75	10.06	10.10	10.56
2014	10.51	10.17	10.06	10.07	10.22	9.82	10.54	10.16	10.46	10.50	10.95
2015	10.80	10.47	10.36	10.37	10.52	10.13	10.83	10.46	10.75	10.79	11.22
2016	11.22	10.88	10.76	10.78	10.93	10.53	11.24	10.86	11.16	11.21	11.64
2017	11.53	11.19	11.07	11.09	11.24	10.84	11.55	11.17	11.47	11.52	11.95
2018	11.94	11.60	11.48	11.49	11.64	11.24	11.96	11.58	11.88	11.93	12.37
2019	12.32	11.98	11.87	11.88	12.03	11.63	12.34	11.96	12.26	12.31	12.74
2020	12.73	12.41	12.30	12.31	12.46	12.08	12.75	12.40	12.68	12.72	13.13
2021	13.11	12.80	12.69	12.70	12.84	12.47	13.13	12.78	13.06	13.10	13.51
2022	13.49	13.17	13.06	13.08	13.22	12.85	13.51	13.16	13.44	13.48	13.89
2023	13.88	13.56	13.45	13.47	13.61	13.24	13.90	13.55	13.83	13.87	14.27
2024	14.27	13.95	13.85	13.86	14.00	13.63	14.29	13.94	14.22	14.26	14.67
2025	14.69	14.37	14.26	14.27	14.41	14.04	14.71	14.35	14.64	14.68	15.10
2026	15.14	14.80	14.69	14.70	14.85	14.46	15.16	14.79	15.08	15.12	15.55
2027	15.59	15.25	15.13	15.15	15.30	14.90	15.61	15.23	15.54	15.58	16.02
2028	16.06	15.71	15.59	15.60	15.76	15.35	16.08	15.69	16.00	16.05	16.50
2029	16.54	16.19	16.07	16.08	16.24	15.82	16.57	16.17	16.49	16.53	16.99
2030	17.03	16.67	16.55	16.56	16.72	16.30	17.06	16.65	16.98	17.02	17.49
2031	17.55	17.18	17.06	17.07	17.24	16.80	17.58	17.17	17.49	17.54	18.02
2032	18.10	17.72	17.59	17.61	17.77	17.33	18.12	17.70	18.04	18.09	18.58
2033	18.67	18.28	18.15	18.16	18.33	17.88	18.69	18.26	18.60	18.65	19.16
2034	19.25	18.86	18.73	18.74	18.92	18.45	19.28	18.84	19.19	19.24	19.75
2035	19.86	19.45	19.32	19.33	19.51	19.04	19.89	19.44	19.80	19.85	20.37

Southern California Gas Company
2014 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
2013	100.00	0.6500	0.6072	0.5997	0.6058	0.6162	0.5710	0.6598	0.6228	0.6530	0.6457	0.6942
2014	100.32	0.6769	0.6350	0.6277	0.6337	0.6437	0.5996	0.6865	0.6502	0.6799	0.6729	0.7204
2015	102.03	0.7426	0.6995	0.6920	0.6981	0.7085	0.6630	0.7525	0.7153	0.7457	0.7383	0.7871
2016	103.82	0.7450	0.7021	0.6947	0.7008	0.7111	0.6659	0.7548	0.7178	0.7480	0.7407	0.7893
2017	105.75	0.7741	0.7307	0.7232	0.7293	0.7398	0.6940	0.7841	0.7467	0.7772	0.7697	0.8189
2018	107.86	0.7995	0.7557	0.7481	0.7543	0.7649	0.7187	0.8096	0.7718	0.8026	0.7950	0.8445
2019	109.87	0.8521	0.8075	0.7997	0.8059	0.8169	0.7697	0.8624	0.8240	0.8553	0.8474	0.8979
2020	112.04	0.9452	0.8997	0.8918	0.8981	0.9093	0.8612	0.9557	0.9166	0.9485	0.9403	0.9917
2021	114.34	1.0067	0.9603	0.9523	0.9586	0.9702	0.9210	1.0175	0.9776	1.0101	1.0016	1.0540
2022	116.51	1.0483	1.0011	0.9928	0.9993	1.0111	0.9609	1.0594	1.0188	1.0518	1.0431	1.0965
2023	118.71	1.1142	1.0660	1.0576	1.0641	1.0763	1.0250	1.1256	1.0842	1.1178	1.1088	1.1633
2024	120.91	1.1588	1.1097	1.1011	1.1077	1.1202	1.0678	1.1704	1.1283	1.1625	1.1531	1.2087
2025	123.26	1.1941	1.1440	1.1352	1.1419	1.1547	1.1013	1.2059	1.1630	1.1979	1.1882	1.2448
2026	125.73	1.2298	1.1787	1.1698	1.1765	1.1896	1.1350	1.2419	1.1982	1.2337	1.2236	1.2814
2027	128.23	1.2597	1.2076	1.1985	1.2053	1.2188	1.1631	1.2721	1.2276	1.2637	1.2534	1.3122
2028	130.79	1.2974	1.2442	1.2350	1.2419	1.2557	1.1987	1.3101	1.2647	1.3016	1.2908	1.3509
2029	133.42	1.3446	1.2903	1.2808	1.2878	1.3020	1.2438	1.3575	1.3113	1.3488	1.3377	1.3990
2030	136.03	1.3864	1.3311	1.3214	1.3285	1.3430	1.2836	1.3996	1.3525	1.3907	1.3793	1.4418
2031	138.81	1.4320	1.3756	1.3658	1.3729	1.3878	1.3271	1.4456	1.3976	1.4365	1.4247	1.4884
2032	141.72	1.4778	1.4201	1.4100	1.4173	1.4326	1.3705	1.4917	1.4427	1.4824	1.4702	1.5353
2033	144.73	1.5218	1.4627	1.4525	1.4598	1.4756	1.4119	1.5361	1.4859	1.5266	1.5139	1.5806
2034	147.84	1.5860	1.5255	1.5149	1.5224	1.5387	1.4733	1.6006	1.5493	1.5909	1.5777	1.6460
2035	150.98	1.6316	1.5698	1.5590	1.5665	1.5833	1.5164	1.6467	1.5943	1.6367	1.6231	1.6928

(b) Marginal Price Forecasat

Year	Price Deflator	Chemical	Fabricated Metal	Food	Mining	Petroleum	Primary Metal	Stone	Textile	Transport	Wood Paper	Misc
2013	100.00	0.5877	0.5672	0.5602	0.5609	0.5700	0.5460	0.5891	0.5662	0.5844	0.5870	0.6136
2014	100.32	0.6158	0.5958	0.5889	0.5897	0.5986	0.5752	0.6172	0.5948	0.6126	0.6152	0.6411
2015	102.03	0.6799	0.6592	0.6521	0.6528	0.6620	0.6378	0.6813	0.6582	0.6766	0.6792	0.7060
2016	103.82	0.6826	0.6621	0.6551	0.6558	0.6649	0.6409	0.6840	0.6611	0.6794	0.6819	0.7086
2017	105.75	0.7110	0.6902	0.6830	0.6838	0.6931	0.6687	0.7124	0.6892	0.7077	0.7103	0.7374
2018	107.86	0.7359	0.7148	0.7076	0.7084	0.7178	0.6931	0.7373	0.7138	0.7325	0.7352	0.7625
2019	109.87	0.7873	0.7658	0.7584	0.7592	0.7688	0.7436	0.7888	0.7648	0.7839	0.7866	0.8145
2020	112.04	0.8793	0.8572	0.8497	0.8505	0.8603	0.8345	0.8808	0.8562	0.8758	0.8785	0.9071
2021	114.34	0.9395	0.9170	0.9093	0.9101	0.9201	0.8938	0.9411	0.9159	0.9360	0.9388	0.9680
2022	116.51	0.9799	0.9568	0.9489	0.9498	0.9600	0.9330	0.9815	0.9557	0.9762	0.9791	1.0091
2023	118.71	1.0445	1.0208	1.0127	1.0136	1.0241	0.9965	1.0461	1.0197	1.0407	1.0437	1.0744
2024	120.91	1.0878	1.0637	1.0554	1.0563	1.0670	1.0388	1.0895	1.0625	1.0840	1.0870	1.1184
2025	123.26	1.1217	1.0970	1.0886	1.0895	1.1005	1.0716	1.1234	1.0959	1.1178	1.1209	1.1530
2026	125.73	1.1561	1.1308	1.1221	1.1230	1.1343	1.1047	1.1578	1.1296	1.1520	1.1552	1.1880
2027	128.23	1.1846	1.1587	1.1499	1.1508	1.1623	1.1321	1.1864	1.1575	1.1805	1.1838	1.2173
2028	130.79	1.2208	1.1944	1.1853	1.1863	1.1980	1.1670	1.2226	1.1931	1.2166	1.2200	1.2543
2029	133.42	1.2665	1.2394	1.2301	1.2311	1.2431	1.2114	1.2683	1.2381	1.2622	1.2656	1.3008
2030	136.03	1.3069	1.2791	1.2697	1.2707	1.2830	1.2506	1.3088	1.2778	1.3025	1.3059	1.3419
2031	138.81	1.3510	1.3226	1.3129	1.3139	1.3265	1.2933	1.3529	1.3212	1.3465	1.3500	1.3868
2032	141.72	1.3950	1.3659	1.3559	1.3570	1.3699	1.3359	1.3970	1.3645	1.3903	1.3940	1.4318
2033	144.73	1.4371	1.4072	1.3970	1.3981	1.4114	1.3764	1.4392	1.4058	1.4324	1.4361	1.4749
2034	147.84	1.4993	1.4686	1.4581	1.4592	1.4729	1.4369	1.5014	1.4671	1.4944	1.4983	1.5381
2035	150.98	1.5431	1.5116	1.5008	1.5020	1.5160	1.4791	1.5452	1.5101	1.5381	1.5420	1.5829

Southern California Gas Company
2014 CGR - Industrial G10
Historical Throughput and Customer Counts

Business Type	therms_ 2013	meters_ 2013	meters_ 2013_ ExCust	meters_ 2013_ NewCust	avgUse_ 2013_ ExCust	avgUse_ 2013_ NewCust	Price Elasticity	Employment Elasticity
Mining	2,451,817	229	227	2	10,350	51,169	0.000000	0.321451
Food	75,580,231	2,790	2,737	53	27,389	11,645	-0.190795	1.242506
Textile	16,754,894	545	543	2	30,808	13,118	0.000000	0.033325
Wood_Paper	8,629,100	512	511	1	16,886	546	0.000000	0.508272
Chemical	22,972,522	1,017	1,007	10	22,663	15,086	-0.080517	0.650067
Petroleum	10,477,333	132	132	0	79,374	0	-0.180563	0.084537
Stone	5,005,213	468	466	2	10,736	1,097	0.000000	0.416909
Prim_Metal	10,997,051	372	371	1	29,589	19,710	0.000000	0.956685
Fab_Metal	26,168,257	2,248	2,236	12	11,671	6,076	-0.137441	1.023881
Transport	15,910,113	1,862	1,858	4	8,475	40,943	0.000000	0.402505
Misc	40,332,367	7,572	7,542	30	5,322	6,451	-0.108307	0.879307
Total	235,278,896	17,747						

Southern California Gas Company
2014 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
2014 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
2014 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
2014 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	952

Southern California Gas Company
2014 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
2014 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
2014 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
2014 CGR - Industrial G10
Employment Forecast (in thousands)

YEAR	Mining	Food	Textile	Wood_Paper	Chemical	Petroleum	Stone	Primary_Metal	Fabricated_Metal	Transportation	Miscellaneous	Total
2013	22.9525	105.8833	10.6292	27.1408	47.3167	8.2258	16.8917	12.6600	85.2625	72.7017	322.8325	732.4942
2014	23.4125	105.6808	10.3183	28.8208	48.2725	8.3033	18.0258	12.8942	90.0008	73.8058	326.8592	746.3867
2015	23.7675	106.5892	10.0367	31.3892	48.8200	8.2783	19.0342	13.1300	94.0150	75.7350	324.9058	755.6967
2016	24.1667	107.0417	9.7142	33.4558	49.3658	8.1258	19.8200	13.4258	97.4125	76.5125	321.7883	760.8267
2017	24.4817	107.6983	9.4008	34.0817	49.9508	7.9600	19.8408	13.7608	99.1333	75.2900	321.6208	763.2150
2018	24.8075	109.1642	9.1542	34.0658	50.7308	7.8408	19.7050	13.9442	99.3000	74.5358	322.9683	766.2125
2019	24.7975	110.1767	8.8767	34.4367	50.9425	7.7133	19.5825	14.0150	99.6733	73.4142	323.3442	766.9642
2020	24.7008	110.7875	8.5317	34.8608	50.6717	7.5725	19.3317	13.9733	100.0842	71.4408	322.7075	764.6583
2021	24.8108	111.0025	8.1525	34.7650	50.2308	7.3908	18.9708	13.8733	100.2692	69.5333	321.8058	760.8050
2022	25.0208	110.9042	7.7675	34.4992	49.6792	7.1900	18.6000	13.7817	100.3775	67.6817	320.7133	756.2133
2023	24.8225	110.8217	7.3917	34.6742	49.2833	7.0008	18.3067	13.6900	100.3867	66.0492	319.9450	752.3675
2024	24.5600	110.9375	7.1708	34.9633	48.8258	6.8233	18.0808	13.5958	100.3425	64.7400	319.1342	749.1700
2025	24.3367	110.8717	7.0700	35.1158	48.3017	6.6633	17.8858	13.4575	99.7467	63.8925	316.5050	743.8433
2026	24.1225	110.7850	7.0150	35.2117	47.7800	6.5233	17.7500	13.2292	98.3833	63.5742	313.0742	737.4442
2027	23.9042	110.5708	6.9375	34.8983	47.2275	6.3858	17.7058	12.9500	96.6625	63.2192	310.0683	730.5258
2028	23.7117	110.3658	6.8542	34.4125	46.7025	6.2633	17.5992	12.6325	94.9233	62.7933	307.2950	723.5467
2029	23.5208	110.2308	6.7867	34.1908	46.2550	6.1525	17.4842	12.3233	93.1592	62.3058	304.3933	716.7958
2030	23.2875	110.0408	6.7275	34.3400	45.8558	6.0342	17.4550	12.0108	91.7017	61.7225	301.5592	710.7350
2031	23.0517	109.8725	6.6592	34.3483	45.3933	5.9100	17.4117	11.7192	90.7817	61.1883	299.3392	705.6675
2032	22.8625	109.6175	6.5900	33.6433	44.9075	5.7817	17.2258	11.4117	89.9233	60.7558	297.8483	700.5625
2033	22.6483	109.1900	6.5283	33.0633	44.4125	5.6567	17.0883	11.0983	88.8733	60.6200	296.6867	695.8633
2034	22.4975	108.7317	6.4467	33.1200	43.9900	5.5375	17.0783	10.7950	87.8408	60.5225	295.7792	692.3325
2035	22.3867	108.2233	6.3558	33.1667	43.6942	5.4242	17.1083	10.4308	86.8675	60.4483	295.0317	689.1325

Southern California Gas Company
2014 CGR - Industrial G10
Core Industrial Demand Forecast (Mdth)
Average Temperature

Avg Year	Model Output G10-Ind	EE/DSM	AB980	City of Vernon	AMI	C2NC Migration	Final
2013	23,527.9	0.0	0.0	0.0	0.0	0.0	23,527.9
2014	23,629.1	290.1	0.0	0.0	3.2	933.4	22,402.3
2015	23,619.4	613.9	0.0	43.0	9.1	713.7	22,239.9
2016	23,809.8	937.6	0.1	85.9	15.1	494.0	22,277.2
2017	23,851.7	1,261.4	0.1	128.9	19.5	430.0	22,012.0
2018	23,941.0	1,585.1	0.1	171.8	20.0	366.0	21,798.2
2019	23,853.9	1,908.9	0.1	214.8	19.9	302.0	21,408.5
2020	23,534.5	2,232.6	0.2	257.7	19.6	302.0	20,722.7
2021	23,306.2	2,556.4	0.2	286.3	19.4	302.0	20,142.2
2022	23,131.1	2,880.2	0.2	286.3	19.3	302.0	19,643.6
2023	22,881.5	3,203.9	0.3	286.3	19.1	302.0	19,070.4
2024	22,740.1	3,527.7	0.3	286.3	19.0	302.0	18,605.4
2025	22,595.1	3,851.4	0.3	286.3	18.8	302.0	18,136.8
2026	22,423.0	4,175.2	0.3	286.3	18.7	302.0	17,641.1
2027	22,251.7	4,498.9	0.4	286.3	18.5	302.0	17,146.3
2028	22,056.1	4,822.7	0.4	286.3	18.4	302.0	16,627.1
2029	21,844.8	4,856.3	0.4	286.3	18.2	302.0	16,382.3
2030	21,668.4	4,856.3	0.4	286.3	18.1	302.0	16,206.1
2031	21,513.3	4,856.3	0.4	286.3	17.9	302.0	16,051.1
2032	21,358.9	4,856.3	0.4	286.3	17.8	302.0	15,896.8
2033	21,207.5	4,856.3	0.4	286.3	17.7	302.0	15,745.5
2034	21,018.1	4,856.3	0.4	286.3	17.5	302.0	15,556.3
2035	20,891.3	4,856.3	0.3	286.3	17.4	302.0	15,429.6

Southern California Gas Company
2014 CGR - Industrial G10
Core Industrial Demand Forecast (Mdth)
Cold Temperature

Cold YEAR	Model Output G10-Ind	EE/DSM	AB980	City of Vernon	AMI	C2NC Migration	Final
2013	23,847.45	0.0	0.0	0.0	0.0	0.0	23,847.5
2014	23,950.00	294.1	0.0	0.0	3.2	933.4	22,719.3
2015	23,940.25	622.2	0.0	43.0	9.3	713.7	22,552.1
2016	24,133.17	950.4	0.1	85.9	15.4	494.0	22,587.6
2017	24,175.63	1,278.5	0.1	128.9	19.9	430.0	22,318.5
2018	24,266.16	1,606.7	0.1	171.8	20.4	366.0	22,101.4
2019	24,177.87	1,934.8	0.1	214.8	20.3	302.0	21,706.1
2020	23,854.11	2,263.0	0.2	257.7	20.0	302.0	21,011.6
2021	23,622.78	2,591.1	0.2	286.3	19.8	302.0	20,423.7
2022	23,445.32	2,919.3	0.2	286.3	19.7	302.0	19,918.3
2023	23,192.27	3,247.4	0.3	286.3	19.5	302.0	19,337.3
2024	23,048.93	3,575.6	0.3	286.3	19.3	302.0	18,865.9
2025	22,902.00	3,903.7	0.3	286.3	19.2	302.0	18,391.0
2026	22,727.56	4,231.9	0.3	286.3	19.1	302.0	17,888.6
2027	22,553.97	4,560.0	0.4	286.3	18.9	302.0	17,387.0
2028	22,355.66	4,888.2	0.4	286.3	18.8	302.0	16,860.8
2029	22,141.47	4,922.3	0.4	286.3	18.6	302.0	16,612.7
2030	21,962.74	4,922.3	0.4	286.3	18.4	302.0	16,434.1
2031	21,805.47	4,922.3	0.4	286.3	18.3	302.0	16,276.9
2032	21,649.01	4,922.3	0.4	286.3	18.2	302.0	16,120.6
2033	21,495.51	4,922.3	0.4	286.3	18.0	302.0	15,967.2
2034	21,303.58	4,922.3	0.4	286.3	17.9	302.0	15,775.4
2035	21,175.05	4,922.3	0.3	286.3	0.0	302.0	15,664.8

Southern California Gas Company
2014 CGR - Industrial G10
Core Industrial Demand Forecast (Mdth)
Hot Temperature

Hot

YEAR	Model Output G10-Ind	EE/DSM	AB980	City of Vernon	AMI	C2NC Migration	Final
2013	23,208.3	0.0	0.0	0.0	0.0	0.0	23,208.3
2014	23,308.1	286.2	0.0	0.0	3.1	933.4	22,085.4
2015	23,298.6	605.5	0.0	43.0	8.9	713.7	21,927.6
2016	23,486.4	924.9	0.1	85.9	14.8	494.0	21,966.9
2017	23,527.7	1,244.3	0.1	128.9	19.1	430.0	21,705.6
2018	23,615.8	1,563.6	0.1	171.8	19.5	366.0	21,495.0
2019	23,529.9	1,883.0	0.1	214.8	19.5	302.0	21,110.8
2020	23,214.8	2,202.3	0.2	257.7	19.2	302.0	20,433.7
2021	22,989.7	2,521.7	0.2	286.3	19.0	302.0	19,860.8
2022	22,817.0	2,841.0	0.2	286.3	18.9	302.0	19,368.9
2023	22,570.7	3,160.4	0.3	286.3	18.7	302.0	18,803.5
2024	22,431.2	3,479.7	0.3	286.3	18.6	302.0	18,344.8
2025	22,288.2	3,799.1	0.3	286.3	18.4	302.0	17,882.6
2026	22,118.4	4,118.5	0.3	286.3	18.3	302.0	17,393.7
2027	21,949.5	4,437.8	0.4	286.3	18.2	302.0	16,905.6
2028	21,756.5	4,757.2	0.4	286.3	18.0	302.0	16,393.4
2029	21,548.1	4,790.3	0.4	286.3	17.8	302.0	16,151.9
2030	21,374.1	4,790.3	0.4	286.3	17.7	302.0	15,978.1
2031	21,221.1	4,790.3	0.4	286.3	17.6	302.0	15,825.2
2032	21,068.8	4,790.3	0.4	286.3	17.4	302.0	15,673.1
2033	20,919.4	4,790.3	0.4	286.3	17.3	302.0	15,523.8
2034	20,732.6	4,790.3	0.4	286.3	17.2	302.0	15,337.1
2035	20,607.5	4,790.3	0.3	286.3	17.0	302.0	15,212.1

Southern California Gas Company
2014 CGR - Industrial G10
Core Industrial Demand Forecast (Mdth)
Base Temperature

Base YEAR	Model Output G10-Ind	EE/DSM	AB980	City of Vernon	AMI	C2NC Migration	Final
2013	21,224.4	0.0	0.0	0.0	0.0	0.0	21,224.4
2014	21,315.6	261.7	0.0	0.0	2.9	933.4	20,117.6
2015	21,307.0	553.8	0.0	43.0	8.2	713.7	19,988.3
2016	21,478.7	845.8	0.1	85.9	13.6	494.0	20,039.3
2017	21,516.4	1,137.9	0.1	128.9	17.6	430.0	19,802.2
2018	21,597.0	1,429.9	0.1	171.8	18.0	366.0	19,611.4
2019	21,518.4	1,722.0	0.1	214.8	17.9	302.0	19,261.9
2020	21,230.3	2,014.1	0.2	257.7	17.7	302.0	18,639.0
2021	21,024.4	2,306.1	0.2	286.3	17.5	302.0	18,112.6
2022	20,866.5	2,598.2	0.2	286.3	17.4	302.0	17,662.8
2023	20,641.2	2,890.2	0.3	286.3	17.2	302.0	17,145.7
2024	20,513.7	3,182.3	0.3	286.3	17.1	302.0	16,726.2
2025	20,382.9	3,474.3	0.3	286.3	17.0	302.0	16,303.5
2026	20,227.7	3,766.4	0.3	286.3	16.9	302.0	15,856.4
2027	20,073.2	4,058.4	0.4	286.3	16.7	302.0	15,410.0
2028	19,896.7	4,350.5	0.4	286.3	16.6	302.0	14,941.6
2029	19,706.0	4,380.8	0.4	286.3	16.4	302.0	14,720.8
2030	19,547.0	4,380.8	0.4	286.3	16.3	302.0	14,561.9
2031	19,407.0	4,380.8	0.4	286.3	16.2	302.0	14,422.0
2032	19,267.7	4,380.8	0.4	286.3	16.1	302.0	14,282.9
2033	19,131.1	4,380.8	0.4	286.3	15.9	302.0	14,146.4
2034	18,960.3	4,380.8	0.4	286.3	15.8	302.0	13,975.7
2035	18,845.9	4,380.8	0.3	286.3	15.7	302.0	13,861.3

2014 CALIFORNIA GAS REPORT

NONCORE COMMERCIAL AND INDUSTRIAL DEMAND FORECAST
JULY 2014

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 consumption for the commercial and industrial markets was obtained from SoCalGas' billing records for 2013. The recorded usage was then further disaggregated into the 14 commercial or 11 industrial business sectors; however, the customer counts were often quite low for specific business types, especially for the noncore commercial segment. Historical data and model forecast results are provided only on an aggregated basis—for noncore commercial and noncore industrial (non-refinery) segments.

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 cost of gas delivered to the SoCalGas "city gate" was used 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 2013. The average rate is calculated from the weighted average rate at each tier for each customer; whereas the marginal rate is calculated as the rate that applies to the last unit of gas consumed for each customer.

C. Electricity Price Data

Both average prices (cents/kWh) and marginal prices (cents/kWh) were developed as electricity price inputs. Forecasts of retail electricity prices were developed from the California Energy Commission's staff report entitled *California Energy Demand*

2014-2024 Final Forecast, December 2013, number CEC-200-2013-004-SF, Vol#1 & Vol#2. Retail electricity price forecasts for the SCE industrial customer classe were based on the MID case assumptions for the SCE planning area (see EXCEL files posted at web-link: http://www.energy.ca.gov/2013_energypolicy/documents/#reportsnomeeting of the CEC's web-site.). The electricity price forecast from this source ended in year 2024; it was extrapolated through 2035 applying the annual growth rate for 2022 relative to 2021 to the year 2024 prices and beyond. The resulting prices were used for the average electricity prices for the noncore commercial & 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 2035 is based on Global Insight's February 2014 Regional forecast (released February 13th, 2014). 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 savings goals that were authorized by the CPUC in decision D.04-09-060 and expected load leaving SoCalGas' retail service for service by the City of Vernon were subtracted from the model forecast. The gas load for these customers essentially transfers from retail to wholesale service. Migration of customers between noncore and core service has been observed to the extent that the net-migration is from core to noncore. An outlook for this net load migration, split between commercial and industrial sectors was developed and results in a *subtraction* from the respective core sector and a corresponding *addition* to the respective noncore sector.

Sum of tota	bname														
year	Agriculture	College	Construction	Government	Health	Laundry	Lodging	Misc	Office	Restaurant	Retail	School	TCU	Warehouse	Grand Total
2013	20,091,383	20,813,519	129,782	25,238,208	73,099,534	9,437,353	10,543,509	320,838	588,097	1,023,761	1,006,753	0	18,279,750	1,109,781	181,682,268
2014	19,735,690	20,555,121	131,695	24,872,199	72,946,156	9,387,493	10,566,982	318,650	586,405	1,020,722	1,001,993	0	18,168,730	1,109,203	180,401,039
2015	19,932,582	20,653,450	138,835	24,943,115	73,843,419	9,386,774	10,678,993	318,307	598,147	1,027,620	1,007,189	0	18,339,775	1,124,889	181,993,095
2016	20,178,262	20,770,474	146,937	25,007,945	74,856,007	9,383,119	10,754,978	317,831	605,327	1,033,497	1,011,368	0	18,633,644	1,140,383	183,839,772
2017	20,286,265	20,859,992	152,462	25,050,140	75,737,776	9,392,573	10,809,472	317,755	609,209	1,037,044	1,013,333	0	18,855,471	1,153,181	185,274,673
2018	20,351,421	20,972,179	154,587	25,113,146	76,532,238	9,388,066	10,845,213	317,248	611,261	1,036,815	1,011,825	0	19,008,970	1,162,281	186,505,250
2019	20,316,323	21,017,921	155,091	25,104,635	76,881,237	9,337,440	10,826,871	315,221	612,259	1,032,586	1,006,536	0	19,050,033	1,165,006	186,821,159
2020	20,205,692	21,017,856	155,318	25,168,267	76,823,087	9,262,392	10,766,576	312,368	612,136	1,024,727	997,833	0	19,020,648	1,163,375	186,530,275
2021	20,137,944	21,074,117	155,572	25,092,530	76,898,044	9,218,366	10,723,962	310,572	612,591	1,018,148	990,444	0	19,023,330	1,162,270	186,417,890
2022	20,110,491	21,164,918	155,984	25,150,374	77,079,160	9,192,423	10,695,173	309,392	614,986	1,013,338	984,797	0	19,055,822	1,163,357	186,690,215
2023	20,053,646	21,212,676	156,412	25,152,829	77,090,268	9,145,788	10,640,220	307,522	616,890	1,006,551	977,265	0	19,037,233	1,161,763	186,559,063
2024	20,025,201	21,298,164	157,285	25,204,563	77,164,731	9,121,086	10,605,867	306,394	619,899	1,002,278	972,160	0	19,048,550	1,162,340	186,688,518
2025	20,006,385	21,372,052	158,656	25,251,786	77,348,088	9,114,060	10,580,702	305,860	623,318	1,000,007	968,965	0	19,061,576	1,164,677	186,956,132
2026	19,988,095	21,404,035	160,219	25,257,069	77,614,549	9,114,356	10,567,750	305,555	626,474	999,570	967,494	0	19,065,193	1,166,549	187,236,908
2027	19,980,968	21,440,703	161,867	25,269,025	77,961,559	9,122,127	10,576,681	305,516	629,970	1,000,375	967,219	0	19,057,182	1,168,525	187,641,717
2028	19,973,406	21,471,529	163,275	25,273,678	78,340,436	9,133,030	10,595,677	305,573	632,990	1,001,760	967,493	0	19,056,321	1,166,358	188,081,526
2029	19,960,974	21,493,915	164,699	25,267,974	78,672,814	9,132,123	10,614,056	305,268	635,594	1,002,466	967,149	0	19,053,374	1,164,140	188,434,546
2030	19,953,848	21,512,686	166,536	25,364,862	79,023,077	9,129,828	10,632,234	304,910	638,699	1,003,449	967,098	0	19,057,494	1,161,143	188,915,864
2031	19,942,175	21,518,123	167,984	25,253,859	79,377,435	9,120,903	10,649,036	304,346	641,379	1,004,149	966,802	0	19,056,261	1,157,879	189,160,331
2032	19,930,514	21,530,394	168,465	25,241,307	79,760,041	9,117,686	10,669,163	303,975	644,416	1,005,091	966,770	0	19,056,077	1,153,840	189,547,739
2033	19,924,651	21,548,725	168,814	25,234,512	80,169,137	9,123,269	10,693,705	303,902	647,678	1,006,467	967,160	0	19,040,998	1,151,419	189,980,437
2034	19,891,907	21,548,219	169,475	25,205,286	80,514,534	9,117,672	10,705,646	303,472	650,359	1,006,944	966,723	0	19,014,272	1,147,325	190,241,834
2035	**19,873,117**	**21,568,954**	**171,089**	**25,200,631**	**80,878,210**	**9,119,339**	**10,726,789**	**303,280**	**653,586**	**1,008,335**	**967,179**	**0**	**18,992,407**	**1,144,794**	190,607,710

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

Year	Agriculture	College	Construc-tion	Govern-ment	Health	Laundry	Lodging	Misc	Office	Restaurant	Retail	School	TCU	Warehouse	Grand Total
2013	2,009	2,081	13	2,524	7,310	944	1,054	32	59	102	101	0	1,828	111	18,168
2014	1,974	2,056	13	2,487	7,295	939	1,057	32	59	102	100	0	1,817	111	18,040
2015	1,993	2,065	14	2,494	7,384	939	1,068	32	60	103	101	0	1,834	112	18,199
2016	2,018	2,077	15	2,501	7,486	938	1,075	32	61	103	101	0	1,863	114	18,384
2017	2,029	2,086	15	2,505	7,574	939	1,081	32	61	104	101	0	1,886	115	18,527
2018	2,035	2,097	15	2,511	7,653	939	1,085	32	61	104	101	0	1,901	116	18,651
2019	2,032	2,102	16	2,510	7,688	934	1,083	32	61	103	101	0	1,905	117	18,682
2020	2,021	2,102	16	2,517	7,682	926	1,077	31	61	102	100	0	1,902	116	18,653
2021	2,014	2,107	16	2,509	7,690	922	1,072	31	61	102	99	0	1,902	116	18,642
2022	2,011	2,116	16	2,515	7,708	919	1,070	31	61	101	98	0	1,906	116	18,669
2023	2,005	2,121	16	2,515	7,709	915	1,064	31	62	101	98	0	1,904	116	18,656
2024	2,003	2,130	16	2,520	7,716	912	1,061	31	62	100	97	0	1,905	116	18,669
2025	2,001	2,137	16	2,525	7,735	911	1,058	31	62	100	97	0	1,906	116	18,696
2026	1,999	2,140	16	2,526	7,761	911	1,057	31	63	100	97	0	1,907	117	18,724
2027	1,998	2,144	16	2,527	7,796	912	1,058	31	63	100	97	0	1,906	117	18,764
2028	1,997	2,147	16	2,527	7,834	913	1,060	31	63	100	97	0	1,906	117	18,808
2029	1,996	2,149	16	2,527	7,867	913	1,061	31	64	100	97	0	1,905	116	18,843
2030	1,995	2,151	17	2,536	7,902	913	1,063	30	64	100	97	0	1,906	116	18,892
2031	1,994	2,152	17	2,525	7,938	912	1,065	30	64	100	97	0	1,906	116	18,916
2032	1,993	2,153	17	2,524	7,976	912	1,067	30	64	101	97	0	1,906	115	18,955
2033	1,992	2,155	17	2,523	8,017	912	1,069	30	65	101	97	0	1,904	115	18,998
2034	1,989	2,155	17	2,521	8,051	912	1,071	30	65	101	97	0	1,901	115	19,024
2035	1,987	2,157	17	2,520	8,088	912	1,073	30	65	101	97	0	1,899	114	19,061

Sum of tota	bname											
year	Chemical	Fab_Metal	Food	Mining	Misc	Petroleum	Prim_Metal	Stone	Textile	Transport	Wood_Paper	Grand Total
2013	33,348,798	45,890,445	186,290,907	18,974,874	19,541,832	30,785,717	69,313,937	31,664,188	22,860,123	19,753,566	30,512,080	508,936,467
2014	33,200,792	46,421,032	183,614,569	18,888,661	19,385,921	30,494,027	68,957,092	32,190,150	22,248,851	19,620,144	30,948,140	505,969,379
2015	33,549,807	47,644,085	185,300,446	19,120,658	19,434,358	30,613,566	69,902,247	33,218,597	22,090,231	19,961,112	32,421,693	513,256,800
2016	33,786,945	48,565,557	186,001,357	19,306,791	19,384,698	30,411,185	70,771,487	33,949,895	21,816,217	20,094,457	33,539,892	517,628,481
2017	33,940,618	48,939,941	186,340,770	19,406,120	19,360,371	30,099,914	71,536,016	33,935,711	21,486,317	19,923,481	33,828,135	518,797,394
2018	34,158,137	48,935,579	187,333,036	19,509,748	19,378,382	29,866,900	71,919,595	33,788,924	21,223,112	19,811,133	33,789,695	519,714,241
2019	34,068,422	48,803,402	187,276,235	19,415,826	19,298,565	29,511,556	71,769,925	33,529,209	20,853,429	19,581,021	33,824,265	517,931,855
2020	33,718,347	48,527,019	186,308,812	19,229,015	19,130,364	29,040,925	71,108,772	33,058,913	20,355,286	19,186,765	33,777,542	513,441,760
2021	33,423,600	48,350,083	185,616,694	19,180,569	19,016,598	28,601,629	70,538,630	32,603,016	19,894,012	18,865,313	33,573,977	509,664,121
2022	33,166,331	48,258,473	185,078,700	19,210,215	18,939,129	28,193,827	70,137,834	32,212,445	19,470,105	18,592,665	33,359,854	506,619,578
2023	32,866,326	48,006,877	184,032,494	19,034,643	18,817,031	27,722,185	69,542,967	31,796,695	19,003,916	18,295,231	33,271,016	502,389,381
2024	32,623,805	47,854,044	183,569,552	18,881,308	18,737,827	27,344,801	69,105,535	31,510,809	18,734,973	18,080,889	33,316,327	499,759,870
2025	32,394,416	47,617,267	183,149,350	18,761,446	18,628,959	27,020,862	68,630,414	31,286,468	18,596,414	17,941,242	33,327,710	497,354,548
2026	32,157,340	47,185,901	182,665,503	18,639,969	18,494,068	26,725,310	67,920,436	31,102,231	18,498,686	17,860,988	33,300,767	494,551,199
2027	31,927,384	46,693,478	182,174,565	18,526,835	18,379,999	26,447,869	67,123,228	31,008,054	18,390,138	17,785,359	33,087,851	491,544,760
2028	31,692,184	46,177,538	181,608,771	18,414,605	18,264,178	26,180,141	66,203,147	30,851,794	18,266,582	17,693,417	32,774,991	488,127,348
2029	31,459,772	45,625,275	180,974,732	18,291,636	18,132,737	25,921,122	65,264,307	30,666,922	18,147,329	17,582,048	32,570,730	484,636,610
2030	31,260,082	45,171,607	180,391,884	18,161,986	18,012,895	25,660,746	64,356,092	30,568,714	18,046,325	17,468,853	32,567,415	481,666,599
2031	31,037,584	44,841,500	179,810,290	18,029,729	17,907,959	25,389,226	63,488,891	30,455,198	17,931,987	17,360,278	32,491,190	478,743,832
2032	30,815,716	44,536,438	179,201,860	17,919,879	17,826,444	25,117,054	62,602,723	30,231,602	17,823,198	17,267,616	32,070,816	475,413,346
2033	30,600,635	44,200,726	178,515,423	17,807,194	17,759,427	24,861,868	61,726,785	30,060,091	17,726,205	17,215,761	31,723,216	472,197,331
2034	30,366,661	43,808,658	177,558,995	17,691,382	17,674,380	24,581,713	60,788,024	29,948,753	17,587,177	17,144,697	31,642,726	468,793,166
2035	**30,217,431**	**43,498,375**	**176,834,292**	**17,617,470**	**17,620,643**	**24,345,375**	**59,806,116**	**29,916,337**	**17,467,926**	**17,102,150**	**31,608,409**	466,034,524

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
2013	3,335	4,589	18,629	1,897	1,954	3,079	6,931	3,166	2,286	1,975	3,051	50,894
2014	3,320	4,642	18,361	1,889	1,939	3,049	6,896	3,219	2,225	1,962	3,095	50,597
2015	3,355	4,764	18,530	1,912	1,943	3,061	6,990	3,322	2,209	1,996	3,242	51,326
2016	3,379	4,857	18,600	1,931	1,938	3,041	7,077	3,395	2,182	2,009	3,354	51,763
2017	3,394	4,894	18,634	1,941	1,936	3,010	7,154	3,394	2,149	1,992	3,383	51,880
2018	3,416	4,894	18,733	1,951	1,938	2,987	7,192	3,379	2,122	1,981	3,379	51,971
2019	3,407	4,880	18,728	1,942	1,930	2,951	7,177	3,353	2,085	1,958	3,382	51,793
2020	3,372	4,853	18,631	1,923	1,913	2,904	7,111	3,306	2,036	1,919	3,378	51,344
2021	3,342	4,835	18,562	1,918	1,902	2,860	7,054	3,260	1,989	1,887	3,357	50,966
2022	3,317	4,826	18,508	1,921	1,894	2,819	7,014	3,221	1,947	1,859	3,336	50,662
2023	3,287	4,801	18,403	1,903	1,882	2,772	6,954	3,180	1,900	1,830	3,327	50,239
2024	3,262	4,785	18,357	1,888	1,874	2,734	6,911	3,151	1,873	1,808	3,332	49,976
2025	3,239	4,762	18,315	1,876	1,863	2,702	6,863	3,129	1,860	1,794	3,333	49,735
2026	3,216	4,719	18,267	1,864	1,849	2,673	6,792	3,110	1,850	1,786	3,330	49,455
2027	3,193	4,669	18,217	1,853	1,838	2,645	6,712	3,101	1,839	1,779	3,309	49,154
2028	3,169	4,618	18,161	1,841	1,826	2,618	6,620	3,085	1,827	1,769	3,277	48,813
2029	3,146	4,563	18,097	1,829	1,813	2,592	6,526	3,067	1,815	1,758	3,257	48,464
2030	3,126	4,517	18,039	1,816	1,801	2,566	6,436	3,057	1,805	1,747	3,257	48,167
2031	3,104	4,484	17,981	1,803	1,791	2,539	6,349	3,046	1,793	1,736	3,249	47,874
2032	3,082	4,454	17,920	1,792	1,783	2,512	6,260	3,023	1,782	1,727	3,207	47,541
2033	3,060	4,420	17,852	1,781	1,776	2,486	6,173	3,006	1,773	1,722	3,172	47,220
2034	3,037	4,381	17,756	1,769	1,767	2,458	6,079	2,995	1,759	1,714	3,164	46,879
2035	3,022	4,350	17,683	1,762	1,762	2,435	5,981	2,992	1,747	1,710	3,161	46,603

Noncore Commercial Demand Forecast

Sum of totalUsage year	Total from EUForeaster (Therms)
2013	181,682,268
2014	180,401,037
2015	181,993,096
2016	183,839,771
2017	185,274,674
2018	186,505,250
2019	186,821,161
2020	186,530,275
2021	186,417,890
2022	186,690,215
2023	186,559,062
2024	186,688,519
2025	186,956,133
2026	187,236,910
2027	187,641,718
2028	188,081,526
2029	188,434,547
2030	188,915,863
2031	189,160,332
2032	189,547,740
2033	189,980,437
2034	190,241,834
2035	**190,607,709**

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

Year	Total
2013	18,168
2014	18,040
2015	18,199
2016	18,384
2017	18,527
2018	18,651
2019	18,682
2020	18,653
2021	18,642
2022	18,669
2023	18,656
2024	18,669
2025	18,696
2026	18,724
2027	18,764
2028	18,808
2029	18,843
2030	18,892
2031	18,916
2032	18,955
2033	18,998
2034	19,024
2035	19,061

Noncore Industrial Demand Forecast

Sum of totalUsage year	Total from EUForeaster (Therms)
2013	508,936,467
2014	505,969,376
2015	513,256,800
2016	517,628,481
2017	518,797,395
2018	519,714,240
2019	517,931,855
2020	513,441,760
2021	509,664,121
2022	506,619,578
2023	502,389,381
2024	499,759,869
2025	497,354,549
2026	494,551,198
2027	491,544,760
2028	488,127,348
2029	484,636,609
2030	481,666,599
2031	478,743,831
2032	475,413,346
2033	472,197,330
2034	468,793,166
2035	**466,034,524**

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

Year	Total
2013	50,894
2014	50,597
2015	51,326
2016	51,763
2017	51,880
2018	51,971
2019	51,793
2020	51,344
2021	50,966
2022	50,662
2023	50,239
2024	49,976
2025	49,735
2026	49,455
2027	49,154
2028	48,813
2029	48,464
2030	48,167
2031	47,874
2032	47,541
2033	47,220
2034	46,879
2035	46,603

Noncore Commercial Demand Forecast (MDth)

Load per HDD: 14,773 Therm/HDD

	Commercial Average Year						Commercial Cold Year				
Date	End-Use Fcst @AvgYr HDD	DSM	Vernon	Migr: g10-- > g30	AvgYr Adj (MDth)	Cold Yr less Avg Yr HDD Load Incr.	End-Use Fcst @ColdYr HDD	DSM	Vernon	Migr: g10-- > g30	ColdYr Adj (MDth)
Jan-13	1,840	0	0	0	1,840	59	1,926	0	0	0	1,926
Feb-13	1,618	0	0	0	1,618	51	1,693	0	0	0	1,693
Mar-13	1,639	0	0	0	1,639	39	1,696	0	0	0	1,696
Apr-13	1,474	0	0	0	1,474	28	1,515	0	0	0	1,515
May-13	1,378	0	0	0	1,378	11	1,393	0	0	0	1,393
Jun-13	1,246	0	0	0	1,246	3	1,250	0	0	0	1,250
Jul-13	1,279	0	0	0	1,279	0	1,280	0	0	0	1,280
Aug-13	1,364	0	0	0	1,364	0	1,365	0	0	0	1,365
Sep-13	1,547	0	0	0	1,547	1	1,549	0	0	0	1,549
Oct-13	1,474	0	0	0	1,474	8	1,486	0	0	0	1,486
Nov-13	1,500	0	0	0	1,500	32	1,547	0	0	0	1,547
Dec-13	1,810	0	0	0	1,810	62	1,903	0	0	0	1,903
Jan-14	1,827	65	0	53	1,814	59	1,913	65	0	53	1,901
Feb-14	1,606	57	0	47	1,596	51	1,682	57	0	47	1,671
Mar-14	1,627	58	0	47	1,616	39	1,684	58	0	47	1,673
Apr-14	1,464	52	0	43	1,454	28	1,504	52	0	43	1,495
May-14	1,368	49	0	40	1,359	11	1,383	49	0	40	1,374
Jun-14	1,237	44	0	36	1,229	3	1,241	44	0	36	1,233
Jul-14	1,270	45	0	37	1,262	0	1,271	45	0	37	1,262
Aug-14	1,355	48	0	39	1,346	0	1,355	48	0	39	1,346
Sep-14	1,536	55	0	45	1,526	1	1,538	55	0	45	1,528
Oct-14	1,464	52	0	43	1,454	8	1,476	52	0	43	1,466
Nov-14	1,489	53	0	43	1,480	32	1,536	53	0	43	1,526
Dec-14	1,798	64	0	52	1,786	62	1,890	64	0	52	1,878
Jan-15	1,843	135	0	41	1,748	59	1,929	135	0	41	1,835
Feb-15	1,621	119	0	36	1,538	51	1,696	119	0	36	1,613
Mar-15	1,641	120	0	36	1,557	39	1,698	120	0	36	1,614
Apr-15	1,477	108	0	33	1,401	28	1,517	108	0	33	1,442
May-15	1,380	101	0	30	1,309	11	1,396	101	0	30	1,325
Jun-15	1,248	92	0	28	1,184	3	1,252	92	0	28	1,188
Jul-15	1,281	94	0	28	1,216	0	1,282	94	0	28	1,216
Aug-15	1,367	100	0	30	1,297	0	1,367	100	0	30	1,297
Sep-15	1,550	114	0	34	1,470	1	1,551	114	0	34	1,472
Oct-15	1,476	108	0	33	1,401	8	1,489	108	0	33	1,413
Nov-15	1,503	110	0	33	1,426	32	1,549	110	0	33	1,472
Dec-15	1,813	133	0	40	1,720	62	1,906	133	0	40	1,813

Noncore Commercial Demand Forecast (MDth)

Load per HDD: 14,773 Therm/HDD

	Commercial Average Year						Commercial Cold Year					
Date	End-Use Fcst @AvgYr HDD	DSM	Vernon	Migr: g10-- > g30	AvgYr Adj (MDth)	Cold Yr less Avg Yr HDD Load Incr.	End-Use Fcst @ColdYr HDD	DSM	Vernon	Migr: g10-- > g30	ColdYr Adj (MDth)
Jan-16	1,861	205	0	28	1,684	59	1,948	205	0	28	1,771
Feb-16	1,637	180	0	25	1,482	51	1,712	180	0	25	1,557
Mar-16	1,658	183	0	25	1,500	39	1,715	183	0	25	1,557
Apr-16	1,492	164	0	23	1,350	28	1,532	164	0	23	1,391
May-16	1,394	154	0	21	1,261	11	1,410	154	0	21	1,277
Jun-16	1,260	139	0	19	1,141	3	1,265	139	0	19	1,145
Jul-16	1,294	143	0	20	1,171	0	1,295	143	0	20	1,172
Aug-16	1,380	152	0	21	1,249	0	1,381	152	0	21	1,250
Sep-16	1,566	172	0	24	1,417	1	1,567	172	0	24	1,418
Oct-16	1,491	164	0	23	1,350	8	1,504	164	0	23	1,362
Nov-16	1,518	167	0	23	1,374	32	1,564	167	0	23	1,420
Dec-16	1,832	202	0	28	1,658	62	1,924	202	0	28	1,750
Jan-17	1,876	275	0	24	1,626	59	1,962	275	0	24	1,712
Feb-17	1,650	242	0	22	1,430	51	1,725	242	0	22	1,505
Mar-17	1,671	245	0	22	1,448	39	1,728	245	0	22	1,505
Apr-17	1,503	220	0	20	1,303	28	1,544	220	0	20	1,343
May-17	1,405	206	0	18	1,217	11	1,420	206	0	18	1,233
Jun-17	1,270	186	0	17	1,101	3	1,274	186	0	17	1,105
Jul-17	1,304	191	0	17	1,130	0	1,305	191	0	17	1,131
Aug-17	1,391	204	0	18	1,206	0	1,392	204	0	18	1,206
Sep-17	1,578	231	0	21	1,367	1	1,579	231	0	21	1,369
Oct-17	1,503	220	0	20	1,302	8	1,515	220	0	20	1,315
Nov-17	1,530	224	0	20	1,326	32	1,576	224	0	20	1,372
Dec-17	1,846	271	0	24	1,600	62	1,938	271	0	24	1,692
Jan-18	1,888	345	0	21	1,564	59	1,975	345	0	21	1,651
Feb-18	1,661	303	0	18	1,376	51	1,736	303	0	18	1,451
Mar-18	1,682	307	0	19	1,394	39	1,739	307	0	19	1,451
Apr-18	1,513	276	0	17	1,254	28	1,554	276	0	17	1,294
May-18	1,414	258	0	16	1,172	11	1,430	258	0	16	1,187
Jun-18	1,279	233	0	14	1,059	3	1,283	233	0	14	1,064
Jul-18	1,313	240	0	14	1,088	0	1,314	240	0	14	1,089
Aug-18	1,400	256	0	15	1,160	0	1,401	256	0	15	1,161
Sep-18	1,588	290	0	18	1,316	1	1,590	290	0	18	1,317
Oct-18	1,513	276	0	17	1,254	8	1,525	276	0	17	1,266
Nov-18	1,540	281	0	17	1,276	32	1,586	281	0	17	1,322
Dec-18	1,858	339	0	21	1,540	62	1,951	339	0	21	1,632
Jan-19	1,892	415	0	17	1,494	59	1,978	415	0	17	1,581
Feb-19	1,664	365	0	15	1,314	51	1,739	365	0	15	1,389
Mar-19	1,685	369	0	15	1,331	39	1,742	369	0	15	1,388
Apr-19	1,516	332	0	14	1,197	28	1,557	332	0	14	1,238
May-19	1,417	310	0	13	1,119	11	1,432	310	0	13	1,135
Jun-19	1,281	281	0	12	1,012	3	1,285	281	0	12	1,016
Jul-19	1,315	288	0	12	1,039	0	1,316	288	0	12	1,040
Aug-19	1,403	307	0	13	1,108	0	1,403	307	0	13	1,109
Sep-19	1,591	349	0	14	1,257	1	1,592	349	0	14	1,258
Oct-19	1,516	332	0	14	1,197	8	1,528	332	0	14	1,209
Nov-19	1,542	338	0	14	1,218	32	1,589	338	0	14	1,265
Dec-19	1,862	408	0	17	1,470	62	1,954	408	0	17	1,563
Jan-20	1,889	484	0	17	1,421	59	1,975	484	0	17	1,508
Feb-20	1,661	426	0	15	1,250	51	1,736	426	0	15	1,325
Mar-20	1,682	431	0	15	1,266	39	1,739	431	0	15	1,323
Apr-20	1,513	388	0	14	1,139	28	1,554	388	0	14	1,180
May-20	1,414	363	0	13	1,064	11	1,430	363	0	13	1,080
Jun-20	1,279	328	0	12	963	3	1,283	328	0	12	967
Jul-20	1,313	337	0	12	988	0	1,314	337	0	12	989
Aug-20	1,401	359	0	13	1,054	0	1,401	359	0	13	1,055
Sep-20	1,589	407	0	14	1,196	1	1,590	407	0	14	1,197
Oct-20	1,513	388	0	14	1,139	8	1,525	388	0	14	1,151
Nov-20	1,540	395	0	14	1,159	32	1,587	395	0	14	1,206
Dec-20	1,859	477	0	17	1,399	62	1,951	477	0	17	1,491

Noncore Commercial Demand Forecast (MDth)

Load per HDD: 14,773 Therm/HDD

	Commercial Average Year					Commercial Cold Year					
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Jan-21	1,887	554	0	17	1,350	59	1,974	554	0	17	1,436
Feb-21	1,660	487	0	15	1,187	51	1,735	487	0	15	1,263
Mar-21	1,681	494	0	15	1,202	39	1,738	494	0	15	1,259
Apr-21	1,513	444	0	14	1,082	28	1,553	444	0	14	1,122
May-21	1,414	415	0	13	1,011	11	1,429	415	0	13	1,027
Jun-21	1,278	375	0	12	914	3	1,282	375	0	12	918
Jul-21	1,312	385	0	12	939	0	1,313	385	0	12	939
Aug-21	1,400	411	0	13	1,001	0	1,400	411	0	13	1,002
Sep-21	1,588	466	0	14	1,135	1	1,589	466	0	14	1,137
Oct-21	1,512	444	0	14	1,082	8	1,524	444	0	14	1,094
Nov-21	1,539	452	0	14	1,101	32	1,586	452	0	14	1,147
Dec-21	1,858	545	0	17	1,328	62	1,950	545	0	17	1,421
Jan-22	1,890	624	0	17	1,283	59	1,977	624	0	17	1,369
Feb-22	1,662	549	0	15	1,128	51	1,738	549	0	15	1,204
Mar-22	1,684	556	0	15	1,143	39	1,741	556	0	15	1,200
Apr-22	1,515	500	0	14	1,028	28	1,555	500	0	14	1,069
May-22	1,416	467	0	13	961	11	1,431	467	0	13	976
Jun-22	1,280	423	0	12	869	3	1,284	423	0	12	873
Jul-22	1,314	434	0	12	892	0	1,315	434	0	12	893
Aug-22	1,402	463	0	13	951	0	1,402	463	0	13	952
Sep-22	1,590	525	0	14	1,079	1	1,591	525	0	14	1,080
Oct-22	1,515	500	0	14	1,028	8	1,527	500	0	14	1,040
Nov-22	1,541	509	0	14	1,046	32	1,588	509	0	14	1,093
Dec-22	1,860	614	0	17	1,262	62	1,952	614	0	17	1,355
Jan-23	1,889	694	0	17	1,212	59	1,975	694	0	17	1,298
Feb-23	1,661	610	0	15	1,066	51	1,737	610	0	15	1,141
Mar-23	1,683	618	0	15	1,079	39	1,740	618	0	15	1,136
Apr-23	1,514	556	0	14	971	28	1,554	556	0	14	1,012
May-23	1,415	520	0	13	907	11	1,430	520	0	13	923
Jun-23	1,279	470	0	12	820	3	1,283	470	0	12	825
Jul-23	1,313	483	0	12	842	0	1,314	483	0	12	843
Aug-23	1,401	515	0	13	899	0	1,401	515	0	13	899
Sep-23	1,589	584	0	14	1,019	1	1,590	584	0	14	1,020
Oct-23	1,513	556	0	14	971	8	1,526	556	0	14	983
Nov-23	1,540	566	0	14	988	32	1,587	566	0	14	1,035
Dec-23	1,859	683	0	17	1,192	62	1,951	683	0	17	1,285
Jan-24	1,890	764	0	17	1,143	59	1,977	764	0	17	1,230
Feb-24	1,662	672	0	15	1,005	51	1,738	672	0	15	1,081
Mar-24	1,684	680	0	15	1,018	39	1,741	680	0	15	1,075
Apr-24	1,515	612	0	14	916	28	1,555	612	0	14	957
May-24	1,416	572	0	13	856	11	1,431	572	0	13	872
Jun-24	1,280	517	0	12	774	3	1,284	517	0	12	778
Jul-24	1,314	531	0	12	795	0	1,315	531	0	12	796
Aug-24	1,402	566	0	13	848	0	1,402	566	0	13	848
Sep-24	1,590	642	0	14	961	1	1,591	642	0	14	963
Oct-24	1,515	612	0	14	916	8	1,527	612	0	14	928
Nov-24	1,541	623	0	14	932	32	1,588	623	0	14	979
Dec-24	1,860	752	0	17	1,125	62	1,952	752	0	17	1,217
Jan-25	1,893	834	0	17	1,076	59	1,979	834	0	17	1,162
Feb-25	1,665	733	0	15	946	51	1,740	733	0	15	1,022
Mar-25	1,686	743	0	15	958	39	1,743	743	0	15	1,015
Apr-25	1,517	668	0	14	862	28	1,558	668	0	14	903
May-25	1,418	624	0	13	806	11	1,433	624	0	13	821
Jun-25	1,282	565	0	12	729	3	1,286	565	0	12	733
Jul-25	1,316	580	0	12	748	0	1,317	580	0	12	749
Aug-25	1,404	618	0	13	798	0	1,404	618	0	13	799
Sep-25	1,592	701	0	14	905	1	1,594	701	0	14	906
Oct-25	1,517	668	0	14	862	8	1,529	668	0	14	874
Nov-25	1,544	680	0	14	877	32	1,590	680	0	14	924
Dec-25	1,863	820	0	17	1,059	62	1,955	820	0	17	1,151

Noncore Commercial Demand Forecast (MDth)

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Jan-26	1,896	904	0	17	1,009	59	1,982	904	0	17	1,095
Feb-26	1,667	795	0	15	887	51	1,743	795	0	15	963
Mar-26	1,689	805	0	15	899	39	1,746	805	0	15	956
Apr-26	1,519	724	0	14	809	28	1,560	724	0	14	849
May-26	1,420	677	0	13	756	11	1,435	677	0	13	771
Jun-26	1,284	612	0	12	683	3	1,288	612	0	12	687
Jul-26	1,318	628	0	12	702	0	1,319	628	0	12	702
Aug-26	1,406	670	0	13	748	0	1,407	670	0	13	749
Sep-26	1,595	760	0	14	849	1	1,596	760	0	14	850
Oct-26	1,519	724	0	14	808	8	1,531	724	0	14	821
Nov-26	1,546	737	0	14	823	32	1,592	737	0	14	869
Dec-26	1,866	889	0	17	993	62	1,958	889	0	17	1,085
Jan-27	1,900	973	0	17	943	59	1,986	973	0	17	1,030
Feb-27	1,671	856	0	15	830	51	1,746	856	0	15	905
Mar-27	1,692	867	0	15	840	39	1,749	867	0	15	897
Apr-27	1,522	780	0	14	756	28	1,563	780	0	14	797
May-27	1,423	729	0	13	706	11	1,438	729	0	13	722
Jun-27	1,287	659	0	12	639	3	1,291	659	0	12	643
Jul-27	1,321	677	0	12	656	0	1,322	677	0	12	657
Aug-27	1,409	722	0	13	700	0	1,410	722	0	13	700
Sep-27	1,598	819	0	14	793	1	1,599	819	0	14	795
Oct-27	1,522	780	0	14	756	8	1,534	780	0	14	768
Nov-27	1,549	794	0	14	769	32	1,596	794	0	14	816
Dec-27	1,870	958	0	17	928	62	1,962	958	0	17	1,020
Jan-28	1,904	1,043	0	17	878	59	1,991	1,043	0	17	964
Feb-28	1,675	918	0	15	772	51	1,750	918	0	15	847
Mar-28	1,696	929	0	15	782	39	1,753	929	0	15	839
Apr-28	1,526	836	0	14	703	28	1,567	836	0	14	744
May-28	1,426	781	0	13	657	11	1,442	781	0	13	673
Jun-28	1,290	706	0	12	594	3	1,294	706	0	12	599
Jul-28	1,324	725	0	12	610	0	1,325	725	0	12	611
Aug-28	1,412	774	0	13	651	0	1,413	774	0	13	652
Sep-28	1,602	878	0	14	738	1	1,603	878	0	14	740
Oct-28	1,526	836	0	14	703	8	1,538	836	0	14	715
Nov-28	1,553	851	0	14	716	32	1,599	851	0	14	762
Dec-28	1,874	1,027	0	17	864	62	1,966	1,027	0	17	956
Jan-29	1,908	1,048	0	17	877	59	1,994	1,048	0	17	963
Feb-29	1,678	922	0	15	771	51	1,753	922	0	15	846
Mar-29	1,699	933	0	15	781	39	1,756	933	0	15	838
Apr-29	1,529	840	0	14	703	28	1,570	840	0	14	743
May-29	1,429	785	0	13	657	11	1,444	785	0	13	672
Jun-29	1,292	710	0	12	594	3	1,296	710	0	12	598
Jul-29	1,327	729	0	12	610	0	1,327	729	0	12	610
Aug-29	1,415	777	0	13	650	0	1,416	777	0	13	651
Sep-29	1,605	881	0	14	738	1	1,606	881	0	14	739
Oct-29	1,529	840	0	14	703	8	1,541	840	0	14	715
Nov-29	1,556	854	0	14	715	32	1,602	854	0	14	762
Dec-29	1,878	1,031	0	17	863	62	1,970	1,031	0	17	955
Jan-30	1,913	1,048	0	17	882	59	1,999	1,048	0	17	968
Feb-30	1,682	922	0	15	775	51	1,758	922	0	15	851
Mar-30	1,704	933	0	15	785	39	1,761	933	0	15	842
Apr-30	1,533	840	0	14	707	28	1,574	840	0	14	747
May-30	1,432	785	0	13	660	11	1,448	785	0	13	676
Jun-30	1,295	710	0	12	597	3	1,299	710	0	12	601
Jul-30	1,330	729	0	12	613	0	1,331	729	0	12	614
Aug-30	1,419	777	0	13	654	0	1,419	777	0	13	654
Sep-30	1,609	881	0	14	742	1	1,610	881	0	14	743
Oct-30	1,533	840	0	14	706	8	1,545	840	0	14	719
Nov-30	1,560	854	0	14	719	32	1,606	854	0	14	766
Dec-30	1,882	1,031	0	17	868	62	1,975	1,031	0	17	960

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Jan-31	1,915	1,048	0	17	884	59	2,002	1,048	0	17	971
Feb-31	1,684	922	0	15	778	51	1,760	922	0	15	853
Mar-31	1,706	933	0	15	788	39	1,763	933	0	15	845
Apr-31	1,535	840	0	14	709	28	1,576	840	0	14	749
May-31	1,434	785	0	13	662	11	1,450	785	0	13	678
Jun-31	1,297	710	0	12	599	3	1,301	710	0	12	603
Jul-31	1,332	729	0	12	615	0	1,332	729	0	12	615
Aug-31	1,420	777	0	13	656	0	1,421	777	0	13	656
Sep-31	1,611	881	0	14	744	1	1,612	881	0	14	745
Oct-31	1,535	840	0	14	708	8	1,547	840	0	14	721
Nov-31	1,562	854	0	14	721	32	1,608	854	0	14	768
Dec-31	1,885	1,031	0	17	870	62	1,977	1,031	0	17	962
Jan-32	1,919	1,048	0	17	888	59	2,006	1,048	0	17	975
Feb-32	1,688	922	0	15	781	51	1,763	922	0	15	856
Mar-32	1,709	933	0	15	791	39	1,767	933	0	15	848
Apr-32	1,538	840	0	14	712	28	1,579	840	0	14	752
May-32	1,437	785	0	13	665	11	1,453	785	0	13	681
Jun-32	1,300	710	0	12	601	3	1,304	710	0	12	605
Jul-32	1,334	729	0	12	617	0	1,335	729	0	12	618
Aug-32	1,423	777	0	13	659	0	1,424	777	0	13	659
Sep-32	1,614	881	0	14	747	1	1,616	881	0	14	748
Oct-32	1,538	840	0	14	712	8	1,550	840	0	14	724
Nov-32	1,565	854	0	14	724	32	1,612	854	0	14	771
Dec-32	1,889	1,031	0	17	874	62	1,981	1,031	0	17	966
Jan-33	1,924	1,048	0	17	892	59	2,010	1,048	0	17	979
Feb-33	1,692	922	0	15	785	51	1,767	922	0	15	860
Mar-33	1,713	933	0	15	795	39	1,770	933	0	15	852
Apr-33	1,541	840	0	14	715	28	1,582	840	0	14	756
May-33	1,441	785	0	13	668	11	1,456	785	0	13	684
Jun-33	1,303	710	0	12	604	3	1,307	710	0	12	608
Jul-33	1,337	729	0	12	621	0	1,338	729	0	12	621
Aug-33	1,427	777	0	13	662	0	1,427	777	0	13	662
Sep-33	1,618	881	0	14	751	1	1,619	881	0	14	752
Oct-33	1,541	840	0	14	715	8	1,553	840	0	14	727
Nov-33	1,569	854	0	14	728	32	1,615	854	0	14	774
Dec-33	1,893	1,031	0	17	878	62	1,985	1,031	0	17	971
Jan-34	1,926	1,048	0	17	895	59	2,013	1,048	0	17	982
Feb-34	1,694	922	0	15	787	51	1,769	922	0	15	863
Mar-34	1,716	933	0	15	797	39	1,773	933	0	15	854
Apr-34	1,544	840	0	14	717	28	1,584	840	0	14	758
May-34	1,442	785	0	13	670	11	1,458	785	0	13	686
Jun-34	1,304	710	0	12	606	3	1,308	710	0	12	610
Jul-34	1,339	729	0	12	622	0	1,340	729	0	12	623
Aug-34	1,429	777	0	13	664	0	1,429	777	0	13	664
Sep-34	1,620	881	0	14	753	1	1,622	881	0	14	754
Oct-34	1,543	840	0	14	717	8	1,555	840	0	14	729
Nov-34	1,571	854	0	14	730	32	1,617	854	0	14	776
Dec-34	1,896	1,031	0	17	881	62	1,988	1,031	0	17	973
Jan-35	1,930	1,048	0	17	899	59	2,016	1,048	0	17	985
Feb-35	1,697	922	0	15	790	51	1,773	922	0	15	866
Mar-35	1,719	933	0	15	801	39	1,776	933	0	15	858
Apr-35	1,547	840	0	14	720	28	1,587	840	0	14	761
May-35	1,445	785	0	13	673	11	1,461	785	0	13	689
Jun-35	1,307	710	0	12	609	3	1,311	710	0	12	613
Jul-35	1,342	729	0	12	625	0	1,343	729	0	12	626
Aug-35	1,431	777	0	13	667	0	1,432	777	0	13	667
Sep-35	1,623	881	0	14	756	1	1,625	881	0	14	757
Oct-35	1,546	840	0	14	720	8	1,558	840	0	14	732
Nov-35	1,574	854	0	14	733	32	1,620	854	0	14	779
Dec-35	1,899	1,031	0	17	885	62	1,991	1,031	0	17	977

Noncore Industrial Demand Forecast (MDth)

	Industrial - All Temperature Years				
Date	IndModel	DSM	Vernon	Migr: g10--> g30	Ind-All
Jan-13	4,366	0	0	0	4,366
Feb-13	3,967	0	0	0	3,967
Mar-13	4,456	0	0	0	4,456
Apr-13	4,239	0	0	0	4,239
May-13	4,325	0	0	0	4,325
Jun-13	4,066	0	0	0	4,066
Jul-13	4,506	0	0	0	4,506
Aug-13	5,003	0	0	0	5,003
Sep-13	4,646	0	0	0	4,646
Oct-13	4,301	0	0	0	4,301
Nov-13	3,651	0	0	0	3,651
Dec-13	3,369	0	0	0	3,369
Jan-14	4,340	28	0	80	4,392
Feb-14	3,943	25	0	73	3,991
Mar-14	4,430	29	0	82	4,483
Apr-14	4,214	27	0	78	4,265
May-14	4,300	28	0	79	4,352
Jun-14	4,043	26	0	75	4,091
Jul-14	4,479	29	0	83	4,533
Aug-14	4,974	32	0	92	5,033
Sep-14	4,619	30	0	85	4,674
Oct-14	4,276	28	0	79	4,328
Nov-14	3,629	23	0	67	3,673
Dec-14	3,349	22	0	62	3,389
Jan-15	4,403	51	3	61	4,409
Feb-15	4,000	47	3	56	4,006
Mar-15	4,493	52	3	62	4,500
Apr-15	4,275	50	3	59	4,281
May-15	4,362	51	3	61	4,369
Jun-15	4,101	48	3	57	4,107
Jul-15	4,544	53	3	63	4,551
Aug-15	5,045	59	4	70	5,053
Sep-15	4,685	55	3	65	4,692
Oct-15	4,338	51	3	60	4,345
Nov-15	3,682	43	3	51	3,687
Dec-15	3,397	40	2	47	3,403

Noncore Industrial Demand Forecast (MDth)

	Industrial - All Temperature Years				
Date	IndModel	DSM	Vernon	Migr: g10--> g30	Ind-All
Jan-16	4,440	75	6	42	4,402
Feb-16	4,034	68	6	39	3,999
Mar-16	4,532	76	7	43	4,492
Apr-16	4,311	73	6	41	4,274
May-16	4,399	74	6	42	4,361
Jun-16	4,136	70	6	39	4,100
Jul-16	4,583	77	7	44	4,542
Aug-16	5,088	86	7	49	5,044
Sep-16	4,725	80	7	45	4,684
Oct-16	4,375	74	6	42	4,337
Nov-16	3,713	62	5	35	3,680
Dec-16	3,426	58	5	33	3,396
Jan-17	4,450	98	10	37	4,379
Feb-17	4,043	89	9	34	3,979
Mar-17	4,542	100	10	38	4,470
Apr-17	4,321	95	9	36	4,252
May-17	4,409	97	10	37	4,339
Jun-17	4,145	91	9	34	4,079
Jul-17	4,593	101	10	38	4,520
Aug-17	5,100	112	11	42	5,018
Sep-17	4,736	104	10	39	4,660
Oct-17	4,385	97	10	36	4,315
Nov-17	3,721	82	8	31	3,662
Dec-17	3,434	76	7	28	3,379
Jan-18	4,458	121	13	31	4,355
Feb-18	4,051	110	12	29	3,957
Mar-18	4,550	124	13	32	4,445
Apr-18	4,329	118	13	30	4,229
May-18	4,417	120	13	31	4,315
Jun-18	4,153	113	12	29	4,057
Jul-18	4,601	125	13	32	4,495
Aug-18	5,109	139	15	36	4,991
Sep-18	4,744	129	14	33	4,635
Oct-18	4,393	120	13	31	4,291
Nov-18	3,728	102	11	26	3,642
Dec-18	3,440	94	10	24	3,361
Jan-19	4,443	145	16	26	4,308
Feb-19	4,037	132	15	24	3,914
Mar-19	4,534	148	16	26	4,397
Apr-19	4,314	141	16	25	4,183
May-19	4,402	143	16	26	4,268
Jun-19	4,138	135	15	24	4,013
Jul-19	4,585	149	17	27	4,446
Aug-19	5,091	166	18	30	4,936
Sep-19	4,728	154	17	28	4,584
Oct-19	4,378	143	16	26	4,244
Nov-19	3,715	121	13	22	3,602
Dec-19	3,428	112	12	20	3,324
Jan-20	4,404	168	19	26	4,243
Feb-20	4,002	153	18	24	3,855
Mar-20	4,495	172	20	26	4,330
Apr-20	4,276	163	19	25	4,119
May-20	4,364	167	19	26	4,204
Jun-20	4,102	157	18	24	3,952
Jul-20	4,545	174	20	27	4,379
Aug-20	5,047	193	22	30	4,862
Sep-20	4,687	179	21	28	4,515
Oct-20	4,340	166	19	26	4,180
Nov-20	3,683	141	16	22	3,548
Dec-20	3,399	130	15	20	3,274

Noncore Industrial Demand Forecast (MDth)

	Industrial - All Temperature Years				
Date	IndModel	DSM	Vernon	Migr: g10--> g30	Ind-All
Jan-21	4,372	192	22	26	4,185
Feb-21	3,972	174	20	24	3,802
Mar-21	4,462	195	22	26	4,271
Apr-21	4,245	186	21	25	4,063
May-21	4,332	190	21	26	4,146
Jun-21	4,072	178	20	24	3,898
Jul-21	4,512	198	22	27	4,319
Aug-21	5,010	219	25	30	4,795
Sep-21	4,652	204	23	28	4,453
Oct-21	4,308	189	21	26	4,123
Nov-21	3,656	160	18	22	3,499
Dec-21	3,374	148	17	20	3,229
Jan-22	4,346	215	22	26	4,135
Feb-22	3,948	195	20	24	3,757
Mar-22	4,435	219	22	26	4,220
Apr-22	4,220	209	21	25	4,015
May-22	4,306	213	21	26	4,097
Jun-22	4,048	200	20	24	3,852
Jul-22	4,485	222	22	27	4,268
Aug-22	4,980	246	25	30	4,739
Sep-22	4,625	229	23	28	4,401
Oct-22	4,282	212	21	26	4,075
Nov-22	3,634	180	18	22	3,458
Dec-22	3,354	166	17	20	3,191
Jan-23	4,310	238	22	26	4,076
Feb-23	3,916	216	20	24	3,703
Mar-23	4,398	243	22	26	4,160
Apr-23	4,184	231	21	25	3,957
May-23	4,270	236	21	26	4,038
Jun-23	4,014	222	20	24	3,796
Jul-23	4,448	246	22	27	4,206
Aug-23	4,938	273	25	30	4,670
Sep-23	4,586	254	23	28	4,337
Oct-23	4,246	235	21	26	4,016
Nov-23	3,604	199	18	22	3,408
Dec-23	3,326	184	17	20	3,145
Jan-24	4,287	262	22	26	4,030
Feb-24	3,895	238	20	24	3,661
Mar-24	4,375	267	22	26	4,113
Apr-24	4,162	254	21	25	3,913
May-24	4,247	259	21	26	3,993
Jun-24	3,993	244	20	24	3,754
Jul-24	4,424	270	22	27	4,159
Aug-24	4,913	300	25	30	4,618
Sep-24	4,562	278	23	28	4,288
Oct-24	4,224	258	21	26	3,970
Nov-24	3,585	219	18	22	3,370
Dec-24	3,308	202	17	20	3,110
Jan-25	4,266	285	22	26	3,986
Feb-25	3,876	259	20	24	3,621
Mar-25	4,354	291	22	26	4,068
Apr-25	4,142	277	21	25	3,870
May-25	4,227	282	21	26	3,949
Jun-25	3,974	265	20	24	3,713
Jul-25	4,403	294	22	27	4,113
Aug-25	4,889	327	25	30	4,567
Sep-25	4,540	303	23	28	4,241
Oct-25	4,204	281	21	26	3,927
Nov-25	3,567	238	18	22	3,333
Dec-25	3,292	220	17	20	3,076

Noncore Industrial Demand Forecast (MDth)

	Industrial - All Temperature Years				
Date	IndModel	DSM	Vernon	Migr: g10--> g30	Ind-All
Jan-26	4,242	308	22	26	3,938
Feb-26	3,854	280	20	24	3,578
Mar-26	4,330	315	22	26	4,019
Apr-26	4,119	299	21	25	3,824
May-26	4,203	306	21	26	3,902
Jun-26	3,952	287	20	24	3,668
Jul-26	4,378	318	22	27	4,065
Aug-26	4,861	353	25	30	4,513
Sep-26	4,514	328	23	28	4,191
Oct-26	4,180	304	21	26	3,880
Nov-26	3,547	258	18	22	3,293
Dec-26	3,274	238	17	20	3,039
Jan-27	4,217	332	22	26	3,889
Feb-27	3,831	301	20	24	3,534
Mar-27	4,303	339	22	26	3,969
Apr-27	4,094	322	21	25	3,776
May-27	4,178	329	21	26	3,853
Jun-27	3,928	309	20	24	3,623
Jul-27	4,352	342	22	27	4,014
Aug-27	4,832	380	25	30	4,457
Sep-27	4,487	353	23	28	4,139
Oct-27	4,155	327	21	26	3,832
Nov-27	3,526	277	18	22	3,252
Dec-27	3,254	256	17	20	3,001
Jan-28	4,187	355	22	26	3,837
Feb-28	3,804	323	20	24	3,486
Mar-28	4,273	362	22	26	3,916
Apr-28	4,066	345	21	25	3,725
May-28	4,149	352	21	26	3,801
Jun-28	3,900	331	20	24	3,574
Jul-28	4,321	366	22	27	3,959
Aug-28	4,798	407	25	30	4,396
Sep-28	4,456	378	23	28	4,083
Oct-28	4,126	350	21	26	3,780
Nov-28	3,501	297	18	22	3,208
Dec-28	3,231	274	17	20	2,961
Jan-29	4,157	350	22	26	3,811
Feb-29	3,777	318	20	24	3,463
Mar-29	4,243	358	22	26	3,890
Apr-29	4,036	340	21	25	3,700
May-29	4,119	347	21	26	3,776
Jun-29	3,872	326	20	24	3,550
Jul-29	4,290	362	22	27	3,933
Aug-29	4,764	402	25	30	4,367
Sep-29	4,424	373	23	28	4,056
Oct-29	4,096	345	21	26	3,755
Nov-29	3,476	293	18	22	3,187
Dec-29	3,208	270	17	20	2,941
Jan-30	4,132	350	22	26	3,786
Feb-30	3,754	318	20	24	3,440
Mar-30	4,217	358	22	26	3,864
Apr-30	4,012	340	21	25	3,676
May-30	4,094	347	21	26	3,751
Jun-30	3,849	326	20	24	3,526
Jul-30	4,264	362	22	27	3,907
Aug-30	4,735	402	25	30	4,338
Sep-30	4,397	373	23	28	4,029
Oct-30	4,071	345	21	26	3,730
Nov-30	3,455	293	18	22	3,166
Dec-30	3,188	270	17	20	2,921

Noncore Industrial Demand Forecast (MDth)

	Industrial - All Temperature Years				
Date	IndModel	DSM	Vernon	Migr: g10--> g30	Ind-All
Jan-31	4,107	350	22	26	3,761
Feb-31	3,731	318	20	24	3,417
Mar-31	4,191	358	22	26	3,838
Apr-31	3,987	340	21	25	3,651
May-31	4,069	347	21	26	3,726
Jun-31	3,825	326	20	24	3,503
Jul-31	4,238	362	22	27	3,881
Aug-31	4,706	402	25	30	4,309
Sep-31	4,370	373	23	28	4,002
Oct-31	4,046	345	21	26	3,705
Nov-31	3,434	293	18	22	3,145
Dec-31	3,169	270	17	20	2,902
Jan-32	4,078	350	22	26	3,732
Feb-32	3,705	318	20	24	3,391
Mar-32	4,162	358	22	26	3,809
Apr-32	3,960	340	21	25	3,624
May-32	4,040	347	21	26	3,698
Jun-32	3,799	326	20	24	3,476
Jul-32	4,209	362	22	27	3,852
Aug-32	4,673	402	25	30	4,277
Sep-32	4,340	373	23	28	3,971
Oct-32	4,018	345	21	26	3,677
Nov-32	3,410	293	18	22	3,121
Dec-32	3,147	270	17	20	2,880
Jan-33	4,051	350	22	26	3,705
Feb-33	3,680	318	20	24	3,366
Mar-33	4,134	358	22	26	3,781
Apr-33	3,933	340	21	25	3,597
May-33	4,013	347	21	26	3,670
Jun-33	3,773	326	20	24	3,451
Jul-33	4,180	362	22	27	3,823
Aug-33	4,642	402	25	30	4,245
Sep-33	4,310	373	23	28	3,942
Oct-33	3,991	345	21	26	3,650
Nov-33	3,387	293	18	22	3,098
Dec-33	3,126	270	17	20	2,859
Jan-34	4,021	350	22	26	3,675
Feb-34	3,654	318	20	24	3,339
Mar-34	4,104	358	22	26	3,751
Apr-34	3,905	340	21	25	3,569
May-34	3,984	347	21	26	3,641
Jun-34	3,746	326	20	24	3,423
Jul-34	4,150	362	22	27	3,793
Aug-34	4,608	402	25	30	4,212
Sep-34	4,279	373	23	28	3,911
Oct-34	3,962	345	21	26	3,621
Nov-34	3,363	293	18	22	3,073
Dec-34	3,103	270	17	20	2,836
Jan-35	3,998	350	22	26	3,652
Feb-35	3,632	318	20	24	3,318
Mar-35	4,080	358	22	26	3,727
Apr-35	3,882	340	21	25	3,546
May-35	3,961	347	21	26	3,618
Jun-35	3,724	326	20	24	3,401
Jul-35	4,126	362	22	27	3,769
Aug-35	4,581	402	25	30	4,184
Sep-35	4,254	373	23	28	3,886
Oct-35	3,939	345	21	26	3,598
Nov-35	3,343	293	18	22	3,053
Dec-35	3,085	270	17	20	2,818

EUForecaster (Noncore Commercial), Adj. to "Avg Yr HDD"

Month	2009 Forecast	Yr-2009 ["B4" DSM/COV/ Migr(g10-->g30)] for 2009 BCAP Pred G30-Com at 2010 Cgr Avg Hdd (MThm)	Weather Adj. Share of Ann. Total
1	Jan-09	**21,598**	10.125%
2	Feb-09	**18,996**	8.905%
3	Mar-09	**19,238**	9.019%
4	Apr-09	**17,308**	8.114%
5	May-09	**16,175**	7.582%
6	Jun-09	**14,626**	6.856%
7	Jul-09	**15,018**	7.040%
8	Aug-09	**16,018**	7.509%
9	Sep-09	**18,167**	8.516%
10	Oct-09	**17,306**	8.113%
11	Nov-09	**17,612**	8.256%
12	Dec-09	**21,256**	9.964%
		213,317	**100.000%**

EUForecaster (Noncore Industrial/Non-Refinery)

Month	"Fitted Monthly" Load (per BMW's Simple Regression Model) **(MDTh)**	Monthly Proportions of Annual Total Load **(%-of-Annual)**
1	3,710	8.58%
2	3,371	7.79%
3	3,786	8.75%
4	3,602	8.33%
5	3,676	8.50%
6	3,456	7.99%
7	3,829	8.85%
8	4,251	9.83%
9	3,948	9.13%
10	3,655	8.45%
11	3,102	7.17%
12	2,863	6.62%
	43,250	100.00%

Natural Gas Rates/Prices

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	"Check Calc" of: C Non Core Average Price	"Check Calc" of: C Non Core Marginal Price	"Check Calc" of: I Non Core Average Price	"Check Calc" of: I Non Core Marginal Price	g-30 Com: GHG $/Mmbtu (Natural Gas)	g-30 Ind: GHG $/Mmbtu (Natural Gas)
2013	100.00	100.00	6.0629	5.9037	6.2447	6.2584	6.0629	5.9037	6.2447	6.2584	0.0	0.4
2014	100.32	100.32	7.3697	7.2119	7.3862	7.3994	7.3697	7.2119	7.3862	7.3994	0.0	0.2
2015	102.03	102.03	7.0170	6.8566	6.9632	6.9774	7.0170	6.8566	6.9632	6.9774	0.2	0.4
2016	103.82	103.82	6.8986	6.7397	6.8369	6.8505	6.8986	6.7397	6.8369	6.8505	0.2	0.4
2017	105.75	105.75	7.0517	6.8907	6.9774	6.9919	7.0517	6.8907	6.9774	6.9919	0.3	0.4
2018	107.86	107.86	7.2146	7.0512	7.1293	7.1447	7.2146	7.0512	7.1293	7.1447	0.3	0.5
2019	109.87	109.87	7.7240	7.5583	7.6308	7.6471	7.7240	7.5583	7.6308	7.6471	0.4	0.6
2020	112.04	112.04	8.5689	8.4008	8.4691	8.4863	8.5689	8.4008	8.4691	8.4863	0.5	0.7
2021	114.34	114.34	9.1089	8.9383	9.0280	9.0463	9.1089	8.9383	9.0280	9.0463	0.6	0.8
2022	116.51	116.51	9.4364	9.2633	9.3754	9.3946	9.4364	9.2633	9.3754	9.3946	0.7	0.9
2023	118.71	118.71	10.0647	9.8892	10.0243	10.0445	10.0647	9.8892	10.0243	10.0445	0.8	1.0
2024	120.91	120.91	10.4696	10.2917	10.4506	10.4717	10.4696	10.2917	10.4506	10.4717	0.9	1.1
2025	123.26	123.26	10.7910	10.6105	10.7939	10.8160	10.7910	10.6105	10.7939	10.8160	1.0	1.3
2026	125.73	125.73	11.1574	10.9741	11.1829	11.2061	11.1574	10.9741	11.1829	11.2061	1.1	1.4
2027	128.23	128.23	11.4796	11.2936	11.5286	11.5530	11.4796	11.2936	11.5286	11.5530	1.2	1.5
2028	130.79	130.79	11.8633	11.6744	11.9367	11.9621	11.8633	11.6744	11.9367	11.9621	1.3	1.7
2029	133.42	133.42	12.3394	12.1476	12.4380	12.4647	12.3394	12.1476	12.4380	12.4647	1.4	1.8
2030	136.03	136.03	12.7651	12.5704	12.8899	12.9177	12.7651	12.5704	12.8899	12.9177	1.6	2.0
2031	138.81	138.81	13.2272	13.0294	13.3792	13.4082	13.2272	13.0294	13.3792	13.4082	1.7	2.1
2032	141.72	141.72	13.6862	13.4852	13.8664	13.8967	13.6862	13.4852	13.8664	13.8967	1.8	2.3
2033	144.73	144.73	14.1258	13.9215	14.3352	14.3668	14.1258	13.9215	14.3352	14.3668	1.9	2.5
2034	147.84	147.84	14.7588	14.5510	14.9985	15.0315	14.7588	14.5510	14.9985	15.0315	2.1	2.6
2035	150.98	150.98	15.2168	15.0055	15.4879	15.5222	15.2168	15.0055	15.4879	15.5222	2.2	2.8

Prices in Nominal $/Therm

Electricity Rates/Prices

Year	C Non Core Average Price	C Non Core Marginal Price	I Non Core Average Price	I Non Core Marginal Price
2013	9.69	6.83	9.69	6.83
2014	10.10	7.12	10.10	7.12
2015	10.39	7.32	10.39	7.32
2016	10.79	7.60	10.79	7.60
2017	11.09	7.82	11.09	7.82
2018	11.49	8.10	11.49	8.10
2019	11.87	8.37	11.87	8.37
2020	12.28	8.66	12.28	8.66
2021	12.66	8.92	12.66	8.92
2022	13.03	9.18	13.03	9.18
2023	13.41	9.45	13.41	9.45
2024	13.79	9.72	13.79	9.72
2025	14.20	10.01	14.20	10.01
2026	14.63	10.31	14.63	10.31
2027	15.07	10.62	15.07	10.62
2028	15.53	10.94	15.53	10.94
2029	16.00	11.28	16.00	11.28
2030	16.47	11.61	16.47	11.61
2031	16.98	11.97	16.98	11.97
2032	17.51	12.34	17.51	12.34
2033	18.06	12.73	18.06	12.73
2034	18.63	13.13	18.63	13.13
2035	19.22	13.55	19.22	13.55

Prices in Nominal ¢/Kwh

Alternative Fuel (Propane) Prices

Year	C Non Core Average Price	C Non Core Marginal Price	I Non Core Average Price	I Non Core Marginal Price
2013	1.2194	1.2194	1.6718	1.6718
2014	1.2688	1.2688	1.5428	1.5428
2015	1.2600	1.2600	1.5409	1.5409
2016	1.2810	1.2810	1.5699	1.5699
2017	1.3306	1.3306	1.6316	1.6316
2018	1.3749	1.3749	1.6942	1.6942
2019	1.4110	1.4110	1.7592	1.7592
2020	1.4436	1.4436	1.8306	1.8306
2021	1.4840	1.4840	1.9369	1.9369
2022	1.5224	1.5224	2.0431	2.0431
2023	1.5585	1.5585	2.1494	2.1494
2024	1.5981	1.5981	2.2611	2.2611
2025	1.6410	1.6410	2.3786	2.3786
2026	1.6824	1.6824	2.4975	2.4975
2027	1.7251	1.7251	2.6203	2.6203
2028	1.7667	1.7667	2.7448	2.7448
2029	1.8113	1.8113	2.8751	2.8751
2030	1.8576	1.8576	3.0096	3.0096
2031	1.9068	1.9068	3.1508	3.1508
2032	1.9592	1.9592	3.2986	3.2986
2033	2.0156	2.0156	3.4539	3.4539
2034	2.0842	2.0842	3.6251	3.6251
2035	2.1420	2.1420	3.7886	3.7886

Prices in Nominal $/Therm

Annual G30 Noncore C&I Gas Rates

						Nominal Dollars					Constant 2011 Dollars			
Year	Com Trsp Average ¢/Therm	Com Trsp Marginal ¢/Therm	Ind Trsp Average ¢/Therm	Ind Trsp Marginal ¢/Therm	CBSP ¢/Therm	Com B/T Average $/Dth	Com B/T Marginal $/Dth	Ind B/T Average $/Dth	Ind B/T Marginal $/Dth	CPI (Yr-2011 = 1.0000)	Com B/T Average 2011-$ /Dth	Com B/T Marginal 2011-$ /Dth	Ind B/T Average 2011-$ /Dth	Ind B/T Marginal 2011-$ /Dth
2013	**20.958**	**19.366**	**18.874**	**19.011**	**39.671**	**6.063**	**5.904**	**5.854**	**5.868**	**1.0000**	**6.063**	**5.904**	**5.854**	**5.868**
2014	22.504	20.926	20.306	20.438	51.193	7.370	7.212	7.150	7.163	1.0032	7.346	7.189	7.127	7.140
2015	22.886	21.282	20.645	20.786	45.362	6.825	6.664	6.601	6.615	1.0203	6.689	6.532	6.470	6.483
2016	22.803	21.214	20.587	20.723	43.797	6.660	6.501	6.438	6.452	1.0382	6.415	6.262	6.202	6.215
2017	23.271	21.660	21.016	21.160	44.351	6.762	6.601	6.537	6.551	1.0575	6.395	6.242	6.181	6.195
2018	23.757	22.123	21.459	21.613	44.893	6.865	6.702	6.635	6.651	1.0786	6.365	6.213	6.152	6.166
2019	24.213	22.556	21.873	22.035	48.766	7.298	7.132	7.064	7.080	1.0987	6.642	6.491	6.429	6.444
2020	24.717	23.036	22.333	22.505	55.761	8.048	7.880	7.809	7.827	1.1204	7.183	7.033	6.970	6.985
2021	25.233	23.526	22.801	22.984	59.759	8.499	8.329	8.256	8.274	1.1434	7.433	7.284	7.221	7.237
2022	25.721	23.991	23.246	23.438	61.632	8.735	8.562	8.488	8.507	1.1651	7.497	7.349	7.285	7.301
2023	26.226	24.471	23.705	23.906	66.466	9.269	9.094	9.017	9.037	1.1871	7.808	7.660	7.596	7.613
2024	26.723	24.944	24.157	24.368	69.046	9.577	9.399	9.320	9.341	1.2091	7.921	7.773	7.708	7.726
2025	27.249	25.444	24.635	24.856	70.730	9.798	9.617	9.536	9.559	1.2326	7.949	7.802	7.737	7.755
2026	27.802	25.969	25.136	25.369	72.798	10.060	9.877	9.793	9.817	1.2573	8.001	7.855	7.789	7.808
2027	28.360	26.499	25.642	25.885	74.384	10.274	10.088	10.003	10.027	1.2823	8.012	7.867	7.800	7.819
2028	28.932	27.044	26.162	26.416	76.533	10.546	10.358	10.269	10.295	1.3079	8.064	7.919	7.852	7.871
2029	29.524	27.606	26.699	26.965	79.548	10.907	10.715	10.625	10.651	1.3342	8.175	8.032	7.963	7.983
2030	30.109	28.162	27.230	27.508	82.032	11.214	11.019	10.926	10.954	1.3603	8.244	8.101	8.032	8.053
2031	30.734	28.757	27.797	28.087	84.789	11.552	11.355	11.259	11.288	1.3881	8.322	8.180	8.111	8.132
2032	31.386	29.376	28.388	28.691	87.445	11.883	11.682	11.583	11.614	1.4172	8.385	8.243	8.173	8.195
2033	32.058	30.014	28.998	29.314	89.836	12.189	11.985	11.883	11.915	1.4473	8.422	8.281	8.211	8.233
2034	32.757	30.679	29.633	29.962	94.086	12.684	12.477	12.372	12.405	1.4784	8.580	8.439	8.368	8.391
2035	33.458	31.346	30.269	30.613	96.542	13.000	12.789	12.681	12.716	1.5098	8.610	8.470	8.399	8.422
						Avg-Ann Growth Rate (2013 through 2035):					**1.6%**	**1.7%**	**1.7%**	**1.7%**
Col-#01	Col-#02	Col-#03	Col-#04	Col-#05	Col-#06	Col-#07	Col-#08	Col-#09	Col-#10	Col-#11	Col-#12	Col-#13	Col-#14	Col-#15

2013 G30 C&I Weight of Usage by Tier, BMW

	Service	Tier	Both	Com	Ind
Average	D	1	D1	87.47%	61.46%
Average	D	2	D2	12.53%	38.54%
Average	D	3	D3	0.00%	0.00%
Average	D	4	D4	0.00%	0.00%
Average	T	1	T1	99.13%	43.17%
Average	T	2	T2	0.87%	56.83%
Marginal	D	1	D1	69.02%	69.02%
Marginal	D	2	D2	30.98%	30.98%
Marginal	D	3	D3	0.00%	0.00%
Marginal	D	4	D4	0.00%	0.00%
Marginal	T	1	T1	87.42%	20.54%
Marginal	T	2	T2	12.58%	79.46%

2013 Volume (Therms)			Percent
Com&Ind	D&T	688,048,185	100.00%
Com&Ind	D	649,934,903	94.46%
Com&Ind	T	38,113,282	5.54%
Com	D&T	179,111,718	26.03%
Ind	D&T	508,936,467	73.97%
Com	D	173,417,150	96.82%
Com	T	5,694,568	3.18%
Ind	D	476,517,753	93.63%
Ind	T	32,418,714	6.37%

Obs	seg	service	_TYPE_	_FREQ_ ("Cust Cnt")	G-30 C&I (Non-Refinery) Therms	Prop/Pct.	Annual Therms/"Cust"	Annual $/Cust under: Class Avg Rates	Rsvr Rates
1			0	597	688,048,185	100.0%	1,152,510		
2		D	1	570	649,934,903	94.5%	1,140,237		
3		T	1	27	38,113,282	5.5%	1,411,603		
4	COM		2	234	179,111,718	26.0%	765,435		
5	IND		2	363	508,936,467	74.0%	1,402,029		
6	COM	D	3	222	173,417,150	96.8%	781,158	$42,886	$41,423
7	COM	T	3	12	5,694,568	3.2%	474,547	$26,053	$25,164
8	IND	D	3	348	476,517,753	93.63%	1,369,304	$75,175	$72,611
9	IND	T	3	15	32,418,714	6.37%	2,161,248	$118,652	$114,605

Gas Transp. Forecast from Rate Design (Nominal Cents per Therm)

							Trans Option: "Class Averge"			**Trans Option: "Reservation"**					
Year	**PPP (¢/Thm)**	**Dcharge ($/mo /mtr)**	**D1 (¢/Thm)**	**D2 (¢/Thm)**	**D3 (¢/Thm)**	**D4 (¢/Thm)**	**Tcharge ($/mo /mtr)**	**T1 (¢/Thm)**	**T2 (¢/Thm)**	**Tcharge (¢/Thm/day per Mtr)**	**T1 (¢/Thm)**	**T2 (¢/Thm)**	**CPI**	**CBSP $/Dth**	Price Deflator
2013	3.092	$350	18.486	12.489	8.584	6.374	$0	5.490	5.490	0.989	4.314	4.314	1.000	**3.97**	**100.00**
2014	2.73	$350	20.51	14.60	10.81	8.11	$0	3.36	3.36	0.58	4.16	4.16	1.003	5.12	100.32
2015	2.809	$350	20.85	14.78	10.90	8.13	$0	3.44	3.44	0.41	4.05	4.02	1.020	4.54	102.03
2016	2.86	$350	20.70	14.72	10.89	8.16	$0	3.47	3.47	0.34	4.00	3.94	1.038	4.38	103.82
2017	2.91	$350	21.14	15.04	11.13	8.35	$0	3.57	3.57	0.40	4.16	4.05	1.057	4.44	105.75
2018	2.97	$350	21.59	15.36	11.37	8.52	$0	3.67	3.67	0.42	4.29	4.14	1.079	4.49	107.86
2019	3.02	$350	22.02	15.66	11.59	8.69	$0	3.73	3.73	0.44	4.36	4.22	1.099	4.88	109.87
2020	3.08	$350	22.49	16.00	11.85	8.88	$0	3.82	3.82	0.47	4.49	4.32	1.120	5.58	112.04
2021	3.15	$350	22.98	16.34	12.10	9.06	$0	3.91	3.91	0.49	4.60	4.41	1.143	5.98	114.34
2022	3.21	$350	23.43	16.66	12.33	9.24	$0	4.00	4.00	0.50	4.70	4.49	1.165	6.16	116.51
2023	3.27	$350	23.91	17.00	12.58	9.42	$0	4.07	4.07	0.53	4.80	4.58	1.187	6.65	118.71
2024	3.33	$350	24.37	17.33	12.82	9.60	$0	4.14	4.14	0.55	4.89	4.66	1.209	6.90	120.91
2025	3.39	$350	24.87	17.67	13.07	9.79	$0	4.22	4.22	0.56	4.98	4.75	1.233	7.07	123.26
2026	3.46	$350	25.38	18.04	13.34	9.98	$0	4.28	4.28	0.57	5.06	4.84	1.257	7.28	125.73
2027	3.53	$350	25.91	18.41	13.61	10.18	$0	4.34	4.34	0.58	5.13	4.92	1.282	7.44	128.23
2028	3.60	$350	26.44	18.78	13.89	10.38	$0	4.41	4.41	0.60	5.22	5.01	1.308	7.65	130.79
2029	3.67	$350	27.00	19.18	14.17	10.60	$0	4.48	4.48	0.61	5.31	5.11	1.334	7.95	133.42
2030	3.74	$350	27.55	19.56	14.46	10.81	$0	4.55	4.55	0.63	5.39	5.21	1.360	8.20	136.03
2031	3.82	$350	28.13	19.98	14.76	11.03	$0	4.62	4.62	0.65	5.48	5.31	1.388	8.48	138.81
2032	3.90	$350	28.74	20.41	15.07	11.26	$0	4.70	4.70	0.66	5.58	5.41	1.417	8.74	141.72
2033	3.98	$350	29.37	20.85	15.40	11.50	$0	4.78	4.78	0.68	5.68	5.52	1.447	8.98	144.73
2034	4.07	$350	30.03	21.31	15.74	11.75	$0	4.86	4.86	0.71	5.79	5.64	1.478	9.41	147.84
2035	4.15	$350	30.68	21.77	16.07	12.00	$0	4.94	4.94	0.72	5.89	5.75	1.510	9.65	150.98

				(Check Calc for Transp Rates)
Example of Calculations: 2015 Noncore Industrial *Average* Gas Price:				
Transportation Charge (¢/Thm):	**20.645**	**=**	**+ (93.63% Ind Dist of total Ind) * { [(100 ¢/$ *12 Mo/Yr)*($350.00 /mo/mtr)/(1,369,304 Thm/Mtr Ind Dist)]**	**17.619**
			+ (61.46%* 20.85 ¢/Thm + 38.54%* 14.78 ¢/Thm + 0.00%* 10.90 ¢/Thm + 0.00%* 8.13 ¢/Thm) }	
			+ (6.37% Ind Trans of total Ind) * { [(100 ¢/$ *12 Mo/Yr)*($0.00 /mo/mtr)/(2,161,248 Thm/Mtr Ind Trans)]	**0.219**
			+ (43.17%* 3.44 ¢/Thm+56.83%* 3.44¢/Thm) }	
			+ PPP Surcharge (¢/Thm):	**2.809**
Gas Commodity Price (¢/Thm):	**45.362**	**=**	**("CBSP", market price of gas at the SoCalGas City Gate)**	**20.647**
Gas Transp + Cmdty (¢/Thm):	**66.006**	**=**	**(at "GasPrices" worksheet AVERAGE price)**	
GHG "Adder" (¢/Thm):	**3.625**	=	**(37.46% of 2013 Noncore Ind Mkt "Self-Pay" * $12.20 CO2/ MT Nat Gas * 0.05302 Emissions MT/ Dth * 1 Dth/ 10 Th)**	
			+ (62.54% of 2013 Noncore Ind Mkt as "SCG Managed" * 1.92 ¢/ Thm)	
Customer's "Burner-Tip" Price:	**69.632**	**=**	**(20.645 + 45.362 + 3.625) ¢/Thm**	

Example of Calculations: 2015 Noncore Industrial *Marginal* Gas Price:				
Transportation Charge (¢/Thm):	**20.786**	**=**	**+ (93.63% Ind Dist of total Ind) * {(69.02%* 20.85 ¢/Thm + 30.98%* 14.78 ¢/Thm + 0.00%* 10.90 ¢/Thm + 0.00%* 8.13 ¢/Thm) }**	**17.761**
			+ (6.37% Ind Trans of total Ind) * { (20.54%* 3.44¢/Thm+79.56%* 3.44¢/Thm) }	**0.219**
			+ PPP Surcharge (¢/Thm):	**2.809**
Gas Commodity Price (¢/Thm):	**45.362**	**=**	**("CBSP", market price of gas at the SoCalGas City Gate)**	**20.790**
Gas Transp + Cmdty (¢/Thm):	**66.148**	**=**	**(at "GasPrices" worksheet MARGINAL price)**	
GHG "Adder" (¢/Thm):	**3.625**	=	**(37.46% of 2013 Noncore Ind Mkt "Self-Pay" * $12.20 CO2/ MT Nat Gas * 0.05302 Emissions MT/ Dth * 1 Dth/ 10 Th)**	
			+ (62.54% of 2013 Noncore Ind Mkt as "SCG Managed" * 1.92 ¢/ Thm)	
Customer's "Burner-Tip" Price:	**69.774**	**=**	**(20.786 + 45.362 + 3.625) ¢/Thm**	

WP_Com_NCore_13_Source_Data(Linked_03May2014)_Part2.xls - CGR_Employment_Data

YEAR	Office	Restaurant	Retail	Laundry	Warehouse	School	College	Health	Lodging	Misc	Governmen	TCU	Constructic	Agriculture	EMPLTOT
2013	1.54768	0.65405	0.93714	0.08682	0.43651	0.60622	0.20207	0.83227	0.13032	0.21225	0.61076	0.50411	0.31487	0.22486	7.29992
2014	1.57970	0.66442	0.95196	0.08773	0.44620	0.60470	0.20157	0.84886	0.13421	0.21449	0.60684	0.50970	0.33370	0.22135	7.40542
2015	1.64396	0.66914	0.95873	0.08708	0.45675	0.60810	0.20270	0.86682	0.13656	0.21291	0.60798	0.51720	0.37135	0.22468	7.56394
2016	1.68704	0.67508	0.96723	0.08672	0.46888	0.61517	0.20506	0.89104	0.13845	0.21202	0.61132	0.53424	0.41548	0.23008	7.73781
2017	1.71724	0.68061	0.97516	0.08698	0.48060	0.62306	0.20769	0.91558	0.14032	0.21265	0.61608	0.54908	0.44698	0.23308	7.88511
2018	1.73618	0.68092	0.97560	0.08696	0.48912	0.63236	0.21079	0.93783	0.14166	0.21261	0.62190	0.55970	0.45978	0.23502	7.98042
2019	1.75791	0.67930	0.97328	0.08649	0.49468	0.64071	0.21357	0.95363	0.14225	0.21147	0.62721	0.56636	0.46581	0.23575	8.04842
2020	1.78089	0.67574	0.96819	0.08593	0.49869	0.64901	0.21634	0.96334	0.14232	0.21009	0.63952	0.57125	0.47218	0.23570	8.10921
2021	1.79857	0.67056	0.96076	0.08555	0.50079	0.65780	0.21927	0.97187	0.14217	0.20916	0.64080	0.57535	0.47669	0.23553	8.14487
2022	1.82249	0.66573	0.95385	0.08526	0.50330	0.66685	0.22228	0.98023	0.14196	0.20845	0.64741	0.57955	0.48079	0.23562	8.19378
2023	1.85069	0.66087	0.94688	0.08491	0.50545	0.67573	0.22524	0.98804	0.14159	0.20759	0.65364	0.58288	0.48667	0.23594	8.24611
2024	1.87967	0.65727	0.94172	0.08471	0.50789	0.68491	0.22830	0.99437	0.14132	0.20710	0.66038	0.58619	0.49365	0.23618	8.30366
2025	1.90852	0.65550	0.93918	0.08474	0.51117	0.69234	0.23078	1.00214	0.14110	0.20718	0.66588	0.58879	0.50281	0.23632	8.36645
2026	1.93640	0.65654	0.94067	0.08495	0.51423	0.69722	0.23241	1.01239	0.14127	0.20768	0.66926	0.59101	0.51320	0.23656	8.43378
2027	1.96502	0.65885	0.94399	0.08525	0.51704	0.70194	0.23398	1.02404	0.14195	0.20842	0.67251	0.59210	0.52377	0.23691	8.50578
2028	1.99186	0.66241	0.94909	0.08567	0.51655	0.70668	0.23556	1.03712	0.14300	0.20944	0.67576	0.59399	0.53328	0.23740	8.57780
2029	2.01794	0.66569	0.95379	0.08594	0.51649	0.71151	0.23717	1.04995	0.14417	0.21012	0.67907	0.59630	0.54332	0.23800	8.64946
2030	2.04572	0.66888	0.95836	0.08612	0.51539	0.71558	0.23853	1.06255	0.14523	0.21055	0.68763	0.59863	0.55536	0.23856	8.72707
2031	2.07112	0.67178	0.96250	0.08618	0.51412	0.71885	0.23962	1.07540	0.14627	0.21069	0.68457	0.60070	0.56530	0.23904	8.78613
2032	2.09813	0.67483	0.96688	0.08633	0.51202	0.72237	0.24079	1.08870	0.14736	0.21105	0.68682	0.60266	0.56968	0.23945	8.84708
2033	2.12566	0.67820	0.97170	0.08662	0.51112	0.72597	0.24199	1.10226	0.14851	0.21176	0.68907	0.60343	0.57311	0.23990	8.90930
2034	2.15341	0.68167	0.97668	0.08686	0.50971	0.72967	0.24322	1.11615	0.14959	0.21236	0.69139	0.60460	0.57921	0.24015	8.97468
2035	2.18039	0.68498	0.98142	0.08706	0.50863	0.73328	0.24443	1.12840	0.15062	0.21284	0.69361	0.60484	0.58970	0.24024	9.04045
AvgAnn Gwth (2013-2035)	1.6%	0.2%	0.2%	0.0%	0.7%	0.9%	0.9%	1.4%	0.7%	0.0%	0.6%	0.8%	2.9%	0.3%	1.0%

WP_Com_NCore_13_Source_Data(Linked_03May2014)_Part2.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

WP_Com_NCore_13_Source_Data(Linked_03May2014)_Part2.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

WP_Com_NCore_13_Source_Data(Linked_03May2014)_Part2.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

WP_Com_NCore_13_Source_Data(Linked_03May2014)_Part2.xls ComNCoreUsePerMeterAvg

Sector	Space Heater	Water Heater	Cooktop	Griddle	Fryer	Other Cooking Equipment	Kitchen Equipment	AC	Dryer	Engine	Other	Total Building
Office	222982	92578	11291	3754	2864	11680	2505	3822	11115	3176	222330	588097
Restaurant	35919	69523	116038	47736	91672	101429	24698	1431	640	0	22794	511880
Retail	115353	70064	25511	4248	28415	48983	30291	6721	12917	1032	159841	503377
Laundry	2069	32903	270	42	67	391	2	62	330524	0	307766	674097
Warehouse	101502	29487	4195	1169	10110	11625	14862	11550	33754	10027	326608	554890
School	0	0	0	0	0	0	0	0	0	0	0	0
College	534596	264059	25796	7610	13230	31754	7339	33415	8104	11356	363587	1300845
Health	279109	174890	28030	5429	7615	21556	12192	5052	38395	2863	295103	870233
Lodging	90524	184900	25521	6229	7976	31078	15297	1496	48171	31	208983	620206
Misc	116292	71024	14380	2871	4732	11820	3778	11974	4598	882	78487	320838
Government	320346	186235	16368	8066	4788	13473	7308	8552	4320	47314	125530	742300
TCU	104224	37469	3300	820	1556	2890	1974	5091	321	163525	172877	494047
Construction	42461	13270	1066	6	158	592	363	1259	7939	27	62641	129782
Agriculture	125039	30294	5145	859	10701	23795	21633	294	31535	206759	417484	873538

WP_Com_NCore_13_Source_Data(Linked_03May2014)_Part2.xls - 2013_Historical_Data_Agg

Segment	2013 Therm Sales	2013 Meter Count	2013 Meter Count, Existing/Old customers	2013 Meter Count New Customers	Avg Use Per Meter Existing Customers	Avg Use Per Meter New Customers	Price Elasticity	Employment Elasticities	MAS SQFT ADJ
Office + Restaurant + Retail + Laundry	12,055,964	19	19	0	2277450	0	-0.046000	0.474000	6881366
Warehouse + School + College	21,923,300	18	18	0	1855735	0	-0.046000	0.474000	10064926
Health	73,099,534	84	84	0	870233	0	-0.046000	0.474000	1707720
Lodging + Misc	10,864,347	18	18	0	941045	0	-0.046000	0.474000	14736871
Government	25,238,208	34	34	0	742300	0	-0.046000	0.474000	3533422
TCU	18,279,750	37	37	0	494047	0	-0.046000	0.474000	2992940
Construction + Agriculture	20,221,165	24	24	0	1003321	0	-0.046000	0.474000	2571346
Total	181,682,269	234							

Adjustment for Normal Year Year

Normal Year HDD	**1,384**	HDD
Actual **2013** HDD	**1,210**	HDD
HDD Difference	174	HDD
Load per HDD	14,773	Therm/HDD
Temperature Adj.	2,570,551	Therms

	Actual 2011	Ratio
Office + Restaurant + Retail + Laundry	11,885,389	6.64%
Warehouse + School + College	21,613,116	12.07%
Health	72,065,277	40.23%
Lodging + Misc	10,710,632	5.98%
Government	24,881,123	13.89%
TCU	18,021,117	10.06%
Construction + Agriculture	19,935,064	11.13%
G30 Commercial	179,111,718	181,682,269

WP_Ind_NCore_13_Source_Data(Linked_03May2014)_Part3.xls - IndNonCoreEmpFcast

YEAR	Mining	Food	Textile	Wood_Pape	Chemical	Petroleum	Stone	Prim_Metal	Fab_Metal	Transport	Misc	EMPLTOT
2013	22.95125	105.88214	10.62842	27.13929	47.31777	8.22669	16.89167	12.65822	85.26191	72.70215	322.83339	732.49291
2014	23.41232	105.67931	10.31836	28.81897	48.27259	8.30192	18.02406	12.89382	90.00046	73.80595	326.85782	746.38557
2015	23.76583	106.59043	10.03597	31.38914	48.82000	8.27778	19.03399	13.12884	94.01444	75.73530	324.90394	755.69564
2016	24.16604	107.03945	9.71437	33.45562	49.36549	8.12541	19.81799	13.42573	97.41352	76.51259	321.78819	760.82440
2017	24.48151	107.69735	9.40038	34.08089	49.94997	7.96066	19.83929	13.76094	99.13294	75.29015	321.62066	763.21475
2018	24.80685	109.16412	9.15378	34.06495	50.73050	7.84129	19.70370	13.94228	99.29878	74.53690	322.96893	766.21208
2019	24.79671	110.17568	8.87667	34.43579	50.94185	7.71382	19.58045	14.01512	99.67102	73.41342	323.34365	766.96417
2020	24.70121	110.78820	8.53158	34.86095	50.67123	7.57169	19.33142	13.97251	100.08230	71.43899	322.70929	764.65936
2021	24.81137	111.00174	8.15293	34.76366	50.23105	7.39093	18.97019	13.87373	100.26870	69.53390	321.80597	760.80418
2022	25.02076	110.90357	7.76599	34.49987	49.67807	7.19081	18.60040	13.78128	100.37812	67.68235	320.71217	756.21339
2023	24.82148	110.82019	7.38991	34.67376	49.28323	6.99897	18.30741	13.68973	100.38638	66.04910	319.94459	752.36474
2024	24.56032	110.93660	7.17123	34.96214	48.82528	6.82353	18.07923	13.59582	100.34297	64.73896	319.13244	749.16851
2025	24.33733	110.87146	7.06849	35.11589	48.30238	6.66292	17.88585	13.45734	99.74650	63.89176	316.50384	743.84375
2026	24.12245	110.78444	7.01328	35.21042	47.77984	6.52313	17.74993	13.22883	98.38306	63.57403	313.07451	737.44392
2027	23.90432	110.57159	6.93674	34.89771	47.22737	6.38579	17.70355	12.94972	96.66139	63.21939	310.06793	730.52550
2028	23.71073	110.36572	6.85275	34.41263	46.70207	6.26106	17.59874	12.63136	94.92321	62.79370	307.29405	723.54600
2029	23.52151	110.23029	6.78610	34.19043	46.25321	6.15196	17.48445	12.32268	93.15748	62.30501	304.39199	716.79511
2030	23.28696	110.03975	6.72842	34.33975	45.85552	6.03335	17.45551	12.01141	91.70170	61.72224	301.55902	710.73363
2031	23.04900	109.87173	6.65810	34.34808	45.39193	5.90892	17.41131	11.71851	90.78115	61.18945	299.33931	705.66749
2032	22.86129	109.61834	6.58923	33.64343	44.90705	5.78025	17.22487	11.41093	89.92279	60.75671	297.84849	700.56337

WP_Ind_NCore_13_Source_Data(Linked_03May2014)_Part3.xls - IndNonCoreUsePerMeterAvg

Segment	Fire_Tube_Boil	Wat_Tube_Boil	Space_Heat	Water_Heat	Dryer	Furnace_Oven_Kiln	AC	Engine	Misc_Other	Total
Mining	73968	292815	3806	2267	196557	515123	0	21363	10269	1116169
Food	879689	238082	9519	12401	327015	80205	905	2641	62989	1613447
Textile	561310	77246	4634	14743	256698	81330	0	8502	34633	1039097
Wood_Paper	238889	599897	102	418	89197	51260	0	0	37306	1017069
Chemical	582864	182417	4094	2846	0	28208	9374	0	340155	1149959
Petroleum	40420	0	18141	1399	153134	487334	0	0	50444	750871
Stone	63924	0	9909	1794	40250	1666353	0	0	80370	1862599
Prim_Metal	57877	207721	6522	750	68558	2561680	234	0	247293	3150634
Fab_Metal	129500	13603	17613	1828	2863	772922	58	1076	153166	1092630
Transport	97213	145769	29606	3100	1728	814183	229	0	142769	1234598
Misc	257066	85196	10430	10908	19108	177124	4	0	163937	723772

WP_Ind_NCore_13_Source_Data(Linked_03May2014)_Part3.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

WP_Ind_NCore_13_Source_Data(Linked_03May2014)_Part3.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%

WP_Ind_NCore_13_Source_Data(Linked_03May2014)_Part3.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%

WP_Ind_NCore_13_Source_Data(Linked_03May2014)_Part3.xls - IndNonCoreAvgEQAge

Segment	Fire_Tube_Boil	Wat_Tube_Boil	Space_Heat	Water_Heat	Dryer	Furnace_Oven_ Kiln	AC	Engine	Misc_Other
Mining	1978.50	1976.00	1971.00	1989.00	1972.60	1971.75	.	1984.50	1971.50
Food	1981.14	1979.00	1978.44	1979.54	1983.50	1977.64	1998.50	1988.50	1976.33
Textile	1977.00	1975.25	.	1980.00	1988.00	1975.00	1990.00	.	1971.00
Wood_Paper	1979.60	1974.64	1975.00	1975.00	1981.40	1977.00	.	1968.00	1980.80
Chemical	1985.20	1976.00	1978.14	1985.00	1986.00	1979.00	1996.00	.	1983.21
Petroleum	1970.00	.	1980.25	1981.50	1967.87	1988.00	.	.	1967.86
Stone	1976.00	.	1984.33	1982.00	1978.25	1975.50	.	.	1966.50
Prim_Metal	1989.50	1974.83	1974.20	1982.88	1988.50	1982.13	1975.00	.	1978.73
Fab_Metal	1973.50	1972.00	1975.50	1981.33	1976.00	1980.05	1998.00	.	1978.05
Transport	1976.50	1989.00	1970.33	1976.00	.	1981.20	1976.00	.	1982.00
Misc	1979.92	1978.00	1978.31	1981.80	1984.33	1979.77	.	.	1983.71

WP_Ind_NCore_13_Source_Data(Linked_03May2014)_Part3.xls - 2013_Historical_Data_Agg

Segment	2013 Therm Sales	2013 Meter Count	2013 Meter Count, Existing/Old customers	2013 Meter Count New Customers	Avg Use Per Meter Existing Customers	Avg Use Per Meter New Customers	Price Elasticity	Emp Elasticity	MAS SQFT ADJ	Initial SQFT Calibration	Initial SQFT
Mining	18,974,874	17	17	0	1116169	.	-0.071000	0.474000	13.2900	177.2025	8539
Food	186,290,907	100	100	0	1613447	.	-0.071000	0.474000	12.7700	116.3474	2356
Textile	22,860,123	22	22	0	1039097	.	-0.071000	0.474000	13.0200	271.4589	11002
Wood_Paper	30,512,080	30	30	0	1017069	.	-0.071000	0.474000	8.3700	11.8754	3237
Chemical	33,348,798	29	29	0	1149959	.	-0.071000	0.474000	17.2700	728.2737	17662
Petroleum	30,785,717	41	41	0	750871	.	-0.071000	0.474000	3.7300	0.3081	47145
Stone	31,664,188	17	17	0	1862599	.	-0.071000	0.474000	6.2300	40.1230	42397
Prim_Metal	69,313,937	22	22	0	3150634	.	-0.071000	0.474000	20.0200	184.5367	15764
Fab_Metal	45,890,445	42	42	0	1092630	.	-0.071000	0.474000	9.0100	16.8171	21333
Transport	19,753,566	16	16	0	1234598	.	-0.071000	0.474000	7.9900	966.3551	6969
Misc	19,541,832	27	27	0	723772	.	-0.071000	0.474000	9.4800	226.5333	17929
Total	508,936,467	363									

No temperature adjustment since the weather coefficient is "small" and statistically not significant (i.e., Coeff=1,500 Therms/HDD & ABS(T-Stat) = 1.89 and < 2.00).
(Soruce: See tab "g30Ind-Reg#2(w_HDD)" of file: "S:\End_Use_Model\BMW\2010Cgr\SoCalGas-g30-g50\g30-g50_LoadWeatherSensitivity.xls")

WP_g30-g50_LoadWeatherSensitivity_Part4.xls(Seasonal-WeatherFactor-BMW)

Weather Sensitivity Factor (MTherm)

	Date	Actual G30 Commercial	Calendar HDD	Yr_06	Yr_07	Yr_08	M_01	M_02	M_03	M_04	M_05	M_06	M_07	M_09	M_10	M_11	M_12	M_08
2006	Jan-06	2,228	271	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
2006	Feb-06	1,971	203	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2006	Mar-06	2,288	341	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
2006	Apr-06	1,935	161	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
2006	May-06	1,703	32	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
2006	Jun-06	1,496	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
2006	Jul-06	1,491	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
2006	Aug-06	1,536	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2006	Sep-06	1,656	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
2006	Oct-06	1,929	39	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2006	Nov-06	1,784	103	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2006	Dec-06	2,247	272	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
2007	Jan-07	2,286	345	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
2007	Feb-07	1,858	213	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
2007	Mar-07	1,833	131	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
2007	Apr-07	1,724	122	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
2007	May-07	1,610	52	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
2007	Jun-07	1,443	15	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
2007	Jul-07	1,364	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
2007	Aug-07	1,451	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
2007	Sep-07	1,700	11	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0
2007	Oct-07	1,596	40	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
2007	Nov-07	1,639	124	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0
2007	Dec-07	2,095	351	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
2008	Jan-08	2,164	346	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
2008	Feb-08	1,930	263	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
2008	Mar-08	1,801	153	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0
2008	Apr-08	1,678	124	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
2008	May-08	1,643	81	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0
2008	Jun-08	1,474	6	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0
2008	Jul-08	1,649	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0
2008	Aug-08	1,724	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
2008	Sep-08	1,986	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0
2008	Oct-08	1,665	23	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0
2008	Nov-08	1,711	74	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0
2008	Dec-08	2,170	334	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
2009	Jan-09	2,010	191	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
2009	Feb-09	1,876	259	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
2009	Mar-09	1,903	197	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
2009	Apr-09	1,692	135	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
2009	May-09	1,525	21	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
2009	Jun-09	1,435	14	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
2009	Jul-09	1,520	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
2009	Aug-09	1,715	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2009	Sep-09	1,945	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
2009	Oct-09	1,759	41	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
2009	Nov-09	1,711	116	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2009	Dec-09	2,118	316	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0

2006	22,264	1,422		
2007	20,600	1,404	-3.6	-5.7%
2008	21,594	1,404	-11.3	-18.9%
2009	21,208	1,291	-5.5	-11.3%

WP_g30-g50_LoadWeatherSensitivity_Part4.xls(G30Com-Reg#2(w_Hdd))

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.947573327
R Square	0.897895209
Adjusted R Square	0.850033589
Standard Error	95.67370896
Observations	48 **(Jan-2006 through Dec-2009)**

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	15	2575815.393	171721.0262	18.76023413	9.91636E-12
Residual	32	292910.6748	9153.458586		
Total	47	2868726.068			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept (Yr_09, M_08)	1599.9	53.6	29.86	6.10228E-25	1490.8	1709.0
Calendar HDD	**1.5**	**0.4**	**3.57**	0.001154131	0.6	2.3
Yr_06	71.9	39.3	1.83	0.076912182	-8.2	152.0
Yr_07	-64.5	39.3	-1.64	0.110096002	-144.5	15.4
Yr_08	18.3	39.3	0.47	0.644801727	-61.7	98.2
M_01	140.0	137.2	1.02	0.31491605	-139.3	419.4
M_02	-43.8	118.3	-0.37	0.713767399	-284.8	197.2
M_03	46.4	108.7	0.43	0.672490607	-175.0	267.7
M_04	-49.3	87.9	-0.56	0.579040859	-228.3	129.7
M_05	-54.8	70.3	-0.78	0.442005686	-198.0	88.5
M_06	-157.4	67.7	-2.32	0.026714509	-295.4	-19.4
M_07	-100.7	67.7	-1.49	0.146312396	-238.5	37.1
M_09	211.3	67.7	3.12	0.003781287	73.5	349.2
M_10	78.1	69.3	1.13	0.268077014	-63.0	219.1
M_11	-49.3	80.2	-0.61	0.543496182	-212.7	114.2
M_12	80.8	148.1	0.55	0.589072357	-220.8	382.4

RESIDUAL OUTPUT

Observation	Predicted Y-ComReg#2(w Hdd)	Residuals-ComReg#2(w Hdd)	Standard Residuals	Date
1	2212.2	16.2	0.205	Jan-06
2	1927.9	43.6	0.552	Feb-06
3	2221.9	66.1	0.837	Mar-06
4	1860.4	74.8	0.948	Apr-06
5	1664.3	38.4	0.486	May-06
6	1514.4	-18.6	-0.236	Jun-06
7	1571.1	-79.8	-1.011	Jul-06
8	1671.8	-136.2	-1.725	Aug-06
9	1883.1	-226.9	-2.875	Sep-06
10	1807.5	121.5	1.539	Oct-06
11	1774.7	9.0	0.113	Nov-06
12	2154.4	92.1	1.167	Dec-06
13	2185.1	101.4	1.284	Jan-07
14	1806.3	51.8	0.656	Feb-07
15	1775.3	57.5	0.729	Mar-07
16	1666.4	57.6	0.729	Apr-07
17	1557.5	53.0	0.671	May-07
18	1400.2	42.4	0.537	Jun-07
19	1434.7	-70.2	-0.890	Jul-07
20	1535.4	-84.4	-1.070	Aug-07
21	1763.0	-62.7	-0.794	Sep-07
22	1672.6	-76.5	-0.969	Oct-07
23	1669.3	-30.4	-0.385	Nov-07
24	2134.8	-39.4	-0.499	Dec-07
25	2269.4	-105.2	-1.332	Jan-08
26	1962.9	-33.0	-0.419	Feb-08
27	1890.6	-89.1	-1.129	Mar-08
28	1752.1	-74.3	-0.941	Apr-08
29	1683.1	-40.1	-0.508	May-08
30	1469.7	4.6	0.059	Jun-08
31	1517.5	131.1	1.661	Jul-08
32	1618.2	105.4	1.335	Aug-08
33	1829.5	156.2	1.979	Sep-08
34	1730.2	-65.4	-0.828	Oct-08
35	1678.2	32.4	0.411	Nov-08
36	2192.4	-22.7	-0.288	Dec-08
37	2022.1	-12.4	-0.157	Jan-09
38	1938.8	-62.3	-0.790	Feb-09
39	1937.3	-34.5	-0.437	Mar-09
40	1750.1	-58.1	-0.736	Apr-09
41	1576.2	-51.2	-0.649	May-09
42	1463.2	-28.4	-0.359	Jun-09
43	1500.7	19.0	0.240	Jul-09
44	1599.9	115.2	1.459	Aug-09
45	1811.2	133.4	1.690	Sep-09
46	1738.5	20.4	0.259	Oct-09
47	1722.0	-11.0	-0.139	Nov-09
48	2147.6	-30.0	-0.380	Dec-09

2014 CALIFORNIA GAS REPORT

NATURAL GAS VEHICLES
JULY 2014

The Gas Company

A Sempra Energy utility™

SoCalGas and SDG&E 2014 CGR forecast summary and methodologies

SoCalGas Forecast:
Throughput is expected to double in the next 21 years, from 11,686 MDtherms to 23,969 MDtherms.
Compound average growth rate (CAGR) over the 21 years is 3.32%, or 5.4 mil therms per year.
Station growth will be from 289 at the end of 2013 to 648 at the end of 2035, an average of
16 stations per year.

Methodologies:
Determine the throughput CAGR for 2008 through 2013 - 5.39%. Determine the CAGR for the percentage change in throughput for the years 2008 through 2013 - (-6.67%).
Apply the 5.39% growth at a declining rate of 6.67% per year 2014 through 2035. Also add the prorated 5.5 mil therms from Swift Trucking which is expected Oct 2014 through Sept 2015,
and another 1.5 mil therms from Oct 2015 through Sept 2016 (total of 7.0 mil therms for Swift).
Determine the stations CAGR over 2008 through 2013 - 8.08%. Determine the CAGR of the yearly percentage change in stations - (-8.33%).
Apply the 8.08% growth at a declining rate of 8.33% per year 2014 through 2035,
resulting in adding 16 stations per year.

SDG&E Forecast:
Throughput is expected to triple in the next 21 years, from 1,423.6 MDtherms to 4,670.4 MDtherms.
Compound average growth rate (CAGR) over the 21 years is 5.45%, or 1.5 mil therms per year.
Station growth will be from 31 at the end of 2013 to 57 at the end of 2035, an average of
one station per year.

Methodologies:
Determine the throughput CAGR for 2008 through 2013 - 5.5%. Determine the CAGR
for the percentage change in throughput for the years.
2008 through 2013 - 50.9% (percentage growth is abnormal). Apply the 5.5% growth rate per year, 2014 through 2035.
Determine the stations CAGR over 2008 through 2013 - 2.8%. Apply the 2.8% growth
per year 2014 through 2035, resulting in adding one station per year.

SoCalGas compressed, uncompressed and Transportation only throughput forecast 2013 throu

YEAR	MDTH1	MDTH2	MDTH3	MDTH4	MDTH5	MDTH6	MDTH7	MDTH8	MDTH9	MDTH10	MDTH11	MDTH12	TOTAL	RATE	NGVTYPE
	5%	7%								45.83	12.5				
2013	20	18	20	21	22	18	19	20	20	23	20	20	240	GNV	C
2014	21	19	22	22	23	19	20	21	21	24	21	21	253	GNV	C
2015	22	20	23	23	24	20	21	22	22	25	22	22	266	GNV	C
2016	23	21	24	24	25	21	22	23	23	26	23	23	279	GNV	C
2017	24	22	25	25	26	22	23	24	24	28	24	24	291	GNV	C
2018	25	23	26	26	27	22	24	25	25	29	25	25	303	GNV	C
2019	26	24	27	27	28	23	25	26	26	30	26	26	314	GNV	C
2020	27	24	28	28	29	24	26	27	27	31	27	27	326	GNV	C
2021	28	25	29	29	30	25	27	28	28	32	28	28	336	GNV	C
2022	29	26	29	30	31	26	27	29	29	33	29	29	347	GNV	C
2023	30	27	30	30	32	26	28	30	29	34	30	30	357	GNV	C
2024	31	28	31	31	33	27	29	30	30	35	31	31	367	GNV	C
2025	32	28	32	32	34	28	30	31	31	36	31	32	376	GNV	C
2026	32	29	33	33	34	29	30	32	32	37	32	32	385	GNV	C
2027	33	30	33	34	35	29	31	33	32	37	33	33	393	GNV	C
2028	34	30	34	34	36	30	32	33	33	38	34	34	401	GNV	C
2029	34	31	35	35	37	30	32	34	34	39	34	34	409	GNV	C
2030	35	31	35	36	37	31	33	35	34	40	35	35	416	GNV	C
2031	36	32	36	36	38	31	33	35	35	40	35	35	423	GNV	C
2032	36	32	37	37	38	32	34	36	35	41	36	36	430	GNV	C
2033	37	33	37	37	39	32	35	36	36	41	36	37	436	GNV	C
2034	37	33	38	38	40	33	35	37	36	42	37	37	442	GNV	C
2035	38	34	38	38	40	33	35	37	37	42	37	38	448	GNV	C
2013	917	848	919	792	818	750	799	799	777	834	742	755	9,749	GNV	U
2014	966	894	968	835	862	790	842	842	819	925	828	841	10,412	GNV	U
2015	1,060	985	1,063	923	952	876	930	930	906	984	882	896	11,387	GNV	U
2016	1,123	1,044	1,125	979	1,009	930	986	987	961	1,030	923	938	12,034	GNV	U
2017	1,172	1,089	1,175	1,022	1,053	970	1,029	1,030	1,003	1,075	964	979	12,562	GNV	U
2018	1,220	1,134	1,223	1,064	1,096	1,010	1,071	1,072	1,044	1,119	1,003	1,020	13,076	GNV	U
2019	1,267	1,177	1,270	1,104	1,138	1,049	1,112	1,113	1,084	1,162	1,042	1,058	13,576	GNV	U
2020	1,312	1,219	1,315	1,144	1,179	1,086	1,152	1,153	1,122	1,203	1,079	1,096	14,060	GNV	U
2021	1,356	1,260	1,359	1,182	1,218	1,122	1,190	1,191	1,160	1,243	1,115	1,133	14,528	GNV	U
2022	1,398	1,299	1,401	1,218	1,256	1,157	1,227	1,228	1,196	1,282	1,150	1,168	14,980	GNV	U
2023	1,438	1,337	1,441	1,254	1,292	1,191	1,263	1,264	1,230	1,319	1,183	1,202	15,414	GNV	U
2024	1,477	1,373	1,480	1,288	1,327	1,223	1,297	1,298	1,264	1,355	1,215	1,234	15,831	GNV	U
2025	1,514	1,408	1,518	1,320	1,361	1,254	1,330	1,331	1,296	1,389	1,246	1,266	16,231	GNV	U
2026	1,550	1,441	1,554	1,351	1,393	1,283	1,361	1,362	1,326	1,422	1,275	1,295	16,614	GNV	U
2027	1,584	1,473	1,588	1,381	1,424	1,312	1,391	1,392	1,355	1,453	1,303	1,324	16,980	GNV	U
2028	1,617	1,503	1,621	1,409	1,453	1,339	1,420	1,421	1,383	1,483	1,330	1,351	17,329	GNV	U
2029	1,648	1,532	1,652	1,437	1,481	1,364	1,447	1,448	1,410	1,511	1,355	1,377	17,661	GNV	U

2030	1,677	1,559	1,681	1,462	1,507	1,389	1,473	1,474	1,435	1,538	1,380	1,402	17,978	GNV	U
2031	1,705	1,585	1,709	1,487	1,532	1,412	1,498	1,499	1,459	1,564	1,403	1,425	18,278	GNV	U
2032	1,732	1,610	1,736	1,510	1,556	1,434	1,521	1,522	1,482	1,589	1,425	1,447	18,563	GNV	U
2033	1,757	1,633	1,761	1,532	1,579	1,455	1,543	1,544	1,503	1,612	1,445	1,468	18,834	GNV	U
2034	1,781	1,656	1,785	1,553	1,601	1,475	1,564	1,565	1,524	1,634	1,465	1,488	19,089	GNV	U
2035	1,804	1,677	1,808	1,572	1,621	1,493	1,584	1,585	1,543	1,654	1,483	1,507	19,332	GNV	U
2013	10	10	9	163	176	158	169	197	203	218	193	192	1,697	GNV	UT
2014	195	195	223	172	185	166	178	208	214	230	203	203	2,371	GNV	UT
2015	205	204	234	180	195	175	187	218	225	241	213	213	2,490	GNV	UT
2016	215	214	245	189	204	183	195	229	235	253	223	223	2,607	GNV	UT
2017	224	223	256	197	213	191	204	239	246	264	233	233	2,722	GNV	UT
2018	233	233	266	205	222	199	212	248	256	275	243	242	2,833	GNV	UT
2019	242	241	276	213	230	206	220	258	265	285	252	251	2,941	GNV	UT
2020	251	250	286	221	238	214	228	267	275	295	261	260	3,046	GNV	UT
2021	259	258	296	228	246	221	236	276	284	305	270	269	3,148	GNV	UT
2022	267	266	305	235	254	228	243	285	293	315	278	277	3,246	GNV	UT
2023	275	274	314	242	261	234	250	293	301	324	286	286	3,340	GNV	UT
2024	282	282	322	248	268	241	257	301	309	333	294	293	3,430	GNV	UT
2025	289	289	330	255	275	247	263	308	317	341	301	301	3,517	GNV	UT
2026	296	295	338	261	282	253	270	316	325	349	308	308	3,600	GNV	UT
2027	303	302	346	266	288	258	276	323	332	357	315	315	3,679	GNV	UT
2028	309	308	353	272	294	264	281	329	339	364	322	321	3,755	GNV	UT
2029	315	314	359	277	299	269	287	335	345	371	328	327	3,827	GNV	UT
2030	321	320	366	282	305	273	292	341	351	378	334	333	3,895	GNV	UT
2031	326	325	372	287	310	278	297	347	357	384	339	339	3,960	GNV	UT
2032	331	330	378	291	315	282	301	353	363	390	345	344	4,022	GNV	UT
2033	336	335	383	296	319	286	306	358	368	396	350	349	4,081	GNV	UT
2034	340	339	388	300	323	290	310	363	373	401	354	354	4,136	GNV	UT
2035	345	344	393	303	328	294	314	367	378	406	359	358	4,189	GNV	UT

SoCalGas station growth 2013 through 2035

Station Forecast	No. of Stations	Stations added per year	Average Stations per Year	Station growth Rate	0
2013	289	23		8.08%	-0.083309
2014	312	23			
2015	335	23			
2016	358	22			
2017	381	22			
2018	402	21			

2019	423	20	
2020	444	19	
2021	463	19	
2022	482	18	
2023	499	17	
2024	516	16	
2025	532	15	
2026	547	14	
2027	562	13	
2028	575	13	
2029	588	12	
2030	600	11	
2031	611	10	
2032	621	10	16
2033	631	9	
2034	639	8	
2035	648	8	
2036	655	(655)	

Throughput forecast methodoloy.

Years	Total Volume	Yearly Volume	Yearly Percentage	CAGR (2008 -
	MM CCF	MM CCF	%	
2013	113.3	6.26	5.85%	0.0539346
2012	107.04	6.25	6.20%	-0.06667882
2011	100.79	2.1	2.13%	
2010	98.69	2.9	3.03%	12.5
2009	95.79	3.97	4.32%	45.83
2008	91.82	9.15	11.07%	
2007	82.67	6.72	8.85%	
2006	75.95	n/a	#VALUE!	

Debbie Liou provided from CSD

Year	Mcf	Therms
2007	8,267,231	84,821,790
2008	9,182,139	94,208,746
2009	9,578,723	98,277,698
2010	9,868,510	101,250,913
2011	10,078,659	103,407,041
2012	10,704,124	109,824,312
2013	11,329,676	116,242,476

Year	**MDtherms**	**CAGR 2013-2035**
2013	11,686	
2035	23,969	3.32%

Station count forecast methodology.

					Average % change	CAGR
NGV Station Count					-0.0833	0.0808
Year	Historical Station count	Private stations	yearly change	% change		
2013	289			0.08646617		
2012	266			0.0390625		
2011	256	182	22	0.09401709		
2010	234	166	14	0.06363636		
2009	220	155	24	0.12244898		
2008	196	137	n/a	#DIV/0!		
Count Forecast						
2013	289					
2014	312		23.34			
2015	335		23.12			
2016	358		22.77			
2017	381		22.28			
2018	402		21.70			
2019	423		21.03			
2020	444		20.28			
2021	463		19.48			
2022	482		18.64			
2023	499		17.78			
2024	516		16.90			
2025	532		16.02			
2026	547		15.14			
2027	562		14.27			
2028	575		13.42			
2029	588		12.60			
2030	600		11.80	16		
2031	611		11.04			
2032	621		10.30			

2033	631
2034	639
2035	648
2035	656

9.60
8.94
8.31

2013	11686
2035	22939

0.055487

SDG&E compressed, uncompressed, and transportation only throughput forecast 2013 through 2035 in MDTH

YEAR	MDTH1	MDTH2	MDTH3	MDTH4	MDTH5	MDTH6	MDTH7	MDTH8	MDTH9	MDTH10	MDTH11
2013	8.51	8.65	8.55	9.79	10.14	10.65	10.18	11.09	8.88	11.47	10.52
2014	8.98	9.13	9.03	10.34	10.70	11.24	10.74	11.71	9.38	12.11	11.10
2015	9.48	9.63	9.53	10.91	11.30	11.87	11.34	12.35	9.90	12.78	11.72
2016	10.00	10.17	10.06	11.51	11.92	12.52	11.97	13.04	10.45	13.49	12.37
2017	10.56	10.73	10.61	12.15	12.58	13.22	12.63	13.76	11.03	14.24	13.05
2018	11.15	11.33	11.20	12.83	13.28	13.95	13.33	14.53	11.64	15.03	13.78
2019	11.76	11.96	11.82	13.54	14.02	14.73	14.07	15.33	12.28	15.86	14.54
2020	12.42	12.62	12.48	14.29	14.80	15.54	14.86	16.18	12.97	16.74	15.35
2021	13.11	13.32	13.17	15.08	15.62	16.41	15.68	17.08	13.68	17.67	16.20
2022	13.83	14.06	13.90	15.92	16.49	17.32	16.55	18.03	14.44	18.65	17.10
2023	14.60	14.84	14.68	16.80	17.40	18.28	17.47	19.03	15.25	19.69	18.05
2024	15.41	15.66	15.49	17.74	18.37	19.29	18.44	20.09	16.09	20.78	19.05
2025	16.27	16.53	16.35	18.72	19.39	20.36	19.46	21.20	16.98	21.93	20.11
2026	17.17	17.45	17.26	19.76	20.46	21.49	20.54	22.38	17.93	23.15	21.22
2027	18.12	18.42	18.21	20.85	21.60	22.68	21.68	23.62	18.92	24.43	22.40
2028	19.13	19.44	19.22	22.01	22.79	23.94	22.88	24.93	19.97	25.79	23.65
2029	20.19	20.52	20.29	23.23	24.06	25.27	24.15	26.31	21.08	27.22	24.96
2030	21.31	21.65	21.42	24.52	25.39	26.67	25.49	27.77	22.25	28.73	26.34
2031	22.49	22.86	22.61	25.88	26.80	28.15	26.91	29.31	23.48	30.33	27.80
2032	23.74	24.12	23.86	27.32	28.29	29.72	28.40	30.94	24.79	32.01	29.35
2033	25.06	25.46	25.18	28.84	29.86	31.36	29.98	32.66	26.16	33.79	30.98
2034	26.45	26.88	26.58	30.44	31.52	33.10	31.64	34.47	27.61	35.66	32.69
2035	27.91	28.37	28.06	32.12	33.27	34.94	33.39	36.38	29.15	37.64	34.51
2013	39.22	39.97	38.92	33.62	37.98	36.51	34.28	34.89	37.33	36.20	38.17
2014	41.40	42.19	41.08	35.49	40.08	38.53	36.18	36.82	39.40	38.21	40.29
2015	43.69	44.53	43.36	37.46	42.31	40.67	38.19	38.87	41.58	40.33	42.52
2016	46.12	47.00	45.77	39.53	44.65	42.93	40.31	41.02	43.89	42.56	44.88
2017	48.68	49.61	48.30	41.73	47.13	45.31	42.54	43.30	46.33	44.93	47.37
2018	51.38	52.36	50.98	44.04	49.75	47.82	44.90	45.70	48.90	47.42	50.00
2019	54.23	55.27	53.81	46.49	52.51	50.48	47.39	48.24	51.61	50.05	52.77
2020	57.24	58.33	56.80	49.07	55.42	53.28	50.02	50.91	54.47	52.83	55.70
2021	60.41	61.57	59.95	51.79	58.50	56.23	52.80	53.74	57.50	55.76	58.79
2022	63.77	64.99	63.28	54.66	61.74	59.35	55.73	56.72	60.69	58.85	62.05
2023	67.30	68.59	66.79	57.70	65.17	62.65	58.82	59.87	64.05	62.12	65.50
2024	71.04	72.40	70.50	60.90	68.78	66.12	62.08	63.19	67.61	65.57	69.13
2025	74.98	76.42	74.41	64.28	72.60	69.79	65.53	66.70	71.36	69.20	72.97
2026	79.14	80.66	78.54	67.84	76.63	73.66	69.17	70.40	75.32	73.04	77.02
2027	83.53	85.13	82.89	71.61	80.88	77.75	73.00	74.30	79.50	77.10	81.29
2028	88.17	89.85	87.49	75.58	85.37	82.06	77.05	78.43	83.91	81.37	85.80
2029	93.06	94.84	92.35	79.77	90.11	86.62	81.33	82.78	88.57	85.89	90.56
2030	98.22	100.10	97.47	84.20	95.11	91.42	85.84	87.37	93.48	90.66	95.59
2032	109.42	111.52	108.59	93.80	105.95	101.85	95.63	97.34	104.14	100.99	106.49
2033	115.50	117.71	114.61	99.01	111.83	107.50	100.94	102.74	109.92	106.60	112.40
2034	121.90	124.24	120.97	104.50	118.04	113.47	106.54	108.44	116.02	112.51	118.63
2035	128.67	131.13	127.69	110.30	124.59	119.76	112.45	114.45	122.46	118.76	125.22
2013	66.78	68.44	64.56	70.32	72.89	73.04	67.82	81.58	74.85	75.19	77.45
2014	70.49	72.24	68.14	74.23	76.93	77.09	71.58	86.10	79.00	79.36	81.74
2015	74.40	76.25	71.92	78.34	81.20	81.37	75.55	90.88	83.38	83.76	86.28
2016	78.52	80.48	75.91	82.69	85.71	85.88	79.75	95.92	88.01	88.41	91.07
2017	82.88	84.95	80.12	87.28	90.46	90.65	84.17	101.25	92.89	93.32	96.12
2018	87.48	89.66	84.57	92.12	95.48	95.68	88.84	106.86	98.05	98.49	101.45
2019	92.33	94.63	89.26	97.23	100.78	100.99	93.77	112.79	103.49	103.96	107.08
2020	97.46	99.89	94.22	102.63	106.37	106.59	98.97	119.05	109.23	109.73	113.02
2021	102.87	105.43	99.44	108.32	112.28	112.51	104.47	125.66	115.29	115.82	119.29
2022	108.57	111.28	104.96	114.34	118.51	118.75	110.26	132.63	121.69	122.24	125.91
2023	114.60	117.45	110.79	120.68	125.08	125.34	116.38	139.99	128.44	129.03	132.90
2024	120.96	123.97	116.93	127.38	132.02	132.29	122.84	147.76	135.57	136.18	140.28
2025	127.67	130.85	123.42	134.44	139.35	139.63	129.65	155.95	143.09	143.74	148.06
2026	134.75	138.11	130.27	141.90	147.08	147.38	136.85	164.61	151.03	151.72	156.27
2027	142.23	145.77	137.50	149.78	155.24	155.56	144.44	173.74	159.41	160.14	164.95

2028	150.12	153.86	145.13	158.09	163.85	164.19	152.46	183.38	168.25	169.02	174.10
2029	158.45	162.40	153.18	166.86	172.95	173.30	160.91	193.56	177.59	178.40	183.76
2030	167.24	171.41	161.68	176.12	182.54	182.92	169.84	204.30	187.44	188.30	193.95
2031	176.52	180.92	170.65	185.89	192.67	193.06	179.27	215.63	197.85	198.75	204.72
2032	186.32	190.96	180.12	196.20	203.36	203.78	189.21	227.60	208.82	209.77	216.08
2033	196.66	201.55	190.11	207.09	214.65	215.08	199.71	240.23	220.41	221.41	228.06
2034	207.57	212.74	200.66	218.58	226.56	227.02	210.80	253.56	232.64	233.70	240.72
2035	219.09	224.54	211.80	230.71	239.13	239.62	222.49	267.63	245.55	246.67	254.08

2014 CGR SD&G Station Forecast

Year	No. of Stat Stations ac	Station growth Rate	
2013	31	1.0	2.80%
2014	32	0.9	
2015	33	0.9	
2016	34	0.9	
2017	35	0.9	
2018	36	1.0	
2019	37	1.0	
2020	38	1.0	
2021	39	1.1	
2022	40	1.1	
2023	41	1.1	
2024	42	1.1	
2025	43	1.2	
2026	44	1.2	
2027	46	1.2	
2028	47	1.3	
2029	48	1.3	
2030	50	1.4	
2031	51	1.4	
2032	52	1.4	
2033	54	1.5	
2034	55	1.5	
2035	57	1.6	

MDTH12	TOTAL	RATE	NGVTYPE
9.40	117.84	GNV	C
9.92	124.38	GNV	C
10.48	131.28	GNV	C
11.06	138.56	GNV	C
11.67	146.25	GNV	C
12.32	154.36	GNV	C
13.00	162.93	GNV	C
13.72	171.97	GNV	C
14.48	181.51	GNV	C
15.29	191.58	GNV	C
16.14	202.21	GNV	C
17.03	213.43	GNV	C
17.98	225.28	GNV	C
18.97	237.78	GNV	C
20.03	250.97	GNV	C
21.14	264.90	GNV	C
22.31	279.59	GNV	C
23.55	295.11	GNV	C
24.86	311.48	GNV	C
26.23	328.77	GNV	C
27.69	347.01	GNV	C
29.23	366.26	GNV	C
30.85	386.59	GNV	C
36.04	443.11	GNV	U
38.04	467.70	GNV	U
40.15	493.65	GNV	U
42.38	521.04	GNV	U
44.73	549.95	GNV	U
47.21	580.47	GNV	U
49.83	612.68	GNV	U
52.60	646.67	GNV	U
55.52	682.55	GNV	U
58.60	720.43	GNV	U
61.85	760.40	GNV	U
65.28	802.59	GNV	U
68.90	847.13	GNV	U
72.73	894.13	GNV	U
76.76	943.75	GNV	U
81.02	996.11	GNV	U
85.52	1051.38	GNV	U
90.26	1109.72	GNV	U
100.55	1236.29	GNV	U
106.13	1304.89	GNV	U
112.02	1377.29	GNV	U
118.24	1453.71	GNV	U
69.75	862.66	GNV	UT
73.63	910.53	GNV	UT
77.71	961.05	GNV	UT
82.02	1014.38	GNV	UT
86.57	1070.66	GNV	UT
91.38	1130.07	GNV	UT
96.45	1192.78	GNV	UT
101.80	1258.96	GNV	UT
107.45	1328.82	GNV	UT
113.41	1402.55	GNV	UT
119.70	1480.37	GNV	UT
126.34	1562.51	GNV	UT
133.36	1649.21	GNV	UT
140.75	1740.72	GNV	UT
148.56	1837.31	GNV	UT

156.81	1939.26	GNV	UT
165.51	2046.86	GNV	UT
174.69	2160.44	GNV	UT
184.39	2280.31	GNV	UT
194.62	2406.84	GNV	UT
205.42	2540.39	GNV	UT
216.81	2681.35	GNV	UT
228.84	2830.13	GNV	UT

Table 1 - SDG&E Volume Forecast Growth

Years	Total Volume MDtherms	Yearly % change	CAGR (2008-2013)
2013	1365	9%	0.055487238
2012	1247	13%	
2011	1101	7%	
2010	1031	-3%	
2009	1061	2%	
2008	1042	n/a	

0.509324

			CAGR (2013-2035)
2013	1423.6113		0.055487209
2035	4670.43		

SDG&E Historical NGV Station Count

Year	Station count		CAGR (2008 - 2013)
2013		31	0.028015318
2012		30	
2011		29	
2010		28	
2009		26	
2008		27	

SDG&E NGV Station Count Forecast

2013	31	1
2014	32	0.9
2015	33	0.9
2016	34	0.9
2017	35	0.9
2018	36	1.0
2019	37	1.0
2020	38	1.0
2021	39	1.1
2022	40	1.1
2023	41	1.1
2024	42	1.1
2025	43	1.2
2026	44	1.2
2027	46	1.2
2028	47	1.3
2029	48	1.3
2030	50	1.4
2031	51	1.4
2032	52	1.4
2033	54	1.5
2034	55	1.5
2035	57	1.6

2014 CALIFORNIA GAS REPORT

ENERGY EFFICIENCY
JULY 2014

The Gas Company

A Sempra Energy utility™

2014 California Gas Report
EE Savings: SoCalGas

	Forecast 2013	Forecast 2014	Forecast 2015	Forecast 2016	Forecast 2017	Forecast 2018	Forecast 2019	Forecast 2020	Forecast 2021	Forecast 2022	Forecast 2023	Forecast 2024
SoCalGas EE Program TOTAL												
PUC Goal	32,000,000	32,000,000	32,000,000	32,000,000	32,000,000	32,000,000	32,000,000	32,000,000	32,000,000	32,000,000	32,000,000	32,000,000
Difference												

SoCalGas	**2013 therms**	**2014 therms**	**2015 therms**
Core Residential	8,253,897	10,088,677	8,335,853
Core Commercial	2,349,806	3,394,587	3,755,346
Core Industrial	2,438,032	2,901,223	3,237,537
NonCore Commercial	5,092,417	6,450,119	6,899,078
NonCore Industrial retail	3,253,148	3,262,318	2,723,683
NonCore Industrial refinery	4,124,279	3,832,935	3,465,000
Total	**25,511,578**	**29,929,859**	**28,416,497**

Proportionally scale it down or up to match PUC Goals for 2011 - 2012

ANNUAL NET SAVINGS	**2013 Mdth**	**2014 Mdth**	**2015 Mdth**	**2016 Mdth**	**2017 Mdth**	**2018 Mdth**	**2019 Mdth**	**2020 Mdth**	**2021 Mdth**	**2022 Mdth**	**2023 Mdth**	**2024 Mdth**
Core Residential	825	1,009	834	834	834	834	834	834	834	834	834	834
Core Commercial	235	339	376	376	376	376	376	376	376	376	376	376
Core Industrial	244	290	324	324	324	324	324	324	324	324	324	324
NonCore Commercial	509	645	690	690	690	690	690	690	690	690	690	690
NonCore Industrial retail	325	326	272	272	272	272	272	272	272	272	272	272
NonCore Industrial refinery	412	383	347	347	347	347	347	347	347	347	347	347
Total	**2,551**	**2,993**	**2,842**	**2,842**	**2,842**	**2,842**	**2,842**	**2,842**	**2,842**	**2,842**	**2,842**	**2,842**

Cumulative Savings Mdth	**2013 Mdth**	**2014 Mdth**	**2015 Mdth**	**2016 Mdth**	**2017 Mdth**	**2018 Mdth**	**2019 Mdth**	**2020 Mdth**	**2021 Mdth**	**2022 Mdth**	**2023 Mdth**	**2024 Mdth**
Core Residential		1,009	1,842	2,676	3,510	4,343	5,177	6,010	6,844	7,678	8,511	9,345
Core Commercial		339	715	1,091	1,466	1,842	2,217	2,593	2,968	3,344	3,719	4,095
Core Industrial		290	614	938	1,261	1,585	1,909	2,233	2,556	2,880	3,204	3,528
NonCore Commercial		645	1,335	2,025	2,715	3,405	4,095	4,784	5,474	6,164	6,854	7,544
NonCore Industrial regular		326	599	871	1,143	1,416	1,688	1,960	2,233	2,505	2,778	3,050
NonCore Industrial refinery		383	730	1,076	1,423	1,769	2,116	2,462	2,809	3,155	3,502	3,848
Total Load Impacts		**2,993**	**5,835**	**8,676**	**11,518**	**14,360**	**17,201**	**20,043**	**22,885**	**25,726**	**28,568**	**31,409**

MMCF factor: **1.0266**

Cumulative Savings MMCF	**2013 mmcf**	**2014 mmcf**	**2015 mmcf**	**2016 mmcf**	**2017 mmcf**	**2018 mmcf**	**2019 mmcf**	**2020 mmcf**	**2021 mmcf**	**2022 mmcf**	**2023 mmcf**	**2024 mmcf**
Core Residential		983	1,795	2,607	3,419	4,231	5,043	5,855	6,667	7,479	8,291	9,103
Core Commercial		331	696	1,062	1,428	1,794	2,160	2,525	2,891	3,257	3,623	3,989
Core Industrial		283	598	913	1,229	1,544	1,859	2,175	2,490	2,806	3,121	3,436
NonCore Commercial		628	1,300	1,972	2,644	3,316	3,988	4,660	5,333	6,005	6,677	7,349
NonCore Industrial regular		318	583	848	1,114	1,379	1,644	1,910	2,175	2,440	2,706	2,971
NonCore Industrial refinery		373	711	1,048	1,386	1,723	2,061	2,398	2,736	3,074	3,411	3,749
Total Cumulative Load		**2,915**	**5,683**	**8,451**	**11,219**	**13,988**	**16,756**	**19,524**	**22,292**	**25,060**	**27,828**	**30,596**

	Forecast 2025	Forecast 2026	Forecast 2027	Forecast 2028	Forecast 2029	Forecast 2030	Forecast 2031	Forecast 2032	Forecast 2033	Forecast 2034	Forecast 2035
SoCalGas EE Program TOTAL											
PUC Goal	32,000,000	32,000,000	32,000,000	32,000,000	32,000,000	32,000,000	32,000,000	32,000,000	32,000,000	32,000,000	32,000,000
Difference											

SoCalGas
Core Residential
Core Commercial
Core Industrial
NonCore Commercial
NonCore Industrial retail
NonCore Industrial refinery
Total

Proportionally scale it down or u

ANNUAL NET SAVINGS	2025 Mdth	2026 Mdth	2027 Mdth	2028 Mdth	2029 Mdth	2030 Mdth	2031 Mdth	2032 Mdth	2033 Mdth	2034 Mdth	2035 Mdth
Core Residential	834	834	834	834	834	834	834	834	834	834	834
Core Commercial	376	376	376	376	376	376	376	376	376	376	376
Core Industrial	324	324	324	324	324	324	324	324	324	324	324
NonCore Commercial	690	690	690	690	690	690	690	690	690	690	690
NonCore Industrial retail	272	272	272	272	272	272	272	272	272	272	272
NonCore Industrial refinery	347	347	347	347	347	347	347	347	347	347	347
Total	**2,842**	**2,842**	**2,842**	**2,842**	**2,842**	**2,842**	**2,842**	**2,842**	**2,842**	**2,842**	**2,842**

Cumulative Savings Mdth	2025 Mdth	2026 Mdth	2027 Mdth	2028 Mdth	2029 Mdth	2030 Mdth	2031 Mdth	2032 Mdth	2033 Mdth	2034 Mdth	2035 Mdth
Core Residential	10,178	11,012	11,845	12,679	12,504	12,504	12,504	12,504	12,504	12,504	12,504
Core Commercial	4,470	4,846	5,221	5,597	5,633	5,633	5,633	5,633	5,633	5,633	5,633
Core Industrial	3,851	4,175	4,499	4,823	4,856	4,856	4,856	4,856	4,856	4,856	4,856
NonCore Commercial	8,234	8,924	9,614	10,304	10,349	10,349	10,349	10,349	10,349	10,349	10,349
NonCore Industrial regular	3,322	3,595	3,867	4,139	4,086	4,086	4,086	4,086	4,086	4,086	4,086
NonCore Industrial refinery	4,195	4,541	4,888	5,234	5,198	5,198	5,198	5,198	5,198	5,198	5,198
Total Load Impacts	**34,251**	**37,093**	**39,934**	**42,776**	**42,625**	**42,625**	**42,625**	**42,625**	**42,625**	**42,625**	**42,625**

Cumulative Savings MMCF	2025 mmcf	2026 mmcf	2027 mmcf	2028 mmcf	2029 mmcf	2030 mmcf	2031 mmcf	2032 mmcf	2033 mmcf	2034 mmcf	2035 mmcf
Core Residential	9,915	10,727	11,539	12,351	12,180	12,180	12,180	12,180	12,180	12,180	12,180
Core Commercial	4,355	4,720	5,086	5,452	5,487	5,487	5,487	5,487	5,487	5,487	5,487
Core Industrial	3,752	4,067	4,382	4,698	4,730	4,730	4,730	4,730	4,730	4,730	4,730
NonCore Commercial	8,021	8,693	9,365	10,037	10,080	10,080	10,080	10,080	10,080	10,080	10,080
NonCore Industrial regular	3,236	3,502	3,767	4,032	3,980	3,980	3,980	3,980	3,980	3,980	3,980
NonCore Industrial refinery	4,086	4,424	4,761	5,099	5,063	5,063	5,063	5,063	5,063	5,063	5,063
Total Cumulative Load	**33,364**	**36,132**	**38,900**	**41,668**	**41,520**	**41,520**	**41,520**	**41,520**	**41,520**	**41,520**	**41,520**

2014 CALIFORNIA GAS REPORT

EXCHANGE DEMAND FORECAST
JULY 2014

The Gas Company

A Sempra Energy utility™

2014 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 2011 to 2013 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.

2014 California Gas Report
Exchange Forecast

SOURCE	RATE	YEAR	MDTH1	MDTH2	MDTH3	MDTH4	MDTH5	MDTH6	MDTH7	MDTH8	MDTH9	MDTH10	MDTH11	MDTH12	TOTAL
EXCH	G40	**2013**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.36**	**1.63**	**0.78**	**0.76**	**0.00**	**0.00**	**0.00**	6.53
EXCH	G30	**2013**	**75.55**	**106.78**	**-26.20**	**20.75**	**18.95**	**15.51**	**14.15**	**15.04**	**16.54**	**19.43**	**29.98**	**59.70**	366.19
EXCH	G40	2014	**0.44**	**0.00**	**2.42**	**0.33**	**0.00**	**0.00**	**0.00**	**0.60**	**0.24**	**0.17**	**0.01**	**1.79**	6.00
EXCH	G30	2014	**68.90**	**50.06**	**40.94**	**24.70**	**19.70**	**16.79**	**15.06**	**13.13**	**14.36**	**19.05**	**33.86**	**59.43**	376.00
EXCH	G40	2015	**0.44**	**0.00**	**2.42**	**0.33**	**0.00**	**0.00**	**0.00**	**0.60**	**0.24**	**0.17**	**0.01**	**1.79**	6.00
EXCH	G30	2015	**68.90**	**50.06**	**40.94**	**24.70**	**19.70**	**16.79**	**15.06**	**13.13**	**14.36**	**19.05**	**33.86**	**59.43**	376.00
EXCH	G40	2016	**0.44**	**0.00**	**2.42**	**0.33**	**0.00**	**0.00**	**0.00**	**0.60**	**0.24**	**0.17**	**0.01**	**1.79**	6.00
EXCH	G30	2016	**68.90**	**50.06**	**40.94**	**24.70**	**19.70**	**16.79**	**15.06**	**13.13**	**14.36**	**19.05**	**33.86**	**59.43**	376.00
EXCH	G40	2017	**0.44**	**0.00**	**2.42**	**0.33**	**0.00**	**0.00**	**0.00**	**0.60**	**0.24**	**0.17**	**0.01**	**1.79**	6.00
EXCH	G30	2017	**68.90**	**50.06**	**40.94**	**24.70**	**19.70**	**16.79**	**15.06**	**13.13**	**14.36**	**19.05**	**33.86**	**59.43**	376.00
EXCH	G40	2018	**0.44**	**0.00**	**2.42**	**0.33**	**0.00**	**0.00**	**0.00**	**0.60**	**0.24**	**0.17**	**0.01**	**1.79**	6.00
EXCH	G30	2018	**68.90**	**50.06**	**40.94**	**24.70**	**19.70**	**16.79**	**15.06**	**13.13**	**14.36**	**19.05**	**33.86**	**59.43**	376.00
EXCH	G40	2019	**0.44**	**0.00**	**2.42**	**0.33**	**0.00**	**0.00**	**0.00**	**0.60**	**0.24**	**0.17**	**0.01**	**1.79**	6.00
EXCH	G30	2019	**68.90**	**50.06**	**40.94**	**24.70**	**19.70**	**16.79**	**15.06**	**13.13**	**14.36**	**19.05**	**33.86**	**59.43**	376.00
EXCH	G40	2020	**0.44**	**0.00**	**2.42**	**0.33**	**0.00**	**0.00**	**0.00**	**0.60**	**0.24**	**0.17**	**0.01**	**1.79**	6.00
EXCH	G30	2020	**68.90**	**50.06**	**40.94**	**24.70**	**19.70**	**16.79**	**15.06**	**13.13**	**14.36**	**19.05**	**33.86**	**59.43**	376.00
EXCH	G40	2021	**0.44**	**0.00**	**2.42**	**0.33**	**0.00**	**0.00**	**0.00**	**0.60**	**0.24**	**0.17**	**0.01**	**1.79**	6.00
EXCH	G30	2021	**68.90**	**50.06**	**40.94**	**24.70**	**19.70**	**16.79**	**15.06**	**13.13**	**14.36**	**19.05**	**33.86**	**59.43**	376.00
EXCH	G40	2022	**0.44**	**0.00**	**2.42**	**0.33**	**0.00**	**0.00**	**0.00**	**0.60**	**0.24**	**0.17**	**0.01**	**1.79**	6.00
EXCH	G30	2022	**68.90**	**50.06**	**40.94**	**24.70**	**19.70**	**16.79**	**15.06**	**13.13**	**14.36**	**19.05**	**33.86**	**59.43**	376.00
EXCH	G40	2023	**0.44**	**0.00**	**2.42**	**0.33**	**0.00**	**0.00**	**0.00**	**0.60**	**0.24**	**0.17**	**0.01**	**1.79**	6.00
EXCH	G30	2023	**68.90**	**50.06**	**40.94**	**24.70**	**19.70**	**16.79**	**15.06**	**13.13**	**14.36**	**19.05**	**33.86**	**59.43**	376.00
EXCH	G40	2024	**0.44**	**0.00**	**2.42**	**0.33**	**0.00**	**0.00**	**0.00**	**0.60**	**0.24**	**0.17**	**0.01**	**1.79**	6.00
EXCH	G30	2024	**68.90**	**50.06**	**40.94**	**24.70**	**19.70**	**16.79**	**15.06**	**13.13**	**14.36**	**19.05**	**33.86**	**59.43**	376.00
EXCH	G40	2025	**0.44**	**0.00**	**2.42**	**0.33**	**0.00**	**0.00**	**0.00**	**0.60**	**0.24**	**0.17**	**0.01**	**1.79**	6.00
EXCH	G30	2025	**68.90**	**50.06**	**40.94**	**24.70**	**19.70**	**16.79**	**15.06**	**13.13**	**14.36**	**19.05**	**33.86**	**59.43**	376.00
EXCH	G40	2026	**0.44**	**0.00**	**2.42**	**0.33**	**0.00**	**0.00**	**0.00**	**0.60**	**0.24**	**0.17**	**0.01**	**1.79**	6.00
EXCH	G30	2026	**68.90**	**50.06**	**40.94**	**24.70**	**19.70**	**16.79**	**15.06**	**13.13**	**14.36**	**19.05**	**33.86**	**59.43**	376.00
EXCH	G40	2027	**0.44**	**0.00**	**2.42**	**0.33**	**0.00**	**0.00**	**0.00**	**0.60**	**0.24**	**0.17**	**0.01**	**1.79**	6.00
EXCH	G30	2027	**68.90**	**50.06**	**40.94**	**24.70**	**19.70**	**16.79**	**15.06**	**13.13**	**14.36**	**19.05**	**33.86**	**59.43**	376.00
EXCH	G40	2028	**0.44**	**0.00**	**2.42**	**0.33**	**0.00**	**0.00**	**0.00**	**0.60**	**0.24**	**0.17**	**0.01**	**1.79**	6.00
EXCH	G30	2028	**68.90**	**50.06**	**40.94**	**24.70**	**19.70**	**16.79**	**15.06**	**13.13**	**14.36**	**19.05**	**33.86**	**59.43**	376.00
EXCH	G40	2029	**0.44**	**0.00**	**2.42**	**0.33**	**0.00**	**0.00**	**0.00**	**0.60**	**0.24**	**0.17**	**0.01**	**1.79**	6.00
EXCH	G30	2029	**68.90**	**50.06**	**40.94**	**24.70**	**19.70**	**16.79**	**15.06**	**13.13**	**14.36**	**19.05**	**33.86**	**59.43**	376.00
EXCH	G40	2030	**0.44**	**0.00**	**2.42**	**0.33**	**0.00**	**0.00**	**0.00**	**0.60**	**0.24**	**0.17**	**0.01**	**1.79**	6.00
EXCH	G30	2030	**68.90**	**50.06**	**40.94**	**24.70**	**19.70**	**16.79**	**15.06**	**13.13**	**14.36**	**19.05**	**33.86**	**59.43**	376.00
EXCH	G40	2031	**0.44**	**0.00**	**2.42**	**0.33**	**0.00**	**0.00**	**0.00**	**0.60**	**0.24**	**0.17**	**0.01**	**1.79**	6.00
EXCH	G30	2031	**68.90**	**50.06**	**40.94**	**24.70**	**19.70**	**16.79**	**15.06**	**13.13**	**14.36**	**19.05**	**33.86**	**59.43**	376.00
EXCH	G40	2032	**0.44**	**0.00**	**2.42**	**0.33**	**0.00**	**0.00**	**0.00**	**0.60**	**0.24**	**0.17**	**0.01**	**1.79**	6.00
EXCH	G30	2032	**68.90**	**50.06**	**40.94**	**24.70**	**19.70**	**16.79**	**15.06**	**13.13**	**14.36**	**19.05**	**33.86**	**59.43**	376.00
EXCH	G40	2033	**0.44**	**0.00**	**2.42**	**0.33**	**0.00**	**0.00**	**0.00**	**0.60**	**0.24**	**0.17**	**0.01**	**1.79**	6.00
EXCH	G30	2033	**68.90**	**50.06**	**40.94**	**24.70**	**19.70**	**16.79**	**15.06**	**13.13**	**14.36**	**19.05**	**33.86**	**59.43**	376.00
EXCH	G40	2034	**0.44**	**0.00**	**2.42**	**0.33**	**0.00**	**0.00**	**0.00**	**0.60**	**0.24**	**0.17**	**0.01**	**1.79**	6.00
EXCH	G30	2034	**68.90**	**50.06**	**40.94**	**24.70**	**19.70**	**16.79**	**15.06**	**13.13**	**14.36**	**19.05**	**33.86**	**59.43**	376.00
EXCH	G40	2035	**0.44**	**0.00**	**2.42**	**0.33**	**0.00**	**0.00**	**0.00**	**0.60**	**0.24**	**0.17**	**0.01**	**1.79**	6.00
EXCH	G30	2035	**68.90**	**50.06**	**40.94**	**24.70**	**19.70**	**16.79**	**15.06**	**13.13**	**14.36**	**19.05**	**33.86**	**59.43**	376.00

2014 CALIFORNIA GAS REPORT

EOR STEAMING
JULY 2014

The Gas Company

A Sempra Energy utility™

ENHANCED OIL RECOVERY - STEAMING

FORECAST METHODOLOGY FOR THE 2014 CALIFORNIA GAS REPORT

Southern California Gas' ("SoCalGas") forecast of enhanced oil recovery ("EOR") steaming gas requirements as reported in the *2014 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 2011 through 2013 were analyzed in order to determine typical throughput volumes over the past few years.

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 CGR 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 or new load from new operations in new or existing fields. 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.

The assumptions about bypass for this forecast are as follows:

1. EOR gas demand for customers located in the Los Angeles Basin, Santa Barbara and Ventura areas will not bypass SoCalGas' distribution system.
2. Customers in the San Joaquin Valley who have already bypassed SoCalGas' system will continue to bypass at their historical levels.
3. New customers in the San Joaquin Valley will not bypass unless they signed up for a bypass transportation rate.

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

2014 CALIFORNIA GAS REPORT
EOR STEAMING FORECAST (2014 - 2035)

		SOCALGAS DELIVERIES (MMcfd)
HISTORICAL		
	2011	27
	2012	30
	2013	35
FORECAST		
	2014	43
	2015	52
	2016	52
	2017	52
	2018	52
	2019	52
	2020	52
	2021	52
	2022	52
	2023	52
	2024	52
	2025	52
	2026	52
	2027	52
	2028	52
	2029	52
	2030	52
	2031	52
	2032	52
	2033	52
	2034	52
	2035	52

ENHANCED OIL RECOVERY - COGENERATION

FORECAST METHODOLOGY FOR THE 2014 CALIFORNIA GAS REPORT

Southern California Gas' ("SoCalGas") forecast of enhanced oil recovery ("EOR") cogeneration gas requirements as reported in the *2014 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 2011 through 2013 were analyzed in order to determine typical throughput volumes over the past few years.

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 new 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 these pipelines, thereby bypassing SoCalGas' distribution system.

The assumptions about bypass for this forecast are as follows:

1. EOR gas demand for customers located in the Los Angeles Basin, Santa Barbara, and Ventura areas will not bypass SoCalGas' distribution system.
2. Customers in the San Joaquin Valley who have already bypassed SoCalGas' system will continue to bypass at their historical levels.
3. New customers in the San Joaquin Valley will not bypass unless they signed up for a bypass transportation rate.

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

2014 CALIFORNIA GAS REPORT
EOR COGENERATION FORECAST (2014 - 2035)

		SOCALGAS DELIVERIES (MMcfd)
HISTORICAL		
	2011	11
	2012	21
	2013	23
FORECAST		
	2014	23
	2015	23
	2016	23
	2017	23
	2018	23
	2019	23
	2020	23
	2021	23
	2022	23
	2023	23
	2024	23
	2025	23
	2026	23
	2027	23
	2028	23
	2029	23
	2030	23
	2031	23
	2032	23
	2033	23
	2034	23
	2035	23

2014 CALIFORNIA GAS REPORT

REFINERIES
JULY 2014

Refinery Non-Cogeneration and Cogeneration Gas Demand

INTRODUCTION

Gas demand for refineries is developed from a base econometric forecast for both non-cogeneration (rate class G-30) load and cogeneration (rate class G-50) load. The separation into G-30 and G-50 categories is based on the historical 2013 monthly proportions of each rate class.

As part of the base forecast, adjustments are made to both the natural gas burner-tip price and the butane price to include GHG (Green House Gas) price adders for each fuel to capture added costs for refiners due to implementation of new emission regulations per AB32 and Low Carbon Fuel Standards (LCFS) beginning in 2012. The table below shows the estimated GHG price adders (in current-year $/MMBtu) for these fuels:

Year	GHG $/Mmbtu (Natural Gas)	GHG $/Mmbtu (Normal Butane)
2012	0.61	0.75
2013	1.04	1.28
2014	0.63	0.78
2015	0.65	0.79
2016	0.67	0.82
2017	0.69	0.85
2018	0.74	0.90
2019	0.80	0.99
2020	0.89	1.10
2021	1.04	1.28
2022	1.20	1.47
2023	1.36	1.67
2024	1.53	1.88
2025	1.70	2.09
2026	1.88	2.31
2027	2.06	2.53
2028	2.25	2.77
2029	2.45	3.01
2030	2.65	3.26
2031	2.86	3.52
2032	3.08	3.79
2033	3.31	4.07
2034	3.55	4.36
2035	3.79	4.66

For the non-cogeneration load component, there is an “out-of-model” adjustment to reflect expected additional gas load from installation of new equipment for this customer segment.

BASE FORECAST EQUATION

The base econometric forecast is generated from an equation that uses the natural logarithm of average daily monthly refinery gas consumption as the dependent variable. The key explanatory variable is the natural logarithm of the monthly ratio of 2-month average burner-tip natural gas rates (e.g., transportation rate + commodity price + GHG price adder) relative to the 2-month average of butane prices. The second component of the forecast equation is a constant term.

The base forecast equation is shown below:

LN(Ref_MDth/d) = 5.61549 + LN(G/B) x (-0.132717),

where

G = Average of current month's and prior month's burner-tip gas price, and
B = Average of current month's and prior month's butane price.

The parameters of this equation were estimated from monthly data for Feb-1997 through Dec-2013.

The four monthly values of "Recorded – Forecast" for the combined g30/g50 load provide evidence that the calibration of the fuel-switching coefficient appears reasonable.

EXAMPLE OF FORECAST CALCULATIONS

The refinery gas demand in a particular month is calculated as:

Ref_MDth/mo = (#days in month) x EXP[LN(Ref_MDth/d)].

For example, the calculation of total refinery gas demand for August 2015 are as follows:

LN[Ref_MDth/d] = 5.61549 + LN[((5.491+5.532)/2) / ((13.1433+13.3345)/2)]
x (-0.132717),
LN[Ref_MDth/d] = 5.73179

(9,564.2 MDth) = (31) x (EXP[5.73179]) = (31) x (308.522 MDth/d)

This total refinery gas demand was "split" between G-30 and G-50 load using the 2013 monthly proportions that the G-30 load represented relative to the total refinery load. The table below provides these proportions.

	2013 Monthly %G-30 of Total Ref.
Jan-13	**81.563%**
Feb-13	**82.470%**
Mar-13	**80.132%**
Apr-13	**81.602%**
May-13	**80.191%**
Jun-13	**81.527%**
Jul-13	**77.283%**
Aug-13	**77.695%**
Sep-13	**77.528%**
Oct-13	**78.260%**
Nov-13	**77.847%**
Dec-13	**78.485%**

Based on the August 2015 example above, the total refinery gas demand is split into G-30 and G-50 values:

Ref_G-30 = (7,430.9 MDth) = (9,564.2 MDth) x (0.77695), and
Reg_G-50 = (2,133.3 MDth) = (9,564.2 MDth) x (0.22305).

The table below show the entire base refinery gas demand forecast and the split into G-30 and G-50 rate class component loads.

Base Forecast of Refinery Gas Demand (2012-2015)

	2014 CGR Ref g-30	2014 CGR Ref g-50 (CoGen)			Total Ref	Total Ref			Total Ref Burner tip	
	Mdth	Mdth	#Days per Month	Month	Mdth	Mdth/Day	ln(mdtd)	ln(G/B): Moving 2-Mo Avg	Burner tip Gas (G) $/dth	Butane (B) $/dth
Jan-12	7,307	1,602	31	1	8,909	287	5.6609	-1.2788	4.032	18.6654
Feb-12	6,479	1,586	29	2	8,066	278	5.6281	-1.5105	3.843	17.0004
Mar-12	7,680	1,889	31	3	9,569	309	5.7323	-1.5636	3.390	17.5460
Apr-12	7,364	1,700	30	4	9,064	302	5.7109	-1.6808	3.312	18.4441
May-12	7,116	1,949	31	5	9,065	292	5.6781	-1.6919	3.549	18.8081
Jun-12	7,199	1,911	30	6	9,110	304	5.7160	-1.6495	3.679	18.8081
Jul-12	7,293	1,917	31	7	9,210	297	5.6941	-1.5890	3.999	18.8081
Aug-12	7,061	1,860	31	8	8,921	288	5.6622	-1.5407	4.059	18.8081
Sep-12	6,907	1,836	30	9	8,743	291	5.6748	-1.5204	4.165	18.8081
Oct-12	7,529	1,491	31	10	9,019	291	5.6731	-1.4503	4.656	18.8081
Nov-12	7,074	1,680	30	11	8,754	292	5.6761	-1.3841	4.769	18.8081
Dec-12	8,334	1,863	31	12	10,197	329	5.7958	-1.3862	4.636	18.8081
Jan-13	7,410	1,675	31	1	9,085	293	5.6803	-1.3680	5.077	19.3384
Feb-13	7,253	1,542	28	2	8,795	314	5.7497	-1.3381	5.070	19.3384
Mar-13	7,774	1,927	31	3	9,701	313	5.7460	-1.3064	5.403	19.3384
Apr-13	7,776	1,753	30	4	9,529	318	5.7609	-1.2509	5.668	19.3384
May-13	7,389	1,825	31	5	9,214	297	5.6945	-1.2354	5.576	19.3384
Jun-13	7,557	1,712	30	6	9,270	309	5.7333	-1.2595	5.400	19.3384
Jul-13	7,269	2,137	31	7	9,406	303	5.7151	-1.2823	5.329	19.3384
Aug-13	7,759	2,228	31	8	9,987	322	5.7750	-1.3096	5.111	19.3384
Sep-13	7,424	2,152	30	9	9,576	319	5.7658	-1.3124	5.300	19.3384
Oct-13	7,689	2,136	31	10	9,825	317	5.7587	-1.2920	5.326	19.3384
Nov-13	6,819	1,940	30	11	8,759	292	5.6766	-1.2943	5.275	19.3384
Dec-13	8,042	2,205	31	12	10,247	331	5.8007	-1.2143	6.208	19.3384
Jan-14	7929.9	1792.6	31	1	9722.4	313.6	5.7482	-0.9999	5.903	13.5820
Feb-14	6929.4	1472.9	28	2	8402.3	300.1	5.7041	-0.6673	7.810	13.1427
Mar-14	7359.9	1824.9	31	3	9184.7	296.3	5.6913	-0.5713	6.786	12.6984
Apr-14	7368.9	1661.4	30	4	9030.3	301.0	5.7071	-0.6906	5.966	12.7396
May-14	7559.2	1867.3	31	5	9426.5	304.1	5.7173	-0.7670	5.904	12.8202
Jun-14	7460.8	1690.5	30	6	9151.4	305.0	5.7205	-0.7909	5.926	13.2691
Jul-14	7309.2	2148.5	31	7	9457.7	305.1	5.7206	-0.7919	6.068	13.2095
Aug-14	7340.1	2107.2	31	8	9447.2	304.7	5.7195	-0.7836	6.087	13.4021
Sep-14	7101.7	2058.5	30	9	9160.2	305.3	5.7214	-0.7982	6.021	13.4969
Oct-14	7442.7	2067.5	31	10	9510.2	306.8	5.7261	-0.8337	5.998	14.1670
Nov-14	7218.4	2054.1	30	11	9272.5	309.1	5.7336	-0.8900	6.092	15.2729
Dec-14	7551.7	2070.2	31	12	9621.9	310.4	5.7378	-0.9216	6.224	15.6818
Jan-15	7769.9	1756.4	31	1	9526.4	307.3	5.7278	-0.8464	6.299	13.5132
Feb-15	7008.2	1489.6	28	2	8497.8	303.5	5.7154	-0.7525	6.230	13.0770
Mar-15	7520.8	1864.7	31	3	9385.5	302.8	5.7129	-0.7342	6.110	12.6357
Apr-15	7463.4	1682.7	30	4	9146.1	304.9	5.7199	-0.7866	5.418	12.6766
May-15	7653.1	1890.5	31	5	9543.6	307.9	5.7296	-0.8600	5.344	12.7566
Jun-15	7557.4	1712.4	30	6	9269.8	309.0	5.7333	-0.8878	5.340	13.2025
Jul-15	7403.8	2176.3	31	7	9580.2	309.0	5.7335	-0.8889	5.491	13.1433
Aug-15	7430.9	2133.3	31	8	9564.2	308.522	5.7318	-0.8763	5.532	13.3345
Sep-15	7187.8	2083.4	30	9	9271.2	309.0	5.7335	-0.8889	5.470	13.4286
Oct-15	7534.7	2093.1	31	10	9627.8	310.6	5.7384	-0.9262	5.430	14.0941
Nov-15	7308.8	2079.9	30	11	9388.7	313.0	5.7461	-0.9838	5.519	15.1924
Dec-15	7643.9	2095.4	31	12	9739.3	314.2	5.7499	-1.0130	5.662	15.5985

Base Forecast of Refinery Gas Demand (2016-2020)

	2014 CGR Ref g-30	2014 CGR Ref g-50 (CoGen)			Total Ref	Total Ref			Total Ref Burner tip	
	Mdth	Mdth	#Days per Month	Month	Mdth	Mdth/Day	ln(mdtd)	ln(G/B): Moving 2-Mo Avg	Burner tip Gas (G) $/dth	Butane (B) $/dth
Jan-16	7865.7	1778.1	31	1	9643.8	311.1	5.7401	-0.9387	5.815	13.7453
Feb-16	7349.8	1562.2	29	2	8912.0	307.3	5.7279	-0.8467	5.784	13.3020
Mar-16	7602.8	1885.1	31	3	9487.9	306.1	5.7238	-0.8160	5.782	12.8534
Apr-16	7514.5	1694.2	30	4	9208.7	307.0	5.7267	-0.8380	5.356	12.8950
May-16	7674.3	1895.8	31	5	9570.0	308.7	5.7324	-0.8809	5.365	12.9763
Jun-16	7568.2	1714.8	30	6	9283.1	309.4	5.7347	-0.8986	5.386	13.4295
Jul-16	7428.0	2183.4	31	7	9611.4	310.0	5.7367	-0.9134	5.365	13.3694
Aug-16	7473.4	2145.5	31	8	9618.9	310.3	5.7375	-0.9193	5.377	13.5638
Sep-16	7226.5	2094.7	30	9	9321.2	310.7	5.7388	-0.9294	5.371	13.6594
Oct-16	7562.1	2100.7	31	10	9662.7	311.7	5.7420	-0.9535	5.418	14.3359
Nov-16	7338.3	2088.3	30	11	9426.5	314.2	5.7501	-1.0141	5.386	15.4522
Dec-16	7663.3	2100.8	31	12	9764.1	315.0	5.7525	-1.0321	5.770	15.8650
Jan-17	7858.1	1776.3	31	1	9634.4	310.8	5.7391	-0.9314	6.105	14.2742
Feb-17	7097.2	1508.5	28	2	8605.7	307.3	5.7280	-0.8475	5.930	13.8138
Mar-17	7633.3	1892.6	31	3	9525.9	307.3	5.7278	-0.8461	5.725	13.3481
Apr-17	7555.4	1703.4	30	4	9258.9	308.6	5.7321	-0.8789	5.379	13.3913
May-17	7709.4	1904.4	31	5	9613.8	310.1	5.7370	-0.9153	5.379	13.4758
Jun-17	7608.7	1724.0	30	6	9332.8	311.1	5.7401	-0.9388	5.346	13.9463
Jul-17	7460.2	2192.9	31	7	9653.1	311.4	5.7410	-0.9460	5.460	13.8838
Aug-17	7485.8	2149.0	31	8	9634.8	310.8	5.7391	-0.9317	5.557	14.0857
Sep-17	7227.1	2094.8	30	9	9322.0	310.7	5.7389	-0.9301	5.597	14.1850
Oct-17	7559.5	2099.9	31	10	9659.5	311.6	5.7417	-0.9510	5.636	14.8873
Nov-17	7345.6	2090.3	30	11	9436.0	314.5	5.7511	-1.0217	5.500	16.0464
Dec-17	7679.8	2105.3	31	12	9785.1	315.6	5.7546	-1.0483	5.899	16.4750
Jan-18	7874.1	1779.9	31	1	9654.1	311.4	5.7411	-0.9468	6.223	14.7679
Feb-18	7111.3	1511.5	28	2	8622.8	308.0	5.7300	-0.8625	6.044	14.2923
Mar-18	7648.9	1896.5	31	3	9545.4	307.9	5.7298	-0.8615	5.831	13.8113
Apr-18	7570.6	1706.8	30	4	9277.4	309.2	5.7341	-0.8940	5.485	13.8559
May-18	7723.8	1908.0	31	5	9631.8	310.7	5.7388	-0.9294	5.490	13.9431
Jun-18	7622.5	1727.2	30	6	9349.7	311.7	5.7419	-0.9524	5.456	14.4292
Jul-18	7473.8	2196.9	31	7	9670.7	312.0	5.7429	-0.9597	5.571	14.3646
Aug-18	7499.7	2153.0	31	8	9652.7	311.4	5.7410	-0.9457	5.668	14.5731
Sep-18	7240.3	2098.6	30	9	9338.9	311.3	5.7407	-0.9438	5.714	14.6757
Oct-18	7572.4	2103.5	31	10	9675.9	312.1	5.7434	-0.9638	5.758	15.4011
Nov-18	7356.5	2093.4	30	11	9450.0	315.0	5.7526	-1.0328	5.634	16.5984
Dec-18	7689.7	2108.0	31	12	9797.7	316.1	5.7559	-1.0580	6.044	17.0411
Jan-19	7872.2	1779.5	31	1	9651.7	311.3	5.7409	-0.9450	6.492	15.2090
Feb-19	7094.3	1507.9	28	2	8602.2	307.2	5.7276	-0.8445	6.372	14.7212
Mar-19	7620.3	1889.4	31	3	9509.7	306.8	5.7261	-0.8333	6.210	14.2276
Apr-19	7535.7	1699.0	30	4	9234.7	307.8	5.7295	-0.8592	5.860	14.2734
May-19	7684.2	1898.2	31	5	9582.4	309.1	5.7337	-0.8906	5.893	14.3629
Jun-19	7577.4	1716.9	30	6	9294.4	309.8	5.7360	-0.9078	5.897	14.8615
Jul-19	7423.6	2182.1	31	7	9605.7	309.9	5.7361	-0.9089	6.053	14.7953
Aug-19	7444.2	2137.1	31	8	9581.3	309.1	5.7336	-0.8898	6.189	15.0092
Sep-19	7182.5	2081.9	30	9	9264.4	308.8	5.7327	-0.8834	6.263	15.1145
Oct-19	7507.5	2085.5	31	10	9593.0	309.5	5.7348	-0.8990	6.343	15.8587
Nov-19	7288.0	2074.0	30	11	9362.0	312.1	5.7432	-0.9623	6.242	17.0870
Dec-19	7614.1	2087.3	31	12	9701.4	312.9	5.7460	-0.9836	6.707	17.5411
Jan-20	7769.3	1756.3	31	1	9525.5	307.3	5.7277	-0.8458	7.537	15.6439
Feb-20	7230.2	1536.8	29	2	8767.0	302.3	5.7115	-0.7230	7.404	15.1449
Mar-20	7498.9	1859.3	31	3	9358.2	301.9	5.7100	-0.7123	7.206	14.6401
Apr-20	7426.5	1674.3	30	4	9100.8	303.4	5.7149	-0.7492	6.659	14.6869
May-20	7586.8	1874.1	31	5	9460.9	305.2	5.7209	-0.7945	6.654	14.7785
Jun-20	7484.6	1695.9	30	6	9180.5	306.0	5.7236	-0.8148	6.657	15.2885
Jul-20	7334.0	2155.8	31	7	9489.8	306.1	5.7240	-0.8175	6.814	15.2208
Aug-20	7357.6	2112.2	31	8	9469.9	305.5	5.7219	-0.8016	6.941	15.4395
Sep-20	7102.5	2058.7	30	9	9161.2	305.4	5.7215	-0.7990	6.997	15.5472
Oct-20	7426.6	2063.0	31	10	9489.6	306.1	5.7240	-0.8173	7.072	16.3084
Nov-20	7210.6	2051.9	30	11	9262.5	308.7	5.7325	-0.8818	6.953	17.5648
Dec-20	7535.9	2065.8	31	12	9601.7	309.7	5.7357	-0.9058	7.435	18.0293

Base Forecast of Refinery Gas Demand (2021-2025)

	2014 CGR Ref g-30	2014 CGR Ref g-50 (CoGen)			Total Ref	Total Ref			Total Ref Burner tip	
	Mdth	Mdth	#Days per Month	Month	Mdth	Mdth/Day	ln(mdtd)	ln(G/B): Moving 2-Mo Avg	Burner tip Gas (G) $/dth	Butane (B) $/dth
Jan-21	7682.4	1736.6	31	1	9419.1	303.8	5.7165	-0.7611	8.571	16.2334
Feb-21	6900.1	1466.7	28	2	8366.8	298.8	5.6998	-0.6354	8.356	15.7206
Mar-21	7420.6	1839.9	31	3	9260.5	298.7	5.6995	-0.6332	8.061	15.2018
Apr-21	7363.2	1660.1	30	4	9023.2	300.8	5.7064	-0.6847	7.295	15.2499
May-21	7537.7	1862.0	31	5	9399.7	303.2	5.7144	-0.7456	7.221	15.3440
Jun-21	7443.5	1686.6	30	6	9130.1	304.3	5.7181	-0.7734	7.182	15.8681
Jul-21	7300.0	2145.8	31	7	9445.8	304.7	5.7193	-0.7825	7.298	15.7986
Aug-21	7330.4	2104.4	31	8	9434.7	304.3	5.7182	-0.7736	7.382	16.0234
Sep-21	7082.2	2052.8	30	9	9135.0	304.5	5.7187	-0.7774	7.397	16.1341
Oct-21	7410.7	2058.6	31	10	9469.3	305.5	5.7218	-0.8011	7.436	16.9164
Nov-21	7199.0	2048.6	30	11	9247.6	308.3	5.7309	-0.8697	7.283	18.2075
Dec-21	7528.7	2063.8	31	12	9592.5	309.4	5.7348	-0.8986	7.738	18.6850
Jan-22	7675.3	1735.0	31	1	9410.3	303.6	5.7156	-0.7540	8.960	16.8073
Feb-22	6891.0	1464.7	28	2	8355.8	298.4	5.6985	-0.6254	8.743	16.2813
Mar-22	7410.2	1837.3	31	3	9247.6	298.3	5.6981	-0.6226	8.442	15.7493
Apr-22	7351.9	1657.5	30	4	9009.4	300.3	5.7048	-0.6731	7.651	15.7986
May-22	7525.2	1858.9	31	5	9384.1	302.7	5.7128	-0.7331	7.575	15.8951
Jun-22	7430.7	1683.7	30	6	9114.4	303.8	5.7164	-0.7604	7.537	16.4327
Jul-22	7287.5	2142.1	31	7	9429.6	304.2	5.7176	-0.7695	7.654	16.3613
Aug-22	7318.3	2100.9	31	8	9419.2	303.8	5.7165	-0.7612	7.738	16.5919
Sep-22	7070.7	2049.5	30	9	9120.2	304.0	5.7171	-0.7652	7.752	16.7054
Oct-22	7398.6	2055.3	31	10	9453.9	305.0	5.7202	-0.7889	7.792	17.5077
Nov-22	7186.2	2045.0	30	11	9231.2	307.7	5.7291	-0.8563	7.641	18.8318
Dec-22	7515.2	2060.2	31	12	9575.4	308.9	5.7330	-0.8851	8.103	19.3214
Jan-23	7644.5	1728.0	31	1	9372.5	302.3	5.7116	-0.7238	9.687	17.3663
Feb-23	6849.3	1455.9	28	2	8305.2	296.6	5.6924	-0.5797	9.464	16.8280
Mar-23	7364.5	1826.0	31	3	9190.5	296.5	5.6919	-0.5760	9.150	16.2834
Apr-23	7305.9	1647.2	30	4	8953.0	298.4	5.6985	-0.6258	8.295	16.3339
May-23	7477.9	1847.2	31	5	9325.1	300.8	5.7065	-0.6855	8.213	16.4327
Jun-23	7383.4	1673.0	30	6	9056.4	301.9	5.7100	-0.7123	8.177	16.9829
Jul-23	7241.1	2128.5	31	7	9369.6	302.2	5.7112	-0.7214	8.296	16.9098
Aug-23	7272.5	2087.8	31	8	9360.3	301.9	5.7102	-0.7139	8.381	17.1458
Sep-23	7027.0	2036.8	30	9	9063.9	302.1	5.7109	-0.7185	8.392	17.2620
Oct-23	7352.9	2042.5	31	10	9395.4	303.1	5.7140	-0.7422	8.435	18.0831
Nov-23	7140.3	2031.9	30	11	9172.2	305.7	5.7227	-0.8081	8.289	19.4384
Dec-23	7466.9	2046.9	31	12	9513.8	306.9	5.7265	-0.8365	8.771	19.9395
Jan-24	7614.5	1721.3	31	1	9335.8	301.2	5.7076	-0.6942	10.161	17.9647
Feb-24	7080.6	1505.0	29	2	8585.6	296.1	5.6906	-0.5655	9.935	17.4129
Mar-24	7350.1	1822.4	31	3	9172.6	295.9	5.6900	-0.5613	9.614	16.8547
Apr-24	7290.8	1643.8	30	4	8934.6	297.8	5.6965	-0.6103	8.725	16.9065
May-24	7461.8	1843.3	31	5	9305.1	300.2	5.7043	-0.6694	8.640	17.0077
Jun-24	7367.2	1669.3	30	6	9036.5	301.2	5.7078	-0.6957	8.605	17.5717
Jul-24	7225.2	2123.8	31	7	9349.0	301.6	5.7090	-0.7049	8.725	17.4968
Aug-24	7257.0	2083.3	31	8	9340.3	301.3	5.7081	-0.6978	8.810	17.7388
Sep-24	7012.2	2032.6	30	9	9044.8	301.5	5.7087	-0.7026	8.820	17.8578
Oct-24	7337.4	2038.2	31	10	9375.6	302.4	5.7119	-0.7262	8.864	18.6996
Nov-24	7124.2	2027.3	30	11	9151.6	305.1	5.7205	-0.7911	8.721	20.0889
Dec-24	7449.9	2042.2	31	12	9492.1	306.2	5.7242	-0.8193	9.213	20.6026
Jan-25	7605.9	1719.3	31	1	9325.2	300.8	5.7065	-0.6856	10.538	18.6033
Feb-25	6835.0	1452.8	28	2	8287.8	296.0	5.6903	-0.5639	10.309	18.0369
Mar-25	7348.2	1822.0	31	3	9170.1	295.8	5.6897	-0.5593	9.984	17.4638
Apr-25	7288.1	1643.1	30	4	8931.2	297.7	5.6961	-0.6074	9.072	17.5169
May-25	7458.2	1842.4	31	5	9300.6	300.0	5.7039	-0.6657	8.985	17.6209
Jun-25	7363.3	1668.4	30	6	9031.7	301.1	5.7073	-0.6917	8.950	18.1998
Jul-25	7221.4	2122.7	31	7	9344.1	301.4	5.7085	-0.7009	9.072	18.1230
Aug-25	7253.5	2082.3	31	8	9335.8	301.2	5.7076	-0.6942	9.156	18.3714
Sep-25	7009.0	2031.6	30	9	9040.6	301.4	5.7083	-0.6992	9.166	18.4936
Oct-25	7333.8	2037.3	31	10	9371.1	302.3	5.7114	-0.7226	9.210	19.3577
Nov-25	7120.0	2026.1	30	11	9146.2	304.9	5.7199	-0.7866	9.070	20.7840
Dec-25	7445.3	2041.0	31	12	9486.3	306.0	5.7236	-0.8147	9.569	21.3113

Base Forecast of Refinery Gas Demand (2026-2030)

	2014 CGR Ref g-30	2014 CGR Ref g-50 (CoGen)			Total Ref	Total Ref			Total Ref Burner tip	
	Mdth	Mdth	#Days per Month	Month	Mdth	Mdth/Day	ln(mdtd)	ln(G/B): Moving 2-Mo Avg	Burner tip Gas (G) $/dth	Butane (B) $/dth
Jan-26	7600.9	1718.2	31	1	9319.1	300.6	5.7058	-0.6807	10.959	19.2354
Feb-26	6829.6	1451.7	28	2	8281.3	295.8	5.6895	-0.5580	10.728	18.6548
Mar-26	7342.0	1820.4	31	3	9162.4	295.6	5.6889	-0.5529	10.397	18.0674
Apr-26	7281.2	1641.6	30	4	8922.8	297.4	5.6952	-0.6003	9.457	18.1218
May-26	7450.5	1840.5	31	5	9291.0	299.7	5.7028	-0.6580	9.369	18.2284
Jun-26	7355.3	1666.6	30	6	9022.0	300.7	5.7062	-0.6836	9.334	18.8218
Jul-26	7213.5	2120.4	31	7	9333.9	301.1	5.7074	-0.6927	9.457	18.7430
Aug-26	7246.0	2080.2	31	8	9326.1	300.8	5.7066	-0.6864	9.542	18.9976
Sep-26	7001.9	2029.5	30	9	9031.4	301.0	5.7073	-0.6915	9.550	19.1229
Oct-26	7326.3	2035.2	31	10	9361.5	302.0	5.7104	-0.7149	9.595	20.0087
Nov-26	7111.9	2023.8	30	11	9135.7	304.5	5.7187	-0.7780	9.457	21.4705
Dec-26	7436.7	2038.6	31	12	9475.3	305.7	5.7225	-0.8059	9.965	22.0111
Jan-27	7596.9	1717.3	31	1	9314.2	300.5	5.7053	-0.6767	11.332	19.8881
Feb-27	6829.4	1451.6	28	2	8281.0	295.8	5.6895	-0.5578	11.099	19.2928
Mar-27	7341.5	1820.3	31	3	9161.8	295.5	5.6888	-0.5524	10.763	18.6907
Apr-27	7280.0	1641.3	30	4	8921.3	297.4	5.6950	-0.5990	9.803	18.7465
May-27	7448.5	1840.0	31	5	9288.5	299.6	5.7025	-0.6559	9.712	18.8557
Jun-27	7353.0	1666.1	30	6	9019.1	300.6	5.7059	-0.6812	9.678	19.4641
Jul-27	7211.2	2119.7	31	7	9331.0	301.0	5.7071	-0.6903	9.801	19.3833
Aug-27	7244.0	2079.6	31	8	9323.5	300.8	5.7063	-0.6843	9.886	19.6443
Sep-27	7000.1	2029.0	30	9	9029.1	301.0	5.7070	-0.6895	9.894	19.7728
Oct-27	7324.3	2034.6	31	10	9358.9	301.9	5.7101	-0.7128	9.940	20.6808
Nov-27	7109.1	2023.1	30	11	9132.2	304.4	5.7184	-0.7751	9.804	22.1795
Dec-27	7433.7	2037.8	31	12	9471.5	305.5	5.7221	-0.8029	10.318	22.7337
Jan-28	7592.3	1716.2	31	1	9308.6	300.3	5.7047	-0.6722	11.776	20.5367
Feb-28	7067.2	1502.2	29	2	8569.4	295.5	5.6887	-0.5513	11.540	19.9273
Mar-28	7334.8	1818.6	31	3	9153.5	295.3	5.6879	-0.5456	11.199	19.3108
Apr-28	7272.7	1639.7	30	4	8912.4	297.1	5.6940	-0.5915	10.209	19.3679
May-28	7440.5	1838.0	31	5	9278.5	299.3	5.7015	-0.6478	10.116	19.4798
Jun-28	7344.7	1664.2	30	6	9009.0	300.3	5.7048	-0.6727	10.083	20.1026
Jul-28	7203.1	2117.3	31	7	9320.4	300.7	5.7060	-0.6818	10.208	20.0199
Aug-28	7236.1	2077.3	31	8	9313.4	300.4	5.7052	-0.6761	10.292	20.2872
Sep-28	6992.6	2026.9	30	9	9019.5	300.6	5.7059	-0.6815	10.299	20.4187
Oct-28	7316.3	2032.4	31	10	9348.7	301.6	5.7090	-0.7046	10.346	21.3484
Nov-28	7100.7	2020.6	30	11	9121.3	304.0	5.7172	-0.7661	10.213	22.8828
Dec-28	7424.7	2035.4	31	12	9460.1	305.2	5.7208	-0.7938	10.735	23.4502
Jan-29	7581.3	1713.8	31	1	9295.0	299.8	5.7032	-0.6612	12.327	21.2244
Feb-29	6811.8	1447.9	28	2	8259.7	295.0	5.6869	-0.5383	12.087	20.5997
Mar-29	7321.9	1815.4	31	3	9137.3	294.8	5.6861	-0.5322	11.738	19.9677
Apr-29	7259.3	1636.7	30	4	8896.0	296.5	5.6922	-0.5776	10.708	20.0263
May-29	7426.3	1834.5	31	5	9260.8	298.7	5.6996	-0.6334	10.612	20.1409
Jun-29	7330.4	1661.0	30	6	8991.4	299.7	5.7028	-0.6580	10.579	20.7794
Jul-29	7189.1	2113.2	31	7	9302.3	300.1	5.7040	-0.6671	10.705	20.6947
Aug-29	7222.3	2073.4	31	8	9295.7	299.9	5.7033	-0.6618	10.790	20.9686
Sep-29	6979.5	2023.1	30	9	9002.5	300.1	5.7041	-0.6673	10.795	21.1034
Oct-29	7302.5	2028.6	31	10	9331.1	301.0	5.7071	-0.6904	10.844	22.0564
Nov-29	7086.5	2016.6	30	11	9103.1	303.4	5.7152	-0.7510	10.714	23.6293
Dec-29	7409.7	2031.2	31	12	9440.9	304.5	5.7188	-0.7785	11.249	24.2109
Jan-30	7570.8	1711.4	31	1	9282.2	299.4	5.7019	-0.6508	12.822	21.9350
Feb-30	6805.8	1446.6	28	2	8252.4	294.7	5.6861	-0.5317	12.580	21.2945
Mar-30	7315.1	1813.8	31	3	9128.9	294.5	5.6852	-0.5253	12.223	20.6465
Apr-30	7252.1	1635.0	30	4	8887.1	296.2	5.6912	-0.5701	11.160	20.7066
May-30	7418.4	1832.5	31	5	9250.9	298.4	5.6985	-0.6254	11.061	20.8241
Jun-30	7322.3	1659.1	30	6	8981.5	299.4	5.7017	-0.6497	11.030	21.4788
Jul-30	7181.1	2110.9	31	7	9291.9	299.7	5.7029	-0.6587	11.157	21.3919
Aug-30	7214.6	2071.2	31	8	9285.8	299.5	5.7023	-0.6537	11.242	21.6727
Sep-30	6972.1	2020.9	30	9	8993.1	299.8	5.7030	-0.6594	11.246	21.8109
Oct-30	7294.7	2026.4	31	10	9321.1	300.7	5.7061	-0.6823	11.296	22.7881
Nov-30	7078.2	2014.2	30	11	9092.4	303.1	5.7140	-0.7422	11.168	24.4008
Dec-30	7400.9	2028.8	31	12	9429.7	304.2	5.7176	-0.7696	11.713	24.9971

Base Forecast of Refinery Gas Demand (2030-2035)

					Total Ref	Total Ref				
	Mth	Mth	Days per Month	Month	Mth	Mth/Day	Intensity			
Jan-21	7668.8	1798.8	31	1	6272.4	202.1	0.7999	-0.0408	12.268	22.6911
Feb-21	6785.1	1447.2	28	2	5544.2	254.4	0.8971	-0.0242	12.112	22.2287
Mar-21	7307.8	1811.6	31	3	5116.6	264.2	0.8943	-0.0176	12.748	21.2277
Apr-21	7244.1	1672.2	30	4	5977.2	267.3	0.8531	-0.0218	11.648	21.4254
May-21	7468.7	1852.4	31	5	6240.1	268.1	0.8972	-0.0188	11.647	21.5480
Jun-21	7212.6	1667.1	30	6	6073.6	268.2	0.7995	-0.0408	11.618	22.2178
Jul-21	7178.4	6198.2	31	7	6268.7	268.4	0.7917	-0.0468	11.646	22.1287
Aug-21	7221.2	2328.7	31	8	6274.8	268.2	0.7911	-0.0448	11.793	22.4168
Sep-21	6984.1	2019.8	30	9	6068.7	268.4	0.7918	-0.0568	11.792	22.6697
Oct-21	7281.2	2324.3	31	10	6213.2	268.2	0.7948	-0.0728	11.794	22.6016
Nov-21	7368.2	2371.7	30	11	6061.8	268.7	0.7157	-0.7287	11.668	22.2196
Dec-21	7231.4	2328.2	31	12	6217.8	267.8	0.7167	-0.7268	12.218	22.6288
Jan-22	7668.8	1798.8	31	1	6267.8	268.8	0.8998	-0.0268	12.880	22.4781
Feb-22	7327.4	1456.8	28	2	5972.2	264.2	0.8944	-0.0184	12.841	22.6928
Mar-22	7868.8	1813.7	31	3	5112.2	264.8	0.8976	-0.0184	12.873	22.1188
Apr-22	7278.8	1672.8	30	4	6073.8	262.7	0.8957	-0.0881	12.198	22.1921
May-22	7492.8	1868.8	31	5	6278.8	267.8	0.8996	-0.0192	12.930	22.2970
Jun-22	7237.2	1666.7	30	6	6113.8	268.8	0.8991	-0.0241	12.885	22.5572
Jul-22	7198.8	6198.6	31	7	6278.8	268.1	0.7998	-0.0423	12.130	22.5995
Aug-22	7288.2	2287.8	31	8	6267.2	268.8	0.7932	-0.0268	12.218	22.2218
Sep-22	6988.4	2017.8	30	9	6072.4	268.2	0.7919	-0.0448	12.217	22.2472
Oct-22	7288.2	2328.4	31	10	6268.8	268.1	0.7941	-0.0372	12.273	24.2772
Nov-22	7368.7	2368.8	30	11	6072.8	268.4	0.7118	-0.7268	12.148	22.2778
Dec-22	7284.4	2324.7	31	12	6438.7	267.8	0.7164	-0.7268	12.718	22.7312
Jan-23	7668.8	1797.8	31	1	6268.2	268.7	0.8994	-0.0782	14.481	24.2281
Feb-23	6782.8	1444.1	28	2	6227.8	264.2	0.8942	-0.0184	14.148	23.8288
Mar-23	7281.4	1813.4	31	3	5111.8	262.8	0.8972	-0.0112	12.771	22.8228
Apr-23	7228.8	1821.8	30	4	6068.4	262.8	0.8981	-0.0842	12.838	22.8881
May-23	7481.2	1868.2	31	5	6268.8	267.7	0.8998	-0.0978	12.487	23.1188
Jun-23	7284.8	1666.1	30	6	6068.7	268.7	0.8992	-0.0214	12.488	23.8884
Jul-23	7182.8	6196.7	31	7	6268.4	268.8	0.7998	-0.0484	12.688	23.7211
Aug-23	7187.8	2288.2	31	8	6264.8	268.8	0.8988	-0.0262	12.684	24.3287
Sep-23	6988.2	2018.2	30	9	6072.8	268.1	0.7997	-0.0402	12.684	24.1988
Oct-23	7277.8	2281.7	31	10	6268.8	268.8	0.7927	-0.0848	12.738	25.2481
Nov-23	7368.8	2368.8	30	11	6068.8	268.2	0.7114	-0.7287	12.630	25.8827
Dec-23	7281.2	6327.6	31	12	6434.8	267.4	0.7168	-0.7487	12.188	27.6432
Jan-24	7642.1	1798.1	31	1	6248.2	268.2	0.8992	-0.0221	16.181	25.2540
Feb-24	6781.8	1441.2	29	2	6288.2	262.7	0.8954	-0.0241	14.888	24.8781
Mar-24	7287.1	1888.8	31	3	6084.8	262.4	0.8914	-0.4884	14.844	23.8487
Apr-24	7288.1	1888.2	30	4	6068.4	262.8	0.8978	-0.0788	12.222	23.8171
May-24	7288.7	1884.8	31	5	6218.2	267.1	0.8941	-0.0881	12.818	24.2488
Jun-24	7288.8	1881.8	30	6	6048.8	268.8	0.8972	-0.0182	12.182	24.7822
Jul-24	7148.4	6191.2	31	7	6248.8	268.4	0.8997	-0.0242	12.212	24.8822
Aug-24	7188.8	2282.8	31	8	6244.8	268.2	0.8978	-0.0288	12.481	25.8888
Sep-24	6948.8	2012.2	30	9	6024.1	268.8	0.8987	-0.0287	12.288	25.1748
Oct-24	7288.8	2317.8	31	10	6288.4	268.4	0.7917	-0.0484	12.488	25.8882
Nov-24	7044.7	2284.7	30	11	6048.4	261.8	0.7882	-0.7824	12.241	25.8788
Dec-24	7288.2	2318.1	31	12	6284.4	262.7	0.7138	-0.7282	12.674	26.7284
Jan-25	7732.7	1782.3	31	1	6228.7	268.8	0.8973	-0.0128	16.782	25.1288
Feb-25	6777.1	1448.8	28	2	6217.8	262.8	0.8918	-0.4888	16.821	25.4218
Mar-25	7282.7	1882.7	31	3	6088.8	262.2	0.8928	-0.4818	16.132	24.8882
Apr-25	7217.8	1887.1	30	4	6044.1	264.8	0.8982	-0.0788	12.871	24.7847
May-25	7278.8	1882.3	31	5	6282.8	267.8	0.8977	-0.0881	12.788	24.8881
Jun-25	7288.8	1888.8	30	6	6072.1	267.8	0.8982	-0.0883	12.728	25.8441
Jul-25	7142.4	6288.8	31	7	6241.8	268.1	0.8978	-0.0183	12.882	25.8442
Aug-25	7177.1	2282.4	31	8	6227.8	268.8	0.8979	-0.0144	12.848	25.8178
Sep-25	6978.8	2018.8	30	9	6047.1	268.8	0.8978	-0.0288	12.845	25.8287
Oct-25	7287.1	2316.8	31	10	6272.8	268.1	0.7998	-0.0422	14.882	27.1888
Nov-25	7278.8	2288.8	30	11	6041.4	261.4	0.7884	-0.8888	12.882	25.8887
Dec-25	7288.8	2317.2	31	12	6278.1	262.8	0.7118	-0.7288	14.488	25.8888

ADJUSTMENTS TO THE BASE FORECAST

A. Energy Efficiency/DSM Program Savings

Adjustments for energy efficiency/DSM (EE/DSM) programs for refinery customers are applied to the G-30 load portion of the refinery gas demand. The cogeneration (G-50) load is exempt from participating in these programs. The values applied to the refinery G-30 load have been noted in the earlier discussion of the overall G-30 load forecast.

B. Out-of-Model Adjustments for Non-Refinery Cogeneration

For the G-30 refinery load, we have made an adjustment to account for anticipated increased gas demand from existing customers beginning in 2014. The amount of additional non-cogeneration load is about 4.4 MDth/d through the forecast time horizon after 2014.

C. Refinery Industrial G-30 Gas Demand

The noncore industrial refinery gas demand receives G-30 rate treatment. It is basically the non-cogeneration gas load at refinery facilities served by SoCalGas. The details of how the gas demand forecast for total gas demand at refineries is provided above as the Base forecast of refinery gas demand. In this part of the noncore C&I only the refinery load billed at G-30 rates is discussed.

Continuing with the August 2015 month as an example and using the data from the following two tables, the G-30 industrial refinery demand was projected to be:

G-30 Refinery Gas Demand, Aug-2015 = (7,430.9) + (12.8 MDth/d) x
(31 days/mo, for Aug-2014)
– (62.0),

= (7,504.4 MDth).

The reduction of 62 MDth is the accumulated EE/DSM program impact for refineries.

D. Refinery Cogeneration Gas Demand

Gas used for cogeneration at refineries receives G-50 rate treatment. The base gas demand forecasted for cogeneration is adjusted as described in "C." above. Using August 2015 as an example:

G-50 Refinery Gas Demand, Aug-2015 = (2,133.3 MDth).

REFINERY GAS DEMAND FORECASTS

A. Annual Forecast Table

The first table below provides annual gas demand for the refinery segment. Recorded data are for years 2012-2013, while forecasts cover years 2014-2035.

B. Monthly Forecast Tables

The additional five tables below provide monthly gas demand for the refinery segment. Recorded data are for years 2012-2013, while forecasts cover years 2014-2035.

Annual Refinery Gas Demand: Recorded (2012-2013) and Forecast (2014-2035) (MDth)

		Refinery Industrial (G-30) Gas Demand				Refinery Cogeneration (G-50) Gas Demand			
Date	Total Refinery (G30 + G50) (MDth)	Ref **G30**, Base Econ. Fcst	Out-of-model Adj. (OOMA) for **Refinery G-30**	Accum. EE/DSM Scg Pgm Savings for **Refinery G-30**	Base Ref **G30,** *plus* OOMA *less* EE/DSM (MDth)	Cal. Days per Month	Ref **G50**, Base Econ. Fcst	Out-of-model Adj. for **Refinery G-50**	Base Ref **G50** *plus* Out-of-model Adj (MDth)
2012	**108,627**	87,342	0	0	87,342	365	21,284	0	21,284
2013	**113,393**	90,161	0	0	90,161	365	23,232	0	23,232
2014	**112,120**	88,572	1,116	383	89,304	366	22,815	0	22,815
2015	**113,417**	89,483	1,606	730	90,359	365	23,058	0	23,058
2016	**114,044**	90,267	1,610	1,076	90,801	365	23,243	0	23,243
2017	**113,645**	90,220	1,606	1,423	90,403	365	23,242	0	23,242
2018	**113,504**	90,384	1,606	1,769	90,220	366	23,283	0	23,283
2019	**112,473**	89,844	1,606	2,116	89,334	365	23,139	0	23,139
2020	**111,016**	88,963	1,610	2,462	88,111	365	22,904	0	22,904
2021	**109,721**	88,198	1,606	2,809	86,995	365	22,726	0	22,726
2022	**109,202**	88,061	1,606	3,155	86,512	366	22,690	0	22,690
2023	**108,182**	87,526	1,606	3,502	85,630	365	22,552	0	22,552
2024	**107,886**	87,571	1,610	3,848	85,333	365	22,553	0	22,553
2025	**107,182**	87,282	1,606	4,195	84,693	365	22,489	0	22,489
2026	**106,727**	87,196	1,606	4,541	84,260	366	22,467	0	22,467
2027	**106,350**	87,172	1,606	4,888	83,890	365	22,460	0	22,460
2028	**106,191**	87,326	1,610	5,234	83,702	365	22,489	0	22,489
2029	**105,724**	86,921	1,606	5,198	83,329	365	22,395	0	22,395
2030	**105,606**	86,826	1,606	5,198	83,235	366	22,371	0	22,371
2031	**105,480**	86,726	1,606	5,198	83,135	365	22,345	0	22,345
2032	**105,688**	86,897	1,610	5,198	83,310	365	22,378	0	22,378
2033	**105,355**	86,627	1,606	5,198	83,036	366	22,319	0	22,319
2034	**105,137**	86,454	1,606	5,198	82,863	365	22,274	0	22,274
2035	**105,048**	86,384	1,606	5,198	82,792	365	22,256	0	22,256

Monthly Refinery Gas Demand: Recorded (2012-2013) and Forecast (2014-2035) (MDth)

Date	Total Refinery (G30 + G50) (MDth)	Refinery Industrial (G-30) Gas Demand				Refinery Cogeneration (G-50) Gas Demand			
		Ref **G30**, Base Econ. Fcst	Out-of-model Adj. (OOMA) for **Refinery G-30**	Accum. EE/DSM Scg Pgm Savings for **Refinery G-30**	Base Ref **G30,** *plus* OOMA *less* EE/DSM (MDth)	Cal. Days per Month	Ref **G50**, Base Econ. Fcst	Out-of-model Adj. for **Refinery G-50**	Base Ref **G50** *plus* Out-of-model Adj (MDth)
Jan-12	**8,909**	7,307	0	0	7,307	31	1,602	0	1,602
Feb-12	**8,066**	6,479	0	0	6,479	28	1,586	0	1,586
Mar-12	**9,569**	7,680	0	0	7,680	31	1,889	0	1,889
Apr-12	**9,064**	7,364	0	0	7,364	30	1,700	0	1,700
May-12	**9,065**	7,116	0	0	7,116	31	1,949	0	1,949
Jun-12	**9,110**	7,199	0	0	7,199	30	1,911	0	1,911
Jul-12	**9,210**	7,293	0	0	7,293	31	1,917	0	1,917
Aug-12	**8,921**	7,061	0	0	7,061	31	1,860	0	1,860
Sep-12	**8,743**	6,907	0	0	6,907	30	1,836	0	1,836
Oct-12	**9,019**	7,529	0	0	7,529	31	1,491	0	1,491
Nov-12	**8,754**	7,074	0	0	7,074	30	1,680	0	1,680
Dec-12	**10,197**	8,334	0	0	8,334	31	1,863	0	1,863
Jan-13	**9,085**	7,410	0	0	7,410	31	1,675	0	1,675
Feb-13	**8,795**	7,253	0	0	7,253	28	1,542	0	1,542
Mar-13	**9,701**	7,774	0	0	7,774	31	1,927	0	1,927
Apr-13	**9,529**	7,776	0	0	7,776	30	1,753	0	1,753
May-13	**9,214**	7,389	0	0	7,389	31	1,825	0	1,825
Jun-13	**9,270**	7,557	0	0	7,557	30	1,712	0	1,712
Jul-13	**9,406**	7,269	0	0	7,269	31	2,137	0	2,137
Aug-13	**9,987**	7,759	0	0	7,759	31	2,228	0	2,228
Sep-13	**9,576**	7,424	0	0	7,424	30	2,152	0	2,152
Oct-13	**9,825**	7,689	0	0	7,689	31	2,136	0	2,136
Nov-13	**8,759**	6,819	0	0	6,819	30	1,940	0	1,940
Dec-13	**10,247**	8,042	0	0	8,042	31	2,205	0	2,205
Jan-14	**9,752**	7,930	62	33	7,959	31	1,793	0	1,793
Feb-14	**8,429**	6,929	56	29	6,956	29	1,473	0	1,473
Mar-14	**9,214**	7,360	62	33	7,389	31	1,825	0	1,825
Apr-14	**9,059**	7,369	60	32	7,397	30	1,661	0	1,661
May-14	**9,475**	7,559	81	33	7,607	31	1,867	0	1,867
Jun-14	**9,198**	7,461	78	32	7,507	30	1,691	0	1,691
Jul-14	**9,524**	7,309	99	33	7,376	31	2,149	0	2,149
Aug-14	**9,514**	7,340	99	33	7,407	31	2,107	0	2,107
Sep-14	**9,243**	7,102	114	32	7,184	30	2,058	0	2,058
Oct-14	**9,614**	7,443	136	33	7,547	31	2,068	0	2,068
Nov-14	**9,373**	7,218	132	32	7,319	30	2,054	0	2,054
Dec-14	**9,726**	7,552	136	33	7,656	31	2,070	0	2,070
Jan-15	**9,601**	7,770	136	62	7,844	31	1,756	0	1,756
Feb-15	**8,565**	7,008	123	56	7,075	28	1,490	0	1,490
Mar-15	**9,460**	7,521	136	62	7,595	31	1,865	0	1,865
Apr-15	**9,218**	7,463	132	60	7,535	30	1,683	0	1,683
May-15	**9,618**	7,653	136	62	7,727	31	1,891	0	1,891
Jun-15	**9,342**	7,557	132	60	7,629	30	1,712	0	1,712
Jul-15	**9,655**	7,404	136	62	7,478	31	2,176	0	2,176
Aug-15	**9,639**	7,431	136	62	7,505	31	2,133	0	2,133
Sep-15	**9,343**	7,188	132	60	7,260	30	2,083	0	2,083
Oct-15	**9,702**	7,535	136	62	7,609	31	2,093	0	2,093
Nov-15	**9,461**	7,309	132	60	7,381	30	2,080	0	2,080
Dec-15	**9,814**	7,644	136	62	7,718	31	2,095	0	2,095

Monthly Refinery Gas Demand: Recorded (2012-2013) and Forecast (2014-2035) (MDth)

Date	Total Refinery (G30 + G50) (MDth)	Refinery Industrial (G-30) Gas Demand				Refinery Cogeneration (G-50) Gas Demand			
		Ref G30, Base Econ. Fcst	Out-of-model Adj. (OOMA) for Refinery G-30	Accum. EE/DSM Scg Pgm Savings for Refinery G-30	Base Ref G30, *plus* OOMA *less* EE/DSM (MDth)	Cal. Days per Month	Ref G50, Base Econ. Fcst	Out-of-model Adj. for Refinery G-50	Base Ref G50 *plus* Out-of-model Adj (MDth)
Jan-16	**9,689**	7,866	136	91	7,911	31	1,778	0	1,778
Feb-16	**8,954**	7,350	128	85	7,392	28	1,562	0	1,562
Mar-16	**9,533**	7,603	136	91	7,648	31	1,885	0	1,885
Apr-16	**9,253**	7,515	132	88	7,558	30	1,694	0	1,694
May-16	**9,615**	7,674	136	91	7,720	31	1,896	0	1,896
Jun-16	**9,327**	7,568	132	88	7,612	30	1,715	0	1,715
Jul-16	**9,657**	7,428	136	91	7,473	31	2,183	0	2,183
Aug-16	**9,664**	7,473	136	91	7,519	31	2,145	0	2,145
Sep-16	**9,365**	7,227	132	88	7,270	30	2,095	0	2,095
Oct-16	**9,708**	7,562	136	91	7,607	31	2,101	0	2,101
Nov-16	**9,470**	7,338	132	88	7,382	30	2,088	0	2,088
Dec-16	**9,809**	7,663	136	91	7,709	31	2,101	0	2,101
Jan-17	**9,650**	7,858	136	121	7,874	31	1,776	0	1,776
Feb-17	**8,620**	7,097	123	109	7,111	28	1,509	0	1,509
Mar-17	**9,541**	7,633	136	121	7,649	31	1,893	0	1,893
Apr-17	**9,274**	7,555	132	117	7,570	30	1,703	0	1,703
May-17	**9,629**	7,709	136	121	7,725	31	1,904	0	1,904
Jun-17	**9,348**	7,609	132	117	7,624	30	1,724	0	1,724
Jul-17	**9,669**	7,460	136	121	7,476	31	2,193	0	2,193
Aug-17	**9,650**	7,486	136	121	7,501	31	2,149	0	2,149
Sep-17	**9,337**	7,227	132	117	7,242	30	2,095	0	2,095
Oct-17	**9,675**	7,560	136	121	7,575	31	2,100	0	2,100
Nov-17	**9,451**	7,346	132	117	7,361	30	2,090	0	2,090
Dec-17	**9,801**	7,680	136	121	7,695	31	2,105	0	2,105
Jan-18	**9,640**	7,874	136	150	7,860	31	1,780	0	1,780
Feb-18	**8,610**	7,111	123	136	7,099	29	1,512	0	1,512
Mar-18	**9,532**	7,649	136	150	7,635	31	1,897	0	1,897
Apr-18	**9,264**	7,571	132	145	7,557	30	1,707	0	1,707
May-18	**9,618**	7,724	136	150	7,710	31	1,908	0	1,908
Jun-18	**9,336**	7,623	132	145	7,609	30	1,727	0	1,727
Jul-18	**9,657**	7,474	136	150	7,460	31	2,197	0	2,197
Aug-18	**9,639**	7,500	136	150	7,486	31	2,153	0	2,153
Sep-18	**9,325**	7,240	132	145	7,227	30	2,099	0	2,099
Oct-18	**9,662**	7,572	136	150	7,559	31	2,104	0	2,104
Nov-18	**9,437**	7,357	132	145	7,343	30	2,093	0	2,093
Dec-18	**9,784**	7,690	136	150	7,676	31	2,108	0	2,108
Jan-19	**9,608**	7,872	136	180	7,829	31	1,780	0	1,780
Feb-19	**8,563**	7,094	123	162	7,055	28	1,508	0	1,508
Mar-19	**9,466**	7,620	136	180	7,577	31	1,889	0	1,889
Apr-19	**9,193**	7,536	132	174	7,494	30	1,699	0	1,699
May-19	**9,539**	7,684	136	180	7,641	31	1,898	0	1,898
Jun-19	**9,252**	7,577	132	174	7,536	30	1,717	0	1,717
Jul-19	**9,562**	7,424	136	180	7,380	31	2,182	0	2,182
Aug-19	**9,538**	7,444	136	180	7,401	31	2,137	0	2,137
Sep-19	**9,223**	7,183	132	174	7,141	30	2,082	0	2,082
Oct-19	**9,550**	7,508	136	180	7,464	31	2,085	0	2,085
Nov-19	**9,320**	7,288	132	174	7,246	30	2,074	0	2,074
Dec-19	**9,658**	7,614	136	180	7,571	31	2,087	0	2,087
Jan-20	**9,453**	7,769	136	209	7,697	31	1,756	0	1,756
Feb-20	**8,699**	7,230	128	195	7,163	28	1,537	0	1,537
Mar-20	**9,286**	7,499	136	209	7,427	31	1,859	0	1,859
Apr-20	**9,031**	7,426	132	202	7,357	30	1,674	0	1,674
May-20	**9,389**	7,587	136	209	7,515	31	1,874	0	1,874
Jun-20	**9,111**	7,485	132	202	7,415	30	1,696	0	1,696
Jul-20	**9,418**	7,334	136	209	7,262	31	2,156	0	2,156
Aug-20	**9,398**	7,358	136	209	7,285	31	2,112	0	2,112
Sep-20	**9,091**	7,102	132	202	7,033	30	2,059	0	2,059
Oct-20	**9,417**	7,427	136	209	7,354	31	2,063	0	2,063
Nov-20	**9,193**	7,211	132	202	7,141	30	2,052	0	2,052
Dec-20	**9,530**	7,536	136	209	7,464	31	2,066	0	2,066

Monthly Refinery Gas Demand: Recorded (2012-2013) and Forecast (2014-2035) (MDth)

Date	Total Refinery (G30 + G50) (MDth)	Refinery Industrial (G-30) Gas Demand				Refinery Cogeneration (G-50) Gas Demand			
		Ref G30, Base Econ. Fcst	Out-of-model Adj. (OOMA) for Refinery G-30	Accum. EE/DSM Scg Pgm Savings for Refinery G-30	Base Ref G30, *plus* OOMA *less* EE/DSM (MDth)	Cal. Days per Month	Ref G50, Base Econ. Fcst	Out-of-model Adj. for Refinery G-50	Base Ref G50 *plus* Out-of-model Adj (MDth)
Jan-21	**9,317**	7,682	136	239	7,580	31	1,737	0	1,737
Feb-21	**8,274**	6,900	123	215	6,808	28	1,467	0	1,467
Mar-21	**9,158**	7,421	136	239	7,318	31	1,840	0	1,840
Apr-21	**8,924**	7,363	132	231	7,264	30	1,660	0	1,660
May-21	**9,298**	7,538	136	239	7,436	31	1,862	0	1,862
Jun-21	**9,031**	7,443	132	231	7,345	30	1,687	0	1,687
Jul-21	**9,344**	7,300	136	239	7,198	31	2,146	0	2,146
Aug-21	**9,333**	7,330	136	239	7,228	31	2,104	0	2,104
Sep-21	**9,036**	7,082	132	231	6,983	30	2,053	0	2,053
Oct-21	**9,367**	7,411	136	239	7,309	31	2,059	0	2,059
Nov-21	**9,149**	7,199	132	231	7,100	30	2,049	0	2,049
Dec-21	**9,490**	7,529	136	239	7,427	31	2,064	0	2,064
Jan-22	**9,279**	7,675	136	268	7,544	31	1,735	0	1,735
Feb-22	**8,237**	6,891	123	242	6,772	29	1,465	0	1,465
Mar-22	**9,116**	7,410	136	268	7,279	31	1,837	0	1,837
Apr-22	**8,882**	7,352	132	259	7,225	30	1,658	0	1,658
May-22	**9,253**	7,525	136	268	7,394	31	1,859	0	1,859
Jun-22	**8,987**	7,431	132	259	7,303	30	1,684	0	1,684
Jul-22	**9,298**	7,287	136	268	7,156	31	2,142	0	2,142
Aug-22	**9,288**	7,318	136	268	7,187	31	2,101	0	2,101
Sep-22	**8,993**	7,071	132	259	6,943	30	2,050	0	2,050
Oct-22	**9,322**	7,399	136	268	7,267	31	2,055	0	2,055
Nov-22	**9,104**	7,186	132	259	7,059	30	2,045	0	2,045
Dec-22	**9,444**	7,515	136	268	7,384	31	2,060	0	2,060
Jan-23	**9,212**	7,645	136	297	7,483	31	1,728	0	1,728
Feb-23	**8,160**	6,849	123	269	6,704	28	1,456	0	1,456
Mar-23	**9,029**	7,364	136	297	7,203	31	1,826	0	1,826
Apr-23	**8,797**	7,306	132	288	7,150	30	1,647	0	1,647
May-23	**9,164**	7,478	136	297	7,317	31	1,847	0	1,847
Jun-23	**8,901**	7,383	132	288	7,228	30	1,673	0	1,673
Jul-23	**9,209**	7,241	136	297	7,080	31	2,129	0	2,129
Aug-23	**9,199**	7,273	136	297	7,112	31	2,088	0	2,088
Sep-23	**8,908**	7,027	132	288	6,871	30	2,037	0	2,037
Oct-23	**9,234**	7,353	136	297	7,192	31	2,043	0	2,043
Nov-23	**9,016**	7,140	132	288	6,984	30	2,032	0	2,032
Dec-23	**9,353**	7,467	136	297	7,306	31	2,047	0	2,047
Jan-24	**9,146**	7,615	136	326	7,425	31	1,721	0	1,721
Feb-24	**8,408**	7,081	128	305	6,903	28	1,505	0	1,505
Mar-24	**8,983**	7,350	136	326	7,161	31	1,822	0	1,822
Apr-24	**8,751**	7,291	132	315	7,107	30	1,644	0	1,644
May-24	**9,116**	7,462	136	326	7,272	31	1,843	0	1,843
Jun-24	**8,853**	7,367	132	315	7,184	30	1,669	0	1,669
Jul-24	**9,159**	7,225	136	326	7,036	31	2,124	0	2,124
Aug-24	**9,151**	7,257	136	326	7,067	31	2,083	0	2,083
Sep-24	**8,861**	7,012	132	315	6,829	30	2,033	0	2,033
Oct-24	**9,186**	7,337	136	326	7,148	31	2,038	0	2,038
Nov-24	**8,968**	7,124	132	315	6,941	30	2,027	0	2,027
Dec-24	**9,303**	7,450	136	326	7,260	31	2,042	0	2,042
Jan-25	**9,105**	7,606	136	356	7,386	31	1,719	0	1,719
Feb-25	**8,089**	6,835	123	322	6,636	28	1,453	0	1,453
Mar-25	**8,950**	7,348	136	356	7,128	31	1,822	0	1,822
Apr-25	**8,718**	7,288	132	345	7,075	30	1,643	0	1,643
May-25	**9,081**	7,458	136	356	7,238	31	1,842	0	1,842
Jun-25	**8,819**	7,363	132	345	7,151	30	1,668	0	1,668
Jul-25	**9,124**	7,221	136	356	7,001	31	2,123	0	2,123
Aug-25	**9,116**	7,253	136	356	7,034	31	2,082	0	2,082
Sep-25	**8,828**	7,009	132	345	6,796	30	2,032	0	2,032
Oct-25	**9,151**	7,334	136	356	7,114	31	2,037	0	2,037
Nov-25	**8,933**	7,120	132	345	6,907	30	2,026	0	2,026
Dec-25	**9,266**	7,445	136	356	7,225	31	2,041	0	2,041

Monthly Refinery Gas Demand: Recorded (2012-2013) and Forecast (2014-2035) (MDth)

Date	Total Refinery (G30 + G50) (MDth)	Refinery Industrial (G-30) Gas Demand				Refinery Cogeneration (G-50) Gas Demand			
		Ref G30, Base Econ. Fcst	Out-of-model Adj. (OOMA) for Refinery G-30	Accum. EE/DSM Scg Pgm Savings for Refinery G-30	Base Ref G30, *plus* OOMA *less* EE/DSM (MDth)	Cal. Days per Month	Ref G50, Base Econ. Fcst	Out-of-model Adj. for Refinery G-50	Base Ref G50 *plus* Out-of-model Adj (MDth)
Jan-26	**9,070**	7,601	136	386	7,352	31	1,718	0	1,718
Feb-26	**8,056**	6,830	123	348	6,604	29	1,452	0	1,452
Mar-26	**8,913**	7,342	136	386	7,093	31	1,820	0	1,820
Apr-26	**8,682**	7,281	132	373	7,040	30	1,642	0	1,642
May-26	**9,042**	7,451	136	386	7,201	31	1,840	0	1,840
Jun-26	**8,781**	7,355	132	373	7,114	30	1,667	0	1,667
Jul-26	**9,085**	7,214	136	386	6,964	31	2,120	0	2,120
Aug-26	**9,077**	7,246	136	386	6,997	31	2,080	0	2,080
Sep-26	**8,790**	7,002	132	373	6,761	30	2,030	0	2,030
Oct-26	**9,112**	7,326	136	386	7,077	31	2,035	0	2,035
Nov-26	**8,894**	7,112	132	373	6,871	30	2,024	0	2,024
Dec-26	**9,226**	7,437	136	386	7,187	31	2,039	0	2,039
Jan-27	**9,035**	7,597	136	415	7,318	31	1,717	0	1,717
Feb-27	**8,029**	6,829	123	375	6,578	28	1,452	0	1,452
Mar-27	**8,883**	7,341	136	415	7,063	31	1,820	0	1,820
Apr-27	**8,652**	7,280	132	402	7,010	30	1,641	0	1,641
May-27	**9,010**	7,449	136	415	7,170	31	1,840	0	1,840
Jun-27	**8,749**	7,353	132	402	7,083	30	1,666	0	1,666
Jul-27	**9,052**	7,211	136	415	6,933	31	2,120	0	2,120
Aug-27	**9,045**	7,244	136	415	6,965	31	2,080	0	2,080
Sep-27	**8,759**	7,000	132	402	6,730	30	2,029	0	2,029
Oct-27	**9,080**	7,324	136	415	7,046	31	2,035	0	2,035
Nov-27	**8,862**	7,109	132	402	6,839	30	2,023	0	2,023
Dec-27	**9,193**	7,434	136	415	7,155	31	2,038	0	2,038
Jan-28	**9,002**	7,592	136	443	7,285	31	1,716	0	1,716
Feb-28	**8,282**	7,067	128	415	6,780	28	1,502	0	1,502
Mar-28	**8,847**	7,335	136	443	7,028	31	1,819	0	1,819
Apr-28	**8,615**	7,273	132	429	6,976	30	1,640	0	1,640
May-28	**8,972**	7,440	136	443	7,134	31	1,838	0	1,838
Jun-28	**8,712**	7,345	132	429	7,048	30	1,664	0	1,664
Jul-28	**9,014**	7,203	136	443	6,896	31	2,117	0	2,117
Aug-28	**9,006**	7,236	136	443	6,929	31	2,077	0	2,077
Sep-28	**8,722**	6,993	132	429	6,696	30	2,027	0	2,027
Oct-28	**9,042**	7,316	136	443	7,009	31	2,032	0	2,032
Nov-28	**8,824**	7,101	132	429	6,804	30	2,021	0	2,021
Dec-28	**9,153**	7,425	136	443	7,118	31	2,035	0	2,035
Jan-29	**8,990**	7,581	136	441	7,276	31	1,714	0	1,714
Feb-29	**7,984**	6,812	123	399	6,536	28	1,448	0	1,448
Mar-29	**8,832**	7,322	136	441	7,017	31	1,815	0	1,815
Apr-29	**8,601**	7,259	132	427	6,964	30	1,637	0	1,637
May-29	**8,956**	7,426	136	441	7,121	31	1,835	0	1,835
Jun-29	**8,696**	7,330	132	427	7,035	30	1,661	0	1,661
Jul-29	**8,997**	7,189	136	441	6,884	31	2,113	0	2,113
Aug-29	**8,991**	7,222	136	441	6,917	31	2,073	0	2,073
Sep-29	**8,707**	6,979	132	427	6,684	30	2,023	0	2,023
Oct-29	**9,026**	7,303	136	441	6,998	31	2,029	0	2,029
Nov-29	**8,808**	7,086	132	427	6,791	30	2,017	0	2,017
Dec-29	**9,136**	7,410	136	441	7,105	31	2,031	0	2,031
Jan-30	**8,977**	7,571	136	441	7,266	31	1,711	0	1,711
Feb-30	**7,977**	6,806	123	399	6,530	29	1,447	0	1,447
Mar-30	**8,824**	7,315	136	441	7,010	31	1,814	0	1,814
Apr-30	**8,592**	7,252	132	427	6,957	30	1,635	0	1,635
May-30	**8,946**	7,418	136	441	7,113	31	1,833	0	1,833
Jun-30	**8,686**	7,322	132	427	7,027	30	1,659	0	1,659
Jul-30	**8,987**	7,181	136	441	6,876	31	2,111	0	2,111
Aug-30	**8,981**	7,215	136	441	6,910	31	2,071	0	2,071
Sep-30	**8,698**	6,972	132	427	6,677	30	2,021	0	2,021
Oct-30	**9,016**	7,295	136	441	6,990	31	2,026	0	2,026
Nov-30	**8,797**	7,078	132	427	6,783	30	2,014	0	2,014
Dec-30	**9,125**	7,401	136	441	7,096	31	2,029	0	2,029

Monthly Refinery Gas Demand: Recorded (2012-2013) and Forecast (2014-2035) (MDth)

		Refinery Industrial (G-30) Gas Demand				Refinery Cogeneration (G-50) Gas Demand			
Date	Total Refinery (G30 + G50) (MDth)	Ref G30, Base Econ. Fcst	Out-of-model Adj. (OOMA) for Refinery	G-30	Accum. EE/DSM Scg Pgm Savings for Refinery G-30	Base Ref G30, *plus* OOMA *less* EE/DSM (MDth)	Cal. Days per Month	Ref G50, Base Econ. Fcst	Out-of-model Adj. for Refinery G-50	Base Ref G50 *plus* Out-of-model Adj (MDth)
Jan-31	**8,967**	7,563	136	441	7,258	31	1,710	0	1,710
Feb-31	**7,969**	6,799	123	399	6,524	28	1,445	0	1,445
Mar-31	**8,814**	7,308	136	441	7,003	31	1,812	0	1,812
Apr-31	**8,582**	7,244	132	427	6,949	30	1,633	0	1,633
May-31	**8,935**	7,410	136	441	7,105	31	1,830	0	1,830
Jun-31	**8,675**	7,313	132	427	7,018	30	1,657	0	1,657
Jul-31	**8,976**	7,172	136	441	6,867	31	2,108	0	2,108
Aug-31	**8,970**	7,206	136	441	6,901	31	2,069	0	2,069
Sep-31	**8,688**	6,964	132	427	6,669	30	2,019	0	2,019
Oct-31	**9,005**	7,286	136	441	6,981	31	2,024	0	2,024
Nov-31	**8,786**	7,069	132	427	6,774	30	2,012	0	2,012
Dec-31	**9,113**	7,391	136	441	7,086	31	2,026	0	2,026
Jan-32	**8,960**	7,556	136	440	7,252	31	1,708	0	1,708
Feb-32	**8,249**	7,037	128	412	6,753	28	1,496	0	1,496
Mar-32	**8,809**	7,303	136	440	6,999	31	1,811	0	1,811
Apr-32	**8,577**	7,239	132	426	6,945	30	1,632	0	1,632
May-32	**8,929**	7,404	136	440	7,100	31	1,829	0	1,829
Jun-32	**8,669**	7,307	132	426	7,013	30	1,656	0	1,656
Jul-32	**8,969**	7,166	136	440	6,862	31	2,106	0	2,106
Aug-32	**8,963**	7,200	136	440	6,896	31	2,067	0	2,067
Sep-32	**8,681**	6,958	132	426	6,664	30	2,017	0	2,017
Oct-32	**8,999**	7,280	136	440	6,976	31	2,022	0	2,022
Nov-32	**8,779**	7,063	132	426	6,769	30	2,010	0	2,010
Dec-32	**9,105**	7,384	136	440	7,081	31	2,024	0	2,024
Jan-33	**8,954**	7,552	136	441	7,247	31	1,707	0	1,707
Feb-33	**7,962**	6,794	123	399	6,518	29	1,444	0	1,444
Mar-33	**8,807**	7,301	136	441	6,996	31	1,810	0	1,810
Apr-33	**8,573**	7,237	132	427	6,942	30	1,632	0	1,632
May-33	**8,925**	7,401	136	441	7,096	31	1,828	0	1,828
Jun-33	**8,665**	7,305	132	427	7,009	30	1,655	0	1,655
Jul-33	**8,964**	7,164	136	441	6,859	31	2,106	0	2,106
Aug-33	**8,959**	7,198	136	441	6,893	31	2,066	0	2,066
Sep-33	**8,677**	6,956	132	427	6,661	30	2,016	0	2,016
Oct-33	**8,995**	7,278	136	441	6,973	31	2,022	0	2,022
Nov-33	**8,774**	7,060	132	427	6,765	30	2,009	0	2,009
Dec-33	**9,100**	7,381	136	441	7,076	31	2,023	0	2,023
Jan-34	**8,943**	7,543	136	441	7,238	31	1,705	0	1,705
Feb-34	**7,947**	6,781	123	399	6,505	28	1,441	0	1,441
Mar-34	**8,789**	7,287	136	441	6,982	31	1,807	0	1,807
Apr-34	**8,555**	7,222	132	427	6,927	30	1,628	0	1,628
May-34	**8,905**	7,386	136	441	7,081	31	1,824	0	1,824
Jun-34	**8,645**	7,289	132	427	6,994	30	1,652	0	1,652
Jul-34	**8,945**	7,148	136	441	6,843	31	2,101	0	2,101
Aug-34	**8,940**	7,183	136	441	6,878	31	2,062	0	2,062
Sep-34	**8,659**	6,942	132	427	6,647	30	2,012	0	2,012
Oct-34	**8,975**	7,263	136	441	6,958	31	2,018	0	2,018
Nov-34	**8,754**	7,045	132	427	6,749	30	2,005	0	2,005
Dec-34	**9,079**	7,365	136	441	7,060	31	2,019	0	2,019
Jan-35	**8,932**	7,534	136	441	7,229	31	1,703	0	1,703
Feb-35	**7,942**	6,777	123	399	6,502	28	1,441	0	1,441
Mar-35	**8,783**	7,283	136	441	6,978	31	1,806	0	1,806
Apr-35	**8,549**	7,217	132	427	6,922	30	1,627	0	1,627
May-35	**8,898**	7,380	136	441	7,075	31	1,823	0	1,823
Jun-35	**8,638**	7,283	132	427	6,988	30	1,650	0	1,650
Jul-35	**8,937**	7,142	136	441	6,837	31	2,099	0	2,099
Aug-35	**8,932**	7,177	136	441	6,872	31	2,060	0	2,060
Sep-35	**8,652**	6,936	132	427	6,641	30	2,011	0	2,011
Oct-35	**8,968**	7,257	136	441	6,952	31	2,016	0	2,016
Nov-35	**8,746**	7,038	132	427	6,743	30	2,003	0	2,003
Dec-35	**9,071**	7,359	136	441	7,054	31	2,017	0	2,017

2014 CALIFORNIA GAS REPORT

ELECTRIC GENERATION
JULY 2014

2014 CALIFORNIA GAS REPORT

NON-COGENERATION ELECTRIC GENERATION
JULY 2014

2014 CGR Workpapers
SDG&E/SoCalGas
Jeff Huang

The electric generation forecast is based on an analysis of the plant's operation in the western electric market using the Market Analytics model from Ventyx. Market Analytics has been used by SoCalGas in previous applications before the Commission. This workpapers include both the input assumptions and results.

Workpaper List

Energy Demand Forecast for California.
California Energy Commission's (CEC) California Energy Demand 2014-2024 Final Forecast, dated December 2013. SoCalGas selected the Mid Energy Demand scenario with Mid Additional Achievable Energy Efficiency (AAEE) scenario.

See Schedule 1 & 2 for the summary of peak and energy data.

Energy Demand Forecast for Outside of California
For outside of California, load data were based on Ventyx's most recent update of peak and energy. For the most part, Ventyx acquired the data from other utilities' resource plans. The load profiles are based on the average of 7 historical years.

Renewable Power Supply Assumptions and Reference
The base case assumes that 33% of the state's energy needs are met with renewable power by 2020, and additional renewable power is added after 2020 to maintain the 33% level. For summary of RPS, see Schedule 3

Current and future projects are based on CPUC's Project Status Table 2014 February. See Schedule 3a and Schedule 3b.

Green House Gas (GHG) Compliance Costs
See Schedule 4.

Once Through Cooling (OTC) Compliance Schedule
See Schedule 5.

Annual Gas Demand Throughput Forecasts
For SDG&E EG forecast, see Schedule 6a and 6b. For SoCal UEG/EWG, see Schedule 7a and 7b. For SoCal Large Cogen, see Schedule 8a and 8b.

Peak Day Forecasts
For SDG&E, see Schedule 9a and 9b. For SoCalGas, see Schedule 10a and 10b.

Energy Storage Assumption
See Schedule 11.

Schedule 1: Form 1.5a - Statewide
Final California Energy Demand Forecast, 2014 - 2024, Mid Demand Baseline, Mid AAEE Savings
Net Energy for Load by Agency and Balancing Authority (GWh)

Balancing Authority	Agency	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Average Annual Growth 2013 - 2024
	CCSF	1,079	1,086	1,093	1,104	1,115	1,128	1,137	1,147	1,157	1,166	1,184	1,198	1,207	0.96%
	NCPA - Greater Bay Area	1,522	1,528	1,537	1,556	1,573	1,594	1,611	1,631	1,650	1,669	1,689	1,705	1,720	1.08%
	Other NP15 LSEs - Bay Area	35	36	36	36	36	37	37	38	38	38	39	39	39	0.73%
	PG&E Service Area - Greater Bay Area	39,652	40,355	40,565	40,603	40,516	40,514	40,529	40,619	40,749	40,850	40,916	40,893	40,869	0.12%
	Silicon Valley Power	3,182	3,199	3,202	3,236	3,265	3,299	3,325	3,351	3,376	3,401	3,426	3,445	3,463	0.72%
Greater Bay Area Subtotal		45,470	46,204	46,433	46,535	46,505	46,572	46,639	46,786	46,970	47,124	47,254	47,280	47,298	0.21%
	CDWR-N	1,118	1,045	1,045	1,045	1,045	1,045	1,045	1,045	1,045	1,045	1,045	1,045	1,045	0.00%
	NCPA - Non Bay Area	1,046	1,048	1,057	1,069	1,081	1,094	1,106	1,121	1,136	1,151	1,166	1,179	1,190	1.16%
	Other NP15 LSEs - Non Bay Area	161	162	163	166	167	170	172	175	178	181	184	186	189	1.41%
	PG&E Service Area - Non Bay Area	45,082	44,549	44,898	45,040	45,105	45,271	45,480	45,827	46,193	46,507	46,883	47,135	47,299	0.55%
	WAPA	1,481	1,484	1,485	1,486	1,487	1,488	1,489	1,490	1,491	1,491	1,493	1,494	1,495	0.07%
Total North of Path 15		94,358	94,492	95,081	95,340	95,391	95,639	95,931	96,444	97,013	97,499	98,025	98,319	98,515	0.38%
	CDWR-ZP26	2,156	2,016	2,016	2,016	2,016	2,016	2,016	2,016	2,016	2,016	2,016	2,016	2,016	0.00%
	PG&E Service Area - ZP26	9,721	9,545	9,619	9,591	9,535	9,509	9,508	9,550	9,603	9,643	9,681	9,703	9,720	0.17%
Total Zone Path 26		11,877	11,561	11,635	11,607	11,551	11,525	11,524	11,566	11,619	11,659	11,697	11,719	11,736	0.14%
Total Valley		60,765	59,849	60,283	60,413	60,436	60,592	60,817	61,224	61,662	62,034	62,469	62,758	62,954	0.46%
Total North of Path 26		106,235	106,053	106,716	106,948	106,941	107,164	107,455	108,010	108,632	109,158	109,722	110,038	110,251	0.35%
	Merced	481	483	484	489	493	498	501	505	509	512	516	519	522	0.71%
	Turlock Irrigation District	2,151	2,156	2,175	2,201	2,223	2,249	2,274	2,305	2,337	2,368	2,400	2,429	2,456	1.19%
Total Turlock Irrigation District Control Area		2,633	2,639	2,659	2,690	2,716	2,747	2,775	2,810	2,846	2,881	2,916	2,948	2,978	1.10%
	City of Shasta Lake	200	200	200	202	203	203	204	205	206	207	208	208	209	0.40%
	Modesto Irrigation District	2,748	2,752	2,770	2,801	2,826	2,856	2,882	2,917	2,952	2,986	3,020	3,050	3,077	1.02%
	Redding	840	841	850	861	871	884	895	910	925	940	954	967	979	1.39%
	Roseville	1,319	1,321	1,331	1,347	1,361	1,378	1,394	1,413	1,432	1,450	1,469	1,485	1,500	1.16%
	SMUD	11,193	11,156	11,299	11,434	11,534	11,681	11,816	11,996	12,169	12,350	12,540	12,722	12,897	1.33%
	WAPA (SMUD)	1,391	1,212	1,223	1,252	1,285	1,316	1,336	1,357	1,377	1,400	1,418	1,436	1,455	1.68%
Total SMUD/WAPA Control Area		17,690	17,482	17,674	17,897	18,080	18,318	18,528	18,797	19,061	19,332	19,609	19,867	20,117	1.28%
	Anaheim	2,603	2,573	2,588	2,623	2,652	2,683	2,710	2,743	2,776	2,811	2,844	2,875	2,903	1.10%
	MWD	138	121	119	118	116	116	116	116	116	116	116	116	117	-0.31%
	Other SP15 LSEs - LA Basin	1,229	1,213	1,223	1,239	1,253	1,268	1,281	1,299	1,317	1,336	1,353	1,370	1,385	1.21%
	Pasadena	1,185	1,164	1,163	1,170	1,174	1,181	1,187	1,197	1,211	1,227	1,241	1,256	1,269	0.79%
	Riverside	2,319	2,288	2,305	2,336	2,363	2,392	2,420	2,453	2,488	2,523	2,557	2,588	2,618	1.23%
	SCE Service Area - LA Basin	72,479	71,367	71,819	71,955	71,799	71,752	71,805	72,091	72,532	72,928	73,249	73,445	73,571	0.28%
	Vernon	1,157	1,154	1,156	1,168	1,175	1,179	1,181	1,184	1,187	1,192	1,196	1,200	1,203	0.38%
LA Basin Subtotal		81,110	79,880	80,373	80,609	80,532	80,571	80,700	81,083	81,627	82,133	82,556	82,850	83,066	0.36%
	CDWR-S	4,710	4,405	4,405	4,405	4,405	4,405	4,405	4,405	4,405	4,405	4,405	4,405	4,405	0.00%
	SCE Service Area - Big Creek Ventura	15,507	15,261	15,318	15,313	15,234	15,174	15,137	15,146	15,173	15,206	15,225	15,231	15,226	-0.02%
Big Creek/Ventura Subtotal		20,217	19,666	19,723	19,718	19,639	19,579	19,542	19,551	19,578	19,611	19,630	19,636	19,631	-0.02%
	MWD	1,396	1,219	1,204	1,190	1,176	1,176	1,175	1,175	1,174	1,175	1,176	1,177	1,178	-0.31%
	Other SP15 LSEs - Out of LA Basin	79	79	79	80	80	80	80	80	80	80	81	81	81	0.23%
	SCE Service Area - Out of LA Basin	4,459	4,456	4,475	4,507	4,526	4,554	4,592	4,641	4,691	4,738	4,807	4,858	4,888	0.84%
	Valley Electric Association	10	10	10	10	10	10	10	10	10	10	10	10	10	0.00%
Total SCE TAC Area		107,271	105,309	105,864	106,114	105,963	105,970	106,098	106,540	107,160	107,747	108,260	108,612	108,854	0.30%
SDG&E Service Area		21,446	21,308	21,453	21,484	21,435	21,519	21,616	21,743	21,840	21,907	21,960	21,963	21,964	0.28%
Total South of Path 26		128,717	126,617	127,317	127,598	127,398	127,490	127,715	128,283	129,000	129,654	130,220	130,576	130,818	0.30%
	Burbank	1,184	1,170	1,178	1,191	1,202	1,213	1,224	1,237	1,254	1,269	1,283	1,292	1,301	0.97%
	Glendale	1,180	1,165	1,175	1,188	1,198	1,211	1,222	1,238	1,257	1,275	1,291	1,303	1,314	1.10%
	LADWP	26,998	26,784	26,996	27,223	27,417	27,629	27,803	28,125	28,531	28,936	29,329	29,675	30,002	1.04%
Total LADWP Control Area		29,361	29,119	29,349	29,602	29,817	30,053	30,249	30,600	31,041	31,479	31,904	32,271	32,618	1.04%
Imperial Irrigation District Control Area		3,833	3,857	3,933	4,016	4,100	4,193	4,288	4,399	4,516	4,514	4,593	4,687	4,777	1.96%
Total CAISO		234,952	232,670	234,032	234,546	234,339	234,654	235,170	236,293	237,632	238,812	239,942	240,614	241,070	0.32%
Total Statewide		288,469	285,767	287,647	288,751	289,052	289,965	291,010	292,899	295,096	297,018	298,964	300,387	301,560	0.49%

NOTES:
Table developed based on 2012 recorded sales.
For PG&E service territory, Bay Area Growth is based on projections for forecasting climate zones 4 and 5, non-Bay Area on climate zones 1, 2, and 3, and ZP 26 on climate zone 1.
For SCE service territory, LA Basin growth is based on projections for forecasting climate zones 8, 9, and 10, Big Creek-Ventura on climate zone 8, and Out of LA Basin on climate zone 7.
On 2013, Valley Electric Association became a CAISO participating transmission owner.

Schedule 2: Form 1.5b - Statewide
Final California Energy Demand Forecast, 2014 - 2024, Mid Demand Baseline, Mid AAEE Savings
1 in 2 Net Electricity Peak Demand by Agency and Balancing Authority (MW)

Balancing Authority	Agency	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Average Annual Growth 2013 - 2024
	CCSF	133	135	138	139	141	142	144	145	146	148	150	151	1.16%
	NCPA - Greater Bay Area	225	229	234	237	240	243	246	249	252	254	256	258	1.25%
	Other NP15 LSEs - Bay Area	7	7	7	7	7	7	7	7	7	8	8	8	1.22%
	PG&E Service Area - Greater Bay Area	7,572	7,699	7,747	7,720	7,702	7,708	7,718	7,729	7,726	7,720	7,691	7,658	0.10%
	Silicon Valley Power	471	477	487	492	496	502	506	510	513	517	519	521	0.92%
Greater Bay Area Subtotal		8,408	8,547	8,613	8,595	8,586	8,602	8,621	8,640	8,644	8,647	8,624	8,596	0.20%
	CDWR-N	264	264	264	264	264	264	264	264	264	264	264	264	0.00%
	NCPA - Non Bay Area	239	244	249	252	255	259	262	266	269	272	275	277	1.35%
	Other NP15 LSEs - Non Bay Area	35	36	37	38	38	39	39	40	41	41	42	42	1.67%
	PG&E Service Area - Non Bay Area	9,926	10,151	10,292	10,330	10,376	10,444	10,519	10,598	10,654	10,706	10,726	10,730	0.71%
	WAPA	153	156	159	161	163	164	166	167	168	169	170	171	1.02%
Total North of Path 15		19,025	19,398	19,614	19,640	19,682	19,772	19,870	19,975	20,041	20,099	20,101	20,080	0.49%
	CDWR-ZP26	315	315	315	315	315	315	315	315	315	315	315	315	0.00%
	PG&E Service Area - ZP26	2,066	2,100	2,111	2,102	2,097	2,099	2,102	2,106	2,104	2,102	2,094	2,083	0.07%
Total Zone Path 26		2,381	2,415	2,426	2,417	2,412	2,414	2,417	2,421	2,419	2,417	2,409	2,398	0.06%
Total Valley		12,998	13,265	13,428	13,462	13,508	13,584	13,667	13,756	13,816	13,869	13,886	13,882	0.60%
Total North of Path 26		21,407	21,812	22,041	22,058	22,094	22,186	22,287	22,396	22,460	22,516	22,510	22,478	0.44%
	Merced	94	95	97	98	98	99	100	101	102	102	103	103	0.83%
	Turlock Irrigation District	531	542	553	560	566	574	582	591	598	606	612	619	1.40%
Total Turlock Irrigation District Control Area		625	637	650	658	664	673	682	692	700	707	714	721	1.31%
	City of Shasta Lake	33	33	34	34	34	34	35	35	35	35	35	35	0.54%
	Modesto Irrigation District	681	695	708	716	723	732	741	750	758	766	772	779	1.23%
	Redding	273	279	285	289	293	298	303	308	313	317	320	324	1.58%
	Roseville	348	355	363	367	371	377	382	387	392	397	401	404	1.35%
	SMUD	3,079	3,135	3,196	3,223	3,263	3,302	3,346	3,387	3,430	3,472	3,514	3,555	1.32%
	WAPA (SMUD)	128	130	132	134	136	137	138	139	140	141	142	143	1.01%
Total SMUD/WAPA Control Area		4,542	4,627	4,718	4,762	4,819	4,879	4,944	5,006	5,068	5,127	5,184	5,240	1.31%
	Anaheim	539	549	560	568	575	582	590	597	605	611	617	623	1.33%
	MWD	20	20	20	20	20	20	20	20	20	20	20	20	0.00%
	Other SP15 LSEs - LA Basin	284	290	296	300	304	308	312	316	321	324	328	331	1.40%
	Pasadena	288	293	298	299	301	302	305	307	309	311	312	313	0.76%
	Riverside	588	599	611	620	628	637	646	656	665	673	681	688	1.44%
	SCE Service Area - LA Basin	16,057	16,357	16,498	16,510	16,537	16,581	16,649	16,750	16,823	16,867	16,875	16,860	0.44%
	Vernon	177	180	183	185	186	186	187	188	188	189	189	189	0.60%
LA Basin Subtotal		17,953	18,288	18,466	18,502	18,551	18,616	18,709	18,834	18,931	18,995	19,022	19,024	0.53%
	CDWR-S	422	422	422	422	422	422	422	422	422	422	422	422	0.00%
	SCE Service Area - Big Creek Ventura	3,227	3,280	3,297	3,287	3,280	3,278	3,282	3,288	3,293	3,293	3,288	3,280	0.15%
Big Creek/Ventura Subtotal		3,649	3,702	3,719	3,709	3,702	3,700	3,704	3,710	3,715	3,715	3,710	3,702	0.13%
	MWD	203	203	201	200	200	200	200	200	200	200	200	200	-0.14%
	Other SP15 LSEs - Out of LA Basin	11	11	11	12	12	12	12	12	12	12	12	12	0.79%
	SCE Service Area - Out of LA Basin	669	690	706	714	723	732	743	754	764	773	780	785	1.47%
	Valley Electric Association	115	116	117	117	118	118	119	119	119	119	119	119	0.31%
Total SCE TAC Area		22,600	23,009	23,221	23,254	23,306	23,378	23,487	23,629	23,741	23,814	23,843	23,843	0.49%
Total PG&E Service Area		4,678	4,751	4,791	4,786	4,810	4,831	4,850	4,859	4,856	4,846	4,822	4,796	0.23%
Total South of Path 26		27,278	27,760	28,012	28,040	28,116	28,209	28,337	28,488	28,596	28,660	28,664	28,639	0.44%
	Burbank	286	291	294	297	299	302	304	308	311	313	315	316	0.91%
	Glendale	308	314	318	321	324	327	330	334	338	341	344	346	1.06%
	LADWP	5,781	5,891	5,983	6,033	6,086	6,134	6,198	6,279	6,356	6,429	6,490	6,546	1.14%
Total LADWP Control Area		6,375	6,496	6,595	6,651	6,709	6,763	6,832	6,921	7,005	7,083	7,149	7,208	1.12%
Imperial Irrigation District Control Area		995	1,023	1,046	1,069	1,095	1,122	1,149	1,177	1,181	1,200	1,221	1,241	2.03%
Total CAISO Noncoincident Peak		48,685	49,573	50,052	50,097	50,210	50,395	50,625	50,884	51,057	51,176	51,174	51,117	0.44%
Total CAISO Coincident Peak		47,516	48,383	48,851	48,895	49,005	49,186	49,410	49,663	49,831	49,948	49,946	49,890	0.44%
Total Statewide Noncoincident Peak		61,222	62,356	63,060	63,237	63,497	63,832	64,231	64,679	65,010	65,294	65,443	65,527	0.62%
Total Statewide Coincident Peak		59,752	60,859	61,547	61,720	61,973	62,300	62,690	63,127	63,449	63,727	63,872	63,955	0.62%

NOTES:
Table developed based on weather-adjusted 2012 and 2013 peak estimates.
For PG&E service territory, Bay Area Growth is based on projections for forecasting climate zones 4 and 5, non-Bay Area on climate zones 1, 2, and 3, and ZP 26 on climate zone 1.
For SCE service territory, LA Basin growth is based on projections for forecasting climate zones 8, 9, and 10, Big Creek-Ventura on climate zone 8, and Out of LA Basin on climate zone 7.
On 2013, Valley Electric Association became a CAISO participating transmission owner.
Entries for California Department of Water Resources are not estimated actual peaks. Staff provides slightly higher totals for California ISO/CPUC Resource Adequacy proceedings to account for potential peak need.
Thus, statewide peaks are slightly higher than in Demand Form 1.4

Schedule 3

Summary of Renewable Energy (GWh)

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Wind	17,059	17,767	17,931	17,977	18,258	19,922	20,553	20,600	20,654	20,656	20,747	20,790
Geothermal	15,763	15,902	16,004	16,024	16,279	16,462	16,671	16,635	16,669	16,685	16,737	16,713
Biomass	1,174	1,252	1,317	1,335	1,395	1,490	1,556	1,562	1,568	1,573	1,577	1,581
Solar	4,784	9,428	14,521	20,025	25,086	29,078	34,271	34,839	35,334	35,738	35,946	36,378
Hydro	5,958	5,958	5,958	5,958	5,958	5,958	5,958	5,958	5,958	5,958	5,958	5,958
Out-of-State	11,279	11,279	11,279	11,279	11,279	11,279	11,279	11,279	11,279	11,279	11,279	11,279
Total (GWh)	**56,018**	**61,586**	**67,011**	**72,598**	**78,254**	**84,190**	**90,289**	**90,872**	**91,463**	**91,889**	**92,244**	**92,698**
% of Sales Energy	21%	23%	25%	27%	29%	31%	33%	33%	33%	33%	33%	33%

Commission Approval Date	Projects Approved and Online	PPA	Status	IOU	Min MW	Min Expected GWh/yr	Technology	Vintage	Contract Term (years)	Location	Online Date/Contracted Delivery Date
Dec-02	GRS (Coyote Canyon)	Download	Operational	SDG&E	8	60	Biogas	New	10	Irvine	
Dec-02	MM Miramar	Download	Operational	SDG&E	3	22	Biogas	Existing	10	Mirimar, San Diego County	07/01/03
Dec-02	MM San Diego North City	Download	Operational	SDG&E	1	7	Biogas	Existing	10	San Diego	07/01/03
Dec-02	FPL	1445-E	Operational	SDG&E	16	24	Wind	Existing	14.5	Palm Springs, CA	06/26/04
Dec-02	GRS (Sycamore 2)	Download	Operational	SDG&E	3	19	Biogas	New	12	Santee	12/01/03
Dec-02	Iberdrola Renewables Mountain Wind	Download	Operational	SDG&E	25	89	Wind	New	15	Riverside County	12/01/03
Dec-02	Iberdrola Renewables Phoenix West	Download	Operational	SDG&E	25	89	Wind	New	15	Riverside County	12/01/03
Dec-02	Oasis Power Partners	Download	Operational	SDG&E	60	179	Wind	New	15	Mojave	12/31/04
Oct-03	Sierra Power Corp.	Download	Operational	PG&E	7	39	Biomass	Existing	11	Terra Bella, Tulare County, CA	09/18/03
May-04	Rancho Penasquitos	Download	Operational	SDG&E	5	20	Small Hydro	New	10	San Diego County	01/23/07
Oct-04	Kumeyaay Wind	Download	Operational	SDG&E	51	101	Wind	New	20	San Diego County	12/31/05
Nov-04	Diablo Winds	Download	Operational	PG&E	18	65	Wind	Existing	11.5	Altamont Pass Wind Resource Area, Al	12/21/04
Jul-05	Buena Vista Energy	Download	Operational	PG&E	38	108	Wind	Repower	15	Altamont Pass Wind Resource Area, C	04/17/07
Aug-05	Shiloh 1 Wind Project	Download	Operational	PG&E	75	225	Wind	New	15	Birds Landing, Solano County, CA	07/01/06
Dec-05	MM Prima Deshecha Energy Phase 1	Download	Operational	SDG&E	15	118	Biogas	New	15	San Juan Capistrano	10/01/07
Dec-05	Otay Landfill 3	Download	Operational	SDG&E	4	24	Biogas	New	10	Chula Vista	03/01/07
May-06	Pacific Wind LLC		Operational	SDG&E	140	392	Wind	New	20	Tehachapi	08/31/12
Dec-06	El Nido Biomass Facility		Operational	PG&E	9	66	Biomass	Restart	23	Merced, Merced County, CA	02/21/09
Jan-07	Dillon Wind LLC	Download	Operational	SCE	45	132	Wind	New	20	Riverside County, CA	03/15/08
Mar-07	City of San Diego (Point Loma)	Download	Operational	SDG&E	5	22	Biogas	Existing	5	San Diego	
Mar-07	Campo Verde /Mt. Signal Solar		Operational	SDG&E	49	168	Solar PV	New	20	Fillaree Ranch, Imperial Valley	07/30/13
Apr-07	Covanata Delano	Download	Operational	SDG&E	49	365	Biomass	Existing	10	Delano, Kern County	01/01/08
Apr-07	MM Tajiquas Energy LLC	Download	Operational	SCE	3	19	Biogas	Existing	20	West of Santa Barbara	06/06/07
May-07	Coso Clean Power	Download	Operational	SCE	204	1608	Geothermal	Existing	20	Little Lake	01/12/10
Nov-07	Calpine Geysers	Download	Operational	SCE	225	1971	Geothermal	Existing	10	Middletown	06/01/07
Nov-07	PPM Klondike III	Download	Operational	PG&E	85	265	Wind	New	15	Wasco, Sherman County, OR	12/01/07
Dec-07	CalRenew America	Download	Operational	PG&E	5	9	Solar PV	New	20	Mendota, Fresno County, CA	04/30/10
Mar-08	Calithness Dixie Valley		Operational	SCE	50		Geothermal	Existing	12	Fallon, NV	07/05/18
Mar-08	ORNI 18	Download	Operational	SCE	50	416	Geothermal	New	20	North Brawley, CA	10/01/09
Apr-08	Shiloh II	Download	Operational	PG&E	150	509	Wind	New	20	Birds Landing, Solano County, CA	02/01/09
Apr-08	Geysers 2008	Download	Operational	PG&E	175	1533	Geothermal	Existing	6.9	Healdsburg, Lake County, CA	02/16/08
May-08	Alta I		Operational	SCE	150	473	Wind	New	25	Tehachapi	01/06/11
May-08	Alta II		Operational	SCE	150	473	Wind	New	25	Tehachapi	01/01/11
May-08	Alta III		Operational	SCE	150	473	Wind	New	25	Tehachapi	02/14/11
May-08	Alta IV		Operational	SCE	102	322	Wind	New	25	Tehachapi	03/10/11
May-08	Alta V		Operational	SCE	168	530	Wind	New	24	Tehachapi	04/20/11
May-08	Alta VI		Operational	SCE	150	473	Wind	New	24	Mohave, CA	03/17/12
May-08	Alta VII		Operational	SCE	168	394	Wind	New	23	Tehachapi	01/01/13
May-08	Alta VIII		Operational	SCE	150	473	Wind	New	24	Tehachapi	02/01/12
May-08	Alta IX		Operational	SCE	132	308	Wind	New	23	Tehachapi	01/01/13
Jul-08	FSE Blythe 1	Download	Operational	SCE	21	46	Solar PV	New	20	Blythe, CA	12/18/09
Aug-08	Wadham Energy LP	Download	Operational	PG&E	26	141	Biomass	Existing	10	Williams, Colusa County, CA	06/01/08
Oct-08	Glacier Wind 1 (Naturener)	Download	Operational	SDG&E	107	318	Wind	New	15	Toole, MT	12/31/08
Oct-08	Glacier Wind 2 (Naturener)	Download	Operational	SDG&E	104	318	Wind	New	15	Toole, MT	10/21/09
Nov-08	Renewable Energy Providers - Blue Lake	Download	Operational	SDG&E	11	90	Biomass	Re-start	15	Eureka, CA	04/30/10
Nov-08	Rattlesnake Road (Horizon)	Download	Operational	PG&E	103	240	Wind	New	15	Arlington, Gilliam County, OR	01/05/09
Dec-08	Klondike III expansion	Download	Operational	PG&E	90	263	Wind	New	10	Wasco, Sherman County, OR	12/19/08
Feb-09	Hatchet Ridge		Operational	PG&E	103	303	Wind	New	15	Burney, Shasta County, CA	12/14/10
Feb-09	High Plains Ranch II		Operational	PG&E	210	550	Solar PV	New	27	California Valley, San Luis Obispo Cour	12/26/13
Mar-09	High Plains Ranch III		Operational	PG&E	40	112	Solar PV	New	25	California Valley, San Luis Obispo Cour	12/31/12
May-09	Sempra El Dorado	Download	Operational	PG&E	10	23	Solar PV	New	20	Boulder City, Clark County, NV	01/01/09
Jun-09	AES Mountain View		Operational	SCE	67	220	Wind	Existing	10	San Gorgonio, CA	10/01/11
Sep-09	North Hurlburt, LLC (Shepherds Flat)		Operational	SCE	265	658	Wind	New	20	Arlington, OR	09/23/11
Sep-09	South Hurlburt, LLC (Shepherds Flat)		Operational	SCE	290	720	Wind	New	20	Arlington, OR	02/14/12
Sep-09	Horseshoe Bend Wind, LLC(Shepherds Flat)		Operational	SCE	290	720	Wind	New	20	Arlington, OR	03/28/12
Sep-09	South Feather		Operational	PG&E	23	80	Small hydro	Existing	10	Oroville, Butte County, CA	07/01/10
Oct-09	Goshen II		Operational	SCE	125	338	Wind	New	20	Southeast ID	09/29/10
Dec-09	Toland Road Landfill	Download	Operational	SCE	1	6	Biogas	New	10	Ventura County, CA	08/26/09
Dec-09	Sempra Copper Mountain		Operational	PG&E	48	100	Solar PV	New	20	Boulder City, Clark County, NV	01/25/11
Jan-10	Woodland Biomass Power	Download	Operational	PG&E	22	154	Biomass	Existing	10	Woodland, Yolo County, CA	03/01/10
Feb-10	Mt. Poso Cogeneration Company		Operational	PG&E	44	328	Biomass	Restart	15	Bakersfield, Kern County, CA	02/21/12
Apr-10	Big Creek Water Works	Download	Operational	PG&E	5	8	Small hydro	Existing	20	Hyampom, Trinity County, CA	01/01/10
Apr-10	Vantage Wind		Operational	PG&E	90	277	Wind	New	15	Ellensburg, Kittitas County, WA	10/04/10
May-10	Geysers Power Company	Download	Operational	PG&E	50	416	Geothermal	Existing	12	Middletown, Sonoma and Lake County,	07/01/10
May-10	Geysers Power Company		Operational	PG&E	50	416	Geothermal	Existing	12	Middletown, Sonoma and Lake County,	07/01/10
Jun-10	Windstar 1, Aero Energy		Operational	SCE	120	370	Wind	New	20	Tehachapi	01/27/12
Jul-10	Calpine Geysers		Operational	SDG&E	25	212	Geothermal	Existing	4.8	Sonoma and Lake Counties, CA	
Jul-10	Coso Clean Power, LLC 2		Operational	SCE	68	536	Geothermal	Existing	20	Little Lake, CA	08/19/11
Aug-10	Solar Partners I, LLC		Operational	SCE	117	286	Solar Thermal	New	20	Ivanpah CA	01/06/14
Aug-10	Eurus Avenal Park		Operational	PG&E	6	10	Solar PV	New	20	Avenal, Kings County, CA	08/05/11
Aug-10	Eurus Sand Drag		Operational	PG&E	19	30	Solar PV	New	20	Avenal, Kings County, CA	08/05/11
Aug-10	Eurus Sun City Project		Operational	PG&E	20	32	Solar PV	New	20	Avenal, Kings County, CA	08/05/11
Sep-10	NRG Alpine Suntower		Operational	PG&E	63	133	Solar PV	New	20	Lancaster, Los Angeles County, CA	01/18/13
Sep-10	FPL Montezuma Wind		Operational	PG&E	37	129	Wind	New	25	Birds Landing, Solano County, CA	01/28/11
Oct-10	Coram Energy		Operational	SDG&E	8	27	Wind	Existing	15	Tehachapi, Kern County, CA	11/27/10
Oct-10	Coram Brodie		Operational	PG&E	102	286	Wind	New	20	Tehachapi, Kern County, CA	03/29/12
Nov-10	SPS Alpaugh		Operational	PG&E	48	79	Solar PV	New	25	Alpaugh, Tulare County, CA	03/08/13
Nov-10	SPS Alpaugh North		Operational	PG&E	19	31	Solar PV	New	25	Alpaugh, Tulare County, CA	03/08/13
Nov-10	SPS Atwell Island		Operational	PG&E	19	31	Solar PV	New	25	Alpaugh, Tulare County, CA	03/08/13
Nov-10	Corcoran		Operational	PG&E	19	31	Solar PV	New	25	Corcoran, Kings County, CA	10/01/13
Nov-10	SPS White River		Operational	PG&E	19	31	Solar PV	New	25	Alpaugh, Tulare County, CA	06/27/13
Dec-10	Mountain View Power Partners IV	1876-E	Operational	SCE	49	165	Wind	New	20	Palm Springs, CA	02/23/12
Jan-11	Greengate Halkirk I		Operational	PG&E	150	485	Wind	New	20	Stettler, Canada, Paintearth Number 18	12/19/12
Apr-11	Mesquite Solar 1	Download	Operational	PG&E	150	305	Solar PV	New	20	Tonopah, Maricopa County, AZ	03/08/13
May-11	Shiloh III		Operational	PG&E	100	345	Wind	New	20	Rio Vista, Solano County, CA	12/23/11
Jul-11	Imperial Solar Energy Center-South	2223-E	Operational	SDG&E	130	307	Solar PV	New	25	8 mi SW of El Centro, CA, CA	10/15/13
Aug-11	Recurrent Kansas South	3877-E	Operational	PG&E	20	48	Solar PV	New	20	Lemoore, Kings County, CA	06/07/13
Sep-11	NRG Solar Borrego I LLC	2236-E	Operational	SDG&E	26	59	Solar PV	New	25	Borrego Springs, CA	02/12/13

Schedule 3a
RPS_Project_Status_Table_2014_Feb.xls
Approved and Online

Commission Approval Date	Projects Approved and Online	PPA	Status	IOU	Min MW	Min Expected GWh/yr	Technology	Vintage	Contract Term (years)	Location	Online Date/Contracted Delivery Date
Sep-11	Norman Ross (Three Forks)		Operational	PG&E	2	8	Small hydro	Existing	20	Zenia, Trinity County, CA	11/01/11
Oct-11	Vasco Winds		Operational	PG&E	78	211	Wind	Repower	25	Livermore, Contra Costa County, CA	02/10/12
Oct-11	Arlington Valley Solar Energy II		Operational	SDG&E	127	270	Solar PV	New	25	Arlington, AZ	12/20/13
Dec-11	Mesa Wind		Operational	SDG&E	30	55	Wind	Existing	2	Whitewater, CA	04/15/12
Dec-11	Anderson Biomass Plant (fka Kiara Biomass)		Operational	PG&E	7	50	Biomass	Repower	15	Anderson, Shasta County, CA	12/12/12
Jan-12	Ocotillo Express Wind Project		Operational	SDG&E	265	891	Wind	New	20	Ocotillo, CA	12/27/12
Jan-12	Montezuma Wind II		Operational	PG&E	78	201	Wind	New	25	Collinsville, Solano County, CA	02/16/12
Feb-12	North Sky River Energy, LLC		Operational	PG&E	162	493	Wind	New	25	Tehachapi, Kern County, CA	12/21/12
Mar-12	Catalina (enXco)		Operational	SDG&E	106	224	Solar PV	New	25	Kern County, CA	06/30/13
Mar-12	Shiloh IV Wind Project, LLC		Operational	PG&E	100	269	Wind	New	25	Rio Vista, Solano County, CA	12/21/12
Aug-12	Manzana		Operational	SDG&E	100	359	Wind	New	20	Tehachapi, CA	12/31/12
Sep-12	Shell Cabazon Wind		Operational	SDG&E	102	294	Wind	Existing	2	Palm Springs, CA	01/01/12
Sep-12	Whitewater Hill Wind		Operational	SDG&E	102	294	Wind	Existing	2	Palm Springs, CA	01/01/12
Jan-13	SPI RECs		Operational	PG&E	0	100	Biomass	Existing	5	Anderson, Lincoln, Quincy, Burney, Mul	02/15/13
Mar-13	NID (RPS) - Dutch Flat / Rollins / Bowman	A.12-06-014	Operational	PG&E	42	118	Small Hydro	Existing	20	Multiple Facilities, Nevada County, CA	07/01/13
Jun-13	ABEC Bidart-Stockdale		Operational	PG&E	1	1	Digester Gas	Existing	10	Bakersfield, Kern County, CA	04/06/13
N/A	Badlands Landfill (Riverside County San. District)	Download	Operational	SCE	1	7	Biogas	Existing	10	Moreno Valley, CA	06/01/09

Schedule 3b

Approved In Development

Commission Approval Date	Approved Contracts In Development	Status	IOU	Min MW	Min Expected GWh/yr	Technology	Vintage	Contract Term (years)	Location	Online Date/Contracted Delivery Date
May-08	Alta X	On schedule	SCE	138	363	Wind	New	23	Tehachapi	01/01/15
May-08	Alta XI	On schedule	SCE	90	237	Wind	New	23	Tehachapi	01/01/15
Jul-08	ORNI 21	Delayed	SCE	30	250	Geothermal	New	20	Wister, CA (Imperial County)	12/31/13
Feb-09	Desert Topaz	On schedule	PG&E	550	1066	Solar PV	New	27.5	Santa Margarita, San Luis Obispo County, CA	08/18/15
Aug-09	Ivanpah Unit 1	Delayed	PG&E	114	295	Solar Thermal	New	25	Nipton, San Bernardino County, CA	09/13/13
Sep-09	Solar Partners XXII	On schedule	PG&E	171	490	Solar Thermal	New	25	near Desert Center, TBD, CA	12/01/16
Sep-09	Solar Partners XXIII	On schedule	PG&E	171	490	Solar Thermal	New	25	Desert Center, Riverside County, CA	07/01/17
Jun-10	NextLight Agua Caliente	On schedule	PG&E	290	688	Solar PV	New	25	Roll, Yuma County, AZ	03/02/15
Aug-10	Solar Reserve Rice Solar	On schedule	PG&E	150	449	Solar Thermal	New	25	Rice (Rice Airfield), Riverside County, CA	06/01/16
Aug-10	Solar Partners I, LLC	On schedule	SCE	117	286	Solar Thermal	New	20	Ivanpah CA	01/06/14
Aug-10	NextEra Genesis	On schedule	PG&E	250	524	Solar Thermal	New	25	Blythe, Riverside County, CA	11/30/14
Sep-10	First Solar Desert Sunlight	Delayed	SCE	250	571	Solar PV	New	20	Desert Center, CA	06/30/14
Sep-10	First Solar Desert Stateline	Delayed	SCE	300	673	Solar PV	New	20	Ivanpah, CA	12/31/15
Sep-10	Desert Center Solar Farm	On schedule	PG&E	300	619	Solar PV	New	25	Desert Center, Riverside County, CA	09/09/15
Jan-11	Centinela Solar	Delayed	SDG&E	110	231	Solar PV	New	20	Calexico, CA	04/01/14
Jan-11	Centinela Solar (expansion)	On schedule	SDG&E	30	62	Solar PV	New	20	Calexico, CA	09/01/14
Jan-11	Blackspring Ridge IA	On schedule	PG&E	150	445	Wind	New	20	Lethbridge, Canada, Vulcan County, AB	06/24/14
Jan-11	Blackspring Ridge IB	On schedule	PG&E	150	445	Wind	New	20	Lethbridge, Canada, Vulcan County, AB	06/24/14
Jul-11	Imperial Solar Energy Center-West	Delayed	SDG&E	130	307	Solar PV	New	25	8 mi SW of El Centro, CA	10/15/13
Aug-11	DTE Potrero Hills Landfill	On schedule	PG&E	3	21	Landfill Gas	New	25	Suisun, Solano County, CA	06/15/15
Aug-11	DTE Sunshine Canyon Landfill	On schedule	PG&E	10	70	Landfill Gas	New	20	Sylmar, Los Angeles County, CA	04/14/15
Oct-11	North Star Solar	On schedule	PG&E	57	129	Solar PV	New	20	Mendota, Fresno County, CA	06/20/15
Nov-11	Lan East (Soltec)	On schedule	SDG&E	22	51	Solar PV	New	25	Boulevard, CA	10/31/14
Nov-11	Lan West (Soltec)	Delayed	SDG&E	7	13	Solar PV	New	25	Boulevard, CA	02/28/14
Nov-11	Desert Green (Soltec)	Delayed	SDG&E	7	13	Solar PV	New	25	Borrego Springs, CA	02/28/14
Nov-11	Rugged (Soltec)	On schedule	SDG&E	80	203	Solar PV	New	25	Boulevard, CA	12/31/14
Nov-11	Tierra del Sol (Soltec)	On schedule	SDG&E	45	114	Solar PV	New	25	Boulevard, CA	12/31/14
Nov-11	Mojave Solar	On schedule	PG&E	250	617	Solar Thermal	New	25	Hinkley, San Bernardino County, CA	11/21/14
Dec-11	SolarGen 2	Delayed	SDG&E	150	390	Solar PV	New	25	Calapatria, CA	02/24/14
Dec-11	Copper Mountain 2, LLC	On schedule	PG&E	150	303	Solar PV	New	25	Boulder City, Clark County, NV	07/15/15
Jan-12	AVSP I (Solar Star California XIX)	On schedule	SCE	310	830	Solar PV	New	20	Rosamond, CA	10/31/16
Jan-12	AVSP II (Solar Star California XX)	On schedule	SCE	270	730	Solar PV	New	20	Rosamond, CA	10/31/16
Jan-12	Solar Star California XIII, LLC	Delayed	SCE	110	275	Solar PV	New	20	Los Banos, CA	12/01/14
Feb-12	Silver State Solar Power South	On schedule	SCE	250	613	Solar PV	New	20	Primm, NV	05/31/17
Mar-12	Energia Sierra Juarez	Delayed	SDG&E	100	324	Wind	New	20	Jacume, Baja California Norte, MX	03/22/14
May-12	Regulus Solar, LLC	Delayed	SCE	60	116	Solar PV	New	20	Lamont, CA	12/31/13
May-12	Adobe Solar, LLC	Delayed	SCE	20	39	Solar PV	New	20	Arvin, CA	09/30/13
Jun-12	SPS Corcoran West, LLC	On schedule	SCE	20	44	Solar PV	New	20	Corcoran, CA	12/21/14
Feb-13	Addison Energy Resources	On schedule	SCE	100	306	Wind	New	20	Mojave, CA	01/01/19
Feb-13	Rising Tree Wind Farm	On schedule	SCE	80	246	Wind	New	20	Mojave, CA	01/01/19
Apr-13	Henrietta Solar	On schedule	PG&E	100	244	Solar PV	New	20	Lemoore Station, Kings County, CA	10/01/16
Apr-13	Kansas	On schedule	PG&E	20	47	Solar PV	New	20	Stratford, Kings County, CA	12/31/16
Jun-13	Calipatria	On schedule	SDG&E	20	48	Solar PV	New	20	Calipatria	06/27/15
Jun-13	Seville Tallbear LLC	On schedule	SDG&E	20	59	Solar PV	New	20	Calipatria	04/01/15
Jun-13	ABEC Bidart-Old River LLC	On schedule	PG&E	1	6	Digester Gas	New	15	Bakersfield, Kern County, CA	02/28/14

Schedule 4

GHG Compliance Cost

Year	Nominal $/Metric Ton
2014	$ 11.90
2015	$ 12.20
2016	$ 12.55
2017	$ 13.07
2018	$ 13.87
2019	$ 15.13
2020	$ 16.81
2021	$ 19.67
2022	$ 22.62
2023	$ 25.66
2024	$ 28.80
2025	$ 32.04
2026	$ 35.40
2027	$ 38.88
2028	$ 42.48
2029	$ 46.20
2030	$ 50.04

Schedule 5

OTC Schedule

Plants	Existing Capacity (MW)	SWRCB Compliance Date	Compliance Dates for 2014 CGR
South Bay	708	12/31/2011	1/1/2009
Humboldt Bay (1,2)	163	12/31/2010	7/31/2010
Potrero (3)	206	10/1/2011	2/28/2011
Contra Costa (6,7)	674	12/31/2017	4/30/2013
El Segundo (3)	335	12/31/2015	7/1/2013
Haynes (5,6)	535	12/31/2019	12/31/2013
El Segundo (4)	335	12/31/2015	12/31/2015
Morro Bay (3,4)	650	12/31/2015	12/31/2015
Scattergood (3)	450	12/31/2020	12/31/2015
Encina (1,2,3)	318	12/31/2017	12/31/2017
Encina (4,5)	628	12/31/2017	12/31/2017
Pittsburg (5,6)	629	12/31/2017	12/31/2017
Moss Landing (1,2)	1,020	12/31/2017	12/31/2017
Moss Landing (6,7)	1,510	12/31/2017	12/31/2017
Huntington Beach (1,2)	452	12/31/2020	12/31/2020
Huntington Beach (3,4)	452	12/31/2020	12/31/2020
Redondo (5,6)	354	12/31/2020	12/31/2020
Redondo (7,8)	989	12/31/2020	12/31/2020
Alamitos (1,2)	350	12/31/2020	12/31/2020
Alamitos (3,4)	668	12/31/2020	12/31/2020
Alamitos (5,6)	993	12/31/2020	12/31/2020
Mandalay (1,2)	430	12/31/2020	12/31/2020
Ormand Beach (1,2)	1,516	12/31/2020	12/31/2020
Scattergood (1,2)	367	12/31/2020	12/31/2024
Haynes (1,2)	444	12/31/2019	12/31/2027
Harbor (1,2,5)	229	12/31/2015	12/31/2031
Haynes (8,9,10)	575	12/31/2019	12/31/2035
San Onofre (2,3)	2,246	12/31/2022	6/7/2013
Diablo Canyon (1,2)	2,240	12/31/2024	

Schedule 6a
2014 CGR - Annual Gas Demand Forecast
SDG&E Power-Plant - BASE HYDRO Ueg/Ewg

	Annual Throughput (BCF)
2014	49
2015	44
2016	46
2017	45
2018	42
2019	41
2020	40
2021	40
2022	40
2023	40
2024	41
2025	41
2026	41
2027	41
2028	41
2029	41
2030	41
2031	41
2032	41
2033	41
2034	41
2035	41

The EG forecast is held constant at 2025 levels for 2026 through 2035.

Schedule 6b
2014 CGR - Annual Gas Demand Forecast
SDG&E Power-Plant - DRY HYDRO Ueg/Ewg

	Annual Throughput (BCF)
2014	49
2015	48
2016	51
2017	49
2018	47
2019	46
2020	45
2021	45
2022	44
2023	44
2024	45
2025	45
2026	45
2027	45
2028	45
2029	45
2030	45
2031	45
2032	45
2033	45
2034	45
2035	45

The EG forecast is held constant at 2025 levels for 2026 through 2035.

Schedule 7a
2014 CGR - Annual Gas Demand Forecast
SoCalgas Noncore G50 - BASE HYDRO Ueg/Ewg

	Annual Throughput (BCF)
2014	211
2015	183
2016	182
2017	177
2018	178
2019	178
2020	178
2021	185
2022	189
2023	193
2024	195
2025	197
2026	197
2027	197
2028	197
2029	197
2030	197
2031	197
2032	197
2033	197
2034	197
2035	197

The EG forecast is held constant at 2025 levels for 2026 through 2035.

Schedule 7b
2014 CGR - Annual Gas Demand Forecast
SoCalgas Noncore G50 - DRY HYDRO Ueg/Ewg

	Annual Throughput (BCF)
2014	211
2015	207
2016	207
2017	200
2018	204
2019	204
2020	203
2021	211
2022	215
2023	220
2024	222
2025	223
2026	223
2027	223
2028	223
2029	223
2030	223
2031	223
2032	223
2033	223
2034	223
2035	223

The EG forecast is held constant at 2025 levels for 2026 through 2035.

Schedule 8a
2014 CGR - Annual Gas Demand Forecast
SoCalgas Noncore G50 - BASE HYDRO Large Co-Generation

	Annual Throughput (BCF)
2014	52
2015	51
2016	51
2017	51
2018	51
2019	51
2020	51
2021	51
2022	51
2023	51
2024	52
2025	51
2026	51
2027	51
2028	51
2029	51
2030	51
2031	51
2032	51
2033	51
2034	51
2035	51

The EG forecast is held constant at 2025 levels for 2026 through 2035.

Schedule 8b
2014 CGR - Annual Gas Demand Forecast
SoCalgas Noncore G50 - DRY HYDRO Large Co-Generation

	Annual Throughput (BCF)
2014	52
2015	52
2016	52
2017	52
2018	52
2019	52
2020	52
2021	52
2022	52
2023	52
2024	52
2025	52
2026	52
2027	52
2028	52
2029	52
2030	52
2031	52
2032	52
2033	52
2034	52
2035	52

The EG forecast is held constant at 2025 levels for 2026 through 2035.

Schedule 9a
2014 CGR - Winter Peak Day Gas Demand Forecast
SDG&E Power-Plant -- BASE HYDRO Ueg/Ewg

	Peak Day Throughput (MMCFD)
2014	139
2015	152
2016	169
2017	171
2018	196
2019	168
2020	163
2021	164
2022	152
2023	172
2024	182
2025	170
2026	170
2027	170
2028	170
2029	170
2030	170
2031	170
2032	170
2033	170
2034	170
2035	170

The EG forecast is held constant at 2025 levels for 2026 through 2035.

Schedule 9b
2014 CGR - Summer Peak Day Gas Demand Forecast
SDG&E Power-Plant - DRY HYDRO Ueg/Ewg

	Peak Day Throughput (MMCFD)
2014	266
2015	248
2016	246
2017	253
2018	196
2019	230
2020	252
2021	243
2022	253
2023	219
2024	265
2025	271
2026	271
2027	271
2028	271
2029	271
2030	271
2031	271
2032	271
2033	271
2034	271
2035	271

The EG forecast is held constant at 2025 levels for 2026 through 2035.

Schedule 10a
2014 CGR - Winter Peak Day Gas Demand Forecast
SoCalgas Noncore G50 - BASE HYDRO Ueg/Ewg/Large Cogen

	Peak Day Throughput (MMCFD)
2014	636
2015	669
2016	698
2017	756
2018	768
2019	715
2020	724
2021	775
2022	816
2023	824
2024	845
2025	848
2026	848
2027	848
2028	848
2029	848
2030	848
2031	848
2032	848
2033	848
2034	848
2035	848

The EG forecast is held constant at 2025 levels for 2026 through 2035.

Schedule 10b
2014 CGR - Summer Peak Day Gas Demand Forecast
SoCalgas Noncore G50 - DRY HYDRO Ueg/Ewg/Large Cogen

	Peak Day Throughput (MMCFD)
2014	1,570
2015	1,538
2016	1,513
2017	1,370
2018	1,536
2019	1,483
2020	1,474
2021	1,291
2022	1,176
2023	1,223
2024	1,254
2025	1,247
2026	1,247
2027	1,247
2028	1,247
2029	1,247
2030	1,247
2031	1,247
2032	1,247
2033	1,247
2034	1,247
2035	1,247

The EG forecast is held constant at 2025 levels for 2026 through 2035.

Schedule 11
Energy Storage (MW)

Year	SDG&E	SCE	PG&E	Total
2014	40	0	0	40
2015	40	0	0	40
2016	40	0	0	40
2017	90	50	50	190
2018	90	100	100	290
2019	90	150	150	390
2020	90	250	250	590
2021	140	300	300	740
2022	140	350	350	840
2023	140	400	400	940
2024	140	500	500	1140
2025	140	500	500	1140

2014 CALIFORNIA GAS REPORT

INDUSTRIAL/COMMERCIAL COGENERATION < 20MW
JULY 2014

The Gas Company

A Sempra Energy utility™

Small Cogeneration (Capacity < 20 Mw)
Gas Demand

INTRODUCTION

The gas demand forecast for small cogeneration (capacity < 20 Mw) is based on an econometric relationship from analysis of annual historical data together with a monthly profile of how the annual consumption is split over the months of a year.

Although these customers are associated with G-50 transportation rates their gas demand in total is split into two tiers based on a customers' annual consumption (tier 1 for ≤ 3,000,000 Thm/yr; and tier 2 for > 3,000,000 Thm/yr). As electric generation customers their consumption is billed at the EG rate structure.

BASE EQUATION TO FORECAST ANNUAL DEMAND

The base forecast equation for annual demand is shown below:

LN(SmCoGen_MDth/yr) = 7.80222 + LN(#Cust) x (0.434589)
+ LN(G/E) x (-0.263709), where

#Cust = Number of active meters/customers,
G =SCG's "EG tier1" Burner-Tip Price cnv. to ¢/Kwh
at 87.60 Thm/Yr per Kw, and
E = SCE-Retail Ind Elec. Price. ¢/Kwh

The small cogeneration gas demand in a particular year is calculated as:

SmCoGen_MDth/yr = EXP[LN(SmCoGen_MDth/yr)].

For example, the calculation of small cogeneration gas demand for 2015 are as follows:

LN[SmCoGen_MDth/yr] = 7.80222 + LN(212) x (0.434589)
+ LN[(10.3877 ¢/Kwh)/(14.4810 ¢/Kwh)] x (-0.263709)

LN[SmCoGen_MDth/yr] = 10.0434

(23,003 MDth/yr) = (EXP[10.0434])

The table below shows the base annual small cogeneration gas demand forecast.

Base Annual Forecast of Small Cogeneration Gas Demand

Year	Annual (Cal Yr) Load	Cust	Avg. Annual Monthly Load per Cust		LN(Cust)	LN (G/E)	Gas/Elec. (G/E) Price Ratio	SCE-Retail Ind Elec. Price	SCG's "EG tier1" Burner-Tip Price cnv. to ¢/Kwh at 87.60 Thm/Yr per Kw
(YYYY)	(MDth)	(cnt)	(Therms/ cust)	LN(Ann.MDTh /Yr)	(cnt)			(Nom ¢/Kwh)	(Nom ¢/Kwh-Equiv.)
2014	22,480	210	89,093	10.02	5.35	0.403	1.50	10.10	15.10
2015	23,003	212	90,243	10.04	5.36	0.332	1.39	10.39	14.48
2016	23,150	213	90,464	10.05	5.36	0.315	1.37	10.79	14.78
2017	23,177	213	90,546	10.05	5.36	0.310	1.36	11.09	15.13
2018	23,224	213	90,951	10.05	5.36	0.299	1.35	11.49	15.50
2019	22,943	212	90,139	10.04	5.36	0.340	1.40	11.87	16.67
2020	22,423	211	88,514	10.02	5.35	0.419	1.52	12.28	18.68
2021	22,173	211	87,679	10.01	5.35	0.459	1.58	12.66	20.03
2022	22,076	210	87,499	10.00	5.35	0.471	1.60	13.03	20.88
2023	21,763	209	86,840	9.99	5.34	0.514	1.67	13.41	22.43
2024	21,597	207	86,852	9.98	5.33	0.531	1.70	13.79	23.45
2025	21,475	205	87,221	9.97	5.32	0.536	1.71	14.20	24.27
2026	21,324	203	87,639	9.97	5.31	0.543	1.72	14.63	25.18
2027	21,206	200	88,174	9.96	5.30	0.545	1.72	15.07	25.99
2028	21,058	198	88,623	9.96	5.29	0.551	1.74	15.53	26.95
2029	20,877	196	88,910	9.95	5.28	0.565	1.76	16.00	28.14
2030	20,736	194	89,267	9.94	5.27	0.573	1.77	16.47	29.21
2031	20,616	192	89,479	9.93	5.26	0.581	1.79	16.98	30.36
2032	20,518	191	89,678	9.93	5.25	0.588	1.80	17.51	31.51
2033	20,433	189	89,971	9.92	5.24	0.591	1.81	18.06	32.62
2034	20,285	188	89,957	9.92	5.24	0.607	1.84	18.63	34.19
2035	20,213	187	90,247	9.91	5.23	0.609	1.84	19.22	35.35

NONCORE SELF-GENERATION INCENTIVE PROGRAM (G-50, SGIP LOAD)

SoCalGas administers a program funded by the State of California to encourage customers to install small capacity electric generation equipment to generate electricity for the customer's own use (not for re-sale in to the electric transmission & distribution grid). The table below shows the expected annual gas demand for the noncore (G-50) part of the SGIP:

Noncore SGIP Annual Forecast of Gas Demand

Year	G-50 SGIP (MDth)
2013	0.0
2014	1.8
2015	6.0
2016	9.9
2017	12.7
2018	16.8
2019	20.1
2020	24.3
2021	28.2
2022	32.0
2023	36.9
2024	39.7
2025	43.8
2026	47.4
2027	51.3
2028	54.2
2029	54.2
2030	54.2
2031	54.2
2032	54.2
2033	53.2
2034	50.1
2035	46.3

MONTHLY PATTERN FOR TOTAL SMALL EG/COGEN LOAD

This total annual small cogeneration gas demand was "split" into monthly load using the monthly proportions in the table below.

Month	Date	*Smoothed* Monthly Load as % of Annual (2004-2009)
(mm)	(mmm)	(%of Ann. Tot.)
1	Jan	8.1915%
2	Feb	7.1841%
3	Mar	7.9681%
4	Apr	7.7703%
5	May	8.2103%
6	Jun	8.6405%
7	Jul	9.1532%
8	Aug	9.2274%
9	Sep	8.7630%
10	Oct	8.7444%
11	Nov	8.0358%
12	Dec	8.1115%
Check-Sum Total:		100.0000%

FORECAST RESULTS

Based on the year 2015 example above together with the monthly percentages of annual total load in the table above, the August 2015 small cogeneration (G-50) gas demand is calculated as:

SmCoGen_G-50 = (2,123.0 MDth) = (23,003 MDth/yr, base forecast
+ 5 MDth/yr, from G-50 SGIP)
x (0.0.092274, monthly % of annual)

The tables below provide the small cogeneration gas demand forecast, monthly, from 2014 through 2035.

	Monthly Small CoGen (C&I) Gas
Date	Small Cogen (C&I) (G-50) Gas Demand (MDth)
2012	23,759
2013	25,169
2014	22,482
2015	23,008
2016	23,159
2017	23,190
2018	23,240
2019	22,964
2020	22,447
2021	22,201
2022	22,108
2023	21,799
2024	21,636
2025	21,518
2026	21,372
2027	21,257
2028	21,113
2029	20,932
2030	20,791
2031	20,671
2032	20,573
2033	20,486
2034	20,335
2035	20,259

		Monthly Small CoGen (C&I) Gas
Year (for "Sum-If")	Date	Small Cogen (C&I) (G-50) Gas Demand (MDth)
2012	Jan-12	1,946
2012	Feb-12	1,707
2012	Mar-12	1,893
2012	Apr-12	1,846
2012	May-12	1,951
2012	Jun-12	2,053
2012	Jul-12	2,175
2012	Aug-12	2,192
2012	Sep-12	2,082
2012	Oct-12	2,078
2012	Nov-12	1,909
2012	Dec-12	1,927
2013	Jan-13	2,062
2013	Feb-13	1,808
2013	Mar-13	2,005
2013	Apr-13	1,956
2013	May-13	2,066
2013	Jun-13	2,175
2013	Nov-13	2,023
2013	Dec-13	2,042
2014	Jan-14	1,842
2014	Feb-14	1,615
2014	Mar-14	1,791
2014	Apr-14	1,747
2014	May-14	1,846
2014	Jun-14	1,943
2014	Jul-14	2,058
2014	Aug-14	2,074
2014	Sep-14	1,970
2014	Oct-14	1,966
2014	Nov-14	1,807
2014	Dec-14	1,824
2015	Jan-15	1,885
2015	Feb-15	1,653
2015	Mar-15	1,833
2015	Apr-15	1,788
2015	May-15	1,889
2015	Jun-15	1,988
2015	Jul-15	2,106
2015	Aug-15	2,123
2015	Sep-15	2,016
2015	Oct-15	2,012
2015	Nov-15	1,849
2015	Dec-15	1,866

		Monthly Small CoGen (C&I) Gas
Year (for "Sum-If")	Date	Small Cogen (C&I) (G-50) Gas Demand (MDth)
2016	Jan-16	1,897
2016	Feb-16	1,664
2016	Mar-16	1,845
2016	Apr-16	1,800
2016	May-16	1,901
2016	Jun-16	2,001
2016	Jul-16	2,120
2016	Aug-16	2,137
2016	Sep-16	2,029
2016	Oct-16	2,025
2016	Nov-16	1,861
2016	Dec-16	1,879
2017	Jan-17	1,900
2017	Feb-17	1,666
2017	Mar-17	1,848
2017	Apr-17	1,802
2017	May-17	1,904
2017	Jun-17	2,004
2017	Jul-17	2,123
2017	Aug-17	2,140
2017	Sep-17	2,032
2017	Oct-17	2,028
2017	Nov-17	1,864
2017	Dec-17	1,881
2018	Jan-18	1,904
2018	Feb-18	1,670
2018	Mar-18	1,852
2018	Apr-18	1,806
2018	May-18	1,908
2018	Jun-18	2,008
2018	Jul-18	2,127
2018	Aug-18	2,144
2018	Sep-18	2,037
2018	Oct-18	2,032
2018	Nov-18	1,868
2018	Dec-18	1,885
2019	Jan-19	1,881
2019	Feb-19	1,650
2019	Mar-19	1,830
2019	Apr-19	1,784
2019	May-19	1,885
2019	Jun-19	1,984
2019	Jul-19	2,102
2019	Aug-19	2,119
2019	Sep-19	2,012
2019	Oct-19	2,008
2019	Nov-19	1,845
2019	Dec-19	1,863
2020	Jan-20	1,839
2020	Feb-20	1,613
2020	Mar-20	1,789
2020	Apr-20	1,744
2020	May-20	1,843
2020	Jun-20	1,940
2020	Jul-20	2,055
2020	Aug-20	2,071
2020	Sep-20	1,967
2020	Oct-20	1,963
2020	Nov-20	1,804
2020	Dec-20	1,821

		Monthly Small CoGen (C&I) Gas
Year (for "Sum-If")	Date	Small Cogen (C&I) (G-50) Gas Demand (MDth)
2021	Jan-21	1,819
2021	Feb-21	1,595
2021	Mar-21	1,769
2021	Apr-21	1,725
2021	May-21	1,823
2021	Jun-21	1,918
2021	Jul-21	2,032
2021	Aug-21	2,049
2021	Sep-21	1,945
2021	Oct-21	1,941
2021	Nov-21	1,784
2021	Dec-21	1,801
2022	Jan-22	1,811
2022	Feb-22	1,588
2022	Mar-22	1,762
2022	Apr-22	1,718
2022	May-22	1,815
2022	Jun-22	1,910
2022	Jul-22	2,024
2022	Aug-22	2,040
2022	Sep-22	1,937
2022	Oct-22	1,933
2022	Nov-22	1,777
2022	Dec-22	1,793
2023	Jan-23	1,786
2023	Feb-23	1,566
2023	Mar-23	1,737
2023	Apr-23	1,694
2023	May-23	1,790
2023	Jun-23	1,884
2023	Jul-23	1,995
2023	Aug-23	2,011
2023	Sep-23	1,910
2023	Oct-23	1,906
2023	Nov-23	1,752
2023	Dec-23	1,768
2024	Jan-24	1,772
2024	Feb-24	1,554
2024	Mar-24	1,724
2024	Apr-24	1,681
2024	May-24	1,776
2024	Jun-24	1,869
2024	Jul-24	1,980
2024	Aug-24	1,996
2024	Sep-24	1,896
2024	Oct-24	1,892
2024	Nov-24	1,739
2024	Dec-24	1,755
2025	Jan-25	1,763
2025	Feb-25	1,546
2025	Mar-25	1,715
2025	Apr-25	1,672
2025	May-25	1,767
2025	Jun-25	1,859
2025	Jul-25	1,970
2025	Aug-25	1,986
2025	Sep-25	1,886
2025	Oct-25	1,882
2025	Nov-25	1,729
2025	Dec-25	1,745

		Monthly Small CoGen (C&I) Gas
Year (for "Sum-If")	Date	Small Cogen (C&I) (G-50) Gas Demand (MDth)
2026	Jan-26	1,751
2026	Feb-26	1,535
2026	Mar-26	1,703
2026	Apr-26	1,661
2026	May-26	1,755
2026	Jun-26	1,847
2026	Jul-26	1,956
2026	Aug-26	1,972
2026	Sep-26	1,873
2026	Oct-26	1,869
2026	Nov-26	1,717
2026	Dec-26	1,734
2027	Jan-27	1,741
2027	Feb-27	1,527
2027	Mar-27	1,694
2027	Apr-27	1,652
2027	May-27	1,745
2027	Jun-27	1,837
2027	Jul-27	1,946
2027	Aug-27	1,961
2027	Sep-27	1,863
2027	Oct-27	1,859
2027	Nov-27	1,708
2027	Dec-27	1,724
2028	Jan-28	1,729
2028	Feb-28	1,517
2028	Mar-28	1,682
2028	Apr-28	1,641
2028	May-28	1,733
2028	Jun-28	1,824
2028	Jul-28	1,933
2028	Aug-28	1,948
2028	Sep-28	1,850
2028	Oct-28	1,846
2028	Nov-28	1,697
2028	Dec-28	1,713
2029	Jan-29	1,715
2029	Feb-29	1,504
2029	Mar-29	1,668
2029	Apr-29	1,627
2029	May-29	1,719
2029	Jun-29	1,809
2029	Jul-29	1,916
2029	Aug-29	1,931
2029	Sep-29	1,834
2029	Oct-29	1,830
2029	Nov-29	1,682
2029	Dec-29	1,698
2030	Jan-30	1,703
2030	Feb-30	1,494
2030	Mar-30	1,657
2030	Apr-30	1,616
2030	May-30	1,707
2030	Jun-30	1,796
2030	Jul-30	1,903
2030	Aug-30	1,918
2030	Sep-30	1,822
2030	Oct-30	1,818
2030	Nov-30	1,671
2030	Dec-30	1,686

		Monthly Small CoGen (C&I) Gas
Year (for "Sum-If")	Date	Small Cogen (C&I) (G-50) Gas Demand (MDth)
2031	Jan-31	1,693
2031	Feb-31	1,485
2031	Mar-31	1,647
2031	Apr-31	1,606
2031	May-31	1,697
2031	Jun-31	1,786
2031	Jul-31	1,892
2031	Aug-31	1,907
2031	Sep-31	1,811
2031	Oct-31	1,808
2031	Nov-31	1,661
2031	Dec-31	1,677
2032	Jan-32	1,685
2032	Feb-32	1,478
2032	Mar-32	1,639
2032	Apr-32	1,599
2032	May-32	1,689
2032	Jun-32	1,778
2032	Jul-32	1,883
2032	Aug-32	1,898
2032	Sep-32	1,803
2032	Oct-32	1,799
2032	Nov-32	1,653
2032	Dec-32	1,669
2033	Jan-33	1,678
2033	Feb-33	1,472
2033	Mar-33	1,632
2033	Apr-33	1,592
2033	May-33	1,682
2033	Jun-33	1,770
2033	Jul-33	1,875
2033	Aug-33	1,890
2033	Sep-33	1,795
2033	Oct-33	1,791
2033	Nov-33	1,646
2033	Dec-33	1,662
2034	Jan-34	1,666
2034	Feb-34	1,461
2034	Mar-34	1,620
2034	Apr-34	1,580
2034	May-34	1,670
2034	Jun-34	1,757
2034	Jul-34	1,861
2034	Aug-34	1,876
2034	Sep-34	1,782
2034	Oct-34	1,778
2034	Nov-34	1,634
2034	Dec-34	1,649
2035	Jan-35	1,660
2035	Feb-35	1,455
2035	Mar-35	1,614
2035	Apr-35	1,574
2035	May-35	1,663
2035	Jun-35	1,751
2035	Jul-35	1,854
2035	Aug-35	1,869
2035	Sep-35	1,775
2035	Oct-35	1,772
2035	Nov-35	1,628
2035	Dec-35	1,643

2014 CALIFORNIA GAS REPORT

INDUSTRIAL/COMMERCIAL COGENERATION > 20 MW
JULY 2014

The Gas Company

A Sempra Energy utility™

Please refer to the Non-Cogeneration EG section of the workpapers for the description of the details concerning Industrial/Commercial Cogen.

2014 CALIFORNIA GAS REPORT

EOR RELATED COGENERATION
JULY 2014

ENHANCED OIL RECOVERY - COGENERATION

FORECAST METHODOLOGY FOR THE 2014 CALIFORNIA GAS REPORT

Southern California Gas' ("SoCalGas") forecast of enhanced oil recovery ("EOR") cogeneration gas requirements as reported in the *2014 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 2011 through 2013 were analyzed in order to determine typical throughput volumes over the past few years.

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 new 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 these pipelines, thereby bypassing SoCalGas' distribution system.

The assumptions about bypass for this forecast are as follows:

1. EOR gas demand for customers located in the Los Angeles Basin, Santa Barbara, and Ventura areas will not bypass SoCalGas' distribution system.
2. Customers in the San Joaquin Valley who have already bypassed SoCalGas' system will continue to bypass at their historical levels.
3. New customers in the San Joaquin Valley will not bypass unless they signed up for a bypass transportation rate.

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

2014 CALIFORNIA GAS REPORT
EOR COGENERATION FORECAST (2014 - 2035)

		SOCALGAS DELIVERIES (MMcfd)
HISTORICAL		
	2011	11
	2012	21
	2013	23
FORECAST		
	2014	23
	2015	23
	2016	23
	2017	23
	2018	23
	2019	23
	2020	23
	2021	23
	2022	23
	2023	23
	2024	23
	2025	23
	2026	23
	2027	23
	2028	23
	2029	23
	2030	23
	2031	23
	2032	23
	2033	23
	2034	23
	2035	23

2014 CALIFORNIA GAS REPORT

REFINERY-RELATED COGENERATION
JULY 2014

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Refinery Related Cogeneration
Gas Demand

Please see the discussion under “Refineries” section above for refinery-related cogeneration gas demand.

2014 CALIFORNIA GAS REPORT

WHOLESALE REQUIREMENTS
JULY 2014

The Gas Company

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2014 CALIFORNIA GAS REPORT

San Diego Gas & Electric Company
JULY 2014

San Diego Gas and Electric Company

The detail of SDG&E's forecast is published in the 2014 California Gas Report Workpapers for San Diego Gas and Electric. Please refer to the SDG&E workpapers.

2014 CALIFORNIA GAS REPORT

CITY OF LONG BEACH OIL AND GAS DEPARTMENT
JULY 2014

The Gas Company

A Sempra Energy utility™

2014 California Gas Report

Long Beach Oil and Gas Workpapers have been redacted in this version.

2014 CALIFORNIA GAS REPORT

SOUTHWEST GAS CORPORATION
JULY 2014

2014 California Gas Report

Southwest Gas Corporation Workpapers have been redacted in this version.

2014 CALIFORNIA GAS REPORT

CITY OF VERNON
JULY 2014

2014 California Gas Report

The City of Vernon's Workpapers have been redacted in this version.

2014 CALIFORNIA GAS REPORT

MEXICALI
JULY 2014

2014 California Gas Report

Workpapers for Mexicali have been redacted in this version.

2014 CALIFORNIA GAS REPORT

CORE PEAKDAY FORECAST
JULY 2014

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	335.2	315.1	276.7	238.3	218.1
February	291.7	274.1	240.7	207.3	189.8
March	221.0	207.7	182.4	157.1	143.8
April	157.8	148.3	130.3	112.2	102.7
May	60.4	56.8	49.9	43.0	39.3
June	15.9	15.0	13.1	11.3	10.4
July	2.7	2.6	2.2	1.9	1.8
August	2.2	2.0	1.8	1.5	1.4
September	5.3	5.0	4.3	3.7	3.4
October	47.0	44.2	38.8	33.4	30.6
November	180.4	169.6	148.9	128.2	117.4
December	357.2	335.7	294.8	253.9	232.4
	1677.0	1576.0	**1384.0**	1192.0	1091.0

Notes:

1/ 20-Yr-Avg (Jan1994-Dec2013)

2/ Daily system wide temperature based on six-zone average using customer counts by zone for December 2013.

2014-CGR Sales + Transport + Exchange for Month of DECEMBER
(units=Mdth/Day)
"1-in-2" Likelihood Cold Day Temperature

No.	"CGR_B"	CLASS	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030	2035
1		RESIDEN	2084.2	2048.9	2014.3	2000.9	1985.2	1977.0	1961.7	1939.6	1875.6	1855.5	1853.8
2		Com G10	470.0	466.1	466.5	469.2	471.7	472.7	472.2	470.4	464.2	469.6	474.3
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	5.0	4.9	4.9	4.9	4.9	4.8	4.8	4.7	4.6	4.5
3		Ind G10	80.4	77.0	76.3	76.4	75.5	74.8	73.4	71.1	62.3	55.7	53.1
4		NGV 2/	31.2	34.4	36.5	38.2	39.9	41.5	43.1	44.6	51.5	57.1	61.4
	Total:	MDth/day	2668.7	2631.4	2598.6	2589.8	2577.3	2571.0	2555.4	2530.7	2458.5	2442.5	2447.3
		MMcf/day 4/	2599.6	2563.2	2531.3	2522.7	2510.5	2504.4	2489.2	2465.1	2394.8	2379.3	2383.8
		Days per Mo	31	31	31	31	31	31	31	31	31	31	31
		Pk-Day Temp. (deg-F) =	**45.4**	45.4	45.4	45.4	45.4	45.4	45.4	45.4	45.4	45.4	45.4
		Hdd: December--ColdYr =	357.2	357.2	357.2	357.2	357.2	357.2	357.2	357.2	357.2	357.2	357.2
		"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 Methodology for the 2014-CGR Res and C&I Calculations

Notes:

1/ =("Cold-Dec" / 31 days)+[("Cold-Dec" - "Base-Dec")
/ Cold-Dec_Hdd]*(65 degF - 45.4 degF

2/ "Non-temperature" sensitive market segment.

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

4/ Dth/Mcf= 1.0266

2014-CGR Sales + Transport + Exchange for Month of DECEMBER
(units=Mdth/Day)
"1-in-10" Likelihood Cold Day Temperature

No.	"CGR_B"	CLASS	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030	2035
1		RESIDEN	2398.5	2357.9	2318.0	2302.7	2284.6	2275.2	2257.5	2232.2	2158.5	2135.3	2133.4
2		Com G10	525.9	521.8	522.2	525.2	528.0	529.2	528.6	526.5	519.6	525.6	530.9
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	5.0	4.9	4.9	4.9	4.9	4.8	4.8	4.7	4.6	4.5
3		Ind G10	84.6	81.2	80.5	80.5	79.6	78.8	77.4	75.0	65.7	58.8	56.1
4		NGV 2/	31.2	34.4	36.5	38.2	39.9	41.5	43.1	44.6	51.5	57.1	61.4
	Total:	MDth/day	3043.2	3000.4	2962.3	2951.7	2937.1	2929.6	2911.6	2883.2	2800.1	2781.4	2786.3
		MMcf/day 4/	2964.3	2922.6	2885.5	2875.2	2861.0	2853.7	2836.1	2808.5	2727.6	2709.3	2714.1
		Days per Mo	31	31	31	31	31	31	31	31	31	31	31
	Pk-Day Temp. (deg-F) =		**41.7**	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7
	Hdd: December--ColdYr =		357.2	357.2	357.2	357.2	357.2	357.2	357.2	357.2	357.2	357.2	357.2
	"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 Methodology for the 2014-CGR Res and C&I Calculations

Notes:

1/ =("Cold-Dec" / 31 days)+[("Cold-Dec" - "Base-Dec")
/ Cold-Dec_Hdd]*(65 degF - 41.7 degF

2/ "Non-temperature" sensitive market segment.

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

4/ Dth/Mcf= 1.0266

2014-CGR Sales + Transport + Exchange for Month of DECEMBER
(units=Mdth/Day)
"1-in-35" Likelihood Cold Day Temperature

No.	"CGR_B"	CLASS	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030	2035
1		RESIDEN	2554.5	2511.3	2468.8	2452.5	2433.2	2423.1	2404.4	2377.3	2298.9	2274.2	2272.2
2		Com G10	553.6	549.5	549.9	553.0	555.9	557.2	556.5	554.3	547.1	553.4	558.9
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	5.0	4.9	4.9	4.9	4.9	4.8	4.8	4.7	4.6	4.5
3		Ind G10	86.7	83.3	82.6	82.6	81.6	80.8	79.4	76.9	67.4	60.3	57.5
4		NGV 2/	31.2	34.4	36.5	38.2	39.9	41.5	43.1	44.6	51.5	57.1	61.4
	Total:	MDth/day	3229.0	3183.5	3142.8	3131.3	3115.6	3107.6	3088.4	3058.1	2969.7	2949.6	2954.6
		MMcf/day 4/	3145.3	3101.0	3061.4	3050.2	3034.9	3027.1	3008.3	2978.9	2892.8	2873.2	2878.0
		Days per Mo	31	31	31	31	31	31	31	31	31	31	31
	Pk-Day Temp. (deg-F) =		**40.0**	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
	Hdd: December--ColdYr =		357.2	357.2	357.2	357.2	357.2	357.2	357.2	357.2	357.2	357.2	357.2
	"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 Methodology for the 2014-CGR Res and C&I Calculations

Notes:

1/ =("Cold-Dec" / 31 days)+[("Cold-Dec" - "Base-Dec")
/ Cold-Dec_Hdd]*(65 degF - 40.0 degF

2/ "Non-temperature" sensitive market segment.

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

4/ Dth/Mcf= 1.0266

2014-CGR Sales + Transport + Exchange for Month of DECEMBER
(units=mdth)
Temp=December, Cold Year

No.	"CGR_CLASS	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030	2035
1	Residen	42645.8	41924.6	41215.7	40942.9	40621.3	40453.3	40139.8	39688.6	38378.6	37966.7	37932.5
2	Com G10	10667.4	10553.6	10565.2	10630.2	10687.4	10712.5	10702.2	10659.5	10521.1	10643.6	10752.9
2	GAC	3.3	4.0	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
2	GEN	89.2	153.5	152.7	152.0	151.2	150.4	149.7	148.9	145.3	141.7	138.2
3	Ind G10	2192.2	2090.0	2074.6	2077.8	2053.6	2033.9	1997.8	1934.3	1693.7	1513.8	1443.0
4	NGV	967.3	1065.3	1131.4	1184.6	1236.5	1287.1	1336.3	1384.0	1597.7	1769.6	1902.9
		56565	55791	55143	54991	54754	54641	54329	53819	52340	52039	52173
	2014 CGR: Mdth/Hdd	104	102	101	100	100	99	99	98	95	94	94

2014-CGR Sales + Transport + Exchange for Month of DECEMBER
(units=mdth)
Temp=December, "Base/Zero-Hdd" Year

No.	"CGR_CLASS	2013	2014	2015	2016	2017	2018	2019	2020	2025	2030	2035
1	Residen	11500.5	11306.0	11114.8	11041.2	10954.5	10909.2	10824.7	10703.0	10349.7	10238.6	10229.4
2	Com G10	5132.5	5030.9	5041.9	5078.6	5108.2	5122.2	5119.0	5098.6	5033.2	5094.6	5149.6
2	GAC	3.3	4.0	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
2	GEN	89.2	153.5	152.7	152.0	151.2	150.4	149.7	148.9	145.3	141.7	138.2
3	Ind G10	1768.7	1670.0	1660.7	1666.4	1647.3	1631.8	1603.1	1551.2	1356.6	1211.5	1153.1
4	NGV	967.3	1065.3	1131.4	1184.6	1236.5	1287.1	1336.3	1384.0	1597.7	1769.6	1902.9
		19461	19230	19105	19126	19101	19104	19036	18889	18486	18460	18577
	2014 CGR: Mdth	19461	19230	19105	19126	19101	19104	19036	18889	18486	18460	18577

2014 CALIFORNIA GAS REPORT

SUPPORTING DATA
JULY 2014

The Gas Company

A Sempra Energy utility™

2014 CALIFORNIA GAS REPORT

WEATHER: HEATING DEGREE DAYS – AVERAGE AND "COLD" YEAR DESIGNS; AND WINTER PEAK DAY DESIGN TEMPERATURES
JULY 2014

Weather for SoCalGas: Heating Degree Days – Average and Cold Year Designs; and Winter Peak Day Design Temperatures

July 2014

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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	0.0062	Big Bear Lake	Lake Arrowhead
2. Low desert	0.0424	Palm Springs	Palm Springs
		El Centro	Brawley
3. Coastal	0.1772	Los Angeles Airport	Los Angeles Airport
		Newport Beach	Newport Beach Harbor
		Santa Barbara Airport	Santa Barbara Airport
4. High desert	0.0742	Bakersfield	Bakersfield Airport
		Lancaster Airport	Palmdale
		Fresno	Visalia
5. Interior valleys	0.3792	Burbank	Burbank
		Pasadena	Pasadena
		Ontario	Pomona Cal Poly
		Rialto	Redlands
6. Basin	0.3208	Los Angeles Civic Center	Los Angeles Civic Center/ Downtown-USC
		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 2010 customer counts. These weights are used in calculating the data shown from January 1991 to December 2010.

Daily weather temperatures are from the National Climatic Data Center or from preliminary data that SoCalGas captures each day and posts on its internal Company web-site at the URL: http://utilinet.sempra.com/departments/massmarkets/weather/default.htm for various individual weather stations as well as for its system average values of HDD. Annual HDDs for the entire service area from 1994 to 2013 are listed in Table 2, below.

Table 2

Calendar Month Heating Degree-Days (Jan. 1994 through Dec. 2013)

	Month												Total "Cal-Year"
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1994	231	259	129	110	78	6	3	0	2	41	293	311	1463
1995	317	136	179	128	108	39	2	1	2	14	67	245	1238
1996	264	201	169	57	14	3	1	0	1	68	145	263	1186
1997	283	206	113	97	5	4	1	0	0	27	120	298	1154
1998	269	283	186	184	87	20	0	0	5	43	167	322	1566
1999	266	246	284	234	77	38	1	2	5	8	128	247	1536
2000	247	243	209	80	25	5	2	1	3	64	248	242	1369
2001	379	337	195	207	25	6	4	3	3	21	146	359	1685
2002	334	202	225	148	78	10	2	4	8	77	92	315	1495
2003	142	233	165	179	73	17	1	1	3	16	201	306	1337
2004	292	301	86	84	17	8	3	2	4	73	227	292	1389
2005	287	208	176	115	35	11	4	1	9	44	99	235	1224
2006	272	200	338	162	28	3	0	1	5	36	104	279	1428
2007	348	214	124	116	49	16	1	1	12	37	125	354	1397
2008	348	262	148	123	75	8	1	0	2	23	75	334	1399
2009	196	259	193	133	18	15	3	4	1	43	117	320	1302
2010	255	220	173	163	71	13	8	9	13	42	203	268	1438
2011	251	307	211	104	80	26	2	3	6	39	207	350	1586
2012	224	236	221	117	38	11	5	1	1	16	111	300	1281
2013	330	263	125	65	17	4	1	2	2	44	104	258	1215
20-Yr-Avg (Jan1994-Dec2013)													
Avg.	**276.8**	**240.8**	**182.5**	**130.3**	**49.9**	**13.2**	**2.3**	**1.8**	**4.4**	**38.8**	**149.0**	**294.9**	**1384.4**
St.Dev.	**56.5**	**45.8**	**58.5**	**46.7**	**30.9**	**10.6**	**1.9**	**2.1**	**3.6**	**19.9**	**61.7**	**39.0**	**144.879**
Min.	**142.0**	**136.0**	**86.0**	**57.0**	**5.0**	**3.0**	**0.0**	**0.0**	**0.0**	**8.0**	**67.0**	**235.0**	**1154.0**
Max.	**379.0**	**337.0**	**338.0**	**234.0**	**108.0**	**39.0**	**8.0**	**9.0**	**13.0**	**77.0**	**293.0**	**359.0**	**1685.0**

II. Calculations to Define Our Average-Temperature Year

The simple average of the 20-year period (January 1994 through December 2013) 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, ***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

Cold Year HDD Weather Designs

For SoCalGas, cold-temperature-year HDD weather designs are developed with a 1-in-35 annual 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 144.879 HDD from the last

20 years of data, these equations yield values of about 1,677 HDD for a “1-in-35” cold year and 1,576 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 = 1,677 which equals approximately
1,375 average-year HDDs + 2.025 * 144.879

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 1994 to 2013, as shown as the bottom of Table 2, above. For example, the average-year December value of 294.9 HDD equals the simple average of the 20 December HDD figures from 1994 to 2013, and represents 21.3 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 21.3 percent of average-temperature-year HDDs occurred in December, the estimated number of HDDs during December for a cold-year is equal to 1,677 HDDs multiplied by 21.3 percent, or 357.2 HDDs.

Table 3

Calendar Month Heating Degree-Day Designs

	Cold		Average	Hot	
	1-in-35 Design	1-in-10 Design		1-in-10 Design	1-in-35 Design
January	335.2	315.1	276.7	238.3	218.1
February	291.7	274.1	240.7	207.3	189.8
March	221.0	207.7	182.4	157.1	143.8
April	157.8	148.3	130.3	112.2	102.7
May	60.4	56.8	49.9	43.0	39.3
June	15.9	15.0	13.1	11.3	10.4
July	2.7	2.6	2.2	1.9	1.8
August	2.2	2.0	1.8	1.5	1.4
September	5.3	5.0	4.3	3.7	3.4
October	47.0	44.2	38.8	33.4	30.6
November	180.4	169.6	148.9	128.2	117.4
December	357.2	335.7	294.8	253.9	232.4
	1677	1576	1384	1192	1091

IV. Calculating the Peak-Day Design Temperature

SoCalGas' Peak-Day design temperature of 40.0 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 2013, 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:

$$(2)\quad MinAVG_y = \min_{d=1}^{n(y)}\{ AVG_{y,d} \},\ \text{for } y=1950, 1951, \ldots, 2013.$$

(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 Tables 4.1 and 4.2, 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:

$$- \text{MinAVG}_y = - \min_{d=1}^{n(y)}\{\text{AVG}_{y,d}\} = \max_{d=1}^{n(y)}\{ -\text{AVG}_{y,d}\}, \text{ for y=1950, …, 2013;}$$

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 "$-\text{MinAVG}_y$" (which is a *maximum* over a set of *negative* temperatures) with values of the variable MinAVG_y that are the same as shown in Tables 4.1 and 4.2, below.

In Tables 5.1 and 5.2, the data for $-\text{MinAVG}_y$ 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 5.1 and Table 5.2) 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 T_Dist model were selected since the fit to the ECDF was better than that of either the GEV model or the EV1 model. (Although convergence to stable parameter estimates is occasionally a problem with fitting a GEV model to the ECDF, the T_Dist model had no problems with convergence of the iterative procedure to estimate parameters.)

The T_Dist model used here is a three-parameter probability model where the varable $z = (-\text{MinAVG}_y - \gamma) / \theta$, for each year, y, is presumed to follow a T_Dist with location parameter, γ, and scale parameter, θ, and a third parameter, v, that represents the number of degrees of freedom. For a given number of years of data, N, then v=N-2.

The following mathematical expression specifies the T_Dist model we fit to the data for "$-\text{MinAVG}_y$ " shown in Table 5.1 and Table 5.2, below.

(3) $\text{ECDF}(-\text{MinAVG}_y) = \text{Prob}\{ -T < -\text{MinAVG}_y \} = \text{T\_Dist}\{z; \gamma, \theta, v=N-2\},$

where "T_Dist{ . }" is the cumulative probability distribution function for Student's T-Distribution[1], and

(4) $z = (-MinAVG_y - \gamma) / \theta$, for each year, y, and

the parameters "γ" and "θ" are estimated for this model for given degrees of freedom v=N-2. The estimated values for γ and θ are shown in Table 5.2 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) $\delta = Prob\{ T \leq TPDD_\delta \}$, which is equivalent to

(6) $\delta = Prob\{ [(-T - \gamma) / \theta] \geq [(-TPDD_\delta - \gamma) / \theta] \}, = Prob\{ [(-T - \gamma) / \theta] \geq [z_\delta] \}$,

where $z_\delta = [(-TPDD_\delta - \gamma) / \theta]$. In terms of our probability model,

(7) $\delta = 1 - T\_Dist\{ z_\delta; \gamma, \theta, v=N-2\}$,

which yields the following equation for z_δ,

(7') $z_\delta = \{ TINV\_Dist\{ (1-\delta); \gamma, \theta, v=N-2\}$, where "TINV_Dist{ . }" is the inverse function of the T_Dist{ . } function[2]. The implied equation for $TPDD_\delta$ is:

(8) $TPDD_\delta = - [\gamma + (z_\delta)(\theta)]$.

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 $TPDD_\delta = - [\gamma + (z_\delta)(\theta)]$.

The value of $z_\delta = 1.938$ and $TPDD_\delta = - [\gamma + (z_\delta)(\theta)] = 40.0$ degrees Fahrenheit, with values for "v=N-2"; along with "γ" and "θ" in Tables 5.1 & 5.2, below.

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[1] A common mathematical expression for Student's T-Distribution is provided at http://en.wikipedia.org/wiki/Student%27s_t-distribution; with a probability density function

$$f(t) = \frac{\Gamma\left(\frac{\nu+1}{2}\right)}{\sqrt{\nu\pi}\,\Gamma\left(\frac{\nu}{2}\right)}\left(1+\frac{t^2}{\nu}\right)^{-\frac{\nu+1}{2}},$$

such that $T\_Dist\{z; \gamma, \theta, v=N-2\} = \int f(t)\,dt$, from $t=-\infty$ to $t=z$. Also, the notation Γ(.) is known in mathematics as the GAMMA function; see http://www.wikipedia.org/wiki/Gamma_function for a description. Also, see *Statistical Theory*, 3rd Ed., B.W. Lindgren, MacMillian Pub. Inc, 1976, pp. 336-337.

[2] Computer software packages such as SAS and EXCEL have implemented statistical and mathematical functions to readily calculate values for T_Dist{ . } and TINV_Dist{ . } as defined above.

SoCalGas' peak-day design temperature of 41.7 degrees Fahrenheit, is calculated in a methodologically similar way as for the 40.0 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 $z_\delta = 1.295$ and, $TPDD_\delta = - [\gamma + (z_\delta)(\theta)] = 41.7$ with values for "v=N-2"; along with "γ" and "θ" in Tables 5.1 and 5.2, below.

A plot of the cumulative distribution function for $MinAVG_y$ based on "v=N-2", the fitted model parameters, "γ" and "θ" with values in Tables 5.1 and 5.2, below, is shown in Figure 1.

Table 4.1

YEAR	MINAVG	Month(MinAvg)
1950	40.8191	Jan
1951	44.5523	Dec
1952	43.0422	Jan
1953	45.6761	Feb
1954	45.6751	Dec
1955	45.8482	Dec
1956	44.8846	Feb
1957	39.5055	Jan
1958	46.2247	Nov
1959	48.2503	Feb
1960	42.2893	Jan
1961	47.1759	Dec
1962	43.4003	Jan
1963	42.5726	Jan
1964	45.2038	Nov
1965	44.7796	Jan
1966	46.6868	Jan
1967	40.7302	Dec
1968	40.6236	Dec
1969	44.8223	Jan
1970	46.8224	Dec
1971	42.9869	Jan
1972	41.4205	Dec
1973	45.0407	Jan
1974	42.9529	Jan
1975	44.6298	Jan
1976	44.8191	Jan
1977	48.2993	Jan
1978	41.6281	Dec
1979	41.3779	Jan
1980	50.3490	Jan
1981	49.3398	Jan
1982	45.3391	Jan
1983	48.6757	Jan
1984	46.9167	Dec
1985	45.0975	Feb
1986	48.5763	Feb
1987	43.4309	Dec
1988	43.2619	Dec
1989	40.5849	Feb
1990	38.9999	Dec
1991	48.6862	Mar
1992	47.3161	Dec
1993	46.0841	Jan
1994	47.1499	Nov

Table 4.2

YEAR	MINAVG	Month(MinAvg)
1995	49.8233	Dec
1996	44.9530	Feb
1997	48.3975	Jan
1998	43.6092	Dec
1999	49.0015	Jan
2000	48.7789	Mar
2001	47.1681	Feb
2002	45.8223	Jan
2003	47.0613	Dec
2004	48.1867	Nov
2005	47.2599	Jan
2006	45.8077	Mar
2007	41.4929	Jan
2008	45.8011	Dec
2009	45.2637	Dec
2010	44.6793	Dec
2011	46.7511	Feb
2012	46.7463	Dec
2013	43.8687	Jan

Table 5.1

alpha= 0.375

YEAR	Month(- MinAvg)	Days/Yr	-MinAvg	Rank	Empirical CDF	Fitted Model CDF
1980	Jan	366	-50.3490	1	0.0097	-1.9044
1995	Dec	365	-49.8233	2	0.0253	-1.7098
1981	Jan	365	-49.3398	3	0.0409	-1.5309
1999	Jan	365	-49.0015	4	0.0564	-1.4057
2000	Mar	366	-48.7789	5	0.0720	-1.3233
1991	Mar	365	-48.6862	6	0.0875	-1.2890
1983	Jan	365	-48.6757	7	0.1031	-1.2851
1986	Feb	365	-48.5763	8	0.1187	-1.2483
1997	Jan	365	-48.3975	9	0.1342	-1.1821
1977	Jan	365	-48.2993	10	0.1498	-1.1458
1959	Feb	365	-48.2503	11	0.1654	-1.1276
2004	Nov	366	-48.1867	12	0.1809	-1.1041
1992	Dec	366	-47.3161	13	0.1965	-0.7819
2005	Jan	365	-47.2599	14	0.2121	-0.7611
1961	Dec	365	-47.1759	15	0.2276	-0.7300
2001	Feb	365	-47.1681	16	0.2432	-0.7271
1994	Nov	365	-47.1499	17	0.2588	-0.7204
2003	Dec	365	-47.0613	18	0.2743	-0.6876
1984	Dec	366	-46.9167	19	0.2899	-0.6341
1970	Dec	365	-46.8224	20	0.3054	-0.5992
2011	Feb	365	-46.7511	21	0.3210	-0.5728
2012	Dec	366	-46.7463	22	0.3366	-0.5710
1966	Jan	365	-46.6868	23	0.3521	-0.5490
1958	Nov	365	-46.2247	24	0.3677	-0.3780
1993	Jan	365	-46.0841	25	0.3833	-0.3259
1955	Dec	365	-45.8482	26	0.3988	-0.2386
2002	Jan	365	-45.8223	27	0.4144	-0.2291
2006	Mar	365	-45.8077	28	0.4300	-0.2237
2008	Dec	366	-45.8011	29	0.4455	-0.2212
1953	Feb	365	-45.6761	30	0.4611	-0.1749
1954	Dec	365	-45.6751	31	0.4767	-0.1745
1982	Jan	365	-45.3391	32	0.4922	-0.0502
2009	Dec	365	-45.2637	33	0.5078	-0.0223
1964	Nov	366	-45.2038	34	0.5233	-0.0001
1985	Feb	365	-45.0975	35	0.5389	0.0392
1973	Jan	365	-45.0407	36	0.5545	0.0602
1996	Feb	366	-44.9530	37	0.5700	0.0927
1956	Feb	366	-44.8846	38	0.5856	0.1180
1969	Jan	365	-44.8223	39	0.6012	0.1411
1976	Jan	366	-44.8191	40	0.6167	0.1422
1965	Jan	365	-44.7796	41	0.6323	0.1569
2010	Dec	365	-44.6793	42	0.6479	0.1940
1975	Jan	365	-44.6298	43	0.6634	0.2123
1951	Dec	365	-44.5523	44	0.6790	0.2410
2013	Jan	365	-43.8687	45	0.6946	0.4940

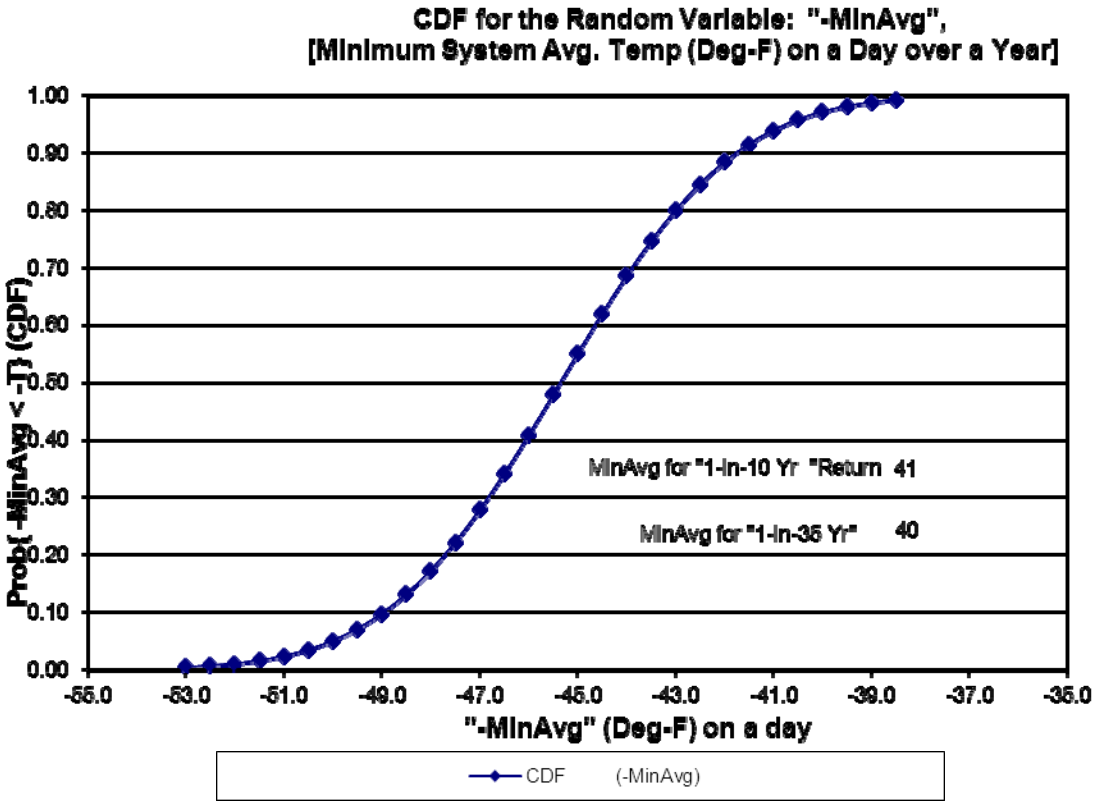
Table 5.2

alpha= 0.375

YEAR	Month(-MinAvg)	Days/Yr	-MinAvg	Rank	Empirical CDF	Fitted Model CDF
1998	Dec	365	-43.6092	46	0.7101	0.5900
1987	Dec	365	-43.4309	47	0.7257	0.6560
1962	Jan	365	-43.4003	48	0.7412	0.6674
1988	Dec	366	-43.2619	49	0.7568	0.7186
1952	Jan	366	-43.0422	50	0.7724	0.7999
1971	Jan	365	-42.9869	51	0.7879	0.8203
1974	Jan	365	-42.9529	52	0.8035	0.8329
1963	Jan	365	-42.5726	53	0.8191	0.9737
1960	Jan	366	-42.2893	54	0.8346	1.0786
1978	Dec	365	-41.6281	55	0.8502	1.3232
2007	Jan	365	-41.4929	56	0.8658	1.3733
1972	Dec	366	-41.4205	57	0.8813	1.4001
1979	Jan	365	-41.3779	58	0.8969	1.4159
1950	Jan	365	-40.8191	59	0.9125	1.6227
1967	Dec	365	-40.7302	60	0.9280	1.6556
1968	Dec	366	-40.6236	61	0.9436	1.6950
1989	Feb	365	-40.5849	62	0.9591	1.7093
1957	Jan	365	-39.5055	63	0.9747	2.1088
1990	Dec	365	-38.9999	64	0.9903	2.2960

"Gamma" (Fitted) =	**-45.35**
"Theta" (Fitted) =	**2.78**
Deg. Freedom=	**62**

Figure 1


CDF for the Random Variable: "-MinAvg",
[Minimum System Avg. Temp (Deg-F) on a Day over a Year]
Prob{-MinAvg < -T} (CDF)
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
-55.0
-53.0
-51.0
-49.0
-47.0
-45.0
-43.0
-41.0
-39.0
-37.0
-35.0
"-MinAvg" (Deg-F) on a day
MinAvg for "1-in-10 Yr "Return 41
MinAvg for "1-in-35 Yr" 40
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 Tables 5.1 and 5.2, above) to calculate the fitted temperatures as a function of the empirical CDF listed in Tables 5.1 and 5.2, above. 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, values of the root-mean-square error (RMSE) of the differences in each third of the distribution are calculated, along with the RMSE for the entire set of differences overall. The data in Tables 6.1 and 6.2, 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:

$$\text{RMSE} = \text{SQRT}\left\{ \left(\sum_{i=1,\ ...,\ N} e[\,i\,]^{2} \right) / (N-2) \right\},$$

where e[i] = *observed* less *fitted* value of temperature, T[i]. The number of estimated paramters (3 for the GEV model, 2 for the T-Dist and EV1 models) 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 0.4 Deg-F.

Table 6.1

Quantile: (Lower, Middle, Upper 3rd's)	Observed $T_{[i]}$ Temp. Ranked	Fitted Value of $T_{[i]}$	Obs'd. less Fitted Value of $T_{[i]}$	Square of $e_{[i]}$:	
U	50.3490	52.0270	-1.6780	2.815619	
U	49.8233	50.8989	-1.0756	1.156884	
U	49.3398	50.2750	-0.9352	0.874670	
U	49.0015	49.8263	-0.8247	0.680201	
U	48.7789	49.4688	-0.6898	0.475853	
U	48.6862	49.1677	-0.4815	0.231856	
U	48.6757	48.9052	-0.2295	0.052670	
U	48.5763	48.6708	-0.0945	0.008935	
U	48.3975	48.4577	-0.0601	0.003618	
U	48.2993	48.2613	0.0379	0.001440	
U	48.2503	48.0785	0.1718	0.029518	
U	48.1867	47.9067	0.2800	0.078393	
U	47.3161	47.7442	-0.4280	0.183199	
U	47.2599	47.5894	-0.3295	0.108571	
U	47.1759	47.4414	-0.2654	0.070463	
U	47.1681	47.2991	-0.1310	0.017160	
U	47.1499	47.1617	-0.0118	0.000140	
U	47.0613	47.0287	0.0327	0.001067	
U	46.9167	46.8994	0.0173	0.000301	
U	46.8224	46.7734	0.0490	0.002399	
U	46.7511	46.6503	0.1007	0.010149	
M	46.7463	46.5298	0.2166	0.046905	
M	46.6868	46.4114	0.2754	0.075850	
M	46.2247	46.2949	-0.0703	0.004938	
M	46.0841	46.1801	-0.0961	0.009231	
M	45.8482	46.0668	-0.2186	0.047771	
M	45.8223	45.9546	-0.1322	0.017489	
M	45.8077	45.8434	-0.0357	0.001271	
M	45.8011	45.7330	0.0681	0.004636	
M	45.6761	45.6232	0.0529	0.002796	
M	45.6751	45.5138	0.1612	0.025999	

Table 6.2

Quantile: (Lower, Middle, Upper 3rd's)	Observed $T_{[i]}$ Temp. Ranked	Fitted Value of $T_{[i]}$	Obs'd. less Fitted Value of $T_{[i]}$	Square of $e_{[i]}$:	
M	45.3391	45.4047	-0.0657	0.004310	
M	45.2637	45.2957	-0.0320	0.001026	
M	45.2038	45.1866	0.0172	0.000296	
M	45.0975	45.0772	0.0203	0.000412	
M	45.0407	44.9674	0.0732	0.005363	
M	44.9530	44.8570	0.0960	0.009210	
M	44.8846	44.7458	0.1388	0.019256	
M	44.8223	44.6336	0.1886	0.035577	
M	44.8191	44.5203	0.2989	0.089319	
M	44.7796	44.4055	0.3741	0.139971	
M	44.6793	44.2890	0.3902	0.152290	
M	44.6298	44.1707	0.4591	0.210812	
L	44.5523	44.0501	0.5022	0.252183	
L	43.8687	43.9270	-0.0583	0.003402	
L	43.6092	43.8010	-0.1918	0.036795	
L	43.4309	43.6717	-0.2409	0.058023	
L	43.4003	43.5387	-0.1384	0.019166	
L	43.2619	43.4014	-0.1395	0.019456	
L	43.0422	43.2590	-0.2168	0.047016	
L	42.9869	43.1110	-0.1240	0.015388	
L	42.9529	42.9563	-0.0033	0.000011	
L	42.5726	42.7937	-0.2211	0.048900	
L	42.2893	42.6220	-0.3327	0.110682	
L	41.6281	42.4391	-0.8110	0.657657	
L	41.4929	42.2427	-0.7498	0.562201	
L	41.4205	42.0296	-0.6091	0.370988	
L	41.3779	41.7952	-0.4173	0.174152	
L	40.8191	41.5327	-0.7136	0.509272	
L	40.7302	41.2317	-0.5015	0.251462	
L	40.6236	40.8741	-0.2505	0.062769	
L	40.5849	40.4254	0.1596	0.025458	
L	39.5055	39.8016	-0.2960	0.087633	
L	38.9999	38.6734	0.3265	0.106602	
			Overall RMSE ($e_{[i]}$):	0.4	°F
			Upper 3rd RMSE ($e_{[i]}$):	0.6	°F
			Middle 3rd RMSE ($e_{[i]}$):	0.2	°F
			Lower 3rd RMSE ($e_{[i]}$):	0.4	°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 (40.0°F) associated with a 1-in-35 annual likelihood, the return period is 35 years (δ=1/35). For the 41.7°F peak-day design temperature, the return period is 10 years (δ=1/10). Occasionally, a less precise terminology is used. For example, the 40.0°F peak-day design temperature may be referred to as a "1-in-35 year cold day"; and the 41.7°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 } = $(1 - \delta)^{(r-1)}$ δ, 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*] = $\left(E[\text{ return period }]\right)^2 \times \left(1 - (1 / E[\text{ return period }])\right)$,

(4') Var[*return period*] = $\left(E[\text{ return period }]\right) \times \left(E[\text{ return period }] - 1\right)$.

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) $BiNomial(s, N, \delta) = \{ N! / [(s!) (N-s)!]\} [\delta]^{(s)} [1 - \delta]^{(N-s)}$, 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 δ = 0.0011052, 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 $TPDD_{\delta}$ = 38.8°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 δ = 0.000084085 with $TPDD_{\delta}$ = 36.2°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.


1    Title1 "Data Analysis for Maximum/Minimum Daily SysAvg Temperatures (Un-Rounded)." ;
2    Title2 "Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods." ;
3
4    /*************************************************************************************************************/
5    /*                                                                                                           */
6    /*                                                                                                           */
7    /*                                                                                                           */
8    /* FILE SAVED: "S:\Weather\2014Cgr\SoCalGas\TDist4DlyTemp(NLReg2)_Scg4WP.sas"                                */
9    /*                                                                                                           */
10   /*             Jul. 10th, 2014 for Annual Max of Negative of Min. Temp.                                      */
11   /*             Also, separately for and each of twelve(12) calendar months Jan-Dec.                          */
12   /*             Fit GEV models (3-parameter and 2-parameter), plus a simple T-Dist. model.                    */
13   /*                                                                                                           */
14   /*                                                                                                           */
15   /*  2014 California Gas Report Work Paper:  Model Estimation for the 2-parameter T-Dist in this CGR          */
16   /*             rather than the  G.E.V., used for the 2012 CGR.                                               */
17   /*                                                                                                           */
18   /*                                                                                                           */
19   /*************************************************************************************************************/
20
21
22
23
24
25
26   options mprint ;
27   /* %cour8p
28      %cour8l ; */
29
30
31    options ls=211 ps=69 ; **<<LANDSCAPE:  SAS-Monospace w/Roman 6pt. Font >>**;
32   *options ls=160 ps=90 ; **<<PORTRAIT:   SAS-Monospace w/Roman 6pt. Font >>**;
33
34   options date number notes ;
35
36
37
38   libname out2 'S:\Weather\2014Cgr\SoCalGas\' ;
NOTE: Libref OUT2 was successfully assigned as follows:
      Engine:        V612
      Physical Name: S:\Weather\2014Cgr\SoCalGas
39     **<< Change library reference to use applicable daily data. >>**;
40
41   libname estout2 'S:\Weather\2014Cgr\SoCalGas\MinTemp\' ;
NOTE: Libref ESTOUT2 was successfully assigned as follows:
      Engine:        V612
      Physical Name: S:\Weather\2014Cgr\SoCalGas\MinTemp
42     **<< Change library reference to use estimation results directory. >>**;
43
44
45   proc contents data=out2.DlySys_d ;
46   run ;

NOTE: The PROCEDURE CONTENTS used 0.28 seconds.


47
48   data seriesD ;
49     set out2.DlySys_d ;
50     year = year(date) ;
51     month = month(date) ;
52     posAvg = avg ;
53     negAvg = -avg ;
54   run ;

NOTE: The data set WORK.SERIESD has 23407 observations and 8 variables.
NOTE: The DATA statement used 0.39 seconds.


55
```

```
56
57   proc means data=seriesD noprint nway ;
58    class year month ;
59     var posAvg negAvg ;
60    output out=mostat
61                     mean=posAvg  negAvg
62                      max=MxPosAvg MxNegAvg
63                      min=MnPosAvg MnNegAvg    ;
64   run;

NOTE: The data set WORK.MOSTAT has 769 observations and 10 variables.
NOTE: The PROCEDURE MEANS used 0.04 seconds.


65
66
67   proc sort data=mostat ;
68      by year month ;
69   run ;

NOTE: The data set WORK.MOSTAT has 769 observations and 10 variables.
NOTE: The PROCEDURE SORT used 0.03 seconds.


70
71
72   data mostat ;
73      set mostat ;
74      MxPRatio = MxPosAvg/ PosAvg  ;
75      MnPRatio = MnPosAvg/ PosAvg  ;
76      MxNRatio = MxNegAvg/ NegAvg  ;
77      MnNRatio = MnNegAvg/ NegAvg  ;
78   run ;

NOTE: The data set WORK.MOSTAT has 769 observations and 14 variables.
NOTE: The DATA statement used 0.04 seconds.


79
80
81
82
83
84
85
86   /****************
87   ***<< Print Summary Tables of Means/Minimums/Maximums of daily NEGATIVE-Temperatures (degrees-F). >>*** ;
88
89   proc transpose data=mostat out=AvTData prefix=AvT_ ;  **<< Update "year" value as necessary! >>** ;
90      where (year < 2014) ;
91      by year;
92      id month ;
93      var NegAvg  ;
94   run ;
95
96   data AvTData ;
97      set AvTData ;
98
99    if (mod(year,4)=0) then do ;
100          AvTyr = (AvT_1 + AvT_3 + AvT_5 + AvT_7 + AvT_8 + AvT_10 + AvT_12)*31
101                 + (AvT_4 + AvT_6 + AvT_9 + AvT_11)*30
102                 + (AvT_2)*29 ;
103          AvTyr = AvTyr / 366 ;
104          end ;
105   else do ;
106          AvTyr = (AvT_1 + AvT_3 + AvT_5 + AvT_7 + AvT_8 + AvT_10 + AvT_12)*31
107                 + (AvT_4 + AvT_6 + AvT_9 + AvT_11)*30
108                 + (AvT_2)*28 ;
109          AvTyr = AvTyr / 365 ;
110          end ;
111
112  run ;
113
114  proc print data=AvTData ;
115   id year ;
116   var AvTyr AvT_1-AvT_12 ;
117  title3 'Monthly Mean NEGATIVE Temperature (Deg-F) from 1950 thru 2013.';
```

```
118  run ;
119
120
121
122
123
124  proc transpose data=mostat out=MnTData prefix=MnT_ ;
125     where (year < 2014) ;     **<< Update "year" value as necessary! >>** ;
126     by year;
127     id month ;
128     var MnNegAvg ;
129  run ;
130
131  data MnTData ;
132     set MnTData ;
133   MnTyr = min(of MnT_1-MnT_12) ;
134  run ;
135
136  proc print data=MnTData ;
137   id year ;
138   var MnTyr MnT_1-MnT_12 ;
139  title3 'Monthly MINIMUM NEGATIVE-Temperature (Deg-F) from 1950 thru 2013.';
140  run ;
141  ***************/
142
143
144
145
146
147  proc transpose data=mostat out=MxTData prefix=MxT_ ;
148     where (year < 2014) ;    **<< Update "year" value as necessary! >>** ;
149     by year;
150     id month ;
151     var MxNegAvg ;
152  run ;

NOTE: The data set WORK.MXTDATA has 64 observations and 14 variables.
NOTE: The PROCEDURE TRANSPOSE used 0.03 seconds.


153
154  data MxTData ;
155     set MxTData ;
156   MxTyr = max(of MxT_1-MxT_12) ;
157  run ;

NOTE: The data set WORK.MXTDATA has 64 observations and 15 variables.
NOTE: The DATA statement used 0.04 seconds.


158
159  proc print data=MxTData ;
160   id year ;
161   var MxTyr MxT_1-MxT_12 ;
162  title3 'Monthly MAXIMUM NEGATIVE-Temperature (Deg-F) from 1950 thru 2013.';    **<< Update "year" value as
necessary! >>** ;
163  run ;

NOTE: The PROCEDURE PRINT used 0.01 seconds.


164
165
166
167
168
169
170
171
172
173
174  /***************
175  ***<< Descriptive Statistics: Maximums of daily NEGATIVE-Temperatures (Deg-F) for Year and each calendar month.
>>*** ;
176
177
178  proc corr data=MxTData ;
```

```
179    var MxTyr MxT_1 - MxT_12 ;
180  title3 'Correlation Matrix of Monthly Maximum NEGATIVE-Temperatures (Deg-F) within same year.';
181  run ;
182
183  proc arima data=MxTData ;
184    identify var=MxTyr ;
185    identify var=MxT_1 ;
186    identify var=MxT_2 ;
187    identify var=MxT_3 ;
188    identify var=MxT_4 ;
189    identify var=MxT_5 ;
190    identify var=MxT_6 ;
191    identify var=MxT_7 ;
192    identify var=MxT_8 ;
193    identify var=MxT_9 ;
194    identify var=MxT_10 ;
195    identify var=MxT_11 ;
196    identify var=MxT_12 ;
197  title3 "Auto-correlation analysis of each calendar month's Maximum NEGATIVE-Temperatures (Deg-F) within same
year.";
198  run ;
199
200  proc univariate normal data=MxTData plot ;
201    id year ;
202    var MxTyr MxT_1 - MxT_12 ;
203  title3 "Probability plots and tests for NORMALity by each calendar month's Maximun NEGATIVE-Temperatures (Deg-F)
time series.";
204  run ;
205
206
207  proc means data=MxTData ;
208    var MxT_1 - MxT_12  MxTYr ;
209  run ;
210  ***************/
211
212
213
214
215
216
217
218
219  ***<< Statistical Estimation of 2-Parameter T-Dist Models: Maximums of daily heating degrees for Year and each
calendar month. >>*** ;
220
221  %macro RankIt(file=MxTData,var=MxTYr,rank=RankYr,prob=PrMxTYr,Nobser=64,PltValue=0.375) ;
222            **<< Update "Nobser" value as necessary! >>** ;
223  proc sort data=&file ;
224    by &var ;
225  run ;
226
227  data &file ;
228     set &file ;
229     retain &rank 0     alpha &pltvalue ;
230
231    &rank = &rank + 1 ;
232    &prob =  (&rank - alpha) / (&Nobser +(1 - 2*alpha)) ;
233  run ;
234
235  proc print data=&file ;
236    var &var &rank &prob alpha year ;
237  run ;
238  %mend RankIt ;
239
240
241
242
243  %macro GEVfit(file=MxTData,ofile=MxTNL1,outfit=fit1,outest=est1,depvar=PrMxTYr,var=MxTYr,typeGEV=1,
244                KappaI=0.25,GammaI=-47.05,ThetaI=2.77,YrLo=1950,YrHi=2013) ;
245
246            **<< Update "year" value as necessary! >>** ;
247
248  proc sort data=&file ;
249     by year ;
250  run ;
251
252
```

```
253
254  proc model data=&file converge=0.001
255             maxit=500 dw ;  outmodel=&ofile ;
256       range year = &YrLo to &YrHi ;  **<< Dropped monthly data beyond 2013 data. >>** ;
257
258
259       y = (&var - Gamma) / Theta ;
260
261      %if &typeGEV=1 %then %do ;  ***<< 3-parameter GEV Model. >>>*** ;
262          &depvar = exp( -(1 - Kappa * (y))**(1/Kappa) ) ;
263          %let typmod = 3-parameter GEV Model. ;
264          %end ;
265
266      %if &typeGEV=2 %then %do ;  **<< 2-parameter "Double Exponential" or  "Gumbel" Model. >>** ;
267          &depvar = exp( -exp(-(y)) ) ;
268          %let typmod = 2-parameter Double Exponential or Gumbel Model. ;
269          %end ;
270
271      %if (&typeGEV NE 1) AND (&typeGEV NE 2) %then  %do ; **<< 2-parameter "T-Dist" Model. >>** ;
272          dft=(&YrHi - &YrLo) +1 -2 ;
273          &depvar = probt(y,dft) ;
274          %let typmod = 2-parameter T-Dist Model. ;
275          %end ;
276
277
278    %if &typeGEV = 1 %then %do ;
279    parms
280          Kappa  &KappaI
281          Gamma  &GammaI
282          Theta  &ThetaI ;
283    %end ;
284
285    %if (&typeGEV NE 1)  %then %do ;
286    parms
287          Gamma  &GammaI
288          Theta  &ThetaI ;
289    %end ;
290
291
292    fit &depvar   /out=&outfit  outall
293                   outest=&outest corrb corrs outcov ;
294
295  title3 "Non-linear Estimation of &&typmod: for Maximum NEGATIVE Temperature (Deg-F)." ;
296  run ;
297  %mend GEVfit ;
298
299
300
301
302
303
304
305  /****************
306  ****************/
307
308  proc means data=MxTData ;
309    var MxT_1 - MxT_12  MxTYr ;
310   output out=VarStat
311          mean=mean1-mean12 meanYr
312          std=stdev1-stdev12 stdevYr;
313  title3 "Calc. Means and Standard Deviantions to use as Starting Values in Non-Linear Estimations." ;
314  run ;

NOTE: The data set WORK.VARSTAT has 1 observations and 28 variables.
NOTE: The PROCEDURE MEANS used 0.01 seconds.


315
316
317  proc print data=VarStat ;
318  run ;

NOTE: The PROCEDURE PRINT used 0.0 seconds.


319
320
```

```
321  data _null_ ;
322     set VarStat ;
323
324    call symput('gamma_Yr',meanYr) ;
325    call symput('theta_Yr',stdevYr) ;
326
327    call symput('gamma_12',mean12) ;
328    call symput('theta_12',stdev12) ;
329
330    call symput('gamma_11',mean11) ;
331    call symput('theta_11',stdev11) ;
332
333    call symput('gamma_10',mean10) ;
334    call symput('theta_10',stdev10) ;
335
336    call symput('gamma_9',mean9) ;
337    call symput('theta_9',stdev9) ;
338
339    call symput('gamma_8',mean8) ;
340    call symput('theta_8',stdev8) ;
341
342    call symput('gamma_7',mean7) ;
343    call symput('theta_7',stdev7) ;
344
345    call symput('gamma_6',mean6) ;
346    call symput('theta_6',stdev6) ;
347
348    call symput('gamma_5',mean5) ;
349    call symput('theta_5',stdev5) ;
350
351    call symput('gamma_4',mean4) ;
352    call symput('theta_4',stdev4) ;
353
354    call symput('gamma_3',mean3) ;
355    call symput('theta_3',stdev3) ;
356
357    call symput('gamma_2',mean2) ;
358    call symput('theta_2',stdev2) ;
359
360    call symput('gamma_1',mean1) ;
361    call symput('theta_1',stdev1) ;
362
363  run ;

NOTE: Numeric values have been converted to character values at the places given by: (Line):(Column).
      324:26   325:26   327:26   328:26   330:26   331:26   333:26   334:26   336:25   337:25   339:25   340:25
342:25   343:25   345:25   346:25   348:25   349:25   351:25   352:25   354:25   355:25
      357:25   358:25   360:25   361:25
NOTE: The DATA statement used 0.04 seconds.


364
365
366
367
368
369
370  *********<<< Analysis for "Annual" Data  (i.e., SUFFIX "mm" = "_Yr"  >>>******************;
371
372
373
MPRINT(RANKIT):   **<< UPDATE "NOBSER" VALUE AS NECESSARY! >>** ;
374
375
376  %RankIt(file=MxTData,var=MxTYr,rank=RankYr,prob=PrMxTYr,Nobser=64,PltValue=0.375) ;
MPRINT(RANKIT):   PROC SORT DATA=MXTDATA ;
MPRINT(RANKIT):   BY MXTYR ;
MPRINT(RANKIT):   RUN ;

NOTE: The data set WORK.MXTDATA has 64 observations and 15 variables.
NOTE: The PROCEDURE SORT used 0.01 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) / (64 +(1 - 2*ALPHA)) ;
MPRINT(RANKIT):   RUN ;

NOTE: The data set WORK.MXTDATA has 64 observations and 18 variables.
NOTE: The DATA statement used 0.06 seconds.


MPRINT(RANKIT):   PROC PRINT DATA=MXTDATA ;
MPRINT(RANKIT):   VAR MXTYR RANKYR PRMXTYR ALPHA YEAR ;
MPRINT(RANKIT):   RUN ;

NOTE: The PROCEDURE PRINT used 0.01 seconds.


377
378
379
380  *** <<  Call "GEVfit" with "typeGEV=0" which indicates a 2-Parameter, T-Dist probability model. >> *** ;
381  *** <<  Keep the other "suffix" values as "1" for convenience in the post-processing code.      >> *** ;
382  *** <<                                                                                          >> *** ;
383
384  %GEVfit(file=MxTData,ofile=MxTNL1,outfit=fit1,outest=est1,depvar=PrMxTYr,var=MxTYr,typeGEV=0,
MPRINT(GEVFIT):   **<< UPDATE "YEAR" VALUE AS NECESSARY! >>** ;
385          KappaI=0.25,GammaI=&gamma_Yr,ThetaI=&theta_Yr,YrLo=1950,YrHi=2013) ;
MPRINT(GEVFIT):   PROC SORT DATA=MXTDATA ;
MPRINT(GEVFIT):   BY YEAR ;
MPRINT(GEVFIT):   RUN ;

NOTE: The data set WORK.MXTDATA has 64 observations and 18 variables.
NOTE: The PROCEDURE SORT used 0.01 seconds.


MPRINT(GEVFIT):   PROC MODEL DATA=MXTDATA CONVERGE=0.001 MAXIT=500 DW ;
MPRINT(GEVFIT):   OUTMODEL%MXTNL1 ;
MPRINT(GEVFIT):   RANGE YEAR = 1950 TO 2013 ;
MPRINT(GEVFIT):   **<< DROPPED MONTHLY DATA BEYOND 2013 DATA. >>** ;
MPRINT(GEVFIT):   Y % (MXTYR - GAMMA) / THETA ;
MPRINT(GEVFIT):   **<< 2-PARAMETER "T-DIST" MODEL. >>** ;
MPRINT(GEVFIT):   DFT%(2013 - 1950) +1 -2 ;
MPRINT(GEVFIT):   PRMXTYR % PROBT(Y,DFT) ;
MPRINT(GEVFIT):   PARMS GAMMA -45.20344479 THETA 2.7019354047 ;

MPRINT(GEVFIT):   FIT PRMXTYR /OUT=FIT1 OUTALL OUTEST=EST1 CORRB CORRS OUTCOV ;
MPRINT(GEVFIT):   TITLE3 "Non-linear Estimation of 2-parameter T-Dist Model.: for Maximum NEGATIVE Temperature (Deg-
F)." ;
MPRINT(GEVFIT):   RUN ;

NOTE: At OLS Iteration 3 CONVERGE=0.001 Criteria Met.
NOTE: The data set WORK.FIT1 has 192 observations and 6 variables.
NOTE: The data set WORK.EST1 has 3 observations and 5 variables.
386
387            **<< Update "YrHi" value as necessary! >>** ;
388

NOTE: The PROCEDURE MODEL used 0.09 seconds.


389  proc print data=fit1 ;
390  run ;

NOTE: The PROCEDURE PRINT used 0.0 seconds.


391
392
393
394
395  proc transpose data=fit1 out=pred1 prefix=probP ;
396     where (_type_ = "PREDICT" ) ;
397     by year;
398     var prmxtyr ;
399  run ;

NOTE: The data set WORK.PRED1 has 64 observations and 3 variables.
NOTE: The PROCEDURE TRANSPOSE used 0.01 seconds.
```

```
400
401  data comb1 ;
402     merge MxTData pred1 ;
403    by year ;
404     ProbP = ProbP1 ;
405    keep year MxTYr PrMxTYr ProbP ;
406  run ;

NOTE: The data set WORK.COMB1 has 64 observations and 4 variables.
NOTE: The DATA statement used 0.04 seconds.


407
408
409  proc print data=comb1 ;
410  run ;

NOTE: The PROCEDURE PRINT used 0.01 seconds.


411
412
413  proc plot data=comb1 ;
414    plot prmxtyr*MxTYr='*'
415         probP*MxTYr='-' / overlay ;
416  run ;

417
418

NOTE: The PROCEDURE PLOT used 0.01 seconds.


419  proc print data=est1 ;
420  run ;

NOTE: The PROCEDURE PRINT used 0.0 seconds.


421
422
423  /**************
424  data estout2.est0_Yr ;   ***<<< Save a copy of the "2-parameter T-Dist Model" estimation results!  >>>*** ;
425                           ***<<<    Number "0" in output file "est3_Yr" identifies results for a T-Dist model.
>>>*** ;
426    set est1 ;
427  run ;
428  **************/
429
430
431
432  data comb  ;
433     merge MxTData pred1(rename=(ProbP1=ProbP1)) ;
434    by year ;
435
436   ***<< "Log(PrMxTYr) - Log(ProgP)" to calc. RMSE of Proportional Errors Models! >>** ;
437     LgPrRat1 = Log(PrMxTYr/ProbP1) ;
438
439   label   LgPrRat1 = "Log(PrMxTYr/ProbP1)- T-Dist" ;
440
441     if (PrMxTYr <= (1/3)) then Quantile=1 ;  **<< "Lower Third" >>** ;
442     if (PrMxTYr > (1/3)) AND (PrMxTYr <= (2/3)) then Quantile=2 ; **<< "Middle Third" >>** ;
443     if (PrMxTYr > (2/3)) then Quantile=3 ;  **<< "Upper Third" >>** ;
444
445    keep year MxTYr Quantile PrMxTYr ProbP1 LgPrRat1 ;
446  run ;

NOTE: The data set WORK.COMB has 64 observations and 6 variables.
NOTE: The DATA statement used 0.04 seconds.


447
448
449  proc print data=comb  ;
450    var year MxTYr Quantile  PrMxTYr ProbP1  LgPrRat1 ;
451  title3 "Est'd CDFs and Logarithms of 'Empirical CDF rel. to Fitted CDF' values by Models." ;
452  run ;
```

```
NOTE: The PROCEDURE PRINT used 0.01 seconds.


453
454
455
456  proc means data=comb  n mean std min max var uss ;
457    var LgPrRat1 ;
458  title3 "Stats for Logarithms of 'Empirical CDF rel. to Fitted CDF' values by Models to calc. RMSE of Prop. Model
Spec" ;
459  run ;

NOTE: The PROCEDURE MEANS used 0.0 seconds.


460
461
462  proc sort data=comb ;
463    by Quantile ;
464  run ;

NOTE: The data set WORK.COMB has 64 observations and 6 variables.
NOTE: The PROCEDURE SORT used 0.01 seconds.


465
466
467  proc means data=comb  n mean std min max var uss ;
468    by Quantile ;
469    var LgPrRat1 ;
470  title3 "Stats By Quantile for Logarithms of 'Empirical CDF rel. to Fitted CDF' values by Models to calc. RMSE of
Prop. Model Spec" ;
471  run ;

NOTE: The PROCEDURE MEANS used 0.01 seconds.


472
473
474
475  quit ;
```

IX. Attachment 2: SAS Program Output

SOUTHERN CALIFORNIA GAS
2014 CALIFORNIA GAS REPORT--REDACTED WORKPAPERS

CONTENTS PROCEDURE

Data Set Name:	OUT2.DLYSYS_D	Observations:	23407
Member Type:	DATA	Variables:	4
Engine:	V612	Indexes:	0
Created:	20:08 Thursday, February 20, 2014	Observation Length:	32
Last Modified:	20:08 Thursday, February 20, 2014	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:	93
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			

Data Analysis for Maximum/Minimum Daily SysAvg Temperatures (Un-Rounded).
Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods.
Monthly MAXIMUM NEGATIVE-Temperature (Deg-F) from 1950 thru 2013.

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	-40.8191	-40.8191	-44.9998	-50.7384	-53.8284	-54.7660	-60.3327	-68.4569	-67.9341	-64.1639	-63.2849	-52.1884	-51.8107
1951	-44.5523	-46.2003	-44.6845	-46.0282	-54.2190	-55.5056	-62.2043	-68.2877	-64.6160	-65.7136	-55.7771	-49.1965	-44.5523
1952	-43.0422	-43.0422	-46.8814	-45.9480	-53.2920	-61.0918	-59.8675	-68.6287	-69.5319	-62.0161	-61.2040	-46.9077	-47.0536
1953	-45.6761	-48.5242	-45.6761	-45.7751	-50.5883	-53.9743	-58.8795	-72.3811	-65.5690	-64.7101	-57.3573	-50.4371	-49.1872
1954	-45.6751	-47.6578	-49.5168	-49.0750	-56.7571	-56.4659	-61.5359	-69.9724	-67.5331	-64.1278	-58.4765	-51.4007	-45.6751
1955	-45.8482	-46.1393	-45.9639	-51.5460	-53.9052	-52.9363	-58.6313	-66.4290	-71.2729	-63.6120	-58.1722	-49.7517	-45.8482
1956	-44.8846	-48.5222	-44.8846	-51.4947	-50.4975	-58.3117	-65.1737	-66.3105	-66.5175	-70.5317	-53.5483	-53.4569	-48.6331
1957	-39.5055	-39.5055	-49.0151	-51.1551	-51.3106	-57.6984	-65.2963	-71.3508	-66.5933	-67.6755	-57.1745	-52.2047	-52.8359
1958	-46.2247	-50.2476	-53.6736	-49.7267	-51.1664	-60.7489	-66.3350	-69.7126	-72.8928	-66.5768	-62.8177	-46.2247	-52.9492
1959	-48.2503	-51.4487	-48.2503	-57.7020	-59.7467	-58.2343	-66.7131	-74.6211	-68.4779	-65.9403	-60.1343	-58.6094	-48.7270
1960	-42.2893	-42.2893	-48.4021	-52.2157	-53.3997	-57.4435	-66.4791	-69.3953	-69.6127	-67.3236	-59.1059	-50.3971	-45.6329
1961	-47.1759	-50.8158	-53.3610	-53.4325	-54.5524	-59.0403	-60.5470	-69.2793	-68.8779	-64.3243	-55.8126	-51.7928	-47.1759
1962	-43.4003	-43.4003	-45.2123	-46.9269	-57.9661	-54.9889	-57.8917	-68.3985	-70.2439	-66.2385	-60.9859	-54.8103	-47.8349
1963	-42.5726	-42.5726	-52.9706	-48.0745	-51.2265	-60.5000	-60.6617	-68.4249	-70.4451	-67.5929	-62.5105	-53.0244	-48.8780
1964	-45.2038	-47.5811	-49.7444	-48.2013	-52.1701	-52.5159	-59.0233	-68.5033	-67.9754	-65.8800	-61.5902	-45.2038	-45.6197
1965	-44.7796	-44.7796	-47.8001	-51.7404	-48.2731	-57.6000	-59.0849	-68.4742	-71.3274	-64.4027	-60.8982	-51.6409	-46.3590
1966	-46.6868	-46.6868	-48.1819	-47.3158	-57.5952	-58.6049	-62.9803	-69.9381	-68.7952	-66.8423	-63.4944	-52.6235	-47.2416
1967	-40.7302	-49.5424	-52.8419	-51.1870	-48.2491	-57.8827	-58.9107	-72.4859	-74.8031	-70.3731	-64.8869	-51.6390	-40.7302
1968	-40.6236	-46.2402	-52.4175	-53.8037	-55.4409	-56.9997	-61.6141	-68.0417	-68.4643	-64.8175	-59.6803	-54.2491	-40.6236
1969	-44.8223	-44.8223	-47.3999	-48.6259	-53.7517	-55.7176	-62.7672	-68.8001	-72.2395	-67.2629	-59.2295	-56.3644	-48.7825
1970	-46.8224	-46.9341	-54.2609	-51.9885	-51.7481	-57.6377	-62.1036	-71.6011	-71.4286	-66.0815	-58.2385	-53.2619	-46.8224
1971	-42.9869	-42.9869	-48.9359	-48.7077	-52.8077	-55.8881	-58.5927	-68.9136	-70.6925	-62.7928	-49.2377	-52.3681	-44.6741
1972	-41.4205	-45.9957	-49.8747	-55.4183	-54.2917	-56.8837	-65.9486	-70.1931	-70.1718	-66.2921	-55.9630	-53.8143	-41.4205
1973	-45.0407	-45.0407	-52.1278	-49.1368	-55.3717	-58.1856	-63.7853	-67.4249	-68.0265	-65.8994	-61.9501	-49.7132	-50.8649
1974	-42.9529	-42.9529	-51.8383	-48.2656	-55.6726	-58.3752	-65.5637	-68.7409	-70.9643	-66.8560	-56.3199	-55.0452	-44.7943
1975	-44.6298	-44.6298	-47.9783	-49.7590	-47.3717	-56.3533	-61.4188	-69.4181	-68.6297	-67.4526	-59.2099	-47.7313	-48.6374
1976	-44.8191	-44.8191	-49.5439	-45.4221	-50.4091	-58.0715	-60.5197	-70.7529	-67.7144	-67.5030	-62.8499	-51.6628	-51.2303
1977	-48.2993	-48.2993	-51.9229	-48.6928	-53.4543	-53.9830	-64.7613	-69.5405	-72.9737	-65.7100	-60.6031	-54.0616	-53.2511
1978	-41.6281	-51.1090	-48.2377	-54.1236	-51.2941	-59.4736	-65.8961	-68.8261	-68.7092	-65.8590	-59.3746	-49.0100	-41.6281
1979	-41.3779	-41.3779	-45.8361	-49.7205	-56.2811	-58.7749	-63.9629	-66.6141	-69.8528	-69.2651	-59.9813	-51.5936	-49.5105
1980	-50.3490	-50.3490	-54.7684	-52.8838	-53.2091	-57.2217	-60.6501	-71.9369	-70.0355	-66.2393	-59.0269	-56.0353	-51.6753
1981	-49.3398	-49.3398	-52.1371	-52.3843	-54.8637	-61.4158	-68.3333	-73.1676	-72.9912	-68.2729	-58.1177	-50.9169	-52.9671
1982	-45.3391	-45.3391	-52.3247	-49.2906	-50.3405	-57.8469	-62.8548	-66.7931	-69.7427	-63.7989	-61.7309	-52.0637	-48.3405
1983	-48.6757	-48.6757	-51.5694	-54.6097	-52.4974	-57.7019	-62.6384	-69.1251	-70.4833	-64.0415	-65.4436	-49.4565	-49.4625
1984	-46.9167	-49.6005	-53.8440	-56.9361	-54.9053	-59.4351	-66.1357	-73.1404	-74.8571	-70.7826	-60.6768	-50.0104	-46.9167
1985	-45.0975	-47.3791	-45.0975	-49.1006	-54.9263	-59.0951	-62.9051	-71.6050	-69.5189	-64.7457	-61.8164	-47.5337	-46.7316
1986	-48.5763	-56.1750	-48.5763	-50.3670	-57.7426	-59.4650	-66.4247	-69.1524	-72.3741	-61.1407	-61.4653	-58.2149	-52.9105
1987	-43.4309	-44.2661	-46.0420	-50.7526	-56.2917	-60.0333	-66.6726	-67.1219	-68.1879	-67.1071	-62.0577	-52.6887	-43.4309
1988	-43.2619	-49.9452	-51.3263	-54.3681	-54.0256	-55.3783	-59.1349	-70.9730	-70.1645	-64.2787	-64.0840	-50.9728	-43.2619
1989	-40.5849	-42.9465	-40.5849	-52.1917	-55.4459	-58.2067	-64.4875	-71.3185	-69.5340	-62.8617	-59.7889	-56.0433	-51.8970
1990	-38.9999	-48.7821	-43.3730	-49.1386	-58.2499	-61.1357	-63.2494	-72.1595	-69.8831	-69.0226	-63.4980	-52.3723	-38.9999
1991	-48.6862	-51.7210	-56.1763	-48.6862	-57.5537	-55.8819	-63.8281	-68.0943	-70.4369	-66.6563	-57.5524	-52.6257	-50.5187
1992	-47.3161	-48.1474	-51.8620	-53.3396	-61.2325	-66.6514	-64.4811	-68.0690	-69.0959	-70.1784	-63.4107	-55.4084	-47.3161
1993	-46.0841	-46.0841	-50.8403	-53.4689	-60.3139	-63.5211	-59.7512	-71.1679	-70.1792	-67.4975	-63.2802	-54.9082	-50.1286
1994	-47.1499	-51.5476	-50.0643	-51.7856	-54.2319	-57.1557	-66.9480	-71.1745	-73.6123	-67.2007	-62.0633	-47.1499	-49.9903
1995	-49.8233	-49.9421	-54.1229	-52.5911	-52.0627	-56.5589	-57.8293	-69.9561	-71.8327	-67.3233	-62.8180	-60.4764	-49.8233
1996	-44.9530	-47.7617	-44.9530	-55.0263	-59.6978	-62.8876	-63.9995	-71.8693	-72.0451	-68.9589	-54.4159	-53.3144	-52.4869
1997	-48.3975	-48.3975	-53.4627	-53.2971	-55.7123	-66.9537	-64.8212	-70.6145	-72.0367	-71.8833	-62.3951	-54.8714	-48.9587
1998	-43.6092	-50.7118	-52.3952	-49.8567	-50.0517	-55.2463	-61.1750	-70.3811	-72.6641	-65.0651	-60.8835	-55.3429	-43.6092
1999	-49.0015	-49.0015	-49.9935	-50.1309	-50.2334	-57.6469	-57.3415	-69.3627	-69.0089	-67.8535	-64.5037	-54.8822	-52.0566
2000	-48.7789	-49.7628	-49.0039	-48.7789	-55.7078	-61.3821	-64.7715	-69.3843	-69.5633	-67.2093	-57.2105	-50.3792	-51.1212
2001	-47.1681	-47.3407	-47.1681	-51.9562	-50.1094	-63.0759	-66.6301	-69.4096	-70.5751	-69.0640	-63.0799	-51.6725	-49.0997
2002	-45.8223	-45.8223	-48.9409	-50.2512	-56.3027	-57.7700	-64.9941	-70.1903	-70.1090	-63.3394	-58.9696	-58.5822	-48.7274
2003	-47.0613	-54.5808	-52.8352	-53.0637	-53.4382	-58.6432	-63.0545	-73.2257	-73.6653	-70.3936	-57.5661	-52.9768	-47.0613
2004	-48.1867	-49.0465	-50.7794	-53.6947	-56.6526	-63.7255	-65.9808	-68.9781	-70.3597	-65.6788	-56.1204	-48.1867	-48.2907
2005	-47.2599	-47.2599	-54.0097	-53.5998	-57.5496	-60.9997	-65.4731	-71.0229	-71.0006	-65.8685	-60.6023	-55.1945	-50.5972
2006	-45.8077	-51.5571	-48.3682	-45.8077	-53.7074	-62.5195	-68.5607	-74.8743	-72.2667	-68.2557	-62.2553	-52.0219	-48.0777
2007	-41.4929	-41.4929	-50.7839	-51.4167	-54.2690	-59.5979	-63.9872	-73.0400	-72.5376	-63.5150	-61.4484	-56.1205	-47.4868
2008	-45.8011	-47.4858	-49.8375	-54.5779	-55.1500	-57.5404	-64.0075	-72.7389	-73.0302	-68.8659	-60.3823	-58.5470	-45.8011
2009	-45.2637	-47.9951	-48.1499	-52.3874	-52.8171	-65.4331	-64.0208	-72.2665	-71.2159	-69.0147	-59.0749	-56.6637	-45.2637
2010	-44.6793	-48.7393	-50.9752	-52.1429	-52.0308	-59.1218	-65.8374	-68.1391	-67.5518	-66.6485	-60.3472	-49.6281	-44.6793
2011	-46.7511	-47.1723	-46.7511	-50.5103	-50.1027	-56.4699	-62.0575	-68.8443	-71.8433	-68.3855	-59.1551	-52.5649	-48.6758
2012	-46.7463	-50.8960	-49.5318	-49.0954	-52.7511	-60.3420	-66.9861	-69.9129	-74.1191	-71.4731	-63.0381	-53.3003	-46.7463

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
2013	-43.8687	-43.8687	-47.2471	-51.2171	-57.9394	-62.1341	-69.2856	-70.9681	-70.8446	-68.4636	-58.4221	-56.4427	-46.9579

Data Analysis for Maximum/Minimum Daily SysAvg Temperatures (Un-Rounded).
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	64	-47.2518094	3.3369840	-56.1750000	-39.5055333
MXT_2	64	-49.5364031	3.2063445	-56.1762667	-40.5849333
MXT_3	64	-50.9477104	2.7449512	-57.7020000	-45.4221333
MXT_4	64	-54.0430240	3.0440408	-61.2324667	-47.3716667
MXT_5	64	-58.6382427	3.0353724	-66.9537333	-52.5159333
MXT_6	64	-63.2310990	2.9797153	-69.2856000	-57.3414667
MXT_7	64	-70.0014927	1.9647630	-74.8743333	-66.3105333
MXT_8	64	-70.3164500	2.1593983	-74.8570667	-64.6160000
MXT_9	64	-66.6393969	2.3594021	-71.8832667	-61.1406667
MXT_10	64	-60.1026625	2.9883555	-65.4436000	-49.2376667
MXT_11	64	-52.6242802	3.2370815	-60.4764000	-45.2038000
MXT_12	64	-47.7976990	3.3155050	-53.2510667	-38.9999333
MXTYR	64	-45.2034448	2.7019354	-50.3490000	-38.9999333

OBS	_TYPE_	_FREQ_	MEAN1	MEAN2	MEAN3	MEAN4	MEAN5	MEAN6	MEAN7	MEAN8	MEAN9	MEAN10	MEAN11	MEAN12
1	0	64	-47.2518	-49.5364	-50.9477	-54.0430	-58.6382	-63.2311	-70.0015	-70.3165	-66.6394	-60.1027	-52.6243	-47.7977

OBS	MEANYR	STDEV1	STDEV2	STDEV3	STDEV4	STDEV5	STDEV6	STDEV7	STDEV8	STDEV9	STDEV10	STDEV11	STDEV12	STDEVYR
1	-45.2034	3.33698	3.20634	2.74495	3.04404	3.03537	2.97972	1.96476	2.15940	2.35940	2.98836	3.23708	3.31551	2.70194

OBS	MXTYR	RANKYR	PRMXTYR	ALPHA	YEAR
1	-50.3490	1	0.00973	0.375	1980
2	-49.8233	2	0.02529	0.375	1995
3	-49.3398	3	0.04086	0.375	1981
4	-49.0015	4	0.05642	0.375	1999
5	-48.7789	5	0.07198	0.375	2000
6	-48.6862	6	0.08755	0.375	1991
7	-48.6757	7	0.10311	0.375	1983
8	-48.5763	8	0.11868	0.375	1986
9	-48.3975	9	0.13424	0.375	1997
10	-48.2993	10	0.14981	0.375	1977
11	-48.2503	11	0.16537	0.375	1959
12	-48.1867	12	0.18093	0.375	2004
13	-47.3161	13	0.19650	0.375	1992
14	-47.2599	14	0.21206	0.375	2005
15	-47.1759	15	0.22763	0.375	1961
16	-47.1681	16	0.24319	0.375	2001
17	-47.1499	17	0.25875	0.375	1994
18	-47.0613	18	0.27432	0.375	2003
19	-46.9167	19	0.28988	0.375	1984
20	-46.8224	20	0.30545	0.375	1970
21	-46.7511	21	0.32101	0.375	2011
22	-46.7463	22	0.33658	0.375	2012
23	-46.6868	23	0.35214	0.375	1966
24	-46.2247	24	0.36770	0.375	1958
25	-46.0841	25	0.38327	0.375	1993
26	-45.8482	26	0.39883	0.375	1955
27	-45.8223	27	0.41440	0.375	2002
28	-45.8077	28	0.42996	0.375	2006
29	-45.8011	29	0.44553	0.375	2008
30	-45.6761	30	0.46109	0.375	1953
31	-45.6751	31	0.47665	0.375	1954
32	-45.3391	32	0.49222	0.375	1982
33	-45.2637	33	0.50778	0.375	2009
34	-45.2038	34	0.52335	0.375	1964
35	-45.0975	35	0.53891	0.375	1985
36	-45.0407	36	0.55447	0.375	1973
37	-44.9530	37	0.57004	0.375	1996
38	-44.8846	38	0.58560	0.375	1956
39	-44.8223	39	0.60117	0.375	1969
40	-44.8191	40	0.61673	0.375	1976
41	-44.7796	41	0.63230	0.375	1965
42	-44.6793	42	0.64786	0.375	2010
43	-44.6298	43	0.66342	0.375	1975
44	-44.5523	44	0.67899	0.375	1951
45	-43.8687	45	0.69455	0.375	2013
46	-43.6092	46	0.71012	0.375	1998
47	-43.4309	47	0.72568	0.375	1987
48	-43.4003	48	0.74125	0.375	1962
49	-43.2619	49	0.75681	0.375	1988
50	-43.0422	50	0.77237	0.375	1952
51	-42.9869	51	0.78794	0.375	1971
52	-42.9529	52	0.80350	0.375	1974
53	-42.5726	53	0.81907	0.375	1963
54	-42.2893	54	0.83463	0.375	1960
55	-41.6281	55	0.85019	0.375	1978
56	-41.4929	56	0.86576	0.375	2007
57	-41.4205	57	0.88132	0.375	1972
58	-41.3779	58	0.89689	0.375	1979
59	-40.8191	59	0.91245	0.375	1950
60	-40.7302	60	0.92802	0.375	1967
61	-40.6236	61	0.94358	0.375	1968
62	-40.5849	62	0.95914	0.375	1989
63	-39.5055	63	0.97471	0.375	1957

Data Analysis for Maximum/Minimum Daily SysAvg Temperatures (Un-Rounded).
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
64	-38.9999	64	0.99027	0.375	1990

MODEL Procedure

Model Summary

Model Variables	1
Parameters	3
RANGE Variable	YEAR
Equations	1
Number of Statements	4

Model Variables: PRMXTYR

Parameters: GAMMA: -45.2 THETA: 2.702 MXTNL1

Equations: PRMXTYR

MODEL Procedure

NOTE: A finite difference approximation is used for the derivative of the PROBT function at line 385 column 101.

Data Analysis for Maximum/Minimum Daily SysAvg Temperatures (Un-Rounded).
Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods.
Non-linear Estimation of 2-parameter T-Dist Model.: for Maximum NEGATIVE Temperature (Deg-F).

MODEL Procedure

The Equation to Estimate is:

PRMXTYR = F(GAMMA, THETA)

MODEL Procedure
OLS Estimation

OLS Estimation Summary

Dataset Option	Dataset
DATA=	MXTDATA
OUT=	FIT1
OUTEST=	EST1
Parameters Estimated	2
RANGE Processed	YEAR
First	1950
Last	2013

Minimization Summary

Method	GAUSS
Iterations	3

Final Convergence Criteria	
R	0.00009127
PPC(THETA)	0.000013
RPC(THETA)	0.000122
Object	2.62674E-6
Trace(S)	0.00076051
Objective Value	0.00073674

Observations Processed

Read	64
Solved	64

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	2	62	0.04715	0.0007605	0.02758	0.9911	0.9909	1.618

Nonlinear OLS Parameter Estimates

Parameter	Estimate	Approx. Std Err	'T' Ratio	Approx. Prob>|T|
GAMMA	-45.350207	0.03195	-1419.36	0.0001
THETA	2.783027	0.05571	49.96	0.0001

Number of Observations		Statistics for System	
Used	64	Objective	0.000737
Missing	0	Objective*N	0.0472

RANGE of Fit: YEAR = 1950 TO 2013

Correlations of Estimates

CorrB	GAMMA	THETA
GAMMA	1.0000	0.0893
THETA	0.0893	1.0000

MODEL Procedure

Model Summary

Model Variables	1
Parameters	3
RANGE Variable	YEAR
Equations	1
Number of Statements	5

Model Variables: PRMXTYR

Parameters: MXTNL1 GAMMA: -45.35(-1419) THETA: 2.783(50)

Equations: PRMXTYR

Data Analysis for Maximum/Minimum Daily SysAvg Temperatures (Un-Rounded).
Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods.
Non-linear Estimation of 2-parameter T-Dist Model.: for Maximum NEGATIVE Temperature (Deg-F).

OBS	YEAR	_ESTYPE_	_TYPE_	_WEIGHT_	PRMXTYR	MXTYR
1	1950	OLS	ACTUAL	1	0.91245	-40.8191
2	1950	OLS	PREDICT	1	0.94572	-40.8191
3	1950	OLS	RESIDUAL	1	-0.03326	-40.8191
4	1951	OLS	ACTUAL	1	0.67899	-44.5523
5	1951	OLS	PREDICT	1	0.61236	-44.5523
6	1951	OLS	RESIDUAL	1	0.06663	-44.5523
7	1952	OLS	ACTUAL	1	0.77237	-43.0422
8	1952	OLS	PREDICT	1	0.79495	-43.0422
9	1952	OLS	RESIDUAL	1	-0.02257	-43.0422
10	1953	OLS	ACTUAL	1	0.46109	-45.6761
11	1953	OLS	PREDICT	1	0.45358	-45.6761
12	1953	OLS	RESIDUAL	1	0.00751	-45.6761
13	1954	OLS	ACTUAL	1	0.47665	-45.6751
14	1954	OLS	PREDICT	1	0.45373	-45.6751
15	1954	OLS	RESIDUAL	1	0.02293	-45.6751
16	1955	OLS	ACTUAL	1	0.39883	-45.8482
17	1955	OLS	PREDICT	1	0.42928	-45.8482
18	1955	OLS	RESIDUAL	1	-0.03045	-45.8482
19	1956	OLS	ACTUAL	1	0.58560	-44.8846
20	1956	OLS	PREDICT	1	0.56616	-44.8846
21	1956	OLS	RESIDUAL	1	0.01944	-44.8846
22	1957	OLS	ACTUAL	1	0.97471	-39.5055
23	1957	OLS	PREDICT	1	0.98010	-39.5055
24	1957	OLS	RESIDUAL	1	-0.00539	-39.5055
25	1958	OLS	ACTUAL	1	0.36770	-46.2247
26	1958	OLS	PREDICT	1	0.37721	-46.2247
27	1958	OLS	RESIDUAL	1	-0.00950	-46.2247
28	1959	OLS	ACTUAL	1	0.16537	-48.2503
29	1959	OLS	PREDICT	1	0.15072	-48.2503
30	1959	OLS	RESIDUAL	1	0.01465	-48.2503
31	1960	OLS	ACTUAL	1	0.83463	-42.2893
32	1960	OLS	PREDICT	1	0.86218	-42.2893
33	1960	OLS	RESIDUAL	1	-0.02755	-42.2893
34	1961	OLS	ACTUAL	1	0.22763	-47.1759
35	1961	OLS	PREDICT	1	0.25712	-47.1759
36	1961	OLS	RESIDUAL	1	-0.02949	-47.1759
37	1962	OLS	ACTUAL	1	0.74125	-43.4003
38	1962	OLS	PREDICT	1	0.75693	-43.4003
39	1962	OLS	RESIDUAL	1	-0.01568	-43.4003
40	1963	OLS	ACTUAL	1	0.81907	-42.5726
41	1963	OLS	PREDICT	1	0.83893	-42.5726
42	1963	OLS	RESIDUAL	1	-0.01987	-42.5726
43	1964	OLS	ACTUAL	1	0.52335	-45.2038
44	1964	OLS	PREDICT	1	0.52089	-45.2038
45	1964	OLS	RESIDUAL	1	0.00245	-45.2038
46	1965	OLS	ACTUAL	1	0.63230	-44.7796
47	1965	OLS	PREDICT	1	0.58089	-44.7796
48	1965	OLS	RESIDUAL	1	0.05141	-44.7796
49	1966	OLS	ACTUAL	1	0.35214	-46.6868
50	1966	OLS	PREDICT	1	0.31636	-46.6868
51	1966	OLS	RESIDUAL	1	0.03578	-46.6868
52	1967	OLS	ACTUAL	1	0.92802	-40.7302
53	1967	OLS	PREDICT	1	0.94902	-40.7302
54	1967	OLS	RESIDUAL	1	-0.02101	-40.7302
55	1968	OLS	ACTUAL	1	0.94358	-40.6236
56	1968	OLS	PREDICT	1	0.95277	-40.6236
57	1968	OLS	RESIDUAL	1	-0.00919	-40.6236
58	1969	OLS	ACTUAL	1	0.60117	-44.8223
59	1969	OLS	PREDICT	1	0.57492	-44.8223
60	1969	OLS	RESIDUAL	1	0.02625	-44.8223
61	1970	OLS	ACTUAL	1	0.30545	-46.8224
62	1970	OLS	PREDICT	1	0.29935	-46.8224
63	1970	OLS	RESIDUAL	1	0.00610	-46.8224

Data Analysis for Maximum/Minimum Daily SysAvg Temperatures (Un-Rounded).
Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods.
Non-linear Estimation of 2-parameter T-Dist Model.: for Maximum NEGATIVE Temperature (Deg-F).

OBS	YEAR	_ESTYPE_	_TYPE_	_WEIGHT_	PRMXTYR	MXTYR
64	1971	OLS	ACTUAL	1	0.78794	-42.9869
65	1971	OLS	PREDICT	1	0.80047	-42.9869
66	1971	OLS	RESIDUAL	1	-0.01254	-42.9869
67	1972	OLS	ACTUAL	1	0.88132	-41.4205
68	1972	OLS	PREDICT	1	0.91853	-41.4205
69	1972	OLS	RESIDUAL	1	-0.03720	-41.4205
70	1973	OLS	ACTUAL	1	0.55447	-45.0407
71	1973	OLS	PREDICT	1	0.54410	-45.0407
72	1973	OLS	RESIDUAL	1	0.01037	-45.0407
73	1974	OLS	ACTUAL	1	0.80350	-42.9529
74	1974	OLS	PREDICT	1	0.80383	-42.9529
75	1974	OLS	RESIDUAL	1	-0.00033	-42.9529
76	1975	OLS	ACTUAL	1	0.66342	-44.6298
77	1975	OLS	PREDICT	1	0.60170	-44.6298
78	1975	OLS	RESIDUAL	1	0.06173	-44.6298
79	1976	OLS	ACTUAL	1	0.61673	-44.8191
80	1976	OLS	PREDICT	1	0.57536	-44.8191
81	1976	OLS	RESIDUAL	1	0.04137	-44.8191
82	1977	OLS	ACTUAL	1	0.14981	-48.2993
83	1977	OLS	PREDICT	1	0.14671	-48.2993
84	1977	OLS	RESIDUAL	1	0.00310	-48.2993
85	1978	OLS	ACTUAL	1	0.85019	-41.6281
86	1978	OLS	PREDICT	1	0.90701	-41.6281
87	1978	OLS	RESIDUAL	1	-0.05682	-41.6281
88	1979	OLS	ACTUAL	1	0.89689	-41.3779
89	1979	OLS	PREDICT	1	0.92075	-41.3779
90	1979	OLS	RESIDUAL	1	-0.02386	-41.3779
91	1980	OLS	ACTUAL	1	0.00973	-50.3490
92	1980	OLS	PREDICT	1	0.03867	-50.3490
93	1980	OLS	RESIDUAL	1	-0.02894	-50.3490
94	1981	OLS	ACTUAL	1	0.04086	-49.3398
95	1981	OLS	PREDICT	1	0.07836	-49.3398
96	1981	OLS	RESIDUAL	1	-0.03751	-49.3398
97	1982	OLS	ACTUAL	1	0.49222	-45.3391
98	1982	OLS	PREDICT	1	0.50159	-45.3391
99	1982	OLS	RESIDUAL	1	-0.00937	-45.3391
100	1983	OLS	ACTUAL	1	0.10311	-48.6757
101	1983	OLS	PREDICT	1	0.11833	-48.6757
102	1983	OLS	RESIDUAL	1	-0.01522	-48.6757
103	1984	OLS	ACTUAL	1	0.28988	-46.9167
104	1984	OLS	PREDICT	1	0.28777	-46.9167
105	1984	OLS	RESIDUAL	1	0.00211	-46.9167
106	1985	OLS	ACTUAL	1	0.53891	-45.0975
107	1985	OLS	PREDICT	1	0.53602	-45.0975
108	1985	OLS	RESIDUAL	1	0.00289	-45.0975
109	1986	OLS	ACTUAL	1	0.11868	-48.5763
110	1986	OLS	PREDICT	1	0.12541	-48.5763
111	1986	OLS	RESIDUAL	1	-0.00673	-48.5763
112	1987	OLS	ACTUAL	1	0.72568	-43.4309
113	1987	OLS	PREDICT	1	0.75351	-43.4309
114	1987	OLS	RESIDUAL	1	-0.02783	-43.4309
115	1988	OLS	ACTUAL	1	0.75681	-43.2619
116	1988	OLS	PREDICT	1	0.77207	-43.2619
117	1988	OLS	RESIDUAL	1	-0.01526	-43.2619
118	1989	OLS	ACTUAL	1	0.95914	-40.5849
119	1989	OLS	PREDICT	1	0.95408	-40.5849
120	1989	OLS	RESIDUAL	1	0.00507	-40.5849
121	1990	OLS	ACTUAL	1	0.99027	-38.9999
122	1990	OLS	PREDICT	1	0.98703	-38.9999
123	1990	OLS	RESIDUAL	1	0.00325	-38.9999
124	1991	OLS	ACTUAL	1	0.08755	-48.6862
125	1991	OLS	PREDICT	1	0.11760	-48.6862
126	1991	OLS	RESIDUAL	1	-0.03006	-48.6862

OBS	YEAR	_ESTYPE_	_TYPE_	_WEIGHT_	PRMXTYR	MXTYR
127	1992	OLS	ACTUAL	1	0.19650	-47.3161
128	1992	OLS	PREDICT	1	0.24129	-47.3161
129	1992	OLS	RESIDUAL	1	-0.04480	-47.3161
130	1993	OLS	ACTUAL	1	0.38327	-46.0841
131	1993	OLS	PREDICT	1	0.39645	-46.0841
132	1993	OLS	RESIDUAL	1	-0.01318	-46.0841
133	1994	OLS	ACTUAL	1	0.25875	-47.1499
134	1994	OLS	PREDICT	1	0.26012	-47.1499
135	1994	OLS	RESIDUAL	1	-0.00137	-47.1499
136	1995	OLS	ACTUAL	1	0.02529	-49.8233
137	1995	OLS	PREDICT	1	0.05654	-49.8233
138	1995	OLS	RESIDUAL	1	-0.03125	-49.8233
139	1996	OLS	ACTUAL	1	0.57004	-44.9530
140	1996	OLS	PREDICT	1	0.55651	-44.9530
141	1996	OLS	RESIDUAL	1	0.01352	-44.9530
142	1997	OLS	ACTUAL	1	0.13424	-48.3975
143	1997	OLS	PREDICT	1	0.13888	-48.3975
144	1997	OLS	RESIDUAL	1	-0.00464	-48.3975
145	1998	OLS	ACTUAL	1	0.71012	-43.6092
146	1998	OLS	PREDICT	1	0.73306	-43.6092
147	1998	OLS	RESIDUAL	1	-0.02294	-43.6092
148	1999	OLS	ACTUAL	1	0.05642	-49.0015
149	1999	OLS	PREDICT	1	0.09718	-49.0015
150	1999	OLS	RESIDUAL	1	-0.04076	-49.0015
151	2000	OLS	ACTUAL	1	0.07198	-48.7789
152	2000	OLS	PREDICT	1	0.11130	-48.7789
153	2000	OLS	RESIDUAL	1	-0.03931	-48.7789
154	2001	OLS	ACTUAL	1	0.24319	-47.1681
155	2001	OLS	PREDICT	1	0.25802	-47.1681
156	2001	OLS	RESIDUAL	1	-0.01483	-47.1681
157	2002	OLS	ACTUAL	1	0.41440	-45.8223
158	2002	OLS	PREDICT	1	0.43292	-45.8223
159	2002	OLS	RESIDUAL	1	-0.01852	-45.8223
160	2003	OLS	ACTUAL	1	0.27432	-47.0613
161	2003	OLS	PREDICT	1	0.27045	-47.0613
162	2003	OLS	RESIDUAL	1	0.00387	-47.0613
163	2004	OLS	ACTUAL	1	0.18093	-48.1867
164	2004	OLS	PREDICT	1	0.15603	-48.1867
165	2004	OLS	RESIDUAL	1	0.02490	-48.1867
166	2005	OLS	ACTUAL	1	0.21206	-47.2599
167	2005	OLS	PREDICT	1	0.24757	-47.2599
168	2005	OLS	RESIDUAL	1	-0.03551	-47.2599
169	2006	OLS	ACTUAL	1	0.42996	-45.8077
170	2006	OLS	PREDICT	1	0.43498	-45.8077
171	2006	OLS	RESIDUAL	1	-0.00501	-45.8077
172	2007	OLS	ACTUAL	1	0.86576	-41.4929
173	2007	OLS	PREDICT	1	0.91464	-41.4929
174	2007	OLS	RESIDUAL	1	-0.04889	-41.4929
175	2008	OLS	ACTUAL	1	0.44553	-45.8011
176	2008	OLS	PREDICT	1	0.43592	-45.8011
177	2008	OLS	RESIDUAL	1	0.00961	-45.8011
178	2009	OLS	ACTUAL	1	0.50778	-45.2637
179	2009	OLS	PREDICT	1	0.51235	-45.2637
180	2009	OLS	RESIDUAL	1	-0.00457	-45.2637
181	2010	OLS	ACTUAL	1	0.64786	-44.6793
182	2010	OLS	PREDICT	1	0.59486	-44.6793
183	2010	OLS	RESIDUAL	1	0.05300	-44.6793
184	2011	OLS	ACTUAL	1	0.32101	-46.7511
185	2011	OLS	PREDICT	1	0.30825	-46.7511
186	2011	OLS	RESIDUAL	1	0.01276	-46.7511
187	2012	OLS	ACTUAL	1	0.33658	-46.7463
188	2012	OLS	PREDICT	1	0.30884	-46.7463
189	2012	OLS	RESIDUAL	1	0.02773	-46.7463

Data Analysis for Maximum/Minimum Daily SysAvg Temperatures (Un-Rounded).
Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods.
Non-linear Estimation of 2-parameter T-Dist Model.: for Maximum NEGATIVE Temperature (Deg-F).

OBS	YEAR	_ESTYPE_	_TYPE_	_WEIGHT_	PRMXTYR	MXTYR
190	2013	OLS	ACTUAL	1	0.69455	-43.8687
191	2013	OLS	PREDICT	1	0.70181	-43.8687
192	2013	OLS	RESIDUAL	1	-0.00725	-43.8687

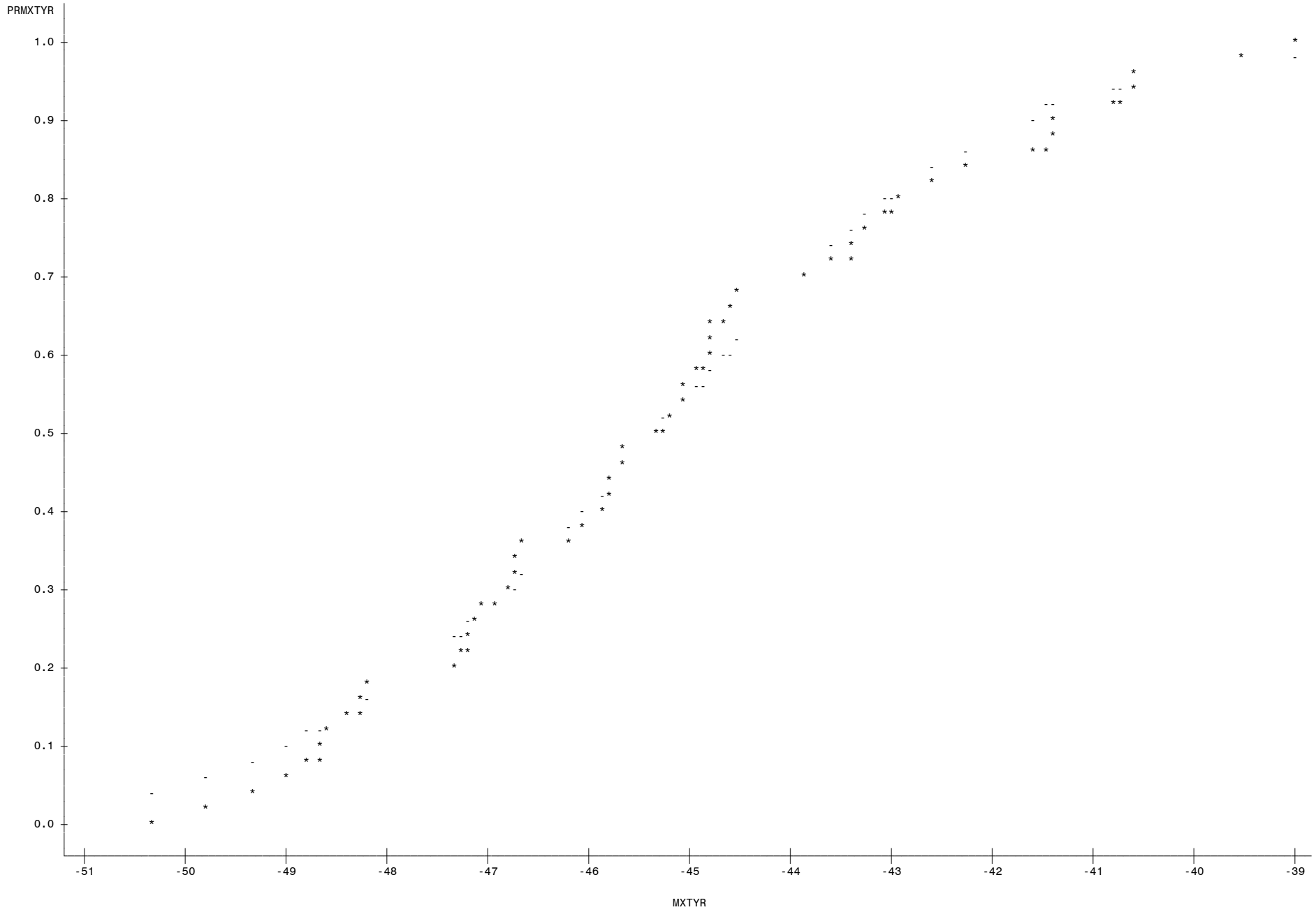
Data Analysis for Maximum/Minimum Daily SysAvg Temperatures (Un-Rounded).
Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods.
Non-linear Estimation of 2-parameter T-Dist Model.: for Maximum NEGATIVE Temperature (Deg-F).

OBS	YEAR	MXTYR	PRMXTYR	PROBP
1	1950	-40.8191	0.91245	0.94572
2	1951	-44.5523	0.67899	0.61236
3	1952	-43.0422	0.77237	0.79495
4	1953	-45.6761	0.46109	0.45358
5	1954	-45.6751	0.47665	0.45373
6	1955	-45.8482	0.39883	0.42928
7	1956	-44.8846	0.58560	0.56616
8	1957	-39.5055	0.97471	0.98010
9	1958	-46.2247	0.36770	0.37721
10	1959	-48.2503	0.16537	0.15072
11	1960	-42.2893	0.83463	0.86218
12	1961	-47.1759	0.22763	0.25712
13	1962	-43.4003	0.74125	0.75693
14	1963	-42.5726	0.81907	0.83893
15	1964	-45.2038	0.52335	0.52089
16	1965	-44.7796	0.63230	0.58089
17	1966	-46.6868	0.35214	0.31636
18	1967	-40.7302	0.92802	0.94902
19	1968	-40.6236	0.94358	0.95277
20	1969	-44.8223	0.60117	0.57492
21	1970	-46.8224	0.30545	0.29935
22	1971	-42.9869	0.78794	0.80047
23	1972	-41.4205	0.88132	0.91853
24	1973	-45.0407	0.55447	0.54410
25	1974	-42.9529	0.80350	0.80383
26	1975	-44.6298	0.66342	0.60170
27	1976	-44.8191	0.61673	0.57536
28	1977	-48.2993	0.14981	0.14671
29	1978	-41.6281	0.85019	0.90701
30	1979	-41.3779	0.89689	0.92075
31	1980	-50.3490	0.00973	0.03867
32	1981	-49.3398	0.04086	0.07836
33	1982	-45.3391	0.49222	0.50159
34	1983	-48.6757	0.10311	0.11833
35	1984	-46.9167	0.28988	0.28777
36	1985	-45.0975	0.53891	0.53602
37	1986	-48.5763	0.11868	0.12541
38	1987	-43.4309	0.72568	0.75351
39	1988	-43.2619	0.75681	0.77207
40	1989	-40.5849	0.95914	0.95408
41	1990	-38.9999	0.99027	0.98703
42	1991	-48.6862	0.08755	0.11760
43	1992	-47.3161	0.19650	0.24129
44	1993	-46.0841	0.38327	0.39645
45	1994	-47.1499	0.25875	0.26012
46	1995	-49.8233	0.02529	0.05654
47	1996	-44.9530	0.57004	0.55651
48	1997	-48.3975	0.13424	0.13888
49	1998	-43.6092	0.71012	0.73306
50	1999	-49.0015	0.05642	0.09718
51	2000	-48.7789	0.07198	0.11130
52	2001	-47.1681	0.24319	0.25802
53	2002	-45.8223	0.41440	0.43292
54	2003	-47.0613	0.27432	0.27045
55	2004	-48.1867	0.18093	0.15603
56	2005	-47.2599	0.21206	0.24757
57	2006	-45.8077	0.42996	0.43498
58	2007	-41.4929	0.86576	0.91464
59	2008	-45.8011	0.44553	0.43592
60	2009	-45.2637	0.50778	0.51235
61	2010	-44.6793	0.64786	0.59486
62	2011	-46.7511	0.32101	0.30825
63	2012	-46.7463	0.33658	0.30884

Data Analysis for Maximum/Minimum Daily SysAvg Temperatures (Un-Rounded).
Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods.
Non-linear Estimation of 2-parameter T-Dist Model.: for Maximum NEGATIVE Temperature (Deg-F).

OBS	YEAR	MXTYR	PRMXTYR	PROBP
64	2013	-43.8687	0.69455	0.70181

Plot of PRMXTYR*MXTYR. Symbol used is '*'.
Plot of PROBP*MXTYR. Symbol used is '-'.



NOTE: 30 obs hidden.

Data Analysis for Maximum/Minimum Daily SysAvg Temperatures (Un-Rounded).
Fit GEV Probability Model to Empirical CDF using NL-OLS Regression Methods.
Non-linear Estimation of 2-parameter T-Dist Model.: for Maximum NEGATIVE Temperature (Deg-F).

OBS	_NAME_	_TYPE_	_NUSED_	GAMMA	THETA
1		OLS	64	-45.3502	2.78303
2	GAMMA	OLS	64	0.0010	0.00016
3	THETA	OLS	64	0.0002	0.00310

Data Analysis for Maximum/Minimum Daily SysAvg Temperatures (Un-Rounded).
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	-40.8191	3	0.91245	0.94572	-0.03581
2	1951	-44.5523	3	0.67899	0.61236	0.10329
3	1952	-43.0422	3	0.77237	0.79495	-0.02881
4	1953	-45.6761	2	0.46109	0.45358	0.01641
5	1954	-45.6751	2	0.47665	0.45373	0.04930
6	1955	-45.8482	2	0.39883	0.42928	-0.07358
7	1956	-44.8846	2	0.58560	0.56616	0.03376
8	1957	-39.5055	3	0.97471	0.98010	-0.00552
9	1958	-46.2247	2	0.36770	0.37721	-0.02552
10	1959	-48.2503	1	0.16537	0.15072	0.09278
11	1960	-42.2893	3	0.83463	0.86218	-0.03247
12	1961	-47.1759	1	0.22763	0.25712	-0.12183
13	1962	-43.4003	3	0.74125	0.75693	-0.02094
14	1963	-42.5726	3	0.81907	0.83893	-0.02397
15	1964	-45.2038	2	0.52335	0.52089	0.00470
16	1965	-44.7796	2	0.63230	0.58089	0.08480
17	1966	-46.6868	2	0.35214	0.31636	0.10713
18	1967	-40.7302	3	0.92802	0.94902	-0.02239
19	1968	-40.6236	3	0.94358	0.95277	-0.00970
20	1969	-44.8223	2	0.60117	0.57492	0.04465
21	1970	-46.8224	1	0.30545	0.29935	0.02016
22	1971	-42.9869	3	0.78794	0.80047	-0.01579
23	1972	-41.4205	3	0.88132	0.91853	-0.04135
24	1973	-45.0407	2	0.55447	0.54410	0.01889
25	1974	-42.9529	3	0.80350	0.80383	-0.00041
26	1975	-44.6298	2	0.66342	0.60170	0.09766
27	1976	-44.8191	2	0.61673	0.57536	0.06944
28	1977	-48.2993	1	0.14981	0.14671	0.02091
29	1978	-41.6281	3	0.85019	0.90701	-0.06469
30	1979	-41.3779	3	0.89689	0.92075	-0.02626
31	1980	-50.3490	1	0.00973	0.03867	-1.38009
32	1981	-49.3398	1	0.04086	0.07836	-0.65130
33	1982	-45.3391	2	0.49222	0.50159	-0.01886
34	1983	-48.6757	1	0.10311	0.11833	-0.13767
35	1984	-46.9167	1	0.28988	0.28777	0.00731
36	1985	-45.0975	2	0.53891	0.53602	0.00537
37	1986	-48.5763	1	0.11868	0.12541	-0.05520
38	1987	-43.4309	3	0.72568	0.75351	-0.03763
39	1988	-43.2619	3	0.75681	0.77207	-0.01996
40	1989	-40.5849	3	0.95914	0.95408	0.00530
41	1990	-38.9999	3	0.99027	0.98703	0.00328
42	1991	-48.6862	1	0.08755	0.11760	-0.29513
43	1992	-47.3161	1	0.19650	0.24129	-0.20536
44	1993	-46.0841	2	0.38327	0.39645	-0.03380
45	1994	-47.1499	1	0.25875	0.26012	-0.00527
46	1995	-49.8233	1	0.02529	0.05654	-0.80445
47	1996	-44.9530	2	0.57004	0.55651	0.02401
48	1997	-48.3975	1	0.13424	0.13888	-0.03399
49	1998	-43.6092	3	0.71012	0.73306	-0.03179
50	1999	-49.0015	1	0.05642	0.09718	-0.54373
51	2000	-48.7789	1	0.07198	0.11130	-0.43576
52	2001	-47.1681	1	0.24319	0.25802	-0.05920
53	2002	-45.8223	2	0.41440	0.43292	-0.04373
54	2003	-47.0613	1	0.27432	0.27045	0.01419
55	2004	-48.1867	1	0.18093	0.15603	0.14805
56	2005	-47.2599	1	0.21206	0.24757	-0.15482
57	2006	-45.8077	2	0.42996	0.43498	-0.01160
58	2007	-41.4929	3	0.86576	0.91464	-0.05493
59	2008	-45.8011	2	0.44553	0.43592	0.02181
60	2009	-45.2637	2	0.50778	0.51235	-0.00896
61	2010	-44.6793	2	0.64786	0.59486	0.08535
62	2011	-46.7511	1	0.32101	0.30825	0.04057
63	2012	-46.7463	2	0.33658	0.30884	0.08599

Data Analysis for Maximum/Minimum Daily SysAvg Temperatures (Un-Rounded).
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
64	2013	-43.8687	3	0.69455	0.70181	-0.010390

Analysis Variable : LGPRRAT1 Log(PrMxTYr/ProbP1)- T-Dist

N	Mean	Std Dev	Minimum	Maximum	Variance	USS
64	-0.0683989	0.2351332	-1.3800894	0.1480544	0.0552876	3.7825370

Analysis Variable : LGPRRAT1 Log(PrMxTYr/ProbP1)- T-Dist

QUANTILE=1

N	Mean	Std Dev	Minimum	Maximum	Variance	USS
21	-0.2161818	0.3679758	-1.3800894	0.1480544	0.1354062	3.6895506

QUANTILE=2

N	Mean	Std Dev	Minimum	Maximum	Variance	USS
22	0.0242370	0.0496495	-0.0735777	0.1071347	0.0024651	0.0646900

QUANTILE=3

N	Mean	Std Dev	Minimum	Maximum	Variance	USS
21	-0.0176630	0.0329732	-0.0646928	0.1032879	0.0010872	0.0282963

2014 CALIFORNIA GAS REPORT

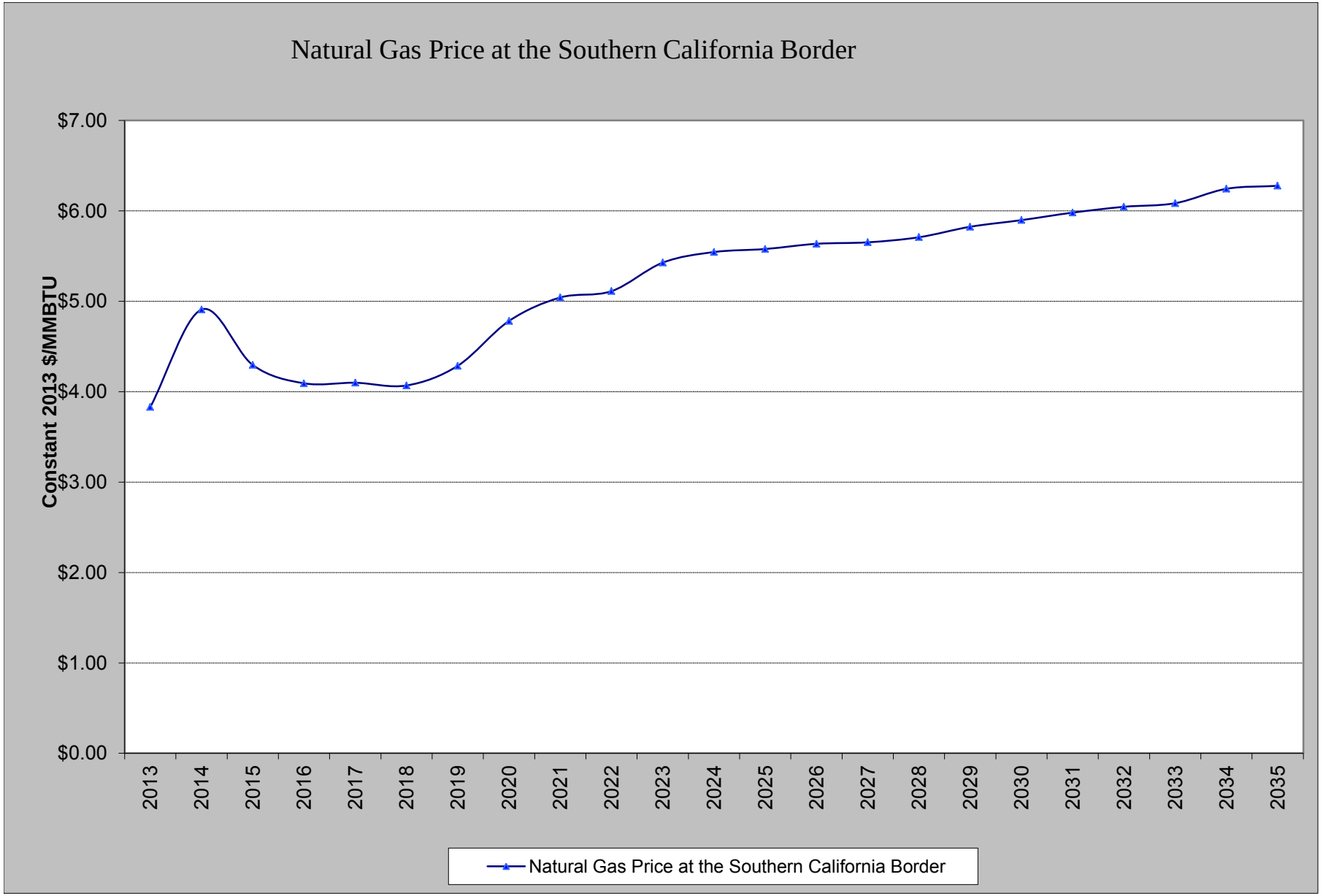
GAS PRICE FORECAST
JULY 2014

The Gas Company

A Sempra Energy utility™

2014 CGR Gas Price Forecast with Historicals

	Jan	fEB	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	Price	CPI Base 2013	Real Prices
2011	$4.35	$4.17	$3.91	$4.23	$4.24	$4.55	$4.42	$4.17	$4.14	$3.53	$3.50	$3.48	$4.06		
2012	$2.92	$2.74	$2.30	$2.22	$2.46	$2.59	$2.91	$2.96	$3.07	$3.53	$3.66	$3.52	$2.91		
2013	$3.53	$3.52	$3.86	$4.11	$4.03	$3.82	$3.76	$3.55	$3.73	$3.75	$3.69	$4.62	$3.83	100	$3.83
2014	$4.64	$6.57	$4.98	$4.70	$4.64	$4.66	$4.81	$4.83	$4.76	$4.74	$4.82	$4.95	$4.92	100.317	$4.91
2015	$5.02	$4.95	$4.83	$4.15	$4.08	$4.07	$4.22	$4.27	$4.20	$4.16	$4.24	$4.39	$4.38	102.026	$4.30
2016	$4.52	$4.49	$4.49	$4.07	$4.08	$4.10	$4.08	$4.09	$4.08	$4.13	$4.26	$4.59	$4.25	103.817	$4.09
2017	$4.65	$4.63	$4.44	$4.15	$4.06	$4.14	$4.15	$4.24	$4.29	$4.29	$4.32	$4.67	$4.33	105.747	$4.10
2018	$4.71	$4.68	$4.48	$4.19	$4.10	$4.19	$4.20	$4.29	$4.35	$4.35	$4.39	$4.75	$4.39	107.862	$4.07
2019	$4.83	$4.87	$4.72	$4.42	$4.36	$4.48	$4.54	$4.66	$4.75	$4.78	$4.85	$5.26	$4.71	109.871	$4.29
2020	$5.71	$5.73	$5.54	$5.05	$4.96	$5.08	$5.13	$5.24	$5.31	$5.34	$5.39	$5.82	$5.36	112.045	$4.78
2021	$6.57	$6.50	$6.23	$5.52	$5.35	$5.43	$5.45	$5.52	$5.55	$5.55	$5.56	$5.96	$5.77	114.341	$5.04
2022	$6.78	$6.72	$6.43	$5.71	$5.54	$5.62	$5.63	$5.70	$5.73	$5.73	$5.74	$6.15	$5.96	116.512	$5.11
2023	$7.33	$7.26	$6.97	$6.17	$6.00	$6.08	$6.10	$6.17	$6.20	$6.19	$6.21	$6.65	$6.44	118.71	$5.43
2024	$7.63	$7.55	$7.25	$6.42	$6.25	$6.33	$6.35	$6.42	$6.44	$6.45	$6.47	$6.91	$6.70	120.913	$5.55
2025	$7.82	$7.74	$7.44	$6.59	$6.41	$6.49	$6.51	$6.58	$6.61	$6.61	$6.63	$7.08	$6.88	123.264	$5.58
2026	$8.06	$7.98	$7.67	$6.79	$6.61	$6.69	$6.71	$6.79	$6.81	$6.81	$6.84	$7.29	$7.09	125.732	$5.64
2027	$8.24	$8.16	$7.84	$6.95	$6.76	$6.85	$6.87	$6.94	$6.96	$6.97	$6.99	$7.46	$7.25	128.231	$5.65
2028	$8.48	$8.40	$8.08	$7.16	$6.97	$7.05	$7.08	$7.15	$7.17	$7.17	$7.20	$7.68	$7.47	130.789	$5.71
2029	$8.83	$8.74	$8.41	$7.45	$7.26	$7.35	$7.37	$7.44	$7.46	$7.47	$7.50	$7.98	$7.77	133.417	$5.82
2030	$9.11	$9.03	$8.69	$7.69	$7.50	$7.59	$7.61	$7.68	$7.70	$7.71	$7.74	$8.24	$8.02	136.027	$5.90
2031	$9.43	$9.34	$8.99	$7.96	$7.76	$7.85	$7.88	$7.95	$7.97	$7.98	$8.01	$8.52	$8.30	138.813	$5.98
2032	$9.73	$9.63	$9.28	$8.21	$8.01	$8.10	$8.13	$8.21	$8.22	$8.23	$8.27	$8.79	$8.57	141.72	$6.05
2033	$10.00	$9.90	$9.54	$8.44	$8.24	$8.33	$8.36	$8.43	$8.45	$8.46	$8.50	$9.03	$8.81	144.728	$6.09
2034	$10.48	$10.38	$10.01	$8.85	$8.65	$8.74	$8.77	$8.84	$8.85	$8.87	$8.91	$9.46	$9.23	147.84	$6.24
2035	$10.75	$10.65	$10.27	$9.09	$8.88	$8.97	$9.00	$9.08	$9.09	$9.10	$9.15	$9.70	$9.48	150.981	$6.28


Natural Gas Price at the Southern California Border
Constant 2013 $/MMBTU
$7.00
$6.00
$5.00
$4.00
$3.00
$2.00
$1.00
$0.00
2013
2014
2015
2016
2017
2018
2019
2020
2021
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2026
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2033
2034
2035
Natural Gas Price at the Southern California Border

2014 CALIFORNIA GAS REPORT

ALTERNATE PRICE FORECAST
JULY 2014

The Gas Company
A Sempra Energy utility™

Propane Forecast: Cents/Gallon

2013	$	116.14
2014	$	115.89
2015	$	115.08
2016	$	116.99
2017	$	121.53
2018	$	125.58
2019	$	128.87
2020	$	131.85
2021	$	135.54
2022	$	139.04
2023	$	142.34
2024	$	145.96
2025	$	149.87
2026	$	153.66
2027	$	157.56
2028	$	161.36
2029	$	165.43
2030	$	169.66
2031	$	174.16
2032	$	178.94
2033	$	184.09
2034	$	190.36
2035	$	195.64

2014 CALIFORNIA GAS REPORT

SERVICE AREA ECONOMIC FORECAST
JULY 2014

SOUTHERN CALIFORNIA GAS COMPANY SERVICE AREA ECONOMIC FORECAST

(based on Global Insight's February 2014 Regional Forecast)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
EMPLOYMENT (1000's)													
Total	7,672.4	7,711.3	7,800.3	7,912.3	8,058.3	8,219.0	8,359.7	8,462.9	8,537.3	8,600.0	8,674.1	8,733.7	8,793.4
Agriculture	219.9	219.9	217.5	214.8	213.9	214.8	216.4	217.6	218.3	218.7	219.1	219.9	220.6
Total Non-farm	7,452.5	7,491.3	7,582.7	7,697.5	7,844.4	8,004.3	8,143.4	8,245.3	8,319.0	8,381.3	8,454.9	8,513.9	8,572.8
Mining	18.6	19.5	19.5	19.5	19.5	18.8	18.2	17.8	17.2	16.5	15.8	15.2	15.0
Construction	283.7	276.7	280.1	292.8	328.5	376.2	415.6	438.8	452.0	462.1	473.7	483.7	490.3
Manufacturing	712.9	712.9	718.8	732.7	740.9	749.4	752.9	753.6	752.3	750.6	747.6	746.9	745.4
Transportation, Information, Utilities	524.0	537.4	540.2	555.5	566.7	580.3	591.1	602.6	612.2	617.3	621.5	626.8	631.8
Trade	1,311.1	1,310.8	1,332.8	1,354.2	1,368.8	1,382.5	1,397.1	1,406.7	1,411.9	1,415.7	1,418.6	1,420.4	1,421.7
Retail	901.9	900.7	911.9	921.2	925.6	930.0	935.3	936.6	936.7	936.4	935.8	935.9	934.8
Wholesale (including warehousing)	409.3	410.1	420.9	433.0	443.2	452.5	461.8	470.1	475.2	479.3	482.8	484.5	487.0
Restaurants	550.7	562.7	569.7	575.5	578.2	581.0	584.3	585.2	585.2	585.0	584.6	584.7	584.0
Finance, Insurance & Real Estate	411.7	409.2	408.0	408.1	411.7	415.8	414.8	411.6	411.4	410.5	411.6	411.5	411.1
Services	2,197.0	2,227.6	2,277.1	2,326.7	2,394.0	2,457.1	2,517.6	2,568.4	2,605.7	2,642.6	2,683.5	2,718.6	2,752.3
Accomodation	122.7	125.2	128.8	130.6	130.5	129.6	128.5	127.6	126.5	125.7	125.0	124.2	123.3
Personal & Laundry Services	79.9	79.0	79.3	80.0	80.0	79.1	78.3	77.7	77.2	76.4	75.9	75.4	74.9
Professional & Business Services	1,000.4	1,013.3	1,041.8	1,075.0	1,127.2	1,181.0	1,222.6	1,255.8	1,281.2	1,311.5	1,347.5	1,379.1	1,409.8
Health & Social Services	772.9	786.5	802.8	815.0	829.8	843.7	866.8	887.3	902.6	912.8	920.6	926.7	932.6
Misc. Services	221.1	223.5	224.4	226.1	226.4	223.8	221.4	219.8	218.2	216.2	214.6	213.2	211.7
Government & Education	1,442.7	1,434.4	1,436.5	1,432.6	1,436.2	1,443.2	1,451.6	1,460.6	1,471.1	1,481.1	1,498.0	1,506.1	1,521.2
OTHER INDICATORS													
Southern California Consumer Inflation*	1.2%	2.7%	1.6%	2.0%	1.9%	2.0%	2.0%	1.9%	1.9%	1.8%	1.7%	2.1%	2.2%
Inflation--US Gross Domestic Product**	1.2%	2.0%	1.7%	1.4%	1.5%	1.7%	1.6%	1.6%	1.7%	1.6%	1.7%	1.8%	1.7%

* Consumer Price Index for Greater Los Angeles area (Los Angeles, Orange, and Riverside Counties)

** Chained Price Index--US GDP, through 2024 from Global Insight's Feb 2014 US forecast, starting 2025 using growth rates from Dec 2013 30-Year US forecast..

SOUTHERN CALIFORNIA GAS COMPANY SERVICE AREA ECONOMIC FORECAST

(based on Global Insight's February 2014 Regional Forecast)

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
EMPLOYMENT (1000's)													
Total	8,858.3	8,932.4	9,008.7	9,090.3	9,174.6	9,251.9	9,328.3	9,403.9	9,465.5	9,525.8	9,584.1	9,643.1	9,705.0
Agriculture	221.4	222.2	223.0	223.9	225.1	226.0	227.0	227.9	228.7	229.3	229.8	230.1	230.5
Total Non-farm	8,636.9	8,710.2	8,785.8	8,866.3	8,949.5	9,025.8	9,101.3	9,176.0	9,236.9	9,296.5	9,354.3	9,413.0	9,474.6
Mining	14.8	14.6	14.4	14.3	14.3	14.2	14.1	14.0	13.9	13.7	13.5	13.4	13.2
Construction	497.0	508.2	523.6	538.1	553.6	566.4	577.1	587.0	595.8	605.3	614.0	623.7	635.6
Manufacturing	740.5	734.8	727.6	718.9	710.5	701.8	693.5	686.0	680.4	675.8	670.9	666.2	661.8
Transportation, Information, Utilities	637.9	645.2	652.8	661.5	669.0	676.6	684.6	691.2	696.1	699.7	703.1	706.4	709.9
Trade	1,424.9	1,430.7	1,438.6	1,447.0	1,456.4	1,462.8	1,469.9	1,474.5	1,479.2	1,481.1	1,485.0	1,487.5	1,490.6
Retail	935.1	937.2	941.2	946.3	952.7	959.6	966.3	972.0	978.5	983.9	990.4	996.2	1,001.3
Wholesale (including warehousing)	489.8	493.6	497.4	500.7	503.7	503.2	503.6	502.5	500.7	497.2	494.6	491.3	489.3
Restaurants	584.2	585.5	588.0	591.2	595.2	599.5	603.7	607.3	611.3	614.7	618.8	622.4	625.5
Finance, Insurance & Real Estate	411.9	411.8	411.4	411.7	412.5	413.7	415.6	417.4	419.4	420.1	421.1	423.0	425.2
Services	2,792.3	2,836.1	2,877.9	2,924.0	2,970.5	3,016.2	3,061.1	3,105.5	3,147.8	3,187.9	3,224.4	3,261.9	3,298.9
Accomodation	123.2	123.4	123.9	124.9	126.2	127.6	129.2	130.5	131.8	132.8	133.9	134.7	135.7
Personal & Laundry Services	74.5	74.4	74.4	74.5	74.6	74.7	74.9	74.9	74.9	74.8	74.7	74.6	74.5
Professional & Business Services	1,444.4	1,479.7	1,512.0	1,545.7	1,578.6	1,609.6	1,639.9	1,671.7	1,703.6	1,735.2	1,763.9	1,794.2	1,825.2
Health & Social Services	939.4	948.0	957.2	968.3	980.3	992.9	1,005.4	1,016.4	1,025.7	1,033.5	1,040.7	1,047.4	1,052.7
Misc. Services	210.8	210.5	210.4	210.6	210.9	211.3	211.7	211.9	211.8	211.5	211.2	211.0	210.8
Government & Education	1,533.5	1,543.4	1,551.5	1,559.6	1,567.5	1,574.6	1,581.7	1,593.1	1,592.9	1,598.2	1,603.5	1,608.7	1,613.9
OTHER INDICATORS													
Southern California Consumer Inflation*	2.0%	2.1%	2.1%	2.2%	2.2%	2.2%	2.1%	2.1%	2.2%	2.2%	2.2%	2.2%	2.2%
Inflation--US Gross Domestic Product**	1.7%	1.7%	1.7%	1.8%	1.8%	1.8%	1.8%	1.8%	1.9%	1.9%	1.9%	1.9%	1.9%

* Consumer Price Index for Greater Los Angeles area (Los Angeles, Orange, and Riverside Counties)

** Chained Price Index--US GDP, through 2024 from Global Insight's Feb 2014 US forecast, starting 2025 using growth rates from Dec 2013 30-Year US forecast..