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SMUD

Load Forecast and Methodology

2015-2034

Resource Planning and Pricing

Sacramento Municipal Utility District

April 14, 2015

SMUD 2015 Retail Sales, Load and Customer Forecast

This report presents the results of SMUD's long term forecast for 2015 to 2034. The forecast includes retail sales, system energy, system peak and customer accounts for SMUD's retail service territory. The forecast is used by SMUD for budget and retail revenue projections, resource procurement, transmission and distribution planning and SMUD services program planning. The forecast presented in Table 1 are for SMUD's managed system energy, system peak, retail sales and net customers. Managed loads and sales are adjusted for SMUD's energy efficiency programs, SMUD's Photovoltaic (PV) programs, and the expected development of the electric vehicle market. The Net Customer forecast includes residential, commercial, agricultural, and streetlight accounts.

Table 1

Summary of Managed Load and Sales Forecasts

Year	Sales (GWH)	Energy (GWH)	Peak (MW)	Net Customers
2015	10,548	11,289	3,008	618,560
2016	10,628	11,377	3,041	626,243
2017	10,598	11,349	3,058	633,212
2018	10,626	11,383	3,084	641,063
2019	10,651	11,415	3,112	648,678
2020	10,600	11,339	3,095	656,166
2021	10,492	11,227	3,087	663,600
2022	10,435	11,167	3,087	670,798
2023	10,452	11,184	3,096	677,801
2024	10,525	11,261	3,113	684,983
2025	10,566	11,303	3,129	692,001
2026	10,652	11,393	3,148	698,886
2027	10,753	11,499	3,171	706,103
2028	10,912	11,665	3,200	713,497
2029	11,007	11,763	3,221	721,041
2030	11,119	11,881	3,247	728,571
2031	11,224	11,990	3,264	736,297
2032	11,376	12,149	3,285	743,865
2033	11,460	12,236	3,303	751,309
2034	11,599	12,381	3,328	758,589
Annual Growth Rates				
2015-2024	-0.02%	-0.03%	0.38%	1.14%
2015-2034	0.50%	0.49%	0.53%	1.08%

The growth in SMUD loads and sales are predicted to be relatively flat over the next 10 years due to the slow growth in net additions to the housing stock and business activity, SMUD's energy efficiency programs (EE), and the installation of photovoltaic panels under SMUD's SB1 program (PV). The market penetration of electric vehicles (EV) will help reduce the impact of these forces in the long term.

Table 2 below presents unmanaged and managed system energy. System energy is measured as net energy imports plus gross generation from SMUD-owned natural gas generation plants, hydro, wind, PV systems, and selective customer-side distributed generation, and energy losses for final delivery to SMUD customers. The unmanaged energy forecast assumes that energy use behavior remains relatively stable over the forecast period. The managed loads include the impacts of SMUD EE and SB1 programs, the penetration of EVs, and incremental customer loads. This net impact decreases the long term annual growth rate from 0.9 percent to 0.5 percent per year.

Table 2

Managed and Unmanaged System Energy (GWH)

Year	Unmanaged	EE	SB1	EV	Incremental	Managed
2015	11,425	-183	-23	13	56	11,289
2016	11,661	-348	-46	22	88	11,377
2017	11,799	-518	-58	37	88	11,349
2018	12,001	-690	-69	54	88	11,383
2019	12,197	-865	-81	76	88	11,415
2020	12,244	-1,007	-83	97	88	11,339
2021	12,259	-1,162	-85	126	88	11,227
2022	12,342	-1,318	-96	151	88	11,167
2023	12,436	-1,411	-108	179	88	11,184
2024	12,591	-1,507	-121	211	88	11,261
2025	12,641	-1,535	-135	243	88	11,303
2026	12,741	-1,566	-148	280	88	11,393
2027	12,850	-1,595	-162	318	88	11,499
2028	13,007	-1,615	-176	361	88	11,665
2029	13,085	-1,633	-189	412	88	11,763
2030	13,185	-1,647	-204	459	88	11,881
2031	13,267	-1,660	-216	511	88	11,990
2032	13,391	-1,672	-228	570	88	12,149
2033	13,438	-1,683	-240	632	88	12,236
2034	13,534	-1,692	-252	703	88	12,381
Annual Growth Rates						
2015-2024	1.1%					-0.03%
2015-2034	0.9%					0.49%

Table 3 presents unmanaged and managed system peak loads. The system peak load forecast is the coincident system peak for the SMUD retail service territory. SMUD's system peak usually occurs during summer months of July or August between the hours of 5 and 6 P.M. For forecasting purposes, the system peaks is designed to occur on a Wednesday during the month of July where the maximum daily temperature reaches 106 degree Fahrenheit. The managed system peak is net of EE, PV, EV and incremental customer load impacts. The PV impact on system peak is about 35 percent of the installed capacity. EV peak load impacts, in comparison to energy impacts, are negligible because of the assumption that most of the EVs will charge at night or in the early morning. In the short term (2015 to 2024) the net impact of EE, SB1, and EV reduces the unmanaged system peak growth 1.1 to 0.4 percent per year. In the long term (2015 to 2034) the annual growth in peak loads decrease from at 0.9 to 0.5 percent per year. The difference is load reduction between the short and long term periods is due to the decay of energy efficiency impacts overtime.

Table 3

Unmanaged and Managed System Peak (MW)

Year	Unmanaged	EE	PV	EV	Incremental	Managed
2015	3,033	-26	-5	0	7	3,008
2016	3,090	-50	-10	0	10	3,041
2017	3,134	-74	-13	1	10	3,058
2018	3,186	-98	-15	1	10	3,084
2019	3,240	-121	-18	1	10	3,112
2020	3,242	-140	-18	1	10	3,095
2021	3,256	-162	-19	2	10	3,087
2022	3,278	-182	-22	2	10	3,087
2023	3,303	-196	-24	3	10	3,096
2024	3,336	-209	-27	3	10	3,113
2025	3,357	-212	-30	3	10	3,129
2026	3,382	-216	-33	4	10	3,148
2027	3,413	-220	-36	5	10	3,171
2028	3,448	-223	-39	5	10	3,200
2029	3,473	-226	-42	6	10	3,221
2030	3,503	-227	-46	7	10	3,247
2031	3,524	-229	-48	7	10	3,264
2032	3,549	-230	-51	8	10	3,285
2033	3,569	-231	-54	9	10	3,303
2034	3,595	-231	-56	10	10	3,328
2015-2024	1.06%					0.38%
2015-2034	0.90%					0.53%

Table 4 presents unmanaged and managed retail sales. Retail sales are the electricity sales to SMUD's retail customers measured at the customer's meter. Managed sales are net of EE, SB1, incremental sales and EV impacts. In the long run, these impacts decrease from a growth rate of 0.92 to 0.5 percent per year.

Table 4

Unmanaged and Managed Retail Sales

Retail Sales	Unmanaged	EE	PV	EV	Incremental	Managed
2015	10,678	-175	-22	12	55	10,548
2016	10,898	-334	-44	21	87	10,628
2017	11,027	-496	-55	36	87	10,598
2018	11,216	-662	-66	51	87	10,626
2019	11,399	-829	-77	73	87	10,651
2020	11,465	-965	-79	93	87	10,600
2021	11,480	-1,113	-81	121	87	10,492
2022	11,559	-1,263	-92	145	87	10,435
2023	11,649	-1,352	-103	172	87	10,452
2024	11,797	-1,445	-116	202	87	10,525
2025	11,846	-1,472	-129	233	87	10,566
2026	11,941	-1,501	-142	268	87	10,652
2027	12,046	-1,529	-155	305	87	10,753
2028	12,196	-1,548	-169	346	87	10,912
2029	12,271	-1,565	-181	395	87	11,007
2030	12,367	-1,579	-195	440	87	11,119
2031	12,446	-1,591	-207	489	87	11,224
2032	12,564	-1,603	-219	546	87	11,376
2033	12,610	-1,613	-230	606	87	11,460
2034	12,702	-1,622	-241	674	87	11,599
2015-2024	1.11%					-0.02%
2015-2034	0.92%					0.50%

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The EE impacts are based on SMUD's EE Board Goals. Table 5 presents SMUD's 10 year EE goals approved by the SMUD Board of Directors in 2014 (SMUD Board Policy SD-9). The Board EE goals are measured at the customer's meter. For the system energy forecast, the EE savings are adjusted by 4.3 percent (system level EE = 1.043*EE savings) to reflect line and voltage losses. The figures presented in Table 5 are first year EE impacts.

Table 5

SMUD 10 Year EE Board Goals

Year	Annual Energy Savings Goal (GWH)	Annual Demand Reduction (MW)
2014	172	24.6
2015	175	25.0
2016	178	25.4
2017	180	25.7
2018	182	26.0
2019	184	26.3
2020	186	26.6
2021	187	26.7
2022	189	27.0
2023	191	27.3
Total	1824	260.6

The 10 Year SMUD's EE Board Goals are based on achieving 15 percent of retail sales with energy efficiency by 2023. For the years beyond 2023, first year energy efficiency saving are extrapolated from the Board EE Goals presented in Table 5. Cumulative EE savings are based on an average annual decay rate of seven percent per year. Table 6 shows the relationship between first year EE savings and cumulative savings, measured at the billing meter.

Table 6

First Year EE Savings and Cumulative Savings

Year	First Year Savings (GWH)	Cumulative Savings (GWH)
2015	175	175
2016	178	328
2017	179	488
2018	181	652
2019	184	818
2020	186	956
2021	187	1,113
2022	189	1,263
2023	191	1,352
2024	193	1,444
2025	195	1,471
2026	197	1,501
2027	199	1,529
2028	201	1,548
2029	203	1,564
2030	205	1,578
2031	207	1,591
2032	209	1,602
2033	211	1,612
2034	213	1,622

Table 7 presents the first year peak savings and cumulative savings based on the assumption of seven percent annual decay rate.

Table 7

First Year EE Peak Demand Savings and Cumulative Savings

(Note: Savings are measured at the SMUD EMS system)

Year	First Year Savings (MW)	Cumulative Savings (MW)
2015	26.1	26.1
2016	26.5	49.5
2017	26.8	73.5
2018	27.1	97.8
2019	27.4	120.8
2020	27.7	140.4
2021	27.8	162.4
2022	28.2	182.2
2023	28.5	195.9
2024	28.7	209.4
2025	28.9	211.8
2026	29.0	215.5
2027	29.3	219.9
2028	29.4	223.1
2029	29.7	225.9
2030	29.9	227.0
2031	30.2	228.5
2032	30.4	230.3
2033	30.6	231.0
2034	30.8	231.4

Table 8 presents the annual installation of PVs beginning in 2015. PV savings are based on the expected installation of PV systems under SMUD's SB1 program which provides a monetary incentive for customers to install a PV system on their premise. Approximately 70 MWs of PV capacity were installed under this program between 2007 through 2014. This program, however, is expected to end in 2016. After 2016, PV installations are based on its economic potential.

The figures for PV installations (MW) and generation are presented at the billing meter. PV generation is based on PV generation data metered by SMUD. The capacity factor from the metered data is about 18 percent. The peak impact, measured at hour ending 6 PM in July, is about 35 percent of the installed capacity. In the table below, installed capacity and generation is measured at the billing meter. The peak impact, however, is measured at the system level which reflects a loss factor of 4.3 percent.

Table 8

SB1 Installed PV Capacity and Generation

	Installed PV (MW)	Cumulative PV (MW)	PV Generation (MWH)	Peak Impact (MW)
2015	14	14	22,111	5
2016	14	28	44,323	10
2017	7	35	55,277	12
2018	7	42	66,333	15
2019	7	49	77,388	17
2020	1	50	79,326	18
2021	1	51	81,317	18
2022	7	58	92,287	21
2023	7	66	103,412	23
2024	8	73	116,192	26
2025	8	82	129,184	29
2026	8	90	142,334	32
2027	8	99	155,359	35
2028	8	107	168,654	37
2029	8	115	181,179	40
2030	9	124	195,227	43
2031	7	131	206,644	46
2032	7	138	218,610	48
2033	7	146	229,722	51
2034	7	153	241,469	54

Table 9 presents the plug-in electric vehicle forecast and the electricity sales from battery charging. The sales forecast is based on metered interval data for customers who are currently receiving service on one of SMUD's electric vehicle charging TOU rate schedules. On the average, EV charging amounts to about 8.7 kWh per day/vehicle.

Table 9

Electric Vehicle and Retail Sales Forecast

Year	Plug-In Vehicles	Sales (MWH)
2015	2,812	8,879
2016	5,625	17,810
2017	10,125	31,970
2018	15,125	47,758
2019	21,875	69,071
2020	28,125	89,049
2021	37,058	117,013
2022	44,792	141,432
2023	53,325	168,376
2024	62,658	198,388
2025	72,792	229,843
2026	83,725	264,365
2027	95,458	301,414
2028	108,125	342,345
2029	123,992	391,509
2030	138,125	436,135
2031	153,845	485,773
2032	171,331	540,984
2033	190,780	602,395
2034	212,413	670,702

Forecast Methods Overview

SMUD's forecast models are based on statistical regression techniques which normalized electricity use for variation in temperatures, seasonal use, number of customer accounts, and recent trends in electricity use behaviors. The forecast is based on four regression models: daily system energy, daily system peak, system hourly loads (24 separate equations), and the retail class sales models. In each model, loads and retail sales are normalized by customer accounts.

The daily energy and peak models serve as the foundation for the load forecast. These models normalize SMUD's EMS system loads for variations in daily temperatures, weekdays and weekends, months, seasons and holidays. The hourly load model provides a daily load shape which is calibrated to daily energy and peak model estimates with the following restrictions:

- Maximum of estimated hourly loads for day (i) = estimated peak for day (i) for each day of the forecast year.
- Sum of the estimated hourly estimate loads for day (i) = estimated daily energy for day(i) for each day of the forecast year.

The predicted values from these models are:

- kwh/day/account,
- peak kW/day/account, and
- kW/hour/account.

The retail sales model includes separate regression equations for each major rate class. They are:

- Residential Electric Space Heat
- Residential Non-Electric Space Heat
- Small General Services with maximum demands below 20 kW
- Small General Services with maximum demands between 20 and 299 kW
- Small General Service Time of Use with maximum demands between 300 and 499 kW
- Medium General Service Time of Use with maximum demands between 500 and 999 kW
- Large General Service Time of Use with maximum demands greater than 1,000 kW
- Other includes Agricultural, Street and Night Lighting accounts.

The dependent variable for the sales models is kWh/customer per billing period. The regression model normalized class sales for variations in monthly use, temperature conditions (monthly heating and cooling degree days), and for recent sales trend with a binary variable. For the small general service classes (under 299 kW maximum demands), commercial vacancy rates were included in the regression equations to explain the recent trends in economic activity.

In the long term (2015-2034), the unmanaged sales forecast includes changes in end-use saturations, federal efficiency standards, and new construction. The ITRON Statistically Adjusted End-use (SAE) modeling framework is used to simulate end-use saturations and efficiency standards. This model is applied to residential and small commercial customer accounts with less than 299 kW maximum demands. The SAE modeling framework incorporates end-use energy use, appliance saturations and efficiencies to develop heating, cooling and "other" appliances end-use indices. The indices are used as independent variables in a regression model where the dependent variable is electricity sales per account. Simulation of energy use is based on the indices, which change overtime to incorporate marginal saturation rates and improvements in efficiency standards. For the residential model, saturations are based on the SMUD 2013 RASS survey results. For the commercial model, appliance saturations are from the 2014 SMUD Commercial Building Survey (CBS). Energy use per appliance and appliance efficiency levels are provided by ITRON. In the SAE models, price and income elasticity parameters are assumed to be zero.

The regression models, estimated parameters, and summary statistics are presented in Table 18.

Residential sales are further adjusted by new construction energy use factors. Based on SMUD's billing data between 2007 and 2014, the average monthly electricity use for these units, relative to class average electricity use, are 23 percent lower for non-electric space heat and 5 percent lower for electric space heat accounts.

For both residential and commercial rate classes, the SAE adjustments are made to current customer sales, while the new construction adjustments are applied to incremental customer growth beginning in 2020.

Load and Sales projections

The monthly retail sales forecast for each rate class is projected by multiplying the forecasted sales per customer account times the forecasted number of customers. The unmanaged retail sales forecast in Table 4 is the sum of the sales forecast for the each rate class. For system energy, peak and hourly loads, the forecast is based on the estimated loads per account times the net customer forecast (total customers minus nightlight customer accounts). System energy, peak and hourly loads are calibrated to the unmanaged sales forecast after adjusting for line and voltage distribution losses (i.e. system energy = 1.043*unmanaged sales forecast).

Forecast Adjustments

The unmanaged forecast for sales, energy and peak are adjusted by subtracting projections of energy efficiency, PV generation, and adding incremental and EV charging sales.

Economic and Demographic Data

The primary driver for the sales and load forecasts is the customer account forecast. Table 10 presents the customer account forecast for the major customer classes.

Table 10

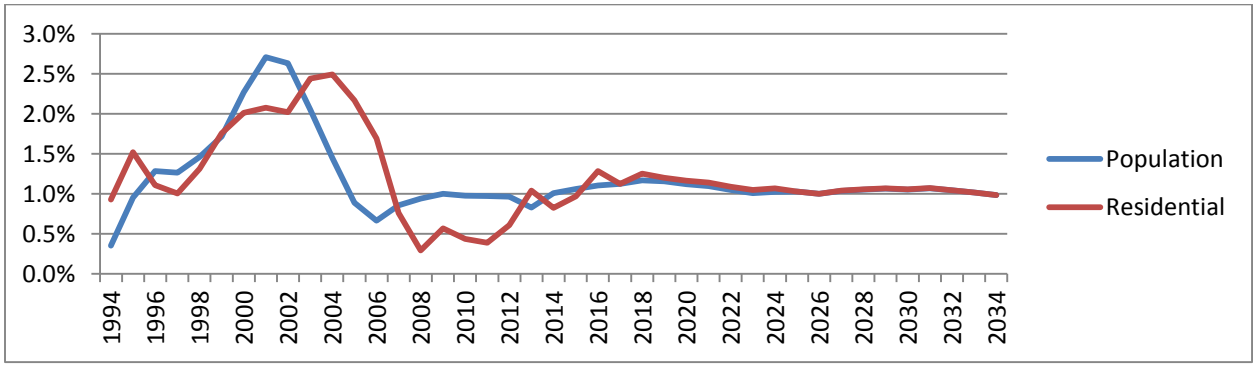
SMUD Customer Account Forecast

Year	Residential	Small GS	Medium GS	Large GS	Other	Net Customers
2015	548,548	64,341	270	152	5,250	618,560
2016	555,586	64,935	273	154	5,296	626,243
2017	561,824	65,613	276	156	5,344	633,212
2018	568,863	66,368	279	158	5,395	641,063
2019	575,679	67,111	282	160	5,446	648,678
2020	582,372	67,850	285	162	5,497	656,166
2021	589,003	68,597	288	164	5,548	663,600
2022	595,416	69,328	291	166	5,597	670,798
2023	601,665	70,029	295	168	5,644	677,801
2024	608,081	70,742	298	170	5,693	684,983
2025	614,338	71,447	302	172	5,743	692,001
2026	620,486	72,128	306	174	5,792	698,886
2027	626,935	72,839	311	176	5,843	706,103
2028	633,551	73,559	315	178	5,896	713,497
2029	640,304	74,289	320	180	5,949	721,041
2030	647,060	75,002	325	182	6,003	728,571
2031	653,984	75,742	330	184	6,058	736,297
2032	660,811	76,422	335	186	6,112	743,865
2033	667,530	77,086	340	188	6,165	751,309
2034	674,099	77,736	346	190	6,218	758,589
	Annual Growth Rate					
2015-2024	1.2%	1.1%	1.1%	1.2%	0.9%	1.1%
2015-2034	1.1%	1.0%	1.3%	1.2%	0.9%	1.1%

The forecast for residential customers is based on the population forecast for Sacramento County. Figure 1 shows the historical and forecasted growth rates for the Sacramento County's population and SMUD's residential customer accounts.

Figure 1

Population and Customer Trends



During the 2000-2007 housing boom for new building permits, new customer accounts outpaced population growth as the housing market expanded and during the recent recession (2008-2012), population growth outpaced new customer accounts as the housing market contracted. For the forecast period, customer growth is expected to keep pace with the population growth.

The forecast for Small General Service (under 499 kW maximum demands) accounts are based on economic driver such as employment and gross county product. The Medium General Service accounts (between 500 and 1,000 kW maximum demands) and Large General Service accounts (between 500 and 1,000 kW maximum demands), and other customer accounts (Agriculture and Lighting) are based on their historical growth rates.

Sacramento Weather

A key component in normalizing sales and loads is weather. Both sales and load models use cooling degrees and heating degrees as independent variables in the regression equations. In the load model, daily high temperatures are also used to explain the rapid change in loads during heat storms.

Temperature data is from the National Weather Service's Sacramento City and Executive Airport weather stations. The daily temperatures from these weather stations are averaged to develop a composite reading for the Sacramento area. Daily composite temperatures are used to construct cooling and heating degree day variables in the regressions models.

Table 11 presents the normal temperatures and degree days used in forecast based on temperature data from 1981 to 2010. The average daily temperature is the average of the daily high and low temperatures. The High and Low temperatures are the maximum and minimum daily temperatures, respectively, for each month. The cooling degree (CDD65) and heating degree (HDD65) variables are the sum of the daily cooling and heating degrees for the calendar month with 65 degrees centigrade as the base temperature. The SumCdd65 and SumHdd65 are the sum of the cumulative degree days for the previous 30 days for each day during the month. The Sumcdd65 and SumHdd65 are used to reflect the number of degrees days over the billing month period.

Table 11

Normal Average Daily Temperatures

	Avg Daily	Avg High	Avg Low	High	Low
January	48	55	40	65	32
February	52	61	43	72	33
March	56	67	45	79	34
April	62	76	49	89	41
May	67	81	53	97	45
June	74	90	58	104	51
July	78	95	60	106	54
August	76	93	60	105	55
September	73	88	58	101	51
October	65	78	52	93	44
November	55	65	44	77	34
December	47	55	40	65	30

Normal Cooling and Heating Degree Days per Month

	CDD65	HDD65	SumCdd65	SumHdd65
January	-	542	-	18,275
February	-	361	-	13,886
March	2	277	18	10,813
April	25	165	313	6,975
May	112	52	2,072	3,425
June	239	6	5,355	804
July	362	0	10,142	61
August	339	0	11,369	4
September	240	5	9,407	56
October	69	65	5,069	799
November	1	318	734	5,507
December	-	551	4	14,432

Variability of Load Forecast: Extreme Temperature Scenarios

The normal temperature scenario is referred to as the "1 in 2" load condition scenario. That is, there is a 1 in 2 chance of this weather scenario occurring. Because the Sacramento area often experiences extremes in temperatures during the summer months, extreme temperature scenarios

are used to examine these changes in system peak loads. Table 12 below presents the extreme temperature conditions for each load condition scenario.

Table 12

Extreme Temperature Scenarios

Load Condition Scenario	Daily High Temperature
1 in 2	106
1 in 5	108
1 in 10	110
1 in 20	112
1 in 40	114

The peak load forecasts under extreme conditions are estimated using the parameter estimates from daily peak model. Table 13 presents the 1 in 10 unmanaged and managed system peak load forecast. The PV impacts are slightly lower than the 1 in 2 forecast to reflect the reduction in generation capacity due to increasing temperatures.

Table 13

1 in 10 Unmanaged and Managed System Peak Loads

Year	Unmanaged	EE	PV	EV	Incremental	Managed
2015	3,358	-27	-5	0	7	3,333
2016	3,401	-49	-10	0	10	3,352
2017	3,438	-73	-12	1	10	3,363
2018	3,481	-97	-15	1	10	3,380
2019	3,522	-119	-17	1	10	3,396
2020	3,563	-140	-18	1	10	3,416
2021	3,603	-162	-18	2	10	3,434
2022	3,642	-182	-21	2	10	3,452
2023	3,680	-196	-23	3	10	3,473
2024	3,719	-209	-26	3	10	3,497
2025	3,757	-212	-29	3	10	3,530
2026	3,795	-216	-32	4	10	3,561
2027	3,834	-220	-35	5	10	3,594
2028	3,874	-223	-37	5	10	3,628
2029	3,915	-226	-40	6	10	3,664
2030	3,956	-227	-43	7	10	3,702
2031	3,998	-229	-46	7	10	3,740
2032	4,039	-230	-48	8	10	3,778
2033	4,079	-231	-51	9	10	3,816
2034	4,118	-231	-54	10	10	3,853

Table 14 presents the managed peak loads for the weather scenarios in Table 12.

Table 14

Managed System Peak Loads for Load Condition Scenarios

Year	1 in 2	1 in 5	1 in 10	1 in 20	1 in 40
2015	3,008	3,227	3,333	3,442	3,530
2016	3,041	3,245	3,352	3,462	3,552
2017	3,058	3,254	3,363	3,474	3,565
2018	3,084	3,271	3,380	3,493	3,585
2019	3,112	3,285	3,396	3,510	3,603
2020	3,095	3,304	3,416	3,532	3,625
2021	3,087	3,320	3,434	3,551	3,645
2022	3,087	3,337	3,452	3,570	3,665
2023	3,096	3,357	3,473	3,593	3,689
2024	3,113	3,380	3,497	3,618	3,715
2025	3,129	3,411	3,530	3,651	3,750
2026	3,148	3,442	3,561	3,684	3,784
2027	3,171	3,473	3,594	3,718	3,819
2028	3,200	3,506	3,628	3,754	3,856
2029	3,221	3,541	3,664	3,791	3,894
2030	3,247	3,577	3,702	3,830	3,934
2031	3,264	3,614	3,740	3,870	3,975
2032	3,285	3,651	3,778	3,909	4,015
2033	3,303	3,687	3,816	3,948	4,055
2034	3,328	3,724	3,853	3,987	4,095

Forecast Errors

Tables 15, Table 16, and Table 17 present the annual errors (actual – predicted) for the retail sales, system peak, and customer forecasts.

Table 15

Retail Sales Errors

(MWH)

Years	Actual	Forecast	% Error
2005	10,604,035	10,325,332	-2.6%
2006	10,891,871	10,608,307	-2.6%
2007	10,913,372	10,940,472	0.2%
2008	10,959,168	11,238,188	2.5%
2009	10,757,807	10,958,626	1.9%
2010	10,389,858	10,560,255	1.6%
2011	10,459,022	10,527,298	0.7%
2012	10,519,497	10,513,856	-0.1%
2013	10,480,762	10,432,362	-0.5%
2014	10,585,750	10,572,551	-0.1%

Note: Retail sales based on SMUD's 21 day cycle read billing data

Table 16

System Peak Errors

Years	Actual	Forecast	% Error
2005	2,959	2,953	-0.2%
2006	3,280	2,983	-9.1%
2007	3,099	3,124	0.8%
2008	3,086	3,062	-0.8%
2009	2,848	3,038	6.7%
2010	2,990	2,976	-0.5%
2011	2,840	2,979	4.9%
2012	2,953	2,974	0.7%
2013	3,014	2,946	-2.3%
2014	3,003	2,987	-0.5%

In general, the peak model does not perform as well as the daily energy where the average errors are 0.3% and ranging from -9.1% to 6.7% for the annual peak estimates.

Table 17

Customers Errors

Years	Actual	Forecast	% Error
2005	572,832	573,795	0.2%
2006	582,745	592,242	1.6%
2007	588,107	595,130	1.2%
2008	590,607	598,717	1.4%
2009	593,971	594,838	0.1%
2010	596,367	593,975	-0.4%
2011	598,730	599,098	0.1%
2012	602,141	600,904	-0.2%
2013	607,997	605,887	-0.3%
2014	613,046	614,201	0.2%

The remainder of the report presents the regression equations, variable definitions, estimated parameters and standard errors, and summary statistics in Table 18. Historical SMUD sales, system energy, annual system peaks, and net customers are presented in Table 19. Sacramento County population, employment, and income are presented in Table 20.

Table 18

Regression Parameters Coefficients, Standard Errors, and Summary Statistics

Daily System Energy Model Parameters					
Variable	Variable Description	Coefficient	StdErr	T-Stat	P-Value
CONST	Constant Variable	45.271	0.200	226.751	0.00%
loads.monday	if day=Monday then=1, else=0	4.408	0.100	44.182	0.00%
loads.Tuesday	if day=Tuesday then=1, else=0	4.135	0.123	33.679	0.00%
loads.Wednesday	if day=Wendnesday then=1, else=0	4.177	0.131	31.814	0.00%
loads.Thursday	if day=Thursday then=1, else=0	4.081	0.132	30.944	0.00%
loads.Friday	if day=Friday then=1, else=0	3.927	0.123	31.959	0.00%
loads.Saturday	if day=Saturday then=1, else=0	0.417	0.099	4.189	0.00%
loads.February	if month= February then=1, else=0	-0.269	0.364	-0.738	46.06%
loads.March	if month= March then=1, else=0	0.574	0.212	2.707	0.68%
loads.April	if month= April then=1, else=0	-0.458	0.203	-2.260	2.39%
loads.May	if month= May then=1, else=0	-0.960	0.230	-4.167	0.00%
loads.June	if month= June then=1, else=0	-0.542	0.255	-2.126	3.35%
loads.July	if month= July then=1, else=0	0.586	0.301	1.948	5.14%
loads.August	if month= August then=1, else=0	0.418	0.294	1.418	15.62%
loads.September	if month= September then=1, else=0	-0.758	0.258	-2.937	0.33%
loads.December	if month= December then=1, else=0	2.009	0.405	4.961	0.00%
loads.summer_monday	if day=Monday and season=Summer then=1, else=0	0.651	0.127	5.130	0.00%
loads.summer_tuesday	if day=Tuesday and season=Summer then=1, else=0	0.989	0.157	6.303	0.00%
loads.summer_wednesday	if day=Wednesday and season=Summer then=1, else=0	0.866	0.168	5.147	0.00%
loads.Summer_thursday	if day=Thursday and season=Summer then=1, else=0	1.003	0.168	5.951	0.00%
loads.summer_friday	if day=Friday and season=Summer then=1, else=0	0.862	0.157	5.492	0.00%
loads.summer_saturday	if day=Saturday and season=Summer then=1, else=0	0.185	0.127	1.463	14.37%
loads.winter_monday	if day=Monday and season=Winter then=1, else=0	-0.451	0.132	-3.424	0.06%
loads.winter_tuesday	if day=Tuesday and season=Winter then=1, else=0	-0.196	0.160	-1.225	22.07%
loads.winter_wednesday	if day=Wednesday and season=Winter then=1, else=0	-0.345	0.170	-2.022	4.33%
loads.winter_thursday	if day=Thursday and season=Winter then=1, else=0	-0.467	0.171	-2.739	0.62%
loads.winter_friday	if day=Friday and season=Winter then=1, else=0	-0.442	0.159	-2.775	0.56%
loads.winter_saturday	if day=Saturday and season=Winter then=1, else=0	-0.135	0.130	-1.040	29.84%
loads.cdd65	Coolling Degree Day Base 65º	0.586	0.024	24.174	0.00%
loads.cdd70	Coolling Degree Day Base 70º	0.147	0.037	3.967	0.01%
loads.cdd75	Coolling Degree Day Base 75º	0.319	0.029	10.842	0.00%
loads.lag1_cdd65	Coolling Degree Day Lagged 1 day Base 65º	0.301	0.009	33.550	0.00%
loads.lag2_cdd65	Coolling Degree Day Lagged 2 day Base 65º	0.018	0.009	2.110	3.50%
loads.lag3_cdd65	Coolling Degree Day Lagged 3 day Base 65º	0.024	0.009	2.744	0.61%
loads.lag4_cdd65	Coolling Degree Day Lagged 4 day Base 65º	0.036	0.008	4.376	0.00%
loads.holiday	if Day=California or Federal Holiday then =1, else=0	-1.874	0.091	-20.603	0.00%
loads.Hdd65_Novermber	Heating Degree Days in November Base 65º	0.113	0.019	6.020	0.00%
loads.Hdd65_December	Heating Degree Days in December Base 65º	0.130	0.026	5.063	0.00%
loads.Hdd65_January	Heating Degree Days in January Base 65º	0.234	0.017	13.815	0.00%
loads.hdd65_February	Heating Degree Days in February Base 65º	0.175	0.025	6.957	0.00%
loads.hdd50	Heating Degree Day Base 50º	0.242	0.024	9.889	0.00%
loads.hdd65	Heating Degree Day Base 65º	0.038	0.012	3.211	0.14%
loads.cai	exp(.2+2*(max daily temps-95))/(1+exp(.2+2*max daily temps-95))	3.655	0.778	4.695	0.00%
loads.cai_june	CAI * June	5.230	0.770	6.792	0.00%
loads.cai_july	CAI * July	4.022	0.783	5.139	0.00%
loads.cai_august	CAI * August	2.975	0.786	3.787	0.02%
loads.cai_may	CAI * May	3.485	0.834	4.178	0.00%
loads.cai_september	CAI * September	1.252	0.774	1.617	10.59%
loads.maxtemp_105	if Max Daily Temperature => 105º then=1, else=0	0.948	0.212	4.480	0.00%
loads.holiday_july	if Day=California or Federal Holiday in July then =1, else=0	-2.435	0.295	-8.251	0.00%
loads.DLST	Adjustment for change in Daylight Saving Time	-0.950	0.170	-5.596	0.00%
loads.Year_2009	If year=2009 then=1, else=0	-1.590	0.159	-9.980	0.00%
loads.year_2010	If year=2010 then=1, else=0	-2.226	0.160	-13.927	0.00%
loads.year_2011	If year=2011 then=1, else=0	-2.439	0.160	-15.245	0.00%
loads.year_2012	If year=2012 then=1, else=0	-3.354	0.160	-21.024	0.00%
loads.year_2013_trend	if year=>2013 then =1, else=0	-4.053	0.136	-29.833	0.00%
AR(1)	Autoregressive rho Estimate	0.623	0.014	45.758	0.00%

Table 18 (continued)

Daily System Peak Model Parameters and Estimates					
Variable	Variable Discription	Coefficient	StdErr	T-Stat	P-Value
CONST	Constant Variable	2.271	0.015	147.503	0.00%
loads.monday	if day=Monday then=1, else=0	0.123	0.009	13.583	0.00%
loads.Tuesday	if day=Tuesday then=1, else=0	0.103	0.011	9.570	0.00%
loads.Wednesday	if day=Wendnesday then=1, else=0	0.096	0.011	8.501	0.00%
loads.Thursday	if day=Thursday then=1, else=0	0.084	0.011	7.398	0.00%
loads.Friday	if day=Friday then=1, else=0	0.036	0.011	3.364	0.08%
loads.Saturday	if day=Saturday then=1, else=0	-0.081	0.009	-9.031	0.00%
loads.February	if month= February then=1, else=0	-0.057	0.028	-2.048	4.06%
loads.April	if month= April then=1, else=0	-0.067	0.012	-5.567	0.00%
loads.May	if month= May then=1, else=0	-0.128	0.015	-8.567	0.00%
loads.June	if month= June then=1, else=0	-0.086	0.018	-4.823	0.00%
loads.July	if month= July then=1, else=0	0.085	0.022	3.967	0.01%
loads.August	if month= August then=1, else=0	0.032	0.021	1.524	12.76%
loads.September	if month= September then=1, else=0	-0.134	0.019	-7.178	0.00%
loads.December	if month= December then=1, else=0	0.132	0.033	4.067	0.01%
loads.summer_monday	if day=Monday and season=Summer then=1, else=0	0.133	0.011	11.537	0.00%
loads.summer_tuesday	if day=Tuesday and season=Summer then=1, else=0	0.147	0.014	10.725	0.00%
loads.summer_wednesday	if day=Wednesday and season=Summer then=1, else=0	0.149	0.014	10.325	0.00%
loads.Summer_thursday	if day=Thursday and season=Summer then=1, else=0	0.168	0.015	11.571	0.00%
loads.summer_friday	if day=Friday and season=Summer then=1, else=0	0.193	0.014	14.075	0.00%
loads.summer_saturday	if day=Saturday and season=Summer then=1, else=0	0.058	0.011	5.091	0.00%
loads.winter_monday	if day=Monday and season=Winter then=1, else=0	0.037	0.012	3.115	0.19%
loads.winter_tuesday	if day=Tuesday and season=Winter then=1, else=0	0.038	0.014	2.771	0.56%
loads.winter_wednesday	if day=Wednesday and season=Winter then=1, else=0	0.035	0.015	2.397	1.66%
loads.winter_thursday	if day=Thursday and season=Winter then=1, else=0	0.029	0.015	2.025	4.29%
loads.winter_friday	if day=Friday and season=Winter then=1, else=0	0.038	0.014	2.773	0.56%
loads.winter_saturday	if day=Saturday and season=Winter then=1, else=0	0.017	0.012	1.481	13.86%
loads.cdd65	Coolling Degree Day Base 65º	0.051	0.002	31.507	0.00%
loads.lag1_cdd65	Coolling Degree Day Lagged 1 day Base 65º	0.018	0.001	22.199	0.00%
loads.lag2_cdd65	Coolling Degree Day Lagged 2 day Base 65º	0.002	0.001	3.134	0.18%
loads.lag3_cdd65	Coolling Degree Day Lagged 3 day Base 65º	0.002	0.001	2.703	0.69%
loads.lag4_cdd65	Coolling Degree Day Lagged 4 day Base 65º	0.004	0.001	5.671	0.00%
loads.holiday	if Day=California or Federal Holiday then =1, else=0	-0.092	0.008	-11.048	0.00%
loads.hdd65	Heating Degree Day Base 65º	0.003	0.001	3.477	0.05%
loads.hdd50	Heating Degree Day Base 50º	0.011	0.002	5.629	0.00%
loads.lag1_hdd65	Heating Degree Day Lagged 1 day Base 65º	0.002	0.001	2.556	1.06%
loads.lag2_hdd65	Heating Degree Day Lagged 2 day Base 65º	0.002	0.001	2.955	0.32%
loads.lag3_hdd65	Heating Degree Day Lagged 3 day Base 65º	0.000	0.001	0.646	51.86%
loads.lag4_hdd65	Heating Degree Day Lagged 4 day Base 65º	0.002	0.001	2.603	0.93%
loads.Hdd65_Novermber	Heating Degree Days in November Base 65º	0.004	0.001	2.915	0.36%
loads.Hdd65_December	Heating Degree Days in December Base 65º	0.002	0.002	0.926	35.45%
loads.Hdd65_Oct	Heating Degree Days in October Base 65º	0.001	0.002	0.330	74.12%
loads.hdd65_February	Heating Degree Days in February Base 65º	0.007	0.002	3.555	0.04%
loads.Hdd65_January	Heating Degree Days in January Base 65º	0.007	0.001	6.591	0.00%
loads.cai	exp(.2+2*(max daily temps-95))/(1+exp(.2+2*max daily temps-95))	1.012	0.049	20.655	0.00%
loads.holiday_july	if Day=California or Federal Holiday in July then =1, else=0	-0.199	0.027	-7.383	0.00%
loads.DLST	Adjustment for change in Daylight Saving Time	-0.026	0.013	-1.998	4.57%
loads.year_2008	If year=2008 then=1, else=0	-0.029	0.010	-2.797	0.52%
loads.Year_2009	If year=2009 then=1, else=0	-0.105	0.010	-10.153	0.00%
loads.year_2010	If year=2010 then=1, else=0	-0.140	0.010	-13.610	0.00%
loads.year_2011	If year=2011 then=1, else=0	-0.164	0.010	-15.847	0.00%
loads.year_2012	If year=2012 then=1, else=0	-0.201	0.010	-19.576	0.00%
loads.Year_2013	If year=2013 then=1, else=0	0.014	0.015	0.948	34.34%
loads.cai_june	CAI * June	0.259	0.043	6.002	0.00%
loads.cai_july	CAI * July	0.090	0.043	2.076	3.80%
loads.cai_august	CAI * August	0.154	0.045	3.402	0.07%
loads.cai_september	CAI * September	0.120	0.046	2.604	0.92%
loads.year_2013_trend	if year=>2013 then =1, else=0	-0.251	0.013	-19.380	0.00%
AR(1)	Autogressive rho Estimate	0.477	0.015	31.233	0.00%

Table 18 (continued)

Daily Energy Model Statistics				
Model Statistics			Forecast Statistics	
Iterations	15		Forecast Observations	0
Adjusted Observations	3495		Mean Abs. Dev. (MAD)	0
Deg. of Freedom for Error	3438		Mean Abs. % Err. (MAPE)	0.00%
R-Squared	0.984		Avg. Forecast Error	0
Adjusted R-Squared	0.983		Mean % Error	0.00%
AIC	0.08774		Root Mean-Square Error	0
BIC	0.18819		Theil's Inequality Coefficient	0
F-Statistic	3712.822			
Prob (F-Statistic)	0			
Log-Likelihood	-5,055.52			
Model Sum of Squares	223,343.69			
Sum of Squared Errors	3,693.07			
Mean Squared Error	1.0742			
Std. Error of Regression	1.0364			
Mean Abs. Dev. (MAD)	0.7675			
Mean Abs. % Err. (MAPE)	1.45%			
Durbin-Watson Statistic	2.082			
Ljung-Box Statistic	152.51			
Prob (Ljung-Box)	0			
Skewness	0.036			
Kurtosis	4.781			
Jarque-Bera	462.486			
Prob (Jarque-Bera)	0			
Daily Peak Model Statistics				
Model Statistics			Forecast Statistics	
Iterations	10		Forecast Observations	0
Adjusted Observations	3495		Mean Abs. Dev. (MAD)	0
Deg. of Freedom for Error	3436		Mean Abs. % Err. (MAPE)	0.00%
R-Squared	0.983		Avg. Forecast Error	0
Adjusted R-Squared	0.983		Mean % Error	0.00%
AIC	-4.82056		Root Mean-Square Error	0
BIC	-4.71659		Theil's Inequality Coefficient	0
F-Statistic	3401.062			
Prob (F-Statistic)	0			
Log-Likelihood	3,523.74			
Model Sum of Squares	1,563.97			
Sum of Squared Errors	27.24			
Mean Squared Error	0.0079			
Std. Error of Regression	0.089			
Mean Abs. Dev. (MAD)	0.0627			
Mean Abs. % Err. (MAPE)	2.26%			
Durbin-Watson Statistic	2.055			
Ljung-Box Statistic	65.18			
Prob (Ljung-Box)	0			
Skewness	-0.083			
Kurtosis	8.077			
Jarque-Bera	3757.245			
Prob (Jarque-Bera)	0			

Table 18 (continued)

Hour	Obs	DF	AdjRSq	DW	StdErr	MAD	MAPE	FObs	FMAD	FMAPE	FAvgErr
Hour1	3499	3448	0.914	1.262	0.062	0.041	2.22%	0	0	0.00%	0
Hour2	3497	3446	0.826	1.576	0.078	0.041	2.27%	0	0	0.00%	0
Hour3	3499	3448	0.898	0.949	0.05	0.035	2.13%	0	0	0.00%	0
Hour4	3499	3448	0.887	0.891	0.049	0.035	2.14%	0	0	0.00%	0
Hour5	3499	3448	0.886	0.859	0.05	0.036	2.17%	0	0	0.00%	0
Hour6	3499	3448	0.899	0.883	0.057	0.041	2.31%	0	0	0.00%	0
Hour7	3499	3448	0.917	0.882	0.072	0.052	2.69%	0	0	0.00%	0
Hour8	3499	3448	0.92	0.889	0.077	0.056	2.71%	0	0	0.00%	0
Hour9	3499	3448	0.918	0.949	0.069	0.05	2.36%	0	0	0.00%	0
Hour10	3499	3448	0.918	1.047	0.068	0.049	2.22%	0	0	0.00%	0
Hour11	3499	3448	0.923	1.096	0.075	0.054	2.34%	0	0	0.00%	0
Hour12	3499	3448	0.935	1.131	0.085	0.062	2.60%	0	0	0.00%	0
Hour13	3499	3450	0.95	1.202	0.094	0.068	2.81%	0	0	0.00%	0
Hour14	3499	3450	0.964	1.27	0.098	0.072	2.93%	0	0	0.00%	0
Hour15	3499	3450	0.974	1.292	0.1	0.075	3.01%	0	0	0.00%	0
Hour16	3499	3450	0.978	1.237	0.104	0.078	3.10%	0	0	0.00%	0
Hour17	3499	3450	0.978	1.163	0.11	0.083	3.24%	0	0	0.00%	0
Hour18	3499	3449	0.975	1.096	0.114	0.086	3.25%	0	0	0.00%	0
Hour19	3499	3449	0.974	1.107	0.105	0.077	2.90%	0	0	0.00%	0
Hour20	3499	3448	0.972	1.275	0.093	0.068	2.58%	0	0	0.00%	0
Hour21	3499	3448	0.967	1.374	0.087	0.062	2.34%	0	0	0.00%	0
Hour22	3499	3449	0.959	1.408	0.084	0.059	2.32%	0	0	0.00%	0
Hour23	3498	3448	0.949	1.37	0.075	0.051	2.24%	0	0	0.00%	0
Hour24	3499	3449	0.924	1.424	0.073	0.046	2.22%	0	0	0.00%	0

Note: Regression equations for the hourly models are similar to the daily peak model. Parameter and standard error are available upon request.

Table 18 (continued)

Residential Electric Space Heat Sales					
Variable	Definition	Coefficient	StdErr	T-Stat	P-Value
CONST	Constant term	533.054	23.094	23.082	0.00%
Account_Forecast.january	If month=1 then=1, else=0	141.819	23.297	6.087	0.00%
Account_Forecast.february	If month=2 then=1, else=0	53.816	19.039	2.827	0.56%
Account_Forecast.april	If month=4 then=1, else=0	-70.722	19.326	-3.659	0.04%
Account_Forecast.may	If month=5 then=1, else=0	-62.067	20.315	-3.055	0.28%
Account_Forecast.October	If month=10 then=1, else=0	-31.638	19.337	-1.636	10.46%
Account_Forecast.November	If month=11 then=1, else=0	-46.796	20.434	-2.290	2.39%
Account_Forecast.sumcdd65	Sum CDD base 65º	0.034	0.002	13.806	0.00%
Account_Forecast.sumhdd65	Sum HDD base 65º	0.031	0.002	16.457	0.00%
Account_Forecast.year_2010	If year=2010 then=1,else=0	-26.328	13.219	-1.992	4.88%
Account_Forecast.year_2011	If year=2011 then=1,else=0	-22.835	13.219	-1.727	8.68%
Account_Forecast.year_2012	If year=2012 then=1,else=0	-32.606	13.206	-2.469	1.51%
AR(1)	Autoregressive rho estimate	-0.143	0.093	-1.532	12.83%
Data Series: January 2004 to July 2014					
Sum CDD is the sum of cdd which are summed over the previous 30 days.					
For example, for each day, calculate the sum of cdds ofhte the previous 30 day. For each month, sum					
the cdds for each day. Same proceedure for calculating the Sum HDD variable					

Residential Non-Electric Space Heat Sales					
Variable	Definition	Coefficient	StdErr	T-Stat	P-Value
CONST	Constant term	605.498	21.969	27.562	0.00%
Account_Forecast.february	If month=2 then=1, else=0	-74.064	8.482	-8.732	0.00%
Account_Forecast.march	If month=3 then=1, else=0	-102.306	10.573	-9.676	0.00%
Account_Forecast.april	If month=4 then=1, else=0	-130.461	14.357	-9.087	0.00%
Account_Forecast.may	If month=5 then=1, else=0	-135.903	18.378	-7.395	0.00%
Account_Forecast.June	If month=6 then=1, else=0	-89.206	21.339	-4.180	0.01%
Account_Forecast.July	If month=7 then=1, else=0	-46.527	25.089	-1.854	6.65%
Account_Forecast.August	If month=8 then=1, else=0	-97.357	25.654	-3.795	0.03%
Account_Forecast.September	If month=9 then=1, else=0	-80.076	24.381	-3.284	0.14%
Account_Forecast.October	If month=10 then=1, else=0	-125.763	20.908	-6.015	0.00%
Account_Forecast.November	If month=11 then=1, else=0	-108.166	16.078	-6.727	0.00%
Account_Forecast.December	If month=12 then=1, else=0	-39.785	8.196	-4.854	0.00%
Account_Forecast.sumcdd65	Sum CDD base 65º	0.031	0.002	16.118	0.00%
Account_Forecast.sumhdd65	Sum HDD base 65º	0.008	0.001	6.451	0.00%
Account_Forecast.lag_cdd75	Sum CDD base 75º lagged 1 month	0.642	0.104	6.191	0.00%
Account_Forecast.year_2005	If year=2005 then=1,else=0	16.826	5.265	3.196	0.18%
Account_Forecast.year_2006	If year=2006 then=1,else=0	24.770	5.235	4.731	0.00%
Account_Forecast.year_2007	If year=2007 then=1,else=0	20.585	5.216	3.947	0.01%
Account_Forecast.year_2008	If year=2008 then=1,else=0	13.921	5.214	2.670	0.88%
Account_Forecast.year_2012	If year=2012 then=1,else=0	-3.060	5.214	-0.587	55.86%
Data Series: January 2004 to July 2014					
Sum CDD is the sum of cdd which are summed over the previous 30 days.					
For example, for each day, calculate the sum of cdds ofhte the previous 30 day. For each month, sum					
the cdds for each day. Same proceedure for calculating the Sum HDD variable					

Table 18 (continued)

Small Commercial Sales (<20 kW)				
Variable	Definition	StdErr	T-Stat	P-Value
CONST	Constant term	12.694	102.466	0.00%
Account_Forecast.january	If month=1 then=1, else=0	8.628	8.042	0.00%
Account_Forecast.march	If month=3 then=1, else=0	8.913	-6.571	0.00%
Account_Forecast.april	If month=4 then=1, else=0	9.474	-14.942	0.00%
Account_Forecast.may	If month=5 then=1, else=0	11.022	-15.398	0.00%
Account_Forecast.June	If month=6 then=1, else=0	15.733	-8.302	0.00%
Account_Forecast.July	If month=7 then=1, else=0	27.330	-5.065	0.00%
Account_Forecast.August	If month=8 then=1, else=0	29.451	-4.652	0.00%
Account_Forecast.September	If month=9 then=1, else=0	25.868	-4.554	0.00%
Account_Forecast.October	If month=10 then=1, else=0	14.739	-8.406	0.00%
Account_Forecast.November	If month=11 then=1, else=0	9.296	-13.129	0.00%
Account_Forecast.sumcdd65	Sum CDD base 65º	0.002	9.153	0.00%
Account_Forecast.year2014	if year=2014 then=1, else=0	12.972	15.004	0.00%
Vanancy2.vancancy2	Annual Vancancy Rate Office Bldg.	0.619	-24.052	0.00%
AR(1)	Autoregressive rho estimate	0.095	1.879	6.28%
Data Series: January 2004 to July 2014				

Small Commercial Sales (21-299 kW)					
Variable	Definition	Coefficient	StdErr	T-Stat	P-Value
CONST	Constant term	18519.733	594.832	31.134	0.00%
Account_Forecast.february	I month=2 then=1, else =0	-529.692	237.643	-2.229	2.78%
Account_Forecast.march	I month=3 then=1, else =0	-928.276	260.893	-3.558	0.06%
Account_Forecast.april	I month=4 then=1, else =0	-1443.250	261.659	-5.516	0.00%
Account_Forecast.may	I month=5 then=1, else =0	-1091.279	232.732	-4.689	0.00%
Account_Forecast.November	I month=11 then=1, else =0	-840.966	228.501	-3.680	0.04%
Vanancy2.vancancy2	Annual Vancancy Rate Office Bldg.	-235.147	37.281	-6.307	0.00%
Account_Forecast.sumcdd65	Sum CDD base 65º	0.263	0.022	12.027	0.00%
Account_Forecast.year_2010	If year=2010 then=1, else=0	-100.005	388.517	-0.257	79.73%
Account_Forecast.year_2011	If year=2011 then=1, else=0	-264.698	411.792	-0.643	52.17%
Account_Forecast.year_2012	If year=2012 then=1, else=0	-395.256	426.050	-0.928	35.56%
Account_Forecast.year_2013	If year=2013 then=1, else=0	1091.430	435.558	2.506	1.37%
Account_Forecast.year2014	If year=2014 then=1, else=0	5040.313	525.782	9.586	0.00%
AR(1)	Autoregressive rho estimate	0.293	0.110	2.662	0.89%
Data Series: January 2004 to July 2014					

Table 18 (continued)

Small Commercial Sales (300-499 kW)				
Variable	Definition	StdErr	T-Stat	P-Value
CONST	Constant term	2787.327	35.892	0.00%
Account_Forecast.april	If month=4 then=1, else=0	1464.644	-2.650	0.92%
Account_Forecast.June	If month=6 then=1, else=0	1439.553	1.413	16.04%
Account_Forecast.July	If month=7 then=1, else=0	1595.274	2.051	4.25%
Account_Forecast.September	If month=9 then=1, else=0	1762.031	1.848	6.72%
Account_Forecast.year_2004	if year=2004 then=1,else=0	1446.811	2.962	0.37%
Account_Forecast.lag_cdd65	Sum CDD 65º lagged one month	3.650	8.325	0.00%
Account_Forecast.year_2010	if year=2010 then=1,else=0	1865.003	-1.388	16.78%
Account_Forecast.year_2011	if year=2011 then=1,else=0	1932.892	-1.629	10.60%
Account_Forecast.year_2012	if year=2012 then=1,else=0	1997.872	1.026	30.69%
Account_Forecast.year_2013	if year=2013 then=1,else=0	1981.572	13.044	0.00%
Account_Forecast.year2014	if year=2014 then=1,else=0	2363.563	15.390	0.00%
Vanancy2.vancancy2	Annual Vancancy Rate Office Bldg	176.061	-8.435	0.00%
Data Series: January 2014 to July 2014				

Medium Commercial Sales (500-999 kW)				
Variable	Definition	StdErr	T-Stat	P-Value
CONST	Constant term	2535.117	81.402	0.00%
Account_Forecast.february	If month=2 then=1, else=0	4165.680	-2.444	1.62%
Account_Forecast.march	If month=3 then=1, else=0	3934.995	-3.016	0.33%
Account_Forecast.april	If month=4 then=1, else=0	3939.725	-4.328	0.00%
Account_Forecast.may	If month=5 then=1, else=0	3946.802	-2.869	0.50%
Account_Forecast.November	If month=11 then=1, else=0	3884.318	-1.874	6.39%
Account_Forecast.December	If month=12 then=1, else=0	4280.744	-1.816	7.23%
Account_Forecast.lag_cdd65	Sum CDD 65º lagged one month	9.449	7.317	0.00%
Account_Forecast.year_2009	if year=2009 then=1,else=0	2719.231	-3.303	0.13%
Account_Forecast.year_2010	if year=2010 then=1,else=0	2720.764	-2.971	0.37%
Account_Forecast.year_2011	if year=2011 then=1,else=0	2717.304	-1.556	12.29%
Account_Forecast.year_2012	if year=2012 then=1,else=0	2719.907	-5.549	0.00%
AR(1)	Autoregressive rho estimate	0.098	-1.495	13.81%
Data Series: January 2004 to July 2014				

Table 18 (continued)

Large Commercial Sales (>1000 kW)				
Variable	Definition	StdErr	T-Stat	P-Value
CONST	Constant term	20868.098	47.033	0.00%
Account_Forecast.january	If month=1 then =1, else=0	27796.321	1.894	6.09%
Account_Forecast.february	If month=2 then =1, else=0	27796.321	0.220	82.60%
Account_Forecast.march	If month=3 then =1, else=0	27796.321	-0.354	72.41%
Account_Forecast.april	If month=4 then =1, else=0	27796.321	-0.996	32.17%
Account_Forecast.may	If month=5 then =1, else=0	27796.321	-1.244	21.63%
Account_Forecast.June	If month=6 then =1, else=0	27796.321	1.775	7.86%
Account_Forecast.July	If month=7 then =1, else=0	27796.321	2.766	0.67%
Account_Forecast.August	If month=8 then =1, else=0	28354.162	4.539	0.00%
Account_Forecast.September	If month=9 then =1, else=0	28354.162	3.048	0.29%
Account_Forecast.October	If month=10 then =1, else=0	28354.162	2.165	3.26%
Account_Forecast.November	If month=11 then =1, else=0	28354.162	1.517	13.23%
Account_Forecast.year_2009	If year=2009 then=1, else=0	20049.420	-3.155	0.21%
Account_Forecast.year_2010	If year=2010 then=1, else=0	20049.420	-3.649	0.04%
Account_Forecast.year_2011	If year=2011 then=1, else=0	20049.420	-2.835	0.55%
Account_Forecast.year_2012	If year=2012 then=1, else=0	20049.420	-1.384	16.91%
Account_Forecast.year_2013	If year=2013 then=1, else=0	20049.420	-2.959	0.38%
Account_Forecast.year_2014	If year=2014 then=1, else=0	25791.083	1.582	11.65%
Data Series: January 2004 to July 2014				

Agricultural Sales				
Variable	Definition	StdErr	T-Stat	P-Value
CONST	Constant term	84.444	10.622	0.00%
Account_Forecast.april	If month=4 then=1,else=0	89.500	4.667	0.00%
Account_Forecast.may	If month=5 then=1,else=0	123.861	9.601	0.00%
Account_Forecast.June	If month=6 then=1,else=0	174.029	13.074	0.00%
Account_Forecast.July	If month=7 then=1,else=0	294.900	9.549	0.00%
Account_Forecast.August	If month=8 then=1,else=0	324.431	9.068	0.00%
Account_Forecast.September	If month=9 then=1,else=0	281.523	8.577	0.00%
Account_Forecast.October	If month=10 then=1,else=0	166.974	7.109	0.00%
Account_Forecast.November	If month=11 then=1,else=0	94.590	4.450	0.00%
Account_Forecast.sumcdd65	Sum CDD base 65º	0.026	3.082	0.26%
AR(1)	Autoregressive rho estimate	0.081	7.565	0.00%
Data Series: January 2004 to July 2014				

Streetlight Sales				
Variable	Definition	StdErr	T-Stat	P-Value
CONST	Constant term	20.607	113.184	0.00%
Account_Forecast.year_2004	If year=2004 then=1,else=0	37.129	8.149	0.00%
Account_Forecast.year_2005	If year=2005 then=1,else=0	36.114	7.304	0.00%
Account_Forecast.year_2006	If year=2006 then=1,else=0	36.117	5.199	0.00%
Account_Forecast.year_2007	If year=2007 then=1,else=0	36.117	5.917	0.00%
Account_Forecast.year_2008	If year=2008 then=1,else=0	36.114	5.223	0.00%
Account_Forecast.year_2009	If year=2009 then=1,else=0	36.098	5.068	0.00%
Account_Forecast.year_2010	If year=2010 then=1,else=0	36.515	3.678	0.04%
Account_Forecast.year_2013	If year=2013 then=1,else=0	50.126	-2.057	4.22%
AR(1)	Autoregressive rho estimate 1	0.090	-9.326	0.00%
AR(2)	Autoregressive rho estimate 2	0.090	-4.393	0.00%
Data Series: January 2004 to July 2014				

Nightlights Sales				
Variable	Definition	StdErr	T-Stat	P-Value
CONST	Constant term	0.064	1010.339	0.00%
Account_Forecast.year_2004	If year=2004 then=1, else=0	0.090	-30.204	0.00%
Account_Forecast.year_2005	If year=2005 then=1, else=0	0.090	-26.967	0.00%
Account_Forecast.year_2006	If year=2006 then=1, else=0	0.090	-18.234	0.00%
Account_Forecast.year_2007	If year=2007 then=1, else=0	0.090	-17.516	0.00%
Account_Forecast.year_2008	If year=2008 then=1, else=0	0.090	-12.503	0.00%
Account_Forecast.year_2009	If year=2009 then=1, else=0	0.090	-9.082	0.00%
Account_Forecast.year_2010	If year=2010 then=1, else=0	0.090	-6.148	0.00%
Account_Forecast.year_2011	If year=2011 then=1, else=0	0.090	-2.050	4.26%
Account_Forecast.year_2013	If year=2013 then=1, else=0	0.090	2.213	2.89%
Account_Forecast.year_2014	If year=2014 then=1, else=0	0.110	5.064	0.00%
Data Series: January 2004 to July 2014				

Table 18 (continued)

Model Statistics	Residential Electric Space Heat Sales	Residential Non-Electric Space Heat	Small Commercial Sales (<20 kW)	Small Comercial Sales (21 -299 kW)	Small commercial Sales (300-499 kW)
Iterations	7	1	10	11	1
Adjusted Observations	125	126	125	125	126
Deg. of Freedom for Error	112	106	110	111	113
R-Squared	0.932	0.987	0.956	0.898	0.879
Adjusted R-Squared	0.925	0.985	0.951	0.886	0.866
AIC	7.872	5.758	6.565	13.211	16.909
BIC	8.166	6.208	6.904	13.528	17.202
F-Statistic	128.656	430.288	172.702	75.184	68.322
Prob (F-Statistic)	0.0000	0.0000	0.0000	0.0000	0.0000
Log-Likelihood	-656.38	-521.53	-572.66	-989.07	-1,231.07
Model Sum of Squares	3,671,358.70	2,240,164.37	1,533,527.44	480,764,175.90	16,407,847,727.46
Sum of Squared Errors	266,338.11	29,045.09	69,768.30	54,598,986.32	2,261,447,296.87
Mean Squared Error	2,378.02	274.01	634.26	491,882.76	20,012,807.94
Std. Error of Regression	48.76	16.55	25.18	701.34	4,473.57
Mean Abs. Dev. (MAD)	30.85	11.07	18.39	380.71	3,035.87
Mean Abs. % Err. (MAPE)	3.62%	1.58%	1.79%	2.47%	3.79%
Durbin-Watson Statistic	1.913	2.258	2.029	2.090	1.457
Ljung-Box Statistic	32.97	17.75	26.53	15.50	34.71
Prob (Ljung-Box)	0.1047	0.8148	0.3270	0.9052	0.0728
Skewness	0.593	-0.109	0.491	4.275	1.074
Kurtosis	12.381	7.158	5.175	33.747	8.188
Jarque-Bera	465.683	91.000	29.670	5304.413	165.512
Prob (Jarque-Bera)	0.0000	0.0000	0.0000	0.0000	0.0000

Model Statistics	Meduim Commercial Sales (500-999 kW)	Large Commecial Sales (>1000 kW)	Agricultural Sales	Streetlight Sales	Nightlight Sales
Iterations	7	1	7	7	1
Adjusted Observations	113	127	113	112	126
Deg. of Freedom for Error	100	109	102	101	115
R-Squared	0.724	0.482	0.971	0.530	0.957
Adjusted R-Squared	0.691	0.402	0.968	0.484	0.953
AIC	18.504	22.245	11.255	10.913	-2.942
BIC	18.818	22.648	11.521	11.180	-2.695
F-Statistic	21.840	5.973	342.550	11.408	254.259
Prob (F-Statistic)	0.0000	0.0000	0.0000	0.0000	0.0000
Log-Likelihood	-1,192.81	-1,574.77	-785.25	-759.04	17.58
Model Sum of Squares	25,568,988,834.84	408,197,523,843.12	241,349,753.14	5,703,705.86	123.40
Sum of Squared Errors	9,756,037,755.11	438,157,388,373.79	7,186,597.76	5,049,800.03	5.58
Mean Squared Error	97,560,377.55	4,019,792,553.89	70,456.84	49,998.02	0.05
Std. Error of Regression	9,877.27	63,401.83	265.44	223.60	0.22
Mean Abs. Dev. (MAD)	5,832.12	44,848.28	190.48	126.19	0.16
Mean Abs. % Err. (MAPE)	2.84%	4.55%	10.99%	5.70%	0.26%
Durbin-Watson Statistic	1.981	2.066	1.839	2.090	1.941
Ljung-Box Statistic	14.00	23.85	16.37	13.45	53.08
Prob (Ljung-Box)	0.9467	0.4705	0.8741	0.9581	0.0006
Skewness	2.789	-0.317	0.075	-1.382	-0.333
Kurtosis	24.672	5.597	3.516	7.943	4.763
Jarque-Bera	2357.856	37.825	1.358	149.698	18.649
Prob (Jarque-Bera)	0.0000	0.0000	0.5072	0.0000	0.0001

Table 18 (continued)

SAE Residential Non-Electric Space Heat				
Variable	Definition	StdErr	T-Stat	P-Value
ResidentialVars.XHeat	Heating Index	0.000	6.831	0.00%
ResidentialVars.XCool	Cooling Index	0.000	6.831	0.00%
ResidentialVars.XOther	Non-HVAC index	0.000	31.230	0.00%
BinaryVars.Jan	if month=1 then=1, else=0	13.245	3.559	0.05%
BinaryVars.Feb	if month=2 then=1, else=0	12.985	2.915	0.42%
BinaryVars.Apr	if month=4 then=1, else=0	13.012	-2.192	3.03%
BinaryVars.Jun	if month=5 then=1, else=0	21.196	2.410	1.74%
BinaryVars.Jul	if month=7 then=1, else=0	34.804	4.981	0.00%
BinaryVars.Aug	if month=8 then=1, else=0	35.485	5.413	0.00%
BinaryVars.Sep	if month=9 then=1, else=0	26.175	7.226	0.00%
BinaryVars.Oct	if month=10 then=1, else=0	15.478	4.375	0.00%
BinaryVars.Nov	if month=11 then=1, else=0	12.994	-2.160	3.27%
AR(1)	Autoregressive rho estimate	0.012	78.922	0.00%
MA(1)	Moving Average	0.048	-22.749	0.00%
SAE Residential Electric Space Heat				
Variable	Definition	StdErr	T-Stat	P-Value
ResidentialVars.XHeat	Heating Index	0.153	12.437	0.00%
ResidentialVars.XCool	Cooling Index	0.297	5.376	0.00%
ResidentialVars.XOther	Non-HVAC index	0.043	25.164	0.00%
BinaryVars.Jan	if month=1 then=1, else=0	18.689	6.862	0.00%
BinaryVars.Feb	if month=2 then=1, else=0	16.369	7.439	0.00%
BinaryVars.Apr	if month=4 then=1, else=0	16.426	-5.045	0.00%
BinaryVars.May	if month=5 then=1, else=0	16.139	-2.893	0.44%
BinaryVars.Jul	if month=7 then=1, else=0	26.157	3.922	0.01%
BinaryVars.Aug	if month=8 then=1, else=0	28.488	4.091	0.01%
BinaryVars.Sep	if month=9 then=1, else=0	21.189	4.764	0.00%
BinaryVars.Nov	if month=11 then=1, else=0	15.827	-8.302	0.00%
AR(1)	Autoregressive rho estimate	0.079	2.879	0.46%
Model Statistics	Electric Space Heat	Non-Electric Space Heat		
Iterations	99	11		
Adjusted Observations	139	163		
Deg. of Freedom for Error	125	151		
R-Squared	0.947	0.913		
Adjusted R-Squared	0.942	0.906		
AIC	7.132	7.994		
BIC	7.428	8.222		
Log-Likelihood	-678.93	-870.81		
Model Sum of Squares	2,545,675.76	4,360,255.36		
Sum of Squared Errors	142,248.78	416,909.39		
Mean Squared Error	1,137.99	2,760.99		
Std. Error of Regression	33.73	52.55		
Mean Abs. Dev. (MAD)	23.05	37.43		
Mean Abs. % Err. (MAPE	3.19%	4.48%		
Durbin-Watson Statistic	2.036	2.041		
Ljung-Box Statistic	16.18	24.65		
Prob (Ljung-Box)	0.8814	0.4252		
Skewness	0.575	0.311		
Kurtosis	5.330	4.983		
Jarque-Bera	39.077	29.334		
Prob (Jarque-Bera)	0.0000	0.0000		

Table 18 (continued)

SAE Small Commercial (<20 kW Max Demand)				
Variable	Definition	StdErr	T-Stat	P-Value
CommercialVars.XHeat	Definition	0.017	4.209	0.00%
CommercialVars.XCool	Heating Index	0.002	15.914	0.00%
CommercialVars.XOther	Other index	0.000	78.822	0.00%
BinaryVars.Jan	if month=1 then=1, else=0	11.328	4.382	0.00%
BinaryVars.Feb	if month=2 then=1, else=0	9.727	8.426	0.00%
BinaryVars.Apr	if month=4 then=1, else=0	10.248	-8.732	0.00%
BinaryVars.May	if month=5 then=1, else=0	10.638	-7.239	0.00%
BinaryVars.Jun	if month=6 then=1, else=0	10.084	-6.544	0.00%
BinaryVars.Jul	if month=7 then=1, else=0	10.135	-4.547	0.00%
BinaryVars.Nov	if month=11 then=1, else=0	9.775	-6.486	0.00%
BinaryVars.Aft14	if year>2014 then=1, else=0	15.331	14.807	0.00%
AR(1)	Autoregressive rho estimate1	0.083	2.383	1.85%
AR(2)	Autoregressive rho estimate2	0.071	2.348	2.03%
SAE Small Commercial (20-299 kW Max Demand)				
Variable	Definition	StdErr	T-Stat	P-Value
CommercialVars.XHeat	Definition	0.266	-3.989	0.01%
CommercialVars.XCool	Heating Index	0.040	9.780	0.00%
CommercialVars.XOther	Other index	0.002	65.217	0.00%
BinaryVars.Jan	if month=1 then=1, else=0	175.330	2.352	2.00%
BinaryVars.Feb	if month=2 then=1, else=0	150.523	5.086	0.00%
BinaryVars.Apr	if month=4 then=1, else=0	158.009	-6.255	0.00%
BinaryVars.May	if month=5 then=1, else=0	159.691	-3.855	0.02%
BinaryVars.Aug	if month=8 then=1, else=0	170.142	3.525	0.06%
BinaryVars.Sep	if month=9 then=1, else=0	156.613	3.410	0.09%
BinaryVars.Nov	if month=11 then=1, else=0	156.993	-3.289	0.13%
BinaryVars.Aft14	if year>2014 then=1, else=0	405.743	12.461	0.00%
AR(1)	Autoregressive rho estimate1	0.084	5.180	0.00%
AR(2)	Autoregressive rho estimate2	0.076	3.331	0.11%
Model Statistics	<20 kW	Between 20 and 300 kW		
Iterations	10	13		
Adjusted Observations	151	153		
Deg. of Freedom for Erro	138	140		
R-Squared	0.938	0.947		
Adjusted R-Squared	0.932	0.943		
AIC	6.983	12.715		
BIC	7.242	12.973		
Log-Likelihood	-728.45	-1,176.81		
Model Sum of Squares	2,056,934.25	773,951,296.28		
Sum of Squared Errors	137,003.78	42,955,832.47		
Mean Squared Error	992.78	306,827.37		
Std. Error of Regression	31.51	553.92		
Mean Abs. Dev. (MAD)	22.39	406.15		
Mean Abs. % Err. (MAPE	2.12%	2.60%		
Durbin-Watson Statistic	1.932	1.810		
Ljung-Box Statistic	34.19	33.77		
Prob (Ljung-Box)	0.0813	0.0889		
Skewness	0.467	0.408		
Kurtosis	4.518	4.200		
Jarque-Bera	19.973	13.435		
Prob (Jarque-Bera)	0.0000	0.0012		

Table 18 (continued)

Residential Gas Heat Equipment Shares

Year	EFurn	HPHeat	GHPHeat	SecHt	CAC	HPCool	GHPCool	RAC	EWHeat	ECook	Ref1	Ref2	Frz	Dish	CWash	EDry	TV	FurnFan	Light	Misc
1995	0.0%	0.0%	0.0%	0.0%	73.7%	0.0%	0.0%	9.9%	10.1%	33.1%	97.6%	29.1%	25.6%	76.4%	82.3%	67.5%	204.9%	84.9%	100.0%	100.0%
1996	0.0%	0.0%	0.0%	0.0%	73.7%	0.0%	0.0%	9.9%	10.1%	33.1%	97.6%	29.1%	25.6%	76.4%	82.3%	67.5%	204.9%	84.9%	100.0%	100.0%
1997	0.0%	0.0%	0.0%	0.0%	73.7%	0.0%	0.0%	9.9%	10.1%	33.1%	97.6%	29.1%	25.6%	76.4%	82.3%	67.5%	204.9%	84.9%	100.0%	100.0%
1998	0.0%	0.0%	0.0%	0.0%	73.7%	0.0%	0.0%	9.9%	10.1%	33.1%	97.6%	29.1%	25.6%	76.4%	82.3%	67.5%	204.9%	84.9%	100.0%	100.0%
1999	0.0%	0.0%	0.0%	0.0%	75.2%	0.0%	0.0%	9.9%	10.0%	33.5%	97.6%	28.9%	25.3%	76.9%	82.4%	67.7%	214.0%	85.0%	100.0%	100.0%
2000	0.0%	0.0%	0.0%	0.0%	76.7%	0.0%	0.0%	9.9%	9.9%	34.0%	97.6%	28.7%	24.9%	77.4%	82.6%	67.9%	223.5%	85.0%	100.0%	100.0%
2001	0.0%	0.0%	0.0%	0.0%	78.2%	0.0%	0.0%	9.9%	9.8%	34.4%	97.6%	28.6%	24.5%	77.9%	82.8%	68.1%	228.8%	85.1%	100.0%	100.0%
2002	0.0%	0.0%	0.0%	0.0%	79.7%	0.0%	0.0%	9.8%	9.7%	34.8%	97.6%	28.3%	24.5%	78.5%	82.9%	68.4%	230.5%	85.2%	100.0%	100.0%
2003	0.0%	0.0%	0.0%	0.0%	81.1%	0.0%	0.0%	9.7%	9.6%	35.2%	97.6%	28.0%	24.5%	79.5%	82.9%	69.0%	232.2%	85.2%	100.0%	100.0%
2004	0.0%	0.0%	0.0%	0.0%	82.6%	0.0%	0.0%	9.6%	9.6%	35.6%	97.6%	27.8%	24.4%	80.5%	83.0%	69.7%	233.8%	85.3%	100.0%	100.0%
2005	0.0%	0.0%	0.0%	0.0%	84.1%	0.0%	0.0%	9.5%	9.5%	36.0%	97.6%	27.5%	24.4%	81.7%	83.1%	70.4%	235.5%	85.4%	100.0%	100.0%
2006	0.0%	0.0%	0.0%	0.0%	84.8%	0.0%	0.0%	9.6%	9.5%	36.0%	97.6%	27.6%	24.5%	82.1%	83.1%	70.6%	241.6%	85.6%	100.0%	100.0%
2007	0.0%	0.0%	0.0%	0.0%	85.5%	0.0%	0.0%	9.6%	9.6%	36.0%	97.6%	27.9%	24.5%	82.5%	83.1%	70.8%	247.6%	85.8%	100.0%	100.0%
2008	0.0%	0.0%	0.0%	0.0%	85.8%	0.0%	0.0%	9.6%	9.7%	36.1%	97.6%	28.0%	24.5%	82.7%	83.1%	71.0%	253.6%	85.8%	100.0%	100.0%
2009	0.0%	0.0%	0.0%	0.0%	86.3%	0.0%	0.0%	9.6%	9.7%	36.1%	97.6%	28.2%	24.5%	83.1%	83.1%	71.2%	259.7%	85.9%	100.0%	100.0%
2010	0.0%	0.0%	0.0%	0.0%	86.9%	0.0%	0.0%	9.6%	9.8%	36.1%	97.6%	28.4%	24.6%	83.6%	83.2%	71.4%	265.7%	86.1%	100.0%	100.0%
2011	0.0%	0.0%	0.0%	0.0%	87.4%	0.0%	0.0%	9.7%	9.8%	36.2%	97.6%	28.6%	24.7%	84.0%	83.3%	71.7%	271.7%	86.3%	100.0%	100.0%
2012	0.0%	0.0%	0.0%	0.0%	88.3%	0.0%	0.0%	9.7%	9.9%	36.3%	97.6%	29.1%	24.8%	84.8%	83.3%	72.1%	277.8%	86.5%	100.0%	100.0%
2013	0.0%	0.0%	0.0%	0.0%	88.7%	0.0%	0.0%	9.7%	9.9%	36.4%	97.6%	29.2%	24.8%	85.1%	83.3%	72.3%	283.8%	86.6%	100.0%	100.0%
2014	0.0%	0.0%	0.0%	0.0%	89.3%	0.0%	0.0%	9.7%	9.9%	36.5%	97.6%	29.5%	24.9%	85.7%	83.4%	72.5%	289.8%	86.8%	100.0%	100.0%
2015	0.0%	0.0%	0.0%	0.0%	90.0%	0.0%	0.0%	9.7%	10.0%	36.6%	97.6%	29.8%	24.9%	86.3%	83.4%	72.8%	295.9%	87.0%	100.0%	100.0%
2016	0.0%	0.0%	0.0%	0.0%	90.6%	0.0%	0.0%	9.8%	10.0%	36.7%	97.6%	30.0%	25.0%	86.9%	83.4%	73.1%	295.1%	87.1%	100.0%	100.0%
2017	0.0%	0.0%	0.0%	0.0%	91.3%	0.0%	0.0%	9.8%	10.1%	36.7%	97.6%	30.3%	25.0%	87.5%	83.4%	73.4%	294.9%	87.2%	100.0%	100.0%
2018	0.0%	0.0%	0.0%	0.0%	91.9%	0.0%	0.1%	9.8%	10.1%	36.8%	97.6%	30.5%	25.0%	88.1%	83.4%	73.7%	295.2%	87.3%	100.0%	100.0%
2019	0.0%	0.0%	0.0%	0.0%	92.5%	0.0%	0.1%	9.8%	10.2%	36.9%	97.6%	30.8%	25.1%	88.7%	83.4%	73.9%	295.9%	87.4%	100.0%	100.0%
2020	0.0%	0.0%	0.0%	0.0%	93.1%	0.0%	0.1%	9.8%	10.2%	37.0%	97.6%	31.0%	25.1%	89.2%	83.4%	74.2%	297.0%	87.5%	100.0%	100.0%
2021	0.0%	0.0%	0.0%	0.0%	93.7%	0.0%	0.1%	9.8%	10.3%	37.0%	97.6%	31.2%	25.2%	89.8%	83.4%	74.5%	298.0%	87.6%	100.0%	100.0%
2022	0.0%	0.0%	0.0%	0.0%	94.2%	0.0%	0.1%	9.8%	10.3%	37.1%	97.6%	31.4%	25.2%	90.3%	83.5%	74.8%	299.5%	87.7%	100.0%	100.0%
2023	0.0%	0.0%	0.0%	0.0%	94.8%	0.0%	0.1%	9.8%	10.4%	37.2%	97.6%	31.6%	25.2%	90.8%	83.5%	75.0%	300.9%	87.7%	100.0%	100.0%
2024	0.0%	0.0%	0.0%	0.0%	95.3%	0.0%	0.1%	9.9%	10.4%	37.3%	97.6%	31.9%	25.3%	91.4%	83.5%	75.3%	302.4%	87.8%	100.0%	100.0%
2025	0.0%	0.0%	0.0%	0.0%	95.9%	0.0%	0.1%	9.9%	10.4%	37.4%	97.6%	32.1%	25.3%	91.9%	83.6%	75.5%	304.0%	87.9%	100.0%	100.0%
2026	0.0%	0.0%	0.0%	0.0%	96.4%	0.0%	0.1%	9.9%	10.5%	37.4%	97.6%	32.3%	25.4%	92.4%	83.6%	75.8%	305.5%	88.0%	100.0%	100.0%
2027	0.0%	0.0%	0.0%	0.0%	97.0%	0.0%	0.1%	9.9%	10.5%	37.5%	97.6%	32.5%	25.4%	92.9%	83.7%	76.1%	307.0%	88.0%	100.0%	100.0%
2028	0.0%	0.0%	0.0%	0.0%	97.5%	0.0%	0.1%	9.9%	10.5%	37.6%	97.6%	32.7%	25.4%	93.4%	83.7%	76.3%	308.6%	88.1%	100.0%	100.0%
2029	0.0%	0.0%	0.0%	0.0%	97.9%	0.0%	0.1%	9.9%	10.6%	37.7%	97.6%	32.9%	25.5%	93.9%	83.8%	76.5%	310.1%	88.1%	100.0%	100.0%
2030	0.0%	0.0%	0.0%	0.0%	98.4%	0.0%	0.1%	9.9%	10.6%	37.8%	97.6%	33.1%	25.5%	94.4%	83.8%	76.8%	311.6%	88.2%	100.0%	100.0%
2031	0.0%	0.0%	0.0%	0.0%	98.9%	0.0%	0.1%	9.9%	10.6%	37.8%	97.6%	33.3%	25.5%	94.8%	83.8%	77.0%	313.2%	88.2%	100.0%	100.0%
2032	0.0%	0.0%	0.0%	0.0%	99.3%	0.0%	0.1%	10.0%	10.7%	37.9%	97.6%	33.4%	25.5%	95.3%	83.9%	77.2%	314.8%	88.3%	100.0%	100.0%
2033	0.0%	0.0%	0.0%	0.0%	99.8%	0.0%	0.1%	10.0%	10.7%	38.0%	97.6%	33.6%	25.6%	95.7%	83.9%	77.4%	316.3%	88.4%	100.0%	100.0%
2034	0.0%	0.0%	0.0%	0.0%	100.2%	0.0%	0.1%	10.0%	10.7%	38.0%	97.6%	33.8%	25.6%	96.1%	83.9%	77.6%	318.0%	88.5%	100.0%	100.0%
2035	0.0%	0.0%	0.0%	0.0%	100.6%	0.0%	0.1%	10.0%	10.8%	38.1%	97.6%	33.9%	25.6%	96.6%	84.0%	77.9%	319.6%	88.5%	100.0%	100.0%

Table 18 (continued)

Residential Electric Heat Equipment Shares

Year	EFurn	HPHeat	GHPHeat	SecHt	CAC	HPCool	GHPCool	RAC	EWHeat	ECook	Ref1	Ref2	Frz	Dish	CWash	EDry	TV	FurnFan	Light	Misc
1995	37.8%	31.9%	0.0%	4.3%	30.6%	34.0%	0.0%	4.7%	47.1%	74.8%	97.8%	15.3%	27.1%	79.3%	63.9%	66.5%	164.0%	73.4%	100.0%	100.0%
1996	37.7%	32.8%	0.0%	4.3%	30.9%	34.0%	0.0%	4.7%	47.5%	75.8%	97.8%	15.5%	26.5%	79.3%	63.9%	66.6%	166.9%	73.5%	100.0%	100.0%
1997	37.5%	33.8%	0.0%	4.4%	31.4%	34.0%	0.0%	4.7%	47.9%	76.8%	97.8%	15.7%	26.0%	79.3%	63.9%	66.6%	169.7%	73.5%	100.0%	100.0%
1998	37.3%	34.0%	0.0%	4.4%	31.7%	34.0%	0.0%	4.7%	47.6%	77.7%	97.8%	15.6%	25.6%	79.8%	64.0%	66.7%	177.3%	73.6%	100.0%	100.0%
1999	37.1%	34.1%	0.0%	4.5%	32.4%	34.1%	0.0%	4.7%	47.2%	78.7%	97.8%	15.5%	25.3%	80.3%	64.1%	66.9%	185.2%	73.6%	100.0%	100.0%
2000	36.9%	34.1%	0.0%	4.5%	33.0%	34.1%	0.0%	4.7%	46.9%	79.7%	97.8%	15.4%	24.9%	80.8%	64.2%	67.1%	193.4%	73.7%	100.0%	100.0%
2001	36.7%	34.2%	0.0%	4.5%	33.6%	34.2%	0.0%	4.7%	46.5%	80.7%	97.8%	15.3%	24.5%	81.4%	64.4%	67.3%	198.0%	73.7%	100.0%	100.0%
2002	36.6%	34.2%	0.0%	4.6%	34.3%	34.2%	0.0%	4.7%	46.1%	81.7%	97.8%	15.2%	24.5%	82.0%	64.4%	67.6%	199.4%	73.8%	100.0%	100.0%
2003	36.4%	34.4%	0.0%	4.6%	34.9%	34.4%	0.0%	4.6%	45.6%	82.6%	97.8%	15.0%	24.5%	83.0%	64.5%	68.2%	200.9%	73.8%	100.0%	100.0%
2004	36.2%	34.5%	0.0%	4.6%	35.6%	34.5%	0.0%	4.6%	45.2%	83.6%	97.8%	14.9%	24.4%	84.1%	64.6%	68.8%	202.3%	73.9%	100.0%	100.0%
2005	36.0%	34.8%	0.0%	4.7%	36.2%	34.8%	0.0%	4.5%	44.8%	84.6%	97.8%	14.7%	24.4%	85.3%	64.7%	69.6%	203.8%	74.0%	100.0%	100.0%
2006	35.6%	35.5%	0.0%	4.7%	36.5%	35.5%	0.0%	4.6%	44.9%	84.5%	97.8%	14.8%	24.5%	85.7%	64.6%	69.7%	209.0%	74.1%	100.0%	100.0%
2007	35.3%	36.8%	0.0%	4.7%	36.8%	36.8%	0.0%	4.6%	45.2%	84.6%	97.8%	14.9%	24.5%	86.1%	64.7%	70.0%	214.3%	74.3%	100.0%	100.0%
2008	35.2%	37.4%	0.0%	4.7%	37.0%	37.4%	0.0%	4.6%	45.7%	84.6%	97.8%	15.0%	24.5%	86.4%	64.6%	70.1%	219.5%	74.4%	100.0%	100.0%
2009	35.0%	38.3%	0.0%	4.7%	37.1%	38.3%	0.0%	4.6%	46.0%	84.7%	97.8%	15.1%	24.5%	86.7%	64.6%	70.4%	224.7%	74.5%	100.0%	100.0%
2010	34.8%	38.8%	0.0%	4.7%	37.4%	38.8%	0.0%	4.6%	46.2%	84.7%	97.8%	15.2%	24.6%	87.2%	64.7%	70.6%	229.9%	74.6%	100.0%	100.0%
2011	34.5%	40.0%	0.0%	4.7%	37.6%	40.0%	0.0%	4.6%	46.4%	84.9%	97.8%	15.3%	24.7%	87.7%	64.8%	70.9%	235.1%	74.8%	100.0%	100.0%
2012	34.1%	42.2%	0.0%	4.7%	38.0%	42.2%	0.0%	4.6%	46.6%	85.2%	97.8%	15.6%	24.8%	88.5%	64.8%	71.2%	240.4%	75.0%	100.0%	100.0%
2013	33.9%	43.6%	0.0%	4.7%	38.2%	43.6%	0.0%	4.6%	46.9%	85.4%	97.8%	15.7%	24.8%	88.9%	64.8%	71.4%	245.6%	75.1%	100.0%	100.0%
2014	33.6%	45.3%	0.0%	4.7%	38.5%	45.3%	0.0%	4.6%	47.1%	85.6%	97.8%	15.8%	24.9%	89.4%	64.8%	71.7%	250.8%	75.2%	100.0%	100.0%
2015	33.3%	47.1%	0.0%	4.7%	38.7%	47.1%	0.0%	4.6%	47.3%	85.9%	97.8%	15.9%	24.9%	90.1%	64.9%	71.9%	256.0%	75.4%	100.0%	100.0%
2016	33.0%	49.0%	0.0%	4.7%	39.0%	49.0%	0.0%	4.6%	47.5%	86.0%	97.8%	16.1%	25.0%	90.7%	64.9%	72.2%	255.4%	75.5%	100.0%	100.0%
2017	32.8%	51.0%	0.0%	4.7%	39.3%	51.0%	0.0%	4.7%	47.7%	86.2%	97.8%	16.2%	25.0%	91.4%	64.9%	72.5%	255.2%	75.6%	100.0%	100.0%
2018	32.5%	52.9%	0.0%	4.7%	39.6%	52.9%	0.1%	4.7%	48.0%	86.4%	97.8%	16.4%	25.0%	92.0%	64.9%	72.8%	255.4%	75.6%	100.0%	100.0%
2019	32.2%	54.7%	0.0%	4.7%	39.8%	54.7%	0.1%	4.7%	48.2%	86.6%	97.8%	16.5%	25.1%	92.6%	64.9%	73.1%	256.1%	75.7%	100.0%	100.0%
2020	32.0%	56.4%	0.0%	4.7%	40.1%	56.4%	0.1%	4.7%	48.5%	86.7%	97.8%	16.6%	25.1%	93.2%	64.9%	73.4%	257.0%	75.8%	100.0%	100.0%
2021	31.8%	58.0%	0.0%	4.7%	40.3%	58.0%	0.1%	4.7%	48.7%	86.9%	97.8%	16.7%	25.2%	93.7%	64.9%	73.6%	257.9%	75.9%	100.0%	100.0%
2022	31.6%	59.6%	0.0%	4.7%	40.6%	59.6%	0.1%	4.7%	48.9%	87.1%	97.8%	16.8%	25.2%	94.3%	64.9%	73.9%	259.1%	76.0%	100.0%	100.0%
2023	31.3%	61.1%	0.0%	4.7%	40.8%	61.1%	0.1%	4.7%	49.1%	87.3%	97.8%	16.9%	25.2%	94.8%	64.9%	74.1%	260.4%	76.0%	100.0%	100.0%
2024	31.1%	62.5%	0.0%	4.7%	41.0%	62.5%	0.1%	4.7%	49.2%	87.5%	97.8%	17.1%	25.3%	95.4%	65.0%	74.4%	261.7%	76.1%	100.0%	100.0%
2025	30.9%	63.9%	0.0%	4.7%	41.3%	63.9%	0.1%	4.7%	49.4%	87.7%	97.8%	17.2%	25.3%	96.0%	65.0%	74.7%	263.0%	76.2%	100.0%	100.0%
2026	30.6%	65.3%	0.0%	4.7%	41.5%	65.3%	0.1%	4.7%	49.5%	87.9%	97.8%	17.3%	25.4%	96.5%	65.1%	74.9%	264.3%	76.2%	100.0%	100.0%
2027	30.4%	66.7%	0.0%	4.8%	41.7%	66.7%	0.1%	4.7%	49.7%	88.1%	97.8%	17.4%	25.4%	97.0%	65.1%	75.2%	265.7%	76.3%	100.0%	100.0%
2028	30.2%	68.1%	0.0%	4.8%	41.9%	68.1%	0.1%	4.7%	49.9%	88.3%	97.8%	17.5%	25.4%	97.5%	65.1%	75.4%	267.0%	76.3%	100.0%	100.0%
2029	30.0%	69.5%	0.0%	4.8%	42.2%	69.5%	0.1%	4.7%	50.0%	88.4%	97.8%	17.6%	25.5%	98.0%	65.1%	75.6%	268.3%	76.4%	100.0%	100.0%
2030	29.8%	70.8%	0.0%	4.8%	42.4%	70.8%	0.1%	4.7%	50.2%	88.6%	97.8%	17.7%	25.5%	98.5%	65.2%	75.9%	269.7%	76.4%	100.0%	100.0%
2031	29.6%	72.1%	0.0%	4.8%	42.6%	72.1%	0.1%	4.7%	50.3%	88.8%	97.8%	17.8%	25.5%	99.0%	65.2%	76.1%	271.0%	76.4%	100.0%	100.0%
2032	29.4%	73.4%	0.0%	4.8%	42.8%	73.4%	0.1%	4.7%	50.5%	88.9%	97.8%	17.9%	25.5%	99.5%	65.2%	76.3%	272.4%	76.5%	100.0%	100.0%
2033	29.2%	74.6%	0.0%	4.8%	42.9%	74.6%	0.1%	4.7%	50.7%	89.1%	97.8%	18.0%	25.6%	99.9%	65.3%	76.5%	273.7%	76.6%	100.0%	100.0%
2034	29.0%	75.9%	0.0%	4.8%	43.1%	75.9%	0.1%	4.7%	50.8%	89.3%	97.8%	18.1%	25.6%	100.4%	65.3%	76.7%	275.1%	76.6%	100.0%	100.0%
2035	28.8%	77.1%	0.0%	4.8%	43.3%	77.1%	0.1%	4.8%	51.0%	89.4%	97.8%	18.2%	25.6%	100.8%	65.3%	77.0%	276.5%	76.7%	100.0%	100.0%

Table 18 (continued)

Commercial Equipment Shares

Year	Heat	Cool	Vent	EWHeat	Cooking	Refrig	O. Light	I.Light	Office	Misc
1995	32.3%	77.8%	100.0%	35.5%	17.1%	48.1%	73.3%	100.0%	116.3%	100.0%
1996	32.5%	78.2%	100.0%	36.2%	17.1%	48.1%	73.5%	100.3%	117.1%	102.5%
1997	32.7%	78.5%	100.0%	36.9%	17.1%	48.1%	73.7%	100.6%	118.0%	105.1%
1998	32.9%	78.9%	100.0%	37.6%	17.1%	48.1%	73.8%	101.0%	118.8%	107.8%
1999	33.2%	79.7%	100.0%	37.7%	17.3%	48.1%	74.0%	101.3%	119.7%	110.5%
2000	33.5%	80.3%	100.0%	37.8%	17.5%	48.1%	74.1%	101.6%	120.5%	113.4%
2001	33.7%	80.8%	100.0%	37.9%	17.6%	48.1%	74.3%	101.9%	121.4%	116.2%
2002	33.9%	81.1%	100.0%	37.9%	17.7%	48.1%	74.5%	102.3%	122.2%	119.2%
2003	34.0%	81.4%	100.0%	38.0%	17.8%	48.1%	74.6%	102.6%	123.1%	122.2%
2004	34.1%	81.6%	100.0%	38.0%	17.9%	48.1%	74.8%	102.9%	123.9%	125.3%
2005	33.9%	81.1%	100.0%	37.8%	17.8%	48.2%	75.1%	103.4%	124.3%	125.9%
2006	33.8%	80.6%	100.0%	36.9%	17.6%	48.1%	75.4%	103.8%	121.3%	130.3%
2007	33.7%	80.1%	100.0%	36.2%	17.4%	48.1%	75.7%	104.2%	115.8%	133.7%
2008	33.6%	79.7%	100.0%	35.6%	17.2%	48.1%	76.0%	104.6%	109.0%	136.8%
2009	33.5%	79.2%	100.0%	34.9%	17.0%	47.8%	76.3%	105.0%	101.2%	138.7%
2010	33.3%	78.8%	100.0%	34.2%	16.7%	47.5%	76.6%	105.4%	93.0%	141.3%
2011	33.2%	78.3%	100.0%	34.0%	16.5%	47.3%	76.9%	105.8%	84.4%	141.6%
2012	33.1%	77.9%	100.0%	33.6%	16.3%	47.1%	77.2%	106.3%	77.0%	142.8%
2013	33.0%	77.4%	100.0%	33.1%	16.1%	46.9%	77.5%	106.7%	70.4%	144.6%
2014	32.9%	77.0%	100.0%	32.6%	15.9%	46.7%	77.8%	107.1%	64.5%	146.8%
2015	32.8%	76.5%	100.0%	32.2%	15.7%	46.5%	78.1%	107.5%	60.0%	149.5%
2016	32.4%	76.0%	100.0%	31.8%	15.5%	46.5%	78.4%	107.9%	55.7%	152.1%
2017	32.0%	75.6%	100.0%	31.4%	15.3%	46.4%	78.7%	108.3%	51.9%	154.9%
2018	31.6%	75.3%	100.0%	31.0%	15.1%	46.4%	79.0%	108.8%	48.4%	157.6%
2019	31.2%	74.9%	100.0%	30.7%	15.0%	46.3%	79.3%	109.2%	45.1%	160.2%
2020	30.8%	74.3%	100.0%	30.3%	14.8%	46.2%	79.6%	109.6%	42.3%	163.0%
2021	30.4%	73.8%	100.0%	30.0%	14.6%	46.1%	79.9%	110.0%	39.6%	165.9%
2022	30.1%	73.2%	100.0%	29.7%	14.5%	46.0%	80.2%	110.4%	37.1%	168.9%
2023	29.7%	72.5%	100.0%	29.4%	14.3%	46.0%	80.5%	110.8%	34.7%	172.0%
2024	29.4%	71.9%	100.0%	29.1%	14.2%	45.9%	80.8%	111.2%	32.5%	175.2%
2025	29.0%	71.3%	100.0%	28.8%	14.0%	45.9%	81.1%	111.7%	30.5%	178.5%
2026	28.7%	70.6%	100.0%	28.5%	13.9%	45.9%	81.4%	112.1%	28.6%	181.9%
2027	28.3%	69.9%	100.0%	28.2%	13.7%	45.9%	81.7%	112.5%	26.8%	185.2%
2028	28.0%	69.3%	100.0%	27.9%	13.6%	45.9%	82.0%	112.9%	25.1%	188.5%
2029	27.6%	68.6%	100.0%	27.6%	13.5%	46.0%	82.3%	113.3%	23.5%	191.7%
2030	27.3%	68.0%	100.0%	27.4%	13.4%	46.1%	82.6%	113.7%	22.0%	194.8%
2031	26.9%	67.1%	100.0%	27.1%	13.2%	46.1%	82.9%	114.2%	20.6%	197.6%
2032	26.5%	66.2%	100.0%	26.7%	13.0%	46.0%	83.2%	114.6%	19.4%	200.3%
2033	26.1%	65.5%	100.0%	26.5%	12.9%	46.0%	83.5%	115.0%	18.3%	203.0%
2034	25.7%	64.9%	100.0%	26.2%	12.7%	46.0%	83.8%	115.4%	17.2%	205.7%
2035	25.3%	64.1%	100.0%	25.9%	12.6%	46.0%	84.1%	115.8%	16.3%	208.3%
2036	24.9%	63.3%	100.0%	25.5%	12.4%	45.9%	84.4%	116.2%	15.3%	210.7%
2037	24.5%	62.6%	100.0%	25.2%	12.2%	45.8%	84.7%	116.7%	14.5%	213.0%
2038	24.1%	62.0%	100.0%	25.0%	12.1%	45.8%	85.0%	117.1%	13.8%	215.4%
2039	23.8%	61.5%	100.0%	24.7%	11.9%	45.7%	85.3%	117.5%	13.1%	217.7%
2040	23.4%	61.1%	100.0%	24.5%	11.8%	45.7%	85.6%	117.9%	12.4%	219.9%

Table 19

System Energy, Peak, Sales (billing cycle) and Customer History

Year	Sales (GWH)	Energy (GWH)	Peak (MW)	Net Customers		
2000	9,578	10,269	2,688	513,644		
2001	9,406	9,781	2,484	524,348		
2002	9,485	10,094	2,779	535,118		
2003	9,955	10,583	2,809	547,667		
2004	10,206	10,894	2,672	560,937		
2005	10,604	11,133	2,959	572,832		
2006	10,892	11,688	3,280	582,745		
2007	10,913	11,643	3,099	588,107		
2008	10,959	11,718	3,086	590,607		
2009	10,758	11,448	2,848	593,971		
2010	10,390	11,086	2,990	596,367		
2011	10,459	11,193	2,840	598,730		
2012	10,519	11,240	2,953	602,141		
2013	10,481	11,226	3,014	607,997		
2014	10,586	11,259	3,003	612,592		
Class Sales by Rate Class (GWH)						
Year	**Residential**	**Small C&I**	**Medium**	**Large**	**Other**	**Total**
2000	4,132	3,192	761	1,358	136	9,578
2001	4,024	3,193	744	1,307	137	9,406
2002	4,092	3,260	709	1,286	138	9,485
2003	4,366	3,319	773	1,363	133	9,955
2004	4,409	3,362	799	1,495	142	10,206
2005	4,562	3,482	814	1,610	136	10,604
2006	4,747	3,536	779	1,694	136	10,892
2007	4,635	3,524	821	1,790	143	10,913
2008	4,694	3,478	828	1,806	153	10,959
2009	4,708	3,340	793	1,770	147	10,758
2010	4,504	3,222	755	1,768	140	10,390
2011	4,604	3,224	717	1,776	138	10,459
2012	4,648	3,243	680	1,799	149	10,519
2013	4,639	3,236	655	1,804	147	10,481
2014	4,664	3,233	647	1,883	158	10,586
Customer Accounts by Rate Class						
Year	**Residential**	**Small C&I**	**Medium**	**Large**	**Other**	**Total**
2000	455,455	53,055	293	130	4,712	513,644
2001	464,909	54,504	291	128	4,715	524,348
2002	474,293	55,682	289	126	4,728	535,118
2003	485,858	56,656	304	125	4,725	547,667
2004	497,969	57,743	320	130	4,775	560,937
2005	508,760	58,832	315	131	4,794	572,832
2006	517,369	60,099	307	136	4,834	582,745
2007	521,300	61,452	330	141	4,883	588,107
2008	522,819	62,353	332	149	4,955	590,607
2009	525,784	62,686	331	155	5,016	593,971
2010	528,065	62,781	316	156	5,049	596,367
2011	530,104	63,064	294	154	5,114	598,730
2012	533,318	63,238	291	152	5,142	602,141
2013	538,863	63,510	282	157	5,185	607,997
2014	543,177	63,784	264	149	5,217	612,592

Table 20

Sacramento County Economic and Population History and Forecast

Year	Employment (NAICS), Total Nonfarm (Thous.)	Population (Thous.)	Personal Income (Millions)
1975	261	699	4,679
1976	265	715	5,247
1977	282	732	5,861
1978	301	751	6,699
1979	313	772	7,638
1980	321	790	8,542
1981	328	810	9,451
1982	328	834	10,155
1983	337	855	10,960
1984	352	873	12,356
1985	377	894	13,738
1986	398	921	14,952
1987	417	953	16,212
1988	435	984	17,548
1989	447	1,019	19,258
1990	469	1,078	21,012
1991	474	1,109	22,046
1992	466	1,123	23,123
1993	464	1,129	23,547
1994	477	1,133	24,719
1995	486	1,143	26,168
1996	497	1,158	27,105
1997	510	1,173	28,690
1998	530	1,190	31,068
1999	556	1,210	33,058
2000	569	1,238	36,175
2001	579	1,271	39,497
2002	589	1,305	41,349
2003	591	1,331	44,077
2004	597	1,351	46,770
2005	614	1,363	48,919
2006	627	1,372	51,576
2007	628	1,383	53,773
2008	615	1,396	55,207
2009	584	1,410	54,439
2010	569	1,424	55,177
2011	565	1,437	57,996
2012	578	1,450	60,669
2013	591	1,464	61,601
2014	604	1,479	64,077
2015	618	1,494	67,556
2016	632	1,511	71,841
2017	645	1,528	76,522
2018	656	1,546	81,048
2019	665	1,563	85,364
2020	673	1,581	89,526
2021	679	1,598	93,782
2022	685	1,615	98,154
2023	692	1,631	102,785
2024	699	1,648	107,739
2025	705	1,665	112,834
2026	710	1,681	118,097
2027	718	1,699	123,782
2028	726	1,717	129,784
2029	735	1,735	136,010
2030	744	1,753	142,515
2031	751	1,772	149,434
2032	759	1,791	156,565
2033	767	1,809	164,072
2034	776	1,827	172,026
2035	784	1,844	180,390
2036	793	1,861	189,126
2037	801	1,878	198,308
2038	810	1,896	207,885
2039	818	1,913	217,800
2040	828	1,930	228,208
2041	836	1,948	239,328
2042	845	1,966	250,947
2043	853	1,983	262,960
2044	861	2,001	275,632

Data and Sources

The regression models were estimated with data from SMUD's billing system for the period 2004-2014. The hourly load, daily peak and daily energy models were estimated using hourly load data from SMUD's Energy Management System (EMS) for its retail service territory for the period 1-1-2005 to 8-31-2014.

The "California & Metro Forecast" from the University of the Pacific's Eberhardt School of Business (August 2014) and the California Construction Review (September 2014), Market View Sacramento Office, CB Richard Ellis, Second Quarter 2012, were used to develop the short term (2014-2019) forecast of new customer accounts.

The population, personal income, and employment data is from the IHS Global Insight Regional Forecast for Sacramento County (June 2014).