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Load Impact Evaluation of California's Statewide Base Interruptible Program

Final Report

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1. EXECUTIVE SUMMARY

Each of California's three major investor-owned utilities, Pacific Gas and Electric (PG&E), Southern California Edison (SCE) and San Diego Gas & Electric (SDG&E), offer the Base Interruptible Program (BIP). BIP is a tariff based, emergency-triggered demand response program that the California Independent System Operator (CAISO) can dispatch for system emergencies, and the utilities can dispatch for local emergencies. Customers enrolled in BIP receive incentive payments in exchange for committing to reduce their electrical usage to a contractually-established level referred to as the Firm Service Level (FSL). Participants who fail to reduce their load to their FSL are subject to a financial penalty assessed on a kW per hour basis. Enrollment in BIP in January 2009 equaled 149 accounts for PG&E, 583 accounts for SCE and 20 accounts for SDG&E.

This report documents the ex post and ex ante load impact estimates associated with BIP for all three of California's major investor owned utilities. Ex post estimates are provided for the most recent events for PG&E and SDG&E. Ex ante load impact estimates are provided for SCE and SDG&E for the years 2009 through 2020. PG&E plans to fold BIP customers into the Company's PeakChoice program after 2010. As such, ex ante load impacts for PG&E are presented just for the years 2009 and 2010.

1.1. Ex Post Load Impact Estimates

In 2008, PG&E was the only utility to call a BIP event. A test event was implemented for two hours on August 28th. SDG&E had two events in 2007, when only three customers were enrolled in the program. By agreement with the CPUC, the impacts associated with the two 2007 event days in SDG&E's service territory were to be included in this report. However, considering that only one customer participated in the second event, the impacts are not reported for that event due to customer confidentiality. SCE's last called event was in 2006. Ex post analysis for that event was conducted in conjunction with SCE's Demand Response Program filing for 2009-2011.

The August 28, 2008 event for PG&E lasted two hours, from 3 to 5 pm. The aggregate hourly load drop per hour over the two-hour event period equaled approximately 210 MW. This represents an 83 percent drop relative to the reference load of 252 MW. The load drop exceeded what was required to meet the FSL by roughly five percent.

The September 4, 2007 event for SDG&E lasted four hours for the two customers on Option A (30-minute notification, four hour maximum event duration) and three hours for the one customer on Option B (3 hour notification and maximum event duration of three hours). The aggregate load drop across the three hours from 3 to 6 pm was 1.87 MW and the load drop in the fourth event hour, from 2 to 3 pm, was 1.72 MW.

1.2. Ex Ante Load Impact Estimates

BIP is a large, statewide emergency resource. Table 1-1 shows the amount of DR available statewide in 2010[1] through BIP. For the typical event day and monthly peaks throughout the year, between 915 and 1,013 MW of load reduction is available under 1-in-2 weather year conditions. These results are not significantly different for the 1-in-10 weather year conditions because BIP customers are not

[1] Results for 2010 are reported in this section because PG&E plans to incorporate BIP customers into the Company's PeakChoice program after 2010.

weather sensitive on average. For each day type, around 75 percent of the load reduction comes from SCE, 24 percent from PG&E, and the remaining 0.5 to 1 percent from SDG&E.

Table 1-1 Aggregate Impact per Hour for Event Period (2 to 6 pm) for California BIP Program Participants by Day Type 1-in-2 Weather Year Conditions, Forecast Year 2010				
Day Type	SCE[2] (MW)	PG&E (MW)	SDG&E (MW)	Total (MW)
Typical Event Day	690.6	227.6	5.9	924.1
January Monthly Peak	692.4	216.5	6.2	915.1
February Monthly Peak	694.2	219.3	6.1	919.6
March Monthly Peak	706.3	223.9	6.2	936.4
April Monthly Peak	718.1	227.5	6.1	951.6
May Monthly Peak	717.9	226.2	6.2	950.3
June Monthly Peak	698.4	227.5	5.8	931.7
July Monthly Peak	684.4	227.4	6.1	918.0
August Monthly Peak	693.3	229.7	6.1	929.1
September Monthly Peak	694.4	223.1	5.9	923.5
October Monthly Peak	706.8	218.6	5.9	931.3
November Monthly Peak	780.8	217.5	5.6	1003.8
December Monthly Peak	781.9	225.4	5.6	1012.9

Table 1-2 shows the aggregate impact per hour by local capacity area for a typical event day. More than half (51 percent) of the total resource is located in the LA Basin, where the estimated load reduction potential equals 472.5 MW. The rest of the SCE territory provides an additional 24 percent of the total load impact, split roughly evenly between Outside LA Basin LCA (100.7 MW) and the Ventura LCA (116.9 MW). PG&E's Other LCA provides the second largest load impact with 164.3 MW, or 18 percent of the statewide total. It is the only LCA outside of SCE's territory that provides more than 3.5 percent of the total load impact.

[2] For SCE, aggregate impacts are expected to grow through 2013 due to enrollment growth and the economic recovery. As a result, aggregate impacts for SCE in 2013 are 13 to 19 percent higher on average for the day types reported in Table 1-1.

Table 1-2 Aggregate Impact per Hour for Event Period (2 to 6 pm) for California BIP Program Participants by Local Capacity Area Typical Event Day, 1-in-2 Weather Year Conditions, Forecast Year 2010		
Utility	Local Capacity Area	Load Impact (MW)
SCE	LA Basin	472.5
	Outside LA Basin	100.7
	Ventura	116.9
PG&E	Greater Bay Area	29.1
	Greater Fresno	3.3
	Humboldt	4.3
	Kern	9.8
	Northern Coast	8.0
	Sierra	3.0
	Stockton	5.6
	Other	164.3
San Diego	San Diego	5.9
	Total	924.1

2. INTRODUCTION AND PROGRAM SUMMARY

This report documents the 2008 ex post load impact evaluations for California's statewide Base Interruptible Program ("BIP") and provides ex ante load impact estimates from 2009 through 2020. Each of California's three major investor-owned utilities, Pacific Gas and Electric (PG&E), Southern California Edison (SCE) and San Diego Gas & Electric (SDG&E), offer the BIP program. Although minor differences in the tariffs exist across the three utilities, for all three, BIP is an emergency-triggered demand response program that the California Independent System Operator (CAISO) can dispatch for system emergencies, and the utilities can dispatch for local emergencies. Customers enrolled in BIP receive incentive payments in exchange for committing to reduce their electrical usage to a contractually-established level referred to as the Firm Service Level (FSL). Participants who fail to reduce their load to their FSL are subject to a substantial financial penalty assessed on a kW per hour basis.

Until recently, BIP could only be triggered by the CAISO under Stage 2 emergency conditions (e.g., when operating reserves are less than 5 percent). At the request of the CAISO, the California Public Utilities Commission (CPUC) recently ruled[3] that the three utilities must modify their tariffs to allow the CAISO to call BIP before a Stage 1 emergency once it has exhausted all other options to prevent further degradation of its operating reserves. The other triggering conditions for BIP (local emergencies, Stage 2 alerts or test events) will remain.

In 2008, PG&E was the only utility to call a BIP event. A test event was implemented for two hours on August 28th. SDG&E had two events in 2007. By agreement with the CPUC, the impacts associated with these two event days in SDG&E's service territory were to be included in this report. However, considering that only one customer participated in the second event, the impacts are not reported for that event due to customer confidentiality. SCE's last called event was in 2006. Ex post analysis for this event was conducted in conjunction with SCE's Demand Response Program filing for 2009-2011.[4]

Ex ante impact estimates for all three programs are also provided for a 1-in-2 weather year and a 1-in-10 weather year from 2009 to 2020. The load impact estimates presented here are intended to conform to the requirements of the demand response load impact protocols recently adopted by the CPUC.[5]

2.1. Overview of SCE's BIP Program

SCE's BIP program is designed for customers and aggregators with demands of 200 kW and above. The program includes two notification options: Option A with a 15 minute notification lead time and Option B with a 30 minute notification requirement. Interruption events for an individual BIP customer or aggregated group are limited to no more than one 4-hour event per day, and no more than 120 hours per calendar year. An interruption event may be called at any time during the year.

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[3] CPUC resolution E-4220. January 29, 2009.

[4] Stephen George, Josh Bode and Josh Schellenberg. *Load Impact Estimates for Southern California Edison's Demand Response Program Portfolio*. September 25, 2008.

[5] CPUC D.08-04-050 issued on April 28, 2008 with Attachment A.

SCE's I-6 program was a predecessor interruptible tariff designed for large customers with demands of 500 kW and above; the I-6 tariff has been closed to new enrollments since 1996. Starting in 2006, SCE began transitioning I-6 customers to BIP. The transition was complete by the end of 2008. As of January 31, 2009, SCE had 583 service accounts enrolled in the BIP program. As indicated in Table 2-1, the largest number of accounts is from the manufacturing sector. SCE's service territory includes three CAISO local capacity areas.[6] The vast majority of service accounts (473 out of the 583 BIP accounts) are in the LA Basin LCA; 83 are located in the Ventura LCA and the remaining 27 are in the Outside LA Basin LCA.

Table 2-1
Number of Service Accounts in SCE BIP Program

Industry	Number of Service Accounts
Agriculture, Mining & Construction	67
Manufacturing	331
Wholesale, Transport, other utilities	61
Retail stores	14
Offices, Hotels, Finance, Services	44
Schools	58
Institutional/Government	8
Total	*583*

There were no BIP events in SCE's service territory in 2008. Indeed, the last event called under the I-6/BIP program in SCE's service territory was on July 24, 2006. The event lasted for roughly three hours, from 3:32 pm to 5:37 pm. There were 555 service accounts in the I-6/BIP program at that time and the average load drop over that period was roughly 518 MW.[7] Because there were no events in 2008, ex post load impact estimates for SCE's BIP program are not provided in this report.

Enrollment in SCE's BIP/I-6 program grew significantly, form 519 to 623 customers, between January and November 2008. However, as the last of the customers were transitioned from I-6 to BIP, about 40 customers dropped off the program. Going forward, SCE expects enrollment to grow by five percent per year from 2009 through 2011 and then to stay constant from 2011 through 2020.

2.2. Overview of PG&E's BIP Program

Customers can enroll in PG&E's BIP program either directly or through an aggregator. All directly-enrolled customers electing Option A may also participate in PG&E's Under Frequency Relay (UFR) Program. The UFR Program is not available to customers enrolled through aggregators. Under the UFR Program, customers agree to be subject at all times to automatic interruptions of service caused by an under frequency relay device installed by PG&E. PG&E may require up to three years' written notice for termination of participation in the UFR Program. Customers participating in the UFR program will

[6] Local Capacity Area (or LCA) refers to a CAISO-designated load pocket or transmission constrained geographic area for which a utility is required to meet a Local Resource Adequacy capacity requirement. There are currently seven LCAs within PG&E's service area, 3 in SCE's service territory and 1 in SDG&E's service territory. In addition, there are many accounts not located within any specific LCA. These accounts are categorized here as being in an Other LCA region.

[7] Stephen George, Josh Bode and Josh Schellenberg. *Load Impact Estimates for Southern California Edison's Demand Response Program Portfolio*. September 25, 2008.

receive a demand credit on a monthly basis based on their average monthly on-peak period demand in the summer and their average monthly partial-peak demand in the winter.

The program is designed for customers and aggregators with minimum average monthly demands of at least 100 kW. PG&E offers customers two notification options within its BIP program. Customers enrolled in Option A are notified at least 30 minutes in advance of a BIP event, while those enrolled in Option B are notified at least 4 hours in advance. At present, all customers enrolled in BIP are signed up for Option A. Interruption events for an individual BIP customer or an aggregated group of customers are limited to no more than one 4-hour event per day, no more than 10 events per month, and no more than 120 event hours per calendar year. An interruption event may be called under BIP at any time during the year.

As of January 31, 2009, there were 149 service accounts enrolled in PG&E's BIP program. Table 2-2 shows the distribution of those service accounts by industry grouping. As was true for SCE's program, the largest number of accounts came from the manufacturing sector. Table 2-3 shows the distribution of PG&E BIP accounts across the LCAs within PG&E's service area.

Table 2-2
Number of Service Accounts in PG&E BIP Program by Industry Type

Industry	Number of Service Accounts
Agriculture, Mining & Construction	27
Manufacturing	71
Wholesale, Transport, other utilities	39
Retail stores	1
Offices, Hotels, Finance, Services	8
Schools	1
Institutional/Government	2
Total	*149*

Table 2-3
Number of Service Accounts in PG&E BIP Program by Local Capacity Area

Local Capacity Area	Number of Service Accounts
Greater Bay Area	20
Greater Fresno	6
Humboldt	7
Kern	16
Northern Coast	17
Sierra	7
Stockton	9
Other	67
Total	*149*

There was one test event held for PG&E's BIP program in 2008. That event occurred on August 28th and lasted for two hours, from 3 to 5 pm. The ex post analysis for PG&E, presented in Section 5-2, pertains to this single event.

PG&E plans to incorporate BIP customers into the Company's PeakChoice program after 2010. As such, ex ante load impacts for PG&E are presented just for the years 2009 and 2010. Enrollment is assumed to stay constant at the current level for those two years.

2.3. Overview of SDG&E's BIP Program

SDG&E's BIP is a voluntary program that offers participants a monthly capacity bill credit in exchange for committing to reduce their demand to a contracted FSL on short notice during emergency situations. SDG&E offers two options that vary with respect to the notification period, number and duration of allowed events and incentive payments:

- BIP-A (Option A): Requires load reduction response in 30 minutes. Incentive payments are $7/kW. The maximum event length is 4 hours per day and the maximum number of events is 10 per month and 120 hours per calendar year.

- BIP-B (Option B): Requires load reduction response in 3 hours. Incentive payments are $3/kW. The maximum event length is 3 hours per day and the maximum number of events is 10 per month and 90 hours per calendar year.

Participation in SDG&E's program has been low but it is increasing. There was one participant in 2006 and three participants in 2007. Participation grew from 3 to 20 participants in 2008. The current distribution of service accounts by industry is shown in Table 2-4. There is only one LCA in SDG&E's service territory.

Table 2-4
Number of Service Accounts in SDG&E BIP Program

Industry	Number of Service Accounts
Agriculture, Mining & Construction	0
Manufacturing	5
Wholesale, Transport, other utilities	2
Retail stores	2
Offices, Hotels, Finance, Services	9
Schools	0
Institutional/Government	2
Total	*20*

SDG&E did not have any BIP events in 2008. This report examines the ex post impacts for 2007. There were two events in 2007 when only 3 customers participated in the program. One event occurred on September 4, 2007. The event lasted for four hours and involved all three participants. The second event, on October 24th, involved only one customer because only Option B was triggered. Section 4 presents load impact estimates for the first of these two events. Customer confidentiality prevents us from reporting the impact for the event that included only one customer. The very small number of customers also prevents us from reporting impacts by industry.

The ex ante load impact estimates for SDG&E assume that enrollment will not change over the forecast horizon.

2.4. Report Structure

The remainder of this report is organized as follows. Section 3 discusses the methodology for the evaluations and presents model accuracy and validity assessments for each utility. Sections 4, 5 and 6 include the ex ante and ex post (if applicable) load impact estimates for each utility respectively and section 7 contains recommendations for future evaluations. Appendix A discusses differences in the model specification used for the ex post and ex ante analysis. Appendices B through C contain hourly impact tables for the average customer and for all customers combined for the monthly system peak day in July and August for the forecast years over which impacts vary. The first page of each appendix

also describes the various customer segments, geographic regions, day-types and weather conditions for which load impacts were developed. These additional tables have been provided to the CPUC on a CD-Rom and will be posted on the CALMAC web site at CALMAC.org.

3. METHODOLOGY

3.1. Model Development

For demand response resources that have numerous events, regression analysis can be used to estimate the typical (absolute or percentage) load reduction associated with events as a function of event-day conditions (e.g., weather, day-of-week, etc.). These regression models can then be used to predict either ex ante or ex post impacts as a function of the conditions that occurred on those historical days or that are expected to occur on future days on which program events are most likely to be called.

With DR resources for which there is little event history, and certainly for ones like BIP where there were only two event days for each utility over several years, this regression based method cannot be used to predict load reductions. However, for ex ante load impact estimation purposes, regression analysis can be used to predict the reference load (i.e., the load that would occur in the absence of a program event), and the expected load reductions from those customers given their FSL. For ex post load impact estimation purposes, regression analysis can be used to predict the reference load for the historical event day, and the actual metered load for that day can be subtracted from the reference load to estimate the load impact. The remainder of this section focuses on the ex ante analysis methodology. The ex post analysis methodology used to estimate impacts for the 2008 PG&E event and the 2007 SDG&E events is discussed in more detail in Appendix A.

For ex ante analysis, the estimated load reduction for BIP is a function of:

- Forecasted load in the absence of a DR event (i.e. the reference load);
- The participant's FSL; and;
- Over/under performance relative to the FSL.

The reference load is estimated using a regression model discussed below. The FSL is based upon each currently enrolled participant's FSL. Over/under performance relative to the FSL is determined for each industry using historical event data from SCE and PG&E. Although this little event history cannot be used in a regression to predict the observed load (i.e. the load with DR), it can be used to adjust the observed load relative to the FSL. By subtracting the observed load from the reference load, the ex ante load impact can be estimated. More details on the over/under performance adjustment are provided in Section 3.2.

If load impacts only had to be reported for the BIP program as a whole or for the average customer, a single regression model could be estimated and used to predict the aggregate load for all participants. However, because each IOU is required to provide estimates when possible for each of eight industry groupings and for each LCA, an alternative approach is needed. The available alternative approaches include estimating separate regression models of the aggregate load for each industry group and LCA, estimating regressions for panels of customers with numerous interaction terms representing the industry and LCA groupings, or estimating individual customer-specific regression models. Given the large number of variables required to estimate loads by hour, day and season and to capture variation due to weather, using a panel regression with numerous interaction terms would be unwieldy and hard to interpret. Furthermore, panel regressions would not reveal variation in effects across customers within industry or LCA groups. Given the relatively small number of customers in each utility's BIP program, estimating individual customer regressions was straightforward and provided complete

flexibility with regard to different levels of aggregation. Therefore, that was the method used for the load impact analysis presented below.

The regression models used to predict reference loads were developed with the primary goal of accurately predicting the average customer load given time-of-day, day-of-week, month, and temperature. Given that all BIP customers are on TOU rates, rate period variables were also included in the model specification. Dynamic lags – using load in prior periods to predict load at time *t* – were included in the ex post analysis for 24 hours prior and one week prior. These lags were not used in the ex ante analysis methodology presented in this section because the actual load 24 hours to one week prior is unknown when forecasting load many years forward. The estimated models were based on hourly load data for each customer from 2005 to 2008 for PG&E and SCE. For SDG&E, only 2007 and 2008 data is used because, as noted above, there was only one customer enrolled in the BIP program before 2007.

The dependent variable in the ex ante regression model was the kW load in each hourly interval for each participant. The regression model contained more than 250 variables, consisting largely of shape and trend variables (and interaction terms) designed to track variation in load across days of the week and hours of the day. Weather variables were tested and had significant impacts for certain customers. Binary variables representing when the underlying TOU rates changed during the day and season were also included to capture the change in load due to price variation. Mathematically, the regression model can be expressed as:

$$
\begin{aligned}
kW_t = {} & a + b^{SummerOn} SummerOn_t + b^{SummerMid} SummerMid_t + b^{SummerOff} SummerOff_t \\
& + b^{WinterOff} WinterMid_t + \sum_{i=2}^{12} b^{month_i} month_i + \sum_{i=2}^{24}\sum_{j=1}^{5} b^{hour_i * day_j} hour_i * daytype_j \\
& + \sum_{i=2}^{24} b^{hour_i * CDH} hour_i * CDH_t + \sum_{i=2}^{24} b^{hour_i * CDHsqr} hour_i * CDHsqr_t \\
& + \sum_{i=2}^{24} b^{hour_i * nightTEMP} hour_i * nightTEMP_t + \sum_{i=2}^{24}\sum_{j=1}^{2} b^{hour_i * Event_j} hour_i * Event_j \\
& + b^{year2008} year2008_t + e_t
\end{aligned}
$$

In this equation,

kW_t represents the hourly BIP customer load at time t;

the b's are estimated parameters;

$SummerOn_t$, $SummerMid_t$, $SummerOff_t$ and $WinterMid_t$, are binary variables that indicate which rate block is in effect for each hour;

$month_i$ is a series of binary variables for each month;

$daytype_j$ is a series of binary variables representing five different day types (Mon, Tues-Thurs, Fri, Sat, Sunday/Holiday);

CDH_t is the number of cooling degree hours in interval t;

$CDHsqr_t$ is the number of cooling degree hours squared;

$nightTEMP_t$ is the average temperature from 12 am to 6 am for each day;

$Event_j$ is a binary variable representing each event day[8];

$year2008_t$, is a binary variable for the year2008, which captures the downturn in economic conditions during that year, and;

e_t is the error term.

Load was significantly lower in 2008 for many BIP customers across all three utilities due to changes in overall economic conditions. The binary variable representing 2008 was highly significant for some consumers and not for others.[9] If these conditions were not accounted for in the model, there would be a downward bias in the forecasted reference load, assuming that economic growth rebounds from 2008. Each utility had its own assumptions concerning when the economy, and hence electric load, would return to more normal levels.

For SCE, economic growth is assumed to recover from 2008 levels by 2013. Therefore, average reference loads and load impacts increase linearly from 2009 to 2013, and are the same as 2013 after that Since the estimating sample includes three years prior to 2008, load will recover to 2005 to 2007 levels. For customers that did not experience a decline in 2008, load is held constant at 2008 levels.

For PG&E, its return to 2005 to 2007 levels is more aggressive, by 2011.[10] Therefore, average reference loads and load impacts increase linearly from 2009 to 2011. For SDG&E, which has a much smaller customer mix, the ex ante forecasts are based on 2008 conditions because the small sample size made it impossible to determine whether a customer had dropped load due to the economic downturn or had a permanent change in their business practices. Therefore, the average ex ante load impact estimates do not vary by forecast year as no upturn in economic conditions is assumed.

3.2. Over/under Performance Adjustment

In addition to estimating the reference load for the ex ante load impacts, historical event day behavior was analyzed and incorporated into the results to adjust for over/under performance. This adjustment was only made for the SCE and PG&E ex ante load impact estimates, however, because SDG&E did not have enough BIP customers or event data to reliably model event day behavior.

For SCE and PG&E, data was pooled across events from 2006 to 2008. This data included the July 24, 2006 event, for which load and FSL information was available for 102 PG&E customers and 508 SCE customers, and the August 28, 2008 PG&E test event, for which load and FSL information was available for 141 PG&E customers.[11] The August 25, 2005 SCE event was not included because it

[8] Each utility had two events during the time period included in the estimation.

[9] There was not sufficient load data available for about 15 percent of the sample to compare 2008 load with load in prior years. As such, no adjustment to normal conditions was possible for these customers.

[10] Although the recovery is expected by 2011, load impact estimates for PG&E are not reported after 2010.

[11] SCE BIP customers did not participate in the August 28, 2008 event.

only lasted for about an hour and a half. After pooling the event data, the load shape pattern was determined for each industry and incorporated into the ex ante load impact estimates. During the event hours, customers in manufacturing, agriculture, mining & construction, and wholesale, transport, other utilities perform as expected. Retail Stores and schools tended to under perform. Customers that are institutional/government or offices, hotels, finance, services tended to over perform. In aggregate, for each event, there was a slight over performance.

Although the main purpose of this exercise was to determine over/under performance by industry during the event hours, it provided additional information on electric load during pre-event and post-event hours, which was also incorporated into the estimates. As a result, SCE and PG&E estimates show moderate load shifting to pre-event hours. After the event, however, aggregate load does not return to the level of the reference load until 11pm, which is 5 hours aver the event ends. This means that there are substantial load impacts after the event ends.

For SDG&E, the ex ante load impact was determined simply by decreasing usage from the reference load to the FSL when the event begins, and then increasing it back up to the reference load in the hour after the event. Although this event day behavior is not as realistic, it was the most reliable methodology considering that the program has little event history and few participants.

3.3. Enrollment Forecasts

For PG&E and SDG&E, the BIP customer mix and number of customers are not expected to change. PG&E remains at 149 customers throughout the forecast period and SDG&E remains at 20. The number of customers in each industry does not change either. For SCE, the number of participants in the BIP program is expected to grow by 5 percent per year through 2011, as Table 3-1 shows. After 2011, the customer mix and number of customers remains the same as in December 2011. This growth rate is assumed to be the same across all industries, with manufacturing comprising 384 out of 677 customers (57 percent) from 2012 onward.

Table 3-1
SCE BIP Enrollment Forecast by Local Capacity Area

Month and Year	LA Basin	Ventura	Outside LA Basin	Total
Dec-08	473	83	27	583
Jan-09	475	83	27	585
Feb-09	477	84	27	588
Mar-09	479	84	27	590
Apr-09	481	84	27	593
May-09	483	85	28	595
Jun-09	485	85	28	598
Jul-09	487	85	28	600
Aug-09	489	86	28	603
Sep-09	491	86	28	605
Oct-09	493	87	28	608
Nov-09	495	87	28	610
Dec-09	497	87	28	613
Jan-10	499	88	28	615
Feb-10	501	88	29	618
Mar-10	503	88	29	621
Apr-10	506	89	29	623
May-10	508	89	29	626
Jun-10	510	89	29	628
Jul-10	512	90	29	631
Aug-10	514	90	29	634
Sep-10	516	91	29	636
Oct-10	518	91	30	639
Nov-10	520	91	30	642
Dec-10	523	92	30	644
Jan-11	525	92	30	647
Feb-11	527	92	30	650
Mar-11	529	93	30	652
Apr-11	531	93	30	655
May-11	534	94	30	658
Jun-11	536	94	31	660
Jul-11	538	94	31	663
Aug-11	540	95	31	666
Sep-11	543	95	31	669
Oct-11	545	96	31	672
Nov-11	547	96	31	674
Dec-11	549	96	31	677

3.4. SCE Model Accuracy and Validity Assessment

Although regressions were run for each individual customer in SCE's BIP program for which data were provided, what matters most is that the reference loads for all customers combined, or for selected

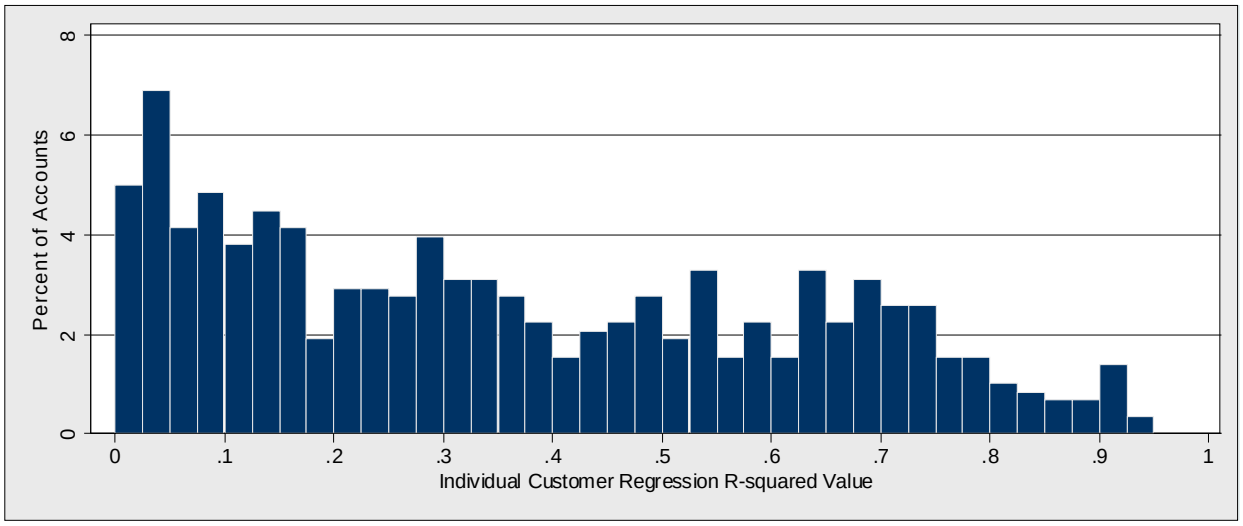
groups of customers (e.g., industry types, LCA area) are accurate. Given that load impacts are calculated as the difference between the reference load and the FSL (with some adjustments), any error in the estimated reference load would cause an error in the estimated load impact.

3.4.1. Goodness of Fit Measures

Although the regressions were estimated at the individual customer level, from a policy standpoint, the focus is less on how the regressions perform for individual customers than it is on how the regressions perform for the average participant and for specific customer segments. Overall, individual customers exhibited more variation and less consistent energy use patterns than the aggregate participant population. Likewise, the regressions explained better the variation in electricity consumption and load impacts for the average customer (or average customer within a specific segment) than for individual customers. Put differently, it is more difficult to explain fully how a customer from a specific industry behaves on an hourly basis than it is to explain how the average customer in that industry behaves on an hourly basis. Because of this, we present measures of the explained variation, as described by the R-squared goodness-of-fit statistic, for the individual regressions for specific customer segments and for the average customer overall.

Figure 3-1 shows the distribution of R-squared values from the individual customer regressions. About one third of the individual customer regressions had R-squared values below 0.2, whereas the upper one third of all individual regressions had R-squared statistics exceeding 0.5.

Figure 3-1
Distribution of R-squared Values from Individual Regressions



In order to estimate the average customer R-squared values for each industry, LCA or the program as a whole, the regression-predicted and actual electricity usage values were averaged across all customers for each date and hour. This process produced regression predicted and actual values for the average customer, which enabled the calculation of errors for the average customer and the calculation of the

R-squared value. The R-squared values for the average participant and for the average customer by segment were estimated using the following formula:[12]

$$R^2 = 1 - \frac{\sum_t (\hat{y}_t - y_t)^2}{\sum_t (\hat{y}_t - \bar{y})^2}$$

Where: y_t is the actual energy use at time t

$\hat{y}_t$ is the regression predicted energy use at time t

$\bar{y}$ is the actual mean energy use across all time periods.

Table 3-2 summarizes the amount of variation explained by the regression model for the average customer in specific segments. In aggregate, the model explained nearly 70 percent of the variation in energy use. The explained variation varied from 19 to 91 percent across industries. Two industries in particular have significantly lower R-squared values – agriculture, mining and construction (0.19) and wholesale, transport and other utilities (0.35). These two industries comprise 44 percent and 40 percent of the customer mix in the Outside LA Basin and Ventura LCAs, respectively. In the LA Basin LCA, the percentage is only 18 percent. This explains why the R-squared value is higher in the LA Basin LCA, where 80 percent of the BIP customers are located.

Table 3-2
R-squared Values for the Average Customer by Segment

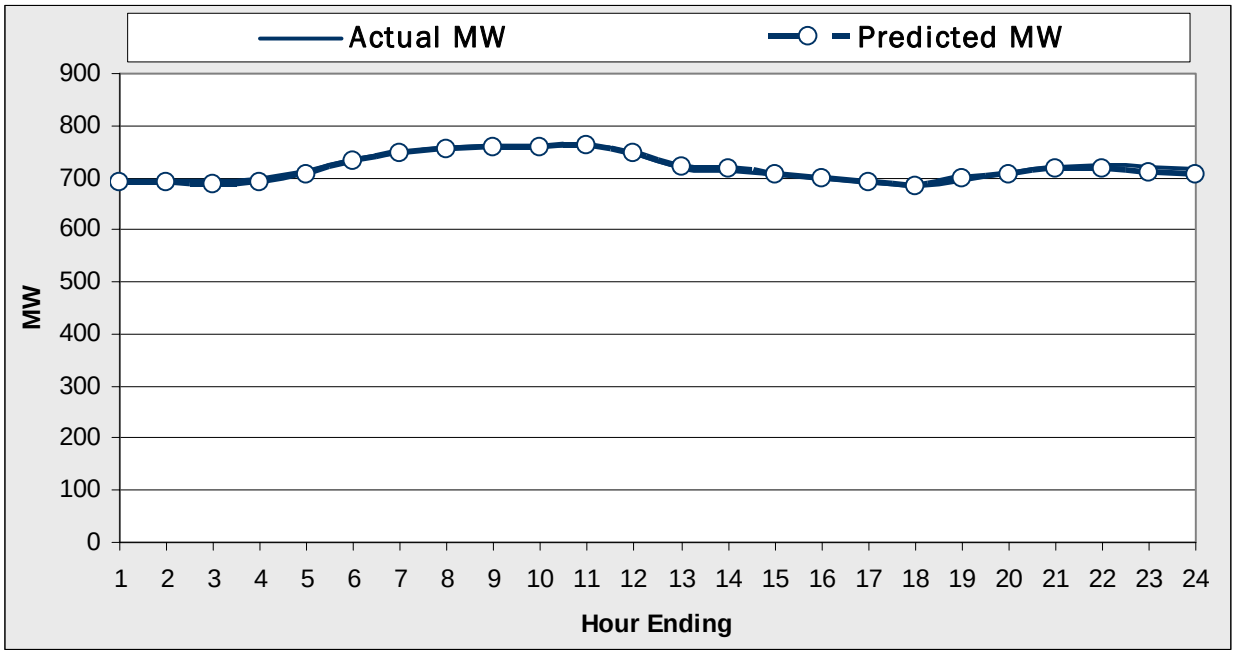
Customer Segment	R-squared
All Customers	0.68
Industry	
Agriculture, Mining & Construction	0.19
Institutional/Government	0.89
Manufacturing	0.59
Offices, Hotels, Finance, Services	0.86
Retail Stores	0.87
Schools	0.91
Wholesale, Transport, other utilities	0.35
Local Capacity Area	
LA Basin	0.67
Outside LA Basin	0.29
Ventura	0.38

[12] Technically, the R-squared value needs to be adjusted based on the number of parameters and observations from each regression. Given that the number of observations per regression was typically over eight thousand, the effects of the adjustment were anticipated to be minimal. As a result, the unadjusted R-squared is presented in order to avoid the complication of tracking the number of observations and parameters from each individual regression.

3.4.2. Comparison of Predicted and Actual Loads

Figure 3-2 compares the actual and predicted load for each hour on an average summer weekday among the currently enrolled SCE BIP customers. As seen in the figure, the model does a very good job of predicting load during summer weekdays. The difference between actual and predicted load exceeded 1.5 percent in only one hour (2.2 percent between 11 pm and midnight) and averaged less than 1 percent across all hours.[13] More importantly, the percentage error is lowest during the middle hours of the day when events are most likely to be called. Between 2 pm and 6 pm, the average error was only 0.2 percent.

Figure 3-2
Actual v. Predicted Aggregate Load by Hour for SCE BIP Customers
Average Summer Weekday (2005 – 2008)[14]



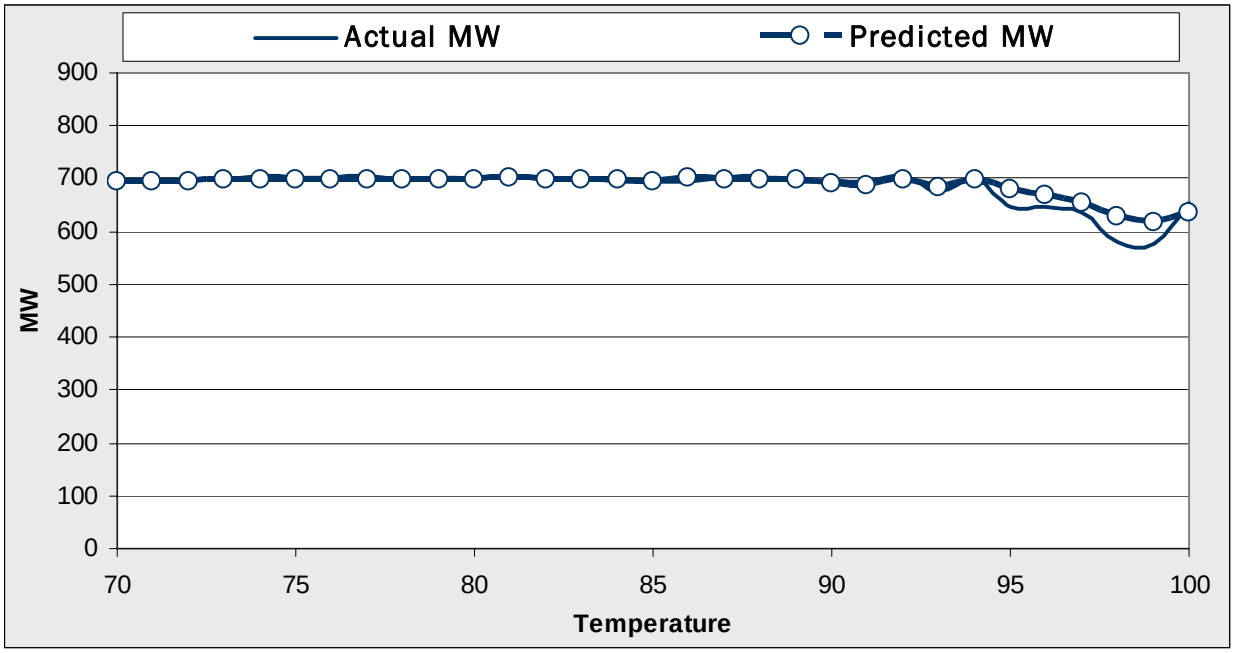
Although many BIP customers are not highly weather sensitive, it is still useful to assess how well the aggregate model predicts under different temperature conditions. As seen in Figure 3-3, the aggregate model also predicts well across various temperatures, with the average error for temperatures between 70 to 100 degrees equal to 1.4 percent. The model slightly over predicts from 95 to 100 degrees, where the average error was 5 percent. The dip in load at high temperatures reflects the fact that nearly all of these temperatures occur in the afternoon, when peak-period prices are in effect. That is,

[13] Although individual customer regressions were run and underlie the impact estimates, the figure represents the aggregate estimates for all enrolled customers.

[14] Note that there are two lines on the graph, but due to the small error between estimated and actual values, it is difficult to distinguish the two lines.

the high temperatures are correlated with high prices that depress demand below what it would be at the same temperature with off-peak prices in effect.

Figure 3-3
Actual v. Predicted Aggregate Load by Temperature for SCE BIP Customers

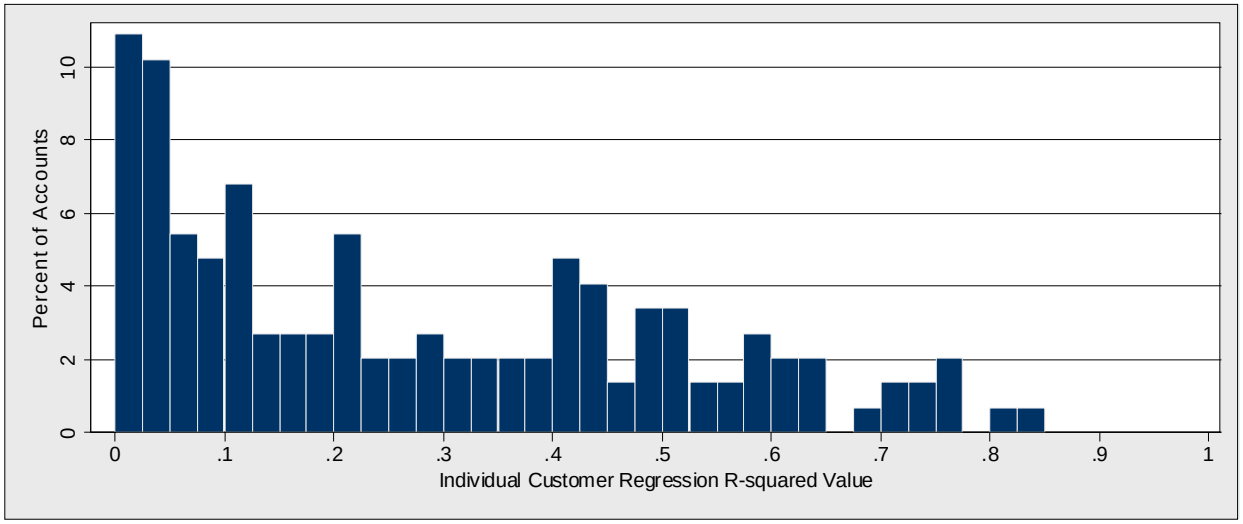


3.5. PG&E Model Accuracy and Validity Assessment

3.5.1. Goodness of Fit Measures

Figure 3-4 shows the distribution of R-squared values from the individual customer regressions for PG&E. About one third of the individual customer regressions had R-squared values below 0.1, whereas 20 percent of all individual regressions had R-squared statistics exceeding 0.5.

Figure 3-4
Distribution of R-squared Values from Individual Regressions



In spite of some low R-squared values at the individual customer level, the explained variation is quite high for the average customer overall, by industry segment and by LCA. In fact, in aggregate, the model explains nearly 80 percent of the variation in energy use. Interestingly, the aggregate R-squared value for PG&E is higher than in the SCE model even though the individual R-squared values are lower on average. When aggregating the predicted and actual values across all customers, the errors in the individual results offset each other out and produce even more explanatory power than in the SCE model.

Table 3-3 summarizes the amount of variation explained by the regression model for the average customer in specific segments. Overall, depending on the specific group assessed, between 42 and 86 percent of the variation is explained. Customers in the wholesale, transport and other utilities industry have the lowest R-squared value. Since 10 out of 16 customers in the Kern LCA are from the wholesale, transport and other utilities industry, the R-squared value is also low in this region. In the other industries and LCAs, 59 percent or more of the variation in hourly energy use is explained.

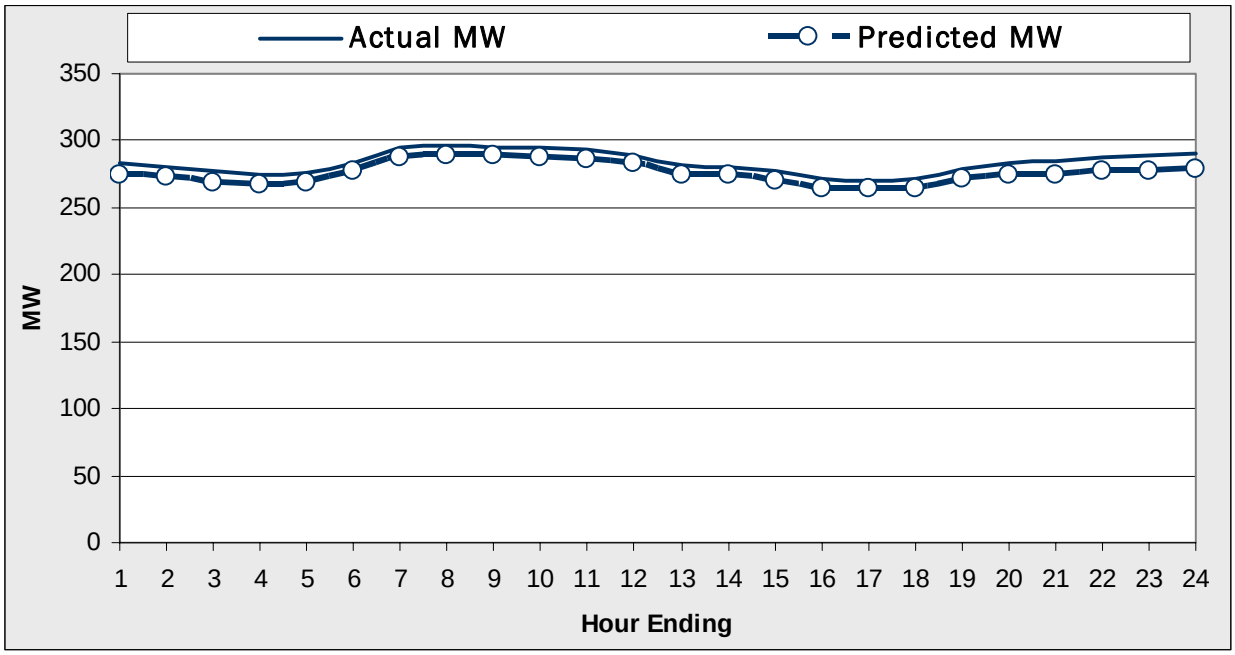
Table 3-3
R-squared Values for the Average Customer by Segment

Customer Segment	R-squared
All Customers	0.79
Industry	
Agriculture, Mining & Construction	0.70
Manufacturing	0.72
Offices, Hotels, Finance, Services	0.85
Wholesale, Transport, other utilities	0.42
Local Capacity Area	
Greater Bay Area	0.59
Greater Fresno	0.67
Humboldt	0.72
Kern	0.42
Northern Coast	0.86
Sierra	0.81
Stockton	0.77
Other	0.68

3.5.2. Comparison of Predicted and Actual Loads

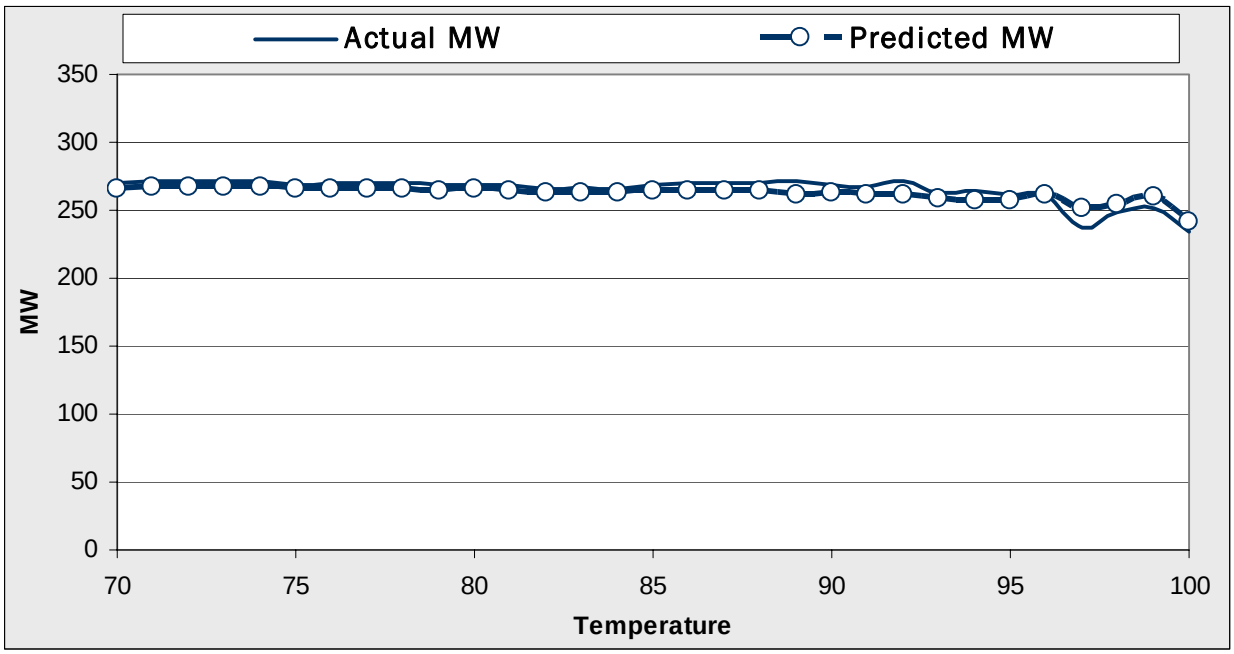
Figure 3-5 compares the actual and predicted load for each hour on an average summer weekday among the currently enrolled PG&E BIP customers. As seen in the figure, the model does a good job of predicting load during summer weekdays, although there is a slight downward bias. The percentage error averages 2.8 percent and is slightly lower during the middle hours of the day when events are most likely to be called. Between 2 pm and 6 pm, the average error was 2.5 percent. This error will result in a slight under estimation of load impacts for this group of BIP customers.

Figure 3-5
Actual v. Predicted Aggregate Load by Hour for PG&E BIP Customers
Average Summer Weekday (2005 – 2008)



As seen in Figure 3-6, the aggregate model also predicts well across various temperatures, with the average error in the temperature range between 70 and 100 degrees equal to 2.0 percent. As with SCE, the model slightly over predicts at higher temperatures. From 95 to 100 degrees, the average error was 3 percent.

Figure 3-6
Actual v. Predicted Aggregate Load by Temperature for PG&E BIP Customers

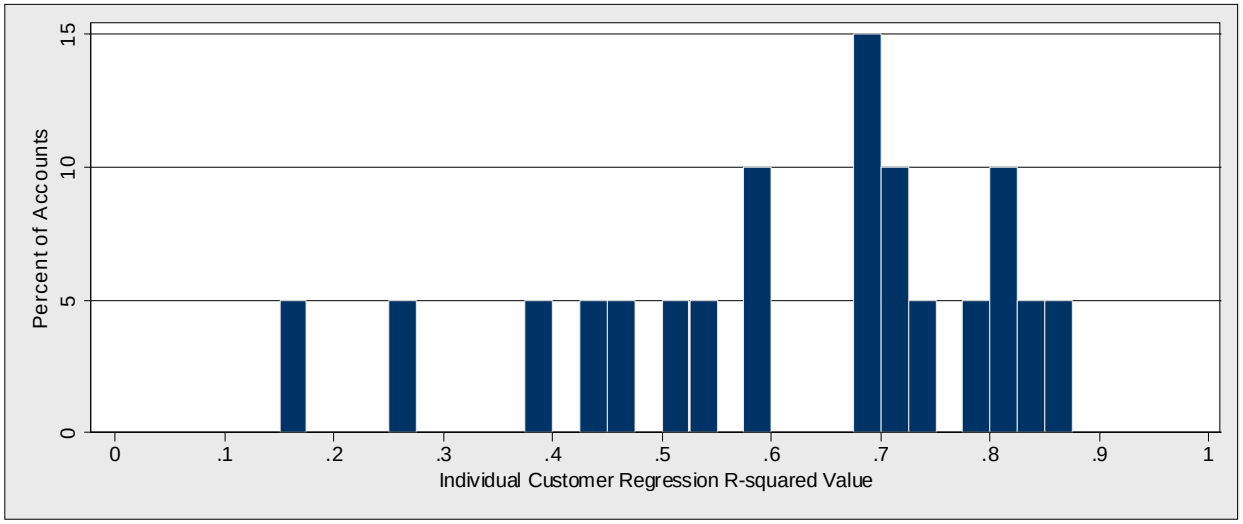


3.6. SDG&E Model Accuracy and Validity Assessment

3.6.1. Goodness of Fit Measures

Figure 3-7 shows the distribution of R-squared values from the individual customer regressions for SDG&E's 20 BIP participants. The individual regressions do a good job of explaining variation in customer load, with 75 percent having R-squared statistics exceeding 0.5. The lowest R-squared value was 0.16. The overall R-squared value was 0.8, which is similar to the PG&E model. For the two industries that comprised more than two customers, Manufacturing and Offices, Hotels, Finance, Services, the R-squared values were 0.84 and 0.71 respectively.

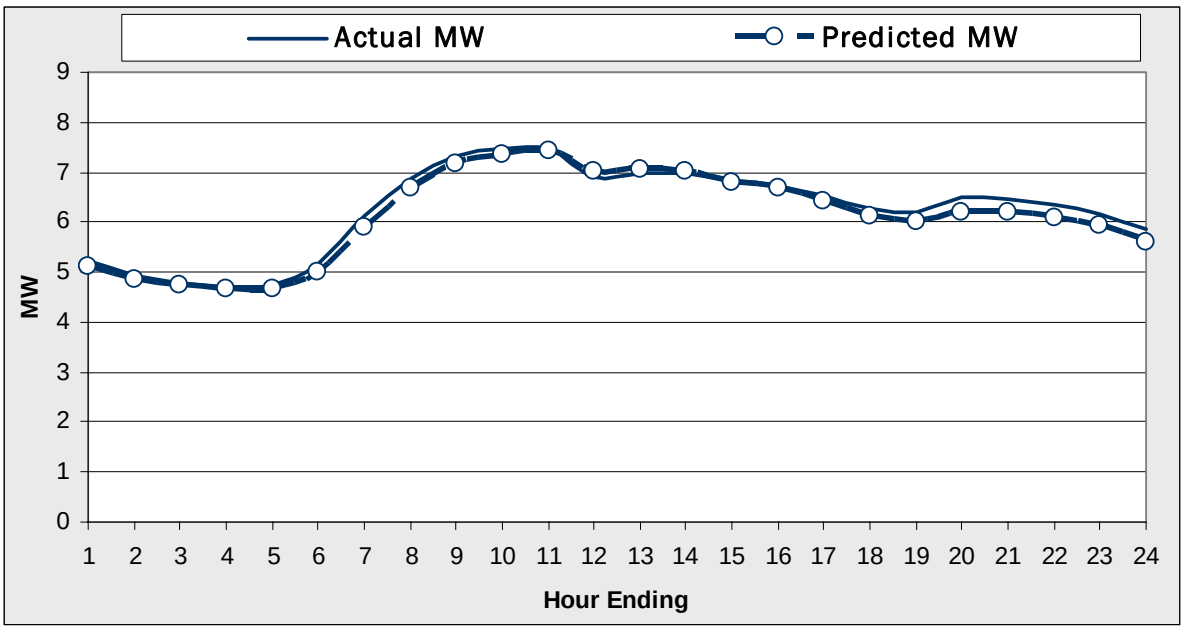
Figure 3-7
Distribution of R-squared Values from Individual Regressions



3.6.2. Comparison of Predicted and Actual Loads

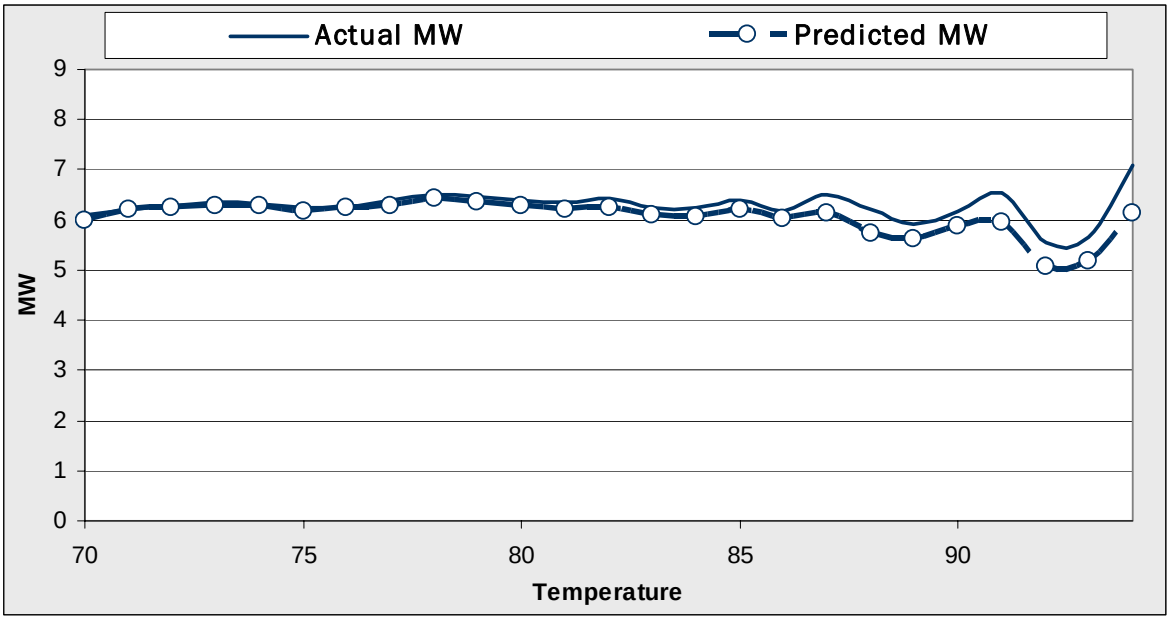
Figure 3-8 compares the actual and predicted load for each hour on an average summer weekday among the currently enrolled SDG&E BIP customers. As seen in the figure, the model does a good job of predicting load during summer weekdays, although there is a slight downward bias during later hours. The percentage error averages 2.2 percent and is lower during the middle hours of the day when events are most likely to be called. Between 2 pm and 6 pm, the average error was 1.2 percent.

Figure 3-8
Actual v. Predicted Aggregate Load by Hour for SDG&E BIP Customers
Average Summer Weekday (2007 – 2008)



As seen in Figure 3-9, the aggregate model also predicts well across various temperatures, with the average error from 70 to 94 degrees equal to 3.6 percent. As with SCE and PG&E, the model slightly over predicts at higher temperatures. Above 90 degrees, the average error was 8.7 percent. Considering that individual regressions were only estimated for 20 SDG&E BIP customers, it is not surprising that the model does not predict as well as it did for SCE and PG&E.

Figure 3-9
Actual v. Predicted Aggregate Load by Temperature for SDG&E BIP Customers



4. SCE LOAD IMPACT ANALYSIS

This section provides a high level summary of the load impacts associated with SCE's BIP program. As required by the California load impact protocols and subsequent direction from the CPUC and DRMEC, estimates have been developed for each hour of an event day for numerous day types (e.g., typical day, monthly system peak days) under various weather conditions (e.g., 1-in-2 and 1-in-10 year weather) for various industry groups and LCAs for each forecast year for both the average customer and for all customers in the program. There are literally thousands of tables produced that contain very detailed estimates, as delineated in the first page of appendices 2 through 4, which list all of the hourly impact tables that are available. The appendices also contain selected hourly impact tables.

This section focuses on the big picture—what is the general magnitude of the BIP resource for SCE (and, in Sections 5 and 6, for PG&E and SDG&E). While a couple of examples of the hourly tables are provided, most of the discussion focuses on the average reduction across the assumed typical event window (four hours from 2 to 6 pm) for selected day types, industry groups, LCAs and forecast years. With respect to the latter, estimates are provided for each forecast year in which either the average impact per customer changes (e.g., due to changing economic conditions), enrollment changes, or both.

4.1. Ex Ante Load Impact Estimates

Figures 4-1 and 4-2 show the estimated reference load and the predicted load after customers respond to the BIP event[15] for an average customer for the typical event day based on 1-in-2 and 1-in-10 year weather conditions for the year 2013. Impacts are reported for 2013 in SCE's case because that is the last year in which program enrollment and average impacts change over the forecast horizon. Put another way, in each year prior to 2013, either enrollment, average impacts or both change from year to year but from 2013 to 2020, these statistics do not change.

As seen in the figures, in a normal weather year (e.g., 1-in-2), on a typical event day, the estimated load impact starts at 1185.6 kW in the first event hour and then drops off slightly to 1162.2 kW in the final event hour ending at 6 pm. Throughout the event period, the average load impact per hour is 1173.3 kW. Recall that these load impacts are based on the FSL after adjusting for over/under compliance for each industry. Although the load impact is larger during the first hour of the event, the observed load does not fall below the FSL (201 kW) until the second event hour. Overall, the average observed load per hour is 190.5 kW, which is 5 percent below the FSL. This suggests that SCE BIP customers may be slow in getting down to the FSL in the first event hour, but then overcompensate in the following 3 event hours Indeed, the observed load in the final event hour ending at 6 pm is 176.2 kW, which is 12.3 percent below the FSL

Based on 1-in-10 year weather conditions, the load impact pattern over the four hour period is very similar to that in a 1-in-2 weather year. The average load impact across the four hours is 1173.9 kW, which is only 0.6 kW greater than for 1-in-2 year weather conditions. Put another way, these large customers are not weather sensitive on average.

[15] Referred to in the table as observed load, although it is not observed in an ex ante context.

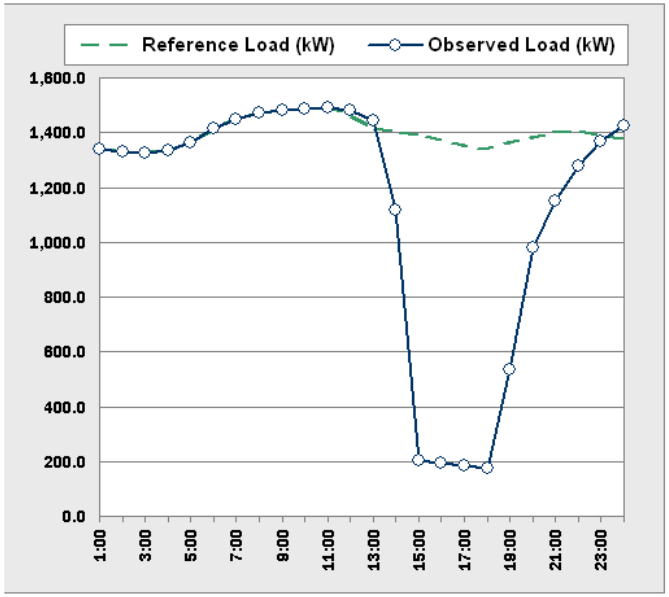
Figure 4-1
SCE BIP Average Load Impact per Customer in 2013
for a Typical Event Day Based on 1-in-2 Year Weather Conditions

TABLE 1: Menu options

Type of Results	Average Enrolled Account
Weather Year	1-in-2 (2002)
Forecast Year	2013
Day Type	TYPICAL EVENT DAY - Top 15
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	677
Average FSL (kW)	201
Proxy Date	N/A



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (kW)	Observed Load (kW)	Load Impact (kW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	1338.0	1338.0	0.0	70.1	-7.7	-3.2	0.0	3.2	7.7
2:00	1331.2	1331.2	0.0	69.2	-7.7	-3.2	0.0	3.2	7.7
3:00	1327.8	1327.8	0.0	68.3	-7.7	-3.2	0.0	3.2	7.7
4:00	1332.8	1332.8	0.0	67.5	-7.7	-3.2	0.0	3.2	7.7
5:00	1365.1	1365.1	0.0	66.9	-7.7	-3.2	0.0	3.2	7.7
6:00	1415.8	1415.8	0.0	66.6	-7.7	-3.2	0.0	3.2	7.7
7:00	1447.9	1447.9	0.0	66.5	-7.7	-3.2	0.0	3.2	7.7
8:00	1474.1	1474.1	0.0	68.6	-7.7	-3.2	0.0	3.2	7.7
9:00	1483.5	1483.5	0.0	72.6	-7.7	-3.2	0.0	3.2	7.7
10:00	1487.7	1487.7	0.0	77.2	-7.7	-3.2	0.0	3.2	7.7
11:00	1491.9	1491.9	0.0	81.7	-7.7	-3.2	0.0	3.2	7.7
12:00	1467.9	1482.9	-15.0	84.6	-22.7	-18.1	-15.0	-11.8	-7.3
13:00	1417.7	1443.4	-25.7	86.6	-33.5	-28.9	-25.7	-22.6	-18.0
14:00	1407.9	1118.1	289.8	87.8	282.1	286.7	289.8	293.0	297.6
15:00	1390.4	204.7	1185.6	88.0	1177.9	1182.4	1185.6	1188.8	1193.3
16:00	1371.5	195.2	1176.3	87.5	1168.5	1173.1	1176.3	1179.4	1184.0
17:00	1355.0	185.7	1169.2	86.1	1161.5	1166.1	1169.2	1172.4	1177.0
18:00	1338.4	176.2	1162.2	84.1	1154.5	1159.1	1162.2	1165.4	1170.0
19:00	1361.9	532.9	829.0	81.1	821.3	825.8	829.0	832.2	836.7
20:00	1380.3	978.8	401.4	77.7	393.7	398.2	401.4	404.6	409.1
21:00	1402.6	1149.6	253.1	74.8	245.4	249.9	253.1	256.3	260.8
22:00	1403.9	1276.1	127.8	73.1	120.1	124.6	127.8	131.0	135.5
23:00	1389.6	1370.1	19.5	71.7	11.8	16.4	19.5	22.7	27.3
0:00	1379.7	1424.8	-45.2	70.5	-52.9	-48.3	-45.2	-42.0	-37.4

	Reference Energy Use (kWh)	Observed Energy Use (kWh)	Change in Energy Use (kWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	33,562.5	27,034.4	6,528.1	165.4	6490.3	6512.6	6528.1	6543.6	6566.0

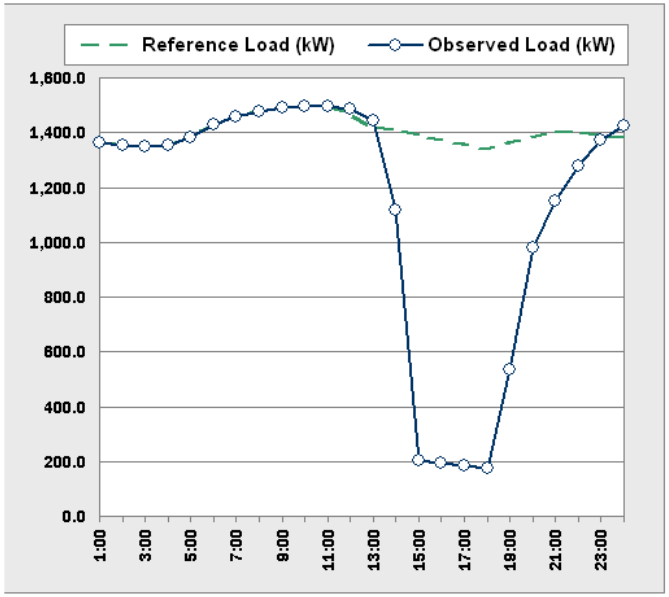
Figure 4-2
SCE BIP Average Load Impact per Customer in 2013
for a Typical Event Day Based on 1-in-10 Year Weather Conditions

TABLE 1: Menu options

Type of Results	Average Enrolled Account
Weather Year	1-in-10 (1998)
Forecast Year	2013
Day Type	TYPICAL EVENT DAY - Top 15
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	677
Average FSL (kW)	202
Proxy Date	N/A



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (kW)	Observed Load (kW)	Load Impact (kW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	1361.2	1361.2	0.0	74.1	-7.8	-3.2	0.0	3.2	7.8
2:00	1352.0	1352.0	0.0	73.2	-7.8	-3.2	0.0	3.2	7.8
3:00	1348.1	1348.1	0.0	72.4	-7.8	-3.2	0.0	3.2	7.8
4:00	1353.7	1353.7	0.0	71.5	-7.8	-3.2	0.0	3.2	7.8
5:00	1383.9	1383.9	0.0	70.9	-7.8	-3.2	0.0	3.2	7.8
6:00	1430.9	1430.9	0.0	70.6	-7.8	-3.2	0.0	3.2	7.8
7:00	1456.7	1456.7	0.0	70.6	-7.8	-3.2	0.0	3.2	7.8
8:00	1479.3	1479.3	0.0	72.7	-7.8	-3.2	0.0	3.2	7.8
9:00	1489.6	1489.6	0.0	76.6	-7.8	-3.2	0.0	3.2	7.8
10:00	1494.8	1494.8	0.0	81.1	-7.8	-3.2	0.0	3.2	7.8
11:00	1496.7	1496.7	0.0	85.5	-7.8	-3.2	0.0	3.2	7.8
12:00	1489.5	1484.4	-14.9	88.9	-22.7	-18.1	-14.9	-11.7	-7.2
13:00	1419.1	1444.9	-25.8	91.2	-33.6	-29.0	-25.8	-22.6	-18.0
14:00	1408.7	1119.5	289.2	92.7	281.5	286.0	289.2	292.4	297.0
15:00	1392.0	205.6	1186.3	92.9	1178.6	1183.1	1186.3	1189.5	1194.1
16:00	1372.9	196.1	1176.8	92.1	1169.0	1173.6	1176.8	1180.0	1184.5
17:00	1357.6	186.6	1171.0	91.0	1163.2	1167.8	1171.0	1174.2	1178.8
18:00	1338.8	177.1	1161.7	89.4	1153.9	1158.5	1161.7	1164.8	1169.4
19:00	1363.2	534.0	829.2	86.8	821.5	826.1	829.2	832.4	837.0
20:00	1380.8	980.6	400.2	83.2	392.5	397.1	400.2	403.4	408.0
21:00	1402.4	1151.4	251.0	80.1	243.2	247.8	251.0	254.2	258.8
22:00	1403.2	1277.9	125.3	78.2	117.5	122.1	125.3	128.4	133.0
23:00	1392.1	1371.9	20.2	76.6	12.4	17.0	20.2	23.4	28.0
0:00	1382.6	1426.6	-44.0	75.3	-51.8	-47.2	-44.0	-40.8	-36.2

	Reference Energy Use (kWh)	Observed Energy Use (kWh)	Change in Energy Use (kWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	33,729.8	27,203.5	6,526.2	257.8	6488.2	6510.6	6526.2	6541.8	6564.3

Tables 4-1 and 4-2 show the average and aggregate impacts per hour for a typical event day by industry and LCA. Forecast years 2009 through 2013 are included to show the impact of the economic recovery. Over the forecast years, the average impact per customer increases by more than 0.1 MW for only two industries – manufacturing and wholesale, transport and other utilities. However, since those industries account for two thirds of SCE BIP customers, the average impact for all customers increases by more than 0.1 MW over the forecast horizon, from 1.06 in 2009 to 1.17 MW in 2013. The aggregate impact per hour for all customers shows an even larger increase because it includes the effect of the assumed 5 percent per year enrollment growth from 2009 to 2011. From 2009 to 2013, the program as a whole grows by roughly 24 percent, or more than 150 MW, from 640.3 MW to 794.5 MW. Approximately 55 percent of this growth is due to enrollment growth and the remaining 45 percent is due to the economic recovery.

As for the distribution of impacts, the two largest industries in terms of enrollment – manufacturing and agriculture, mining and construction – are also the only industries to have an average impact per hour of more than 1 MW. As such, the aggregate impacts are skewed in the direction of those two industries, especially manufacturing, which accounts for nearly 70 percent of the aggregate impact per hour in each year.

Table 4-1
Average and Aggregate Impact per Hour for Event Period (2 to 6 pm) for SCE BIP Program by Industry
Typical Event Day, 1-in-2 Year Weather Conditions
Forecast Years 2009 – 2013

Type of Result	Industry	2009	2010	2011	2012	2013
Average Customer (MW)	Agriculture, Mining & Construction	1.39	1.42	1.44	1.46	1.49
	Institutional/Government	0.51	0.52	0.52	0.52	0.53
	Manufacturing	1.29	1.32	1.36	1.40	1.43
	Offices, Hotels, Finance, Services	0.63	0.64	0.66	0.67	0.68
	Retail stores	0.42	0.42	0.43	0.43	0.43
	Schools	0.36	0.37	0.37	0.37	0.37
	Wholesale, Transport, other utilities	0.68	0.71	0.74	0.77	0.79
	All Customers	1.06	1.09	1.12	1.15	1.17
All Customers (MW)	Agriculture, Mining & Construction	96.5	103.1	110.2	113.9	115.7
	Institutional/Government	4.2	4.5	4.7	4.9	4.9
	Manufacturing	439.9	475.7	513.9	536.7	550.8
	Offices, Hotels, Finance, Services	28.6	30.7	32.9	34.2	34.8
	Retail stores	6.0	6.4	6.8	7.0	7.1
	Schools	21.8	23.0	24.3	24.9	25.0
	Wholesale, Transport, other utilities	43.2	47.2	51.5	54.3	56.3
	All Customers	640.3	690.6	744.4	775.7	794.5

As seen in Table 4-2, there are significant differences in both average and aggregate load impacts across LCAs. Customers in the Outside LA Basin LCA have a much larger average impact per hour. Although this LCA has a higher proportion of customers in the industries that provide larger impacts, the difference is mainly due to the relative sizes of the BIP customers in each LCA. In the Outside LA Basin LCA, average usage per hour is 3.6 MW per customer, whereas LCA Basin and Ventura BIP customers are much smaller, averaging 1.1 MW and 1.3 MW per hour respectively. Although these differences are interesting, the majority of the aggregate impact comes from the LA Basin, which accounts for nearly 70 percent of the aggregate impact per hour in each year.

Table 4-2 Average and Aggregate Impact per Hour for Event Period (2 to 6 pm) for SCE BIP Program by LCA Typical Event Day, 1-in-2 Year Weather Conditions Forecast Years 2009 – 2013						
Type of Result	Local Capacity Area	2009	2010	2011	2012	2013
Average Customer (MW)	LA Basin	0.90	0.92	0.94	0.97	0.99
	Outside LA Basin	3.35	3.43	3.51	3.59	3.68
	Ventura	1.26	1.30	1.33	1.36	1.39
	All Customers	1.06	1.09	1.12	1.15	1.17
All Customers (MW)	LA Basin	437.9	472.5	509.5	531.1	544.2
	Outside LA Basin	93.5	100.7	108.3	112.7	115.3
	Ventura	108.3	116.9	126.0	131.3	134.5
	All Customers	640.3	690.6	744.4	775.7	794.5

Table 4-3 compares the average and aggregate impacts per hour for a typical event day and monthly peak day in a 1-in-2 and 1-in-10 weather year. The differences between the average customer impacts in a 1-in-2 and 1-in-10 weather year are not significant and only exceed 0.01 MW for the October and November monthly peaks. The aggregate impacts for a typical event day are only 0.4 MW greater in the 1-in-10 weather year. These results indicate clearly that SCE BIP customers are not weather sensitive on average. Impacts are significantly lower in the summer months, when TOU and summer peak demand charges are in effect during the event period.

Table 4-3 Average and Aggregate Impact per Hour for Event Period (2 to 6 pm) for SCE BIP Program by Day Type Forecast Year 2013				
Day Type	1-in-2 Weather Year		1-in-10 Weather Year	
	Average Customer (MW)	All Customers (MW)	Average Customer (MW)	All Customers (MW)
Typical Event Day	1.17	794.5	1.17	794.9
January Monthly Peak	1.21	819.5	1.20	810.3
February Monthly Peak	1.21	818.2	1.20	812.7
March Monthly Peak	1.22	828.2	1.21	820.1
April Monthly Peak	1.24	837.8	1.23	833.2
May Monthly Peak	1.23	834.1	1.24	839.2
June Monthly Peak	1.20	809.8	1.18	801.1
July Monthly Peak	1.17	791.5	1.17	790.3
August Monthly Peak	1.18	798.3	1.18	796.8
September Monthly Peak	1.18	795.8	1.17	791.2
October Monthly Peak	1.19	805.6	1.20	815.9
November Monthly Peak	1.32	891.6	1.34	908.0
December Monthly Peak	1.31	889.4	1.30	880.8

4.2. Ex Post Load Impact Estimates

As noted in Section 2, there were no BIP events in SCE's service territory in 2008. Indeed, the last event called under the I-6/BIP program in SCE's service territory was on July 24, 2006. The event lasted for roughly three hours, from 3:32 pm to 5:37 pm. There were 555 service accounts in the I-6/BIP program at that time and the average load drop over that period was roughly 518 MW.[16] Because there were no events in 2008, ex post load impact estimates for SCE's BIP program are not provided in this report.

[16] Stephen George, Josh Bode and Josh Schellenberg. *Load Impact Estimates for Southern California Edison's Demand Response Program Portfolio*. September 25, 2008.

5. PG&E LOAD IMPACT ANALYSIS

As was done in the prior section, the discussion of load impacts provided below focuses on the high level, aggregate impacts for PG&E's BIP program. More detailed estimates are provided in Appendix C and in electronic spread sheets that have been provided to the CPUC. Average load impacts are provided here for selected day types by industry group and LCA.

5.1. Ex Ante Load Impact Estimates

Figures 5-1 and 5-2 show the estimated reference load and the predicted load after customers respond to a BIP event for a typical event day based on 1-in-2 and 1-in-10 year weather conditions for 2010 (the last year before BIP customers are transferred to PeakChoice). In a normal weather year (e.g., 1-in-2), on a typical event day, the estimated load impact starts at 1563.2 kW in the first event hour and then drops off slightly to 1517.4 kW in the final event hour ending at 6 pm. Throughout the event period, the average load impact per hour is 1527.4 kW. Unlike with SCE, the observed load falls below the FSL (325 kW) from the beginning of the event period. Overall, the average observed load per hour is 293.9 kW, which is nearly 10 percent below the FSL Since the over/under performance adjustment was made by industry, the difference in performance between PG&E and SCE BIP customers is attributed to the difference in industry mix. Schools and retail stores, which are the industries that historically under perform, make up 12.3 percent of SCE customers, but only 1.4 percent of PG&E customers.

Based on 1-in-10 year weather conditions, the load impact pattern over the four hour period is very similar to that in a 1-in-2 weather year. The average load impact across the four hours is 1522.6 kW, which is actually 4.8 kW lower than it is under 1-in-2 year weather conditions. When using the actual top 15 load days in the 1-in-2 (2002) and 1-in-10 (1998) weather years as proxies for a typical event day in those years, key variables other than weather influence the estimated load impact. In this case, one of the top 15 load days in the 1-in-10 weather year was a Saturday, which significantly decreased the average impact for the typical event day.

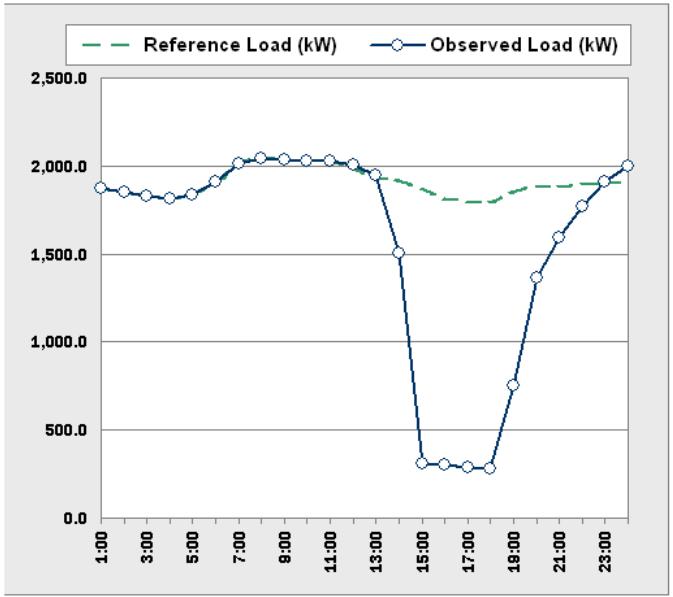
Figure 5-1
PG&E BIP Average Load Impact per Customer in 2011
for a Typical Event Day Based on 1-in-2 Year Weather Conditions

TABLE 1: Menu options

Type of Results	Average Enrolled Account
Weather Year	1-in-2 (2004)
Forecast Year	2010
Day Type	TYPICAL EVENT DAY - Top 15
Customer Characteristic	All Customers

TABLE 2: Output

Accounts in Estimation	149
Average FSL (kW)	325
Proxy Date	N/A



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (kW)	Observed Load (kW)	Load Impact (kW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	1872.4	1872.4	0.0	70.2	-8.0	-3.3	0.0	3.3	8.0
2:00	1854.5	1854.5	0.0	68.9	-8.0	-3.3	0.0	3.3	8.0
3:00	1830.3	1830.3	0.0	67.8	-8.0	-3.3	0.0	3.3	8.0
4:00	1815.1	1815.1	0.0	66.8	-8.0	-3.3	0.0	3.3	8.0
5:00	1833.4	1833.4	0.0	65.8	-8.0	-3.3	0.0	3.3	8.0
6:00	1910.8	1910.8	0.0	64.9	-8.0	-3.3	0.0	3.3	8.0
7:00	2015.0	2015.0	0.0	64.6	-8.0	-3.3	0.0	3.3	8.0
8:00	2043.9	2043.9	0.0	66.6	-8.0	-3.3	0.0	3.3	8.0
9:00	2037.8	2037.8	0.0	70.4	-8.0	-3.3	0.0	3.3	8.0
10:00	2030.5	2030.5	0.0	74.4	-8.0	-3.3	0.0	3.3	8.0
11:00	2024.5	2024.5	0.0	78.3	-8.0	-3.3	0.0	3.3	8.0
12:00	1989.9	2008.8	-18.9	82.0	-26.9	-22.2	-18.9	-15.6	-10.9
13:00	1930.6	1948.1	-17.5	85.3	-25.5	-20.7	-17.5	-14.2	-9.5
14:00	1917.7	1506.2	411.5	88.0	403.4	408.2	411.5	414.7	419.5
15:00	1873.6	310.5	1563.2	89.8	1555.2	1559.9	1563.2	1566.5	1571.2
16:00	1817.4	299.4	1518.0	90.9	1510.0	1514.7	1518.0	1521.3	1526.0
17:00	1799.3	288.4	1510.9	90.8	1502.9	1507.6	1510.9	1514.1	1518.9
18:00	1794.8	277.4	1517.4	89.9	1509.4	1514.1	1517.4	1520.7	1525.4
19:00	1852.3	753.3	1099.0	87.6	1091.0	1095.7	1099.0	1102.3	1107.0
20:00	1879.0	1362.2	516.8	83.8	508.8	513.6	516.8	520.1	524.8
21:00	1881.1	1596.5	284.6	79.4	276.6	281.3	284.6	287.9	292.6
22:00	1895.0	1772.3	122.7	76.0	114.7	119.4	122.7	125.9	130.7
23:00	1905.2	1908.0	-2.8	73.5	-10.8	-6.0	-2.8	0.5	5.2
0:00	1918.3	1998.5	-80.2	71.7	-88.2	-83.5	-80.2	-76.9	-72.2

	Reference Energy Use (kWh)	Observed Energy Use (kWh)	Change in Energy Use (kWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	45,722.6	37,297.9	8,424.6	191.9	8385.4	8408.6	8424.6	8440.7	8463.9

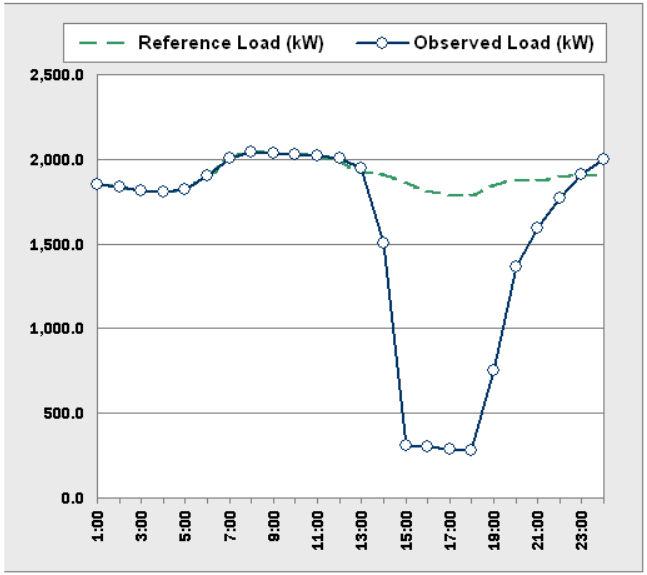
Figure 5-2
PG&E BIP Average Load Impact per Customer in 2011
for a Typical Event Day Based on 1-in-10 Year Weather Conditions

TABLE 1: Menu options

Type of Results	Average Enrolled Account
Weather Year	1-in-10 (2003)
Forecast Year	2010
Day Type	TYPICAL EVENT DAY - Top 15
Customer Characteristic	All Customers

TABLE 2: Output

Accounts in Estimation	149
Average FSL (kW)	325
Proxy Date	N/A



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (kW)	Observed Load (kW)	Load Impact (kW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	1853.4	1853.4	0.0	72.3	-8.0	-3.3	0.0	3.3	8.0
2:00	1838.9	1838.9	0.0	70.9	-8.0	-3.3	0.0	3.3	8.0
3:00	1817.3	1817.3	0.0	69.8	-8.0	-3.3	0.0	3.3	8.0
4:00	1805.8	1805.8	0.0	68.6	-8.0	-3.3	0.0	3.3	8.0
5:00	1823.9	1823.9	0.0	67.7	-8.0	-3.3	0.0	3.3	8.0
6:00	1903.2	1903.2	0.0	66.9	-8.0	-3.3	0.0	3.3	8.0
7:00	2009.5	2009.5	0.0	66.7	-8.0	-3.3	0.0	3.3	8.0
8:00	2039.6	2039.6	0.0	69.0	-8.0	-3.3	0.0	3.3	8.0
9:00	2035.4	2035.4	0.0	73.2	-8.0	-3.3	0.0	3.3	8.0
10:00	2031.4	2031.4	0.0	77.5	-8.0	-3.3	0.0	3.3	8.0
11:00	2022.0	2022.0	0.0	81.6	-8.0	-3.3	0.0	3.3	8.0
12:00	1988.1	2007.0	-18.8	85.2	-26.8	-22.1	-18.8	-15.5	-10.8
13:00	1927.1	1946.2	-19.1	88.3	-27.1	-22.4	-19.1	-15.8	-11.1
14:00	1911.6	1504.9	406.7	90.7	398.6	403.4	406.7	409.9	414.7
15:00	1868.9	310.3	1558.5	92.5	1550.5	1555.3	1558.5	1561.8	1566.6
16:00	1814.4	299.3	1515.1	93.4	1507.1	1511.9	1515.1	1518.4	1523.1
17:00	1794.1	288.3	1505.8	93.3	1497.8	1502.5	1505.8	1509.1	1513.8
18:00	1788.1	277.2	1510.9	92.3	1502.9	1507.6	1510.9	1514.2	1518.9
19:00	1845.9	752.7	1093.2	90.1	1085.2	1089.9	1093.2	1096.5	1101.2
20:00	1874.7	1361.2	513.5	86.3	505.5	510.2	513.5	516.8	521.5
21:00	1875.9	1595.3	280.6	81.9	272.6	277.3	280.6	283.8	288.6
22:00	1892.2	1771.0	121.2	78.7	113.2	117.9	121.2	124.5	129.2
23:00	1902.7	1906.4	-3.6	76.3	-11.7	-6.9	-3.6	-0.4	4.4
0:00	1910.8	1996.7	-86.0	74.4	-94.0	-89.2	-86.0	-82.7	-78.0

	Reference Energy Use (kWh)	Observed Energy Use (kWh)	Change in Energy Use (kWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	45,574.9	37,196.9	8,377.9	238.7	8338.7	8361.9	8377.9	8394.0	8417.2

Tables 5-1 and 5-2 show the average and aggregate impacts per hour for a typical event day by industry and LCA. Forecast years 2009 and 2010 are included to show the impact of the economic recovery. Only industry segments that have more than two customers are included in the table. PG&E BIP customers were strongly impacted by the economic downturn, and in turn show a rebound for each industry except for the offices, hotels, finance and services category and each LCA except the Greater Bay Area and Humboldt. From 2009 to 2010, the program impacts as a whole grow by over 10 MW, from 216.7 MW to 227.6 MW. Even though the economic recovery will have a larger impact for PG&E, the aggregate impacts do not increase at a rate as fast as SCE's because enrollment is expected to remain constant at PG&E whereas it is expected to grow 5 percent a year at SCE.

As for the distribution of impacts, the largest industry in terms of enrollment – manufacturing – is also the only industry to have an average impact per hour of over 2 MW. Therefore, the aggregate impacts are skewed in the direction of the manufacturing customers, which account for nearly 80 percent of the aggregate impact per hour in each year.

Table 5-1
Average and Aggregate Impact per Hour for Event Period (2 to 6 pm)
for PG&E BIP Program by Industry
Typical Event Day, 1-in-2 Year Weather Conditions
Forecast Years 2009 – 2010

Type of Result	Industry	2009	2010
Average Customer (MW)	Agriculture, Mining & Construction	0.57	0.59
	Manufacturing	2.38	2.49
	Offices, Hotels, Finance, Services	1.47	1.47
	Wholesale, Transport, other utilities	0.50	0.56
	All Customers	1.45	1.53
All Customers (MW)	Agriculture, Mining & Construction	15.5	16.0
	Manufacturing	168.6	176.5
	Offices, Hotels, Finance, Services	11.7	11.7
	Wholesale, Transport, other utilities	19.7	22.0
	All Customers	216.7	227.6

Table 5-2 Average and Aggregate Impact per Hour for Event Period (2 to 6 pm) for PG&E BIP Program by LCA Typical Event Day, 1-in-2 Year Weather Conditions Forecast Years 2009 – 2010			
Type of Result	Local Capacity Area	2009	2010
Average Customer (MW)	Greater Bay Area	1.46	1.46
	Greater Fresno	0.51	0.55
	Humboldt	0.64	0.62
	Kern	0.58	0.61
	Northern Coast	0.45	0.47
	Sierra	0.39	0.42
	Stockton	0.59	0.62
	Other	2.31	2.45
	All Customers	1.45	1.53
All Customers (MW)	Greater Bay Area	29.3	29.1
	Greater Fresno	3.1	3.3
	Humboldt	4.5	4.3
	Kern	9.3	9.8
	Northern Coast	7.7	8.0
	Sierra	2.7	3.0
	Stockton	5.3	5.6
	Other	154.7	164.3
	All Customers	216.7	227.6

Table 5-3 compares the average and aggregate impacts per hour for a typical event day and monthly system peak days in 1-in-2 and 1-in-10 weather years. The difference between the average customer impacts in 1-in-2 and 1-in-10 weather years are not significant and does not exceed 0.02 MW. As with SCE, PG&E BIP customers are not weather sensitive on average. Unlike with SCE, there is little variation in load impacts across months.

Table 5-3 Average and Aggregate Impact per Hour for Event Period (2 to 6 pm) for PG&E BIP Program by Day Type Forecast Year 2010				
Day Type	1-in-2 Weather Year		1-in-10 Weather Year	
	Average Customer (MW)	All Customers (MW)	Average Customer (MW)	All Customers (MW)
Typical Event Day	1.53	227.6	1.52	226.9
January Monthly Peak	1.45	216.5	1.46	217.5
February Monthly Peak	1.47	219.3	1.47	219.0
March Monthly Peak	1.50	223.9	1.51	224.6
April Monthly Peak	1.53	227.5	1.55	230.3
May Monthly Peak	1.52	226.2	1.50	223.3
June Monthly Peak	1.53	227.5	1.52	226.3
July Monthly Peak	1.53	227.4	1.52	225.9
August Monthly Peak	1.54	229.7	1.55	231.3
September Monthly Peak	1.50	223.1	1.51	224.9
October Monthly Peak	1.47	218.6	1.48	220.5
November Monthly Peak	1.46	217.5	1.46	217.5
December Monthly Peak	1.51	225.4	1.50	223.7

5.2. Ex Post Load Impact Estimates

The ex post load impact estimates presented in this section are for PG&E's BIP program for the event that occurred on August 28, 2008. That event lasted two hours, roughly from 3 to 5 pm. It was a test event that included all customers that were enrolled in BIP at that time. Although there were 145 enrolled accounts in August 2008 (compared with the 149 accounts enrolled at the end of January 2009), data were available for only 141 of these accounts. Thus, the impact estimates presented here almost certainly underestimate the aggregate load impacts that actually occurred on that day.

Figure 5-3 shows the average load impact per customer in each hour on August 28th and Figure 5-4 shows the aggregate load impact in each hour of that day. As seen, the average load drop over the two-hour event period was roughly 1.5 MW. In the hour prior to the event, the average load drop equaled more than 660 kW, and in the first hour after the event, load was still more than 760 kW below the reference load.

As shown in Figure 5-4, the aggregate load drop during the event period was roughly 210 MW. This represents roughly an 83 percent drop relative to the reference load of 252 MW. The event-period load of roughly 42 MW is lower than the aggregate FSL, which equals 47 MW. In other words, BIP customers reduced load by roughly 10 percent more than required to meet their FSL commitments.

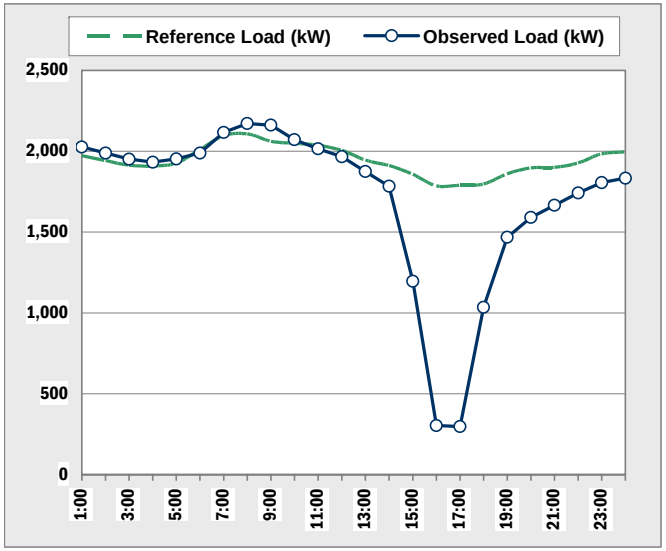
Figure 5-3
Average Ex-post Load Impact (kW) per Participant for PG&E BIP Event (August 28, 2008)

TABLE 1: Menu options

Type of Results	Average Enrolled Account
Event	Thursday, August 28, 2008
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	141
Average FSL (kW)	333



Hour Ending	Reference Load (kW)	Observed Load (kW)	Load Impact (kW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	1973.0	2027.2	-54.2	74.0	-85.0	-66.8	-54.2	-41.5	-23.3
2:00	1943.1	1989.2	-46.0	72.3	-76.9	-58.6	-46.0	-33.4	-15.2
3:00	1914.2	1951.6	-37.5	71.0	-68.3	-50.1	-37.5	-24.8	-6.6
4:00	1908.7	1932.4	-23.7	69.7	-54.6	-36.3	-23.7	-11.1	7.1
5:00	1926.1	1952.8	-26.7	68.9	-57.6	-39.3	-26.7	-14.1	4.1
6:00	2010.8	1988.5	22.3	68.3	-8.5	9.7	22.3	35.0	53.2
7:00	2096.9	2117.1	-20.2	67.5	-51.0	-32.8	-20.2	-7.6	10.7
8:00	2108.1	2171.8	-63.7	69.3	-94.5	-76.3	-63.7	-51.1	-32.8
9:00	2061.7	2161.5	-99.8	74.2	-130.7	-112.4	-99.8	-87.2	-69.0
10:00	2049.5	2071.2	-21.6	79.2	-52.5	-34.3	-21.6	-9.0	9.2
11:00	2038.3	2014.9	23.4	84.2	-7.5	10.7	23.4	36.0	54.2
12:00	2005.3	1966.5	38.8	88.5	8.0	26.2	38.9	51.5	69.7
13:00	1945.6	1875.3	70.3	91.3	39.5	57.7	70.3	82.9	101.2
14:00	1911.3	1783.8	127.5	94.0	96.7	114.9	127.5	140.2	158.4
15:00	1857.6	1196.1	661.4	95.6	630.6	648.8	661.4	674.0	692.3
16:00	1786.2	303.2	1483.0	96.8	1452.2	1470.4	1483.0	1495.7	1513.9
17:00	1790.4	297.1	1493.3	96.5	1462.5	1480.7	1493.3	1506.0	1524.2
18:00	1797.0	1035.1	761.8	95.8	731.0	749.2	761.8	774.5	792.7
19:00	1860.4	1468.4	392.0	93.9	361.1	379.4	392.0	404.6	422.8
20:00	1897.5	1590.2	307.3	89.9	276.5	294.7	307.3	320.0	338.2
21:00	1899.6	1666.1	233.5	85.2	202.7	220.9	233.5	246.2	264.4
22:00	1927.9	1742.4	185.5	81.7	154.7	172.9	185.5	198.1	216.4
23:00	1984.1	1806.4	177.7	79.6	146.8	165.1	177.7	190.3	208.5
0:00	1997.1	1833.2	163.9	77.4	133.0	151.2	163.9	176.5	194.7

	Reference Energy Use (kWh)	Observed Energy Use (kWh)	Change in Energy Use (kWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	46,690.3	40,941.7	5,748.6	291.1	n/a	n/a	n/a	n/a	n/a

TOTAL PARTICIPANTS: 141

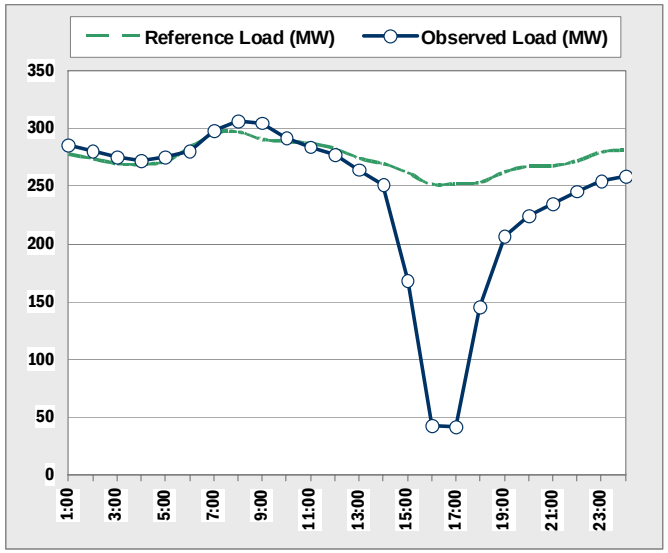
Figure 5-4
Aggregate Load Impact for 2008 BIP Event for PG&E Customers
(August 28, 2008)

TABLE 1: Menu options

Type of Results	Aggregate
Event	Thursday, August 28, 2008
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	141
Aggregate FSL (MW)	47



Hour Ending	Reference Load (MW)	Observed Load (MW)	Load Impact (MW)	Weighted Temp (F)	Uncertainty Adjusted Impa		
					10th	30th	50th
1:00	278.2	285.8	-7.6	74.0	-12.0	-9.4	-7.6
2:00	274.0	280.5	-6.5	72.3	-10.8	-8.3	-6.5
3:00	269.9	275.2	-5.3	71.0	-9.6	-7.1	-5.3
4:00	269.1	272.5	-3.3	69.7	-7.7	-5.1	-3.3
5:00	271.6	275.3	-3.8	68.9	-8.1	-5.5	-3.8
6:00	283.5	280.4	3.1	68.3	-1.2	1.4	3.1
7:00	295.7	298.5	-2.8	67.5	-7.2	-4.6	-2.8
8:00	297.2	306.2	-9.0	69.3	-13.3	-10.8	-9.0
9:00	290.7	304.8	-14.1	74.2	-18.4	-15.9	-14.1
10:00	289.0	292.0	-3.1	79.2	-7.4	-4.8	-3.1
11:00	287.4	284.1	3.3	84.2	-1.1	1.5	3.3
12:00	282.7	277.3	5.5	88.5	1.1	3.7	5.5
13:00	274.3	264.4	9.9	91.3	5.6	8.1	9.9
14:00	269.5	251.5	18.0	94.0	13.6	16.2	18.0
15:00	261.9	168.7	93.3	95.6	88.9	91.5	93.3
16:00	251.9	42.7	209.1	96.8	204.8	207.3	209.1
17:00	252.4	41.9	210.6	96.5	206.2	208.8	210.6
18:00	253.4	146.0	107.4	95.8	103.1	105.6	107.4
19:00	262.3	207.0	55.3	93.9	50.9	53.5	55.3
20:00	267.6	224.2	43.3	89.9	39.0	41.6	43.3
21:00	267.8	234.9	32.9	85.2	28.6	31.1	32.9
22:00	271.8	245.7	26.2	81.7	21.8	24.4	26.2
23:00	279.8	254.7	25.1	79.6	20.7	23.3	25.1
0:00	281.6	258.5	23.1	77.4	18.8	21.3	23.1

	Reference Energy Use (MWh)	Observed Energy Use (MWh)	Change in Energy Use (MWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impa		
					10th	30th	50th
Daily	6,583.3	5,772.8	810.6	291.1	n/a	n/a	n/a

TOTAL PARTICIPANTS: 141

Table 5-4 shows the average load impact per customer across the event period by industry type and Table 5-5 shows the aggregate impact by industry. Three industry segments (retail, schools, and institutional/government) were excluded from the table because each only had one or two customers in them. Among the four segments included in the table, the agriculture, mining and construction and manufacturing segments provided the largest percentage load drop (roughly 85 percent of their respective reference loads). The two remaining groups dropped roughly 75 percent of their load for a typical day. In aggregate, the manufacturing sector provided just over 75 percent of the total load reduction on the event day (158 MW), with the wholesale, transportation and utilities segment accounting for the next largest share (21.5 MW, or 10 percent).

Tables 5-6 and 5-7 show the breakdown of load impacts by LCA. Four of the eight LCAs within PG&E's service territory have fewer than 10 accounts enrolled in BIP. Nearly 45 percent of all accounts are located in the Other LCA. Twenty accounts are located in the Greater Bay Area LCA and 16 each are in the Kern and Northern Coast LCAs.

The load reduction for customers enrolled in BIP exceeded 80 percent in all LCAs except Fresno, where it was roughly 45 percent. More than two-thirds of the total load reduction was provided by customers within PG&E's service area that were not located in a specific LCA (i.e., they were located in the "Other LCA"). Customers in the Greater Bay Area LCA provided almost 40 MW of total load reduction, or about 15 percent of the aggregate load reduction that occurred within PG&E's entire service territory on this event day.

Table 5-4
Average Customer Load Impact by Industry for August 28, 2008 PG&E Event

Industry	Number of Customers	Average Reference Load (kW)	Average Firm Service Level (kW)	Average Reduction per Customer (kW)	Percent Reduction (%)
Agriculture, Mining & Construction	24	813.7	195.9	703.3	86.4
Manufacturing	68	2737.6	418.8	2322.8	84.8
Wholesale, Transport, other utilities	38	757.1	212.3	565.6	74.7
Offices, Hotels, Finance, Services	7	2342.4	813.4	1746.1	74.6
All Customers	141[17]	1788.3	333.0	1488.2	83.2

[17] The total number of customers does not equal the sum of the rows because industry groups with only 1 or 2 customers in them were not included due to confidentiality concerns.

Table 5-5 Aggregate Load Impact by Industry for August 28, 2008 PG&E Event				
Industry	Average Reference Load (MW)	Aggregate Load Reduction per Event Hour (MW)	Aggregate Load Reduction 1 Hour Before Event (MW)	Aggregate Load Reduction 1 Hour After Event (MW)
Agriculture, Mining & Construction	19.5	16.9	4.8	8.4
Manufacturing	186.2	157.9	78.0	88.8
Wholesale, Transport, other utilities	28.8	21.5	8.8	7.1
Offices, Hotels, Finance, Services	16.4	12.2	1.5	2.5
All Customers	252.2	209.8	93.3	107.4

Table 5-6 Average Customer Load Impact by Local Capacity Area for August 28, 2008 PG&E Event					
Local Capacity Area	Number of Customers	Average Reference Load (kW)	Average Firm Service Level (kW)	Average Reduction per Customer (kW)	Percent Reduction (%)
Greater Bay Area	20	1991.0	384.7	1612.3	81.0
Greater Fresno	4	561.1	28.3	251.2	44.7
Humboldt	7	623.4	25.7	609.3	97.7
Kern	16	704.8	127.8	627.0	89.0
Northern Coast	16	527.6	62.8	476.7	90.4
Sierra	5	585.3	176.2	509.0	86.9
Stockton	9	776.2	225.0	640.8	82.6
Other	64	2751.4	515.8	2286.7	83.1
All Customers	141	1788.3	333.0	1488.2	83.2

Table 5-7 Aggregate Load Impact by Local Capacity Area for August 28, 2008 PG&E Event				
Local Capacity Area	Average Reference Load (MW)	Aggregate Load Reduction per Event Hour (MW)	Aggregate Load Reduction 1 Hour Before Event (MW)	Aggregate Load Reduction 1 Hour After Event (MW)
Greater Bay Area	39.8	32.2	9.7	13.0
Greater Fresno	2.2	1.0	0.3	0.2
Humboldt	4.4	4.3	2.2	2.9
Kern	11.3	10.0	2.8	3.3
Northern Coast	8.4	7.6	4.6	2.8
Sierra	2.9	2.5	1.0	0.8
Stockton	7.0	5.8	2.4	2.5
Other	176.1	146.3	70.4	81.9
All Customers	252.2	209.8	93.3	107.4

6. SDG&E LOAD IMPACT ANALYSIS

6.1. Ex Ante Load Impact Estimates

Figures 6-1 and 6-2 show the estimated reference load and the predicted load after customers respond to a BIP event for an average SDG&E customer for the typical event day based on 1-in-2 and 1-in-10 year weather conditions. In a normal weather year (e.g., 1-in-2), on a typical event day, the estimated load impact starts at 311.6 kW in the first event hour and then drops off slightly to 275.4 kW in the final event hour ending at 6 pm. Throughout the event period, the average load impact per hour is 296.1 kW. As discussed in Section 3, the over/under performance adjustment was not made for the SDG&E ex ante estimates.

Based on 1-in-10 year weather conditions, the load impact pattern over the four hour period is very similar to that in a 1-in-2 weather year. The average load impact across the four hours is 300.1 kW, which is 4 kW larger than in the 1-in-2 weather year.

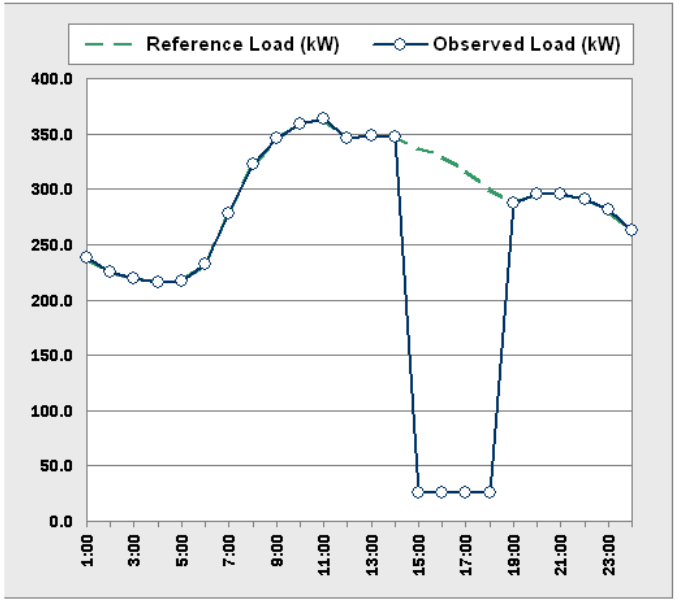
Figure 6-1
SDG&E BIP Average Load Impact per Customer in 2009
for a Typical Event Day Based on 1-in-2 Year Weather Conditions

TABLE 1: Menu options

Type of Results	Average Enrolled Account
Weather Year	1-in-2
Forecast Year	2009
Day Type	TYPICAL EVENT DAY - Top 9
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	20
Average FSL (kW)	25.4
Proxy Date	N/A



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (kW)	Observed Load (kW)	Load Impact (kW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	238.0	238.0	0.0	66.6	-3.9	-1.6	0.0	1.6	3.9
2:00	225.2	225.2	0.0	65.8	-3.9	-1.6	0.0	1.6	3.9
3:00	219.2	219.2	0.0	65.4	-3.9	-1.6	0.0	1.6	3.9
4:00	215.8	215.8	0.0	64.9	-3.9	-1.6	0.0	1.6	3.9
5:00	216.8	216.8	0.0	64.8	-3.9	-1.6	0.0	1.6	3.9
6:00	232.7	232.7	0.0	64.3	-3.9	-1.6	0.0	1.6	3.9
7:00	277.5	277.5	0.0	64.5	-3.9	-1.6	0.0	1.6	3.9
8:00	322.5	322.5	0.0	67.1	-3.9	-1.6	0.0	1.6	3.9
9:00	346.4	346.4	0.0	71.3	-3.9	-1.6	0.0	1.6	3.9
10:00	358.9	358.9	0.0	75.7	-3.9	-1.6	0.0	1.6	3.9
11:00	364.0	364.0	0.0	79.0	-3.9	-1.6	0.0	1.6	3.9
12:00	346.4	346.4	0.0	80.7	-3.9	-1.6	0.0	1.6	3.9
13:00	348.8	348.8	0.0	81.0	-3.9	-1.6	0.0	1.6	3.9
14:00	347.7	347.7	0.0	80.7	-3.9	-1.6	0.0	1.6	3.9
15:00	337.0	25.4	311.6	80.3	307.7	310.0	311.6	313.2	315.5
16:00	330.6	25.4	305.2	80.0	301.4	303.6	305.2	306.8	309.1
17:00	317.4	25.4	292.1	79.6	288.2	290.5	292.1	293.7	296.0
18:00	300.7	25.4	275.4	77.8	271.5	273.8	275.4	277.0	279.3
19:00	287.5	287.5	0.0	74.6	-3.9	-1.6	0.0	1.6	3.9
20:00	295.3	295.3	0.0	72.1	-3.9	-1.6	0.0	1.6	3.9
21:00	295.7	295.7	0.0	70.2	-3.9	-1.6	0.0	1.6	3.9
22:00	291.4	291.4	0.0	69.2	-3.9	-1.6	0.0	1.6	3.9
23:00	280.9	280.9	0.0	68.2	-3.9	-1.6	0.0	1.6	3.9
0:00	262.7	262.7	0.0	67.3	-3.9	-1.6	0.0	1.6	3.9

	Reference Energy Use (kWh)	Observed Energy Use (kWh)	Change in Energy Use (kWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	7,059.2	5,874.9	1,184.3	93.1	1165.3	1176.6	1184.3	1192.1	1203.3

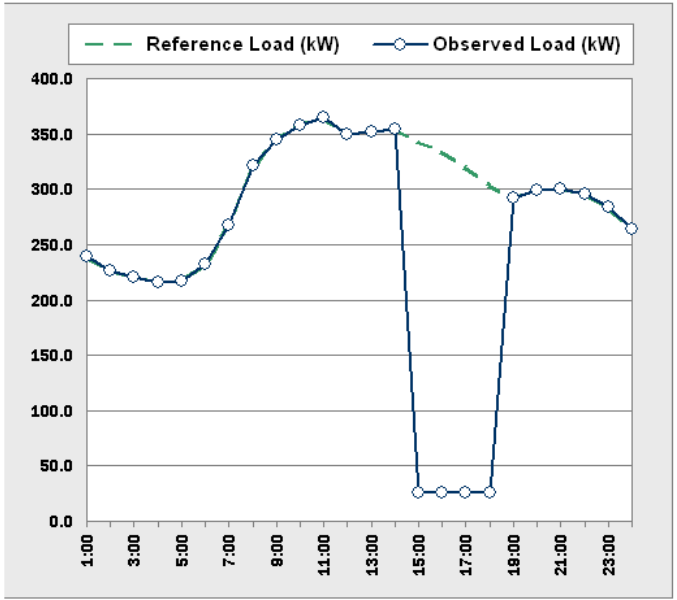
Figure 6-2
SDG&E BIP Average Load Impact per Customer in 2009
for a Typical Event Day Based on 1-in-10 Year Weather Conditions

TABLE 1: Menu options

Type of Results	Average Enrolled Account
Weather Year	1-in-10
Forecast Year	2009
Day Type	TYPICAL EVENT DAY - Top 9
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	20
Average FSL (kW)	25.4
Proxy Date	N/A



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (kW)	Observed Load (kW)	Load Impact (kW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	239.7	239.7	0.0	69.4	-4.1	-1.7	0.0	1.7	4.1
2:00	226.2	226.2	0.0	68.6	-4.1	-1.7	0.0	1.7	4.1
3:00	220.2	220.2	0.0	68.4	-4.1	-1.7	0.0	1.7	4.1
4:00	216.3	216.3	0.0	67.4	-4.1	-1.7	0.0	1.7	4.1
5:00	216.6	216.6	0.0	67.0	-4.1	-1.7	0.0	1.7	4.1
6:00	231.9	231.9	0.0	67.0	-4.1	-1.7	0.0	1.7	4.1
7:00	267.9	267.9	0.0	67.4	-4.1	-1.7	0.0	1.7	4.1
8:00	322.0	322.0	0.0	70.4	-4.1	-1.7	0.0	1.7	4.1
9:00	344.8	344.8	0.0	75.0	-4.1	-1.7	0.0	1.7	4.1
10:00	358.0	358.0	0.0	79.4	-4.1	-1.7	0.0	1.7	4.1
11:00	364.3	364.3	0.0	82.6	-4.1	-1.7	0.0	1.7	4.1
12:00	349.6	349.6	0.0	84.9	-4.1	-1.7	0.0	1.7	4.1
13:00	351.4	351.4	0.0	85.7	-4.1	-1.7	0.0	1.7	4.1
14:00	354.1	354.1	0.0	85.8	-4.1	-1.7	0.0	1.7	4.1
15:00	342.3	25.4	317.0	84.8	312.9	315.3	317.0	318.6	321.0
16:00	334.8	25.4	309.5	83.6	305.4	307.8	309.5	311.1	313.6
17:00	320.7	25.4	295.4	81.9	291.3	293.7	295.4	297.0	299.4
18:00	304.0	25.4	278.6	80.1	274.6	277.0	278.6	280.3	282.7
19:00	292.2	292.2	0.0	76.8	-4.1	-1.7	0.0	1.7	4.1
20:00	299.6	299.6	0.0	73.6	-4.1	-1.7	0.0	1.7	4.1
21:00	300.1	300.1	0.0	72.1	-4.1	-1.7	0.0	1.7	4.1
22:00	295.2	295.2	0.0	71.2	-4.1	-1.7	0.0	1.7	4.1
23:00	284.3	284.3	0.0	70.4	-4.1	-1.7	0.0	1.7	4.1
0:00	264.5	264.5	0.0	69.4	-4.1	-1.7	0.0	1.7	4.1

	Reference Energy Use (kWh)	Observed Energy Use (kWh)	Change in Energy Use (kWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	7,100.5	5,900.1	1,200.4	138.3	1180.5	1192.3	1200.4	1208.6	1220.4

Table 6-1 shows the average and aggregate impacts per hour for a typical event day by industry. Only forecast year 2009 is shown because no economic recovery or enrollment growth is assumed and, therefore, the impacts do not change over the forecast horizon. Most of the aggregate impacts come from the office, hotels, finance and services industry. This industry group has the largest number of customers and a larger average impact per customer than in manufacturing.

Table 6-1
Average and Aggregate Impact per Hour for Event Period (2 to 6 pm)
for SDG&E BIP Program by Industry
Typical Event Day, 1-in-2 Year Weather Conditions
Forecast Year 2009

Type of Result	Industry	2009
Average Customer (MW)	Manufacturing	0.26
	Offices, Hotels, Finance, Services	0.46
	All Customers	0.30
All Customers (MW)	Manufacturing	1.3
	Offices, Hotels, Finance, Services	4.2
	All Customers	6.0

Table 6-2 compares the average and aggregate impacts per hour for a typical event day and monthly system peak days in 1-in-2 and 1-in-10 weather years. The difference between the average customer impacts in 1-in-2 and 1-in-10 weather years is not significant and does not exceed 0.02 MW.

Table 6-2
Average and Aggregate Impact per Hour for Event Period (2 to 6 pm)
for SDG&E BIP Program by Day Type
Forecast Year 2009

Day Type	1-in-2 Weather Year		1-in-10 Weather Year	
	Average Customer (MW)	All Customers (MW)	Average Customer (MW)	All Customers (MW)
Typical Event Day	0.30	5.9	0.30	6.0
January Monthly Peak	0.31	6.2	0.31	6.3
February Monthly Peak	0.31	6.1	0.31	6.1
March Monthly Peak	0.31	6.2	0.31	6.2
April Monthly Peak	0.30	6.1	0.31	6.3
May Monthly Peak	0.31	6.2	0.32	6.4
June Monthly Peak	0.29	5.8	0.31	6.1
July Monthly Peak	0.31	6.1	0.31	6.2
August Monthly Peak	0.31	6.1	0.31	6.2
September Monthly Peak	0.30	5.9	0.30	6.1
October Monthly Peak	0.29	5.9	0.30	5.9
November Monthly Peak	0.28	5.6	0.28	5.6
December Monthly Peak	0.28	5.6	0.28	5.6

6.2. Ex Post Load Impact Estimates

The same model specification and methodology used to estimate ex post load impacts for PG&E's BIP program were employed to develop ex post load impacts for SDG&E's BIP program[18]. As previously discussed, SDG&E currently has 20 accounts enrolled in BIP. However, only three accounts were enrolled during the last two SDG&E BIP events, which occurred on September 4th and October 24th, 2007. Only one customer was called for the October 24th event. As such, in order to maintain customer confidentiality, ex post load impacts are not presented for that event. Also, customer confidentiality prevents us from reporting impacts by industry for the three accounts that were called on September 4th. For the three customers that were part of the September 4th event, the aggregate regression model explained 54 percent of the variation in energy use.

In 2007, two of the three accounts were enrolled in BIP Option A (minimum 30 minutes notification) and one was enrolled in BIP option B (minimum 4 hour notification). The event window for the Option A enrollees was from 2 pm to 6 pm and the event window for Option B was from 3 pm to 6 pm.

Figures 6-4 and 6-5 show load impacts by hour for the average customer and the aggregate of all three customers, respectively, for the September event day in SDG&E's service territory. As seen in the figures, the observed load on the event day in the hours leading up to the event period is much different from the reference load. Another salient point is that electricity demand stayed very low until almost 10 pm, four hours after the end of the event period.

The aggregate load drop from 3 pm to 6 pm, when all three customers were responding, averaged 1.87 MW. Between 2 pm and 3 pm, when only the two Option A customers were required to reduce load, the load drop was 1.72 MW.

The significant increase in load relative to the reference load in the morning hours suggests that these customers either received notification well before the required minimum notification period, or anticipated that an event was going to occur, perhaps based on communication by the CAISO that an event was likely. The reference load is typical of what these customers use on a normal weekday, as evidenced by the validation analysis summarized in Figures 6-5 through 6-6, which compare predicted and actual loads by hour for the typical summer weekday and for the weekdays in the week prior to and week of the event (excluding the event day).

[18] The ex post model specification and methodology is discussed in Appendix A.

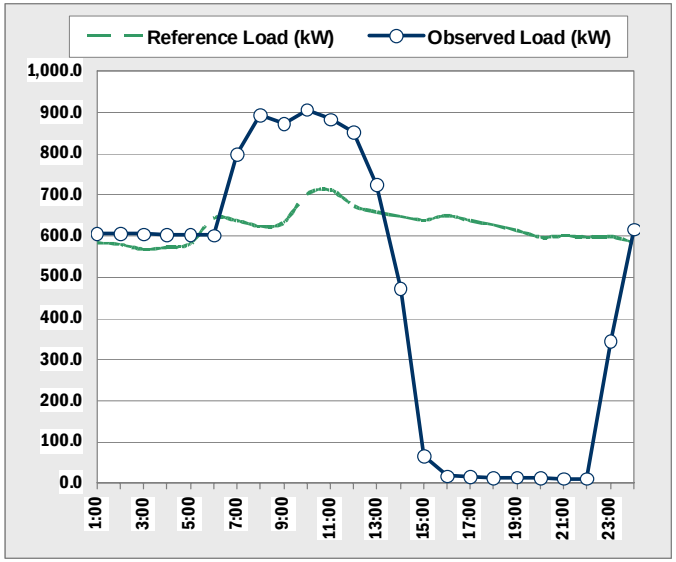
Figure 6-4
Average Load Impact for 2007 BIP Event for SDG&E Customers
(September 4, 2008)

TABLE 1: Menu options

Type of Results	Average Enrolled Account
Event	Tuesday, September 04, 2007
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	3
Average FSL (kW)	150.0



Hour Ending	Reference Load (kW)	Observed Load (kW)	Load Impact (kW)	Weighted Temp (F)	Uncertainty Adjusted Impa		
					10th	30th	50th
1:00	582.9	606.5	-23.5	75.3	-146.9	-74.0	-23.5
2:00	579.7	606.1	-26.5	74.0	-149.8	-76.9	-26.5
3:00	567.3	604.5	-37.2	73.3	-160.6	-87.7	-37.2
4:00	572.1	603.9	-31.8	73.3	-155.2	-82.3	-31.8
5:00	581.2	603.2	-22.0	73.3	-145.4	-72.5	-22.0
6:00	643.3	601.8	41.5	72.7	-81.9	-9.0	41.5
7:00	636.8	798.6	-161.8	73.3	-285.1	-212.3	-161.8
8:00	623.5	892.8	-269.3	78.7	-392.7	-319.8	-269.3
9:00	632.9	872.3	-239.5	82.3	-362.8	-289.9	-239.5
10:00	700.3	906.6	-206.3	84.7	-329.7	-256.8	-206.3
11:00	711.6	883.5	-171.9	86.7	-295.2	-222.4	-171.9
12:00	672.8	852.8	-180.0	86.0	-303.4	-230.5	-180.0
13:00	657.6	724.9	-67.3	85.0	-190.7	-117.8	-67.3
14:00	647.4	471.4	175.9	83.0	52.6	125.5	175.9
15:00	638.3	65.9	572.4	82.7	449.1	521.9	572.4
16:00	648.6	17.6	631.0	84.3	507.7	580.6	631.0
17:00	637.1	15.3	621.9	82.7	498.5	571.4	621.9
18:00	626.9	13.2	613.7	79.7	490.3	563.2	613.7
19:00	612.5	14.0	598.4	74.7	475.1	548.0	598.4
20:00	597.4	12.1	585.2	72.3	461.9	534.8	585.2
21:00	600.4	11.2	589.3	70.7	465.9	538.8	589.3
22:00	597.2	10.9	586.3	70.7	463.0	535.9	586.3
23:00	598.8	345.5	253.3	69.7	129.9	202.8	253.3
0:00	582.9	615.5	-32.5	69.0	-155.9	-83.0	-32.5

	Reference Energy Use (kWh)	Observed Energy Use (kWh)	Change in Energy Use (kWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impa		
					10th	30th	50th
Daily	14949.5	11150.2	3799.3	179.3	n/a	n/a	n/a

TOTAL PARTICIPANTS: 3

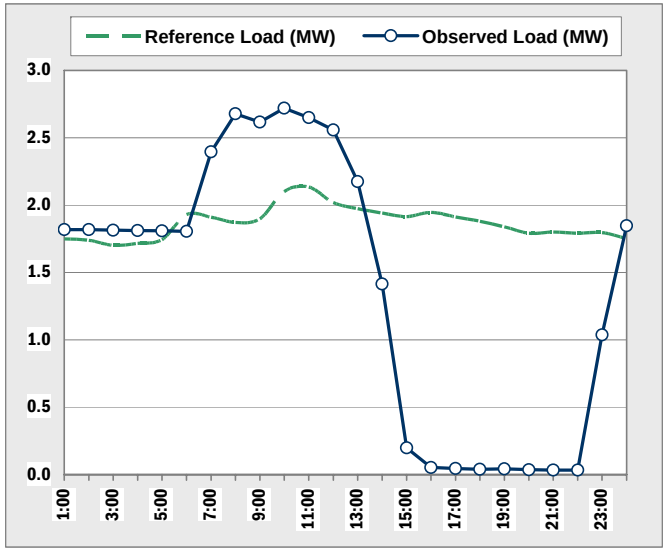
Figure 6-5
Aggregate Load Impact for 2007 BIP Event for SDG&E Customers
(September 4, 2008)

TABLE 1: Menu options

Type of Results	Aggregate
Event	Tuesday, September 04, 2007
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	3
Aggregate FSL (MW)	0.5



Hour Ending	Reference Load (MW)	Observed Load (MW)	Load Impact (MW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	1.7	1.8	-0.1	75.3	-0.4	-0.2	-0.1	0.1	0.3
2:00	1.7	1.8	-0.1	74.0	-0.4	-0.2	-0.1	0.1	0.3
3:00	1.7	1.8	-0.1	73.3	-0.5	-0.3	-0.1	0.0	0.3
4:00	1.7	1.8	-0.1	73.3	-0.5	-0.2	-0.1	0.1	0.3
5:00	1.7	1.8	-0.1	73.3	-0.4	-0.2	-0.1	0.1	0.3
6:00	1.9	1.8	0.1	72.7	-0.2	0.0	0.1	0.3	0.5
7:00	1.9	2.4	-0.5	73.3	-0.9	-0.6	-0.5	-0.3	-0.1
8:00	1.9	2.7	-0.8	78.7	-1.2	-1.0	-0.8	-0.7	-0.4
9:00	1.9	2.6	-0.7	82.3	-1.1	-0.9	-0.7	-0.6	-0.3
10:00	2.1	2.7	-0.6	84.7	-1.0	-0.8	-0.6	-0.5	-0.2
11:00	2.1	2.7	-0.5	86.7	-0.9	-0.7	-0.5	-0.4	-0.1
12:00	2.0	2.6	-0.5	86.0	-0.9	-0.7	-0.5	-0.4	-0.2
13:00	2.0	2.2	-0.2	85.0	-0.6	-0.4	-0.2	-0.1	0.2
14:00	1.9	1.4	0.5	83.0	0.2	0.4	0.5	0.7	0.9
15:00	1.9	0.2	1.7	82.7	1.3	1.6	1.7	1.9	2.1
16:00	1.9	0.1	1.9	84.3	1.5	1.7	1.9	2.0	2.3
17:00	1.9	0.0	1.9	82.7	1.5	1.7	1.9	2.0	2.2
18:00	1.9	0.0	1.8	79.7	1.5	1.7	1.8	2.0	2.2
19:00	1.8	0.0	1.8	74.7	1.4	1.6	1.8	1.9	2.2
20:00	1.8	0.0	1.8	72.3	1.4	1.6	1.8	1.9	2.1
21:00	1.8	0.0	1.8	70.7	1.4	1.6	1.8	1.9	2.1
22:00	1.8	0.0	1.8	70.7	1.4	1.6	1.8	1.9	2.1
23:00	1.8	1.0	0.8	69.7	0.4	0.6	0.8	0.9	1.1
0:00	1.7	1.8	-0.1	69.0	-0.5	-0.2	-0.1	0.1	0.3

	Reference Energy Use (MWh)	Observed Energy Use (MWh)	Change in Energy Use (MWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	44.8	33.5	11.4	179.3	n/a	n/a	n/a	n/a	n/a

TOTAL PARTICIPANTS: 3

Figure 6-5
Actual v. Predicted Aggregate Load by Hour for SDG&E BIP Customers
Average Summer Weekday (2007)

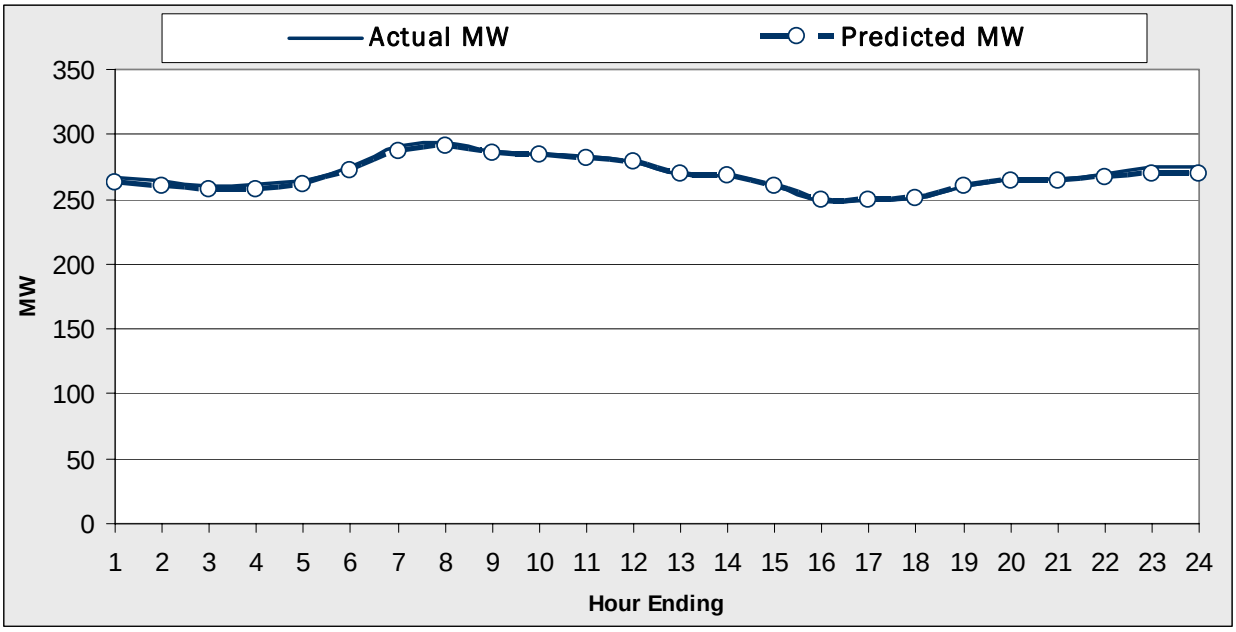
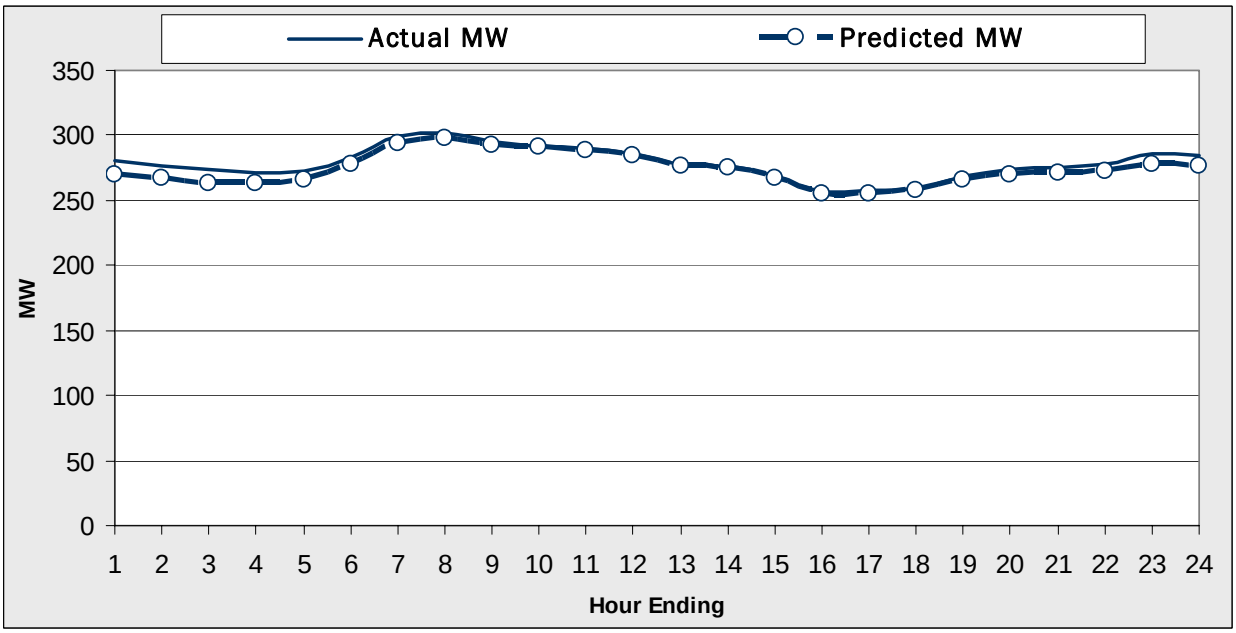


Figure 6-6
Actual v. Predicted Aggregate Load by Hour—Week before and week of Event
Average Weekday, August 27th to September 7th
(Event Day Omitted)



7. RECOMMENDATIONS FOR ALL UTILITIES

The primary factor that would help improve future load impact estimates is to have more actual event data. If allowed under the tariff rules, we recommend that each utility hold at least one test event each year and that consideration be given to coordinating the test events across utilities. By holding the same test event on the same day across utilities, it might be possible to develop over/under performance estimates using pooled data for some industry groups in which enrollment is small for any single utility.

APPENDIX A: EX POST METHODOLOGY

This section discusses the methodology used to estimate ex post load impacts for PG&E's 2008 event day and SDG&E's 2007 event day. The ex post methodology differs from the ex ante in three ways. First, the model is only estimated on 2008 data for PG&E and 2007 data for SDG&E as opposed to multiple years.[19] Second, the year 2008 binary variable is not included in the model because it would not make sense when there is only data for one year. Finally, dynamic lags of one day and one week are included since this improves the fit and does not complicate the analysis for ex post prediction as it does for ex ante forecasting.

Mathematically, the regression model can be expressed as:

$$
\begin{aligned}
kW_t = {} & a + b^{SummerOn} SummerOn_t + b^{SummerMid} SummerMid_t + b^{SummerOff} SummerOff_t \\
& + b^{WinterOff} WinterMid_t + \sum_{i=2}^{12} b^{month_i} month_i + \sum_{i=2}^{24} \sum_{j=1}^{5} b^{hour_i * day_j} hour_i * daytype_j \\
& + \sum_{i=2}^{24} b^{hour_i * CDH} hour_i * CDH_t + \sum_{i=2}^{24} b^{hour_i * CDHsqr} hour_i * CDHsqr_t \\
& + \sum_{i=2}^{24} b^{hour_i * nightTEMP} hour_i * nightTEMP_t + \sum_{i=2}^{24} \sum_{j=1}^{2} b^{hour_i * Event_j} hour_i * Event_j \\
& + b^{kW_{t-24}} kW_{t-24} + b^{kW_{t-168}} kW_{t-168} + e_t
\end{aligned}
$$

In this equation,

kW_{t-24} is a one day lag of the dependent variable;

kW_{t-168} is a one week lag of the dependent variable, and;

All of the other variables are the same as in the ex ante model.

This model provides slightly more accurate predictions and slightly higher R-squared values compared with the ex ante model specification because of the dynamic lags. Electric load is highly auto correlated, which means that kW in previous time periods has a large impact on kW in the following time periods. Because of this autocorrelation, the dynamic lags improve the explanatory power of the model.

[19] Although we initially estimated the model based on data from several years, we found that load varied significantly by year as overall economic conditions changed. Consequently, we decided to use only load data from the year of the event for each utility.

APPENDIX B: SELECTED HOURLY LOAD IMPACT TABLES FOR SCE BIP CUSTOMERS

Estimates of hourly impacts are presented in this appendix for the average customer and for all customers combined for each forecast year in which the values change for the monthly peak day in July and August, based on 1-in-2 year weather conditions. Since enrollment and average impacts are held constant from 2014 through 2020, we have not included tables for these years as each table would be the same as the 2013 table. In the upper left hand corner of each figure, there is a section labeled Table 1 indicating the customer segment, month and year that is represented in the figure.

In addition, an Excel spreadsheet consisting of pivot tables has been filed with the CPUC containing 9,504 hourly ex ante load impact tables delineated as follows:

1. The average enrolled customer for each forecast year, 2009 through 2020, based on 1-in-2 and 1-in-10 weather year conditions for a typical event day (24 tables);

2. All customers combined for each forecast year and set of weather year conditions for a typical event day (24 tables);

3. The average enrolled customer for each monthly system peak day for each forecast year and set of weather conditions (288 tables);

4. All customers combined for each monthly system peak day for each forecast year and set of weather conditions (288 tables);

5. The average enrolled customer for each of the top 5 highest system load days for each forecast year and set of weather conditions (120 tables);

6. All customers combined for each of the top 5 highest system load days for each forecast year and set of weather conditions (120 tables);

7. Tables listed in item 1 for each industry and LCA (240 tables);

8. Tables listed in item 2 for each industry and LCA (240 tables);

9. Tables listed in item 3 for each industry and LCA (2,880 tables);

10. Tables listed in item 4 for each industry and LCA (2,880 tables);

11. Tables listed in item 5 for each industry and LCA (1,200 tables);

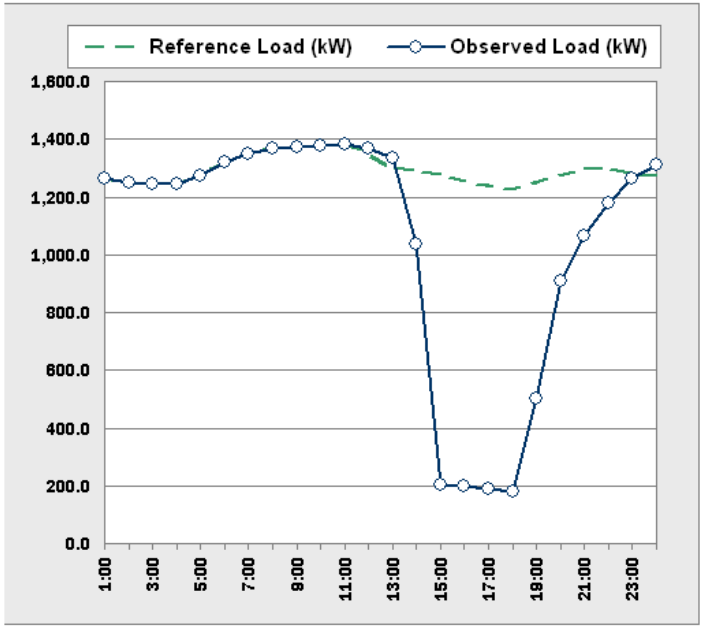
12. Tables listed in item 6 for each industry and LCA (1,200 tables).

TABLE 1: Menu options

Type of Results	Average Enrolled Account
Weather Year	1-in-2 (2002)
Forecast Year	2009
Day Type	July Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	**600**
Average FSL (kW)	**201**
Proxy Date	**Tuesday, July 09, 2002**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (kW)	Observed Load (kW)	Load Impact (kW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	**30th**	**50th**	**70th**	**90th**
1:00	1261.9	1261.9	0.0	69.1	-30.2	-12.4	0.0	12.4	30.2
2:00	1251.2	1251.2	0.0	68.2	-30.2	-12.4	0.0	12.4	30.2
3:00	1243.8	1243.8	0.0	67.2	-30.2	-12.4	0.0	12.4	30.2
4:00	1246.6	1246.6	0.0	66.5	-30.2	-12.4	0.0	12.4	30.2
5:00	1274.8	1274.8	0.0	66.2	-30.2	-12.4	0.0	12.4	30.2
6:00	1321.9	1321.9	0.0	65.7	-30.2	-12.4	0.0	12.4	30.2
7:00	1348.1	1348.1	0.0	66.2	-30.2	-12.4	0.0	12.4	30.2
8:00	1368.0	1368.0	0.0	68.7	-30.2	-12.4	0.0	12.4	30.2
9:00	1373.4	1373.4	0.0	73.4	-30.2	-12.4	0.0	12.4	30.2
10:00	1378.5	1378.5	0.0	79.1	-30.2	-12.4	0.0	12.4	30.2
11:00	1382.1	1382.1	0.0	84.5	-30.2	-12.4	0.0	12.4	30.2
12:00	1356.0	1369.6	-13.5	87.4	-43.7	-25.9	-13.5	-1.2	16.7
13:00	1303.1	1334.0	-30.8	88.7	-61.0	-43.2	-30.8	-18.5	-0.6
14:00	1292.2	1038.5	253.8	89.5	223.6	241.4	253.8	266.1	283.9
15:00	1276.2	205.5	1070.7	88.1	1040.5	1058.4	1070.7	1083.1	1100.9
16:00	1255.6	196.8	1058.8	86.2	1028.6	1046.5	1058.8	1071.2	1089.0
17:00	1240.5	188.1	1052.4	84.6	1022.2	1040.1	1052.4	1064.8	1082.6
18:00	1224.7	179.4	1045.3	82.9	1015.2	1033.0	1045.3	1057.7	1075.5
19:00	1250.0	503.7	746.4	80.0	716.2	734.0	746.4	758.7	776.6
20:00	1273.9	909.6	364.3	77.0	334.1	351.9	364.3	376.6	394.5
21:00	1297.4	1064.8	232.6	73.7	202.4	220.3	232.6	245.0	262.8
22:00	1296.2	1179.6	116.5	72.2	86.3	104.2	116.5	128.9	146.7
23:00	1284.8	1264.5	20.3	71.2	-9.9	7.9	20.3	32.6	50.5
0:00	1272.7	1313.2	-40.6	70.1	-70.7	-52.9	-40.6	-28.2	-10.4

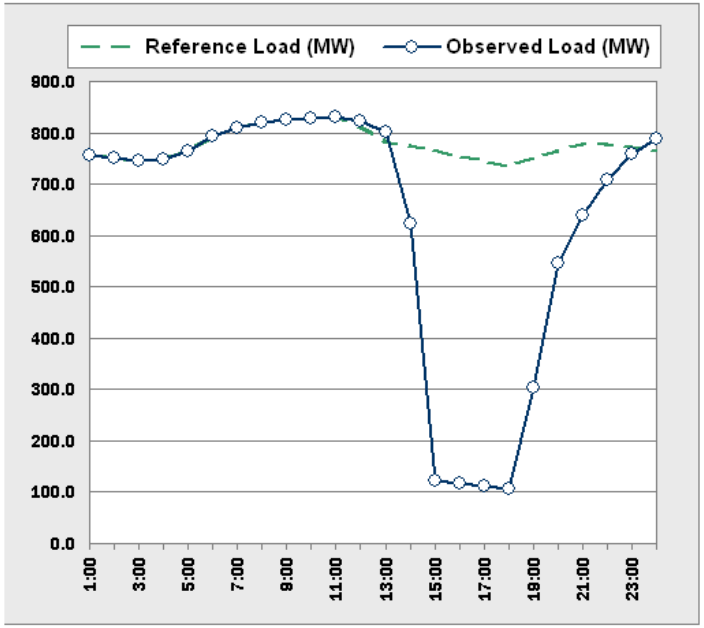
	Reference Energy Use (kWh)	Observed Energy Use (kWh)	Change in Energy Use (kWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	**30th**	**50th**	**70th**	**90th**
Daily	31,073.8	25,197.5	5,876.3	168.8	5728.4	5815.8	5876.3	5936.8	6024.2

TABLE 1: Menu options

Type of Results	Aggregate
Weather Year	1-in-2 (2002)
Forecast Year	2009
Day Type	July Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	**600**
Aggregate FSL (MW)	**121**
Proxy Date	**Tuesday, July 09, 2002**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (MW)	Observed Load (MW)	Load Impact (MW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	757.4	757.4	0.0	69.1	-18.1	-7.4	0.0	7.4	18.1
2:00	751.0	751.0	0.0	68.2	-18.1	-7.4	0.0	7.4	18.1
3:00	746.5	746.5	0.0	67.2	-18.1	-7.4	0.0	7.4	18.1
4:00	748.2	748.2	0.0	66.5	-18.1	-7.4	0.0	7.4	18.1
5:00	765.2	765.2	0.0	66.2	-18.1	-7.4	0.0	7.4	18.1
6:00	793.4	793.4	0.0	65.7	-18.1	-7.4	0.0	7.4	18.1
7:00	809.2	809.2	0.0	66.2	-18.1	-7.4	0.0	7.4	18.1
8:00	821.1	821.1	0.0	68.7	-18.1	-7.4	0.0	7.4	18.1
9:00	824.4	824.4	0.0	73.4	-18.1	-7.4	0.0	7.4	18.1
10:00	827.4	827.4	0.0	79.1	-18.1	-7.4	0.0	7.4	18.1
11:00	829.6	829.6	0.0	84.5	-18.1	-7.4	0.0	7.4	18.1
12:00	813.9	822.0	-8.1	87.4	-26.2	-15.5	-8.1	-0.7	10.0
13:00	782.2	800.7	-18.5	88.7	-36.6	-25.9	-18.5	-11.1	-0.4
14:00	775.6	623.3	152.3	89.5	134.2	144.9	152.3	159.7	170.4
15:00	766.0	123.3	642.7	88.1	624.6	635.3	642.7	650.1	660.8
16:00	753.7	118.1	635.5	86.2	617.4	628.1	635.5	642.9	653.6
17:00	744.6	112.9	631.7	84.6	613.6	624.3	631.7	639.1	649.8
18:00	735.1	107.7	627.4	82.9	609.3	620.0	627.4	634.8	645.5
19:00	750.3	302.3	448.0	80.0	429.9	440.6	448.0	455.4	466.1
20:00	764.6	546.0	218.7	77.0	200.5	211.2	218.7	226.1	236.8
21:00	778.7	639.1	139.6	73.7	121.5	132.2	139.6	147.0	157.7
22:00	778.0	708.0	69.9	72.2	51.8	62.5	69.9	77.4	88.1
23:00	771.1	759.0	12.2	71.2	-5.9	4.8	12.2	19.6	30.3
0:00	763.9	788.2	-24.3	70.1	-42.5	-31.8	-24.3	-16.9	-6.2

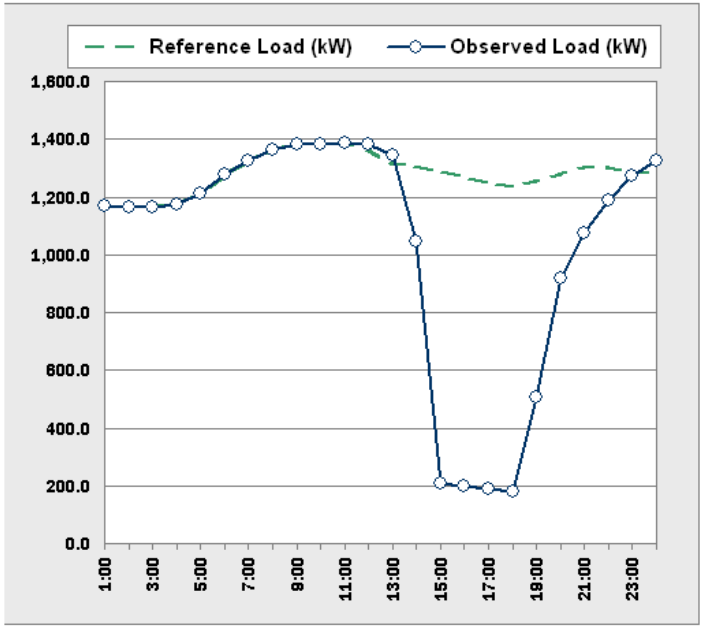
	Reference Energy Use (MWh)	Observed Energy Use (MWh)	Change in Energy Use (MWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	18,651.1	15,124.0	3,527.1	168.8	3438.3	3490.7	3527.1	3563.4	3615.8

TABLE 1: Menu options

Type of Results	Average Enrolled Account
Weather Year	1-in-2 (2002)
Forecast Year	2009
Day Type	August Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	**603**
Average FSL (kW)	**201**
Proxy Date	**Monday, August 12, 2002**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (kW)	Observed Load (kW)	Load Impact (kW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	1168.2	1168.2	0.0	69.8	-30.2	-12.4	0.0	12.4	30.2
2:00	1164.7	1164.7	0.0	68.7	-30.2	-12.4	0.0	12.4	30.2
3:00	1166.6	1166.6	0.0	67.9	-30.2	-12.4	0.0	12.4	30.2
4:00	1172.4	1172.4	0.0	66.7	-30.2	-12.4	0.0	12.4	30.2
5:00	1213.7	1213.7	0.0	65.9	-30.2	-12.4	0.0	12.4	30.2
6:00	1277.9	1277.9	0.0	65.5	-30.2	-12.4	0.0	12.4	30.2
7:00	1323.3	1323.3	0.0	65.6	-30.2	-12.4	0.0	12.4	30.2
8:00	1364.3	1364.3	0.0	67.5	-30.2	-12.4	0.0	12.4	30.2
9:00	1381.3	1381.3	0.0	71.1	-30.2	-12.4	0.0	12.4	30.2
10:00	1384.1	1384.1	0.0	75.1	-30.2	-12.4	0.0	12.4	30.2
11:00	1388.7	1388.7	0.0	78.4	-30.2	-12.4	0.0	12.4	30.2
12:00	1366.4	1380.1	-13.7	81.2	-43.9	-26.0	-13.7	-1.3	16.5
13:00	1317.3	1344.2	-26.9	83.3	-57.1	-39.3	-26.9	-14.6	3.2
14:00	1308.2	1046.2	262.0	84.6	231.8	249.7	262.0	274.4	292.2
15:00	1287.9	207.0	1080.8	85.9	1050.6	1068.5	1080.8	1093.2	1111.0
16:00	1268.0	198.3	1069.7	86.2	1039.5	1057.4	1069.7	1082.1	1099.9
17:00	1251.1	189.6	1061.4	85.1	1031.2	1049.1	1061.4	1073.8	1091.6
18:00	1233.2	180.9	1052.2	82.7	1022.0	1039.9	1052.2	1064.6	1082.4
19:00	1256.7	507.6	749.1	79.3	718.9	736.8	749.1	761.5	779.3
20:00	1275.9	916.8	359.1	75.5	328.9	346.7	359.1	371.4	389.3
21:00	1300.2	1073.3	226.9	72.6	196.7	214.5	226.9	239.2	257.1
22:00	1303.1	1189.1	114.0	71.0	83.9	101.7	114.0	126.4	144.2
23:00	1288.4	1274.8	13.6	70.0	-16.6	1.3	13.6	26.0	43.8
0:00	1280.8	1324.1	-43.2	68.9	-73.4	-55.6	-43.2	-30.9	-13.0

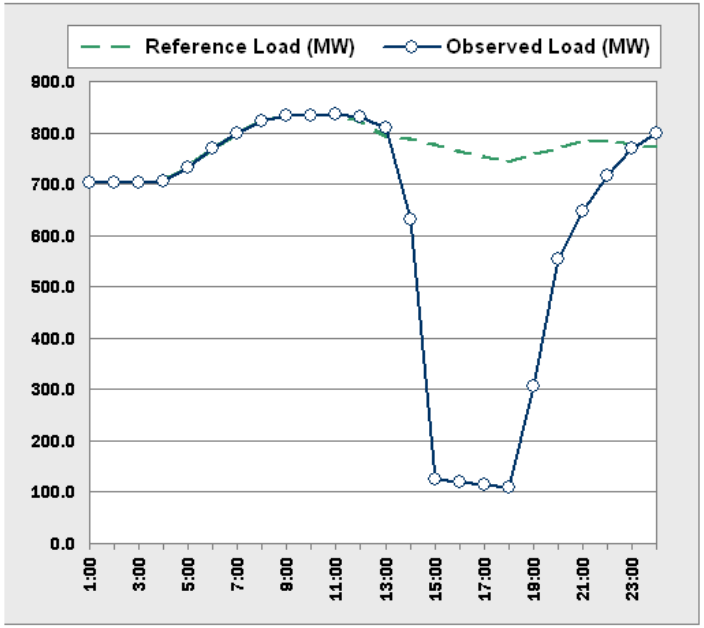
	Reference Energy Use (kWh)	Observed Energy Use (kWh)	Change in Energy Use (kWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	30,742.3	24,837.3	5,905.1	131.9	5757.2	5844.6	5905.1	5965.6	6053.0

TABLE 1: Menu options

Type of Results	Aggregate
Weather Year	1-in-2 (2002)
Forecast Year	2009
Day Type	August Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	**603**
Aggregate FSL (MW)	**121**
Proxy Date	**Monday, August 12, 2002**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (MW)	Observed Load (MW)	Load Impact (MW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	704.1	704.1	0.0	69.8	-18.2	-7.4	0.0	7.4	18.2
2:00	702.0	702.0	0.0	68.7	-18.2	-7.4	0.0	7.4	18.2
3:00	703.1	703.1	0.0	67.9	-18.2	-7.4	0.0	7.4	18.2
4:00	706.6	706.6	0.0	66.7	-18.2	-7.4	0.0	7.4	18.2
5:00	731.5	731.5	0.0	65.9	-18.2	-7.4	0.0	7.4	18.2
6:00	770.2	770.2	0.0	65.5	-18.2	-7.4	0.0	7.4	18.2
7:00	797.6	797.6	0.0	65.6	-18.2	-7.4	0.0	7.4	18.2
8:00	822.3	822.3	0.0	67.5	-18.2	-7.4	0.0	7.4	18.2
9:00	832.5	832.5	0.0	71.1	-18.2	-7.4	0.0	7.4	18.2
10:00	834.2	834.2	0.0	75.1	-18.2	-7.4	0.0	7.4	18.2
11:00	837.0	837.0	0.0	78.4	-18.2	-7.4	0.0	7.4	18.2
12:00	823.6	831.8	-8.2	81.2	-26.4	-15.7	-8.2	-0.8	10.0
13:00	793.9	810.2	-16.2	83.3	-34.4	-23.7	-16.2	-8.8	2.0
14:00	788.5	630.6	157.9	84.6	139.7	150.5	157.9	165.4	176.1
15:00	776.2	124.8	651.4	85.9	633.2	644.0	651.4	658.9	669.6
16:00	764.3	119.5	644.7	86.2	626.5	637.3	644.7	652.2	662.9
17:00	754.0	114.3	639.7	85.1	621.5	632.3	639.7	647.2	657.9
18:00	743.2	109.0	634.2	82.7	616.0	626.8	634.2	641.6	652.4
19:00	757.4	305.9	451.5	79.3	433.3	444.1	451.5	459.0	469.7
20:00	769.0	552.6	216.4	75.5	198.2	209.0	216.4	223.9	234.6
21:00	783.6	646.9	136.7	72.6	118.6	129.3	136.7	144.2	154.9
22:00	785.4	716.7	68.7	71.0	50.5	61.3	68.7	76.2	86.9
23:00	776.5	768.3	8.2	70.0	-10.0	0.8	8.2	15.6	26.4
0:00	772.0	798.0	-26.1	68.9	-44.3	-33.5	-26.1	-18.6	-7.9

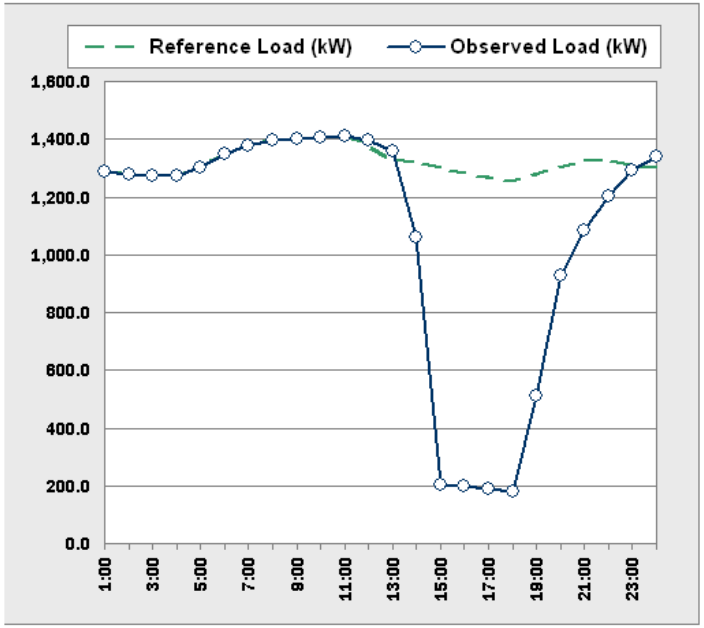
	Reference Energy Use (MWh)	Observed Energy Use (MWh)	Change in Energy Use (MWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	18,529.0	14,969.9	3,559.1	131.9	3470.0	3522.6	3559.1	3595.6	3648.2

TABLE 1: Menu options

Type of Results	Average Enrolled Account
Weather Year	1-in-2 (2002)
Forecast Year	2010
Day Type	July Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	**631**
Average FSL (kW)	**201**
Proxy Date	**Tuesday, July 09, 2002**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (kW)	Observed Load (kW)	Load Impact (kW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	1289.5	1289.5	0.0	69.1	-30.2	-12.4	0.0	12.4	30.2
2:00	1278.8	1278.8	0.0	68.2	-30.2	-12.4	0.0	12.4	30.2
3:00	1271.4	1271.4	0.0	67.2	-30.2	-12.4	0.0	12.4	30.2
4:00	1274.2	1274.2	0.0	66.5	-30.2	-12.4	0.0	12.4	30.2
5:00	1302.4	1302.4	0.0	66.2	-30.2	-12.4	0.0	12.4	30.2
6:00	1349.5	1349.5	0.0	65.7	-30.2	-12.4	0.0	12.4	30.2
7:00	1375.7	1375.7	0.0	66.2	-30.2	-12.4	0.0	12.4	30.2
8:00	1395.6	1395.6	0.0	68.7	-30.2	-12.4	0.0	12.4	30.2
9:00	1401.0	1401.0	0.0	73.4	-30.2	-12.4	0.0	12.4	30.2
10:00	1406.1	1406.1	0.0	79.1	-30.2	-12.4	0.0	12.4	30.2
11:00	1409.7	1409.7	0.0	84.5	-30.2	-12.4	0.0	12.4	30.2
12:00	1383.6	1397.5	-13.9	87.4	-44.0	-26.2	-13.9	-1.5	16.3
13:00	1330.7	1360.9	-30.2	88.7	-60.3	-42.5	-30.2	-17.8	0.0
14:00	1319.8	1058.1	261.7	89.5	231.5	249.4	261.7	274.1	291.9
15:00	1303.8	205.4	1098.4	88.1	1068.3	1086.1	1098.4	1110.8	1128.6
16:00	1283.2	196.5	1086.7	86.2	1056.5	1074.4	1086.7	1099.1	1116.9
17:00	1268.1	187.6	1080.5	84.6	1050.3	1068.2	1080.5	1092.9	1110.7
18:00	1252.3	178.7	1073.6	82.9	1043.4	1061.3	1073.6	1086.0	1103.8
19:00	1277.6	510.9	766.8	80.0	736.6	754.4	766.8	779.1	797.0
20:00	1301.5	926.8	374.7	77.0	344.5	362.3	374.7	387.0	404.9
21:00	1325.0	1085.9	239.2	73.7	209.0	226.8	239.2	251.5	269.4
22:00	1323.7	1203.6	120.2	72.2	90.0	107.8	120.2	132.5	150.4
23:00	1312.4	1290.6	21.7	71.2	-8.5	9.4	21.7	34.1	51.9
0:00	1300.2	1340.9	-40.6	70.1	-70.8	-53.0	-40.6	-28.3	-10.4

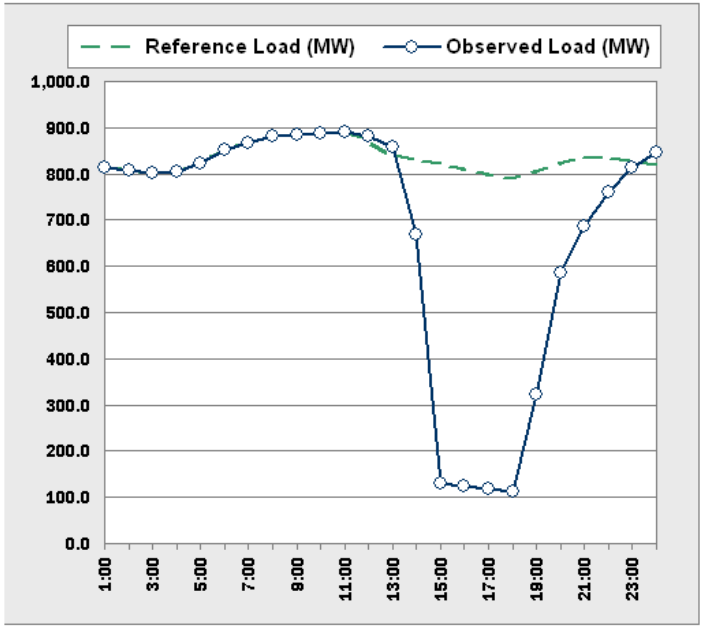
	Reference Energy Use (kWh)	Observed Energy Use (kWh)	Change in Energy Use (kWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	31,736.1	25,697.2	6,038.9	168.8	5891.1	5978.4	6038.9	6099.4	6186.8

TABLE 1: Menu options

Type of Results	Aggregate
Weather Year	1-in-2 (2002)
Forecast Year	2010
Day Type	July Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	**631**
Aggregate FSL (MW)	**127**
Proxy Date	**Tuesday, July 09, 2002**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (MW)	Observed Load (MW)	Load Impact (MW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	**30th**	**50th**	**70th**	**90th**
1:00	813.6	813.6	0.0	69.1	-19.0	-7.8	0.0	7.8	19.0
2:00	806.8	806.8	0.0	68.2	-19.0	-7.8	0.0	7.8	19.0
3:00	802.1	802.1	0.0	67.2	-19.0	-7.8	0.0	7.8	19.0
4:00	803.9	803.9	0.0	66.5	-19.0	-7.8	0.0	7.8	19.0
5:00	821.7	821.7	0.0	66.2	-19.0	-7.8	0.0	7.8	19.0
6:00	851.4	851.4	0.0	65.7	-19.0	-7.8	0.0	7.8	19.0
7:00	868.0	868.0	0.0	66.2	-19.0	-7.8	0.0	7.8	19.0
8:00	880.5	880.5	0.0	68.7	-19.0	-7.8	0.0	7.8	19.0
9:00	884.0	884.0	0.0	73.4	-19.0	-7.8	0.0	7.8	19.0
10:00	887.2	887.2	0.0	79.1	-19.0	-7.8	0.0	7.8	19.0
11:00	889.4	889.4	0.0	84.5	-19.0	-7.8	0.0	7.8	19.0
12:00	873.0	881.7	-8.7	87.4	-27.8	-16.5	-8.7	-1.0	10.3
13:00	839.6	858.6	-19.0	88.7	-38.1	-26.8	-19.0	-11.2	0.0
14:00	832.7	667.6	165.1	89.5	146.1	157.3	165.1	172.9	184.2
15:00	822.6	129.6	693.0	88.1	674.0	685.2	693.0	700.8	712.1
16:00	809.6	124.0	685.6	86.2	666.6	677.9	685.6	693.4	704.7
17:00	800.1	118.4	681.7	84.6	662.7	673.9	681.7	689.5	700.8
18:00	790.1	112.8	677.4	82.9	658.3	669.6	677.4	685.2	696.4
19:00	806.1	322.3	483.8	80.0	464.7	476.0	483.8	491.6	502.8
20:00	821.1	584.7	236.4	77.0	217.4	228.6	236.4	244.2	255.4
21:00	836.0	685.1	150.9	73.7	131.9	143.1	150.9	158.7	170.0
22:00	835.2	759.4	75.8	72.2	56.8	68.0	75.8	83.6	94.9
23:00	828.0	814.3	13.7	71.2	-5.3	5.9	13.7	21.5	32.8
0:00	820.4	846.0	-25.6	70.1	-44.7	-33.4	-25.6	-17.8	-6.6

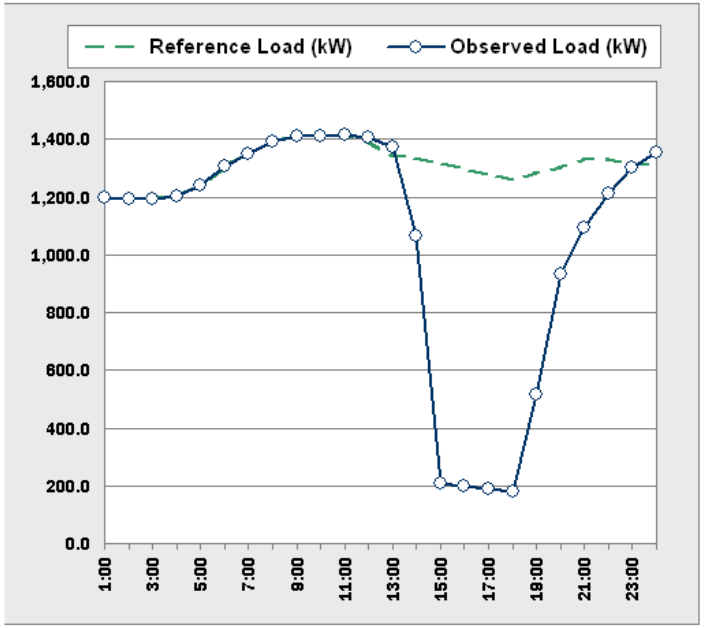
	Reference Energy Use (MWh)	Observed Energy Use (MWh)	Change in Energy Use (MWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	**30th**	**50th**	**70th**	**90th**
Daily	20,023.2	16,213.0	3,810.1	168.8	3716.8	3772.0	3810.1	3848.3	3903.4

TABLE 1: Menu options

Type of Results	Average Enrolled Account
Weather Year	1-in-2 (2002)
Forecast Year	2010
Day Type	August Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	**634**
Average FSL (kW)	**201**
Proxy Date	**Monday, August 12, 2002**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (kW)	Observed Load (kW)	Load Impact (kW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	1196.0	1196.0	0.0	69.8	-30.2	-12.4	0.0	12.4	30.2
2:00	1192.5	1192.5	0.0	68.7	-30.2	-12.4	0.0	12.4	30.2
3:00	1194.4	1194.4	0.0	67.9	-30.2	-12.4	0.0	12.4	30.2
4:00	1200.2	1200.2	0.0	66.7	-30.2	-12.4	0.0	12.4	30.2
5:00	1241.5	1241.5	0.0	65.9	-30.2	-12.4	0.0	12.4	30.2
6:00	1305.7	1305.7	0.0	65.5	-30.2	-12.4	0.0	12.4	30.2
7:00	1351.2	1351.2	0.0	65.6	-30.2	-12.4	0.0	12.4	30.2
8:00	1392.1	1392.1	0.0	67.5	-30.2	-12.4	0.0	12.4	30.2
9:00	1409.1	1409.1	0.0	71.1	-30.2	-12.4	0.0	12.4	30.2
10:00	1411.9	1411.9	0.0	75.1	-30.2	-12.4	0.0	12.4	30.2
11:00	1416.5	1416.5	0.0	78.4	-30.2	-12.4	0.0	12.4	30.2
12:00	1394.2	1408.2	-14.0	81.2	-44.2	-26.4	-14.0	-1.7	16.2
13:00	1345.1	1371.4	-26.3	83.3	-56.5	-38.6	-26.3	-13.9	3.9
14:00	1336.0	1066.0	270.0	84.6	239.8	257.7	270.0	282.4	300.2
15:00	1315.7	206.9	1108.7	85.9	1078.6	1096.4	1108.7	1121.1	1138.9
16:00	1295.9	198.0	1097.8	86.2	1067.6	1085.5	1097.8	1110.2	1128.0
17:00	1278.9	189.1	1089.7	85.1	1059.5	1077.4	1089.7	1102.1	1119.9
18:00	1261.0	180.2	1080.7	82.7	1050.5	1068.4	1080.7	1093.1	1110.9
19:00	1284.5	514.8	769.7	79.3	739.5	757.3	769.7	782.0	799.9
20:00	1303.7	934.2	369.6	75.5	339.4	357.2	369.6	381.9	399.7
21:00	1328.0	1094.5	233.5	72.6	203.3	221.1	233.5	245.8	263.7
22:00	1330.9	1213.2	117.7	71.0	87.5	105.4	117.7	130.1	147.9
23:00	1316.2	1301.2	15.0	70.0	-15.2	2.7	15.0	27.4	45.2
0:00	1308.6	1352.0	-43.3	68.9	-73.5	-55.7	-43.3	-31.0	-13.1

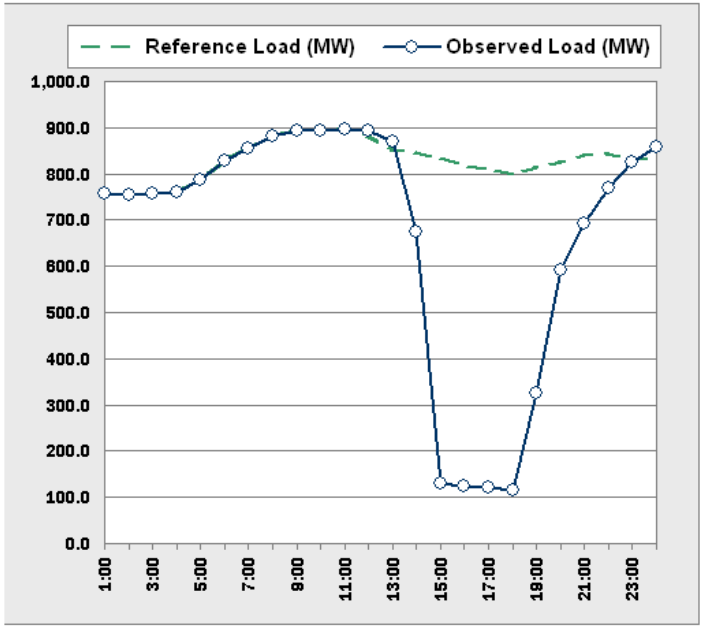
	Reference Energy Use (kWh)	Observed Energy Use (kWh)	Change in Energy Use (kWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	31,409.8	25,341.0	6,068.9	131.9	5921.0	6008.4	6068.9	6129.4	6216.8

TABLE 1: Menu options

Type of Results	Aggregate
Weather Year	1-in-2 (2002)
Forecast Year	2010
Day Type	August Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	**634**
Aggregate FSL (MW)	**128**
Proxy Date	**Monday, August 12, 2002**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (MW)	Observed Load (MW)	Load Impact (MW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	757.8	757.8	0.0	69.8	-19.1	-7.8	0.0	7.8	19.1
2:00	755.5	755.5	0.0	68.7	-19.1	-7.8	0.0	7.8	19.1
3:00	756.7	756.7	0.0	67.9	-19.1	-7.8	0.0	7.8	19.1
4:00	760.4	760.4	0.0	66.7	-19.1	-7.8	0.0	7.8	19.1
5:00	786.6	786.6	0.0	65.9	-19.1	-7.8	0.0	7.8	19.1
6:00	827.3	827.3	0.0	65.5	-19.1	-7.8	0.0	7.8	19.1
7:00	856.0	856.0	0.0	65.6	-19.1	-7.8	0.0	7.8	19.1
8:00	882.0	882.0	0.0	67.5	-19.1	-7.8	0.0	7.8	19.1
9:00	892.8	892.8	0.0	71.1	-19.1	-7.8	0.0	7.8	19.1
10:00	894.5	894.5	0.0	75.1	-19.1	-7.8	0.0	7.8	19.1
11:00	897.5	897.5	0.0	78.4	-19.1	-7.8	0.0	7.8	19.1
12:00	883.3	892.2	-8.9	81.2	-28.0	-16.7	-8.9	-1.0	10.3
13:00	852.2	868.8	-16.7	83.3	-35.8	-24.5	-16.7	-8.8	2.5
14:00	846.4	675.4	171.1	84.6	152.0	163.3	171.1	178.9	190.2
15:00	833.5	131.1	702.4	85.9	683.3	694.6	702.4	710.3	721.6
16:00	821.0	125.5	695.5	86.2	676.4	687.7	695.5	703.4	714.7
17:00	810.2	119.8	690.4	85.1	671.3	682.6	690.4	698.2	709.5
18:00	798.9	114.2	684.7	82.7	665.6	676.9	684.7	692.5	703.8
19:00	813.8	326.2	487.6	79.3	468.5	479.8	487.6	495.5	506.8
20:00	826.0	591.9	234.1	75.5	215.0	226.3	234.1	242.0	253.3
21:00	841.4	693.4	147.9	72.6	128.8	140.1	147.9	155.7	167.0
22:00	843.2	768.6	74.6	71.0	55.5	66.8	74.6	82.4	93.7
23:00	833.9	824.4	9.5	70.0	-9.6	1.7	9.5	17.3	28.6
0:00	829.1	856.5	-27.4	68.9	-46.6	-35.3	-27.4	-19.6	-8.3

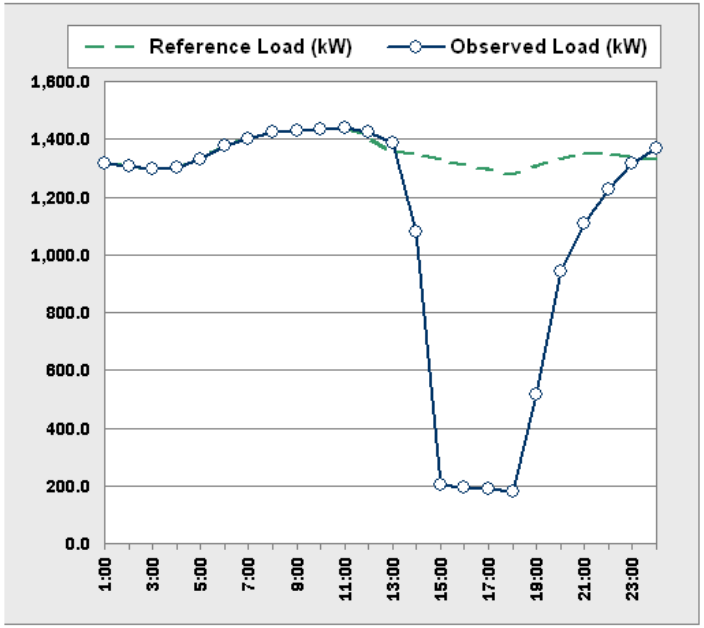
	Reference Energy Use (MWh)	Observed Energy Use (MWh)	Change in Energy Use (MWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	19,899.9	16,054.9	3,845.0	131.9	3751.3	3806.6	3845.0	3883.3	3938.7

TABLE 1: Menu options

Type of Results	Average Enrolled Account
Weather Year	1-in-2 (2002)
Forecast Year	2011
Day Type	July Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	**663**
Average FSL (kW)	**201**
Proxy Date	**Tuesday, July 09, 2002**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (kW)	Observed Load (kW)	Load Impact (kW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	1317.1	1317.1	0.0	69.1	-30.2	-12.4	0.0	12.4	30.2
2:00	1306.4	1306.4	0.0	68.2	-30.2	-12.4	0.0	12.4	30.2
3:00	1299.0	1299.0	0.0	67.2	-30.2	-12.4	0.0	12.4	30.2
4:00	1301.7	1301.7	0.0	66.5	-30.2	-12.4	0.0	12.4	30.2
5:00	1330.0	1330.0	0.0	66.2	-30.2	-12.4	0.0	12.4	30.2
6:00	1377.1	1377.1	0.0	65.7	-30.2	-12.4	0.0	12.4	30.2
7:00	1403.3	1403.3	0.0	66.2	-30.2	-12.4	0.0	12.4	30.2
8:00	1423.2	1423.2	0.0	68.7	-30.2	-12.4	0.0	12.4	30.2
9:00	1428.6	1428.6	0.0	73.4	-30.2	-12.4	0.0	12.4	30.2
10:00	1433.7	1433.7	0.0	79.1	-30.2	-12.4	0.0	12.4	30.2
11:00	1437.3	1437.3	0.0	84.5	-30.2	-12.4	0.0	12.4	30.2
12:00	1411.2	1425.4	-14.2	87.4	-44.4	-26.5	-14.2	-1.8	16.0
13:00	1358.3	1387.8	-29.5	88.7	-59.7	-41.9	-29.5	-17.2	0.7
14:00	1347.4	1077.8	269.7	89.5	239.5	257.3	269.7	282.0	299.8
15:00	1331.4	205.3	1126.2	88.1	1096.0	1113.8	1126.2	1138.5	1156.3
16:00	1310.8	196.2	1114.6	86.2	1084.4	1102.3	1114.6	1127.0	1144.8
17:00	1295.7	187.1	1108.6	84.6	1078.4	1096.3	1108.6	1121.0	1138.8
18:00	1279.9	178.0	1101.9	82.9	1071.7	1089.5	1101.9	1114.2	1132.1
19:00	1305.2	518.1	787.2	80.0	757.0	774.8	787.2	799.5	817.4
20:00	1329.1	944.0	385.1	77.0	354.9	372.7	385.1	397.4	415.3
21:00	1352.6	1106.9	245.7	73.7	215.6	233.4	245.7	258.1	275.9
22:00	1351.3	1227.5	123.9	72.2	93.7	111.5	123.9	136.2	154.0
23:00	1340.0	1316.8	23.1	71.2	-7.0	10.8	23.1	35.5	53.3
0:00	1327.8	1368.5	-40.7	70.1	-70.8	-53.0	-40.7	-28.3	-10.5

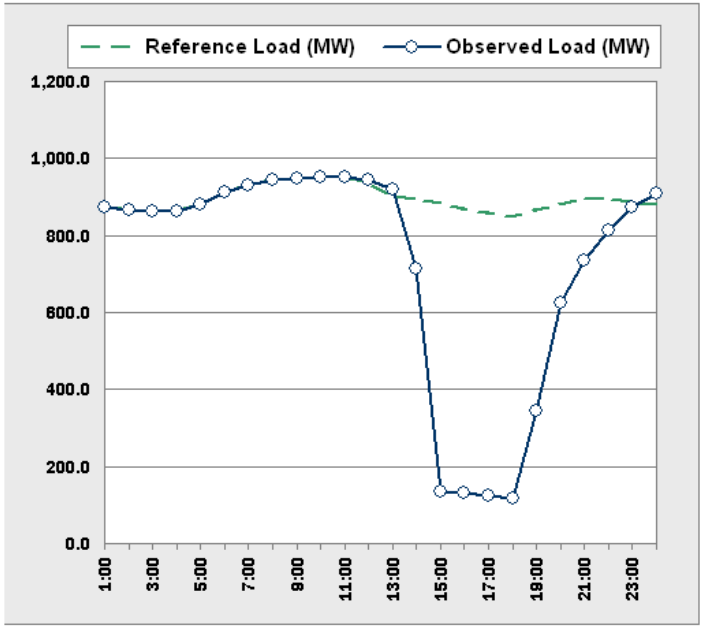
	Reference Energy Use (kWh)	Observed Energy Use (kWh)	Change in Energy Use (kWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	32,398.4	26,196.8	6,201.6	168.8	6053.7	6141.1	6201.6	6262.1	6349.5

TABLE 1: Menu options

Type of Results	Aggregate
Weather Year	1-in-2 (2002)
Forecast Year	2011
Day Type	July Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	**663**
Aggregate FSL (MW)	**134**
Proxy Date	**Tuesday, July 09, 2002**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (MW)	Observed Load (MW)	Load Impact (MW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	873.5	873.5	0.0	69.1	-20.0	-8.2	0.0	8.2	20.0
2:00	866.4	866.4	0.0	68.2	-20.0	-8.2	0.0	8.2	20.0
3:00	861.5	861.5	0.0	67.2	-20.0	-8.2	0.0	8.2	20.0
4:00	863.3	863.3	0.0	66.5	-20.0	-8.2	0.0	8.2	20.0
5:00	882.1	882.1	0.0	66.2	-20.0	-8.2	0.0	8.2	20.0
6:00	913.3	913.3	0.0	65.7	-20.0	-8.2	0.0	8.2	20.0
7:00	930.7	930.7	0.0	66.2	-20.0	-8.2	0.0	8.2	20.0
8:00	943.9	943.9	0.0	68.7	-20.0	-8.2	0.0	8.2	20.0
9:00	947.5	947.5	0.0	73.4	-20.0	-8.2	0.0	8.2	20.0
10:00	950.8	950.8	0.0	79.1	-20.0	-8.2	0.0	8.2	20.0
11:00	953.2	953.2	0.0	84.5	-20.0	-8.2	0.0	8.2	20.0
12:00	935.9	945.3	-9.4	87.4	-29.4	-17.6	-9.4	-1.2	10.6
13:00	900.9	920.4	-19.6	88.7	-39.6	-27.8	-19.6	-11.4	0.4
14:00	893.6	714.8	178.8	89.5	158.8	170.6	178.8	187.0	198.9
15:00	883.0	136.1	746.9	88.1	726.9	738.7	746.9	755.1	766.9
16:00	869.3	130.1	739.2	86.2	719.2	731.0	739.2	747.4	759.2
17:00	859.3	124.1	735.2	84.6	715.2	727.0	735.2	743.4	755.3
18:00	848.9	118.1	730.8	82.9	710.8	722.6	730.8	739.0	750.8
19:00	865.6	343.6	522.1	80.0	502.0	513.9	522.1	530.2	542.1
20:00	881.4	626.1	255.4	77.0	235.4	247.2	255.4	263.6	275.4
21:00	897.1	734.1	163.0	73.7	143.0	154.8	163.0	171.2	183.0
22:00	896.2	814.1	82.1	72.2	62.1	74.0	82.1	90.3	102.2
23:00	888.7	873.3	15.4	71.2	-4.7	7.2	15.4	23.5	35.4
0:00	880.6	907.6	-27.0	70.1	-47.0	-35.2	-27.0	-18.8	-6.9

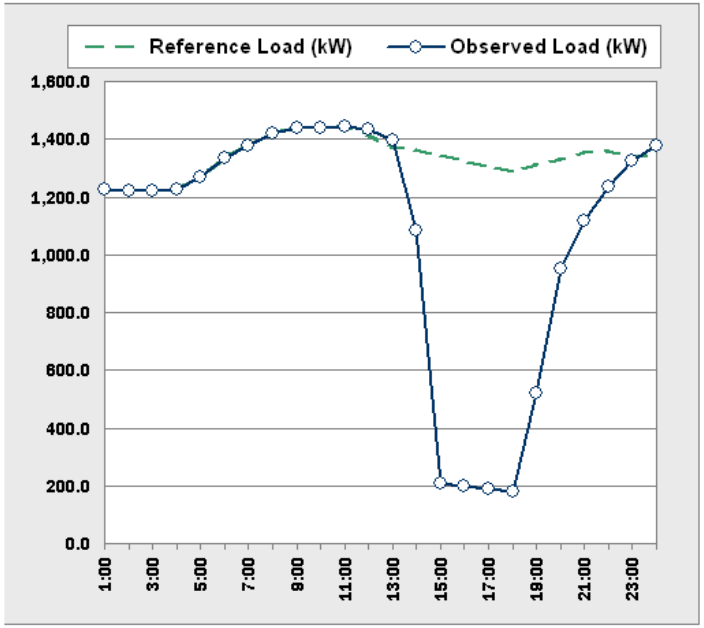
	Reference Energy Use (MWh)	Observed Energy Use (MWh)	Change in Energy Use (MWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	21,486.8	17,373.9	4,112.9	168.8	4014.9	4072.8	4112.9	4153.1	4211.0

TABLE 1: Menu options

Type of Results	Average Enrolled Account
Weather Year	1-in-2 (2002)
Forecast Year	2011
Day Type	August Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	**666**
Average FSL (kW)	**201**
Proxy Date	**Monday, August 12, 2002**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (kW)	Observed Load (kW)	Load Impact (kW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	1223.9	1223.9	0.0	69.8	-30.2	-12.4	0.0	12.4	30.2
2:00	1220.3	1220.3	0.0	68.7	-30.2	-12.4	0.0	12.4	30.2
3:00	1222.2	1222.2	0.0	67.9	-30.2	-12.4	0.0	12.4	30.2
4:00	1228.0	1228.0	0.0	66.7	-30.2	-12.4	0.0	12.4	30.2
5:00	1269.3	1269.3	0.0	65.9	-30.2	-12.4	0.0	12.4	30.2
6:00	1333.5	1333.5	0.0	65.5	-30.2	-12.4	0.0	12.4	30.2
7:00	1379.0	1379.0	0.0	65.6	-30.2	-12.4	0.0	12.4	30.2
8:00	1419.9	1419.9	0.0	67.5	-30.2	-12.4	0.0	12.4	30.2
9:00	1436.9	1436.9	0.0	71.1	-30.2	-12.4	0.0	12.4	30.2
10:00	1439.7	1439.7	0.0	75.1	-30.2	-12.4	0.0	12.4	30.2
11:00	1444.4	1444.4	0.0	78.4	-30.2	-12.4	0.0	12.4	30.2
12:00	1422.0	1436.4	-14.3	81.2	-44.5	-26.7	-14.3	-2.0	15.8
13:00	1372.9	1398.5	-25.6	83.3	-55.8	-38.0	-25.6	-13.3	4.6
14:00	1363.8	1085.8	278.0	84.6	247.9	265.7	278.0	290.4	308.2
15:00	1343.5	206.8	1136.7	85.9	1106.5	1124.3	1136.7	1149.0	1166.9
16:00	1323.7	197.7	1125.9	86.2	1095.7	1113.6	1125.9	1138.3	1156.1
17:00	1306.7	188.7	1118.0	85.1	1087.8	1105.7	1118.0	1130.4	1148.2
18:00	1288.8	179.6	1109.2	82.7	1079.0	1096.9	1109.2	1121.6	1139.4
19:00	1312.3	522.1	790.2	79.3	760.0	777.9	790.2	802.6	820.4
20:00	1331.5	951.5	380.0	75.5	349.8	367.7	380.0	392.4	410.2
21:00	1355.8	1115.7	240.1	72.6	209.9	227.7	240.1	252.4	270.3
22:00	1358.7	1237.3	121.4	71.0	91.2	109.1	121.4	133.8	151.6
23:00	1344.0	1327.6	16.4	70.0	-13.7	4.1	16.4	28.8	46.6
0:00	1336.5	1379.8	-43.4	68.9	-73.6	-55.7	-43.4	-31.0	-13.2

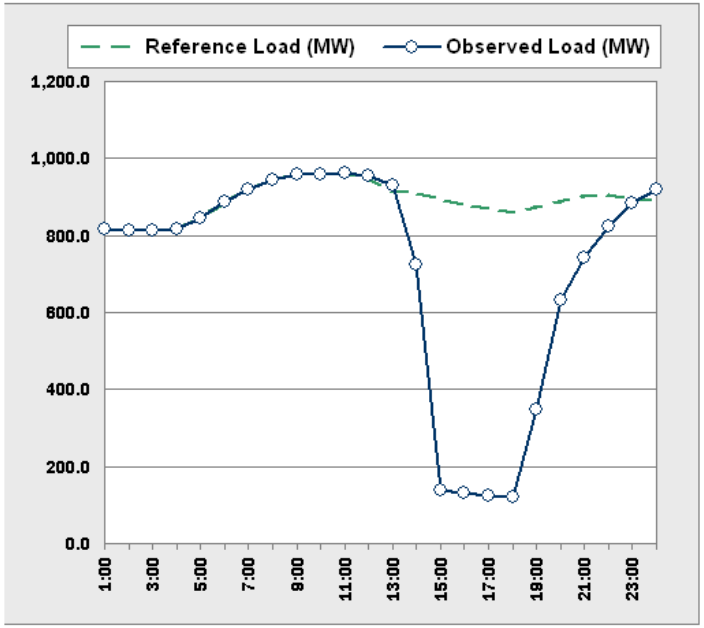
	Reference Energy Use (kWh)	Observed Energy Use (kWh)	Change in Energy Use (kWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	32,077.3	25,844.6	6,232.7	131.9	6084.8	6172.2	6232.7	6293.2	6380.6

TABLE 1: Menu options

Type of Results	Aggregate
Weather Year	1-in-2 (2002)
Forecast Year	2011
Day Type	August Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	**666**
Aggregate FSL (MW)	**134**
Proxy Date	**Monday, August 12, 2002**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (MW)	Observed Load (MW)	Load Impact (MW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	**30th**	**50th**	**70th**	**90th**
1:00	815.0	815.0	0.0	69.8	-20.1	-8.2	0.0	8.2	20.1
2:00	812.7	812.7	0.0	68.7	-20.1	-8.2	0.0	8.2	20.1
3:00	813.9	813.9	0.0	67.9	-20.1	-8.2	0.0	8.2	20.1
4:00	817.8	817.8	0.0	66.7	-20.1	-8.2	0.0	8.2	20.1
5:00	845.3	845.3	0.0	65.9	-20.1	-8.2	0.0	8.2	20.1
6:00	888.1	888.1	0.0	65.5	-20.1	-8.2	0.0	8.2	20.1
7:00	918.4	918.4	0.0	65.6	-20.1	-8.2	0.0	8.2	20.1
8:00	945.6	945.6	0.0	67.5	-20.1	-8.2	0.0	8.2	20.1
9:00	956.9	956.9	0.0	71.1	-20.1	-8.2	0.0	8.2	20.1
10:00	958.8	958.8	0.0	75.1	-20.1	-8.2	0.0	8.2	20.1
11:00	961.9	961.9	0.0	78.4	-20.1	-8.2	0.0	8.2	20.1
12:00	947.0	956.6	-9.5	81.2	-29.6	-17.8	-9.5	-1.3	10.6
13:00	914.3	931.4	-17.1	83.3	-37.2	-25.3	-17.1	-8.8	3.0
14:00	908.3	723.1	185.2	84.6	165.1	176.9	185.2	193.4	205.3
15:00	894.7	137.7	757.0	85.9	736.9	748.8	757.0	765.2	777.1
16:00	881.5	131.7	749.8	86.2	729.7	741.6	749.8	758.1	769.9
17:00	870.2	125.6	744.6	85.1	724.5	736.3	744.6	752.8	764.7
18:00	858.3	119.6	738.7	82.7	718.6	730.5	738.7	746.9	758.8
19:00	874.0	347.7	526.3	79.3	506.2	518.0	526.3	534.5	546.4
20:00	886.8	633.7	253.1	75.5	233.0	244.9	253.1	261.3	273.2
21:00	902.9	743.0	159.9	72.6	139.8	151.7	159.9	168.1	180.0
22:00	904.9	824.0	80.9	71.0	60.7	72.6	80.9	89.1	101.0
23:00	895.1	884.1	11.0	70.0	-9.1	2.7	11.0	19.2	31.1
0:00	890.0	918.9	-28.9	68.9	-49.0	-37.1	-28.9	-20.7	-8.8

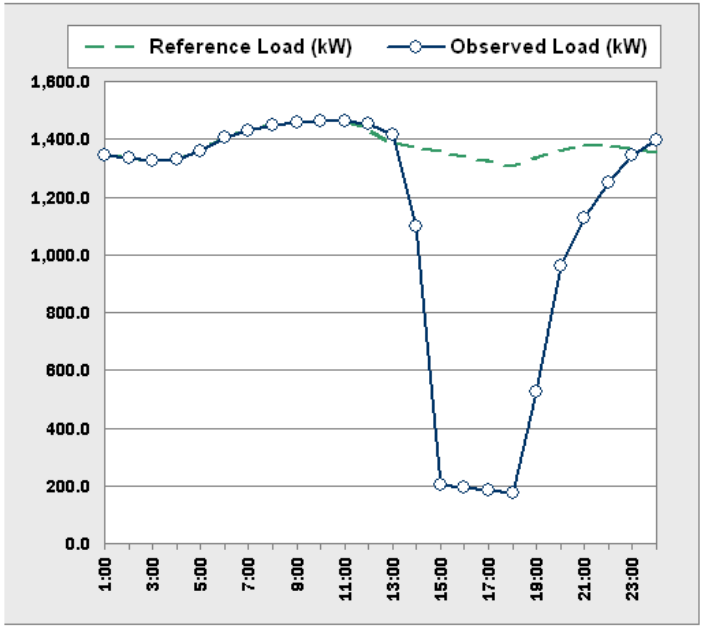
	Reference Energy Use (MWh)	Observed Energy Use (MWh)	Change in Energy Use (MWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	**30th**	**50th**	**70th**	**90th**
Daily	21,362.5	17,211.7	4,150.8	131.9	4052.3	4110.5	4150.8	4191.1	4249.3

TABLE 1: Menu options

Type of Results	Average Enrolled Account
Weather Year	1-in-2 (2002)
Forecast Year	2012
Day Type	July Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	**677**
Average FSL (kW)	**201**
Proxy Date	**Tuesday, July 09, 2002**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (kW)	Observed Load (kW)	Load Impact (kW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	1344.7	1344.7	0.0	69.1	-30.2	-12.4	0.0	12.4	30.2
2:00	1334.0	1334.0	0.0	68.2	-30.2	-12.4	0.0	12.4	30.2
3:00	1326.6	1326.6	0.0	67.2	-30.2	-12.4	0.0	12.4	30.2
4:00	1329.3	1329.3	0.0	66.5	-30.2	-12.4	0.0	12.4	30.2
5:00	1357.6	1357.6	0.0	66.2	-30.2	-12.4	0.0	12.4	30.2
6:00	1404.6	1404.6	0.0	65.7	-30.2	-12.4	0.0	12.4	30.2
7:00	1430.9	1430.9	0.0	66.2	-30.2	-12.4	0.0	12.4	30.2
8:00	1450.8	1450.8	0.0	68.7	-30.2	-12.4	0.0	12.4	30.2
9:00	1456.2	1456.2	0.0	73.4	-30.2	-12.4	0.0	12.4	30.2
10:00	1461.3	1461.3	0.0	79.1	-30.2	-12.4	0.0	12.4	30.2
11:00	1464.9	1464.9	0.0	84.5	-30.2	-12.4	0.0	12.4	30.2
12:00	1438.8	1453.3	-14.5	87.4	-44.7	-26.9	-14.5	-2.2	15.7
13:00	1385.9	1414.8	-28.9	88.7	-59.0	-41.2	-28.9	-16.5	1.3
14:00	1375.0	1097.4	277.6	89.5	247.4	265.3	277.6	290.0	307.8
15:00	1359.0	205.1	1153.9	88.1	1123.7	1141.5	1153.9	1166.2	1184.1
16:00	1338.4	195.9	1142.5	86.2	1112.3	1130.2	1142.5	1154.9	1172.7
17:00	1323.3	186.6	1136.7	84.6	1106.5	1124.4	1136.7	1149.1	1166.9
18:00	1307.5	177.3	1130.2	82.9	1100.0	1117.8	1130.2	1142.5	1160.4
19:00	1332.8	525.3	807.6	80.0	777.4	795.2	807.6	819.9	837.7
20:00	1356.7	961.2	395.5	77.0	365.3	383.1	395.5	407.8	425.7
21:00	1380.2	1127.9	252.3	73.7	222.1	239.9	252.3	264.6	282.5
22:00	1378.9	1251.4	127.5	72.2	97.3	115.2	127.5	139.9	157.7
23:00	1367.6	1343.0	24.6	71.2	-5.6	12.2	24.6	36.9	54.8
0:00	1355.4	1396.1	-40.7	70.1	-70.9	-53.1	-40.7	-28.4	-10.5

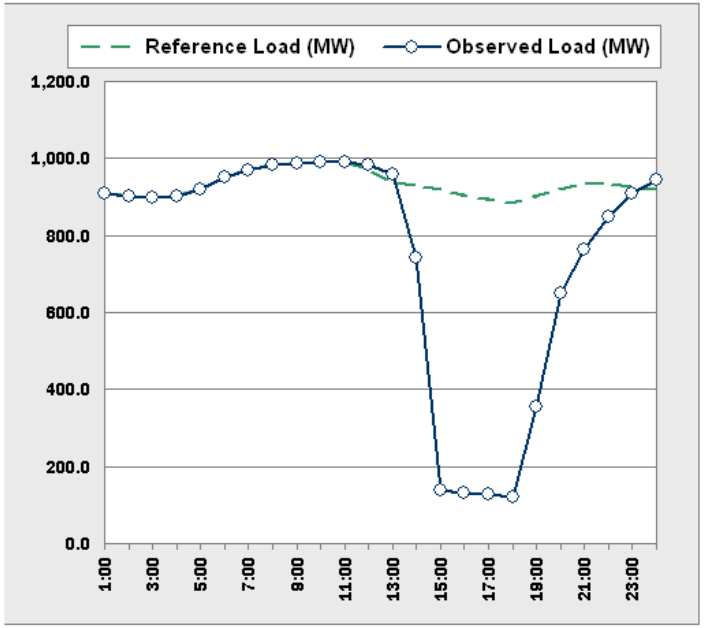
	Reference Energy Use (kWh)	Observed Energy Use (kWh)	Change in Energy Use (kWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	33,060.7	26,696.5	6,364.2	168.8	6216.4	6303.7	6364.2	6424.7	6512.1

TABLE 1: Menu options

Type of Results	Aggregate
Weather Year	1-in-2 (2002)
Forecast Year	2012
Day Type	July Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	**677**
Aggregate FSL (MW)	**136**
Proxy Date	**Tuesday, July 09, 2002**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (MW)	Observed Load (MW)	Load Impact (MW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	910.6	910.6	0.0	69.1	-20.4	-8.4	0.0	8.4	20.4
2:00	903.3	903.3	0.0	68.2	-20.4	-8.4	0.0	8.4	20.4
3:00	898.3	898.3	0.0	67.2	-20.4	-8.4	0.0	8.4	20.4
4:00	900.1	900.1	0.0	66.5	-20.4	-8.4	0.0	8.4	20.4
5:00	919.3	919.3	0.0	66.2	-20.4	-8.4	0.0	8.4	20.4
6:00	951.1	951.1	0.0	65.7	-20.4	-8.4	0.0	8.4	20.4
7:00	968.9	968.9	0.0	66.2	-20.4	-8.4	0.0	8.4	20.4
8:00	982.4	982.4	0.0	68.7	-20.4	-8.4	0.0	8.4	20.4
9:00	986.1	986.1	0.0	73.4	-20.4	-8.4	0.0	8.4	20.4
10:00	989.5	989.5	0.0	79.1	-20.4	-8.4	0.0	8.4	20.4
11:00	991.9	991.9	0.0	84.5	-20.4	-8.4	0.0	8.4	20.4
12:00	974.3	984.1	-9.8	87.4	-30.3	-18.2	-9.8	-1.5	10.6
13:00	938.5	958.0	-19.5	88.7	-40.0	-27.9	-19.5	-11.2	0.9
14:00	931.1	743.1	188.0	89.5	167.5	179.6	188.0	196.3	208.4
15:00	920.2	138.9	781.3	88.1	760.9	773.0	781.3	789.7	801.8
16:00	906.3	132.6	773.7	86.2	753.2	765.3	773.7	782.0	794.1
17:00	896.1	126.4	769.7	84.6	749.3	761.3	769.7	778.1	790.1
18:00	885.4	120.1	765.3	82.9	744.8	756.9	765.3	773.6	785.7
19:00	902.5	355.7	546.8	80.0	526.4	538.5	546.8	555.2	567.3
20:00	918.7	650.9	267.8	77.0	247.4	259.4	267.8	276.2	288.2
21:00	934.6	763.8	170.8	73.7	150.4	162.5	170.8	179.2	191.3
22:00	933.7	847.4	86.4	72.2	65.9	78.0	86.4	94.7	106.8
23:00	926.0	909.4	16.6	71.2	-3.8	8.3	16.6	25.0	37.1
0:00	917.8	945.4	-27.6	70.1	-48.0	-35.9	-27.6	-19.2	-7.1

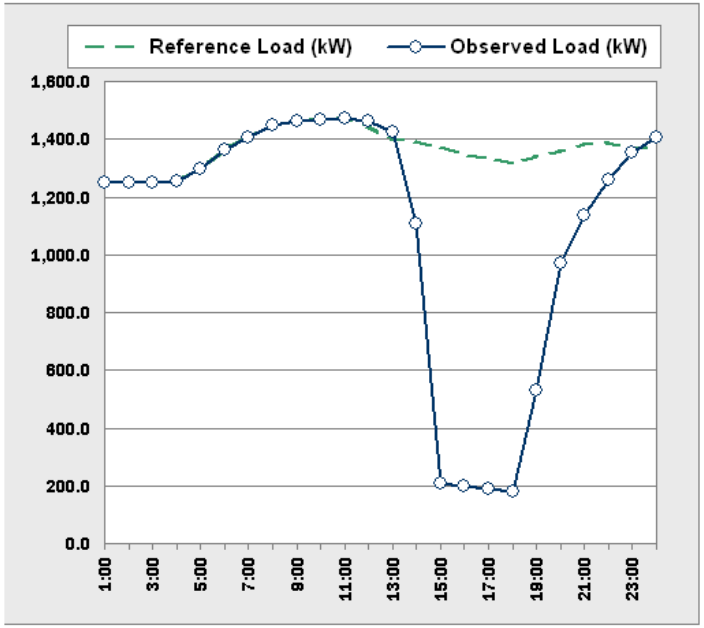
	Reference Energy Use (MWh)	Observed Energy Use (MWh)	Change in Energy Use (MWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	22,386.7	18,077.2	4,309.5	168.8	4209.3	4268.5	4309.5	4350.4	4409.6

TABLE 1: Menu options

Type of Results	Average Enrolled Account
Weather Year	1-in-2 (2002)
Forecast Year	2012
Day Type	August Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	**677**
Average FSL (kW)	**201**
Proxy Date	**Monday, August 12, 2002**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (kW)	Observed Load (kW)	Load Impact (kW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	1251.7	1251.7	0.0	69.8	-30.2	-12.4	0.0	12.4	30.2
2:00	1248.1	1248.1	0.0	68.7	-30.2	-12.4	0.0	12.4	30.2
3:00	1250.0	1250.0	0.0	67.9	-30.2	-12.4	0.0	12.4	30.2
4:00	1255.8	1255.8	0.0	66.7	-30.2	-12.4	0.0	12.4	30.2
5:00	1297.1	1297.1	0.0	65.9	-30.2	-12.4	0.0	12.4	30.2
6:00	1361.4	1361.4	0.0	65.5	-30.2	-12.4	0.0	12.4	30.2
7:00	1406.8	1406.8	0.0	65.6	-30.2	-12.4	0.0	12.4	30.2
8:00	1447.8	1447.8	0.0	67.5	-30.2	-12.4	0.0	12.4	30.2
9:00	1464.7	1464.7	0.0	71.1	-30.2	-12.4	0.0	12.4	30.2
10:00	1467.5	1467.5	0.0	75.1	-30.2	-12.4	0.0	12.4	30.2
11:00	1472.2	1472.2	0.0	78.4	-30.2	-12.4	0.0	12.4	30.2
12:00	1449.8	1464.5	-14.7	81.2	-44.9	-27.0	-14.7	-2.3	15.5
13:00	1400.7	1425.7	-25.0	83.3	-55.2	-37.3	-25.0	-12.6	5.2
14:00	1391.6	1105.6	286.1	84.6	255.9	273.7	286.1	298.4	316.2
15:00	1371.3	206.7	1164.6	85.9	1134.4	1152.2	1164.6	1176.9	1194.8
16:00	1351.5	197.4	1154.0	86.2	1123.9	1141.7	1154.0	1166.4	1184.2
17:00	1334.5	188.2	1146.3	85.1	1116.1	1134.0	1146.3	1158.7	1176.5
18:00	1316.6	178.9	1137.7	82.7	1107.5	1125.3	1137.7	1150.0	1167.9
19:00	1340.1	529.4	810.8	79.3	780.6	798.4	810.8	823.1	841.0
20:00	1359.4	968.9	390.5	75.5	360.3	378.1	390.5	402.8	420.7
21:00	1383.6	1137.0	246.7	72.6	216.5	234.3	246.7	259.0	276.9
22:00	1386.6	1261.5	125.1	71.0	94.9	112.7	125.1	137.4	155.3
23:00	1371.8	1354.0	17.9	70.0	-12.3	5.5	17.9	30.2	48.1
0:00	1364.3	1407.7	-43.5	68.9	-73.6	-55.8	-43.5	-31.1	-13.3

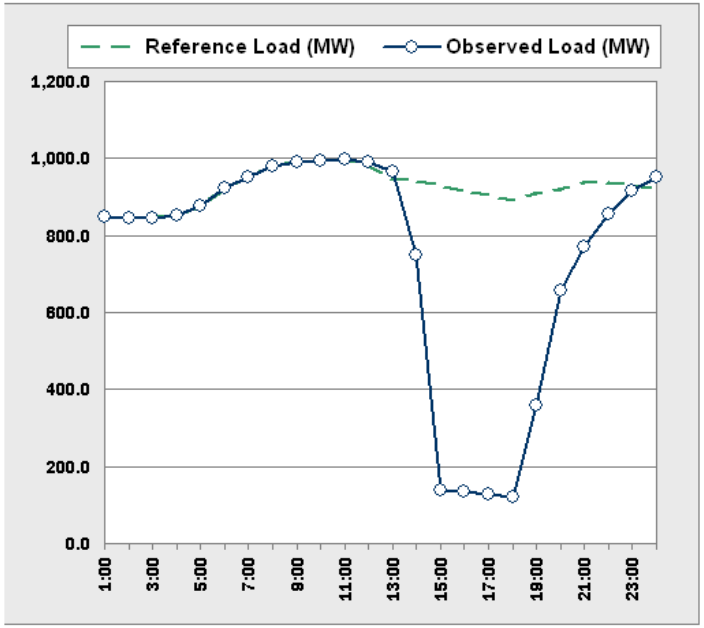
	Reference Energy Use (kWh)	Observed Energy Use (kWh)	Change in Energy Use (kWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	32,744.8	26,348.3	6,396.5	131.9	6248.6	6336.0	6396.5	6457.0	6544.4

TABLE 1: Menu options

Type of Results	Aggregate
Weather Year	1-in-2 (2002)
Forecast Year	2012
Day Type	August Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	**677**
Aggregate FSL (MW)	**136**
Proxy Date	**Monday, August 12, 2002**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (MW)	Observed Load (MW)	Load Impact (MW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	847.6	847.6	0.0	69.8	-20.4	-8.4	0.0	8.4	20.4
2:00	845.2	845.2	0.0	68.7	-20.4	-8.4	0.0	8.4	20.4
3:00	846.4	846.4	0.0	67.9	-20.4	-8.4	0.0	8.4	20.4
4:00	850.3	850.3	0.0	66.7	-20.4	-8.4	0.0	8.4	20.4
5:00	878.3	878.3	0.0	65.9	-20.4	-8.4	0.0	8.4	20.4
6:00	921.8	921.8	0.0	65.5	-20.4	-8.4	0.0	8.4	20.4
7:00	952.6	952.6	0.0	65.6	-20.4	-8.4	0.0	8.4	20.4
8:00	980.3	980.3	0.0	67.5	-20.4	-8.4	0.0	8.4	20.4
9:00	991.8	991.8	0.0	71.1	-20.4	-8.4	0.0	8.4	20.4
10:00	993.7	993.7	0.0	75.1	-20.4	-8.4	0.0	8.4	20.4
11:00	996.9	996.9	0.0	78.4	-20.4	-8.4	0.0	8.4	20.4
12:00	981.7	991.7	-9.9	81.2	-30.4	-18.3	-9.9	-1.6	10.5
13:00	948.5	965.4	-16.9	83.3	-37.4	-25.3	-16.9	-8.5	3.5
14:00	942.3	748.6	193.7	84.6	173.3	185.3	193.7	202.1	214.1
15:00	928.6	140.0	788.6	85.9	768.2	780.2	788.6	797.0	809.0
16:00	915.1	133.7	781.4	86.2	761.0	773.1	781.4	789.8	801.9
17:00	903.6	127.4	776.2	85.1	755.8	767.9	776.2	784.6	796.7
18:00	891.5	121.1	770.4	82.7	749.9	762.0	770.4	778.7	790.8
19:00	907.4	358.4	549.0	79.3	528.6	540.6	549.0	557.4	569.4
20:00	920.5	656.1	264.4	75.5	244.0	256.1	264.4	272.8	284.9
21:00	936.9	769.9	167.0	72.6	146.6	158.7	167.0	175.4	187.5
22:00	938.9	854.2	84.7	71.0	64.3	76.3	84.7	93.1	105.1
23:00	928.9	916.8	12.1	70.0	-8.3	3.7	12.1	20.5	32.5
0:00	923.8	953.2	-29.4	68.9	-49.9	-37.8	-29.4	-21.1	-9.0

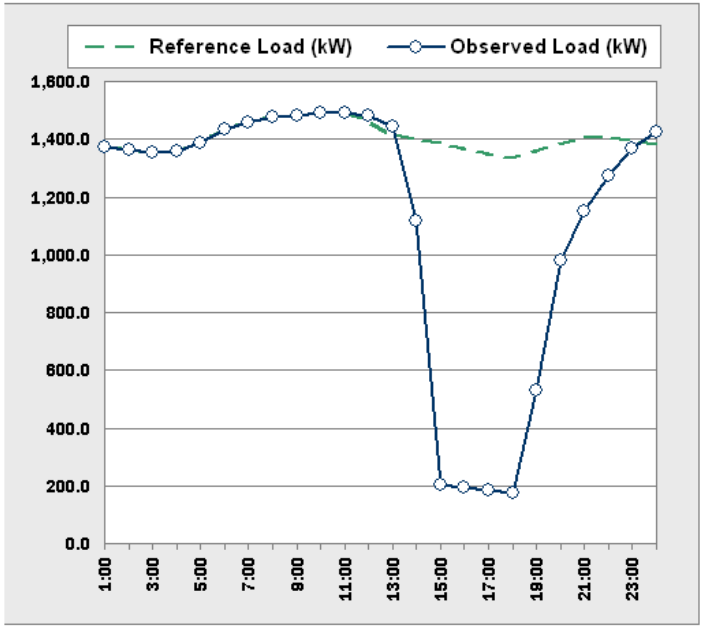
	Reference Energy Use (MWh)	Observed Energy Use (MWh)	Change in Energy Use (MWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	22,172.8	17,841.5	4,331.3	131.9	4231.2	4290.3	4331.3	4372.3	4431.5

TABLE 1: Menu options

Type of Results	Average Enrolled Account
Weather Year	1-in-2 (2002)
Forecast Year	2013
Day Type	July Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	**677**
Average FSL (kW)	**201**
Proxy Date	**Tuesday, July 09, 2002**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (kW)	Observed Load (kW)	Load Impact (kW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	**30th**	**50th**	**70th**	**90th**
1:00	1372.3	1372.3	0.0	69.1	-30.2	-12.4	0.0	12.4	30.2
2:00	1361.6	1361.6	0.0	68.2	-30.2	-12.4	0.0	12.4	30.2
3:00	1354.2	1354.2	0.0	67.2	-30.2	-12.4	0.0	12.4	30.2
4:00	1356.9	1356.9	0.0	66.5	-30.2	-12.4	0.0	12.4	30.2
5:00	1385.2	1385.2	0.0	66.2	-30.2	-12.4	0.0	12.4	30.2
6:00	1432.2	1432.2	0.0	65.7	-30.2	-12.4	0.0	12.4	30.2
7:00	1458.5	1458.5	0.0	66.2	-30.2	-12.4	0.0	12.4	30.2
8:00	1478.4	1478.4	0.0	68.7	-30.2	-12.4	0.0	12.4	30.2
9:00	1483.8	1483.8	0.0	73.4	-30.2	-12.4	0.0	12.4	30.2
10:00	1488.9	1488.9	0.0	79.1	-30.2	-12.4	0.0	12.4	30.2
11:00	1492.5	1492.5	0.0	84.5	-30.2	-12.4	0.0	12.4	30.2
12:00	1466.4	1481.3	-14.8	87.4	-45.0	-27.2	-14.8	-2.5	15.3
13:00	1413.5	1441.7	-28.2	88.7	-58.4	-40.6	-28.2	-15.9	2.0
14:00	1402.6	1117.1	285.6	89.5	255.4	273.2	285.6	297.9	315.7
15:00	1386.6	205.0	1181.6	88.1	1151.4	1169.2	1181.6	1193.9	1211.8
16:00	1366.0	195.6	1170.4	86.2	1140.3	1158.1	1170.4	1182.8	1200.6
17:00	1350.9	186.1	1164.8	84.6	1134.6	1152.4	1164.8	1177.2	1195.0
18:00	1335.1	176.7	1158.5	82.9	1128.3	1146.1	1158.5	1170.8	1188.6
19:00	1360.4	532.5	828.0	80.0	797.8	815.6	828.0	840.3	858.1
20:00	1384.3	978.4	405.9	77.0	375.7	393.5	405.9	418.2	436.1
21:00	1407.8	1149.0	258.8	73.7	228.7	246.5	258.8	271.2	289.0
22:00	1406.5	1275.3	131.2	72.2	101.0	118.8	131.2	143.5	161.4
23:00	1395.1	1369.1	26.0	71.2	-4.2	13.6	26.0	38.3	56.2
0:00	1383.0	1423.8	-40.8	70.1	-70.9	-53.1	-40.8	-28.4	-10.6

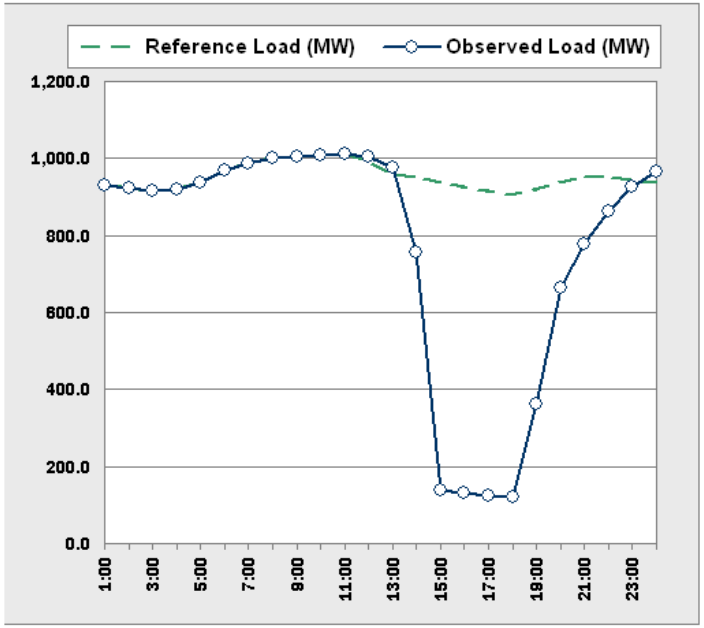
	Reference Energy Use (kWh)	Observed Energy Use (kWh)	Change in Energy Use (kWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	**30th**	**50th**	**70th**	**90th**
Daily	33,723.0	27,196.1	6,526.9	168.8	6379.0	6466.4	6526.9	6587.4	6674.8

TABLE 1: Menu options

Type of Results	Aggregate
Weather Year	1-in-2 (2002)
Forecast Year	2013
Day Type	July Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	**677**
Aggregate FSL (MW)	**136**
Proxy Date	**Tuesday, July 09, 2002**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (MW)	Observed Load (MW)	Load Impact (MW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	929.3	929.3	0.0	69.1	-20.4	-8.4	0.0	8.4	20.4
2:00	922.0	922.0	0.0	68.2	-20.4	-8.4	0.0	8.4	20.4
3:00	917.0	917.0	0.0	67.2	-20.4	-8.4	0.0	8.4	20.4
4:00	918.8	918.8	0.0	66.5	-20.4	-8.4	0.0	8.4	20.4
5:00	938.0	938.0	0.0	66.2	-20.4	-8.4	0.0	8.4	20.4
6:00	969.8	969.8	0.0	65.7	-20.4	-8.4	0.0	8.4	20.4
7:00	987.6	987.6	0.0	66.2	-20.4	-8.4	0.0	8.4	20.4
8:00	1001.1	1001.1	0.0	68.7	-20.4	-8.4	0.0	8.4	20.4
9:00	1004.8	1004.8	0.0	73.4	-20.4	-8.4	0.0	8.4	20.4
10:00	1008.2	1008.2	0.0	79.1	-20.4	-8.4	0.0	8.4	20.4
11:00	1010.6	1010.6	0.0	84.5	-20.4	-8.4	0.0	8.4	20.4
12:00	993.0	1003.0	-10.0	87.4	-30.5	-18.4	-10.0	-1.7	10.4
13:00	957.1	976.2	-19.1	88.7	-39.5	-27.5	-19.1	-10.7	1.3
14:00	949.8	756.4	193.4	89.5	172.9	185.0	193.4	201.7	213.8
15:00	938.9	138.8	800.1	88.1	779.7	791.7	800.1	808.5	820.5
16:00	925.0	132.4	792.5	86.2	772.1	784.2	792.5	800.9	813.0
17:00	914.8	126.0	788.7	84.6	768.3	780.4	788.7	797.1	809.2
18:00	904.1	119.6	784.4	82.9	764.0	776.1	784.4	792.8	804.9
19:00	921.2	360.6	560.6	80.0	540.2	552.3	560.6	569.0	581.1
20:00	937.3	662.5	274.8	77.0	254.4	266.5	274.8	283.2	295.3
21:00	953.3	778.0	175.3	73.7	154.8	166.9	175.3	183.6	195.7
22:00	952.4	863.6	88.8	72.2	68.4	80.5	88.8	97.2	109.3
23:00	944.7	927.1	17.6	71.2	-2.8	9.2	17.6	26.0	38.0
0:00	936.5	964.1	-27.6	70.1	-48.0	-36.0	-27.6	-19.2	-7.2

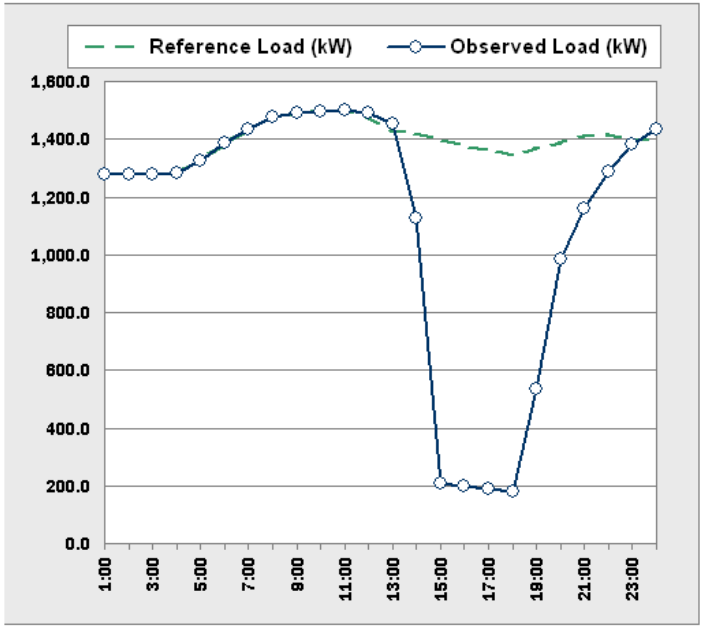
	Reference Energy Use (MWh)	Observed Energy Use (MWh)	Change in Energy Use (MWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	22,835.1	18,415.5	4,419.6	168.8	4319.5	4378.6	4419.6	4460.6	4519.7

TABLE 1: Menu options

Type of Results	Average Enrolled Account
Weather Year	1-in-2 (2002)
Forecast Year	2013
Day Type	August Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	**677**
Average FSL (kW)	**201**
Proxy Date	**Monday, August 12, 2002**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (kW)	Observed Load (kW)	Load Impact (kW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	1279.5	1279.5	0.0	69.8	-30.2	-12.4	0.0	12.4	30.2
2:00	1276.0	1276.0	0.0	68.7	-30.2	-12.4	0.0	12.4	30.2
3:00	1277.8	1277.8	0.0	67.9	-30.2	-12.4	0.0	12.4	30.2
4:00	1283.6	1283.6	0.0	66.7	-30.2	-12.4	0.0	12.4	30.2
5:00	1325.0	1325.0	0.0	65.9	-30.2	-12.4	0.0	12.4	30.2
6:00	1389.2	1389.2	0.0	65.5	-30.2	-12.4	0.0	12.4	30.2
7:00	1434.6	1434.6	0.0	65.6	-30.2	-12.4	0.0	12.4	30.2
8:00	1475.6	1475.6	0.0	67.5	-30.2	-12.4	0.0	12.4	30.2
9:00	1492.6	1492.6	0.0	71.1	-30.2	-12.4	0.0	12.4	30.2
10:00	1495.3	1495.3	0.0	75.1	-30.2	-12.4	0.0	12.4	30.2
11:00	1500.0	1500.0	0.0	78.4	-30.2	-12.4	0.0	12.4	30.2
12:00	1477.6	1492.6	-15.0	81.2	-45.2	-27.3	-15.0	-2.6	15.2
13:00	1428.5	1452.9	-24.3	83.3	-54.5	-36.7	-24.3	-12.0	5.9
14:00	1419.4	1125.4	294.1	84.6	263.9	281.7	294.1	306.4	324.3
15:00	1399.1	206.6	1192.5	85.9	1162.3	1180.2	1192.5	1204.9	1222.7
16:00	1379.3	197.1	1182.2	86.2	1152.0	1169.8	1182.2	1194.5	1212.3
17:00	1362.3	187.7	1174.6	85.1	1144.4	1162.3	1174.6	1187.0	1204.8
18:00	1344.4	178.2	1166.2	82.7	1136.0	1153.8	1166.2	1178.5	1196.4
19:00	1367.9	536.6	831.3	79.3	801.1	819.0	831.3	843.7	861.5
20:00	1387.2	986.2	401.0	75.5	370.8	388.6	401.0	413.3	431.1
21:00	1411.4	1158.2	253.3	72.6	223.1	240.9	253.3	265.6	283.4
22:00	1414.4	1285.6	128.8	71.0	98.6	116.4	128.8	141.1	159.0
23:00	1399.6	1380.3	19.3	70.0	-10.9	6.9	19.3	31.6	49.5
0:00	1392.1	1435.6	-43.5	68.9	-73.7	-55.9	-43.5	-31.2	-13.3

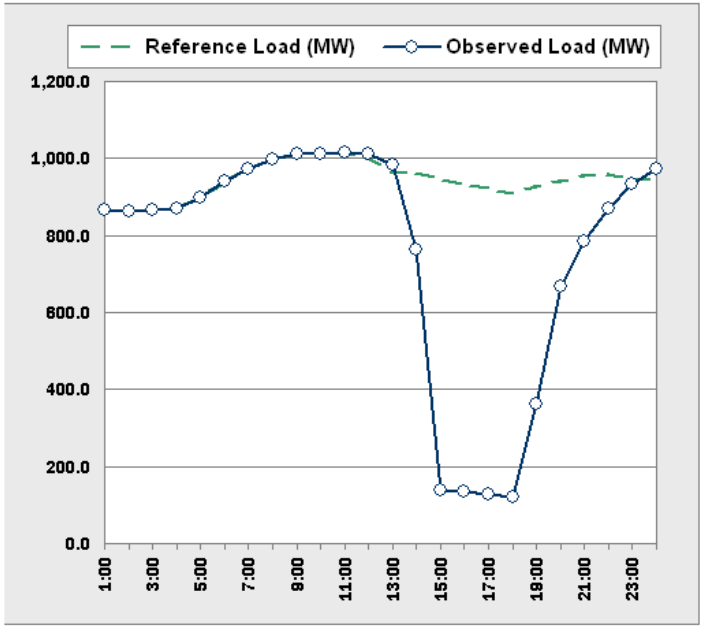
	Reference Energy Use (kWh)	Observed Energy Use (kWh)	Change in Energy Use (kWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	33,412.3	26,852.0	6,560.3	131.9	6412.4	6499.8	6560.3	6620.8	6708.2

TABLE 1: Menu options

Type of Results	Aggregate
Weather Year	1-in-2 (2002)
Forecast Year	2013
Day Type	August Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	**677**
Aggregate FSL (MW)	**136**
Proxy Date	**Monday, August 12, 2002**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (MW)	Observed Load (MW)	Load Impact (MW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	866.4	866.4	0.0	69.8	-20.4	-8.4	0.0	8.4	20.4
2:00	864.0	864.0	0.0	68.7	-20.4	-8.4	0.0	8.4	20.4
3:00	865.3	865.3	0.0	67.9	-20.4	-8.4	0.0	8.4	20.4
4:00	869.2	869.2	0.0	66.7	-20.4	-8.4	0.0	8.4	20.4
5:00	897.2	897.2	0.0	65.9	-20.4	-8.4	0.0	8.4	20.4
6:00	940.7	940.7	0.0	65.5	-20.4	-8.4	0.0	8.4	20.4
7:00	971.4	971.4	0.0	65.6	-20.4	-8.4	0.0	8.4	20.4
8:00	999.2	999.2	0.0	67.5	-20.4	-8.4	0.0	8.4	20.4
9:00	1010.7	1010.7	0.0	71.1	-20.4	-8.4	0.0	8.4	20.4
10:00	1012.5	1012.5	0.0	75.1	-20.4	-8.4	0.0	8.4	20.4
11:00	1015.7	1015.7	0.0	78.4	-20.4	-8.4	0.0	8.4	20.4
12:00	1000.6	1010.7	-10.2	81.2	-30.6	-18.5	-10.2	-1.8	10.3
13:00	967.3	983.8	-16.5	83.3	-36.9	-24.8	-16.5	-8.1	4.0
14:00	961.2	762.0	199.1	84.6	178.7	190.8	199.1	207.5	219.6
15:00	947.4	139.9	807.5	85.9	787.1	799.1	807.5	815.9	827.9
16:00	934.0	133.5	800.5	86.2	780.0	792.1	800.5	808.8	820.9
17:00	922.5	127.1	795.4	85.1	775.0	787.0	795.4	803.8	815.8
18:00	910.3	120.7	789.7	82.7	769.2	781.3	789.7	798.0	810.1
19:00	926.3	363.4	562.9	79.3	542.5	554.6	562.9	571.3	583.4
20:00	939.3	667.8	271.5	75.5	251.1	263.1	271.5	279.9	291.9
21:00	955.7	784.2	171.5	72.6	151.1	163.1	171.5	179.9	191.9
22:00	957.7	870.5	87.2	71.0	66.8	78.8	87.2	95.6	107.6
23:00	947.7	934.7	13.1	70.0	-7.4	4.7	13.1	21.4	33.5
0:00	942.6	972.1	-29.5	68.9	-49.9	-37.8	-29.5	-21.1	-9.0

	Reference Energy Use (MWh)	Observed Energy Use (MWh)	Change in Energy Use (MWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	22,624.8	18,182.5	4,442.2	131.9	4342.1	4401.3	4442.2	4483.2	4542.4

APPENDIX C: SELECTED HOURLY LOAD IMPACT TABLES FOR PG&E BIP CUSTOMERS

Estimates of hourly ex ante impacts are presented in this appendix for the average customer and for all customers combined for each forecast year for the monthly peak day in July and August, based on 1-in-2 year weather conditions. Since PG&E will be transferring its BIP customers to the PeakChoice program by 2011, only forecast years 2009 and 2010 are reported. In the upper left hand corner of each figure, there is a section labeled Table 1 indicating the customer segment, month and year that is represented in the figure.

In addition, an Excel spreadsheet consisting of pivot tables has been filed with the CPUC containing 1,872 hourly ex ante load impact tables delineated as follows:

1. The average enrolled customer for each forecast year, 2009 and 2010, based on 1-in-2 and 1-in-10 weather year conditions for a typical event day (4 tables);
2. All customers combined for each forecast year and set of weather year conditions for a typical event day (4 tables);
3. The average enrolled customer for each monthly system peak day for each forecast year and set of weather conditions (48 tables);
4. All customers combined for each monthly system peak day for each forecast year and set of weather conditions (48 tables);
5. The average enrolled customer for each of the top 5 highest system load days for each forecast year and set of weather conditions (20 tables);
6. All customers combined for each of the top 5 highest system load days for each forecast year and set of weather conditions (20 tables);
7. Tables listed in item 1 for each LCA and industry with more than 2 customers (48 tables);
8. Tables listed in item 2 for each LCA and industry with more than 2 customers (48 tables);
9. Tables listed in item 3 for each LCA and industry with more than 2 customers (576 tables);
10. Tables listed in item 4 for each LCA and industry with more than 2 customers (576 tables);
11. Tables listed in item 5 for each LCA and industry with more than 2 customers (240 tables);
12. Tables listed in item 6 for each LCA and industry with more than 2 customers (240 tables).

As for the ex post pivot tables, an excel spreadsheet has been filed with the CPUC containing 26 hourly ex post load impact tables delineated as follows:

1. The average enrolled customer for the August 28, 2008 event (1 table);
2. All customer combined for the August 28, 2008 event (1 table);
3. Tables listed in item 1 for each LCA and industry with more than 2 customers (12 tables);

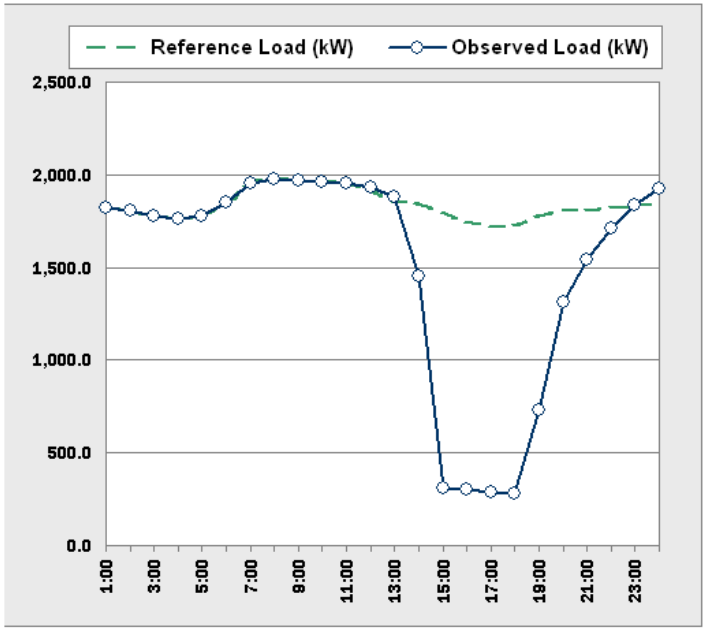
4. Tables listed in item 2 for each LCA and industry with more than 2 customers (12 tables);

TABLE 1: Menu options

Type of Results	Average Enrolled Account
Weather Year	1-in-2 (2004)
Forecast Year	2009
Day Type	July Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Accounts in Estimation	**149**
Average FSL (kW)	**325**
Proxy Date	**Wednesday, July 21, 2004**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (kW)	Observed Load (kW)	Load Impact (kW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	**30th**	**50th**	**70th**	**90th**
1:00	1824.9	1824.9	0.0	69.8	-31.0	-12.7	0.0	12.7	31.0
2:00	1805.9	1805.9	0.0	68.7	-31.0	-12.7	0.0	12.7	31.0
3:00	1779.5	1779.5	0.0	67.9	-31.0	-12.7	0.0	12.7	31.0
4:00	1761.3	1761.3	0.0	67.4	-31.0	-12.7	0.0	12.7	31.0
5:00	1776.9	1776.9	0.0	66.4	-31.0	-12.7	0.0	12.7	31.0
6:00	1851.1	1851.1	0.0	65.4	-31.0	-12.7	0.0	12.7	31.0
7:00	1953.1	1953.1	0.0	65.3	-31.0	-12.7	0.0	12.7	31.0
8:00	1977.0	1977.0	0.0	68.1	-31.0	-12.7	0.0	12.7	31.0
9:00	1967.5	1967.5	0.0	71.5	-31.0	-12.7	0.0	12.7	31.0
10:00	1960.7	1960.7	0.0	75.2	-31.0	-12.7	0.0	12.7	31.0
11:00	1952.6	1952.6	0.0	79.0	-31.0	-12.7	0.0	12.7	31.0
12:00	1917.8	1935.8	-18.0	82.5	-49.0	-30.7	-18.0	-5.3	13.0
13:00	1857.6	1877.8	-20.3	86.0	-51.3	-32.9	-20.3	-7.6	10.7
14:00	1845.1	1455.6	389.6	89.0	358.6	376.9	389.6	402.2	420.6
15:00	1799.7	310.4	1489.3	90.6	1458.3	1476.6	1489.3	1502.0	1520.3
16:00	1744.1	299.9	1444.2	91.4	1413.2	1431.5	1444.2	1456.9	1475.2
17:00	1727.0	289.4	1437.6	91.5	1406.6	1424.9	1437.6	1450.3	1468.6
18:00	1722.0	278.9	1443.1	90.3	1412.1	1430.4	1443.1	1455.8	1474.1
19:00	1779.7	733.0	1046.7	88.2	1015.7	1034.0	1046.7	1059.4	1077.7
20:00	1807.1	1315.1	492.0	85.0	461.0	479.3	492.0	504.7	523.0
21:00	1809.7	1539.5	270.2	80.3	239.2	257.5	270.2	282.9	301.2
22:00	1822.7	1707.8	115.0	76.7	84.0	102.3	115.0	127.6	146.0
23:00	1832.9	1837.2	-4.3	74.5	-35.3	-17.0	-4.3	8.4	26.7
0:00	1846.7	1923.1	-76.4	72.3	-107.4	-89.1	-76.4	-63.7	-45.4

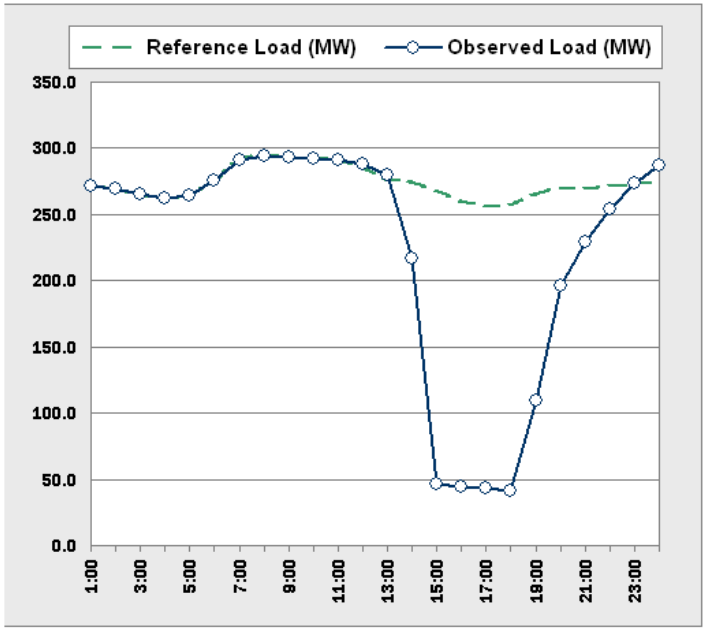
	Reference Energy Use (kWh)	Observed Energy Use (kWh)	Change in Energy Use (kWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	**30th**	**50th**	**70th**	**90th**
Daily	44,122.8	36,114.0	8,008.8	203.9	7856.9	7946.6	8008.8	8070.9	8160.6

TABLE 1: Menu options

Type of Results	Aggregate
Weather Year	1-in-2 (2004)
Forecast Year	2009
Day Type	July Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Accounts in Estimation	**149**
Aggregate FSL (MW)	**48**
Proxy Date	**Wednesday, July 21, 2004**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (MW)	Observed Load (MW)	Load Impact (MW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	271.9	271.9	0.0	69.8	-4.6	-1.9	0.0	1.9	4.6
2:00	269.1	269.1	0.0	68.7	-4.6	-1.9	0.0	1.9	4.6
3:00	265.1	265.1	0.0	67.9	-4.6	-1.9	0.0	1.9	4.6
4:00	262.4	262.4	0.0	67.4	-4.6	-1.9	0.0	1.9	4.6
5:00	264.8	264.8	0.0	66.4	-4.6	-1.9	0.0	1.9	4.6
6:00	275.8	275.8	0.0	65.4	-4.6	-1.9	0.0	1.9	4.6
7:00	291.0	291.0	0.0	65.3	-4.6	-1.9	0.0	1.9	4.6
8:00	294.6	294.6	0.0	68.1	-4.6	-1.9	0.0	1.9	4.6
9:00	293.2	293.2	0.0	71.5	-4.6	-1.9	0.0	1.9	4.6
10:00	292.1	292.1	0.0	75.2	-4.6	-1.9	0.0	1.9	4.6
11:00	290.9	290.9	0.0	79.0	-4.6	-1.9	0.0	1.9	4.6
12:00	285.8	288.4	-2.7	82.5	-7.3	-4.6	-2.7	-0.8	1.9
13:00	276.8	279.8	-3.0	86.0	-7.6	-4.9	-3.0	-1.1	1.6
14:00	274.9	216.9	58.0	89.0	53.4	56.2	58.0	59.9	62.7
15:00	268.2	46.3	221.9	90.6	217.3	220.0	221.9	223.8	226.5
16:00	259.9	44.7	215.2	91.4	210.6	213.3	215.2	217.1	219.8
17:00	257.3	43.1	214.2	91.5	209.6	212.3	214.2	216.1	218.8
18:00	256.6	41.6	215.0	90.3	210.4	213.1	215.0	216.9	219.6
19:00	265.2	109.2	156.0	88.2	151.3	154.1	156.0	157.8	160.6
20:00	269.3	195.9	73.3	85.0	68.7	71.4	73.3	75.2	77.9
21:00	269.6	229.4	40.3	80.3	35.6	38.4	40.3	42.2	44.9
22:00	271.6	254.5	17.1	76.7	12.5	15.2	17.1	19.0	21.7
23:00	273.1	273.7	-0.6	74.5	-5.3	-2.5	-0.6	1.3	4.0
0:00	275.2	286.5	-11.4	72.3	-16.0	-13.3	-11.4	-9.5	-6.8

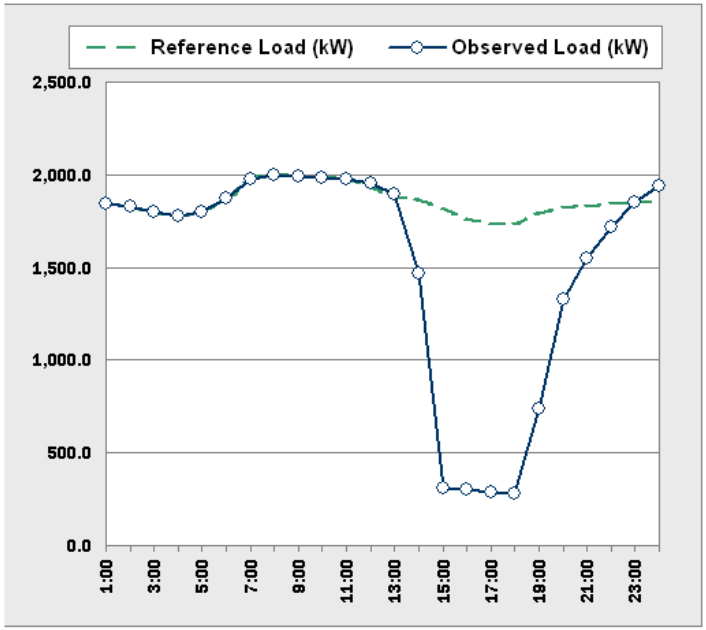
	Reference Energy Use (MWh)	Observed Energy Use (MWh)	Change in Energy Use (MWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	6,574.3	5,381.0	1,193.3	203.9	1170.7	1184.0	1193.3	1202.6	1215.9

TABLE 1: Menu options

Type of Results	Average Enrolled Account
Weather Year	1-in-2 (2004)
Forecast Year	2009
Day Type	August Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Accounts in Estimation	**149**
Average FSL (kW)	**327**
Proxy Date	**Wednesday, August 11, 2004**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (kW)	Observed Load (kW)	Load Impact (kW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	**30th**	**50th**	**70th**	**90th**
1:00	1847.1	1847.1	0.0	70.0	-31.2	-12.8	0.0	12.8	31.2
2:00	1826.1	1826.1	0.0	68.5	-31.2	-12.8	0.0	12.8	31.2
3:00	1798.1	1798.1	0.0	67.1	-31.2	-12.8	0.0	12.8	31.2
4:00	1780.0	1780.0	0.0	66.2	-31.2	-12.8	0.0	12.8	31.2
5:00	1796.1	1796.1	0.0	65.3	-31.2	-12.8	0.0	12.8	31.2
6:00	1870.6	1870.6	0.0	64.4	-31.2	-12.8	0.0	12.8	31.2
7:00	1974.6	1974.6	0.0	64.0	-31.2	-12.8	0.0	12.8	31.2
8:00	1997.5	1997.5	0.0	66.2	-31.2	-12.8	0.0	12.8	31.2
9:00	1989.6	1989.6	0.0	70.2	-31.2	-12.8	0.0	12.8	31.2
10:00	1981.8	1981.8	0.0	74.3	-31.2	-12.8	0.0	12.8	31.2
11:00	1975.3	1975.3	0.0	78.5	-31.2	-12.8	0.0	12.8	31.2
12:00	1937.5	1956.0	-18.5	82.9	-49.7	-31.3	-18.5	-5.7	12.7
13:00	1878.2	1897.7	-19.5	86.6	-50.7	-32.2	-19.5	-6.7	11.7
14:00	1864.1	1470.8	393.3	90.1	362.0	380.5	393.3	406.0	424.5
15:00	1818.5	311.9	1506.6	92.2	1475.3	1493.8	1506.6	1519.3	1537.8
16:00	1762.1	301.1	1461.0	93.6	1429.8	1448.2	1461.0	1473.8	1492.2
17:00	1741.2	290.4	1450.9	94.0	1419.7	1438.1	1450.9	1463.6	1482.1
18:00	1734.0	279.6	1454.3	93.6	1423.1	1441.6	1454.3	1467.1	1485.5
19:00	1792.8	739.0	1053.9	91.8	1022.6	1041.1	1053.9	1066.6	1085.1
20:00	1822.6	1325.2	497.4	87.6	466.2	484.7	497.4	510.2	528.6
21:00	1827.2	1551.8	275.4	82.6	244.2	262.6	275.4	288.2	306.6
22:00	1843.6	1721.8	121.8	79.0	90.6	109.1	121.8	134.6	153.1
23:00	1852.4	1852.8	-0.4	75.9	-31.6	-13.1	-0.4	12.4	30.9
0:00	1863.3	1939.1	-75.8	73.9	-107.0	-88.6	-75.8	-63.0	-44.6

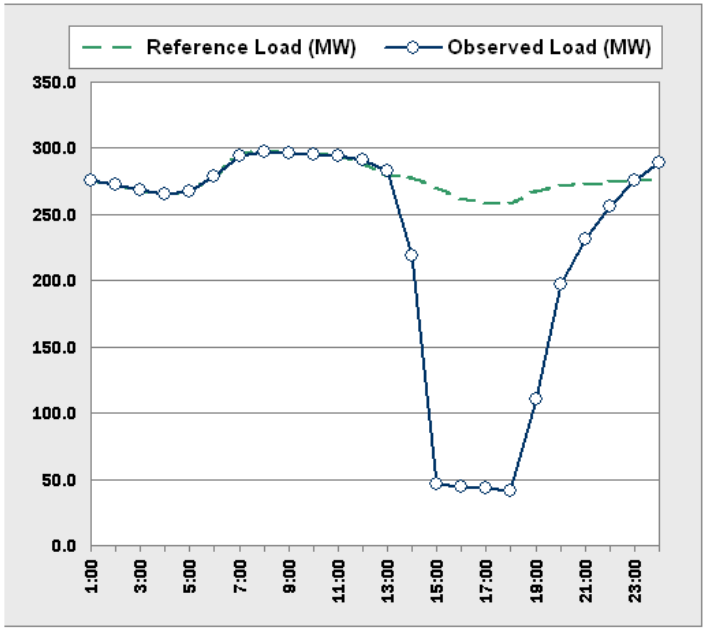
	Reference Energy Use (kWh)	Observed Energy Use (kWh)	Change in Energy Use (kWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	**30th**	**50th**	**70th**	**90th**
Daily	44,574.2	36,473.8	8,100.4	226.9	7947.5	8037.8	8100.4	8163.0	8253.3

TABLE 1: Menu options

Type of Results	Aggregate
Weather Year	1-in-2 (2004)
Forecast Year	2009
Day Type	August Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Accounts in Estimation	**149**
Aggregate FSL (MW)	**49**
Proxy Date	**Wednesday, August 11, 2004**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (MW)	Observed Load (MW)	Load Impact (MW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	275.2	275.2	0.0	70.0	-4.7	-1.9	0.0	1.9	4.7
2:00	272.1	272.1	0.0	68.5	-4.7	-1.9	0.0	1.9	4.7
3:00	267.9	267.9	0.0	67.1	-4.7	-1.9	0.0	1.9	4.7
4:00	265.2	265.2	0.0	66.2	-4.7	-1.9	0.0	1.9	4.7
5:00	267.6	267.6	0.0	65.3	-4.7	-1.9	0.0	1.9	4.7
6:00	278.7	278.7	0.0	64.4	-4.7	-1.9	0.0	1.9	4.7
7:00	294.2	294.2	0.0	64.0	-4.7	-1.9	0.0	1.9	4.7
8:00	297.6	297.6	0.0	66.2	-4.7	-1.9	0.0	1.9	4.7
9:00	296.4	296.4	0.0	70.2	-4.7	-1.9	0.0	1.9	4.7
10:00	295.3	295.3	0.0	74.3	-4.7	-1.9	0.0	1.9	4.7
11:00	294.3	294.3	0.0	78.5	-4.7	-1.9	0.0	1.9	4.7
12:00	288.7	291.4	-2.8	82.9	-7.4	-4.7	-2.8	-0.9	1.9
13:00	279.8	282.8	-2.9	86.6	-7.6	-4.8	-2.9	-1.0	1.7
14:00	277.8	219.2	58.6	90.1	53.9	56.7	58.6	60.5	63.2
15:00	270.9	46.5	224.5	92.2	219.8	222.6	224.5	226.4	229.1
16:00	262.6	44.9	217.7	93.6	213.0	215.8	217.7	219.6	222.3
17:00	259.4	43.3	216.2	94.0	211.5	214.3	216.2	218.1	220.8
18:00	258.4	41.7	216.7	93.6	212.0	214.8	216.7	218.6	221.3
19:00	267.1	110.1	157.0	91.8	152.4	155.1	157.0	158.9	161.7
20:00	271.6	197.4	74.1	87.6	69.5	72.2	74.1	76.0	78.8
21:00	272.3	231.2	41.0	82.6	36.4	39.1	41.0	42.9	45.7
22:00	274.7	256.5	18.2	79.0	13.5	16.3	18.2	20.1	22.8
23:00	276.0	276.1	-0.1	75.9	-4.7	-2.0	-0.1	1.8	4.6
0:00	277.6	288.9	-11.3	73.9	-15.9	-13.2	-11.3	-9.4	-6.6

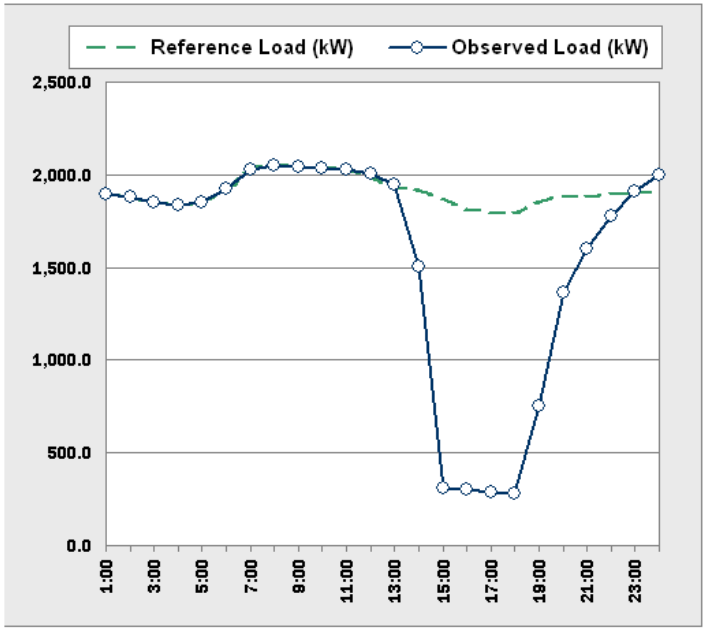
	Reference Energy Use (MWh)	Observed Energy Use (MWh)	Change in Energy Use (MWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	6,641.5	5,434.6	1,207.0	226.9	1184.2	1197.6	1207.0	1216.3	1229.7

TABLE 1: Menu options

Type of Results	Average Enrolled Account
Weather Year	1-in-2 (2004)
Forecast Year	2010
Day Type	July Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Accounts in Estimation	**149**
Average FSL (kW)	**325**
Proxy Date	**Wednesday, July 21, 2004**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (kW)	Observed Load (kW)	Load Impact (kW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	1896.9	1896.9	0.0	69.8	-31.0	-12.7	0.0	12.7	31.0
2:00	1877.9	1877.9	0.0	68.7	-31.0	-12.7	0.0	12.7	31.0
3:00	1851.5	1851.5	0.0	67.9	-31.0	-12.7	0.0	12.7	31.0
4:00	1833.2	1833.2	0.0	67.4	-31.0	-12.7	0.0	12.7	31.0
5:00	1848.9	1848.9	0.0	66.4	-31.0	-12.7	0.0	12.7	31.0
6:00	1923.1	1923.1	0.0	65.4	-31.0	-12.7	0.0	12.7	31.0
7:00	2025.1	2025.1	0.0	65.3	-31.0	-12.7	0.0	12.7	31.0
8:00	2049.0	2049.0	0.0	68.1	-31.0	-12.7	0.0	12.7	31.0
9:00	2039.5	2039.5	0.0	71.5	-31.0	-12.7	0.0	12.7	31.0
10:00	2032.7	2032.7	0.0	75.2	-31.0	-12.7	0.0	12.7	31.0
11:00	2024.6	2024.6	0.0	79.0	-31.0	-12.7	0.0	12.7	31.0
12:00	1989.8	2008.5	-18.8	82.5	-49.8	-31.4	-18.8	-6.1	12.2
13:00	1929.5	1947.7	-18.1	86.0	-49.2	-30.8	-18.1	-5.5	12.9
14:00	1917.1	1505.8	411.3	89.0	380.3	398.6	411.3	424.0	442.3
15:00	1871.7	310.4	1561.4	90.6	1530.4	1548.7	1561.4	1574.1	1592.4
16:00	1816.1	299.4	1516.7	91.4	1485.7	1504.1	1516.7	1529.4	1547.7
17:00	1799.0	288.4	1510.5	91.5	1479.5	1497.8	1510.5	1523.2	1541.5
18:00	1794.0	277.5	1516.5	90.3	1485.5	1503.8	1516.5	1529.2	1547.5
19:00	1851.7	753.3	1098.4	88.2	1067.4	1085.7	1098.4	1111.1	1129.4
20:00	1879.1	1363.2	515.9	85.0	484.9	503.2	515.9	528.6	546.9
21:00	1881.7	1597.7	284.0	80.3	253.0	271.3	284.0	296.7	315.0
22:00	1894.7	1773.6	121.1	76.7	90.1	108.4	121.1	133.8	152.1
23:00	1904.9	1909.2	-4.3	74.5	-35.3	-17.0	-4.3	8.4	26.7
0:00	1918.7	1999.9	-81.2	72.3	-112.2	-93.9	-81.2	-68.5	-50.2

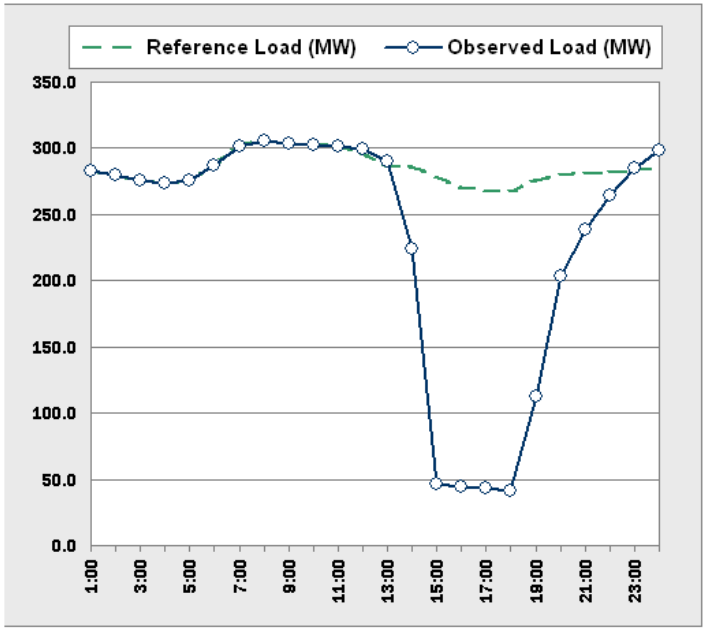
	Reference Energy Use (kWh)	Observed Energy Use (kWh)	Change in Energy Use (kWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	45,850.6	37,437.1	8,413.5	203.9	8261.6	8351.3	8413.5	8475.6	8565.4

TABLE 1: Menu options

Type of Results	Aggregate
Weather Year	1-in-2 (2004)
Forecast Year	2010
Day Type	July Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Accounts in Estimation	**149**
Aggregate FSL (MW)	**48**
Proxy Date	**Wednesday, July 21, 2004**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (MW)	Observed Load (MW)	Load Impact (MW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	282.6	282.6	0.0	69.8	-4.6	-1.9	0.0	1.9	4.6
2:00	279.8	279.8	0.0	68.7	-4.6	-1.9	0.0	1.9	4.6
3:00	275.9	275.9	0.0	67.9	-4.6	-1.9	0.0	1.9	4.6
4:00	273.2	273.2	0.0	67.4	-4.6	-1.9	0.0	1.9	4.6
5:00	275.5	275.5	0.0	66.4	-4.6	-1.9	0.0	1.9	4.6
6:00	286.5	286.5	0.0	65.4	-4.6	-1.9	0.0	1.9	4.6
7:00	301.7	301.7	0.0	65.3	-4.6	-1.9	0.0	1.9	4.6
8:00	305.3	305.3	0.0	68.1	-4.6	-1.9	0.0	1.9	4.6
9:00	303.9	303.9	0.0	71.5	-4.6	-1.9	0.0	1.9	4.6
10:00	302.9	302.9	0.0	75.2	-4.6	-1.9	0.0	1.9	4.6
11:00	301.7	301.7	0.0	79.0	-4.6	-1.9	0.0	1.9	4.6
12:00	296.5	299.3	-2.8	82.5	-7.4	-4.7	-2.8	-0.9	1.8
13:00	287.5	290.2	-2.7	86.0	-7.3	-4.6	-2.7	-0.8	1.9
14:00	285.6	224.4	61.3	89.0	56.7	59.4	61.3	63.2	65.9
15:00	278.9	46.2	232.6	90.6	228.0	230.8	232.6	234.5	237.3
16:00	270.6	44.6	226.0	91.4	221.4	224.1	226.0	227.9	230.6
17:00	268.0	43.0	225.1	91.5	220.4	223.2	225.1	227.0	229.7
18:00	267.3	41.3	226.0	90.3	221.3	224.1	226.0	227.9	230.6
19:00	275.9	112.2	163.7	88.2	159.0	161.8	163.7	165.6	168.3
20:00	280.0	203.1	76.9	85.0	72.2	75.0	76.9	78.8	81.5
21:00	280.4	238.1	42.3	80.3	37.7	40.4	42.3	44.2	46.9
22:00	282.3	264.3	18.0	76.7	13.4	16.2	18.0	19.9	22.7
23:00	283.8	284.5	-0.6	74.5	-5.3	-2.5	-0.6	1.3	4.0
0:00	285.9	298.0	-12.1	72.3	-16.7	-14.0	-12.1	-10.2	-7.5

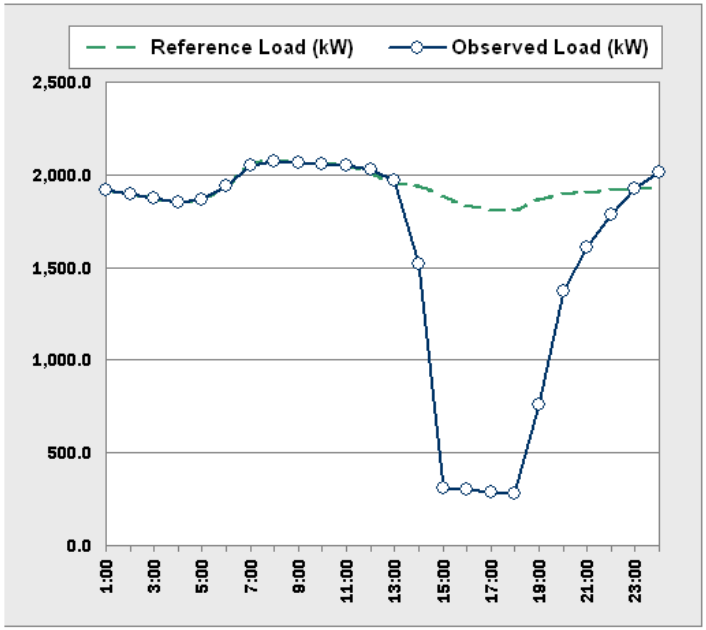
	Reference Energy Use (MWh)	Observed Energy Use (MWh)	Change in Energy Use (MWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	6,831.7	5,578.1	1,253.6	203.9	1231.0	1244.4	1253.6	1262.9	1276.2

TABLE 1: Menu options

Type of Results	Average Enrolled Account
Weather Year	1-in-2 (2004)
Forecast Year	2010
Day Type	August Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Accounts in Estimation	**149**
Average FSL (kW)	**327**
Proxy Date	**Wednesday, August 11, 2004**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (kW)	Observed Load (kW)	Load Impact (kW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	1919.5	1919.5	0.0	70.0	-31.2	-12.8	0.0	12.8	31.2
2:00	1898.6	1898.6	0.0	68.5	-31.2	-12.8	0.0	12.8	31.2
3:00	1870.6	1870.6	0.0	67.1	-31.2	-12.8	0.0	12.8	31.2
4:00	1852.5	1852.5	0.0	66.2	-31.2	-12.8	0.0	12.8	31.2
5:00	1868.5	1868.5	0.0	65.3	-31.2	-12.8	0.0	12.8	31.2
6:00	1943.1	1943.1	0.0	64.4	-31.2	-12.8	0.0	12.8	31.2
7:00	2047.1	2047.1	0.0	64.0	-31.2	-12.8	0.0	12.8	31.2
8:00	2069.9	2069.9	0.0	66.2	-31.2	-12.8	0.0	12.8	31.2
9:00	2062.1	2062.1	0.0	70.2	-31.2	-12.8	0.0	12.8	31.2
10:00	2054.3	2054.3	0.0	74.3	-31.2	-12.8	0.0	12.8	31.2
11:00	2047.7	2047.7	0.0	78.5	-31.2	-12.8	0.0	12.8	31.2
12:00	2010.0	2029.3	-19.3	82.9	-50.5	-32.0	-19.3	-6.5	11.9
13:00	1950.7	1968.0	-17.3	86.6	-48.6	-30.1	-17.3	-4.6	13.9
14:00	1936.6	1521.4	415.2	90.1	384.0	402.4	415.2	427.9	446.4
15:00	1890.9	311.8	1579.1	92.2	1547.9	1566.3	1579.1	1591.9	1610.3
16:00	1834.6	300.6	1534.0	93.6	1502.8	1521.2	1534.0	1546.8	1565.2
17:00	1813.7	289.4	1524.3	94.0	1493.1	1511.5	1524.3	1537.1	1555.5
18:00	1806.4	278.2	1528.2	93.6	1497.0	1515.5	1528.2	1541.0	1559.5
19:00	1865.3	759.3	1106.0	91.8	1074.8	1093.2	1106.0	1118.8	1137.2
20:00	1895.1	1373.6	521.4	87.6	490.2	508.7	521.4	534.2	552.7
21:00	1899.7	1610.4	289.3	82.6	258.1	276.5	289.3	302.1	320.5
22:00	1916.1	1788.1	128.0	79.0	96.8	115.2	128.0	140.8	159.2
23:00	1924.9	1925.3	-0.4	75.9	-31.6	-13.1	-0.4	12.4	30.8
0:00	1935.8	2016.4	-80.7	73.9	-111.9	-93.5	-80.7	-67.9	-49.5

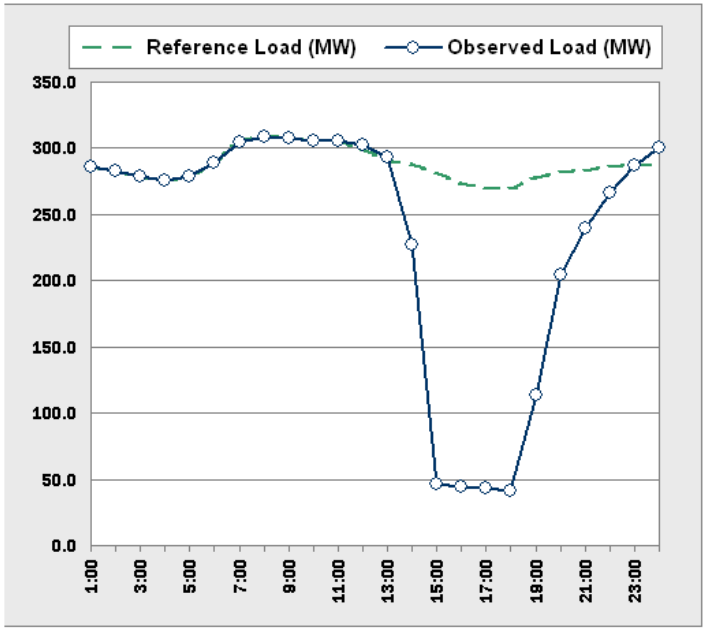
	Reference Energy Use (kWh)	Observed Energy Use (kWh)	Change in Energy Use (kWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	46,313.8	37,805.9	8,507.9	226.9	8355.0	8445.3	8507.9	8570.5	8660.8

TABLE 1: Menu options

Type of Results	Aggregate
Weather Year	1-in-2 (2004)
Forecast Year	2010
Day Type	August Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Accounts in Estimation	**149**
Aggregate FSL (MW)	**49**
Proxy Date	**Wednesday, August 11, 2004**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (MW)	Observed Load (MW)	Load Impact (MW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	286.0	286.0	0.0	70.0	-4.7	-1.9	0.0	1.9	4.7
2:00	282.9	282.9	0.0	68.5	-4.7	-1.9	0.0	1.9	4.7
3:00	278.7	278.7	0.0	67.1	-4.7	-1.9	0.0	1.9	4.7
4:00	276.0	276.0	0.0	66.2	-4.7	-1.9	0.0	1.9	4.7
5:00	278.4	278.4	0.0	65.3	-4.7	-1.9	0.0	1.9	4.7
6:00	289.5	289.5	0.0	64.4	-4.7	-1.9	0.0	1.9	4.7
7:00	305.0	305.0	0.0	64.0	-4.7	-1.9	0.0	1.9	4.7
8:00	308.4	308.4	0.0	66.2	-4.7	-1.9	0.0	1.9	4.7
9:00	307.2	307.2	0.0	70.2	-4.7	-1.9	0.0	1.9	4.7
10:00	306.1	306.1	0.0	74.3	-4.7	-1.9	0.0	1.9	4.7
11:00	305.1	305.1	0.0	78.5	-4.7	-1.9	0.0	1.9	4.7
12:00	299.5	302.4	-2.9	82.9	-7.5	-4.8	-2.9	-1.0	1.8
13:00	290.6	293.2	-2.6	86.6	-7.2	-4.5	-2.6	-0.7	2.1
14:00	288.6	226.7	61.9	90.1	57.2	60.0	61.9	63.8	66.5
15:00	281.7	46.5	235.3	92.2	230.6	233.4	235.3	237.2	239.9
16:00	273.4	44.8	228.6	93.6	223.9	226.7	228.6	230.5	233.2
17:00	270.2	43.1	227.1	94.0	222.5	225.2	227.1	229.0	231.8
18:00	269.2	41.5	227.7	93.6	223.1	225.8	227.7	229.6	232.4
19:00	277.9	113.1	164.8	91.8	160.1	162.9	164.8	166.7	169.4
20:00	282.4	204.7	77.7	87.6	73.0	75.8	77.7	79.6	82.3
21:00	283.1	239.9	43.1	82.6	38.5	41.2	43.1	45.0	47.8
22:00	285.5	266.4	19.1	79.0	14.4	17.2	19.1	21.0	23.7
23:00	286.8	286.9	-0.1	75.9	-4.7	-2.0	-0.1	1.8	4.6
0:00	288.4	300.4	-12.0	73.9	-16.7	-13.9	-12.0	-10.1	-7.4

	Reference Energy Use (MWh)	Observed Energy Use (MWh)	Change in Energy Use (MWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	6,900.8	5,633.1	1,267.7	226.9	1244.9	1258.4	1267.7	1277.0	1290.5

APPENDIX D: SELECTED HOURLY LOAD IMPACT TABLES FOR SDG&E BIP CUSTOMERS

Estimates of hourly ex ante impacts are presented in this appendix for the average customer and for all customers combined for each forecast year in which the values change for the monthly peak day in July and August, based on 1-in-2 year weather conditions. Since enrollment and average impacts are held constant from 2010 through 2020, we have not included tables for these years as each table would be the same as the 2009 table. In the upper left hand corner of each figure, there is a section labeled Table 1 indicating the customer segment, month and year that is represented in the figure.

In addition, an Excel spreadsheet consisting of pivot tables has been filed with the CPUC containing 1,872 hourly ex ante load impact tables delineated as follows:

1. The average enrolled customer for each forecast year, 2009 through 2020, based on 1-in-2 and 1-in-10 year weather conditions for a typical event day (24 tables);

2. All customers combined for each forecast year, each set of weather year conditions and a typical event day (24 tables);

3. The average enrolled customer for each monthly system peak day for each forecast year and set of weather conditions (288 tables);

4. All customers combined for each monthly system peak day for each forecast year and set of weather conditions (288 tables);

5. Tables listed in item 1 for each industry with more than 2 customers (48 tables);

6. Tables listed in item 2 for each industry with more than 2 customers (48 tables);

7. Tables listed in item 3 for each industry with more than 2 customers (576 tables);

8. Tables listed in item 4 for each industry with more than 2 customers (576 tables).

As for the ex post pivot tables, an excel spreadsheet has been filed with the CPUC containing 2 hourly ex post load impact tables delineated as follows:

1. The average enrolled customer for the September 4, 2007 event (1 table);

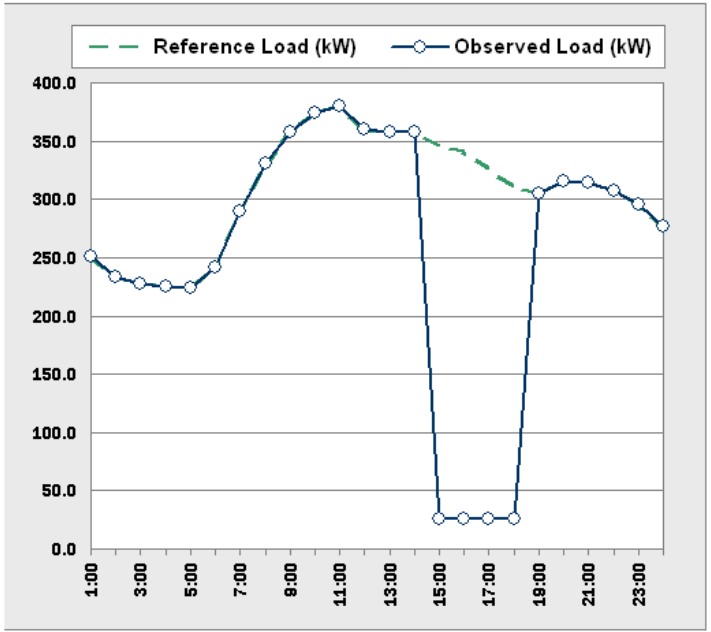
2. All customer combined for the September 4, 2007 event (1 table);

TABLE 1: Menu options

Type of Results	Average Enrolled Account
Weather Year	1-in-2
Forecast Year	2009
Day Type	July Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	**20**
Average FSL (kW)	**25.4**
Proxy Date	**Friday, July 16, 2004**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (kW)	Observed Load (kW)	Load Impact (kW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	251.0	251.0	0.0	72.7	-17.7	-7.3	0.0	7.3	17.7
2:00	233.0	233.0	0.0	71.8	-17.7	-7.3	0.0	7.3	17.7
3:00	227.0	227.0	0.0	71.8	-17.7	-7.3	0.0	7.3	17.7
4:00	224.8	224.8	0.0	72.1	-17.7	-7.3	0.0	7.3	17.7
5:00	224.5	224.5	0.0	71.1	-17.7	-7.3	0.0	7.3	17.7
6:00	241.4	241.4	0.0	70.2	-17.7	-7.3	0.0	7.3	17.7
7:00	289.9	289.9	0.0	71.4	-17.7	-7.3	0.0	7.3	17.7
8:00	331.1	331.1	0.0	73.3	-17.7	-7.3	0.0	7.3	17.7
9:00	358.2	358.2	0.0	76.9	-17.7	-7.3	0.0	7.3	17.7
10:00	374.6	374.6	0.0	80.6	-17.7	-7.3	0.0	7.3	17.7
11:00	380.3	380.3	0.0	83.2	-17.7	-7.3	0.0	7.3	17.7
12:00	359.6	359.6	0.0	84.9	-17.7	-7.3	0.0	7.3	17.7
13:00	358.0	358.0	0.0	84.5	-17.7	-7.3	0.0	7.3	17.7
14:00	357.8	357.8	0.0	84.5	-17.7	-7.3	0.0	7.3	17.7
15:00	346.5	25.4	321.1	83.6	303.4	313.9	321.1	328.4	338.9
16:00	341.5	25.4	316.1	83.6	298.4	308.9	316.1	323.4	333.9
17:00	327.1	25.4	301.7	81.9	284.0	294.4	301.7	309.0	319.5
18:00	310.7	25.4	285.3	82.3	267.6	278.1	285.3	292.6	303.1
19:00	304.4	304.4	0.0	78.9	-17.7	-7.3	0.0	7.3	17.7
20:00	315.2	315.2	0.0	75.0	-17.7	-7.3	0.0	7.3	17.7
21:00	314.5	314.5	0.0	72.7	-17.7	-7.3	0.0	7.3	17.7
22:00	307.5	307.5	0.0	71.8	-17.7	-7.3	0.0	7.3	17.7
23:00	295.2	295.2	0.0	71.8	-17.7	-7.3	0.0	7.3	17.7
0:00	277.1	277.1	0.0	71.2	-17.7	-7.3	0.0	7.3	17.7

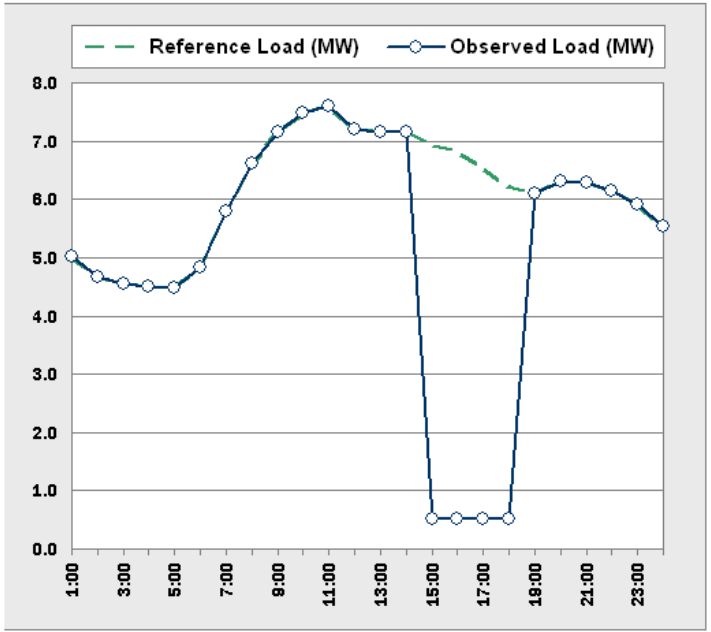
	Reference Energy Use (kWh)	Observed Energy Use (kWh)	Change in Energy Use (kWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	7,350.9	6,126.5	1,224.3	161.8	1137.4	1188.7	1224.3	1259.9	1311.3

TABLE 1: Menu options

Type of Results	Aggregate
Weather Year	1-in-2
Forecast Year	2009
Day Type	July Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	**20**
Aggregate FSL (MW)	**0.5**
Proxy Date	**Friday, July 16, 2004**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (MW)	Observed Load (MW)	Load Impact (MW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	5.0	5.0	0.0	72.7	-0.4	-0.1	0.0	0.1	0.4
2:00	4.7	4.7	0.0	71.8	-0.4	-0.1	0.0	0.1	0.4
3:00	4.5	4.5	0.0	71.8	-0.4	-0.1	0.0	0.1	0.4
4:00	4.5	4.5	0.0	72.1	-0.4	-0.1	0.0	0.1	0.4
5:00	4.5	4.5	0.0	71.1	-0.4	-0.1	0.0	0.1	0.4
6:00	4.8	4.8	0.0	70.2	-0.4	-0.1	0.0	0.1	0.4
7:00	5.8	5.8	0.0	71.4	-0.4	-0.1	0.0	0.1	0.4
8:00	6.6	6.6	0.0	73.3	-0.4	-0.1	0.0	0.1	0.4
9:00	7.2	7.2	0.0	76.9	-0.4	-0.1	0.0	0.1	0.4
10:00	7.5	7.5	0.0	80.6	-0.4	-0.1	0.0	0.1	0.4
11:00	7.6	7.6	0.0	83.2	-0.4	-0.1	0.0	0.1	0.4
12:00	7.2	7.2	0.0	84.9	-0.4	-0.1	0.0	0.1	0.4
13:00	7.2	7.2	0.0	84.5	-0.4	-0.1	0.0	0.1	0.4
14:00	7.2	7.2	0.0	84.5	-0.4	-0.1	0.0	0.1	0.4
15:00	6.9	0.5	6.4	83.6	6.1	6.3	6.4	6.6	6.8
16:00	6.8	0.5	6.3	83.6	6.0	6.2	6.3	6.5	6.7
17:00	6.5	0.5	6.0	81.9	5.7	5.9	6.0	6.2	6.4
18:00	6.2	0.5	5.7	82.3	5.4	5.6	5.7	5.9	6.1
19:00	6.1	6.1	0.0	78.9	-0.4	-0.1	0.0	0.1	0.4
20:00	6.3	6.3	0.0	75.0	-0.4	-0.1	0.0	0.1	0.4
21:00	6.3	6.3	0.0	72.7	-0.4	-0.1	0.0	0.1	0.4
22:00	6.2	6.2	0.0	71.8	-0.4	-0.1	0.0	0.1	0.4
23:00	5.9	5.9	0.0	71.8	-0.4	-0.1	0.0	0.1	0.4
0:00	5.5	5.5	0.0	71.2	-0.4	-0.1	0.0	0.1	0.4

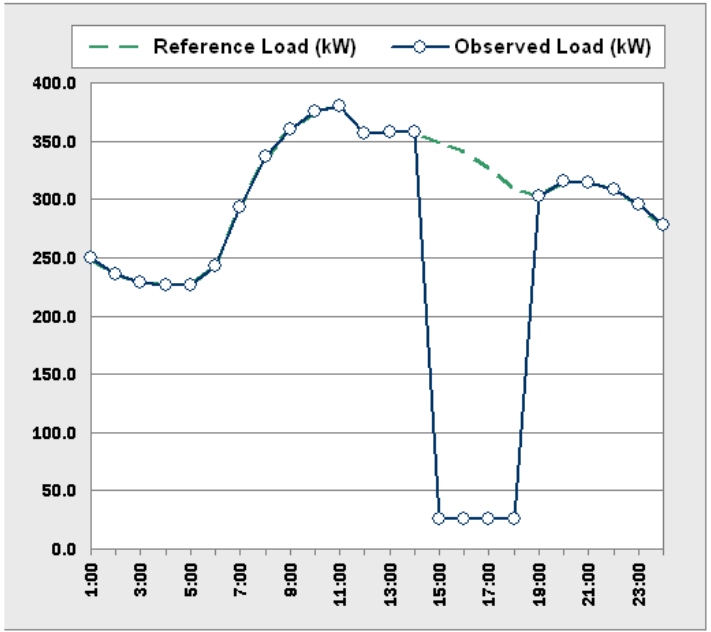
	Reference Energy Use (MWh)	Observed Energy Use (MWh)	Change in Energy Use (MWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	147.0	122.5	24.5	161.8	22.7	23.8	24.5	25.2	26.2

TABLE 1: Menu options

Type of Results	Average Enrolled Account
Weather Year	1-in-2
Forecast Year	2009
Day Type	August Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	20
Average FSL (kW)	25.4
Proxy Date	Wednesday, August 23, 2006



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (kW)	Observed Load (kW)	Load Impact (kW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	249.6	249.6	0.0	70.4	-17.7	-7.3	0.0	7.3	17.7
2:00	235.4	235.4	0.0	70.1	-17.7	-7.3	0.0	7.3	17.7
3:00	228.4	228.4	0.0	70.1	-17.7	-7.3	0.0	7.3	17.7
4:00	226.2	226.2	0.0	69.5	-17.7	-7.3	0.0	7.3	17.7
5:00	226.0	226.0	0.0	69.5	-17.7	-7.3	0.0	7.3	17.7
6:00	242.5	242.5	0.0	69.5	-17.7	-7.3	0.0	7.3	17.7
7:00	292.8	292.8	0.0	69.1	-17.7	-7.3	0.0	7.3	17.7
8:00	336.8	336.8	0.0	71.4	-17.7	-7.3	0.0	7.3	17.7
9:00	360.5	360.5	0.0	74.9	-17.7	-7.3	0.0	7.3	17.7
10:00	375.6	375.6	0.0	78.5	-17.7	-7.3	0.0	7.3	17.7
11:00	380.3	380.3	0.0	79.1	-17.7	-7.3	0.0	7.3	17.7
12:00	356.5	356.5	0.0	80.4	-17.7	-7.3	0.0	7.3	17.7
13:00	357.9	357.9	0.0	80.7	-17.7	-7.3	0.0	7.3	17.7
14:00	358.3	358.3	0.0	81.3	-17.7	-7.3	0.0	7.3	17.7
15:00	348.5	25.4	323.1	83.7	305.4	315.9	323.1	330.4	340.9
16:00	341.9	25.4	316.5	82.7	298.8	309.3	316.5	323.8	334.3
17:00	327.6	25.4	302.3	81.1	284.5	295.0	302.3	309.5	320.0
18:00	309.6	25.4	284.3	76.8	266.5	277.0	284.3	291.5	302.0
19:00	302.9	302.9	0.0	75.3	-17.7	-7.3	0.0	7.3	17.7
20:00	315.3	315.3	0.0	73.4	-17.7	-7.3	0.0	7.3	17.7
21:00	314.5	314.5	0.0	72.7	-17.7	-7.3	0.0	7.3	17.7
22:00	308.0	308.0	0.0	71.5	-17.7	-7.3	0.0	7.3	17.7
23:00	295.9	295.9	0.0	71.5	-17.7	-7.3	0.0	7.3	17.7
0:00	278.0	278.0	0.0	70.5	-17.7	-7.3	0.0	7.3	17.7

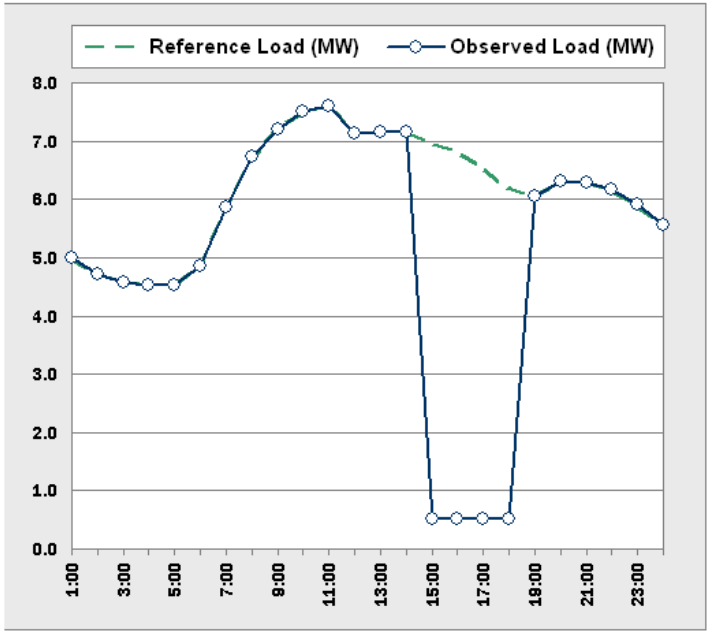
	Reference Energy Use (kWh)	Observed Energy Use (kWh)	Change in Energy Use (kWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	7,369.0	6,142.8	1,226.2	116.1	1139.2	1190.6	1226.2	1261.8	1313.1

TABLE 1: Menu options

Type of Results	Aggregate
Weather Year	1-in-2
Forecast Year	2009
Day Type	August Monthly Peak
Customer Characteristic	All Customers

TABLE 2: Output

Number of Accounts	**20**
Aggregate FSL (MW)	**0.5**
Proxy Date	**Wednesday, August 23, 2006**



Due to size of the time interval, the figure does not reflect the semi-instatenous drop in load attributable to the direct load control technology employed

Hour Ending	Reference Load (MW)	Observed Load (MW)	Load Impact (MW)	Weighted Temp (F)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
1:00	5.0	5.0	0.0	70.4	-0.4	-0.1	0.0	0.1	0.4
2:00	4.7	4.7	0.0	70.1	-0.4	-0.1	0.0	0.1	0.4
3:00	4.6	4.6	0.0	70.1	-0.4	-0.1	0.0	0.1	0.4
4:00	4.5	4.5	0.0	69.5	-0.4	-0.1	0.0	0.1	0.4
5:00	4.5	4.5	0.0	69.5	-0.4	-0.1	0.0	0.1	0.4
6:00	4.8	4.8	0.0	69.5	-0.4	-0.1	0.0	0.1	0.4
7:00	5.9	5.9	0.0	69.1	-0.4	-0.1	0.0	0.1	0.4
8:00	6.7	6.7	0.0	71.4	-0.4	-0.1	0.0	0.1	0.4
9:00	7.2	7.2	0.0	74.9	-0.4	-0.1	0.0	0.1	0.4
10:00	7.5	7.5	0.0	78.5	-0.4	-0.1	0.0	0.1	0.4
11:00	7.6	7.6	0.0	79.1	-0.4	-0.1	0.0	0.1	0.4
12:00	7.1	7.1	0.0	80.4	-0.4	-0.1	0.0	0.1	0.4
13:00	7.2	7.2	0.0	80.7	-0.4	-0.1	0.0	0.1	0.4
14:00	7.2	7.2	0.0	81.3	-0.4	-0.1	0.0	0.1	0.4
15:00	7.0	0.5	6.5	83.7	6.1	6.3	6.5	6.6	6.8
16:00	6.8	0.5	6.3	82.7	6.0	6.2	6.3	6.5	6.7
17:00	6.6	0.5	6.0	81.1	5.7	5.9	6.0	6.2	6.4
18:00	6.2	0.5	5.7	76.8	5.3	5.5	5.7	5.8	6.0
19:00	6.1	6.1	0.0	75.3	-0.4	-0.1	0.0	0.1	0.4
20:00	6.3	6.3	0.0	73.4	-0.4	-0.1	0.0	0.1	0.4
21:00	6.3	6.3	0.0	72.7	-0.4	-0.1	0.0	0.1	0.4
22:00	6.2	6.2	0.0	71.5	-0.4	-0.1	0.0	0.1	0.4
23:00	5.9	5.9	0.0	71.5	-0.4	-0.1	0.0	0.1	0.4
0:00	5.6	5.6	0.0	70.5	-0.4	-0.1	0.0	0.1	0.4

	Reference Energy Use (MWh)	Observed Energy Use (MWh)	Change in Energy Use (MWh)	Cooling Degree Hours (Base 70)	Uncertainty Adjusted Impact - Percentiles				
					10th	30th	50th	70th	90th
Daily	147.4	122.9	24.5	116.1	22.8	23.8	24.5	25.2	26.3