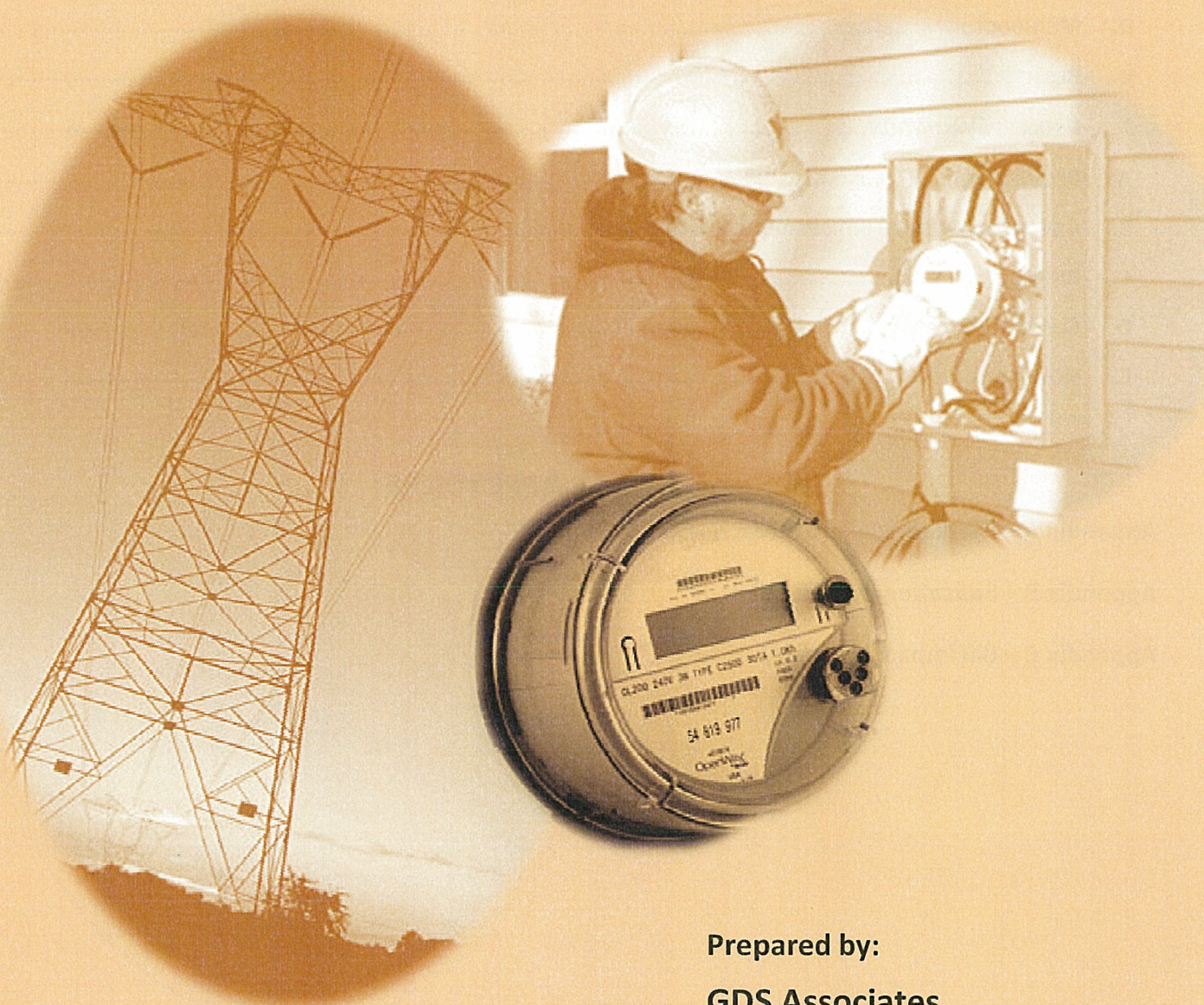




# Unitil

## COMMERCIAL CPP PRICING PILOT EVALUATION REPORT



Prepared by:

GDS Associates  
1181 Elm Street, Suite 205  
Manchester, NH 03101



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## 1.0 EXECUTIVE SUMMARY

This evaluation report presents results from a Critical Peak Pricing (CPP) pilot program conducted by Unitil Energy Systems, Inc. (UES) from June through August, 2011. GDS Associates, Inc. was retained by Unitil to assist in the design, development, implementation, and evaluation of the smart grid pilot program. This final report for Unitil's has been prepared for submission to the New Hampshire Public Utilities Commission under Docket DE 09-137. This report does not provide any assessment or evaluation of the costs and benefits which may be attributable to larger scale implementation of the treatments under study.

Unitil's CPP Pilot program included twenty-nine (29) small commercial and industrial customers located on one of two specific circuits served through the Kingston NH substation. The Pilot was centered around a dynamic rate structure that offered a discounted rate for approximately 98% of the hours during the summer ("off-peak"), and a significantly higher rate during the remaining 2% - those periods declared as "critical peak". The purpose of the rate was to encourage conservation and demand reduction during critical peak periods. Participating customers had the opportunity to save money on their electric bill by virtue of the discounted "off-peak" rate provided they were able to curtail usage during the higher price periods. As part of the Pilot, Unitil offered bill protection to participating customers meaning that customers were able to keep any savings they earned through the pilot but were guaranteed not to pay more on the dynamic rate.

A total of five (5) critical peak periods were declared during the 3-month pilot. A load reduction calculation methodology from ISO-New England was utilized to estimate impacts from the group by comparing average load curves for qualifying pre-event days to actual impacts on event days, with minor corrections for weather. The impact evaluation summarized in Section III of this evaluation indicates that customers reduced load by an average of 0.66 kW, or 6.6% of the total load. The ISO-NE prior day averaging methodology was utilized to estimate the load reduction. This is a simplified calculation model that tends to underestimate impacts.<sup>1</sup> The impacts among a subgroup of customers who indicated an active effort to reduce load during CPP events was higher, 1.17 kW or 11.5% of total load. The fact that bill protection was offered up front to customers had a significant role in the pilot, as approximately 30% of survey respondents indicate they did not actively attempt to reduce load during CPP events because they knew they were protected from higher bills.

This evaluation report presents the design of the pilot (Section II), the methodology of and findings from the impact evaluation (Section III) and a review of the process of implementing the Pilot (Section IV). The process evaluation involves consideration of the recruitment process and typical barriers encountered, and Unitil's experience with their Advanced Metering Infrastructure (AMI) system, billing systems, customer support needs, and handling of critical peak event notifications.

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<sup>1</sup> A comparative analysis of impacts from Unitil's residential TOU pilot was conducted to evaluate the hypothesis that the prior day averaging methodology underestimates impacts. It was found that impacts for the residential pilot using statistical modeling with individual regression analyses were 79% higher than using the prior day averaging methodology. See page 12 for details.

## 2.0 EXPERIMENTAL DESIGN

### A. TARGET POPULATION

The target population was G2 customers with monthly energy consumption greater than 2,000 kWh and with a peak load between 10 kW and 75 kW, and served by one of two specific circuits supplied through the Kingston Substation. Eligible customers on this specific circuit were identified from load data and specifically recruited to participate in the pilot.

Participants were not required to have high speed internet access or central air conditioning systems, and were required to have operating hours within the time period when critical peak events could be dispatched. Eligible customers also had to be responsible for paying their own electric bill and had to purchase default service from Unitil. Customers were offered “bill protection” for participating.

### B. TREATMENT GROUP

Unitil ultimately recruited 29 C&I customers to participate in the pilot. The customers on the pilot were smaller C&I loads, with typically low load factors. Summer peak demand for the customers ranged from 6.9 kW to 45.6 kW, with an average of 15.7 kW. Summer load factor for the group averaged 32% with a minimum of 17% and a maximum of 61%. Table 1 summarizes summer 2011 load characteristics for each of the pilot participants.

TABLE 1: SUMMER LOAD CHARACTERISTICS OF C&I PILOT PARTICIPANTS  
(JUNE THROUGH AUGUST 2011)

Line Number	Summer Energy (kWh)	Summer Peak Demand (kW)	Summer Load Factor
1	18,419	45.6	18.5%
2	43,968	40.0	50.2%
3	25,369	25.2	46.0%
4	9,422	21.9	19.7%
5	8,052	21.0	17.5%
6	15,102	20.2	34.2%
7	16,759	18.1	42.4%
8	8,187	15.4	24.2%
9	5,738	15.0	17.4%
10	10,938	15.0	33.2%
11	8,898	14.8	27.5%
12	10,476	14.8	32.4%
13	16,583	13.8	54.9%
14	7,473	13.5	25.2%
15	8,407	13.4	28.7%
16	6,555	12.5	23.9%
17	9,280	12.5	34.0%
18	5,652	12.1	21.3%
19	6,100	11.7	23.8%
20	7,977	11.6	31.5%



21	7,138	11.5	28.2%
22	5,776	11.5	23.0%
23	7,901	10.5	34.2%
24	6,190	10.5	27.0%
25	6,301	10.0	28.8%
26	8,130	9.8	37.7%
27	7,259	7.8	42.3%
28	7,901	7.6	47.7%
29	9,265	6.9	61.1%
Average	10,870	15.7	32.3%
St. Dev.	7,829	8.7	11.5%
C.V.	72.0%	55.4%	35.6%
Max	43,968	45.6	61.1%
Min	5,652	6.9	17.4%
Range	38,316	38.7	43.7%

The customers enrolled in this program were provided with basic written educational materials that described the CPP rate, the goals and objectives of the pilot program, and basic tips and tactics for shifting energy usage off peak hours. Customers were also provided with access to a web portal hosted by Unitil that provided daily feedback on total energy consumption. Customers did not receive any enabling technologies to assist in reducing loads during critical peak periods. Marketing and outreach materials sent to the customers are included in Appendix A. Enrollment and educational materials for participants is included in Appendix B.

### C. CRITICAL PEAK PRICE RATE STRUCTURE

The Critical Peak Price rate structure dealt with Critical peak periods which were from 12 p.m. – 6 p.m. on weekdays and occurred only as declared by Unitil on forecasted high load days.<sup>2</sup> Customers were notified by 5 p.m. the day prior that the following weekday would be a critical peak period. In total, five (5) critical peak periods were declared during the course of the pilot. The rate design was based on a minimum of two (2) critical peak periods and a maximum of eight (8) critical peak periods. The default service (supply) component of the bill was the only component that changed based on the time period; delivery and customer charges were constant regardless of when the energy was consumed. The participating customers were offered bill protection to encourage participation in the program.

<sup>2</sup> Critical Peak Day definitions and notifications were identical to those used in the Residential Time of Use Pilot Program conducted simultaneously in the summer of 2011.

The CPP rate was calculated based on the ISO-NE LMP by setting all non-CPP hours at a single, discounted Default Service Rate, with the higher rate including demand costs applicable to CPP hours only.<sup>3</sup> Final rates for the pilot are summarized in the table below.

TABLE 2: FINAL CPP RATES

Hours	Off-Peak / CPP	Rate (\$/kWh)
12 p.m. - 6 p.m. Weekdays Only on CPP Days	Critical Peak (CPP)	\$0.52490
All remaining non-CPP hours	Off-Peak	\$0.05983

## D. MARKETING AND RECRUITMENT

Customers were recruited to participate in Unitil's pilot program utilizing an "opt-in" enrollment model. Customers were identified from load data and sent letters inviting them to participate in the summer pilot program. The fact that bill protection was offered was a point of emphasis in the marketing materials. Customers who expressed interest were administered a pre-pilot survey to assess their businesses energy usage, hours of operation, and potential abilities to curtail load during CPP events. In addition, cold calls to customers who received the mailing but did not respond were made to elicit participation. The total pool of solicited C&I customers included 246 customer accounts.

## E. CRITICAL PEAK SELECTION METHODOLOGY

Unitil utilized a 2010 temperature vs. load model as a means to schedule demand reduction events on a day-ahead basis. An average daily temperature of 78 degrees F was selected as a reasonable threshold to result in approximately five (5) critical peak events; this threshold does not correlate directly with previous system peak conditions and would need to be reviewed if a full program were undertaken. The Company received a daily seven day weather forecast that was monitored for the potential for higher temperatures, providing plenty of notice for consideration and communication to customers of planned events.

The temperature vs. load model was developed as a function of Unitil's normal planning process. Unitil develops a temperature vs. load model for each of its operating areas. The basis for each model is a series of yearly regressions that are developed to correlate daily loads to daily temperatures in that season. Once a model is established, an estimated peak load can be derived for any given temperature. The probability distribution for annual highest temperatures is assumed to follow the discrete distribution of past historical highest temperatures. The random possibilities of peak load outcomes for any specific temperature are assumed to follow a standard probability distribution model with a mean centered on the point estimate of the peak load at that temperature and varying based on its individual standard deviation according to the fit of the seasonal model to the actual historical values.

<sup>3</sup> This method is similar to that utilized in the Residential Time of Use Pilot, but without the additional On-Peak / Off-Peak designation.

For the pilot program, an average daily temperature of 78 degrees F was established as the threshold for declaring critical peak events. Table 3 summarizes the day ahead forecasted average daily temperatures, and actual average daily temperatures for the five critical peak days:

TABLE 3: CPP DAYS CALLED AND FORECASTED AVERAGE DAILY TEMPERATURE

Critical Peak Event	Forecasted Daily Temperature	Actual Avg. Daily Temperature
7/6/2011	78°F	78°F
7/11/2011	79°F	79°F
7/12/2011	80°F	80°F
7/21/2011	85°F	85°F
7/22/2011	83°F	83°F

This table illustrates that the forecasted temperatures were in fact identical to the actual average daily temperatures realized on each critical peak day. Due to the number of critical peak days declared in July and a concern for potentially exceeding the number of design days through the full course of the Pilot, the threshold was adjusted up to an average daily temperature of 80 degrees F after the last critical peak event. However, temperatures never reached this threshold for the remainder of the pilot.



### 3.0 IMPACT EVALUATION

The impact evaluation focuses on measuring the impact on average customer loads of a CPP event. Although critical hours are 12:00 PM to 6:00 PM, customers may alter loads before and after these hours in order to respond to CPP events. Therefore, impacts have been measured for every hour of the day. To measure the impact, a baseline load for every customer was estimated based on the ISO method as described below. Once impacts were estimated for every customer on the pilot, they were averaged to represent average hourly demand and total event-day energy impacts for the average pilot participant. This section discusses the data required to perform the impact evaluation, the methodology used to estimate a baseline for each customer, and the results of the evaluation.

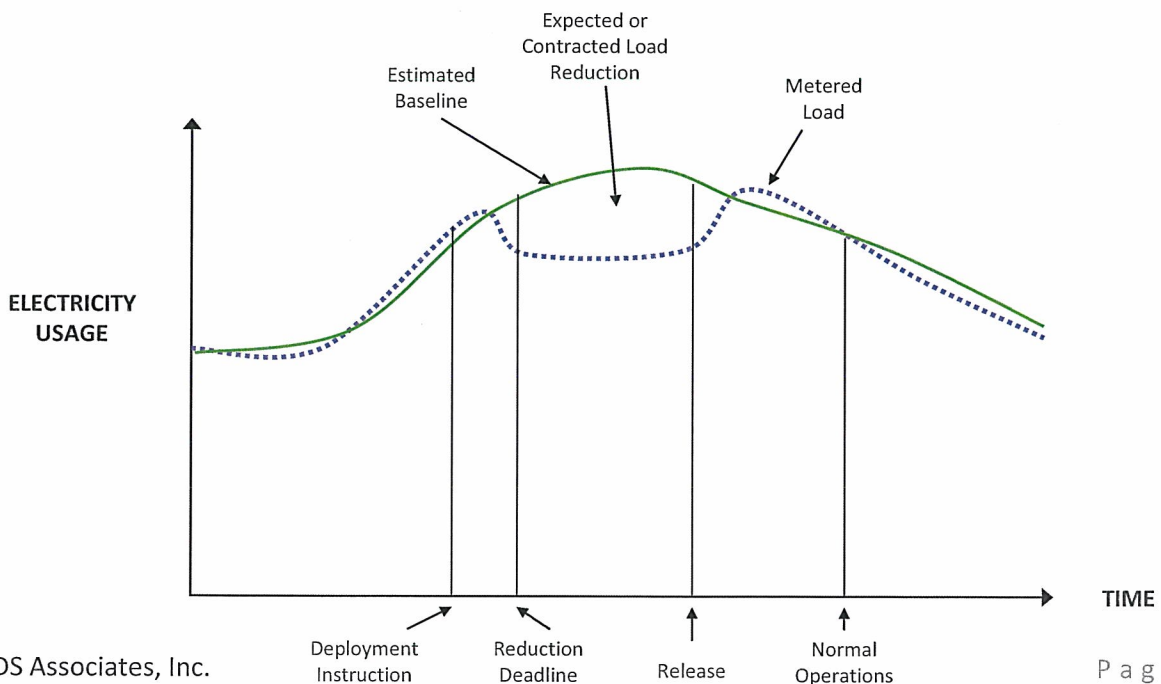
#### A. DATA COLLECTION

The only data required to complete the impact assessment for the C&I pilot program was interval load data for June 2011 through August 2011 for the 29 pilot customers. The interval data was collected at 15-minute intervals and summarized to average hourly load for performing the evaluation. The interval data collected was reviewed for completeness prior to its use. There were very few gaps in the data (e.g., missing reads) and therefore all of the data collected was usable for performing the impact evaluation.

#### B. METHODOLOGY

The goal of the impact evaluation is to calculate a baseline load shape during event days that estimates what customer load would have been had an event not been called by the utility. The difference between the actual loads as recorded and the baseline represents the estimated impact in any given hour due to the CPP event. These impacts can then be averaged by hour over multiple event days and multiple customers to get a representation of expected peak demand and energy savings from the CPP program.

FIGURE 1: EXAMPLE ACTUAL AND BASELINE LOADS



The methodology for determining the baseline follows the prior day averaging method from the ISO-New England (ISO-NE). This method uses average load shapes from a selected number of qualifying days just prior to the CPP event to establish a baseline load shape.

The ISO New England prior day averaging method is a rolling average baseline that updates daily<sup>4</sup>. The initial baseline is an average of loads in every hour for the previous five non-weekend, non-holiday, non-event days that have complete interval data readings in every hour.

$$\text{Baseline}_{\text{Initial}} = \text{Sum (Interval meter reads for most recent five qualifying days)}/5$$

Then, for every day, the baseline is determined based on whether an event is called or not:

$$\text{Event Day: Baseline}_{\text{New}} = \text{Baseline of prior day}$$

$$\text{Non-Event Day: Baseline}_{\text{New}} = 0.9 \times \text{Baseline of prior day} + 0.1 \times \text{Interval meter reads for today}$$

In this manner, the baseline is continually updated on a rolling-average basis. The baseline is then adjusted by adjusting the entire baseline by the average difference between the baseline and the event day loads in the two hours immediately preceding the critical peak event. The adjustment is only made if it adjusts the baseline up. Table 4 demonstrates the application of the adjustment to calculate a baseline.

TABLE 4: EXAMPLE BASELINE ADJUSTMENT  
(CRITICAL PEAK HOURS ARE HOURS ENDING 13-18)

Hour	Event Day Loads	Unadjusted Baseline	Difference	Baseline Adjustment	Adjusted Baseline
1	2.5	2.6		1.1	3.7
2	2.4	2.5		1.1	3.6
3	2.5	2.4		1.1	3.5
4	2.4	2.4		1.1	3.5
5	2.2	2.3		1.1	3.4
6	2.7	2.5		1.1	3.6
7	4.8	4.2		1.1	5.3
8	7.9	6.8		1.1	7.9
9	9.6	8.2		1.1	9.3
10	10.5	9.3		1.1	10.4
11	11.1	9.6		1.1	10.7
12	10.4	9.6	1.5	1.1	10.7
13	10.7	9.9	0.8	1.1	11.0
14	9.8	9.8		1.1	10.9
15	9.5	9.3		1.1	10.4
16	9.1	8.8		1.1	9.9
17	7.3	7.3		1.1	8.4

<sup>4</sup> For further details, see: *ISO New England Manual for Measurement and Verification of Demand Reduction Value from Demand Resources*. Manual M-MVDR. Revision 3, Effective: May 6, 2011.

18	6.2	5.8		1.1	6.9
19	5.0	4.7		1.1	5.8
20	4.8	4.0		1.1	5.1
21	4.6	3.7		1.1	4.8
22	3.8	3.3		1.1	4.4
23	3.6	3.1		1.1	4.2
24	3.5	2.8		1.1	3.9
<b>AVERAGE</b>			<b>1.1</b>		

For the purposes of evaluating the C&I pilot, GDS used the initial approach, taking an average of the five most recent qualifying days. Table 5 shows the days that were used to calculate the baseline for each CPP event day. Note that weekends and the Independence Day Holiday are excluded. On a day when the prior day was also an event, the baseline for both days is the same.

TABLE 5: QUALIFYING DAYS INCLUDED IN BASELINE AVERAGE

Event Day	Days Included in Average for Baseline
July 6, 2011	June 28, 29, 30, July 1, and 5
July 11, 2011	June 30, July 1, 5, 7, and 8
July 12, 2011	Same as July 11
July 21, 2011	July 14, 15, 18, 19, and 20
July 22, 2011	Same as July 21

## C. RESULTS

It is evident that some C&I customers did very little to respond to the CPP events. Averaging the impacts for all customers shows some response, but the savings are not as significant as in the residential pilot. As will be explained further below, Unilit performed an ex post survey of the C&I customers regarding their experiences with the pilot program. One question asked was whether the participant actually attempted to respond to CPP events. Since some did not, this report shows impacts for the pilot group as a whole and then for just those that responded that they did indeed attempt to respond to CPP events.

### ALL PILOT CUSTOMERS

The average result across all 29 pilot customers indicates some response to CPP events during the pilot. The load, on average, was 0.7 kW (7%) lower during on-peak hours. Total daily energy on event days was 7% or 12 kWh lower as well. The results presented below represent the average for all 29 customers across all five CPP event days in July 2011. The data are summarized and presented in hour ending notation, so an on-peak period of 12:00 PM to 6:00 PM is represented by hours ending 13 through 18.



FIGURE 2: AVERAGE EVENT DAY LOAD, BASELINE, AND IMPACTS FOR ALL PILOT CUSTOMERS  
(AVERAGE OF ALL EVENT DAYS IN JULY 2011)

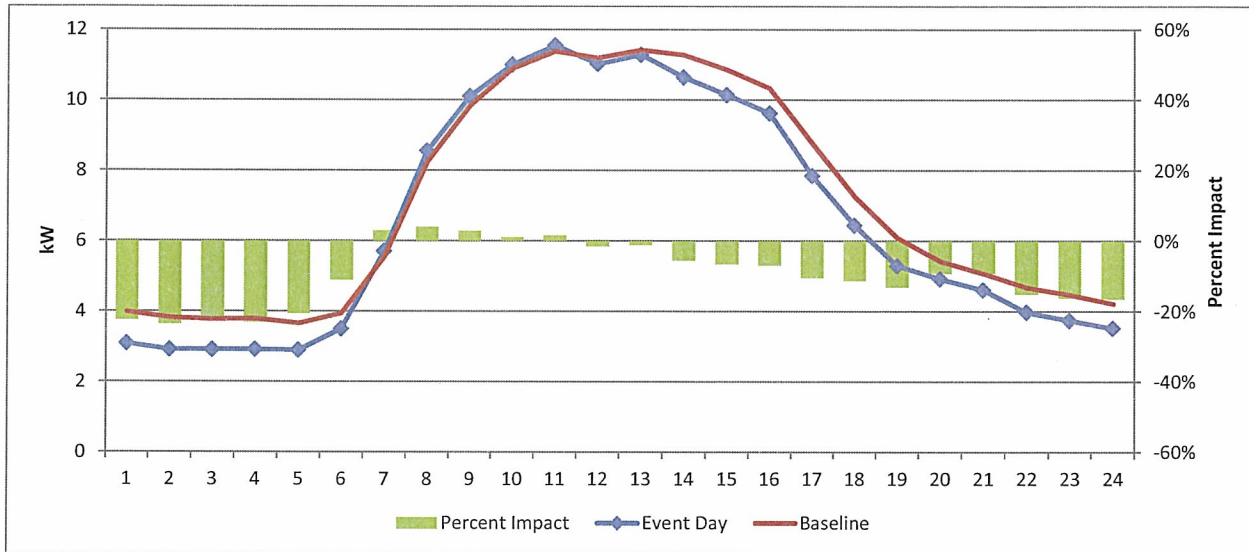


TABLE 6: AVERAGE EVENT DAY LOAD, BASELINE, AND IMPACTS FOR ALL PILOT CUSTOMERS  
(AVERAGE OF ALL EVENT DAYS IN JULY 2011)

Hour Ending	Event kW	Baseline kW	kW Impact	% Impact
1	3.09	3.98	(0.90)	-22.5%
2	2.91	3.82	(0.91)	-23.7%
3	2.91	3.77	(0.86)	-22.9%
4	2.92	3.79	(0.88)	-23.1%
5	2.90	3.65	(0.75)	-20.6%
6	3.50	3.94	(0.44)	-11.2%
7	5.71	5.55	0.16	2.9%
8	8.55	8.23	0.32	3.9%
9	10.10	9.83	0.27	2.8%
10	11.01	10.89	0.11	1.0%
11	11.54	11.37	0.17	1.5%
12	11.02	11.19	(0.17)	-1.5%
13	11.28	11.42	(0.13)	-1.2%
14	10.64	11.28	(0.64)	-5.6%
15	10.14	10.86	(0.72)	-6.6%
16	9.62	10.33	(0.71)	-6.9%
17	7.85	8.77	(0.92)	-10.5%
18	6.44	7.26	(0.82)	-11.3%
19	5.29	6.09	(0.80)	-13.1%
20	4.93	5.43	(0.50)	-9.2%

21	4.61	5.08	(0.47)	-9.2%
22	3.97	4.68	(0.71)	-15.1%
23	3.74	4.47	(0.73)	-16.2%
24	3.52	4.21	(0.69)	-16.5%
<b>Hours 10-12</b>	<b>11.19</b>	<b>11.15</b>	<b>0.04</b>	<b>0.3%</b>
<b>Hours 13-18</b>	<b>9.33</b>	<b>9.99</b>	<b>(0.66)</b>	<b>-6.6%</b>
<b>Hours 19-21</b>	<b>4.94</b>	<b>5.53</b>	<b>(0.59)</b>	<b>-10.7%</b>
<b>Daily kWh</b>	<b>158.21</b>	<b>169.90</b>	<b>(11.69)</b>	<b>-6.9%</b>

### ONLY CUSTOMERS THAT TRIED TO RESPOND TO EVENTS

As can be seen in Figure 2 and Table 6 above, the C&I pilot group as a whole did reduce loads, but the savings were not as great as the residential pilot customers with the same pricing-only design. The fact that customers knew they were protected from higher bills appears to have lessened the incentive for many customers to actively curtail energy use on these days.

Of the 14 participants who responded to the post-pilot survey, 10 (70%) indicated that they had taken efforts to curtail usage during CPP events. A better indication of impacts among active participants is to evaluate the results for only those 10 customers. Figure 3 and Table 7 provide the impact evaluation for those customers only, showing success in reducing loads for those customers that attempted to do so. These customers showed an average 1.2 kW reduction during critical peak hours, a savings of 12%. Some of the energy saved during those hours, however, is recovered prior to the event hours, indicating the participants' efforts to maintain comfort or operations but still reduce loads during the event. Total kWh on event days was only 4% (6 kWh) lower than on baseline days. The data are summarized and presented in hour ending notation, so an on-peak period of 12:00 PM to 6:00 PM is represented by hours ending 13 through 18.

FIGURE 3: AVERAGE EVENT DAY LOAD, BASELINE, AND IMPACTS FOR CUSTOMERS THAT INDICATED THEY RESPONDED TO EVENTS  
(AVERAGE OF ALL EVENT DAYS IN JULY 2011)

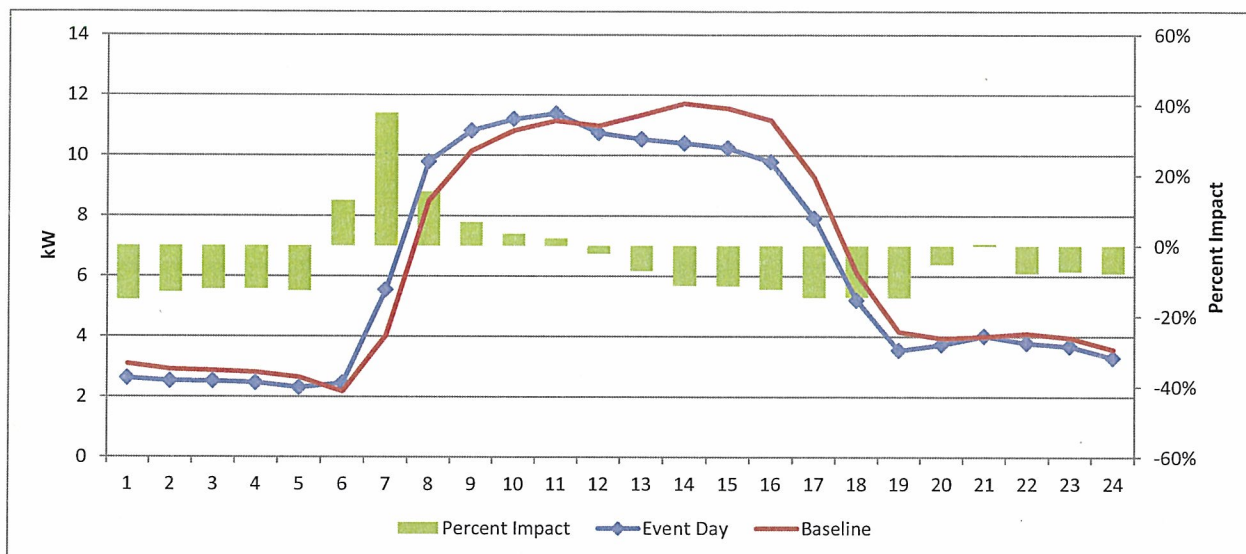


TABLE 7: AVERAGE EVENT DAY LOAD, BASELINE, AND IMPACTS FOR CUSTOMERS THAT INDICATED THEY RESPONDED TO EVENTS  
(AVERAGE OF ALL EVENT DAYS IN JULY 2011)

Hour Ending	Event kW	Baseline kW	kW Impact	% Impact
1	2.62	3.09	(0.47)	-15.2%
2	2.52	2.90	(0.38)	-13.1%
3	2.52	2.87	(0.35)	-12.3%
4	2.47	2.81	(0.34)	-12.2%
5	2.31	2.64	(0.34)	-12.7%
6	2.45	2.17	0.28	12.8%
7	5.54	4.03	1.52	37.6%
8	9.79	8.49	1.30	15.3%
9	10.82	10.15	0.67	6.6%
10	11.20	10.82	0.37	3.5%
11	11.39	11.15	0.23	2.1%
12	10.75	10.98	(0.23)	-2.1%
13	10.53	11.34	(0.80)	-7.1%
14	10.41	11.72	(1.32)	-11.2%
15	10.25	11.56	(1.31)	-11.3%
16	9.79	11.16	(1.37)	-12.3%
17	7.92	9.27	(1.35)	-14.6%
18	5.21	6.09	(0.88)	-14.5%
19	3.55	4.16	(0.61)	-14.7%
20	3.74	3.94	(0.20)	-5.2%
21	4.02	4.00	0.02	0.6%
22	3.79	4.11	(0.31)	-7.7%
23	3.68	3.97	(0.28)	-7.2%
24	3.30	3.57	(0.28)	-7.7%



<i>Hours 10-12</i>	<i>11.11</i>	<i>10.99</i>	<i>0.12</i>	<i>1.1%</i>
<i>Hours 13-18</i>	<i>9.02</i>	<i>10.19</i>	<i>(1.17)</i>	<i>-11.5%</i>
<i>Hours 19-21</i>	<i>3.77</i>	<i>4.03</i>	<i>(0.26)</i>	<i>-6.5%</i>
<i>Daily kWh</i>	<i>150.56</i>	<i>157.00</i>	<i>(6.45)</i>	<i>-4.1%</i>

Interestingly, only 5 of the 10 customers actually performed better from a billing perspective under the CPP rate relative to the standard rate. That indicates that even consumers that tried to respond to the events may not have responded well enough to achieve bill savings under the CPP tariff structure.

#### **METHODOLOGICAL CONCERN**

The ISO methodology represents the tradeoff between ease of calculation and understanding and accuracy. A more sophisticated and rigorous statistical impact evaluation might have provided a better measure of load impacts in the C&I pilot. In order to test this hypothesis without undertaking an intensive effort to develop, GDS performed an additional analysis. Notably, in the Residential Time of Use (“TOU”) Pilot, GDS deployed the more sophisticated statistical analysis whereby the load for each participant is predicted for a given CPP day based on a regression-based model in which key factors that drive consumption are considered including hourly temperatures. Rather than attempt to duplicate this detailed and time-consuming analysis for the C&I Pilot Program, GDS prepared a very simple analysis of the simple TOU group in the Residential Pilot to determine what the ISO method would have predicted for a residential baseline and corresponding impacts for the CPP events. This “ISO-based” impact was then compared to the baseline and impacts calculated from the regression analysis. The results are compared in the table below. As noted, the analysis suggests that the ISO method understates the Residential impacts of the Pilot Program. If this finding were to hold for the C&I pilot program the average impacts noted above would be even more favorable.

**TABLE 8: COMPARISON OF ISO METHOD AND STATISTICAL MODELING – RESIDENTIAL SIMPLE TOU GROUP**

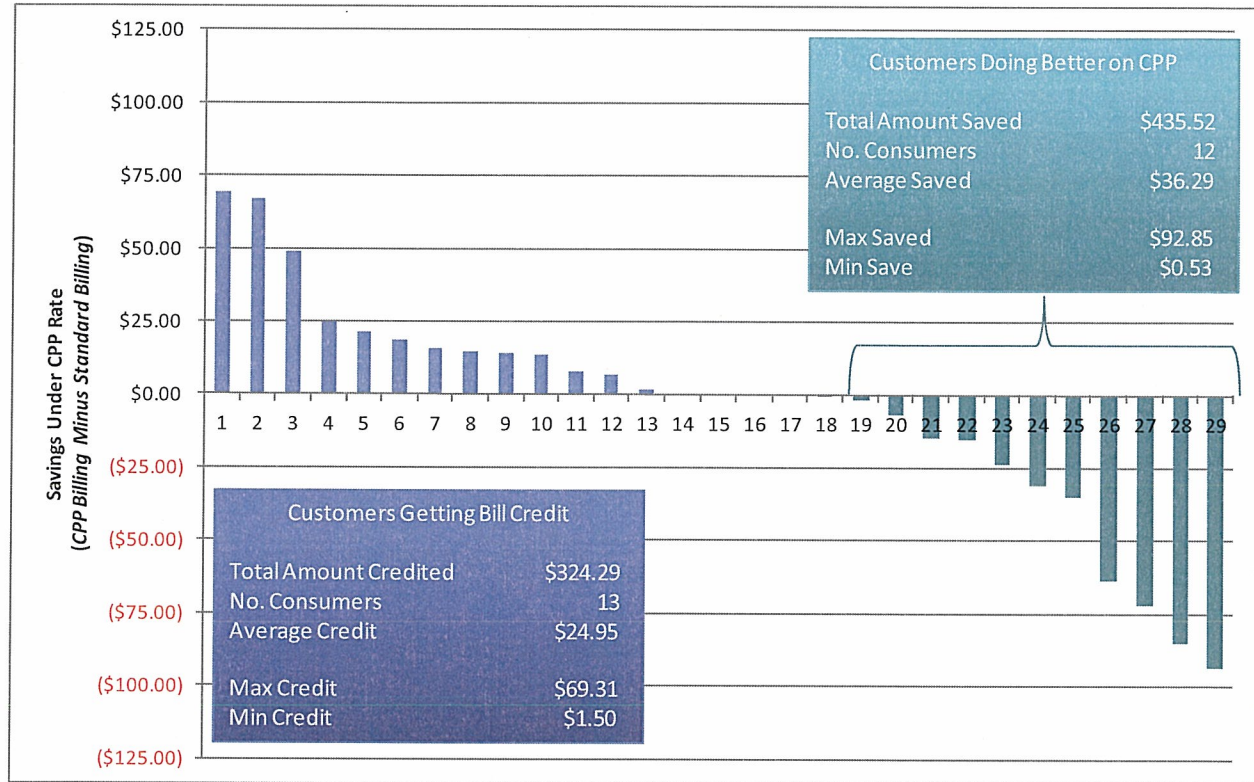
<b>Item</b>	<b>ISO Method</b>	<b>Stat. Model</b>	<b>kW Difference between ISO and Stat. Model</b>	<b>% Difference between ISO and Stat. Model</b>
kW Savings – CPP Hours (HE 13-18)	-0.87	-1.56	-0.69	79.3%

#### **CUSTOMER BILL IMPACTS**

At the conclusion of the three month pilot, an analysis was prepared for each customer calculating what their bill would have been on their previous fixed rate versus what they actually paid on the pilot. Of the 29 customers, 4 ended up “breaking even”, neither performing better under the CPP rate nor requiring a bill credit under the bill protection scheme. 13 of 29 (45%) customers required a bill credit at the end of the pilot because their bill was higher on the CPP rate than it would have been under their standard rate, with an average bill credit of \$24.95. 12 of the 29 (41%) customers saved money on the CPP rate, with an average savings of \$36.29. The distribution of the 29 customers is shown in Figure 4

below. The value for each customer is the difference between what they paid on the CPP rate and what they would have paid on the fixed rate. Therefore a positive value represents an overpayment on the CPP rate and thus a discount, whereas a negative value represents a savings.

FIGURE 4: BILL COMPARISON RESULTS – CPP BILLING VS. STANDARD RATE BILLING



## 4.0 PROCESS EVALUATION

### A. RECRUITMENT

The target sample for the pilot was 30 customers from two specific circuits fed through the Kingston Substation. Recruitment letters were mailed to commercial customers on these circuits who met the energy usage characteristics as described in section 2.A of this report. These letters described the high level goals of the pilot and offered bill protection commitments for participating customers. Bill protection was a key aspect of the recruitment process that simplified the decision making process for many customers. The letters also included a contact phone number for interested businesses to call to sign up. Of the 29 customers who ultimately volunteered to participate, very few were derived from a customer calling in response to the recruitment letter. Most participating customers were recruited through cold calling customers with scripted talking points to communicate the goals and details of the pilot.

Recruitment by phone, though ultimately effective in reaching the targeted number of participants, also faced significant challenges. Over 200 customers were cold called, some multiple times, over a two month period to eventually obtain the target number of participants. The four primary challenges to the recruitment process included the following in order of magnitude:

1. Reaching the decision maker at the business
2. Communicating a large amount of information in a small amount of time without making the customer feel too overwhelmed
3. Lack of knowledge among the general public regarding critical peak pricing structures
4. Fear amongst customers regarding potential negative impacts to their business such as increased bill (despite bill protection commitment) and or employee and customer comfort concerns

Reaching the decision maker was the initial challenge for each of the customers on the call list. Most decision makers did recall receiving the initial recruitment letter but did not remember the details of its content. The majority of businesses recruited were business where the owner/decision maker works at the facility and was easy to reach. Examples of these business types include auto repair shops or small retailers. Business that are part of a corporate chain were the most difficult to recruit because utility bills for these facilities are typically paid from regional or corporate headquarters and those upper managers are thus responsible for approving enrollment into a pilot program. Due to time constraints with recruitment deadlines and lack of success with corporate chains, recruitment efforts adapted to focus primarily on sole proprietors.

Once the decision maker was reached, the second challenge was communicating a large amount of information to the customer without overwhelming them. Cold calls are intrusive by nature and especially so with small business where the decision maker wears many hats and has little time to entertain solicitations. Often customers were simply too busy to care and often cut the conversation short before all the benefits of the pilot could be communicated.



Despite the challenges described above, the Unitil team was able to speak with over 200 qualified business customers in the target areas. Through these many conversations, it was clear that a large knowledge deficit exists amongst the general public regarding demand response pricing and the energy supply price / grid load problems it aims to address. Phone calls with decision makers often turned into lengthy conversations about the benefits of demand response pricing to the individual, utility company and community as a whole. By nature, people fear the unknown and despite our recruitment efforts the vast majority of customer communications resulted in an unwillingness to participate. Common reasons given for not participating include the following:

- The business cannot curtail load during a critical peak event because it would adversely affect their product or service.
- The business cannot curtail load during a critical peak event because it would make employees or customers uncomfortable.
- The business cannot curtail load during a critical peak event because the employees do not have access to temperature and lighting controls.
- The decision to participate needs to be made at the corporate level.

Welcome packets were mailed to customers who agreed to participate. The welcome packets included detailed information on bill cycle adjustments, demand response rate adjustments, bill protection and ways to save energy during on peak and critical peak pricing periods. The welcome packet also included a contract authorizing the adjustment to the billing cycle and rate change. Of the initial 30 recruits, only 29 ultimately returned signed copies of this contract.

Included in Appendix A are copies of recruitment material including the initial recruitment letter, a list of questions used to obtain information from the customer during phone conversations and the welcome packet.

## **B. ADVANCED METERING INFRASTRUCTURE (AMI)**

As with the Residential TOU pilot, the AMI meters currently in place for the small commercial customers were capable of being modified to collect time-of-use billing data over multiple internal registers. However, 15-minute interval data was required to evaluate granular results from the pilot therefore interval meters were installed for those commercial customers who elected to participate in the pilot program. Customers were informed during the recruitment process that a representative from Unitil would be dispatched to replace their existing electrical meter(s) with a new “smart” meter capable of recording the interval usage. The capabilities of these meters were briefly described to the customer as a way to reassure them that it would not impact their business in any way beyond the active study dates as the new meters would remain on customer buildings. Overall, the AMI system worked as anticipated. Interval data received from the meters was very high quality with minimal gaps, and aligned well with the AMI billing data received. Time-of-use data received through the AMI system was utilized for posting daily usage readings to the web portal.

In the deployment planning phase of the Pilot, Unitil evaluated the feasibility of utilizing streaming endpoint technology to retrieve interval usage data from pilot participants. However it was determined

that there was insufficient bandwidth available in that specific area of the system to perform streaming capability for all customers in the pilot, therefore Unitil decided to take a more conservative approach to gathering analysis data in the form of the standard interval recording meters discussed above. It should be noted that Unitil has a capital project scheduled for 2012 to increase the available channels (bandwidth) in the Seacoast Area which will allow for increased streaming capability.

## **C. BILLING**

The two principle challenges to billing customers on the CPP rate were transitioning them to a calendar month billing cycle - and the subsequent demand reset implications, and dealing with required CPP event adjustments<sup>5</sup>. All participating customers were migrated to a calendar month billing cycle beginning June 1, 2011, so that they could receive pilot bills that included solely CPP and Non-CPP related charges (i.e. no charges prior to pilot implementation). This created some challenges to the billing department due to long May bills which raised questions with some customers, and the way in which peak demands and customer charges were dealt with. In all cases, decisions regarding billing modifications favored the customer. For example, with the long bills from mid-April through June 1, customers were charged only a single monthly customer charge. While the transition presented mild challenges to the billing department, these issues were specific to the pilot and would not necessarily be present in a full program.

Overall, billing the commercial accounts on the CPP rate was a very manual process where each account was individually reviewed due to the low number of customers. Based on the limited scope of this pilot, it is difficult to draw conclusions as to the impact on billing if a larger scale program were undertaken. Factors that would impact billing and that would have to be addressed include the number and complexity of rate structure, number of anticipated participating customers, period of CPP rate applicability, customer service training, and customer education.

### **Customer Bill Protection**

Bill protection reimbursements where applicable were calculated after the study period ended. Total kWh usage for each customer over the three month study period was summed and analyzed under both the standard G-2 rate structure and the pilot demand response rate structure to determine savings and or extra costs incurred by each of the pilot participants. Each customer was provided with a summary letter describing how much money they saved as a result of participation OR how much extra money they paid. For those customers who paid more, the overage was applied as a credit to the customer's September bill.

As was mentioned above, bill protection likely influenced participation results by lessening the incentive to actively curtail electricity usage during on peak and critical peak events. One post pilot survey question asked of participants was that if bill protection were not offered as part of this pilot, would

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<sup>5</sup> Adjustments as detailed in the residential TOU evaluation report pertaining to AMI failures to collect CPP event information on back-to-back CPP event days on July 11 and 12. The issue was resolved by utilizing interval data and was corrected for the second set of back-to-back CPP days on July 21 and 22.

they have participated? Only 2 of the 14 post pilot survey respondents indicated that they would have participated without bill protection.

The majority of pilot participants believed that the primary goal of the pilot was for their business to save money. When asked, only one business participant recognized the reduction of energy consumption during peak periods as a primary goal. Given the narrow focus of responses, it is apparent that more education is required during the recruitment process to inform business participants of the greater impacts to other members of the community of easing grid capacity issues.

#### **D. CUSTOMER SUPPORT**

Unitil designated an account executive to serve as the primary liaison for the customers who could also serve as a resource to help develop load curtailment strategies. Interestingly, not a single participant utilized the free services of the account executive to assist with load curtailment planning. It was anticipated during the planning phase that these types of services would be more broadly utilized.

Most support calls were placed directly to Unitil's billing department and regarded high bills, questions about bill protection, and or questions regarding the presentment of data through the web portal. Overall, call volume was very low given the low number of participants.

The web portal did provide useful feedback of daily information to customers and served as a tool for CSR's to respond to specific customer questions. The web portal for C&I customers used the same general format as for the residential pilot with the exception that the web portal did not calculate estimated daily costs. It was felt there were too many variables (such as demand components) to accurately predict daily costs so the web portal was restricted to simple usage comparisons by critical peak and off-peak periods. Overall, there were far fewer challenges with implementing the web portal for this pilot because there was no daily cost estimation and only two usage components (one component only on all but the 5 CPP days during the pilot) compared to three usage components on the residential pilot.

#### **E. NOTIFICATION**

Notifications of critical peak periods were issued by phone and e-mail by 5pm the day before a critical peak day to allow the business enough time to make necessary preparations. 80% of respondents to the post pilot survey indicated they received prior notice of a critical peak event and were satisfied with the way in which messages were delivered (phone, email). In some cases, a breakdown in communication between decision makers and employees led to 20% of business participants not receiving any notification at all. Typically, this occurred when upper management or business owners who were not physically on location on a day to day basis listed themselves as the primary contact and received the notifications. In many cases, these individuals did not communicate with the individuals at the facility who would need to respond, thus there was no awareness of those in a position to curtail usage. It is likely that the fact these owners and managers knew they were protected from higher bills lessened the urgency of communicating with their on-the-ground resources.

# **Appendix A**

## **Marketing and Outreach Materials**



Announcing:  
An Innovative Program To Save Money  
call 1-800-441-8525

Dear Unitil G-2 Customer,

We are pleased to invite you to participate in an exciting and innovative rate incentive pilot program designed to reduce Unitil's peak demands while saving you money. Unitil Rate G-2 Customers who volunteer to enroll in the program will receive a rate roughly 15 percent below standard energy service during 97 percent of the hours this summer. However, on up to eight "Critical Peak" days, those where Unitil's energy demands are at their highest levels, the rate for energy service will be significantly higher from Noon to 6 p.m.. By controlling energy use during these critical peak hours, customers should be able to save money on their monthly electric bills.

Why is it important to reduce peak demand? Electricity requirements climb sharply during those few hot summer days when air-conditioning usage skyrockets. This peak demand stresses the electric distribution and transmission systems, as well as all electricity generators throughout New England. Most of the capital investment in the electric grid goes towards meeting these high peak demands, and these investments drive up electricity prices for all customers. The true costs of electricity in the critical peak periods can be ten times higher than in other hours of the day or other days of the year.

With this pilot program, Unitil is on the forefront of efforts to find new, low-cost solutions to this problem by tapping into what customers themselves can do to reduce peak demand. Using our enhanced metering technology, we can now provide more and better information to our customers while offering new and innovative pricing programs that reward our customers for saving energy during these peak periods. We want you to participate in the pilot and to be successful, and we will provide you with the tools and information you need to do so. If these solutions prove to be effective, the type of program we are

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piloting can help lower costs to customers, reduce future peak demands eliminating the need for additional electric generation plans, and help improve the environment, too.

We need your help to test out the concept. We are currently seeking volunteers from among a limited pool of rate G-2 customers in southeastern New Hampshire to participate in this exciting pilot program. If you choose to participate in the pilot program you will have the opportunity to lower your electric bill this summer. In return for participating, **we guarantee that you will not pay higher bills** as a result of participating in the pilot. That's our promise – you get to keep any savings, but if your bill is higher as a result of participating, we will refund the difference.

Space is limited and slots will be filled on a first come-first serve basis. If you are interested in signing up or learning more about the program, please call our hotline at 1-800-441-8525 to find out if you are eligible.

Thanks for your consideration.

Sincerely,



George Gantz  
SVP, Distributed Energy Resources  
Unitil Service Corp.

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May 3, 2011

Dear Customer,

Congratulations! You have been accepted to participate in the Energy Savings Management pilot program this upcoming summer. Thank you for volunteering and we look forward to embarking together on a successful pilot program. My name is Tim Noonis and I will be your point of contact for questions on the program and how to respond to "Critical Peak" events.

This enrollment package contains important information to confirm your participation, to help you better understand program details, and to help you save money on your electric bill this summer. Please review the information and then sign and return the customer agreement in the enclosed self-addressed, stamped envelope to confirm your enrollment. Materials include:

- ✓ Pilot Program Details: A fact sheet on the pilot duration, changes to your monthly electric bill, event periods and other important information such as how to access the online web portal. This guide was developed to be a quick reference that could be shared with employees to help educate them about the pilot
- ✓ Ways You Can Save: Simple tips and tactics for reducing energy consumption during peak periods. While each business is unique, this reference guide provides some basic information on energy reduction strategies.

We will install a new electric meter at your facility (at no charge to you) and once we receive the customer agreement we will make adjustments to your monthly billing cycle. The new rates will take effect on June 1<sup>st</sup>.

We appreciate your willingness to participate in this new and exciting pilot program. We hope that you will benefit directly in the form of lower energy bills, but we guarantee that if your bill ends up being higher than it would have been on our standard rates we will refund the difference.

Please contact me directly if you have any questions.

Sincerely,

Tim Noonis  
Senior Business Development Executive  
325 West Rd. Portsmouth, NH 03801  
603-294-5123  
noonis@unitil.com



**Energy Savings Management (ESM) Pilot Program  
CUSTOMER PARTICIPATION AGREEMENT**

**THIS AGREEMENT** is by and between Unitil Energy Systems, Inc. ("the Company"), a corporation with its principal place of business in Hampton, New Hampshire, and \_\_\_\_\_ (the "Customer") whose business address is \_\_\_\_\_.

By signing this agreement, Customer agrees to participate on a voluntary basis in the Company's three month ESM Pilot Program (the "Pilot") and acknowledges the terms outlined below:

- a) The Pilot will run from June 1<sup>st</sup> through August 31<sup>st</sup> of 2011. While special metering equipment may be installed on the customers' premises prior to June 1<sup>st</sup>, the actual pilot including any changes to electric rates will not begin until June 1<sup>st</sup>.
- b) The Company does not guarantee or warrant any energy savings or any dollar savings from Customer participating in this Pilot, however, the Company does guarantee that the total charges billed in the Pilot to the Customer will be no higher than if the Customer had been billed on the Company's standard tariff rates.
- c) Informational materials have been provided to the Customer on tips and tactics to conserve energy and take advantage of the program. The Company is not responsible for actions taken by the Customer to control energy use.
- d) The Customer agrees to a change in billing cycle to calendar month billing to enable participation in the Pilot. Billing under the pilot will begin on June 1, 2011. For the preceding billing period ending May 31, 2011, the Customer will receive a bill longer than 31 days in order to accommodate the change. The Customer will remain on this calendar month billing cycle after the Pilot concludes on August 31<sup>st</sup>, 2011.
- e) As described in the accompanying information, the Customer agrees to a temporary change in electric rates during the Pilot period.
- f) Any notices under this agreement may be given by email or in writing. Critical Peak period notices will be issued by the Company to the Customer phone and email listed below.

The Company encourages every Customer to remain in the pilot for the full three month duration. Any questions regarding the Pilot should be directed to Tim Noonis at 603-294-5123 ([noonis@unitil.com](mailto:noonis@unitil.com)).

IN WITNESS WHEREOF, the parties hereto have executed this Agreement.

Company, by its duly authorized representative

Customer, by its duly authorized representative

\_\_\_\_\_  
Tim Noonis  
(Name - printed)

\_\_\_\_\_  
(Name - printed)

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
[noonis@unitil.com](mailto:noonis@unitil.com)  
(Email)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Email)

\_\_\_\_\_  
(Phone)

# **Appendix B**

## **Educational Materials**



# Energy Savings Management Pilot Program Details

## Overview:

The Energy Savings Management Pilot Program ("Pilot") is an innovative alternative rate structure designed to reduce energy demand during peak summer periods while saving customers money. During the pilot period, **June 1<sup>st</sup> to August 31<sup>st</sup>, 2011**, a select group of Unitil's G-2 customers will be placed on an alternative rate structure that prices energy purchases during 2 to 8 "Critical Peak" periods at very high wholesale market price levels, while lowering energy prices during all other hours. These prices are more reflective of *actual* wholesale market prices during these times.

**NOTE: Critical Peak periods will be announced by 5pm the day before by phone and email!**

## Alternative Rate Structure:

As a G-2 business customer, there are several pricing components included in your total monthly electrical bill:

- **Customer Charge:** your monthly Customer Charge does not change with electric usage.
- **Demand Charge:** a charge based on your maximum monthly peak demand in kilowatts.
- **Delivery Charge:** a charge per kilowatt-hour of energy consumption for delivering electricity to you
- **Stranded Cost Charge:** a charge per kilowatt-hour of energy consumption for electric restructuring.
- **System Benefits Charge:** a charge per kilowatt-hour for energy efficiency and low-income rates.
- **Electricity Consumption Tax:** a state tax on energy.
- **Energy Service Charge:** a charge per kilowatt-hour of energy consumption for power supplied to you by Unitil.

In the Pilot, only the **Energy Service Charge** will vary from the current tariff. In the Pilot, the rate will be set at a high level in Critical Peak hours, and a lower level in all other hours, as follows:

Standard Energy Service Charge: All Hours	<b>\$0.07274 per kWh</b>
Pilot Energy Service Charge (non-critical period)	<b>\$0.05983 per kWh</b>
Pilot Critical-Peak Energy Service Charge	<b>\$0.52490 per kWh</b>

## Rate Guarantee:

The above rate is designed to be revenue neutral for an *average* G-2 customer, and provides a significant potential for savings to customers who are able to reduce energy usage in Critical Peak hours. In addition, Unitil guarantees that no customer will lose money as a result of participating in the pilot. If at the end of the summer it is determined your bill would have been lower under the Standard Energy Service Charge rate Unitil will issue a refund for the difference.

## Critical Peak Periods:

The Critical Peak hours will be from noon to 6PM on specific non-holiday weekdays declared by Unitil as Critical Peak days. Unitil will determine and announce Critical Peak periods by email and phone by 5pm the day before a critical peak day so you can plan appropriately, and will declare between 2 and 8 Critical Peak periods during the three month Pilot. Typically these periods occur on very hot weekdays when the demand for air conditioning from businesses and homeowners is at its greatest.

## New Electric Meter:

To aid in the evaluation of results from the pilot program, Unitil may need to replace your current electric meter with an analysis meter that records energy use data in 15-minute increments. The meter change out may require a momentary disruption in power but the new meter will otherwise function no differently from your current meter.

## Adjustments to Your Billing Cycle:

Currently, your electric meter is read on or around the same day each month. The Pilot is based on energy usage during the calendar months of June, July and August, so meter reading and billing dates for Pilot participants need to be reset to start the billing cycle for the Pilot on June 1<sup>st</sup>. To make this adjustment we will be providing you with a long bill for the month of May. We will read your meter on the regular date in May, and again as of May 31. An example for a G-2 customer who normally has their meter read on the 15<sup>th</sup> of each month is provided below:

- April 15<sup>th</sup> – May 15<sup>th</sup> meter read and reset on May 15<sup>th</sup>. No bill issued
- May 16<sup>th</sup> – May 31<sup>st</sup> meter read on May 31<sup>st</sup>. Bill issued around June 3<sup>rd</sup> for usage from 4/15-5/31
- June 1<sup>st</sup> – June 31<sup>st</sup> meter read June 31<sup>st</sup>, bill issued around July 3<sup>rd</sup>



# Energy Savings Management Pilot Program Tips and Tactics

## Ways You Can Save

### *Plan ahead:*

We recommend that customers plan ahead to identify energy reduction strategies in advance of critical peak periods. The strategies – and the importance of conserving energy during critical peak periods – should be communicated to staff members so that everyone can work together to conserve without impacting business operations during these critical peak periods. Some specific tips on planning:

- ✓ Take an inventory of your electrical uses - Identify those that are critical to your operations and cannot be deferred or avoided under any circumstances.
- ✓ Look for electrical uses that could be avoided or deferred during a six-hour critical peak period. Some examples might be lighting, air-conditioning, pumps and motors.
- ✓ Consider options for shifting your energy usage away from peak periods. One example would be to “pre-cool” your facility the morning BEFORE the critical peak hours – and then put the thermostats up during the critical peak hours.
- ✓ Consider undertaking energy efficiency measures that can save your energy during the entire summer period. Check out Unitil’s energy efficiency programs for business at [www.unitil.com](http://www.unitil.com) or by calling your Pilot program contact.
- ✓ Consider possible modifications to your business operations on critical peak days, if it can reduce energy use. At the extreme, postponing shift operations or declaring a half-day holiday could be economical in some situations.
- ✓ Develop a plan – even just a simple one – for how you are going to respond to a critical peak when it is called.
- ✓ Communicate in advance with your employees – what you want to do and why.

### *Things you might be able to do in response to a critical peak event:*

- ✓ Shut down lighting that is not absolutely needed – this reduces your electrical use and your internal heat load at the same time. This could include back of house areas or lighting in showrooms or retail – explain why lights/displays are off to your customers and they might like the “mood lighting”.
- ✓ Pre-cool your facility before Noon, and then turn up the temperature setting on your air conditioning – turn fans/HVAC systems to low settings. Keeping small fans on while the air conditioning is off can help maintain comfort. Encourage employees to dress for the heat.
- ✓ Close blinds and shades to reflect sunlight – while maximizing natural light from shaded windows.
- ✓ Turn down, or turn off, water heating equipment, vending machines, refrigerators/freezers and water coolers unless they are essential to your operations.
- ✓ Pull the plug on un-needed office or other equipment including chargers, monitors and electronics.
- ✓ If possible, avoid using energy-intensive devices like compressors, pumps, heavy-duty motors, electrical welding equipment, etc.
- ✓ Delay energy-intensive activities, if possible, to the evening hours or the next day. This could include postponing meetings and not using meeting rooms or other areas where you can let the temperature rise. Adjust work schedules if feasible.

# **Appendix C**

## **Performance Letters**



September 29, 2011

Dear **Early Bird Cafe**,

As a condition of the Pilot, Unitil promised bill protection to all participants so that you would be guaranteed not to pay more as a result of participating in the program. Now that the pilot has ended, we have prepared a billing summary showing what you paid in under the pilot rate and what you would have paid under the standard rate to determine whether you will be issued a credit. This letter summarizes that analysis.

The only portion of your bill that was different on the pilot rate was the energy supply charge which was lower during off-peak hours and higher during critical peak hours. Because the other components of your bill such as the distribution charge did not change on the pilot rate, these charges were not included in our bill analysis.

Figure 1 below shows total energy consumed during off-peak and critical peak hours for each of the months of the pilot, as well as a calculation of energy supply charges on the pilot and standard G-2 rate and the difference between:

**Figure 1: Billing Summary**

Pilot Month	Energy Consumed (kWh)		Standard Supply Charges (\$)	Pilot Supply Charges (\$)	Difference
	Off-Peak	CPP			
JUNE	2,962	0	\$215.46	\$177.22	\$38.24
JULY	3,889	307	\$305.22	\$393.82	(\$88.61)
AUGUST	3,290	0	\$239.31	\$196.84	\$42.47
TOTAL	10,141	307	\$759.99	\$767.88	(\$7.89)

Based on our analysis, you ended up paying **\$7.89** more on the pilot rate. Therefore Unitil has provided you a rebate for this amount in the form of a credit on your September bill. This credit is shown as a one-time adjustment on the enclosed copy of your September bill.

Thank you again for your participation. If you have any further questions or comments, please don't hesitate to contact us at **1-800-441-8525** or by email at [ESM@unitil.com](mailto:ESM@unitil.com).

Sincerely,

A handwritten signature in black ink, appearing to read "George Gantz".

George Gantz  
SVP, Distributed Energy Resources  
Unitil Service Corp.





September 29, 2011

Dear **Freedom Tire,**

Congratulations! Your efforts to reduce electrical consumption during critical peak periods this summer have paid off. By volunteering to receive Unitil's innovative time-of-use rate you have saved a total of **\$34.18** this summer. Now that the pilot has ended, we have prepared a billing summary showing what you paid under the pilot rate and what you would have paid under the standard rate. This letter summarizes that analysis.

The only portion of your bill that was different on the pilot rate was the energy supply charge which was lower during off-peak hours and higher during critical peak hours. Because the other components of your bill such as the distribution charge did not change on the pilot rate, these charges were not included in our bill analysis.

Figure 1 below shows total energy consumed during off-peak and critical peak hours for each of the months of the pilot, as well as a calculation of energy supply charges on the pilot and standard G-2 rate and the difference between:

Figure 1: Billing Summary

Pilot Month	Energy Consumed (kWh)		Standard Supply Charges (\$)	Pilot Supply Charges (\$)	Difference
	Off-Peak	CPP			
JUNE	3,952	0	\$287.47	\$236.45	\$51.02
JULY	2,544	225	\$201.42	\$270.31	(\$68.89)
AUGUST	4,032	0	\$293.29	\$241.23	\$52.05
TOTAL	10,528	225	\$782.17	\$747.99	\$34.18

Thank you again for your participation. If you have any further questions or comments, please don't hesitate to contact us at **1-800-441-8525** or by email at [ESM@unitil.com](mailto:ESM@unitil.com).

Sincerely,

A handwritten signature in black ink, appearing to read "George Gantz".

George Gantz  
SVP, Distributed Energy Resources  
Unitil Service Corp.

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September 9, 2011

Dear Pilot Participant,

August 31<sup>st</sup> marked the completion of our Energy Savings Management Pilot Program. THANK YOU for participating. We hope that your experience with the pilot was positive and we truly value your feedback on what you liked or disliked, and how a similar program could be improved in the future. Please take 10 minutes to complete a brief post-pilot survey that will help us to better understand your experience:

[www.unitil.com/ESMPilotSurveyCI](http://www.unitil.com/ESMPilotSurveyCI)

The completion of the Pilot Program will also result in some additional changes. Please review the information below. If you have any questions, please don't hesitate to contact us by email at [ESM@unitil.com](mailto:ESM@unitil.com) or by phone at 800-441-8525.

#### ***Your Monthly Electric Bill***

When the program started in June, Unitil adjusted your monthly billing cycle so that the actual billing period coincided with calendar months, beginning and ending on the first of each month. Moving forward, you will continue to receive your monthly bill around the first week of each month. You will be moved to align with the latest non-pilot billing cycle which typically begins and ends around the last day each month so there should be no noticeable difference in when you receive your monthly bills going forward. You will also be reset to your previous rate class that you were assigned before the pilot began and your September bill will reflect this return to a fixed rate

#### ***Bill Protection***

As a condition of the Pilot, Unitil promised bill protection to all participants so that you would be guaranteed not to pay more as a result of participating in the program. Now that the pilot has ended, we will prepare a billing analysis showing what you paid on the pilot rate and what you would have paid on the previous fixed rate. If you indeed paid more on the pilot rate, we will issue a credit on your September bill (received October). We will be preparing the analysis this month, and issuing a written summary of performance to you before you receive your September bill.

#### ***Web Portal***

The Unitil ESM web portal (available at <https://myaccount.unitil.com>) will remain accessible until October 1<sup>st</sup> but will no longer be displaying daily energy use information. Historical energy use





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information accrued during the pilot and all reference material will remain available until this date. If you found the web portal to be helpful and informative, please let us know by completing the post-pilot survey.

#### ***Pilot Results***

We are in the process of compiling and evaluating results from the pilot and will be sharing feedback with participants when this review has been completed. A complete evaluation report will also be filed with state regulatory agencies and we will be providing a web link to the report for those who may be interested.

We are truly pleased that you volunteered to participate in this new and exciting pilot program. We have learned a great deal about these programs, including the logistics of planning and implementing smart grid programs, and of your collective experiences with the technologies and variable elements. We value your feedback and appreciate your willingness to participate in our pilot. If you have any further questions or comments, please don't hesitate to contact us at **1-800-441-8525** or by email at [ESM@unitil.com](mailto:ESM@unitil.com).

Sincerely,

A handwritten signature in black ink, appearing to read "George Gantz".

George Gantz  
SVP, Distributed Energy Resources  
Unitil Service Corp.