# SUMMARY OF PILOT PROGRAMMES EVALUATION & RECOMMENDATIONS

# 1. Interruptible Service Rider (ISR)

#### Structure

Customers receive a monthly credit for agreeing to temporarily interrupt their electricity service under conditions of high system demand, system emergencies or periods of utility equipment problems. The amount of the credit paid to the customer is calculated based on the average interruptible demand. The credit is intended to attract customers whose interruptible capability will reduce Barbados Light & Power's (BL&P's) generation capacity costs. As a result, the value of the credit per kVA is based upon the marginal cost of generating capacity. Customers on the Rider are required to reduce their load to a contracted Firm Demand Level (FDL) within 30 minutes of being notified to interrupt. A limit of 240 hours of interruption per year constrains risk for customers. There is a penalty if the FDL is not achieved.

# **Participants**

Six customers currently participate in the programme, with the sixth having joined recently, in April 2012. As a result, the evaluation makes use of data from the original five customers only.

# **Programme Objectives**

The Rider provided an opportunity for BL&P to reduce the amount of the load that it needs to meet during periods of high demand, system emergencies and times when BL&P is having equipment problems such as transmission or distribution system failures, generator maintenance, unplanned repairs, etc.

#### **Programme Operations**

BL&P called a total of eleven ISR events over the course of 2011. During the pilot period, there were some complications with the collection of customer meter data; however sufficient customer meter information was obtained to form appropriate conclusions with regard to the performance of the programme.

In most cases, customers were able to reduce consumption to their FDL for the full period, although there were a few exceptions. Interruptions of long duration occasionally imposed challenges for some customers. When called upon to reduce their load, all customers replaced BL&P's service with on-site generation and, in some cases, their replacement capability was limited by the availability of fuel for those generators.

Across the customer/events analyzed, customers met their ISR obligations by reducing load to the contracted FDL during event hours in all but three instances. Using data for the one event (June 3 event) for which data for all customers was

available, the total load reduction across all event hours and customer accounts averaged approximately 2 MW.

# **Programme Benefits**

The interruptible events in 2011 were called under emergency conditions caused by generators tripping offline at times when BL&P did not have enough available capacity to resupply all customers for a period of time. ISR load reductions provided partial relief during periods characterized by extremely low reserve conditions. In fact, in some cases BL&P was required to institute rotating customer outages.

Interruptible service programmes provide a form of insurance or option value against the potential occurrence of unexpected capacity shortages, and thus provide benefits even if they are not needed in a particular year. However, the events called in 2011 provided an opportunity to demonstrate the benefits provided by ISR directly. Applying the estimate of customer outage costs (i.e., \$10 per kWh unserved) that was included in the 2008 BL&P rate filing to the overall average hourly ISR load reduction of 2 MW for the June 3 event, multiplied by the 8 event hours, we obtain an estimate of avoided outage costs due to ISR customer response of \$160,000 for that event. For comparison, the total annual ISR capacity credits paid in 2011 amounted to \$282,269. Thus, the value of ISR in terms of avoided outage costs for only one of the eleven events in 2011 amounts to more than half of the total cost of the capacity credits. Applying similar analysis of avoided outage costs applied to the eleven events suggest an estimate of total avoided outage costs benefits of approximately \$1 million during 2011.

#### **Customer Feedback**

BL&P solicited views on its pilot programs from both participating and non-participating customers. Customers provided responses to a set of prepared questions in face-to-face interviews.

Participating ISR customers stated that the primary reason for participating in the ISR was to obtain bill savings, with a secondary reason being the opportunity to contribute to the community by reducing the likelihood that others in the community would experience interruptions.

ISR customers reported that they received adequate advance notice of interruptions. None had difficulty responding, with the exception of technical issues associated with site generation, including the ability to run for the full duration of the interruption period without exhausting available fuel.

Customers were very satisfied with the programme and all customers plan to continue if the program is extended.

Non-participating customers reported they decided not to participate for several

reasons, including perceived lack of benefits and insufficiently reliable site generation to respond fully in interruptions or inadequate capacity to respond. Some respondents suggested they needed stronger evidence of benefits and or more reliable site generation to consider future participation.

# **Analysis and Recommendations**

BL&P sees the ISR as a desirable option for customers who have the ability to vary their load to meet the requirements of the Rider. Customer response to ISR offered benefits to BL&P over the period of the pilot. In particular, the program provided significant benefits during emergency conditions caused by generators tripping offline and periods of low reserve conditions. Customer response reduced the number of customers affected by rotating outages and limited the frequency and duration of such outages. ISR also has the potential to reduce capacity costs in the longer term.

A thorough assessment of the amount of the interruptible credit requires input from an updated marginal cost study and the Integrated Resource Plan (IRP) that is presently being developed. Therefore, Barbados Light & Power recommends that the ISR pilot be continued under the current programme terms and conditions until December 31, 2013. At the conclusion of the year, BL&P will update its evaluation of customer response and its value. More extensive information on response to interruptions and updated marginal cost data will provide an improved platform for drawing conclusions about the permanent status of ISR.

# 2. Time-of-Use (TOU) Tariff

#### Structure

The Time-of-Use (TOU) Tariff is available to Large Power (LP) customers. The tariff is designed to reflect differences in cost to serve during peak and off-peak periods, and to encourage customers to reduce usage during peak hours and potentially increase consumption during relatively low-priced off-peak hours. Prices are higher than the standard rate during peak hours of 10 a.m. to 9 p.m. on non-holiday weekdays and lower than the standard rate in all other hours. The prices in the base revenue portion of this rate were developed using both embedded cost-based revenue requirements for the class and information from the marginal cost study submitted with the last rate application and the fuel component using avoided cost of fuel that was calculated around the same period.

# **Participants**

At the end of April, 2012 nine (9) customer accounts were on the Time of Use Pilot. Six of the accounts were Barbados Water Authority accounts that had a load profile that made the TOU attractive without requiring any significant changes in consumption behavior. The other three participants (Barbados Mills, R L Seale and West Indies Rum Distilleries) generated most of their electrical requirements prior to the adoption of the TOU tariff.

#### **Programme Objectives**

The TOU tariff was designed to provide price signals to customers that reflect average differences in the cost to serve load during peak and off-peak time periods and to encourage load shifting from peak to off-peak periods. Reductions in usage during peak periods benefit BL&P by reducing the amount of high-cost peak generation, and shifting usage from high-cost peak periods to lower-cost off-peak periods can provide bill savings to participating customers.

#### **Programme Operations**

Two types of customers appeared to adopt the TOU rate: 1) "instant winners" who had high load factors and, as a result, benefited from a lower bill on TOU without modifying their usage profile; and 2) customers who have reliable on-site generation which they use to provide most of their load requirements during peak periods while using BL&P service during the lower cost off-peak periods.

The Barbados Water Authority's accounts were "instant winners" and they did not appear to make any load modifications during the TOU pilot period. The other three participants (Barbados Mills, R L Seale, and West Indies Rum Distilleries) had previously self-generated most of their requirements. Their load profiles demonstrated large differences between low on-peak and high off-peak levels. However, R L Seale, apparently returned to generating their requirements shortly after enrollment.

# **Programme Benefits**

Evaluation of the time-of-use (TOU) rate was complicated by two factors. First, the few customers who elected to participate in the TOU pilot did so largely to take advantage of the peak and off-peak rates to lower their energy bill due to their existing load patterns. Second, BL&P did not have adequate load data for all of the TOU participants for the period immediately prior to the pilot and was not able to get full load data following initiation of the pilot because of overwriting of some of the data. This data issue complicated comparisons across customers and limited the ability to calculate changes in several customers' peak and off-peak usage in the periods prior to and following their enrollment in TOU.

For customers with flat load profiles (i.e. with high load factors), such as the Barbados Water Authority, bill reductions under the TOU appears to average 2.8%. In contrast, customers with a peak-to-off-peak usage ratio higher than 1.39 would pay more on the TOU rate than on the Large Power tariff.

Calculations for one customer with self-generation suggest that the load-weighted average marginal cost of generation to support the customer can be reduced by 15 percent. This thus demonstrates that potential benefits exist for both BL&P and its customers from the response to TOU price signals.

# **Programme Feedback**

Participating customers stated that the primary reason for participating was anticipated bill savings.

Customers reported moderate to high levels of satisfaction with TOU service, and they stated that they like the TOU service option in part because it does offer them greater flexibility in meeting their electricity needs.

Customers mentioned increased peak/off-peak price ratios and removal of the limit on the number of accounts per customer as avenues for improvement of the tariff's attractiveness. Additionally, customers on other tariffs could be made eligible. All customers but one indicated that they would like to continue with TOU service.

The non-participating customers surveyed reported they decided not to participate based on the inability to make substantial enough changes in their operations to achieve benefits from load shifting.

# **Analysis and Recommendations**

The programme's instant winners benefited from the TOU rate because they have a new tariff that better reflects the cost to serve a high load factor customer. However, the resulting bill reduction also lowers the utility's revenues. The utility may address this situation by attempting to anticipate the self-selection of customers and adjust standard tariff prices prior to expanding availability of the rate, or by simply filing periodic rate cases following the introduction of the TOU

rate, which allows for updating of billing determinants to appropriately reflect the usage patterns of the customers on both the TOU and base rates.

The value of offering time-based rates as part of a utility rate portfolio is being recognized globally. These rates provides an opportunity for customers with high load factors or who have the ability to change their load profile to benefit from reduced bills, while also benefiting the utility through reduced generating capacity costs.

It appears that the current prices offered in BL&P's pilot programme are not attractive enough to many customers for them to shift their load. It may require a greater differential between peak and off-peak rates to attract wider customer participation. While the issue of price differential may be challenging with the current high fuel prices, it needs to be reviewed after the completion of the IRP and a subsequent marginal cost study.

Since the Fair Trading Commission has indicated that a rate case will be required to set these rates and given that this rate is currently providing some customers with benefits, we recommend that this programme be continued "as is" until the next rate case. At that time, consideration should be given to the impact of the potential revenue attrition associated with this rate.

# 3. Renewable Energy Rider (RER)

#### Structure

The Rider makes provision for customers who own solar photovoltaic (PV) or wind systems to interconnect and feed back to the grid any excess power produced by their renewable energy system. BL&P provides the customer with a monthly renewable energy credit of 1.8 times the Fuel Clause Adjustment for all kWh supplied to the grid. The factor of 1.8 times the FCA was developed based on the avoided cost of fuel over an 11-month period prior to the 2009 rate review application.

# **Participants**

At the end of April, when the programme evaluation commenced, thirteen (13) customers were being billed on the Renewable Energy Rider. However by the end of the pilot programme, participation had expanded to twenty-five customers.

# **Programme Objectives**

The Rider was designed to facilitate the interconnection of customers who own solar photovoltaic (PV) or wind systems.

# **Programme Operations**

RER participants use these systems to generate a portion of their energy needs. Thus, they purchase energy from BL&P at times when on-site generation falls short of their usage, and sell excess power to BL&P when it is in surplus, thus reducing their monthly energy costs. (In some instances bill reductions were quite significant.)

#### **Programme Benefits**

The lower bill that customers received reduced BL&P's revenues. However, offsetting those revenue reductions are reduced costs of generating and delivering power to RER customers. Furthermore, much of the customers' energy production occurs during peak periods.

The current RER credit of 1.8 times FCA (which is designed to reflect the fact that renewable generation tends to displace generation whose fuel cost is higher than the average, which is represented by FCA) appears to exceed the value of BL&P's avoided cost of generation for the amount of energy purchased from the RER customers. After review, the avoided cost was closer to 1.6 times the FCA.

#### **Programme Feedback**

Customers' motivations for participating in the programme were evenly balanced between the pursuit of bill savings and a desire to promote energy efficiency or environmental improvement.

Customers expressed moderate to high satisfaction with the program. They liked the quality of program administration, but some encountered problems with setup

and approval. They also identified some challenges with metering and billing, many of which were resolved during the course of the pilot.

Customers also made a range of broader policy suggestions, directed mostly at improving certification and training of installers, but also at enhancing BL&P's efforts to promote the program. All customers stated that they would like to continue participating in RER service, assuming current payment rates.

Non-participants with renewable systems who were surveyed indicated that they decided not to participate for a variety of reasons. These include installation size limits, a desire to retain 60 Hz service, and concerns with timing of credit payments at year-end only.

Suggestions for improvements included making the credit fixed to provide more investment certainty, and an expansion in unit maximum size.

# **Meter Connection and Billing**

RER service can be supported by a variety of metering configurations and billing approaches. Possible metering configurations are 1) net metering, in which a single meter records the net flows between BL&P and the customer; and 2) dual metering, in which one meter measures the site generator output. There are two alternatives for the second meter location. In the first alternative, the second meter is bidirectional, and is placed at the service entrance with the renewable generator's point of connection on the load side of the meter. It records the net consumption of the site. In the second alternative, the second meter is placed at the service entrance with the renewable generator's point of connection on the line side of the meter. It records gross flows in either direction. Additionally, a utility can choose conventional metering, which records single values for the entire billing period, or interval data recorders that can measure hourly flows.

Net metering is unattractive due to its data limitations, even if time-based metering is used. The difficulty lies in the inability to record the amount of consumption appropriate for charging distribution services, for which total flows are desirable. The first alternative to net metering appears to have an advantage over the second, in that it supports both billing alternatives. Regardless of the method chosen, time-based pricing may be cost-effective, especially if cost to serve varies across time.

There are two billing alternatives. Billing Alternative 1 treats all generation not consumed on site as sold to the utility and all consumption not self-generated as purchased from the utility. Billing Alternative 2 treats all generation on site as being sold to the utility and all consumption as purchased from the utility.

After evaluating the alternative billing methods, Billing Alternative 2, which is supported by both Alternative Metering Configurations 1 and 2 with dual metering, is arguably a superior approach in a world of bundled rates. This is the

case because a customer's total site consumption is likely to be a better metric of the utility's cost (other than generation) incurred to serve the customer than the gross sales of Billing Alternative 1. Stable payments for these services, at a price exactly equal to the prices charged other customers in the class, are intuitively defensible.

# **Analysis and Recommendations**

A review of the avoided cost of the system suggests that up to a level of 5 MW of renewable site generation, the avoided cost of the fuel varies between 1.5 and 1.6 times FCA.

This estimate assumes that a large share of renewable generation will be Photovoltaic, which has a more peak coincident load profile than does wind generation. One way of recognizing this factor in the future would be to move to time-based payments that would result in higher credits for Photovoltaic systems than for wind. This should be considered for the future.

During the pilot, from a cost and practical perspective, customers chose meter configuration 1, which uses one meter to measure generator output and a bidirectional meter to measure hourly flows to and from the grid. This arrangement can also achieve the alternative billing method 2 of buy all, sell all.

The Rider has been generally well accepted and has been developed to facilitate the development of distributed renewable systems without compromising the utility's revenue base. The Rider is designed for customers who want to offset their energy consumption with renewable systems and not for customers who install renewable systems for the main purpose of selling electricity onto the grid. These types of customers are considered IPPs for which a separate arrangement would be required. The Barbados Light & Power Company Limited therefore offers the following recommendations for the future of the Rider (see Appendix for explanatory notes):

- The existing terms and conditions of the Rider (with credit of 1.8 times FCA) be extended until 31 December 2012.
- The following changes to the Renewable Energy Rider (RER) be implemented from January 1, 2013;
  - a) The Renewable Energy Rider be implemented on a permanent basis.
  - b) The RER credit be reduced from 1.8 times FCA to 1.6 times FCA.
  - c) The billing arrangements for the Rider be revised so that customer pays the utility at their appropriate tariff for all energy they consume and the utility purchases the energy produced by the renewable

system(s) at 1.6 times the FCA, up to a maximum of 1.5 times the amount of energy the customer uses within the period. Any amount produced by the Renewable system in excess of 1.5 times the amount of energy used by the customer will be credited at the FCA.

- d) In the event that the FCA reduces to the point that the amount the customer pays is more than what they would have paid if they were offsetting their usage with a standalone system, the RER credit will be increased to match what the customer would have paid had they offset their usage with a standalone system.
- e) Renewable Energy Credit cheques will be issued biannually (June & December) to customers with a credit on their account that exceeds \$500. Customers with an account credit below \$500 at the end of the calendar year may request a cheque be issued for that amount.
- f) The maximum generator capacity for customers will be based on 1.5 times their monthly energy consumption, using the conversion of 150 kWh per month per kilowatt, or 150 kilowatts, whichever is lower.
- g) The Rider will be available up to a maximum combined installed capacity of 5 MW.
- h) The revised terms and conditions of the Renewable Energy Rider should be fixed for a period of three (3) years or until the next rate case, whichever is sooner.

#### **APPENDIX**

# **Explanatory Notes for RER Recommendations**

- We have recommended that the existing Rider (which pays a credit of 1.8 times FCA) be extended to 31 December 2012 to give us time to put the necessary billing arrangements in place and to give the customer enough time to plan for the new changes.
- We have recommended that the billing be arranged such that:
  - all energy used by the customer is purchased from BL&P
  - all energy produced by their renewable source(s) be purchased by BL&P

This will allow the utility to still earn the base portion of revenue so that it can continue to cover the cost of the facilities that still have to be in place for the customer to be connected to the grid and thus minimize the impact of these connections on non-participating customers which the revenue loss would otherwise have created.

- We have recommended that the RER be reduced from 1.8 times FCA to 1.6 times FCA because this has been determined to be the average avoided cost of fuel based on an analysis over the last year.
- We have recommended that the limit of capacity from customer-owned wind and PV be increased form 1.6 MW to 5 MW for the following reasons:
  - to allow for participation of more customers on the Rider.
  - the avoided cost of 1.6 times FCA is applicable up to 5 MW
  - PV and wind are intermittent sources and there is going to be a limit in the amount of these that could be in service at any time without negatively impacting on system stability. This will be examined in greater detail during the IRP and at this point 5 MW is considered to be a reasonable amount to allow unless guided differently by the results of the IRP.
- This Rider is only intended for persons who are installing renewable systems mainly to offset their own electricity consumption and not for those who are installing them to sell electricity on to the grid.

Persons whose purpose is to sell energy to the grid significantly beyond their internal usage are considered to be an IPP and alternative arrangements will have to be made for interconnection of these systems.

We have therefore recommended that the maximum amount of the credit calculated at 1.6 times the FCA be limited to 1.5 times (to allow for monthly fluctuations in usage) the amount of the customer's total use.

This limit will allow for a greater number of customers to participate, as if this were left open-ended, the limited overall capacity available for this rider could be taken up by persons installing larger systems and limit the participation of other customers who may just want to install them to offset all or part of their usage.

- We have recommended that any excess beyond 1.5 times the customer's usage be credited at 1 times the FCA.
- We have recommended that where the FCA drops to the point that the amount the customer pays is more than they would have paid if they were offsetting their usage with a standalone system that the credit be increased to make these two options equivalent.

This is proposed so as to give customers a sense of certainty that the return would not be less by investing in a grid connected system compared to a standalone system. Significant investment in stand alone systems can result in a significant loss in sales which in turn will negatively impact on non-participating customers in the future.

- We recommend that the RER be fixed for 3 years or until the next rate case to give persons a sense of certainty for their investment.
- We recommend that the size of new installations be limited to 1.5 times the customers overall usage, using 150 kWh being equivalent to 1 kilowatt, up to a maximum of 150 kW for reasons indicated in 5 above.
- We recommend that any credit over \$500 be automatically refunded semi-annually. However, any customer who has a credit of less than \$500 at the end of the calendar year can request the amount be refunded. Doing refunds too often can create a significant administrative burden.

# PILOT PROGRAMMES SUMMARY STATISTICS

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TABLE 1: RENEWABLE ENERGY RIDER (RER)

Date	Number of customers	KWh sold to RER customers	kWh sold to the grid	Total RER Credit	Average amount of renewable credit per customer	Installed Capacity (KW)
Oct-10	1	0	124	\$71.38	\$71.38	1.7
Nov-10	1	88	142	\$85.89	\$85.89	1.7
Dec-10	1	146	134	\$81.05	\$81.05	1.7
Q4	1	234	400	\$238	\$238	1.7
2010	1	234	400	238	238	1.7
Jan-11	4	55	131	\$79.23	\$19.81	10.2
Feb-11	4	573	950	\$340.00	\$85.00	10.2
Mar-11	4	793	1,385	\$984.08	\$246.02	10.2
Q1	4	1,421	2,466	\$1,403.31	\$350.83	10.2
Apr-11	5	1,523	1,273	\$1,040.05	\$208.01	13.2
May-11	6	2,617	1,348	\$1,175.00	\$195.83	15.2
Jun-11	7	2,619	1,235	\$1,051.70	\$150.24	16.2
Q2	7	6,759	3,856	\$3,267	\$467	16.2
Jul-11	7	3,789	1,218	\$1,033.00	\$147.57	16.2
Aug-11	7	3,108	1,281	\$995.00	\$142.14	16.2
Sep-11	8	7,002	1,939	\$1,561.00	\$195.13	19.2
Q3	8	13,899	4,438	\$3,589.00	\$448.63	19.2
Oct-11	8	6,945	1,755	\$1,356.59	\$169.57	19.2
Nov-11	8	2,113	1,558	\$1,280.00	\$160.00	19.2
Dec-11	8	4,448	1,538	\$1,270.20	\$158.78	19.2
Q4	8	13,506	4,851	\$3,906.79	\$488	19.2
2011	8	35,585	15,611	\$12,165.85	\$1,520.73	19.2
Jan-12	8	1,494	1,597	\$1,278.00	\$159.75	19.2
Feb-12	8	3,012	1,031	\$908.29	\$113.54	19.2
Mar-12	13	53,085	6,684	\$5,503.61	\$423.35	92.4
Q1	13	57,591	9,312	\$7,689.90	\$591.53	92.4
Apr-12	13	27,972	3,874	\$3,441.46	\$264.73	92.4
May-12	13	41,574	3,050	\$2,614.24	\$201.10	92.4
Jun-12	25	59,003	6,308	\$5,142.42	\$205.70	130.2
Q2	25	128,549	13,232	\$11,198.12	\$447.92	130.2
2012 Year to date	25	186,140	22,544	\$18,888	\$755.52	130.2

**TABLE 2: INTERRUPTIBLE SERVICE RIDER (ISR)** 

DATE	Number of customers	Number of Interruptions	Number of Events	Interruptible Demand	Amount Credited to customers	Average FDL	Billed Demand	Number of customers penalized for non response	Total Penalties
Oct-10	0	0	0	0	0	0	0	0	0
Nov-10	1	0	0	999	\$11,988	140	2,805	0	0
Dec-10	2	0	0	1,285	\$15,420	140	2,785	0	0
Q4	2	0	0	2,284	\$27,408	280	5,590	0	0
2010	2	0	0	1285	\$15,420	140	2785	0	0
Jan-11	5	0	0	1,919	\$23,028	140	3,825	0	0
Feb-11	5	12	3	1,868	\$22,416	140	3,604	0	0
Mar-11	5	0	0	1,838	\$22,056	140	3,647	0	0
Q1	5	12	3	5,625	\$67,500	140	11,076	0	0
Apr-11	5	0	0	1,986	\$23,832	140	3,603	0	0
May-11	5	0	0	2,019	\$24,228	140	3,970	0	0
Jun-11	5	25	5	2,075	\$24,900	140	4,205	0	0
Q2	5	25	5	6,080	\$72,960	420	11,778	0	0
Jul-11	5	9	2	2,063	\$24,756	140	3,963	1	\$22,872
Aug-11	5	0	0	1,967	\$23,604	140	3,996	0	0
Sep-11	5	5	1	2,062	\$24,744	140	3,790	0	0
Q3	5	14	3	6,092	\$73,104	140	11,749	1	\$22,872
Oct-11	5	0	0	2,141	\$25,692	140	3,940	0	0
Nov-11	5	0	0	2,040	\$24,480	140	3,656	0	0
Dec-11	5	0	0	1,876	\$22,512	140	1,876	0	0
Q4	5	0	0	6,057	\$72,684	420	9,472	0	0
2011	5	51	11	23,854	\$286,248	1,120	44,075	1	\$22,872
Jan-12	5	0	0	1,811	\$21,732	140	3,699	0	0
Feb-12	5	0	0	1,824	\$21,888	140	3,619	0	0
Mar-12	5	0	0	1,787	\$21,444	140	3,780	0	0
Q1	5	0	0	5,422	\$65,064	140	11,098	0	0
Apr-12	5	0	0	1,855	\$22,260	140	3,863	0	0
May-12	6	0	0	1,913	\$22,956	140	3,875	0	0
Jun-12	6	0	0	1,946	\$23,352	140	3,883	0	0
Q2	6	0	0	5,714	\$68,568	140	11,621	0	0
2012 Year to date	6	0	0	11,136	\$133,632	140	22,719	0	0

TABLE 3: TIME OF USE TARIFF (TOU)

Date	Number of customers	Peak kWh	Off peak kWh	Total kWh	%Peak kWh/Total	Total kVA	Total kWh (previous year)	Total kVA (previous year)	kWh/kVA	kWh/kVA (previous year)
Aug-10	2	52,200	240,400	292,600	17.8%	1,217	39,720	1,347	240.4	29.5
Sep-10	2	46,200	263,600	309,800	14.9%	1,237	103,600	1,145	250.4	90.5
Q3	2	98,400	504,000	602,400	16.3%	2,454	143,320	2,492	245.5	57.5
Oct-10	2	12,400	381,800	394,200	3.1%	1,194	192,000	1,145	330.2	167.7
Nov-10	3	27,560	301,040	328,600	8.4%	1,274	248,880	1,916	257.9	129.9
Dec-10	3	19,120	382,800	401,920	4.8%	1,438	282,760	2,080	279.5	135.9
Q4	3	59,080	1,065,640	1,124,720	5.3%	3,906	723,640	5,141	287.9	140.8
2010	3	157,480	1,569,640	1,727,120	9.1%	6,360	866,960	7,633	271.6	113.6
Jan-11	9	30,000	351,760	381,769	8%	1,161	476,520	1,857	329	257
Feb-11	9	302,960	939,480	1,242,449	24%	3,154	1,474,800	3,631	394	406
Mar-11	9	617,400	1,342,180	1,959,589	32%	4,954	1,942,960	5,249	396	370
Q1	9	950,360	2,633,420	3,583,807	26.5%	9,269	3,894,280	10,737	386.6	362.7
Apr-11	9	531,280	1,266,880	1,798,169	30%	4,897	2,113,540	5,372	367	393
May-11	9	587,400	1,628,900	2,216,309	27%	4,910	1,974,680	5,354	451	369
Jun-11	9	569,460	1,327,880	1,897,349	30%	5,240	1,840,080	5,376	362	342
Q2	9	1,688,140	4,223,660	5,911,827	28.6%	15,047	5,928,300	16,102	392.9	368.2
Jul-11	9	615,540	1,363,140	1,978,680	31%	5,143	1,974,780	5,292	385	373
Aug-11	9	570,060	1,439,900	2,009,960	28%	4,981	2,028,060	5,390	404	376
Sep-11	9	742,280	1,501,740	2,244,020	33%	5,078	2,074,220	5,420	442	383
Q3	9	1,927,880	4,304,780	6,232,660	30.9%	15,202	6,077,060	16,102	410.0	377.4
Oct-11	9	623,060	1,437,120	2,060,180	30%	4,934	2,173,540	5,438	418	400
Nov-11	9	588,380	1,326,500	1,914,880	31%	4,903	1,964,100	4,818	391	408
Dec-11	9	605,460	1,402,000	2,007,460	30%	4,870	2,064,120	4,870	412	424
Q4	9	1,816,900	4,165,620	5,982,520	30.4%	14,707	6,201,760	15,126	406.8	410.0
2011	9	6,383,280	15,327,480	21,710,814	29.4%	54,225	22,101,400	58,067	400.4	380.6
Jan-12	9	562,980	1,467,860	2,030,840	28%	4,779	381,760	1,161	425	329
Feb-12	9	586,120	1,289,440	1,875,560	31%	4,869	1,699,240	4,373	385	389
Mar-12	9	609,160	1,469,460	2,078,620	29%	4,752	1,959,580	4,956	437	395
Q1	9	1,758,260	4,226,760	5,985,020	29.4%	14,400	4,040,580	10,490	415.6	385.2
Apr-12	9	573,000	1,497,400	2,070,400	28%	4,797	1,961,860	4,897	432	401
May-12	9	572,480	1,452,740	2,025,220	28%	4,786	2,173,700	4,910	423	443
Jun-12	9	653,140	1,622,400	2,275,540	29%	4,825	1,900,040	5,240	472	363
Q2	9	1,798,620	4,572,540	6,371,160	28.2%	14,408	6,035,600	15,047	442.2	401.1
2012 Year to date	9	3,556,880	8,799,300	12,356,180	28.8%	28,808	10,076,180	25,537	428.9	394.6