

Pay- As-You-Go-Power Treating Electricity as a Commodity

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Purpose

This paper is intended to provide information and observations on an electricity payment system that has been in use in Woodstock Ontario for over 12 years. In doing so it is intended that the reader will gain an appreciation for the less than obvious benefits that the system has to offer.

Background

The concept of prepaid power has been around in other jurisdictions for more than 70 years. Electricity consumption meters with coin mechanisms much like parking meters were used in the past. The modern version of this application is much more sophisticated and provides all the data acquisition requirements to satisfy typical customer information system requirements.

Today there are over 5 million consumers worldwide using prepaid power. The United Kingdom, New Zealand and South Africa have the largest number of customers. There are approximately 20 locations where the process is being used in North America.

Woodstock Hydro's pay-as-you-go system was established in 1989. Currently about 2,500 Woodstock Hydro customers choose this method to purchase their electricity. This represents approximately 25% of the residential customer base. The customer base on the system is growing at about 3% per year and is anticipated to increase at a higher rate as the cost of the technology comes down.

Enrolment in prepaid power is completely voluntary. Prepaid power is chosen as a payment option the same as an equal payment plan or pre-authorized bank account debit. Customers may enter or leave the plan at no charge. The additional costs associated with the equipment and software are paid by the customer through a monthly administration

charge of \$7.50. Woodstock's experience is that once someone chooses the pay-as-you-go plan they are very satisfied and they stay with it.

A typical purchase transaction of a prepaid power customer consists of the customer purchasing a power card at a sales location. The sales locations include the Woodstock Hydro main office along with convenience stores that are open 24 hours a day 7 days a week. The power card value is determined by the dollar amount of power the consumer wishes to purchase. The dollar amount of the purchase is encoded on the customer's power card and the customer takes it home.

Once home, the customer swipes the card through an electronic reader/display unit that transfers the amount purchased to the memory in a pre-pay meter and provides up-dated information on the display unit. The meter and the electronic reader/display communicate through the home wiring system utilizing power line carrier (PLC) technology. As power is consumed, the consumption meter communicates back to the display unit and reduces the cash balance being displayed. The fixed charges including the monthly administration fee are programmed to reduce the balance on an hourly incremental basis.

Customer Benefits

There are a number of benefits for the customer on prepaid power. The main benefit is the method by which the prepaid power unit communicates consumption information to the customer. The unit provides information to the customer that is easy to understand. Generally, residential customers do not understand the pricing terminology used by the electricity industry. For example, when the electricity charge is presented on a ¢/kWh basis, customers typically do not fully understand what a kilowatt-hour represents.

The prepaid power unit converts the complex pricing information into terms that the customer can easily comprehend. Customers have a better understanding of their energy usage when they know how much they are spending on a \$/hour, \$/day, \$/week and \$/month basis. This real time awareness provides the information a customer needs to

easily control their usage as well as their cost of energy. For example, the units provide enough information for a customer to manage the energy used by the appliances in their home. Studies have shown that customer's with this level of information reduced their consumption by as much as 20%.

Salt River Project (SRP), a water and electric utility supplying over 700,000 electricity customers in the Phoenix Arizona area started installing pre-paid meters in the late 1990s. They currently have over 30,000 installed with plans to continually grow the program.

The reduction in consumption by pay-as-you-go customers observed by SRP is approximately 20% and comparable to the 15 to 20% reduction that Woodstock Hydro has observed.

Distributor's Benefits

Woodstock Hydro's experience with prepaid power has been very encouraging over the past twelve years. One of the benefits to Woodstock Hydro is the significant decline in bad debt write-offs since the prepaid power program was initiated. The root cause for most bad debt is actually a budgeting issue not the cost of the electricity. A customer that receives an invoice for a few hundred dollars, unexpectedly, is sometimes overwhelmed by the situation and looks for alternatives to payment.

An associated benefit is the reduction in high bill complaint handling costs. The vast majority of high bill complaints are due to the fact that the customer was not aware of their energy usage until some time after the fact when they received the invoice. The time spent educating consumers on what appliances are most costly to run etc. is now a small fraction of what it was before the introduction of the program.

Another benefit of prepaid power is the elimination of billing costs, including paper administration and mailings. Customers purchase electricity when they have the money and at their own convenience. Therefore there is no need to prepare a monthly bill. In

fact, cash flow improves for the utility because payment is made in advance of energy use.

The cost of meter reading is also significantly reduced. Typically, Woodstock Hydro will read the meter of a conventional residential customer 12 times a year. In the case of pre-paid power customers, the meter reading is captured on the power card when the customer uploads their most recent purchase and is downloaded to the utility CIS when they make their next purchase.

Other benefits of prepaid power include lower collection and credit activities related to non-payment and reduced disconnect/reconnect expenses. In addition, because customers with prepaid power do not need to provide a deposit the cost of collecting and administering security deposits is eliminated for prepaid power customers.

Observations

Many studies have been completed measuring customer satisfaction with the pre-paid method of purchasing. The studies indicate a high level of acceptance by customers on these types of systems. Woodstock Hydro has no entry or departure costs in its program. We therefore consider the 2500 customers on the system to be satisfied and to prefer this option to the conventional methods of purchasing.

Woodstock Hydro has calculated that the customers on the pay-as-you-go plan have reduced their consumption by approximately 15% on average. This compares readily to other jurisdictions where this payment method is introduced.

Based on the consumer behavior (conservation) I have witnessed and it is my contention that both the information displayed on the cost of the electricity being consumed and the payment in advance contribute to the altering of the consumer's attitude about the value of electricity.

Paying in advance of use places electricity in the same category as other commodities such as gas for the car and groceries. Once you have brought the electricity home from the store you want to make it last as long as you can. You are more aware of its value because you start making choices in your desire to make your last purchase last longer.

Having the advance knowledge of what consumption will cost due to the experience and education acquired with the display unit allows for intelligent decision-making. I believe that this consumer intelligence coupled with predictable time of use rates would be a powerful tool to assist in flattening our daily demand cycles.

Electricity distribution with post use payment has been around almost 100 years. The value of electricity was not difficult to convey to the customer in the early years. The incredible changes to life style that electricity brought made it very easy for the customer of the early to mid 1900s to consider the worth of what they were purchasing. We have lost touch with the generation of people who recalled living without the convenience of electricity. We don't say pre-paid auto fuel or pre-paid groceries when referring to those commodities. Perhaps we should reconsider what we want to be considered normal.

The following quote by D. G. MacKenzie, Executive Vice-President of Sunoco Inc. outlined in an advertisement for Ontario Hydro, The Toronto Star, 29 Dec. 1989, summarizes the societal benefits of prepaid power.

“If you had to fill up with electricity every few days, you'd think about it a lot more.”