March 9, 2011

Kirsten Walli
Board Secretary
Ontario Energy Board
P.O. Box 2319
2300 Yonge Street, Suite 2700
Toronto, ON M4P 1E4

Subject: **Board File No.: EB-2010-0364 - Time of Use Rates: Let's Use Smart Meters in a Smart Way**

Dear Ms. Walli,

Our apologies for the delay of this submission.

The Society of Ontario Professional Engineers is writing to you to recommend that the Ontario Energy Board investigate a modified method of employing Time of Use (TOU) pricing. We believe this modified method will reduce the pricing distortions that do not contribute to a reduction in peak load demand. It should also eliminate subsidization of electricity sales to neighbouring utilities by Ontario customers when generation technical constraints result in wholesale electricity market prices that are artificially below the incremental cost of production.

The introduction of the smart meter was expected to help consumers make smart choices about how and when they use their electricity. The primary goal was to reduce the system peak load so that additional peak load generating stations and transmission capacity would not be required. The present TOU policy and methodology results in all regulated price plan TOU customers paying the mid-peak and on-peak rate for **all** electricity used during the corresponding periods even if those customers are consuming electricity at or below their average base consumption rate.

We are proposing a modified TOU methodology that would make smarter use of the smart meter data. Our methodology establishes the customer's average base consumption rate during the off-peak period. Then that customer would only be charged the TOU mid-peak and on-peak rates for incremental energy consumed above their average base consumption rate.

Under our proposed methodology there would be 3 rates called base rate, mid-peak rate and on-peak rate. These rates would still need to be established and adjusted periodically as they are for the current methodology to bring total revenue in line with the actual costs for providing electricity so that the accounts "balance" at a regular interval.

The current TOU rate policy and methodology does not use the smart meter data in a smart way. The current methodology has several major disadvantages:

(1) It confuses base load consumption during the mid-peak and on-peak periods with peak load consumption during those 2 periods. It charges a base load customer the peak rates for all their electricity during the peak period even if that customer's load profile has no additional consumption during the peak period. This is inherently unfair to those customers who have adopted conservation, energy efficiency and load shifting to flatten their load profile. These customers are effectively subsidizing other customers who can't or won't reduce their peak energy consumption.

(2) The current TOU rate methodology collects too much revenue during the peak period because it charges peak rates for all energy used during that period. In order to balance the revenue and cost accounts, the global adjustment then biases the off-peak rate to a value that can be lower than the true cost of supplying base load power. It is impractical for captive customers resident in Ontario to reduce their energy consumption to zero during the peak period. Therefore captive customers are not able to take advantage of the lowered off-peak rate for all their base load power because they must pay peak rates for their base load power during peak periods. This makes it less financially attractive to adopt conservation, energy efficiency and load-shifting technologies such as conversions of electric to gas cooking appliances and energy storage systems for space and water heating. This situation will get worse if the government moves to raise peak prices as has been recommended by various environmental groups to encourage conservation and energy efficiency.

(3) Ontario's wholesale electrical spot market system is gradually becoming an incremental cost market because more and more generation is being added to the grid that enjoys long term guaranteed OPA contracts for energy, capacity, take-or-pay, or non-dispatchable generation. During periods of constrained generation, such as this past January, the spot market prices can even drop to negative values as generators compete on price to stay on-line for plant technical reasons. This means that non-captive customers such as utilities in adjoining jurisdictions can enter the Ontario market and take advantage of deep discount pricing. They can then exit the market when prices recover and escape the cost of providing capacity. The global adjustment compensates generators with fixed contracts during a billing period. Most generating capacity in Ontario enjoys fixed contacts of one form or another. This effectively means Ontario customers subsidize electricity sales to non-resident customers. This is inherently unfair.

The problem with TOU rates can best be illustrated by a diagram (see Figures 1 through 5 attached). As you can see, consumers that have little or no peak load contribution pay "peak" rates for all the energy they use during peak periods (Figure 2 – red and orange shaded area).

In OSPE's modified TOU methodology, a customer's average base consumption rate during the off-peak period (during a billing period) can be calculated by their distribution utility's back office software to establish their "average base consumption rate in kWh per hour". The hourly electricity use up to the average base consumption rate would then qualify for a base rate during the mid-peak and on-peak periods. Any additional electricity used above that base consumption rate would then be charged at the established mid-peak and on-peak TOU rates.

The base rate, mid-peak rate and on-peak rates for TOU customers would need to be established. Since all TOU customers would pay the base rate for their base power throughout the entire day (see Figure 4 and 5 – green shaded area), the amount of energy billed at the mid-peak and on-peak rates would be much lower in our recommended methodology. This means the mid-peak and on-peak rates can be higher without increasing the total electricity bill to the average customer and without suppressing the base rate. Customers with a flat consumption profile

would benefit from a lower bill. Customers with an above average peak power demand would pay a higher bill. Customers with an average peak consumption demand similar to the system as a whole would see their bills remain the same as the current TOU methodology.

The spread in the proposed 3 rates can be chosen to achieve various societal benefits much in the same way the current TOU rates can be adjusted for the same purposes. Also, some customer categories have greater control over their electrical consumption than others. For example, apartment dwellers may not be able to unilaterally convert an electric range to a natural gas range. Similarly, a small commercial business may find it impossible to economically shift their electrical consumption outside of normal business hours. For these reasons various mechanisms currently used to deal with hardship cases would still be required under our modified TOU methodology.

For illustration purposes in the diagram, we have set the base rate at the regulated price plan first step of the tired rate. The base rate could logically be set at the true contractual cost of providing base load power. However, some cost studies would be required to determine if that would achieve the desired government policy goals and societal benefits.

During constrained generation, due to inadequate generation maneuvering capability, the wholesale power prices become unrealistically low and even negative. Non-captive power purchasers who can avoid purchasing power can game the wholesale market by holding back purchases until the market price collapses below the incremental cost of production. When generation is constrained, the IESO should be permitted to negotiate a price with non-captive purchasers that better reflects the true incremental (fuel) cost of production in Ontario. In this way the global adjustment is not unfairly distorted to force captive purchasers to subsidize non-captive purchasers more than is absolutely necessary to balance demand with constrained generation.

OSPE believes this modified TOU methodology would reduce the perceived unfairness of the current TOU methodology and the associated price distortions that it causes.

Sincerely,

John Schindler, M.Sc., P.Eng.
President and Chair
Ontario Society of Professional Engineers

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Time of Use Rates – Let's Use Smart Meters in a Smart Way !

Figure 1
Typical Ontario System Load (Nov to April)

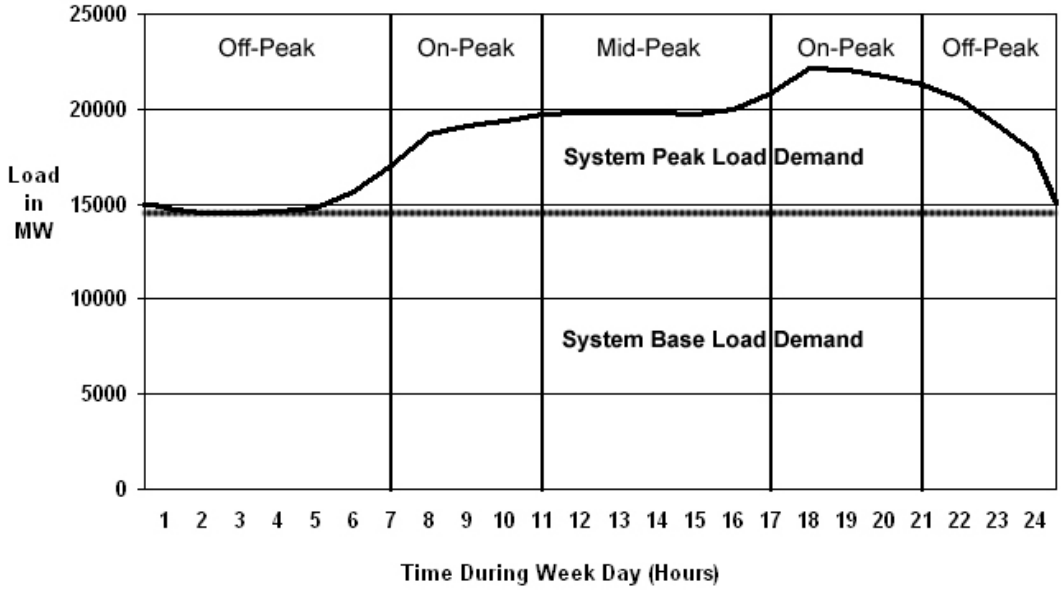

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Figure 2
Present TOU Policy and Methodoloy
Sample Residential Load with Minor Peaking (Nov to April)
(natural gas stove, waterheater and clothes dryer)

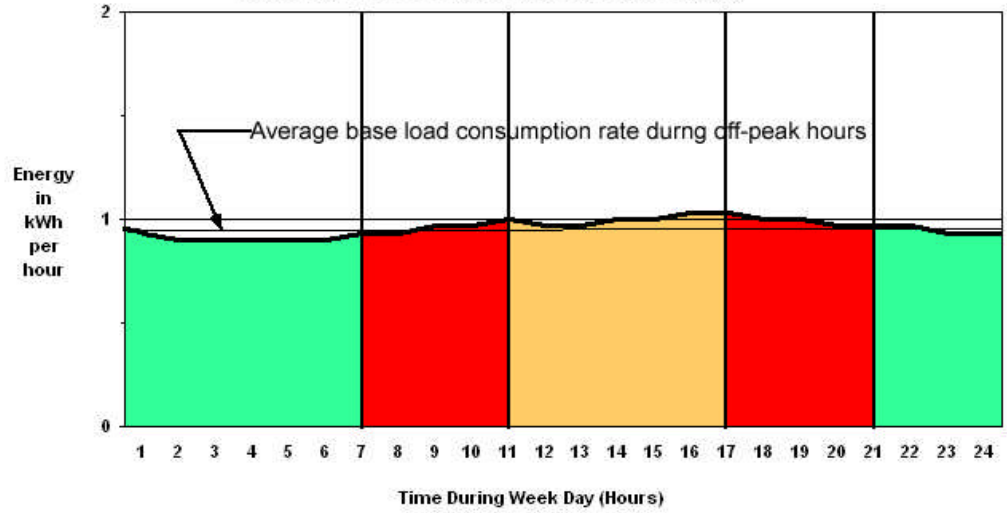

Figure 3
Present TOU Policy and Methodoloy
Sample Residential Load with Major Peaking (Nov to April)
(electric stove, waterheater and clothes dryer)

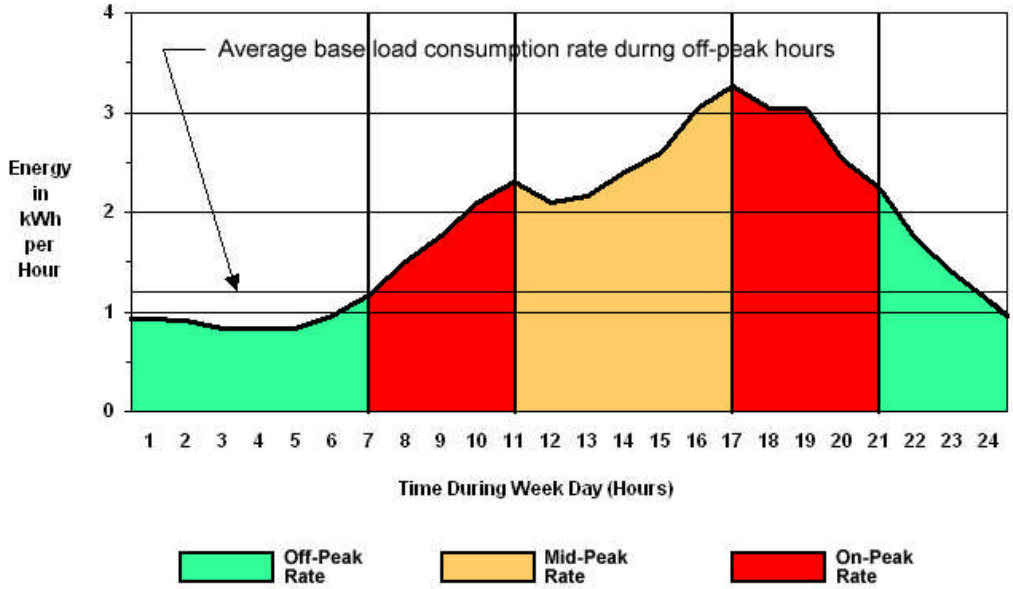

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Figure 4
Modified TOU Policy and Methodoloy
Sample Residential Load with Minor Peaking (Nov to April)
(natural gas stove, waterheater and clothes dryer)

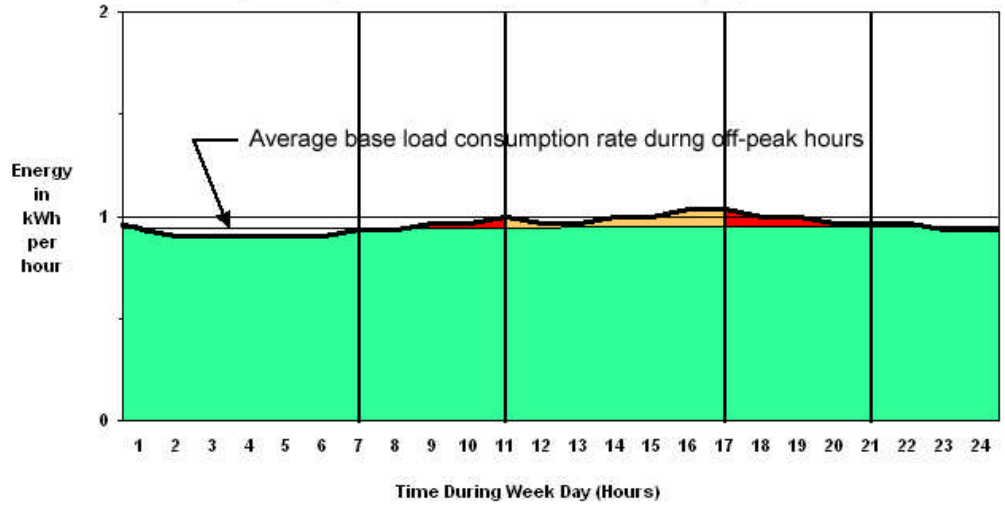
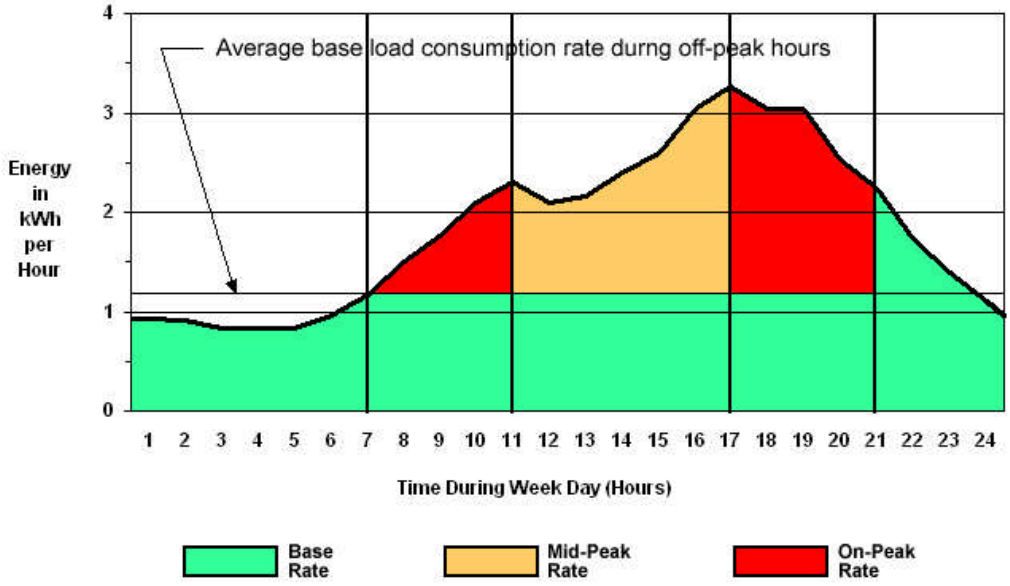


Figure 5
Modified TOU Policy and Methodoloy
Sample Residential Load with Major Peaking (Nov to April)
(electric stove, waterheater and clothes dryer)



Time of Use Rates - Let's Use Smart Meters in a Smart Way !

Present TOU Policy and Methodology

Off-Peak Rate = 5.1 cents/kWh
Mid-Peak Rate = 8.1 cents/kWh
On-Peak Rate = 9.9 cents/kWh

Cost of Power Figure 2 = $51.79 per month
Cost of Power Figure 3 = $101.75 per month

Modified TOU Policy and Methodology

Base Rate = 6.4 cents/kWh
Mid-Peak Rate = 12.5 cents/kWh
On-Peak Rate = 18.8 cents/kWh

Cost of Power Figure 4 = $48.25 per month
Cost of Power Figure 5 = $133.14 per month

For illustration purposes the base rate has been set at the first tiered rate of the "regulated price plan – tiered prices". The mid-peak and on-peak rates have been calculated to generate the same revenue in a typical day as the existing TOU rates and methodology.

NOTES:

In the modified TOU methodology, Figure 4 shows that a customer that has a flat load profile pays a "base" rate (green shading in Figure 4) for most of their power regardless of the time of day.

While the proposed base rate is higher than the present off-peak rate it still results in lower bills at the end of the month because the customer is not paying the much higher mid-peak and on-peak rates for all of the power used during those rate periods.

To ensure sufficient revenue is collected the Modified TOU policy results in a larger spread between base rate and the higher mid-peak and on-peak rates than the present TOU policy. However, those higher rates are applied to a much smaller total amount of energy so the impact on a customer's electricity bill is much smaller than the higher rates imply.

The modified TOU methodology should result in more effective price signals that would better encourage conservation, energy efficiency and load shifting without the distortions that occurs when peak rates are applied to base load energy.