FOCA's Comments on DX Rate Design Issues

General Comments

FOCA is pleased that the rate design review, anticipated in September 2000 is finally under way. The large variations in DX rates falling out of the decision to fix the variable component in the initial rate unbundling is very problematic, especially in the General Service and Large User classes. FOCA is also pleased that the Dx rate design initiative has been given a clean slate that could produce a system that is in tune with the 21st century.

The world has indeed changed since that time. The problem of climate change due to burning fossil fuels is near the top of government and public agendas throughout the developed world. Dx rate design has a pronounced effect on energy consumption so conservation price signals have to be given much higher priority.

In the RP-2000-0069 Decision, the problem of rates impacts in crossing the 50kw boundary in the GS class was recognized. The interim solution ordered by the Board at the time was to allow customers to cross the 50kw threshold up to 100kw before switching them to the > 50kw rates. The same problems occur at the threshold between GS and Intermediate and Large user classes. The general problem of rate coordination as customer demand changes to be addressed in the Dx Rate Consultation process but it is not mentioned. The rate shocks are a fallout from the fixed/variable rate structure selected in the initial rate handbook. It may not be possible to solve the coordination problem without reverting to the declining block structure in use prior to that time.

When any customer classification, cost allocation or rate design changes are implemented, consideration needs to be given to total bill impacts. The 10% limit established in RP-2000-0069 has been used reasonably consistently since that time and should be acknowledged in the Discussion Paper or the final report.

Responses to Specific Questions.

Rate Design Principles

The Bonbright principles certainly fit the era in which they were written. But as mentioned, conservation has come to the forefront since that time.
The Board and/or government have not been consistent in following sound Bonbright principles for the simplified bill format and the Regulated Pricing Plan (RPP).
In the case of the simplified bill, the all-in delivered energy cost is hidden so the customer has no way of understanding the rates or the effect of any change in consumption. The Regulatory Charge line item is unintelligible to virtually all customers. One does not know if it is a fixed or variable charge

The RPP departs very significantly from the understandability, fairness and cost causality principles outlined by Bonbright. The RPP seems to be based on an artificial conservation price signal and some social engineering. Raising the price past a certain threshold runs counter to the way all other commodities and services are priced. The increase in the size of the lower price block in the winter is another puzzle, aimed probably at those who heat with electricity. While residential and small business buy most of their energy at the low rate, universities, schools, hospitals and the like buy most of theirs at the higher rate, so there is a significant cross subsidy from the public (MUSH) sector to residential and small businesses.

Put simply, the Simplified Bill Format and RPP need to be reworked to make the rates understandable to customers. That is, the Bonbright understandability principle needs to be given more emphasis and the conservation price signal needs to be crystal clear.

I do not think that DX rates need to be redesigned to subsidize or promote distributed generation.
Subsidies paid for wind and photovoltaic energy are extremely high relative to the unpredictable weather dependent nature of their output. There are already clear indications that there is far more of this available than can be technically handled on distribution systems and no further incentives are needed. Indeed there are many zones in the province where the distribution system cannot handle any distributed generation. Existing distribution systems were not designed to handle large amounts of generation, and especially not highly unpredictable wind and PV generation.

The use of Dx rates to avoid peak use of the system has already been looked at by the Board and a clear decision has been made. There should be no time-of- use component in DX rates, so I think you could drop the last 2 items on page 10.

Customer Classification

Hydro One has a very comprehensive customer classification system that appears to be based on cost causation principles. At first glance, the farm class appears to be the same as general service, but most farm customers receive rural rate protection so rrp farms at least should therefore be in a separate class. The differentiation between single and 3 phase is also appropriate since it costs more to serve the latter.
And of course they have density based rates for their residential sub-classes, which also have a cost basis.

It is quite likely that many municipal LDCs should have more rate classes. For example it costs far less to serve a customer in a high rise condominium than a customer in a single family home. However, if not imposed by the OEB there is little incentive for an LDC to produce a “very high density” rate since it would not change their revenue and would merely shift costs to owners of single family homes.
Another example would be stores or industries in commercial malls or industrial plazas. There is a low cost single point of supply for multiple customers and the distribution system in the mall or plaza is owned by the landlord.

The sub-classes in General Service are problematic since there can be serious rate impacts resulting from a small change in consumption. A customer’s rate class should have some permanence and not change with a small consumption change. As mentioned above, the fixed variable rate structure is not well suited to mitigating these rate shocks.

Voltage based rates have some merit and should not be discarded.
Hydro One has a “T” rate for customers connected to their sub-transmission system. All LDCs provide a transformer ownership discount for customers owning their own transformation, which in effect is a voltage based rate. These customers are less costly to serve since there is no utility owned transformation between the point of supply from Hydro One and the customer. So there is a rationale for a single class for all customers connected to the sub-transmission system. This could include all large users since they are similarly connected and have similar cost characteristics.

I do not believe the size (amperage) of service is a reasonable basis for a customer classification. For single family residential there are 60, 100, 200 and even 400 ampere services which may all display comparable consumption patterns and load profiles. Underground services are generally 200 amperes up to and including the meter base but could be 100, 125 or 200 amperes from there to the customer’s main breaker. Most customers have little choice over service size. It is usually dictated by Electrical Safety Authority requirements.

The sharing of diversity benefits follows directly from the cost allocation method chosen. One could use the demands of the various classes at the time of the annual utility peak or 1CP. This has the disadvantage of relieving Dx costs from those classes (e.g. street lighting) that have no or little demand at the time of the utility peak. The use of the Dx system has some value even in off-peak periods. The most common allocator is 12 NCP. That is, the average of the class peak demands in the 12 months of the year. This is the underpinning of the current Dx rates and has the advantage of being very stable from year to year and not very dependent on unusual weather patterns in the year for which the cost allocation study was carried out.

Rate Design Issues

The discussion paper very clearly identifies a serious flaw in the initial rate unbundling process. By fixing the variable component at $0.00062/kwh, all of the new costs such as Market Based Rate of Return, PILs etc ended up in the fixed monthly charge. This created very serious rate impacts for the smallest users in each class. It is unreasonable to expect a customer using 250 kwh/month to make the same $ contribution to utility profit and taxes as one using 10 times that amount. Usage of the system was not a factor in setting initial rates. This very clear inequity has been only partially corrected to date, largely by means of playing with the fixed/variable split to mitigate rate impacts.

And in the intervening years, CDM has come to the forefront. The existing rate structure blunts the price signal. In the case of FOCA members, the $35.54 fixed charge is nearly 50% of the average total bill. Loading all Smart Metering costs into the fixed charge further undermines the conservation price signal that Smart Meters were intended to promote.

So this is an anomaly that screams out for correction.

Much has been made of stability of utility revenue brought about by high fixed charges. Claims are made that their debt ratings and risk profiles could be affected if fixed charges were reduced. These arguments tend not to be solid when one looks at Hydro One. Costs of its transmission business are allocated entirely on the basis of variable demand levels, and their distribution system is highly susceptible to storm damage yet it has a very strong single A bond rating.

The most sensible correction is either to eliminate fixed charges completely as Hydro One Transmission has done or to clearly define what can go into the fixed charge. Directly related customer costs such as meter, meter reading, billing and collection and the cost of the connection from the transformer to the meter would be defensible.

The minimum system approach was discussed at great length in the CA Review meetings. It is a mythical construct that is almost impossible to cost without making numerous arbitrary assumptions. If 10 rate analysts, working independently, were asked to cost a minimum system for a given utility, they would come up with 10 entirely different numbers.

Further, allocation of the cost of a 400 watt minimum system to each customer in the fixed charge is extremely unfair to the smaller ones. For example the cost of a 400 watt system for a 20,000 kw large user is a trivial portion of the cost of facilities in place to serve them. At the other end of the spectrum, for a small unmetered scattered load such as a bus shelter, the 400 watt system would exceed the cost of DX facilities actually in place. If the minimum system concept had any credibility, there would have to be many different minimum systems defined for each class and sub-class depending on average customer demand in the class.

The minimum system concept is not a sufficiently robust basis for the design of rates.

So, the principle that should inform the decision on the fixed/variable split should be a very clear definition of what costs can go into the fixed charge. There can be much debate about this. I favour Scenario 1 on the bottom of page 20, that is the avoided cost of not having the customer connected.

There is a strong argument for excluding a portion of Smart Metering costs from the fixed charge since the serve many purposes other than bill production, including Cost Allocation studies. Some LDCs are using them for outage reporting. For all, they are mostly a CDM tool to encourage off-peak use. CDM generally is intended to lower commodity cost, so most of the capital and operating costs of smart metering costs are more properly allocated to the consumption component.

Billing Determinants

These will vary with the type of metering installed. For those with kwh metering, the billing determinant will be kwh.
For those with demand meters, there is a choice of kw, kva or 90% of kva. The later 2 provide an incentive for the customer to install power factor correction equipment hence reducing the demand on the system and system losses. The 90% of kva is used by most so should probably be retained. For unmetered loads such as street lights or other scattered loads, the billing determinant could be either estimated kwh or kw demand.

So the billing determinants cannot be the same for all customer classes.

Cost Model for Generation

This is a very complex subject due to the wide variation in types and time profiles of the various generation technologies.

Photovoltaic (PV) systems produce only during sunny daytime hours and are rarely taken out of service for maintenance.

Small hydro is dependent on water flows, but would produce for many more hours than PV and are rarely taken out of service for maintenance.

Wind generation is the most unpredictable. For most of the time there will be little or no output. At some times, all units in a wind farm can be producing at nameplate capacity putting major stain on the distribution feeder.

Behind the meter co-generation output is also somewhat unpredictable since running them depends on the commodity price at the time or the demand for steam. Also, they must be taken out of service periodically for maintenance which may coincide with peak loading on the distribution feeder.

Some principles have been established for generators connected to the transmission system which should be considered when looking at distribution connected generators. In the original restructuring of the industry, it was determined that generators would pay all up front costs for connection to the transmission system and no ongoing cost for the use of the system. This was subsequently changed in the Transmission System Code so that network upgrades would be paid for by load customers. Generators would still have to pay for upgrades to connection facilities.

One must recognize that there is a peak of activity at present due mainly to the Standard Offer Program. How many of these proposals turn out to be viable remains to be seen. The assessments are based on the current rules whereby the generator pays the cost of distribution system upgrades. Also, many have been placed in service based on existing rules. So there is a fairness issue here. If the Board studies and implements a use-of-system charge, many of the existing generators may become uneconomic.

So my recommendation is not to study use-of-system rates. The current up-front payment for system upgrades along with standby charges for load displacement generators should continue. That is, the present system should not be changed unless there are compelling reasons to do so.

Consistency of Rate Design

In Ontario there is a wide disparity on factors such as customer density, customer classes, terrain, susceptibility to storm damage, size of service territory and the number and sophistication of utility staff. Hydro One is clearly unique with its very large, low density territory. Others could be grouped into small, medium and large urban utilities but their cost characteristics will probably not be similar.
With the exception of Hydro One, there could be some consistency of rate classes within the other groupings but there is no need for them to have identical rates.
But there should be certain fundamental principles that are common to the regulation of all electric utilities under OEB jurisdiction.

Rate Harmonization

At present a number of utilities have multiple rate schedules, mainly as a result of mergers and acquisitions. Progress on harmonizing rates with the service territory has been painfully slow. From a customer perspective, it is rather unfair that similar customers in different parts of a utility service area should be paying different rates.
A customer can readily understand why rates vary from one utility to the next. Property tax, water and sewer rates vary as well.

One would need a single province-wide utility or a small handful of regional utilities to have common rate schedules, but this is not the way the industry is structured.

"Designer Power"

Customers can get increased reliability by means of paying the utility for a 2nd back-up line or the installation of standby generators. Computer based data and industrial control systems can be supplied by means of Uninterruptible Power Supplies (UPSs). Sensitive electronic equipment can be fitted with surge suppressors to protect from voltage spikes.
So I think, customers have sufficient means at their disposal to protect themselves from normal events on commercial utility distribution systems that are exposed to lightning, wind or ice storms, vehicle crashes and the like.

Marginal Cost Pricing

Despite economic theory, marginal cost pricing, either short or long run, introduces an unnecessary level of complexity into rate design and should be rejected for exactly the reasons stated by the Board in 1979. It will be a significant challenge to root out current unfairness in rates without adding additional layers of complexity.

Locational Pricing

Locational pricing was looked at for transmission rates but was rejected in favour of postage stamp rates. This is a vast, diverse province, much of which is undeveloped. Locational transmission pricing would probably shift costs to the sparsely populated north. These types of cost shifts are not strongly favoured in the Ontario culture.

Similar to marginal cost pricing, this would introduce an unnecessary level of complexity.

The Simplified Bill

As stated earlier, both the Regulated Pricing Plan and the Simplified Bill are major departures from the Bobright principles. The latter was imposed on the OEB and customers by regulation. The RPP appears to be completely under the control of the OEB. Both need to be reworked to eliminate the cross subsidies and to clarify the conservation price signal.

If the RPP is considered to be a valid conservation price signal, a consistent approach to Dx rate design would be to zero out the fixed charge and introduce variable charges that escalate as consumption increases. This would be very tough on the larger users in each class just as smaller users are penalized by the current system.
In looking at the May 2007 rates and impacts announced on April 12, I notice that smaller users in each class once again see the highest % increases, due no doubt to the rapidly escalating smart meter charges being added to the fixed charge.