

NOVA SCOTIA UTILITY AND REVIEW BOARD

IN THE MATTER OF: THE PUBLIC UTILITIES ACT

- and -

**IN THE MATTER OF: A HEARING TO DETERMINE WHETHER OR
NOT IT IS APPROPRIATE TO ADOPT A FUEL
ADJUSTMENT MECHANISM (FAM) FOR
NOVA SCOTIA POWER INCORPORATED**

**Comments on FAM Proposals Filed 5 March 2007
from
Energy Research Group
Electrical and Computer Engineering
Dalhousie University
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Background

Unlike most other Canadian utilities, Nova Scotia Power Incorporated relies on fossil energy, notably coal, petcoke, oil, and natural gas, to meet about 85 percent of its energy demand for electrical energy. Of this, about 10 percent is indigenous—natural gas (1.5 percent) and coal (9 percent)—the remainder is imported.

NSPI's reliance on fossil energy has a two-fold effect. First, it makes NSPI and by extension, Nova Scotia, a major emitter of greenhouse gases. Second, it means that Nova Scotians are vulnerable to the vagaries of world energy markets, since all of NSPI's suppliers are located in regions of political instability or declining reserves.

This reliance on imported energy is responsible in great part for the four rate hearings held since 2001, resulting in an almost 21 percent increase in the price of electrical energy. In order to reduce the number of hearing, NSPI has proposed that these repeated rate hearing be replaced with a Fuel Adjustment Mechanism or FAM.

Fuel Adjustment Mechanism

The FAM has the potential to be a more open and transparent method of charging NSPI's consumers at a rate that reflects something closer to the true cost of generation and possibly

transmission and distribution during a fixed period. In FAM, rates are adjusted at regular intervals, depending upon some agreed-upon formulae; for example, taking into account the cost of fuel during the previous interval or making predictions on future energy costs. Energy rates can rise or fall and consumers can receive refunds or credits, once again, depending upon the formulae adopted.

In short, FAM has the potential to be “fairer” in that NSPI’s electricity rates can be adjusted more quickly and at regular intervals. In the past, NSPI has had to predict fuel costs and then hope that its predictions hold true for the lifetime of the rate: too low a prediction means NSPI loses money and very soon calls a rate hearing, whereas too high a prediction means that NSPI generates additional revenue that must be explained during the next rate hearing.

Limitations of FAM

Despite its apparent benefits, FAM is still a very coarse mechanism that does not permit NSPI to determine *when* a consumer uses the supplied energy. Unlike most other forms of energy, the cost of a unit of electrical energy is determined in large part by when generation occurs; for example, consumption at peak time is typically more expensive if NSPI is unable to meet demand from its own generation, requiring it to purchase electricity from out-of-province suppliers such as NB Power or Quebec Hydro. These higher costs will be shared amongst all consumers: those who consume more during the peak as well as those who do not, meaning that consumers who use more electricity during the peak are being subsidized by those who do not. As a result:

- Low-volume consumers can subsidize high-volume consumers.
- There are no incentives to discourage peak-time consumption.

In an era of rising energy costs, mechanisms are needed to address these shortcomings. Although FAM is somewhat fairer than NSPI’s existing rate structures as the cost of generation can be passed on to consumers at regular intervals, the proposed FAM rate structure lacks the mechanisms to address subsidization or peak consumption.

Extending FAM

Addressing these shortcomings—which are also present in NSPI’s existing rates—means that additional changes will be needed to the way consumers are charged for the electricity they consume. Two possible methods are:

- **Inverted block rate.** In an inverted block rate, a consumer’s electrical consumption is divided into “blocks”; the energy in each block is assigned a rate, which increases for each additional block. The inverted block rate is a crude tool since in some cases, low volume consumers can still subsidize high volume consumers; however, without sophisticated metering, this is probably the fairest method of encouraging consumers to use less electricity.

It is worth noting that NSPI has experience with block rates:

- The Small General Tariff has two blocks, one for the first 200 kilowatt-hours consumed per month, and a lower one for any energy consumed in excess of 200 kilowatt-hours. This is a declining block rate.
- The Optional Green Power rider, which allows domestic consumers to purchase 125 kilowatt-hour blocks of “green power” at a rate of 4 cents per kilowatt-hour above the domestic service rate. Since this charge is placed on the first 125 kilowatt-hours of consumption, it is another example of a declining block rate.

The inverted block rate can be implemented through software changes to the existing billing mechanisms.

- **Time-of-day metering.** Time-of-day metering is, as the name suggests, a metering technique that allows the utility to determine how much energy a consumer uses at a given time. This type of metering is particularly useful as it allows the supplier to match the consumer’s consumption with the corresponding supply mix. Time-of-day metering is essentially FAM on a much finer scale, since it allows the energy supplier to allocate the cost of generation more equably.

NSPI also has experience with time-of-day metering as they have a time-of-day domestic rate intended for use with those consumers using electric thermal storage.

Recommendations

NSPI's generation capacity (predominantly coal and oil) and its reliance on imported energy for generation, means that it is both a major source of greenhouse gas emissions and a contributor to Nova Scotia's lack of energy security. Nova Scotians must be encouraged to use less energy to help mitigate climate change as well as to improve the province's energy security. Experience with past rate increases would suggest that FAM will do little to encourage Nova Scotians to reduce their electrical consumption. Serious reduction will only occur with new rate structures such as the inverted block rate or time-of-day metering.

If the UARB decides to permit the use of FAM, it should be done with the understanding that NSPI will implement time-of-day metering to reflect the cost of generation. In the interim, NSPI should be required to use the inverted block rate.