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Halfway to an energy plan ~ Patrick Brown

The BC government's 2007 Energy Plan's themes are: energy conservation, energy efficiency, and self-sufficiency. It is starting to have an impact on residential rates electricity; in a recent report BC Utilities Commission (BCUC) authorized the 'rebalancing' of electricity rates between types of power consumers.

Conservation and Power Prices

However, from the report it was evident BC Hydro has yet to propose, and BCUC to approve, a 'stepped' consumption rate that would actually encourage the power conservation on which the Plan depends.

The 2007 Energy plan anticipates that half of BC's additional power requirements to 2020 will result from conservation by the customers (BC Hydro takes credit for this, calling it 'demand side management (DSM)).

Power Smart aside, the most powerful incentive for conservation, whether residential, commercial, or industrial, is

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A Changing BC Hydro

BC's Power Base

BC Hydro supplies power to nearly all of BC, generating most of it through a series of 'heritage' hydro-electric dams, supplemented by the Burrard thermal natural gas powered generating station, which is used to provide supplemental 'peaking' power to the Lower Mainland when it was needed.

(Rule #1: you can't store power; the amount you generate must exactly equal the amount you use at any given time.) Over the past few years, BC Hydro has increasingly traded in power with its Alberta and US neighbours, buying power when it was cheap, as from Alberta thermal powerplants which could not be shut down and therefore produced more than required on summer nights, and selling when the price was high, as to California at high noon on a hot summer day, for air conditioning.

(Rule #2: you can store water; so you shut off the generators on the hydro dams and save the water for later.) In fact, because of this enormous storage flexibility, BC Hydro, through its subsidiary Powerex, has become a prime, and highly profitable, power trader in northwest North America.

The result was that British Columbia is sometimes a net exporter of power and sometimes a net importer, depending on what time period you are looking at, and whether we had lots of precipitation or not so much. Generally, the 'heritage' hydroelectric facilities still provide over 80% of BC's needs.

Independent Power Producers

However, with economic growth, the need for power in BC increases. But the Liberal government told BC Hydro not to build any more generating facilities and that all new generation would be contracted out to Independent Power Producers (IPPs), a sort of creeping privatization. In practice, this means run-of-river generators (without dams), solar, and wind power, since coal and gas fired generators are ruled out by a requirement that they be carbon neutral. The 2007 Energy Plan also rules out nuclear generation, and anticipates phasing out the Burrard thermal plant, since it is a nasty producer of greenhouse gases (GHG).

'Self-sufficiency'

While endorsing the continuation of power trading, the government has also decreed 'self-sufficiency'—BC should produce at least as much power as it uses, plus a 'hedge' or insurance amount of 3000 GWh per year (say 5% of present consumption). This is to be so even in a 'low water' year, when it doesn't rain much; so BC will always have power to sell on the market. And it will be 'green' power. As Peter Darbee, CEO of California's Pacific Gas & Electric, said the other day, 'One project that we are keenly interested in is British Columbia wind. The thought there is we could run a transmission line from British Columbia, which has a different climate. The other advantage the Canadians have is they have a lot of hydro up there. So they could back up the wind power with hydro, which doesn't produce carbon (dioxide).' By the way, he makes the point that BC's *hydro* facilities are what make it possible to use wind turbines, which don't necessarily produce power when you need it.

Good For The IPPs

To start a run-of-river (ROR) project, you need a water license for a river that runs enthusiastically downhill, and a contract with BC Hydro to buy the power you produce. If you have those, you then have something similar to a mining company, but with much less risk, and you can sell shares and raise money. The whole exercise has been termed a sort of 'liquid gold' rush.

What if BC Hydro doesn't need the power when you produce it? You don't have a dam, so they have to buy it when your river is running, probably best during the spring freshet when BC Hydro has a lot of water, too. Never mind, Powerex will sell it; their only risk is that they won't get the price they had to pay your IPP for it, plus Hydro's cost of providing for its non-too-predictable delivery (transmission and integration costs).

Of course, as Mr Darbee says, it's green power (and at the moment it's cheaper than wind power or solar power). But it's only green from the GHG point of view; the construction, access, connecting powerlines, and operation have significant environmental impacts, here in Canada. And over 200 water licenses have been issued for RoR projects in BC.

increasing the cost of electricity consumption.

Power Rates More Costs Less

The price per kilowatt-hour (kWh) for small commercial users is currently more than that for residential users; for large commercial users about the same. The price for industrial users is ignificantly less. Before 1991, residential users also benefited from a rate that charged *less* per kWh the *more* electricity they used—obviously not an incentive to minimize power use. In 1991 this was changed to a flat rate, which was supposed to reflect the actual cost for each user type.

Rebalancing

The latest BCUC order authorized three annual adjustments to each rate in order to 'rebalance' the rates to reflect actual costs. The current residential flat rate is 6.15¢/kWh. The adjustments, to take place on April 1, 2008, 2009, and 2010, amount to an increase of 3.6% per year for residential customers, a decrease of 6.3% per year for small commercial customers, a decrease of 2.1% per year for large commercial customers, and a decrease of .9% per year for industrial customers. Because they are based on cost recovery, these changes are essentially revenue neutral.

New Stepped Residential Rate

The BCUC report records extensive discussions around the issue of a two-step residential rate that would charge more per kWh for electrical power over a certain consumption threshold, and therefore encourage residential conservation.

What should the threshold be? What to charge below the threshold, in view of the provisions of the 2002 *BC Hydro Public Power Legacy and Heritage Contract Act* which required that the benefits of the cheap power from BC's hydroelectric dams should go to consumers? What to charge above the threshold, given the high cost per kWh of the new 'green' power from run-of-river generators and wind farms?

BC Hydro was, in the end, instructed to go away and work on the problem, but they were given some hints.

For starters, what if the first step on the rate ladder were 800 kWh per month? (The average residential consumption in BC is about 12,000 kWh per year.) And what if the rate per kWh for consumption exceeding 800kWh/month was equivalent to what BC Hydro was paying the IPPs, say 8.8¢/kWh? But the rate change is supposed to be revenue neutral; so the first 800 kWh per month might end up at 4.7¢/kWh.

BC Hydro is supposed to come back to BCUC with a two step residential rate proposal by March 31, 2008.

Now get out your electricity bill. Those compact fluorescents, or that efficient fridge start to look more worthwhile.

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