

Steve Goudie's Comments (in blue)

Feehan's paper is about establishing an efficient economic pricing structure for Island grid as a prerequisite to the development of the Lower Churchill Project Phase 1. The message is essentially "get the price right because only then you know what the correct level of demand is that the utility should be supplying". The core of the proposal is to move away from average cost pricing to more of a marginal cost pricing structure, especially as it pertains to Holyrood. In many ways, this discussion comes back to having the correct price signal in place for end users of electric space heating. NLH/Nalcor should offer no criticism of Feehan's proposal as efficient pricing should always be a goal for regulated utilities. *In fact, NLH itself has progressed a long way to that end goal of establishing economic efficient pricing.*

Embedded cost recovery (i.e. cost of service) and efficient economic pricing not mutually exclusive. Both pricing requirements are accommodated in NLH's existing wholesale pricing structure and rates which it charges Newfoundland Power. NLH passes along a price signal to NP in the form of 1) a demand charge for capacity used, and 2) a two-block energy rate with the runout rate on the second block, targeting Holyrood production, set at the projected price of heavy fuel oil during the last test year (i.e. in 2007 when rates were last formally set). In addition, the annual fuel rider captures the projected price difference on heavy fuel oil price set for the test year and current market price projections, and that difference is added on to the energy charges, including the second block. For its future General Rate Application to the Public Utilities Board (PUB) for setting a new test year, NLH will be maintaining these primary design elements of its wholesale rate design for Newfoundland Power, subject to an overall embedded cost recovery constraint and a reasonableness test of all rate components given the current high cost of fuel.

Beyond wholesale rates, residential and commercial rates are then established by the retail distributor (Newfoundland Power) with the approval of the PUB. Retail electricity pricing structures and rates are not set by either NLH/Nalcor nor the Province. Rate structure and design are within the jurisdiction of the PUB, and would not require Government led legislative changes.

SRG

Jim Hayne's Comments (in red)

- That province's electricity-price regulation imposes artificially low prices, which distort electricity consumption and investment decisions. *I do not agree that the prices are 'artificially low'. They are not subsidized and are regulated as least cost with a reasonable rate of return. Attractive pricing aids other development (which aids GDP growth etc)...leave the money in the pockets of the people, within reason). Artificially is not a reasonable description. His view could be interpreted as allowing one to make crazy returns? I am not*

mush a capitalist, but agree the price should be incenting proper env/conservation behaviour etc. BUT the lower and mid income people need to be able to live reasonably.

- Legislation should be changed to implement efficient pricing so that the economic merits of this megaproject and its alternatives can be properly assessed. A loaded statement. I agree however the rate structure needs to be changed to allow lower pricing for lower consumption. 3 sections. 1 min amount to look after no option electrical needs such as lighting, communications and other creature comforts, 2 an amount higher priced but reasonable to allow one to heat a modest home so lower families can thrive and 3 a higher block that says if I want to build a 10,000 sf ft home go ahead but you will pay marginal rate. That will incent investment in energy wise choices.

I feel that the job creation aspects (commercial and industrial) might get something lower than marginal but low enough to attract them to NL. They after all create wealth via jobs and a social policy that entices with competitive power is not a bad thing. I recall in Europe the ratio of industrial price to residential has a larger spread than our rates. (would have to dig out IEA data to look again)

On the island of Newfoundland, electricity production will soon be pressed to its limits due to consumption growth. So says the province's Crown Corporation, Nalcor. In step with its subsidiary, Newfoundland and Labrador Hydro (NLH), Nalcor favours the first of the following two solutions to this anticipated problem:¹

- the Muskrat Falls Plan (MFP), which involves developing a hydro site on the lower Churchill River to supply the island and the Maritimes; and
- the Isolated Island Option (IIO), which relies on an incremental mix of oil-powered generation and some small renewable energy sources to supplement existing capacity.²

This *e-brief* argues that reform of electricity price regulation should occur before choosing between these options. Knee jerk is that this is about cost and while price elasticity is real not sure it will change the prudent course of action here even if we analyzed every possibly scenario.

In 2009 Nalcor submitted an Environmental Impact Statement for its lower Churchill projects to a federal-provincial Joint Review Panel. During the review process, it became clear that Nalcor had shifted its priority from Gull Island to Muskrat Falls, leaving the larger site for a later unspecified time. ⁶ (if you bought into his argument you might rationalize that GI should be done first as the higher price forces his notion, BUT leaves a lot more to export!)

Nalcor's response is that the alternative IIO is inconsistent with the policy direction in the Energy Plan, creates more pollution, and, largely due to rising fuel costs, is much more costly over the long run: \$8.810 billion versus \$6.652 billion for the MFP.¹² However, those cost figures assume that the current regulatory regime for electricity pricing remains intact. Most folks believe there is a fair saving that can be had with conservation, but it is not orders of magnitude. From a ratepayer view do they care if oil or hydro. Fell if we initialed higher prices

to force conservation they would just a soon pay that penalty for infeed. Some do see CC and GHG as a real issue.

Inefficient Pricing Leads to Waste

Under the Public Utilities Act, the price of electricity in Newfoundland is determined by cost-of-service regulation.¹³ This sets the price at the average cost of production. In contrast, a fundamental principle of economics is that efficient resource allocation requires that the price of a commodity equal the cost of producing an additional unit of it. On the island, low-cost hydro-electric facilities produce most electricity but they must be supplemented by Holyrood to match consumption. That plant is much more expensive to run. The cost of an additional MW hour from Holyrood exceeds the system's average cost. Setting the price at average cost therefore creates a net loss to the economy. **Not in my uneconomic opinion. Society cannot function that way if that approach was taken on everything. Good for some \$\$, but hell for the common folk. Some balance is required. Maybe the fuel tank on his vehicle should be marginal as well all the time even with competition. Are we all paying for H2O on this basis? (he is not all wrong here though and I am taking exception to the extreme)** For instance, in 2011, the regulated price for most residential consumers was set at \$105 per MW hour. Yet, a MW hour from Holyrood costs about \$150, based on \$135 in fuel alone.¹⁴ Consumers facing a price of \$150 would choose to purchase less than at \$105. Producing the extra amount wastes resources, mainly oil in this case. This waste is worsened over time because costly additions to capacity are needed to accommodate the higher-than-otherwise consumption levels and peak demands.¹⁵ The province's Energy Plan did not change electricity price policy. **Nor did it adopt national building code which would reduce load growth.** ¹⁶ Therefore, NLH cannot use efficient pricing. Its price is simply the passive outcome of historical cost. Consequently, Nalcor's evaluation of the IIO has a wasteful pricing regime embedded in it.¹⁷

Re-considering the Isolated Island Option

As part of its evaluation process, Nalcor engaged Navigant Consulting to assess its analysis comparing the MFP with the IIO. That assessment included a sensitivity analysis that shows how changes in some key assumptions affect the cost rankings. The sensitivity with respect to consumption growth is particularly relevant for our purposes. Muskrat Falls' cost advantage is reduced to 8.5 percent if that growth is half **(that is a considerable drop)** that assumed in the base case analysis (Table 1).¹⁸ Yet, despite lower growth in consumption, Navigant reports that it was "assumed" that the need for and timing of additions to capacity would not change. This is questionable. **Yes technically a new expansion and cost run would be required for each scenario. Equally fr=or each change is pricing (his argument) a new expansion scenario would be need as price elasticity is real.**

In short, getting the price right is a prerequisite to making sound decisions about electricity consumption and production. Basically, efficient pricing in requires:

- prices to end-users that reflect the costs of producing additional electricity **you cannot charge all marginal cost. There are too many who would freeze to death!**; and
- if peak demand threatens to exceed capacity, those prices should be temporarily increased during peaking times to reduce the risk of blackouts. **Interesting but how does one sustain the rest of the economy. Now if we do not care about unemployment, people starving to death, I guess you could do. Society will likely step in and that has a cost and his solution further down is not a solution that is sustainable, again my opinion.**

Efficient Pricing as a Substitute for Pollution Abatement Equipment

If efficient pricing can sufficiently ease pressure at Holyrood then one of the significant IIO cost drivers becomes questionable. The IIO includes installation of pollution abatement equipment at Holyrood to reduce SO₂, NO_x and particle emissions. That would occur in 2015 at a cost of approximately \$600 million, which is a substantial component of the IIO cost profile. Yet, since 2004 those emissions from have been substantially reduced as a result of switching to higher quality fuel and reduced production at Holyrood. Remarkably, in 2010 SO₂ and particle emissions per 1000MWhours, were more than 60 percent and 40 percent lower, respectively, than in 2004. Thus, the potential benefit of the abatement equipment is now lower. **Production levels were lower as well and will increase over time.**

Such a policy is not a populist one alone but efficient pricing would increase NLH's profits. The provincial government, as NLH's owner, could draw on that revenue to enrich its program of lump-sum transfer payments to low-income households with home-heating bills. **That is just not the way to help people be better more productive and contribute to society! I believe most people recognize that. EI is not a way to sustain the economy either and this sounds like that. People do not want welfare as a rule they want a chance. As Albert Camus said' "Freedom is nothing but a chance to be better" and a welfare state is not freedom!** More generally, those profits could fund general tax relief, debt reduction, energy-saving programs, etc. As Boyer (2005) puts it, everyone can benefit.

Conclusion

The two electricity options facing Newfoundland are costly. Making the right choice, getting the timing right and maximizing the net benefits of either, have to be based on the correct price signals. This requires action by the provincial government. It should change its legislation to implement efficient pricing. Deciding on Muskrat Falls before doing so would be premature and imprudent.

There is no mention of carbon which is not costed into the base justification.

In an ideal world all these possibilities (Permutations and combinations) could be run for various sets of conditions and results compiled and seek some confidence number. We can all pick a set of variables that help or hinder our perspective of the right course of action!

Rob Henderson's Comments (with review by Steve Goudie in red)

Utility rate making does consider the efficient use of the resources and the price can contain marginal cost price signals. This concept has been promoted by the Consumer Advocate and lead Hydro to have a report prepared by NERA to determine the marginal based costs for the system. This report was submitted to the PUB in the 2006 GRA. As a result of this approach, Hydro has a 2 tier rate to Nfld. Power with the tailblock rate set close to the cost of electricity from Holyrood. This was done to give NP the correct price signal for marginal energy to encourage conservation. **SRG: OK, NFLD Power needs to pass along our efficient cost structure as they incur it instead of bundling wholesale into distribution and then charging retail customers a blended overall rate.**

Setting marginal based rates for industrial customers can have significant detrimental effects on their costs and viability. An approach like that done for NP has been considered and discussed with the ICs but because of the large differences in their sizes a solution has not been found.

A significant assumption in Feehans work is that the consumer will behave to reduce their consumption to a point that Holyrood would be not required or at least it would be reduced to the point that Muskrat Falls is not the least cost option. This assumes the consumer has another economic option. This may not be the case with the high capital cost to switch to alternative energy sources when electric heat is already installed in their homes. Also, oil based heat the normal alternative may not be a lower cost when the capital cost is considered. This would also drive an increase in GHG through home heating. This may be a net reduction but not to the degree suggested by looking at only Holyrood. **SRG: Efficient pricing should have commenced in the late 1960s/early 1970s. It certainly did on isolated diesel systems but average pricing became the rule of the day for the grid. But at this point you can't go back and re-set the clock. Starting today, the impact on many, many households would be punitive in the winter because of electric heat, even though that's the end use demand to target with a considerable portion of Holyrood costs in real time.**

If the rate setting regulation was changed so that all energy was sold at the marginal price, then there would be a very large increase in the cost to the consumer. This could have significant negative economic impacts to economic activity as it would take money out of the consumers hands and place it in the utilities unless there is a mechanism to provide the large profits back to the ratepayers. **SRG: Not necessarily so if efficient rate setting and cost recovery work together as per previous communication. To me, it's more about targeting proper pricing against the end-use consumption profile that drives costs. Electric heat users should have always paid the true cost for their space heating system in the same manner as a fuel oil home heat customer does. An inverted tariff gets you along way along that road - as per our wholesale rate which retail customers still don't see.**