

Ex. B-3
(Part 1)

2010

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NOVA SCOTIA UTILITY AND REVIEW BOARD

IN THE MATTER OF THE ELECTRICITY ACT

IN THE MATTER OF a hearing to determine Renewable Energy Community Based
Feed-in Tariffs

Direct Testimony and Exhibits of

Moses Coady

On behalf of St. Francis Xavier University

March 17, 2011

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Nova Scotia
Utility and Review Board

Summary & Overview

St. Francis Xavier University (STFX) is a leading Canadian undergraduate university located at Antigonish, Nova Scotia. The STFX campus is heated by a central heating plant which is located at the center of the lower campus. It has a district heating loop which connects 33 separate buildings on the campus and heats 1.6 million square feet of heating space. The central heating plant is currently fueled with a combination of bunker C and fish oil. The facility is 90 years old and its replacement is STFX's highest infrastructure priority. It is STFX's intention to replace its current heating plant with a Combined Heat and Power Biomass (CH&PB) facility which will be located at a remote location off the university campus.

Over the years the university and several private developers have proposed replacing the existing facility with a CH&PB. To date the economics of the project has prevented its development. The university believes that the advent of a Community Feed-in Tariff for renewable energy could create the environment in which this project can be feasible and can be developed.

The most recent analysis of the project was carried out in 2009 by CBCL Consulting Engineers on behalf of STFX. A copy of the business plan is attached. STFX is offering this analysis as evidence in support of the setting of a Comfit rate for CH&P Biomass.

STFX has reviewed the Board evidence and we have substituted the assumptions made by Synapse in their final draft comfit dated February 28, 2011, into our 2009 CBCL model. Those assumptions include;

- * inflation at 1.8%,
- * 9.5% debt financing interest rate,
- * 60/40 debt/equity ratio,
- * 13%Return on Equity,
- * 85% Capacity Factor
- * 15 year debt amortization

The outcome of this analysis indicates a Comfit rate of 21.3 cents per kilowatt hour would be required to achieve a Return on Equity of 13%.

Other Concerns respecting Board Evidence

Fuel Escalator The NSURB consultant are proposing to treat biomass fuel costs in the same general manner that the Board approved in the New Page/Port Hawkesbury proceeding. That is, to index 75% of the cost of fuel to a 90% of the Consumer Price Index for Nova Scotia (all items) excluding energy and 25% of the cost of fuel to a diesel fuel index. The biomass market in Nova Scotia is very difficult to project and it is our view that the proposed treatment may not be adequate to actually track the Nova Scotia Biomass market and escalating fuel costs. New biomass capacity is under construction with 60 MW at New Page and a net capacity increase of 25 MW at Abercrombie' Northern Pulp. The sawmilling industry will also bring on additional biomass capacity and demand and supply pressures will push the price of biomass upwards. This tight market environment is further exacerbated by Province of Nova Scotia's regulations which restrict the annual harvest of biomass to an additional 500,000 dry tones above current annual harvest levels. This effectively is limit on supply and it too will tend to have an escalating pressure on the biomass market. STFX believes that a more reactive escalator is required to properly mitigate the fuel cost risk. STFX supports a Fuel Adjustment Mechanism (FAM) similar to that which NSPI uses annually to adjust costs estimates versus actual cost data. In previous technical sessions Board Council indicated that a FAM for each renewable project might be unduly complex so STFX will advocate that a FAM need only be attached to CH&PB projects. The evidence provided by the Board's consultant on February 28, 2011 recommends escalated fuel cost only for CH&PB and proposes a flat for all other resource class. STFX believes that that is appropriate. Another alternative means to escalate fuel costs is where the Board could allow CH&PB to petition the Board for rate increases much like NSPI do now. We will discuss the concept of a "re-opener" and we will have more information on this available during the hearings.

Project ownership It is our understanding that STFX is eligible to access a comfit tariff through two means. Firstly as a "University" and secondly as a "CH&PB" project developer. As a university, STFX could develop either one and avoid a taxable environment. It is also possible that STFX could develop a CH&PB project with a minority partner or we could enter into a steam host arrangement whereby a third party could develop the project independently with STFX entering a long term thermal supply contract. STFX has not yet determined the ownership structure for its proposed CH&PB project.

Extraction versus Back Pressure Turbine The Board consultant unnecessarily complicates the CH&PB analysis by comparing an extraction turbine scenario with a back pressure turbine scenario. A back pressure turbine's electrical production is directly linked to the existence of a thermal load whereby if there is no thermal load there is no electrical production. Conversely, an extraction turbine can continue to produce electricity when there is little or no thermal demand. The very high cost of a boiler and turbine equipment does not allow for this expensive equipment to be idle. The economics of CH&PB simply will not accommodate the use of a back pressure turbine. Only an extraction turbine is feasible at these relatively small name-plate capacity projects. The comfit analysis for CH&PB should be limited to an extraction turbine scenario.

Existing Boiler versus New Boiler The Board consultant discusses the opportunity to use existing boilers for CH&PB projects. Their analysis appears to be driven by the sawmill industries intervention at the hearings and the existence of low pressure boilers at these mills that run their wood drying kilns. STFX is of the view that existing boiler equipment, be it at a Sawmill or a university central heating plant, would be of no value to CH&PB projects. Steam operating pressure at a Sawmill is typically 15 PSI and at a university it typically operates at 100 PSI. Operating steam pressure at a CH&PB is typically in the 600 to 900 PSI range. Existing boilers simply cannot be used in the new high-pressure cogeneration facility and should not be used in calculating a comfit.

Capacity Factor The Board Consultant discusses two capacity factors for CH&PB (60% for back pressure turbines and 85% for extraction turbines). STFX proposes an extraction turbine with a capacity factor of 85%.

Annual Minimum Efficiency STFX believes the Board should not require an annual overall efficiency requirement for CH&PB projects. Such a requirement could create a situation whereby a developer could become ineligible for a comfit. The risk associated with such a situation will render those projects unable to secure project debt financing.

Construction Financing

The Boards consultant proposes a 1 year of construction financing costs at a rate of 10 %. STFX believes the construction financing period should be for a period of 2 years which more appropriately reflects the time required to construct a CH&PB project.

Federal Tax Rate

The Boards consultant indicates a federal tax rate of 15%. STFX believes that the current federal tax rate is 16.5%. STFX acknowledges that federal legislation proposes that the rate be reduced to 15% in 2012 but current Parliamentary debate may put that reduction at risk.

Gasification Technology

The Boards consultant has not considered the use of gasification technology with CH&PB projects. STFX believes that gasification technology is a desirable technology and believes that the comfit should accommodate the additional costs and benefits available when using this technology.

STFX would like to thank the Board for the opportunity to submit this evidence in support of the setting of a Comfit for CH&P Biomass. I will be present at the hearings and I will be prepared to participate in the hearings and I will answer any queries the Board or other intervenors may have at the hearing. Respectfully submitted, I remain,

Yours Sincerely

Moses Coady
March 17, 2011