



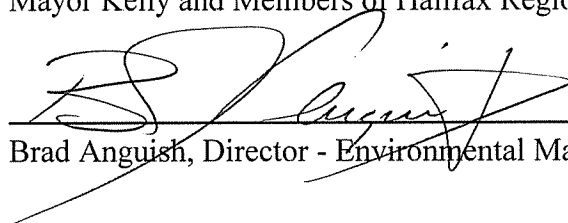
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Halifax Regional Council
November 9, 2004

TO: Mayor Kelly and Members of Halifax Regional Council

SUBMITTED BY:


Brad Anguish, Director - Environmental Management Services

DATE: November 3, 2004

SUBJECT: HRM Community (District) Energy Project

INFORMATION REPORT

ORIGIN

On July 19, 2004 the Halifax Regional Municipality hosted an Energy and Environment Roundtable to bring together representatives from the federal and provincial levels of government, utilities, consulting engineers, environmental groups, and facilities with large electrical loads in an effort to identify areas of opportunity for partnerships. There was a particular focus on community energy and co-generation.

At HRM Regional Council on September 7, 2004 Council passed a motion giving approval for HRM to pursue a high level feasibility study for a Community Energy project, and for HRM to Chair a multi-stakeholder project steering committee. On October 5, 2004 HRM Council granted approval for HRM to submit an Expression of Interest jointly with the Provincial Department of Energy to the evaluation committee that evaluates submissions to the NR Canada Opportunities Envelope.

BACKGROUND

The NR Canada Opportunities Envelope is a three-year funding program with \$160 million (2004/05 - 2007/08) to which Provincial and Territorial governments can apply to fund projects that will achieve Green House Gas (GHG) emission reductions incremental to other federal and provincial initiatives.

The Expression of Interest is the first step in the submission process, and HRM's final detailed application was submitted on October 29, 2004 with a high level of support from key stakeholders. The proposal to the Opportunities Envelope, submitted jointly by the Provincial Department of Energy and HRM, asks for \$200,000 for 2005/06 toward Phase 2 - technical design, contract negotiation with anchor loads, vendors, Nova Scotia Power, and Heritage Gas, and establishment of a Community Energy Corporation as a municipally or privately owned utility. The total cost of Phase 2 is estimated to be \$400,000. The Opportunities Envelope would provide 50% funding and we have identified funding sources for the other \$200,000 between the NS Department of Energy, FCM, and HRM. In the event our application to the Opportunities Envelope is successful, we would return to Council for approval to proceed based on the various defined funding sources.

DISCUSSION

See attached presentation to HRM Regional Council on October 5, 2004.

The Community Energy Project will be a capital project that includes preliminary and detailed design followed by the construction of a community energy system for peninsular Halifax encompassing the "north end" of the city including the DND dockyards, the downtown core area and the large institutions (Dalhousie University, Saint Mary's University and the Capital Health Facilities) resident in the "south end".

Based on several previous studies dated 1993, 1996 & 2000 an assessment of thermal heating and cooling loads has been established along with the technical and economic feasibility of a Community Energy concept. At the time of the previous studies the project was deemed to be technically reasonable and appropriate, however uncertainties existed around the availability of natural gas, and present day environmental concerns were less prominent. Both factors tended to mitigate against the project.

Under present day conditions the following factors apply:

- A natural gas distributor has been established in Halifax (Heritage Gas) who has confirmed that such a project would provide sufficient incentive and benefit to cover the costs of a lateral across Halifax Harbour that would provide the feedstock for the combined heat and power plant.
- Several of the large institutional and industrial loads meet their heating and cooling needs by firing on heavy fuel oil with sulfur content at 2 – 3%. New regulations proposed by the NS Department of Environment are expected to limit sulfur content to 2% by 2005 – although elimination of the use of these fuels may not be mandated by Provincial legislation it is anticipated that concerns regarding local air quality will bring pressure to significantly curtail heavy fuel oil use over the next ten years.

- “Re-Regulation” of the electrical power industry in Nova Scotia will allow Independent Power Producers to sell to either Nova Scotia Power or other Municipal Utilities in the Province and/or to export power to New Brunswick. (The enabling legislation will be enacted this year.)
- It is anticipated that several of the large institutional customers will require significant capital replacement or upgrades within the next 5 years. A Community Energy system would eliminate this requirement.

HRM is actively playing a leadership role in both managing its energy needs and becoming environmentally one of Canada’s greenest cities. The Community Energy system is both means to address environmental concerns and a lever for economic development.

Based on the above, HRM has recently re-evaluated the economics of a proposed Community Energy system and, by using conservative assumptions, has reason to believe that such an enterprise could well succeed from a business perspective either as a municipal utility, as a public private partnership, or perhaps even as a private sector enterprise.

A brief technical description of the system follows:

Based on previous surveys a thermal energy duration curve has been developed for HRM from which a 40 MW electrical gas fired cogeneration plant was selected as a reasonable fit as the main thermal energy source for the system while also producing significant electrical power output. The proposed plant will comprise 2 @ 20 MW nominal gas fired combustion turbines. The heat energy from the exhaust gases from each turbine will be transferred to either steam or hot water circuits via two heat recovery steam generators (HRSG). A modest amount of peaking energy will be required which will be provided by use of an existing boiler plant or by an auxiliary boiler located in the main power plant.

In a November, 2000 study commissioned by Mr Ken Church of CANMET the most economical scenario identified from the three system concepts examined was that serving CFB Halifax, QEII Health Centre and Dalhousie/Daltech via a common steam header from which “water based” clusters would (in turn) be served in the downtown core area. The proposed layout suggests a steam header to run from the CFB Halifax site through the QEII hospital complex and to link up with Dalhousie/Dal Tech Universities. Regional supply points incorporating steam/hot water converters would provide thermal energy to building clusters in the downtown core area and Saint Mary’s University. The findings of our independent advice concurs that the project is indeed technically feasible and will significantly reduce GHG emissions.

BUDGET IMPLICATIONS

The high-level feasibility work currently being conducted is part of a project called District Energy already approved and funded by FCM (two years ago) which has recently been re-initiated.

FINANCIAL MANAGEMENT POLICIES / BUSINESS PLAN

This report complies with the Municipality's Multi-Year Financial Strategy, the approved Operating, Capital and Reserve budgets, policies and procedures regarding withdrawals from the utilization of Capital and Operating reserves, as well as any relevant legislation.

ALTERNATIVES

Key stakeholders have indicated that a leadership role by the municipality is in their opinion, necessary to conduct a balanced analysis, and possibly make this project a reality. If HRM chooses not to take a leadership role, the alternative choice is to wait until either environmental regulations or economics make a community energy project attractive enough for another organization to initiate.

ATTACHMENTS

October 5, 2004 Presentation to HRM Regional Council

Additional copies of this report, and information on its status, can be obtained by contacting the Office of the Municipal Clerk at 490-4210, or Fax 490-4208.

Report Prepared by: Cathie O'Toole, CGA - Environmental Performance Manager (Energy & Utilities)

HRM District Energy Project

October 5, 2004



What's this all about?

- District Energy – A Co-Gen plant to produce electricity, and utilize the waste heat to provide heat to complexes connected by pipe. The facility may provide cooling also, to buildings in close proximity to the harbour.
- CHP plant – A plant that provides cooling, heat and power.

Origins

- July 19th Energy and Environment Roundtable
- Recognition of objectives HRM has in common with Federal and Provincial governments

Our motives?

- Improve air quality on the peninsula through reduced GHG, particulates, sulphur dioxide and NOx emissions.
- Help enable further development of the natural gas distribution network

Why are we talking about this now?

- Proximity of natural gas distribution system
- Purported need for additional generation capacity on the peninsula
- Age, capacity, and capital requirements of key anchor facilities
- Increased focus on GHG emission reductions
- High level of support from Provincial and Federal governments
- Availability of funding programs (Federal gov't)
- Potential future enforcement of the Kyoto protocol

Environmental Impacts

- Dependant upon the size of the project (15 – 40 MWh), this has the potential to reduce GHG emissions by 200,000 – 300,000 metric tonnes per year.
- This will be one of the largest GHG reductions of any co-gen/district energy project in Canada.

Next Steps

- October 31st is the deadline for applications to the NR Canada Opportunities Envelope.
- By mid-October, we will have sufficient information to decide whether to move forward with an application.