HALIFAX
REGIONAL MUNICIPALITY

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Item No. 10.3.1
Halifax Regional Council
January 26, 2010

TO: Mayor Kelly and Members of Halifax Regional Council

SUBMITTED BY: Sue Uteck, Chair, Energy and Underground Services Committee

DATE: January 14, 2010

SUBJECT: Green Thermal Utility (GTU) Opportunities

ORIGIN

- Alderney 5 Project
- EMT Briefings on GTU Concept in 2008 (Queens Square and Kings Wharf)
- Energy and Underground Services Sub-Committee Briefings GTU Dartmouth- 2008
- GTU Feasibility Study commissioned and completed in 2008 by HRM
- GTU Concept Refinement/Risk and Preliminary Design commissioned by Halifax Water in 2009

RECOMMENDATION

The Energy and Underground Service Committee recommends Halifax Regional Council:

1. Approve in principle the concept of a Green Thermal Utility (GTU) subject to financial feasibility and funding.
2. Endorse a preliminary governance structure of a HRM/HW owned and operated GTU, subject to subsequent detailed risk analysis (technical, financial, regulatory).
3. Endorse continued governance development as between HRM and HW.
4. Approve the execution of an MOU with Provident Development Inc.
5. Approve the filing of an application to the UARB to confirm jurisdiction.
6. Approve the submission of an EcoTrust application in support of the project.

BACKGROUND

In 2008, HRM commissioned an energy recapture feasibility study to examine the technical feasibility of heat recovery from the Dartmouth and Halifax Sewer Treatment Plants. It is noted that the proposed concept combines the strengths of district energy and renewable energy into an extremely potent environmental and economic tool. The report confirmed a significant opportunity existed for heat recovery.

In November 2009, Halifax Water, with financial support from HRM, commissioned a further engineering study from Dillon Consulting to undertake a Concept Refinement/Risk and Preliminary Design which will identify technical options and related costs to confirm both technical and financial feasibility. That report should be completed by March 2010. Initial indications look very positive.

The proposed concept would deliver heat and potentially in some instances cooling through a district energy (DE) system. The very delivery of energy through DE systems in and of itself can provide energy resiliency and to a certain degree energy security. There are also large scale economic opportunities for not only the operators of district energy systems but also the community in which they exist. Financial benefits, in addition to direct revenues, can include:

- energy dollars recycled into the community
- new local jobs are created
- businesses are more competitive with reduced energy, capital and maintenance costs
- businesses are more competitive with more predictable energy costs
- energy systems are quickly adapted to newer technologies and fuels

As is self-evident, there are significant environmental benefits associated with the use of sewage heat recovery and seawater cooling; namely, reduction in greenhouse gas emissions, reduced noise, and local air emissions from district energy infrastructure.

This newest opportunity for district energy involves capitalizing on existing HRM and HW infrastructure that could be used as a catalyst for the start of a community energy system in both Bedford and Dartmouth.

DISCUSSION

Bedford (Attachment 1)

The HRM/HW GTU Steering committee has targeted Bedford as the most likely pilot site for a sewage heat recovery DE opportunity. Provident Development Inc., a local developer, is planning to break ground on a 180,000 ft^2 residential/commercial property by spring 2010. This project is

governed by an existing DA. Provident has expressed a strong interest in purchasing thermal energy from the adjacent STP, and has executed the attached MOU, which staff are recommending be approved by Council.

A rough estimate of the cost of a heat recovery system at the Mill Cove Treatment Plant and a geothermal ocean loop for cooling purposes is approximately $3M. With the DE supply option, subject to confirmation through ongoing consulting work, the developer would avoid approximately one-third of this cost in capital costs for "business as usual" infrastructure. The developer would purchase approximately $200,000 - $300,000 of thermal energy per year from the DE system, with operating costs in the order of $45,000 or approximately 1.5% of capital costs. The Bedford GTU system concept design includes heat extraction and heat pump components within the Mill Cove WWTF and a hot water loop pipeline to the proposed Provident buildings. The design consultant is also reviewing a warm water system as an alternative for consideration. The developer has also expressed interest in connecting the other existing buildings they own or manage along the Bedford waterfront.

The feasibility work currently being conducted by Dillon Consulting Ltd. includes further refinement of the business case. Once this work is complete, staff will return to Council, potentially in early March, with respect to a recommendation on any project financing issues that need to be addressed in advance of the HRM budget approval.

Dartmouth

HRM has had a district energy contract "parked" but ready to execute with the owner of Queen Square for over a year. The contract was parked until the Alderney 5 project was completed. Queen Square would require approximately $150,000/year in thermal energy. The estimated capital costs are approximately $1.5M for Queen Square. There have been some discussions with the developer for King's Wharf but GTU project timing is not well aligned for at least the first phase of that project.

EcoTrust Funding

The $7.5M EcoTrust program is set to expire January 31, 2010. Staff have prepared an application to support the expansion of the Alderney 5 project, together with heat recovery projects and are seeking Council's approval for the filing of the application.

Technical Risk

HRM and HW have engaged an experienced consulting team (Dillon/KWL/DEC) that have recent, hands-on experience in DE systems within the context of the HRM GTU. In particular, Dillon was the implementer of the most recent Bedford STP design and construction upgrade, and KWL/DEC

was the designer and constructor of the new Olympic Athletes' Village in Whistler that is using sewage heat recovery. The concept of sewage heat recovery coupled with DE is currently being implemented in several other municipalities in Canada. It also has a much longer and successful track record in Europe, with some systems over 30 years old. HRM and HW staff are confident with proper oversight that the technical risks are minimal.

Legal Issues

Although the general view is that these small thermal projects are not subject to UARB jurisdiction, after consultation with provincial staff, the consensus is that an application to confirm lack of jurisdiction is warranted. Staff are recommending that the referenced application be filed.

Planning

Alderney 5

The Alderney 5 site is zoned Waterfront Zone (W). That zone is very specific as to the permitted uses and the generation of thermal energy for use by other property owners is not one of the listed uses. Although a MPS amendment is not required, a land use bylaw amendment is required to enable the proposed use of the site to generate thermal energy for use by other building owners. Staff therefore recommend that Council approve the initiation of an amendment to the land use bylaw.

Mill Cove

The Mill Cove Treatment Plant is located in a Waterfront Comprehensive Development District. All uses in this zone must be established through a development agreement. Although no MPS change is required, a development agreement is required. Staff recommend that Council approve the initiation of the adoption of a development agreement to support the use of the site for the generation of thermal energy for the use by other property owners.

Financing

One of the HRM corporate financial challenges that has been identified is the HRM dependence on tax revenues. The GTU represents an opportunity to create a new revenue stream for HRM/HW. This project is clearly not a "keep the lights on" project; rather, it represents a unique opportunity to achieve better community energy efficiency, greater energy security, stability of energy cost for those developments served by the system, and therefore supports economic growth by maintaining energy competitiveness. At the same time, the project supports HRM's community climate change objectives.

It is anticipated that the total project costs will be in the range of $4.5M, with $300,000 of this being allocated for project development and initial implementation costs. The funding source for the project development and initial implementation costs will need to be identified by March, which is

prior to HRM/HW 2010-2011 budget approval. HRM will be applying to the EcoTrust to fund some of this upfront development cost.

As mentioned above, it is expected that the total $4.5 cost of the GTU projects can most likely be offset by at least $2.0M from the Province of NS from funds currently available in the EcoTrust program. Although subject to confirmation, it appears that the annual revenues would be sufficient to offset the balance of the project's capital cost.

Governance

Staff are proposing coming forward with a governance model as between HW and HRM once the financial analysis is complete and it is known whether the revenues will allow the project to be funded outside the capital debt strategy.

BUDGET IMPLICATIONS

There are no budget implications with the recommendations in this report. All current consultant costs paid by Halifax Water and HRM have been accommodated within the current budget. The funding source for the project development and initial implementation costs will be identified in subsequent reports.

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

Provident

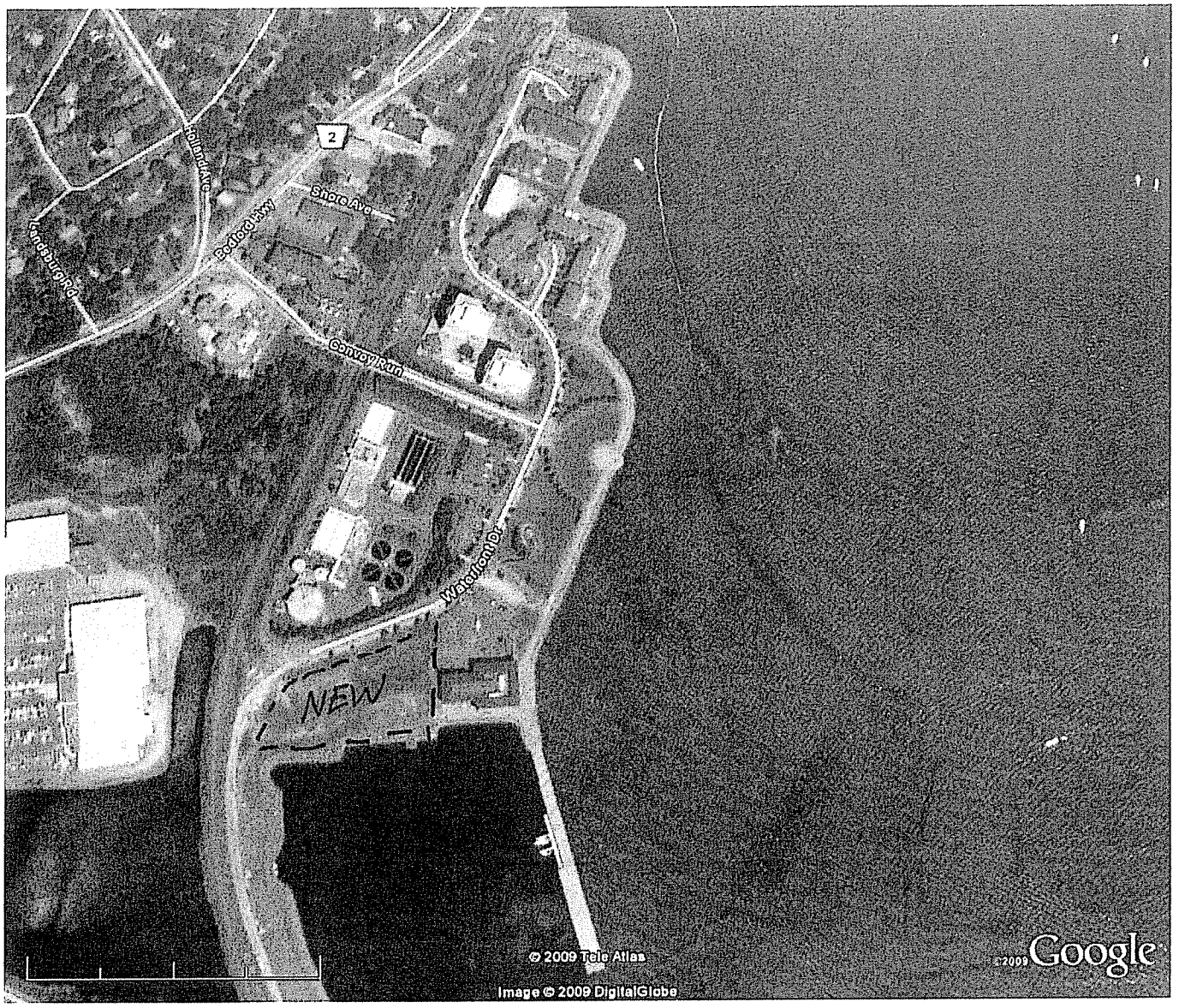
Beyond abandoning the project, there are no reasonable alternatives. Although there might be an opportunity to secure partial developer financing, successful P3 projects normally have to be quite large in order to warrant a P3 project. This project is well below that project minimum.

ATTACHMENTS

Attachment 1: Overview Bedford GTU Site & Provident Developments
Attachment 2: Overview Dartmouth GTU Site
Attachment 3: MOU #1: for Bedford - HRM/HW/Provident

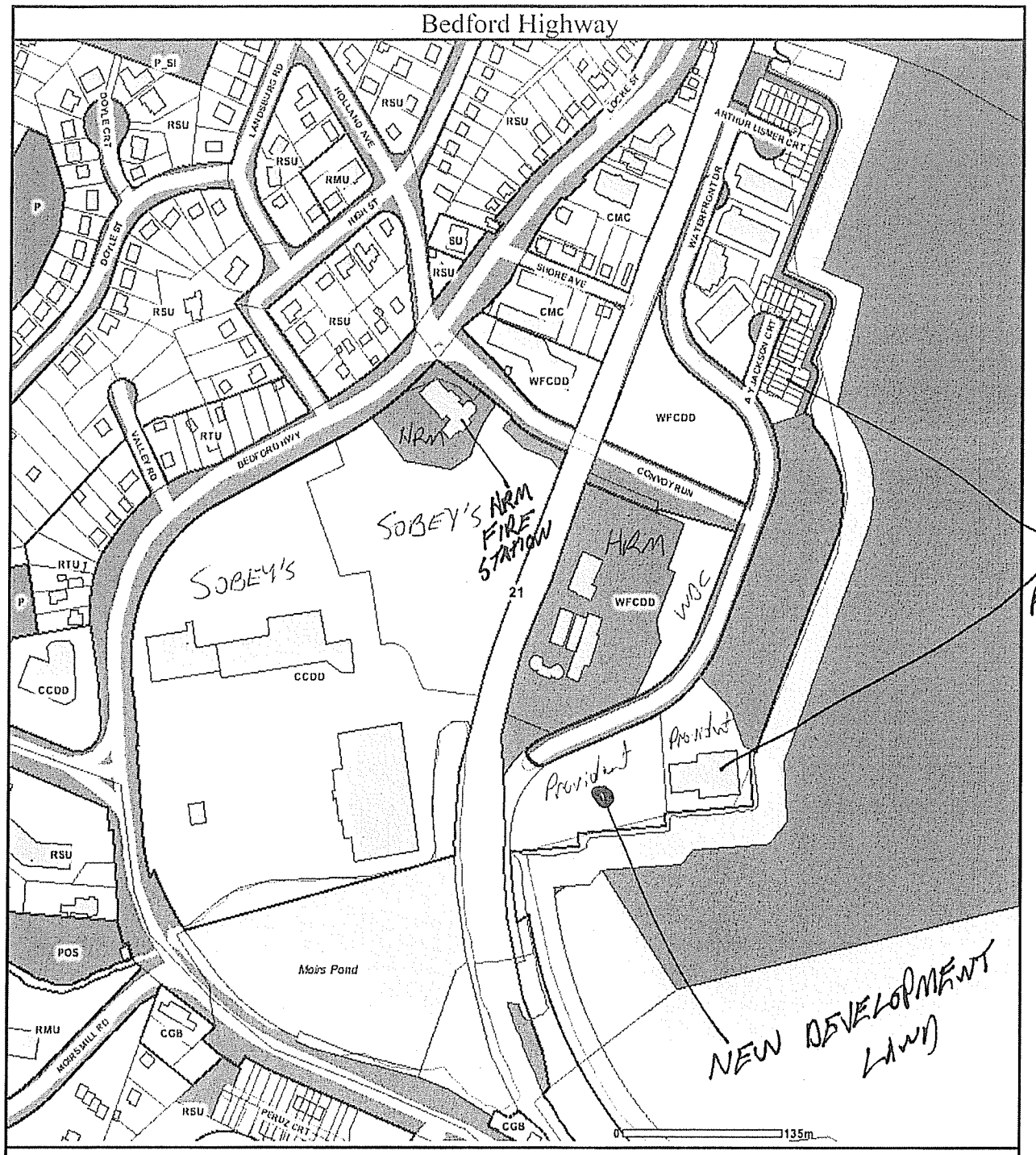
A copy of this report can be obtained online at http://www.halifax.ca/council/agendasc/cagenda.html then choose the appropriate meeting date, or by contacting the Office of the Municipal Clerk at 490-4210, or Fax 490-4208.

Report Prepared by: M.E. Donovan, Director, Legal Services & Risk Management



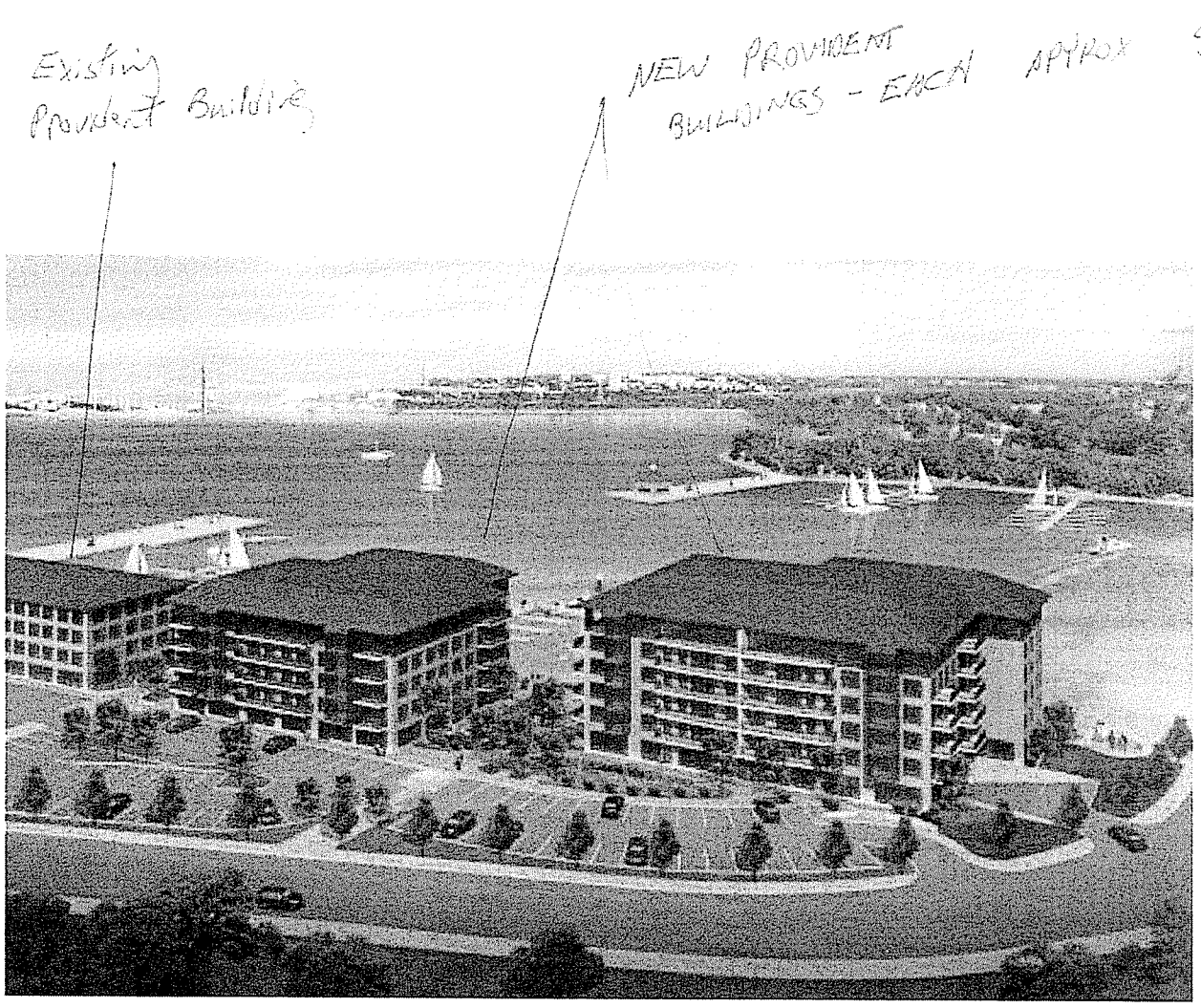
Rogen - new buildings are directly across the street from plant.


NEW
Provident
186 ft
©2009 Tele Atlas
Image © 2009 DigitalGlobe
Google

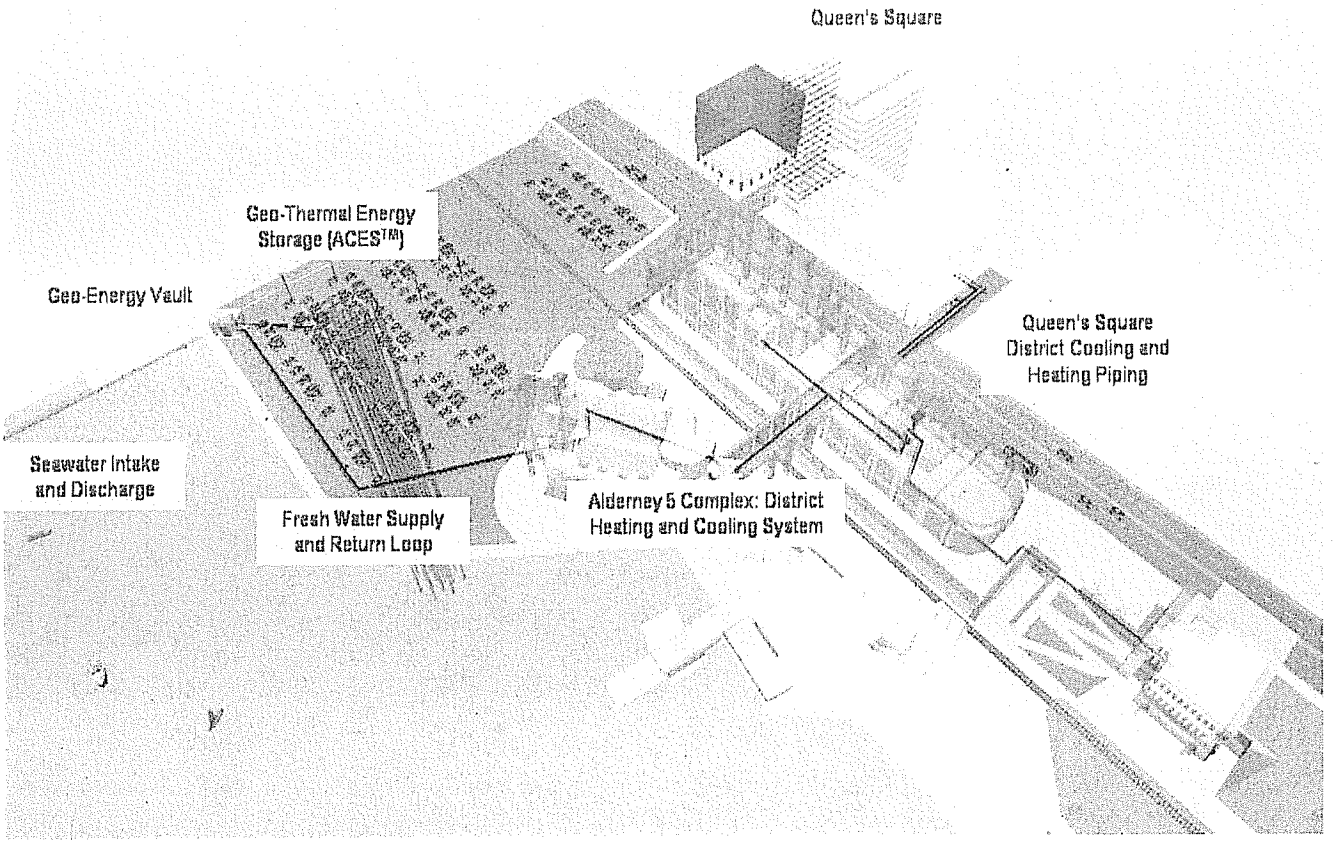


HALIFAX REGIONAL MUNICIPALITY

This map was prepared for the internal use of Halifax Regional Municipality(HRM). HRM takes no responsibility for errors or omissions. For further information on Street Name or Community(GSA) data please contact HRM Civic Addressing at 490-5347 or email civicadd@halifax.ca. Date of map is not indicative of the date of data creation.


Existing Provident Building
NEW PROVIDENT BUILDINGS - EACH APPROX 5900 ft2

Alderney & Queens Square Geothermal/Seawater Cooling System



MEMORANDUM OF UNDERSTANDING

THIS MEMORANDUM OF UNDERSTANDING is made the _____day of January, 2010

BETWEEN:

Provident Development Inc., hereinafter called "Provident"
- and -
Halifax Regional Municipality, hereinafter called "HRM"
- and -
Halifax Regional Water Commission, hereinafter called "HW"

WHEREAS the Parties are interested in considering the feasibility of a district energy project "the Green Thermal Utility Project" to produce hot and cold thermal energy via renewable resources for distribution to the proposed Provident development on the Bedford waterfront, located near the Mill Cove treatment plant and any related future opportunities consequential upon this development;

WHEREAS the Parties recognize the environmental and economic benefits achieved by employing more energy efficient solutions to meet the energy needs of their facilities;

WHEREAS HRM encourages development of district energy projects; and is committed to district energy projects as one possible strategy to address climate change and energy security concerns for its residents and businesses;

WHEREAS the Parties recognize that HW and HRM have assets at its disposal to encourage the sustainable provision of energy, including the Bedford Mill Cove Seawage Treatment Plan,

WHEREAS this MOU sets out the intent of the Parties to co-operate in regard to Stage 1 and 2 of the Green Thermal Utility Project Business Development Model as described in this MOU; and

WHEREAS this MOU was approved by resolution of HRM Council on February ___, 2010 and by the HW Board on February ___, 2010;

The Parties hereby agree as follows:

1. SCOPE

(1) The scope of this MOU is limited to development of the detailed business model, (Stage 1), for the Green Thermal Utility Project as described below in Table 1.

Table 1
Green Thermal Utility - Business Development Model

Stage 1- Project Development	- Design coordination and integration of preliminary technical concept between Provident's design consultants and HW / HRM's GTU design consultants - Preliminary capital cost and operating cost estimates - Confirmation and coordination of required construction timelines - Confirmation of customer self-generation costs - Development of business model including a term sheet for green thermal energy supply, including draft business development agreement - Regulatory review
Stage 2 - Agreements	- Energy Services Agreement - Financing options and agreements - Commercial terms and agreements
Stage 3 - Design, Construction and Commissioning	- Coordination and integration of detailed design and engineering between Provident design consultants and HW / HRM's GTU design consultants - Construction of thermal plant(s), distribution piping, building conversions. and all other mutual energy infrastructure - Commissioning of plant and related equipment.
Stage 4 - Operation	Thermal production commences. Future connection of other properties within Provident's control.

(2) This MOU is intended to enable the Parties to assess the feasibility of moving toward Project Development Stages - 2 to 4 and is subject to any required regulatory, Board of Directors or Council approvals and the finalization of contractual arrangements between the Parties, including the development of an Energy Services Agreement to pursue Stages 2 to 4 if required.

(3) Any such Energy Services Agreement may outline and discuss business opportunities between the parties as at that time determined by the parties, including such things as:

I. Definitions of scope, activities, responsibilities and time-lines for Stage 2 - 4 activities.
II. List of proposed opportunities and synergies;
III. Benefit analysis for each party;
IV. Costs and responsibilities of the project.

2. GUIDING PRINCIPLES

The MOU is based on the following fundamental business principles:

(A) the need to establish a strong relationship based on openness and a willingness to share information necessary to advance the Green Thermal Utility Project, which the parties recognize is key to establishing a trusting business environment;

(B) the importance of a reliable, safe, secure, environmentally and financially sustainable service;

(C) the need for long term fuel flexibility based on the assumption that fossil based fuels will become increasingly scarce and costly, and alternate supplies of energy from renewable sources such as harbour cooling, geothermal, municipal sewage waste, waste heat from industrial processes, biogas or biomass may be available - and the Green Thermal Utility Project shall be designed to use the most economically available fuel; and

(D) the need to move toward increased stabilization of energy costs, at the same time improving the environmental sustainability of the respective heating and cooling systems.

3. PROJECT DEVELOPMENT Stage 1

(A) The Steering Committee (the "Committee") will consist of the following persons, or their designated alternate:

PROVIDENT	-	President
PROVIDENT	-	VP Construction
HRM	-	CFO
HRM	-	Director Legal Services
HRM	-	Energy Auditor
Halifax Water	-	General Manager
Halifax Water	-	Director of Engineering and IS

(B) The Committee will be responsible for the obligations of this MOU on behalf of their respective corporations and have overall responsibility for the successful completion of same.

The Committee shall meet every four weeks, and the meeting duration will be 1 - 2 hours. HRM shall organize, host, and provide administrative support to arrange the meetings.

(C) All activities shall be conducted in the most thorough and cost effective manner possible.

(D) All decisions with respect to Stage 1 Project Development activities will be by unanimous agreement as decided by the representatives or their alternates.

(E) The purpose of the Committee will be to initiate and analyse developmental opportunities that will be considered Stage I of this business opportunity.

(F) The Parties agree that they shall, at their respective costs, proceed and diligently evaluate all analyses, feasibility studies and associated approvals in a manner and schedule compatible with the full evaluation of the Green Thermal Utility Project as contemplated by this MOU.

4. COSTS

Any costs and expenses incurred by any of the Parties at their sole discretion during the Business Development Stage 1 shall be borne by the Party individually.

5. INTEGRATION

Provident agrees that it will apply for its building permits for the Convoy Run proposed project staged to allow for resolution of integration issues.

6. EXCLUSIVITY AND NON-SOLICITATION

(A) During the term of this MOU, none of the Parties will enter into discussions to solicit, or negotiate, directly or indirectly, with other persons or entities concerning participation in any Green Thermal Utility Project or district energy project designed to serve theProvident properties located on Convoy Run, Bedford or in the immediate neighbourhood, unless otherwise unanimously and previously agreed in writing by the Parties.

(B) The Parties covenant to and with each other that at the commencement of this MOU that no Party is participating in any project which contravenes this MOU.

7. NOTICES

Any notice, demand or communication required or permitted to be given to any Party shall be in writing and personally delivered or sent by facsimile to the address of such Party:

(A) in the case of PROVIDENT to: Mr. David Hilchey, VP Construction

(B) in the case of HRM to: Ms. M. E. Donovan

(C) in the case of HW to: Mr. Carl Yates

and shall be deemed to have been received by such Party on the earliest of the date of delivery in the case of personal delivery, and the day following the date of communication by facsimile.

8. TERM and TERMINATION

This MOU will become effective upon execution and will terminate upon the earlier of:

(A) September 1, 2010, or
(B) Execution of an Energy Services Agreement

9. CONFIDENTIALITY AND OWNERSHIP OF MATERIALS

(A) All parties agree that this MOU is a public document and subject to the Freedom of Information and Protection of Privacy (FOIPOP) provisions of the *Municipal Government Act,* S.N.S. 1998, c.18.

(B) Subject to (A), all parties acknowledge that, during the term of the MOU, each party may have access to information of a confidential or proprietary nature of another party (the "Confidential Information") provided one to the other for the purposes of the MOU, and that it is essential to the conduct of each party's business that the Confidential Information be kept confidential.

(C) Subject to (A), all parties agree to keep the Confidential Information confidential and that all such Confidential Information shall be deemed to be and remain the sole property of the party that produced or generated the same.

(D) No party during the term of this MOU and for a period of three (3) years thereafter shall, directly or indirectly, use the Confidential Information or disclose the Confidential Information to or for the benefit of any person, firm, corporation, or other entity, wheresoever situated, except with the prior written approval of the party to whom the information belongs.

(E) Each party shall return to the producer/generator all Confidential Information together with any copies thereof, promptly upon termination or expiration of this MOU.

(F) To assist with compliance with this MOU, the party seeking to maintain confidentiality of information provided shall mark any such document confidential.

(G) Copies of the materials, reports and models produced during Business Development Stage 1 shall be provided to the signing parties of the MOU.

(H) The foregoing is subject to any obligations to disclose information pursuant to a legal process such as a FOIPOP request or subpoena.

In Witness Whereof the parties hereto have executed this MOU as of the day and year first above written.

Halifax Regional Water Commission

Per: _____
Carl Yates
General Manager

Provident Development Inc.

Per: _____
John Greenough
President

Halifax Regional Municipality

Per: _____
Mayor Peter Kelly

Per: _____
Municipal Clerk Jan Gibson