

**Environment and Sustainability Standing Committee**  
**December 6, 2012**

**TO:** Chair and Members of Environment and Sustainability Standing  
Committee

**SUBMITTED BY:** Original Signed  
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Peter Stickings, Acting Director, Planning & Infrastructure

**DATE:** November 14, 2012

**SUBJECT:** District Energy: Municipal Role

**INFORMATION REPORT**

**ORIGIN**

Motion, June, 2012: Environment and Sustainability Standing Committee

MOVED by Councillor Watts, seconded by Councillor Lund that the Environment and Sustainability Standing Committee request a staff report in the role and nature Halifax Regional Municipality (HRM) should take in fostering district energy projects, and provide information on district energy best practices from other Canadian Municipalities. MOTION PUT AND PASSED.

**BACKGROUND**

District Energy: The definition according to the Canadian District Energy Association: District Energy (also called DE) refers to a community scale network of buried pipes that with the aid of steam, hot or chilled water, carry thermal (i.e. heating and/or cooling) energy services to a collection of buildings in a defined geographic area. This thermal energy can be created using a variety of input feedstock fuels including biomass (forest, agricultural, municipal solid waste), biogas, renewable energy forms (e.g. geo-exchange), natural gas, and cool water. As such, it provides the opportunity to utilize locally available fuels to generate hot and cool space heating at a community scale and most importantly, the opportunity to centrally substitute feedstock fuels over time. This is an important way for communities to create sustainable, resilient energy delivery systems and manage risks of being dependent on any one fuel or technology.

Policy Direction: An overview of the Policy influencing the Energy file in Halifax Regional Municipality and Nova Scotia.

Provincial:

- Environmental Goals and Sustainable Prosperity Act;
- Renewable Electricity Plan;
- Efficiency Nova Scotia Act; and
- 2009 Energy Strategy.

Municipal:

- Regional Plan;
- Community Energy Plan; and
- Greenhouse Gas Emissions Reduction Plan.

**DISCUSSION**

Type of District Energy Projects	Municipal Role
Intra-municipal Infrastructure Projects (i.e. Alderney 5 complex)	As an asset owner/manager, expending funds on energy and HVAC infrastructure, it is in the taxpayers' interest for the municipality to identify and execute the best long term cost solutions with respect to energy. The municipality does invest, through staffing and capital funding and the Energy Efficiency reserve, in municipal opportunities. HRM has proven a high return on investment on corporate energy projects on behalf of the taxpayer. In 2010, a presentation to Regional Council demonstrated an over 18% Return On Investment (ROI). These projects are designed, implemented and managed by the responsible HRM departments.

<p>Municipal/ Academic/ School Boards/ Hospital/ Inter-governmental Projects (i.e. Central Library/ Dalhousie Sexton Campus)</p>	<p>As a small extension of intra-municipal infrastructure projects, the Municipality is well positioned to collaboratively infrastructure plan with the local hospitals, universities, and provincial departments to seek optimal long term energy and infrastructure solutions. These collaborative infrastructure planning efforts are part of Facility Development and Energy and Environment project development.</p>
<p>Municipal/ Private Sector Projects (i.e. Mill Cove Sewage Treatment Plant or Queens Square)</p>	<p>Where the municipality has surplus energy available at a facility, the municipality will consider a proposal for uptake. These proposals must be full cost recovery, and all development costs would be to outside parties. The municipality does not develop or solicit these projects. Opportunities or proposals would need to be presented to the CAO's Office for consideration.</p>
<p>Community and Private Projects</p>	<p>The municipality does not expend resources on identifying potential private sector or community projects.</p>
<p>District Energy Planning and Policy</p>	<p>With responsibility around land use planning and by-laws, this is the municipality's primary contribution to District Energy. In the current horizon, a number of potential planning/policy opportunities may be present:</p> <ol style="list-style-type: none"> <li>1. Land use planning and policy related to coordination of seawater piping on the waterfront (to ensure that disruptions to traffic right-of-way are minimized, looking at a plan to best enable usage of seawater cooling and deployment of piping infrastructure).</li> <li>2. The Cogswell Interchange may provide an opportunity to access approximately 100MW of heat at the Halifax Water Sewage Treatment plan. Recognition of this opportunity will be examined during development of a Master Plan for the Cogswell Lands.</li> <li>3. Future Subdivision By-Law revisions may be able to examine opportunities to enable district heating solutions, as observed during the 2009 Sweden Study Tour.</li> </ol> <p>Participation at Quality Urban Energy Systems of Tomorrow (QUEST) will enable identification of municipal planning and policy requirements. The primary objective is to ensure we are removing any barriers to other stakeholders developing district energy solutions. Staff are participating in community energy discussions (for example: QUEST and liaison with the Halifax Chamber, Energy Advisory Committee) that may uncover future planning and policy projects.</p>

QUEST (Quality Urban Energy Systems of Tomorrow)

QUEST Nova Scotia (NS) caucus began in May 2010, of which HRM is a member. The purpose of QUEST NS is "to provide an informal forum where members interested in managing energy related issues, consistent with QUEST principles and the Integrated Community Energy

Solutions (ICES) vision, can meet, exchange information, communicate success stories, propose implementation strategies and develop partnerships for the routine adaptation of said QUEST principles and ICES vision”. It is at this venue where the municipality can, with its role and responsibility, collaboratively examine District Energy opportunities and assist with municipal issues.

#### Community Energy Plan

As per the July Progress Report on the Community Energy Plan to Environment and Sustainability Standing Committee, it is expected that staff will commence a revision to the Community Energy Plan in fiscal year 2013/14. Within the 2007 Community Energy Plan, a Community Action was to explore opportunities for a District Energy system. Further examining the municipal opportunities related to District Energy will be a key section of that effort. It is desired that with that revision, community accountabilities can be articulated and agreed upon. This will help continue to foster an innovative community approach to District Energy.

The primary overview of the municipal role with respect to district energy is as follows:

1. Actively ensure that any existing municipal plans or by-laws are not acting as barriers to district energy;
2. Actively ensure that municipal infrastructure is examined to minimize costs;
3. Be actively available for collaborative infrastructure planning with hospitals, universities, and other levels of government; and
4. Be open to receiving private sector proposals for consideration.

#### Policy Direction for Energy

In the Province of Nova Scotia, Energy Policy is driven by the Environmental Goals and Sustainable Prosperity Act. Energy Policy is the mandate of the Department of Energy. The primary policy is the Renewable Electricity Plan, which calls for 25% Renewable Electricity by 2015 and 40% by 2020. These progressive sustainable energy goals focus on the electricity sector.

In addition to the Department of Energy policy, in 2009 Efficiency Nova Scotia (ENS) was created in Legislation. Recently, the Utility and Review Board (UARB) approved the 2013 to 2015 Demand Side Management Plan (essentially the program delivery) of ENS. Reference to District Energy cannot be identified by staff.

The fact of the matter is that District Energy is not strongly referenced as a strategy or solution in either the Department of Energy Policy or the Efficiency Nova Scotia program plan. This makes advancement of district energy difficult as stakeholders are focused on priorities of energy efficiency and renewable electricity. In order for a district energy solution to be developed, there needs to be a prioritized alignment of community stakeholders.

Snapshot of current energy file priorities and activities within the municipality:

Energy and Environment	<ul style="list-style-type: none"> <li>• Project Development: LED Streetlighting (\$40m project);</li> <li>• Project Development: Solar City (\$8m project);</li> <li>• Regulatory participation (UARB): seeking to save several million dollars (one time) related to the streetlighting project and over one hundred thousand on rates;</li> <li>• Facilitation of Efficiency Nova Scotia Facility Lighting Projects;</li> <li>• Energy benchmarking and measurement;</li> <li>• Revision of Community Energy Plan (13/14 anticipated task); and</li> <li>• Participation at QUEST.</li> </ul>
Facility Development	<ul style="list-style-type: none"> <li>• Building stock assessment (includes utility component);</li> <li>• Recapitalization projects (inclusion of energy efficiency opportunities); and</li> <li>• New construction projects.</li> </ul>
Planning	<ul style="list-style-type: none"> <li>• Regional Plan review;</li> <li>• Examination of Natural Gas fleet potential;</li> <li>• CentrePlan policy development;</li> <li>• Transportation Planning; and</li> <li>• Brownfield Policy.</li> </ul>
Solid Waste	<ul style="list-style-type: none"> <li>• Examination of emerging waste to energy solutions</li> </ul>
Fleet Operations	<ul style="list-style-type: none"> <li>• Examination and implementation of Fuel Efficiency solutions</li> </ul>
Metro Transit	<ul style="list-style-type: none"> <li>• Service delivery is a massive energy solution; and</li> <li>• Examination of fuel efficiency solutions.</li> </ul>

The municipality has a high commitment to energy efficiency. Savings, on behalf of taxpayers, are clear; as such, any operational management unit with fuel or energy expense line items should carefully examine their opportunities for fuel or energy efficiency. The general context of zero-budgeting is very helpful in encouraging managers to look at their fuel and energy costs for savings to enable the creation of budget capacity. Corporate energy and fuel efficiency is the top priority for staff with respect to the energy file. The 2011 revised Greenhouse Gas Emissions Reduction Plan calls for progressive reductions in corporate electricity and fuel consumption over the next several years. This will yield substantial corporate savings.

Further, with strong collaborative relationships built with inter-government and inter-community stakeholders, the municipality is positioned to respond to needs to foster community energy opportunities. Whether they are fostered through QUEST, provincial policy, or private sector proposals, the municipality can address municipal barriers or opportunities in a nimble manner. The key recognition is that the municipality represent municipal authority (land use planning, by-laws, facility construction/operation) and that other responsible community stakeholders take responsibility for their authorized mandates. Venues such as QUEST and the Halifax Chamber Energy Advisory Committee can foster this collective responsibility.

Furthermore, when examining energy planning from a systems perspective, land use planning and transportation planning are paramount. These are tenants of the Regional Plan review. It is indisputable that the opportunities for community energy planning, through good land use and transportation planning, are high priorities of the review project. RP+5 is the major municipal planning project underway. Regional Plan is the municipality's sustainability plan and efforts focused on this project will reap major long term community rewards.

### Best Practices

The Canadian District Energy Association is an industry association representing member utilities, government agencies, building owners, consulting engineers, suppliers, developers, bankers, and investors who share a common interest in promoting the growth of district energy in Canada. Their website can be viewed at [www.cdea.ca](http://www.cdea.ca). There is substantial information and resources available at the website.

In the resources section, a document titled Community Energy Planning: Best Practices, overviews the following:

*The characteristics of efficient cities are well known. They have a higher proportion of denser mixed-use, walkable neighbourhoods encouraged by zoning and planning provisions. These support viable mass transit and reduce vehicle use by combining living and employment. Efficiency standards for both new construction and renovation of home and buildings are continuously raised, with energy performance regularly validated through their lifetimes. These cities have an integrated approach to energy distribution usually with widespread district energy systems delivering heating and cooling as a public utility. This enables diverse clean and renewable heat and electricity sources to be combined for maximum efficiency, including energy from municipal waste.*

The prevailing themes of RP+5 and CentrePlan are adopting these best practices. Clearly, as the municipality develops policy related to intensification, the commerciality for private district energy systems is going to emerge.

### **BUDGET IMPLICATIONS**

There are no implications to the 2012/2013 Operating or Project Budget with respect to this report. Any direction to increase role or projects related to district energy would require consideration in future budget submissions to Regional Council.

### **FINANCIAL MANAGEMENT POLICIES / BUSINESS PLAN**

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

**COMMUNITY ENGAGEMENT**

None performed for this report. However, QUEST is a community energy collaborative where the municipality has the opportunity to participate in energy strategy discussions and strategy, representing the municipal mandate (e.g. land use planning and as a major community facility owner).

**ATTACHMENTS**

None

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A copy of this report can be obtained online at <http://www.halifax.ca/commcoun/cc.html> then choose the appropriate Community Council and meeting date, or by contacting the Office of the Municipal Clerk at 490-4210, or Fax 490-4208.

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