HALIFAX
REGIONAL MUNICIPALITY

P.O. Box 1749
Halifax, Nova Scotia
B3J 3A5 Canada

Environment & Sustainability Standing Committee
December 5, 2013

TO: Chair and Members of the Environment & Sustainability Standing Committee

Original Signed

SUBMITTED BY: _____
Jane Fraser, Director, Planning & Infrastructure

DATE: October 28, 2013

SUBJECT: **Exploratory Study – Conversion of HRM Fleet to Natural Gas**

INFORMATION REPORT

ORIGIN

A motion to sign a cost-sharing agreement with QUEST Canada to undertake an Opportunities Assessment: Natural Gas Use in HRM Fleet was approved by the Environment & Sustainability Standing Committee (March 1, 2012; item 7.1.2), the Transportation Standing Committee (March 1, 2012; item 7.1.1), and Regional Council (March 27, 2012, items 10.2.2 and 10.3.1).

LEGISLATIVE AUTHORITY

Section 79 of the Halifax Regional Municipality Act indicates that HRM has the power to expend money on services that require vehicle fleets including police, fire, public transit, snow and ice removal and solid waste collection.

BACKGROUND

In 2012, the Province of Nova Scotia provided funding to QUEST Canada to be used to explore opportunities to make better domestic use of Nova Scotia's natural gas resources. In meeting with the stakeholders, QUEST determined that large return-to-base-daily fleets presented one of two key opportunities. Recognizing that the HRM municipal fleet had the desired characteristics, a proposal was made to conduct an exploratory study with the cost shared between QUEST ($15,000) and HRM ($7,000).

DISCUSSION

A contract was awarded by HRM to Stantec Associates in December 2012, and the study was overseen by an internal HRM steering committee. The final report "Exploratory Study – Conversion of HRM Fleet to Natural Gas" was submitted in July, 2013.

It is important to recognize that the intent of this study was to provide a high-level examination of potential opportunities for natural gas conversion and not to develop a business case. Understanding which, if any, components of the HRM fleet showed promise for conversion would aid in determining what efforts should be made in developing a subsequent business case.

The study cites the following general potential benefits of conversion to compressed natural gas (CNG):

- Natural gas is a cheaper fuel per unit energy than gasoline or diesel;
- A large domestic reserve of natural gas implies a higher level of fuel security in the long run; and
- Natural gas has been shown to emit fewer greenhouse gases and air contaminants than gasoline and diesel.

The components of the HRM fleet that were evaluated for conversion to CNG were:

- Municipal Infrastructure Support
- Metro Transit
- Municipal Solid Waste
- Emergency Services (police & fire)

In general, the better economic opportunity for conversion to CNG is in fleets that employ heavier-duty vehicles with high daily mileage. Short vehicle replacement cycles also help to bolster the feasibility of conversion.

The study recommended that further exploration of the use of CNG was warranted on the Municipal Solid Waste fleet and the Metro Transit fleet.

The study determined that there were two options for fueling HRM fleet vehicles with CNG:

- Trucking CNG to the depot from a "mother station" at the Stanfield Airport; and
- Constructing a compressing station at the depot.

Constructing a new compressing station adds to the up-front capital cost, but both options had similar total costs over the seven year analysis period.

The consultant concludes that the residential solid waste collection fleet and the Metro Transit fleet are both possible candidates for CNG conversion, given their high fuel consumption rates and their operational requirements. Initially, there is added cost due to facility upgrades, the incremental added vehicle cost and, optionally, the construction of a compressing station at the depot. Over time however, the consultant projects those costs to be recovered due to the lower fuel price. The study

included sensitivity analysis to address volatility in both the diesel and CNG cost, as well as the depot versus mother station fueling options to determine the following payback periods:

	Simple Payback (years)
Municipal Solid Waste	3-7 years
Metro Transit	6-11 years

The study also reviewed legislative barriers and, while noting that legislation in Nova Scotia is behind that of other provinces, compliance is more easily achieved with fleets of this nature that do not cross jurisdictional boundaries and do not require higher fuel storage capacity for inter-city travel.

As a high-level exploratory study, these results are simply an indication that additional investigation is warranted. Further scrutiny of the identified opportunities was undertaken by Metro Transit and Transportation & Public Works in determining potential next steps and those comments follow.

Metro Transit:
There is concern that this technology is unproven in Canada and that proceeding with a transit fleet conversion at this time would pose a significant financial risk. While recognizing that the details associated with the full cost of implementation would not be fully identified unless a follow-up business case were to be undertaken, there is an expectation that those costs will be significant. Further, the potential financial benefits indicated in the report are minimal in the scope of Metro Transit's overall budget. There are enough uncertainties/gaps in the analysis conducted that even these relatively small benefits could easily not be realized. No further investigation is planned by Metro Transit at this time.

Transportation & Public Works:
The solid waste fleet, being fully contracted, is not within the direct control of HRM. Presumably, if there is benefit to the conversion of fleet vehicles to natural gas, that decision would be made by the waste haul contractor and reflected in bid prices. Nevertheless, other Canadian cities have given preferential weighting in waste haul bidding processes to favour contracts that commit to the use of natural gas vehicles in order to advance municipal emission reduction goals. HRM staff intends to further explore this option in upcoming procurement of waste haul contracts.

FINANCIAL IMPLICATIONS

There are no financial implications at this time.

COMMUNITY ENGAGEMENT

No community engagement was undertaken as part of this study.

ATTACHMENTS

Halifax Regional Municipality Exploratory Study: Municipal Fleet Conversion to Natural Gas; Stantec: July, 2013.

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: David McCusker, P.Eng., Manager, Strategic Transportation Planning, 490-6696

Report Approved by: Original Signed
Austin French, Manager, Planning, 490-6717

Report Approved by: Original Signed
David Hubley, P.Eng., Acting Director of TPW, 490-4845

Report Approved by: Original Signed
Eddie Robar, Director of Metro Transit, 490-6720
