HALIFAX
REGIONAL MUNICIPALITY

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Environment and Sustainability Standing Committee
March 6, 2014

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

SUBMITTED BY: Original Signed
Eddie Robar, Director, Metro Transit

DATE: February 12, 2014

SUBJECT: **Metro Transit Conversion to Compressed Natural Gas**

INFORMATION REPORT

ORIGIN

Motion from the December 5, 2013 meeting of the Environment and Sustainability Standing Committee:

MOVED by Councillor Watts, seconded by Councillor Nicoll, that the presentation from QUEST be deferred until the February 6, 2014 meeting of ESSC and request staff provide a supplementary report with more detailed information on the technology and possible external funding sources in consultation with QUEST.

LEGISLATIVE AUTHORITY

Section 79 of the Halifax Regional Municipality Charter 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 stakeholders, QUEST determined that large return-to-base-daily fleets presented an opportunity. Recognizing that the HRM municipal fleet may have the desired characteristics, a proposal was made to conduct an exploratory study with the cost shared between QUEST and HRM.

The results of this study were presented to the Environment and Sustainability Standing Committee on December 5th, 2013, along with comments from staff on the study. Although the study covered several aspects of HRM's vehicle fleet, the concerns raised by QUEST and members of the Committee were focused on Metro Transit buses. As a result this report focuses on the Metro Transit portion of the overall study.

DISCUSSION

As indicated in the December 5th, 2013 staff report, Metro Transit staff have several areas of concern with the original study and generally with a conversion to Compressed Natural Gas (CNG) as a fuel source. These are discussed further below. Information on possible external funding sources is also discussed below.

Potential Benefit/Risk

Based on the study, a conversion to CNG as a fuel source for Metro Transit buses would require a significant initial capital investment. The payback would be over a relatively long period (6-11 years) and the overall savings would be relatively small in the scope of Metro Transit's overall budget. It is the opinion of staff that this level of investment for a relatively small potential benefit represents a high level of risk.

Further, there are several assumptions in the study that could impact the benefit-cost conclusions. One is that the report assumes CNG bus replacements began in the past (2012). However, the most impactful is the assumption around the cost to retrofit the Transit Centres (maintenance garages) to accommodate the fuelling, storage and maintenance of CNG buses. The study assumed a cost of $1.5m per facility. A survey of other recent retrofits (or cost estimates for retrofits) shows much higher costs.

City	Buses Stored	Cost
Denver, CO	289	US$8.8m
Kansas City, MO	269	US$5.5m
Wichita, KS	51	US$2.2m
Lafayette, IN	76	US$2.0m
Halifax (Burnside)	210	CDN$1.5m
Halifax (Ragged Lake)	157	CDN$1.5m

While the cost to retrofit a facility would be dependent on numerous building-specific factors, the table above points to the need for a more detailed assessment of building costs before CNG is further considered as these costs could erode any potential benefit.

Past Canadian CNG Experience and Current Status

Previous experience with CNG powered buses in Canada has generally not been positive. Reliability, cost and maintenance challenges led the transit system in Hamilton, Ontario to abandon its CNG program, while the TTC in Toronto took the step of either retrofitting or prematurely retiring all of its CNG powered buses within the past ten years.

However, CNG technology has advanced over the past years and is now in what is known as the "4th generation". Several Canadian transit properties are now making small steps toward a return to CNG. Calgary and Edmonton are undertaking a pilot project. Hamilton is considering a return to CNG, a return that would be less costly for them as they already have the necessary fuelling infrastructure in place. Vancouver is considering an expansion of their CNG program; however this is coming under criticism due to the capital cost.

Another consideration is the availability of CNG buses in Canada. Currently there are only two companies that manufacture heavy-duty CNG transit buses for the Canadian market. One company has been producing CNG buses since 1994, while the other began producing CNG buses last year. Past experience has shown that purchasing vehicles that are a new design or part of an initial production run can carry additional risks and challenges. In order to ensure competitive bidding, the best situation is to have more than one manufacturer with a proven track record and experience with a particular technology.

Staff will continue to follow the results of the above mentioned pilot projects in Calgary and Edmonton and continue discussions with others in the industry with respect to the evolving CNG propulsion technology.

Capacity for Change

Changing to a new fuel source such as CNG is a significant undertaking for a public transit provider. Metro Transit currently has two significant external projects underway, the Moving Forward Together Plan and the Metro Transit Technology Program. As these two projects are both making major changes to all sections of Metro Transit, it would be a poor time from an organizational capacity perspective to introduce a third major change at the same time.

In additional to organizational capacity, Metro Transit does not currently have any budget allocated to the investigation or implementation of CNG.

External Funding

Members of QUEST had previously indicated that there may be funding from the Provincial Government forthcoming in support of a conversion to CNG. At this time, staff have no indication from the Province that such funding is forthcoming.

Next Steps

The original study was not intended to be at a sufficient level of detail to make a decision to proceed with a conversion to CNG. More detailed analysis would be required before making any decision to proceed with a conversion to CNG. No budget is currently allocated for such analysis.

Metro Transit currently plans to undertake an expansion of the Burnside Transit Centre in fiscal years 2017-18 and 2018-19. This could be an appropriate time to review recent industry experience and undertake a more detailed analysis of building costs associated with the implementation of CNG.

FINANCIAL IMPLICATIONS

There are no financial implications of this information report.

COMMUNITY ENGAGEMENT

As directed by the Standing Committee, staff from Metro Transit and Strategic Transportation Planning met with Ray Ritcie (QUEST) on January 6, 2014 to discuss QUEST's perspectives on the subject.

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

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