

Source: Public Works

To: City Council

From: City Manager and Staff

Council Meeting Date:

Jun 17, 2013

Agenda Item No: REP 90-13

Re: Compressed Natural Gas and Bio-diesel Use in City of Columbia Operations

EXECUTIVE SUMMARY:

Staff has prepared for Council consideration a report concerning Compressed Natural Gas (CNG) and biodiesel use in City operations. Both are alternative fuels, and both can improve the environmental and economic impact of City operations. Although CNG and bio-diesel have unique advantages and operational impacts, it is the intent to have a diverse portfolio of energy sources to secure our place as an environmental leader, and to reduce the cost of City operations.

DISCUSSION:

CNG: Columbia has been working with Clean Energy to build a CNG station at 1900 Lake Ridgeway Drive, just off Vandiver Drive. The site was selected, approved by City Council in late 2012, and purchased for its proximity to a large natural gas main, and for easy access from major roadways (US 63 and Interstate 70). The zoning for the site is already appropriate for use as a CNG station and no further zoning or compliance issues are pending. At the same time, the City is pursuing a Federal TIGER grant that would pay for the station, along with 13 new CNG buses, new solar powered bus shelters, and four electric vehicle charging stations. Whether the contract, currently being reviewed by Legal, or the grant come to fruition, it is hoped that a CNG station can be constructed and in operation by the end of calender year 2013.

Bio-diesel: Columbia has been using bio-diesel, dependent on cost and availability, from a 2% blend (called B2) to as high as a 20% blend (called B20), since 2002. Approximately 300 City vehicles (trucks and equipment) have used over 550,000 gallons of bio-diesel each year.

Environmental Impacts: Emissions Compared to Conventional Diesel Fuel

<u>Pollutants</u>	CNG	Bio-Diesel (B20)	
NOx	- 87%	+2.0%	
Partculate Matter	-95%	-10.1%	
Carbon Monoxide	-6%	-11.0%	
CO2	-23%	No Change	

^{*}Data derived from various internet sources

EconomicConsiderations:

Converting to CNG requires a considerable investment in infrastructure and increased procurement cost for vehicles. The new station will cost between \$1.5M to \$2.8M depending on the contract, and the TIGER grant. New CNG vehicles will cost an additional \$10,000 to \$40,000 each compared to diesel powered vehicles; however, the very low cost for a gallon equivalent of CNG offers the opportunity for a quick return on investment. It is projected that Columbia's cost per CNG gallon equivalent will be in the range of \$2.00 - \$2.40 per gallon. As a result, the additional vehicle cost will be recouped within four to five years. The average life of a bus or a refuse truck is 10 - 15 years, so considerable savings can be realized. Additionally, nationally reported maintenance costs on CNG vehicles show approximately 40% less than diesel powered vehicles. Projections for the cost of natural gas show a flat, or negligible, increase in the foreseeable future.

Using bio-diesel requires no additional investment in infrastructure as our current fueling facilities and vehicles require no modification or upgrade as long as the percent of bio-fuel is at, or below, 20% (B20). However, there is an increased cost in using bio-diesel; the B2 currently in use is costing the City an additional \$.02 per gallon. Additionally, the cost of bio-fuel is very volatile and is subject to soy bean prices which are easily affected by weather, exports, and market fluctuations. The City's goal is to maintain the cost of diesel at or

below retail, and we are able to routinely do that at the B2 level. The City has used B20, but suspended it when the cost exceeded retail diesel cost. The cost of bio-diesel is also linked to the cost of diesel fuel itself, which is projected to continue to rise. Since we are currently using bio-diesel, and require no further investment to continue use, the TIGER grant application does not include any bio-diesel funding requests.

Other Considerations:

"Fracking", the practice of injecting water, sand and chemicals into the underground rock to free vast reserves of gas, is a concern often heard in conjunction with CNG discussions. There is considerable government, media, and even celebrity coverage on the pros and cons of fracking. Recently, the EPA and the Department of Interior have announced new regulations and monitoring of natural gas wells. Although the use of fracking to increase natural gas production is relatively new, this practice has been safely used for oil wells and even water wells for many years. Per a report from the Ground Water Protection Council, current data suggests that problems with fracking only occur in a very small percentage of wells; one recorded incident for every 2,833 wells drilled representing a failure rate of 0.03%. According to the report, greater than 80% of all incidents happened in the 1980's and 1990's. Additionally, the increased public attention will result in further regulatory and enforcement of best practices.

One of the few problems with using bio-diesel is its cold weather performance. Although diesel fuel alone will gel (freeze) at low temperatures, bio-fuel has even a higher gel temperature. The City has found that B20 will gel during our cold weather season, and can impact our snow removal and Transit operations.

As part of the budget process, 16 vehicles approved for procurement in FY13 have been identified as potential CNG vehicles. This \$2.22M procurement has been deferred pending award of the Clean Energy contract and grant. Additionally, 15 CNG vehicles, estimated to cost \$2.5M, have been identified for procurement in FY14.

FISCAL IMPACT:

The CNG station is estimated to cost between \$1.5M and \$2.8M depending on the final contract currently being reviewed by both the City and Clean Energy. The City has applied for a TIGER grant that, if awarded, would cover the cost of the CNG station, 13 new CNG buses, new solar powered bus shelters, and four electric vehicle charging stations. The City would be responsible for a 20% match, or approximately \$2M, that would initially be paid from the designated loan fund. The loan fund would then be reimbursed by Fleet division mark-up of CNG at approximately \$0.20 per gallon.

Regardless of which alternative fuel option is ultimately implemented, the City intends to begin purchasing CNG vehicles. For FY13, the incremental increase to the budget to add the 16 CNG vehicles is approximately \$217,000; and for FY14, the incremental increase to the budget for the 15 CNG vehicles is approximately \$385,000.

VISION IMPACT:

http://www.gocolumbiamo.com/Council/Meetings/visionimpact.php

City Services will be efficient, effective and expanded. Use available technology to increase and improve City services offered to the community.

SUGGESTED COUNCIL ACTIONS:

For information only.

FISCAL and VISION NOTES:							
City Fiscal Impact Enter all that apply		Program Impact		Mandates			
City's current net FY cost	\$0.00	New Program/ Agency?	Yes	Federal or State mandated?	No		
Amount of funds already appropriated	\$0.00	Duplicates/Expands an existing program?	No	Vision Implementation impact			
Amount of budget amendment needed	\$0.00	Fiscal Impact on any local political subdivision?	Yes	Enter all that apply: Refer to Web site			
Estimated 2 yea	ar net costs:	: Resources Required		Vision Impact?	Yes		
One Time	\$0.00	Requires add'I FTE Personnel?	No	Primary Vision, Strategy and/or Goal Item #	3.4		
Operating/ Ongoing	\$0.00	Requires add'I facilities?	Yes	Secondary Vision, Strategy and/or Goal Item #	3.4.1		
		Requires add'l capital equipment?	Yes	Fiscal year implementation Task #			