



Metro

Metropolitan Transportation Authority

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December 14, 2006

TO: BOARD OF DIRECTORS

THROUGH: ROGER SNOBLE
CHIEF EXECUTIVE OFFICER

FROM: CAROLYN FLOWERS
INTERIM CHIEF OPERATING OFFICER

SUBJECT: COMPARISON OF CNG AND DIESEL OPERATING COSTS

ISSUE

The Board requested staff to report back on the costs and benefits of operating compressed natural gas (CNG) buses versus diesel buses.

DISCUSSION

Over the last ten years, staff has run numerous comparisons of diesel and CNG engines. This research is focused on four different elements: capital acquisition, fuel, maintenance costs, and reliability. Please note Metro has not purchased any diesel buses since 1998, and that this analysis reflects Metro's experience with that generation of diesel engine technology.

CNG and diesel engine technologies have changed significantly since 1998 to meet tighter emission standards. However, the general findings and cost analysis discussed below are expected to be valid for the foreseeable future.

Capital Acquisition

In May 2000, the last time that Metro issued competitive solicitations for both CNG and diesel buses, the incremental cost for purchasing a CNG bus was \$46,000 or 15% more than an identical bus with a diesel powerplant. Metro does not have more recent pricing experience for diesel vehicles, but the cost of systems expects that CNG vehicles will still have a similar price premium primarily due to the higher cost for the CNG engine and fuel systems. Life expectancy for both CNG and diesel buses is 12 years and 500,000 miles. CNG buses also require extensive facility modifications and specialized fueling facilities, however as these facilities are fully built at Metro, these cost considerations were not included as part of this analysis.

Diesel vs. CNG Fuel Costs

The historic cost for diesel fuel operation had been averaging 15% less than CNG on a cost/mile basis. However, in fiscal 2006 diesel fuel prices increased and in the last few months have seen a reversal in this trend. At this time, CNG fuel costs \$0.46 per mile, while diesel fuel costs on average \$0.70 per mile. While CNG buses have historically experienced higher fuel costs than diesel buses, due to the substantial recent fuel cost increases for diesel, CNG fueled buses saved Metro approximately \$15 million (\$8,000 per CNG bus) last year in fuel costs.

Diesel vs. CNG Maintenance Costs

Historically, Metro's experience is that CNG bus maintenance costs are 15-20% higher than comparable diesel buses.

In terms of scheduled maintenance, Metro conducts a variety of scheduled maintenance activities every 6,600 miles. On an annual basis, a CNG bus is scheduled for 40 hours of additional scheduled maintenance than a comparable diesel bus, with the majority of this work maintaining CNG fuel and exhaust systems. In addition to the extra labor costs for CNG maintenance, it should be noted that there is generally a cost premium for CNG bus parts and components.

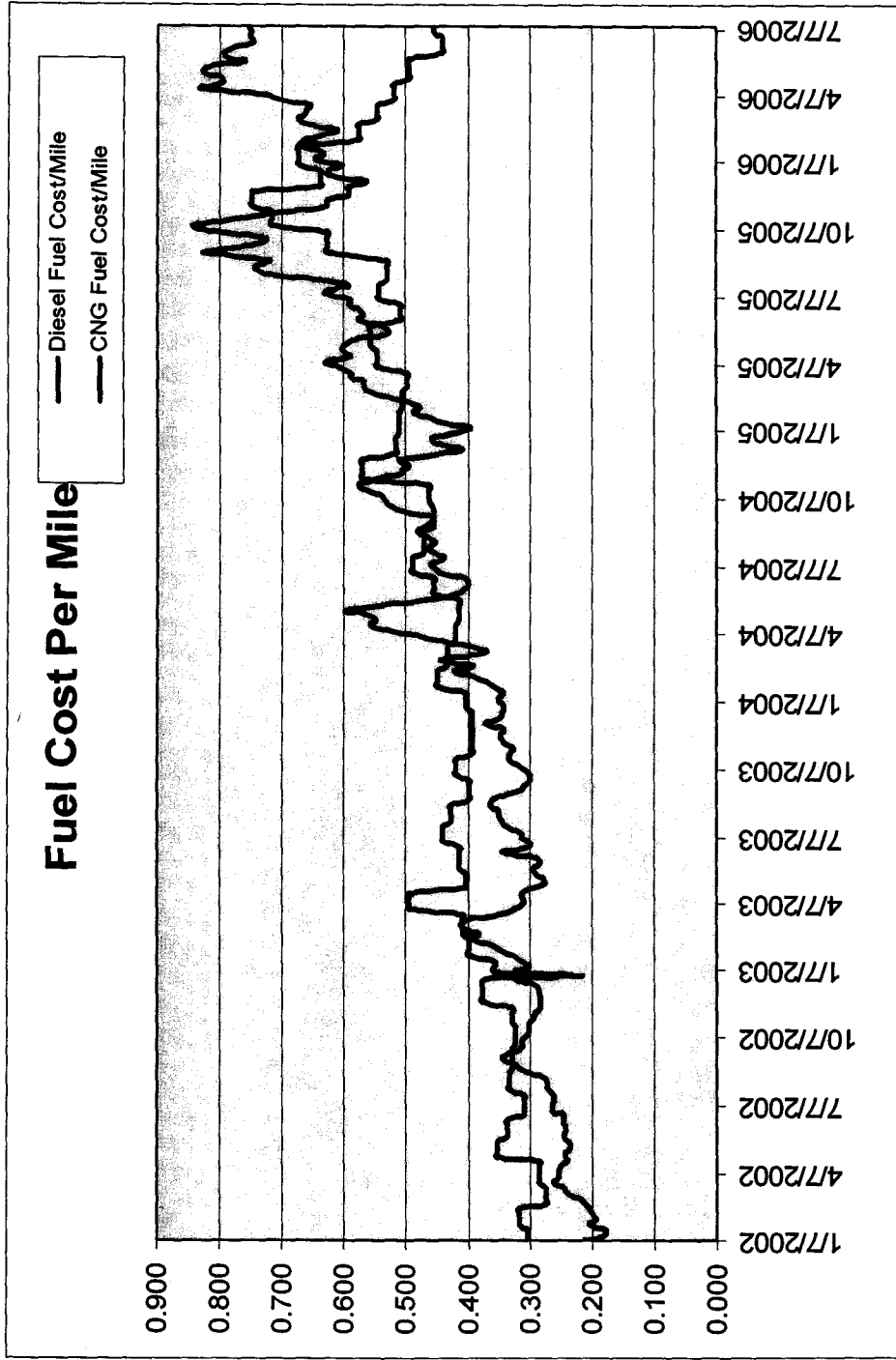
In terms of unscheduled maintenance, there is no major difference in the frequency of unscheduled repairs for CNG buses and diesel buses. However, in general, specialized CNG bus components (engine, fuel and exhaust system), tend to be low volume components, and generally are higher in cost than diesel components.

ATTACHMENTS

1. CNG vs. Diesel Fuel Cost Per Mile
2. CNG vs. Diesel Operating Costs

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ATTACHMENT 1
CNG vs. Diesel Fuel Cost Per Mile



ATTACHMENT 2

Operating Fuel Cost Per Year		CNG	DIESEL	Difference
Total Hub Miles(M3)		94,534,628	11,615,627	82,919,001
Fuel Economy (mpg)		2.66	3.28	-0.62
Fuel Cost (per mile, 12mo average)		\$ 0.46	\$ 0.70	\$ -0.24
Fuel Cost (per gallon, 12mo average)		\$ 1.22	\$ 2.30	\$ -1.08
Total Fuel (gallons)		35,594,652	3,542,346	32,052,306
Total Fuel Cost		\$ 43,425,475	\$ 8,147,396	\$ 35,278,080
Reliability		Average		
Mean Miles Between Road Calls (12mo average)		1545.21	1139.35	1487.24