

Update on Refuse Truck Purchase



Transportation and Environment Committee
December 10, 2007

Purpose

- Update Committee on status of refuse truck purchase
- Request committee support on December 12 agenda items
 - Rescind award of March 28
 - Award to next qualified low bidder

Background

- FY07 Equipment Purchase program
 - Included 14 refuse hauling trucks
 - Bids received Oct'06 and reviewed through Mar'07
- Considered both ***diesel*** and ***LNG**** trucks
 - TEC briefing on March 26
 - Reviewed multiple options in detail
 - LNG was the better deal, provided that:
 - grant funds came through, and
 - DART allowed use of fueling stations

* LNG: liquefied natural gas

Background, cont'd

- Council agenda March 28, 2007:
award to low bidder for LNG-powered trucks, as:
 - Truck purchase (*Condor*) for \$1.65M and
 - Truck body purchase (*Equipment Southwest*) \$1.05M
- Award amount: \$2.70M (Budget: \$2.47M)
- Delivery date: Sept 2007
- Began talks with DART for LNG fueling station use

Current Status

- Truck vendor fails to meet delivery – prepare to rescind award
- Pressures to move on:
 - SAN urgently needing to replace aging units
 - **Good service requires good equipment**
 - Trucks are 8-10 years old (7-year life)
 - Increasing down time and cost to operate
 - adverse effect on **reliability of garbage service**
 - Truck body vendor anxious to deliver bodies
 - 2008 equipment purchases on near horizon – with an additional 14 refuse trucks to bid

What's changed in a year?

- Cost of equipment
- Fueling
 - Ability to access to fueling stations
- Technology advancements
- Environmental benefits

Cost of Equipment

- Bidders for both LNG and Diesel trucks are **willing to hold pricing** – only until Dec 21
- Diesel truck bid unchanged from previous review; will deliver '08 units at '07 bid
- LNG units \$119,704 more than low bid, if:
 - General Land Office grant: est. \$16,600 per unit for LNG trucks (14 units x \$16.6k = \$232,400)

	<u>Condor (LNG)</u>	<u>Autocar (LNG)</u>	<u>Rush (Diesel)</u>
truck bid	\$117,811	\$132,647	\$102,507
qty	x 14	x 14	x 14
total:	\$1,649,354	\$1,857,058	\$1,435,098
Grant funds:	\$144,400	\$232,400	\$0
Adj Totals:	\$1,504,954	\$1,624,658	\$1,435,098

Fueling

- Previous award decision assumed use of DART's LNG stations
- DART now plans to close stations and move on to clean diesel
 - Northwest station to close in 2010
 - South Central station to close in 2012
 - Interlocal agreement can address only a fraction of vehicle life

Fueling, cont'd

- DART constraints on fueling hours
 - Fueling for Dallas is OK between noon and 4 pm
 - Interferes with SAN operations
 - Interruption of garbage route to divert driver for fueling at mid-day
 - Increases cost of operations with additional routes or daily overtime
 - May impact reliability of service to customer
- This option can serve only as contingency measure

Fueling, cont'd

- LNG - a second fueling choice

- **Lease tank from fuel vendor**

- Workable solution at \$1.78/gallon equivalent
 - Other costs (beyond fuel)
 - site set-up and annual maint. \$ 280,000
 - certified fuel technician(s) \$ 267,250
 - leasing of 2 tanks \$ 546,000
 - **TOTAL: \$ 1,093,250**
 - Switch to dissimilar fueling method
 - DART's experience: positive value of fuel cost savings (vs. diesel) may be countered by the "learning curve" costs

Fueling, cont'd

■ Diesel

- Fuel cost estimated at \$3.30/gallon
(average fuel cost for 7-year life of truck)
- City infrastructure in place
- Multiple stations across city
- Stations open during all operational hours
- Conducive to good operational efficiency

Technology Advancements

- All engine manufacturers aiming towards 2010 emission standards
- LNG units already meet 2010 standards
- Diesel in process of catching up
 - Variety of hybrids, SCRs, and H-fuels in development
 - In just past year, hybrid “hydraulic launch assist” (HLA) now available in road test stage
 - HLA shows:
 - 30% fuel reduction usage
 - 30-40% emission reduction
 - Substantial reduction in brake use and maintenance
- *Diesel bid includes 4 HLA units at no cost increase*

Environmental Benefits

	1999 Diesel	2007 Diesel*	LNG
Horsepower rating	345	345	320
Nitrogen Oxides (NOx) (per hp/hour)	3.1g	1.2g	0.2g
Particulate Matter (PM) (per hp/hour)	—	0.20g	0.01
Total NOx, per day, each truck	0.0050 tons	0.0015–0.0020 tons	0.0004 tons
Total PM, per day, each truck	—	0.0003-0.0004 tons	0.00002 tons

* Assumes 4 trucks with **hydraulic launch assist** units; estimated (by manufacturer) at 30% reduction in fuel and related emissions.

Specification for equipment purchase called for 300 HP min.

Environmental Benefits

Emission Reductions Possible with Increased Quantity of Truck Replacement				
	1999 Diesel	2007 Diesel	LNG	Emission Reduction (annual)
Emissions of 14 trucks (tons per year)	23.1		1.54	21.56
	23.1	8.82		14.28
Emissions of 18 trucks (tons per year)	29.7	11.58		18.12

} 3.84 tons/year
reduction

With difference in the cost for diesel trucks (versus LNG), 4 more older diesel trucks can be removed from service and replaced with newer, lower-emission diesels

Decision Chart

	Diesel*	LNG
Cost of Equipment (for all 14 trucks)	<ul style="list-style-type: none"> ■ \$1,435,098 truck bid ■ \$2,480,098 – cost with truck bodies ■ May save 5-7% on FY08 trucks at FY07 prices 	<ul style="list-style-type: none"> ■ \$1,624,658 truck bid ■ \$2,670,458 – cost with truck bodies ■ GLO grant of \$16.6k per truck incl. ■ Could increase to \$30k
Fueling Includes forecast fuel costs for the 6.5-year truck life	<ul style="list-style-type: none"> ■ City owns infrastructure ■ Multiple stations; all-hours available for use ■ \$3.30/gal ■ \$1,595,850 	<ul style="list-style-type: none"> ■ Leased fueling tank(s): ■ \$1.78/gal equivalent <li style="padding-left: 20px;">\$ 971,880 fuel <li style="padding-left: 20px;"><u>\$ 1,093,250</u> tanks, site prep, tech \$2,065,130 TOTAL:
Environmental Benefits (for each truck)	<ul style="list-style-type: none"> ■ NOx: 0.0020 tons per day ■ PM: 0.0004 tons per day 	<ul style="list-style-type: none"> ■ NOx: 0.0004 tons per day ■ PM: 0.00002 tons per day
Financial Summary {figures in brackets are as briefed Mar 2007}	\$4,075,948 { \$3,867,654 }	\$4,735,588 { \$3,747,974 w/DART } { \$4,453,474 leased tanks }

* Assumes 4 of the 14 diesel trucks as hybrids (using hydraulic assist units)

Recommendations

- Purchase 14 diesel refuse vehicles
 - Cost savings of \$659,640 (over life of vehicles)
 - Can purchase 4 additional trucks on same authorization
 - adds more new trucks to replace older diesel units
 - decreases emissions for 4 older diesels by one year (3.84 tons in emission savings)
 - Fueling sites readily available - good for reliable operations
 - Uses existing technology, while open to advances
 - Maintains uniformity of fleet, rather than shifting for short term period
- Continue to explore low emission vehicle options

Action Requested

- Support for council agenda item of Dec 12:
Purchase of 18 diesel refuse trucks