

# Update on Refuse Truck Purchase



Transportation and Environment Committee  
December 10, 2007

# Purpose

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- 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

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- 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

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- 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

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- 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?

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- 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
<b>total:</b>	<b>\$1,649,354</b>	<b>\$1,857,058</b>	<b>\$1,435,098</b>
Grant funds:	\$144,400	\$232,400	\$0
<b>Adj Totals:</b>	<b>\$1,504,954</b>	<b>\$1,624,658</b>	<b>\$1,435,098</b>

# Fueling

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- 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

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- 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

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- 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

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## ■ 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

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- 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
<b>Total NOx, per day, each truck</b>	0.0050 tons	<b>0.0015–0.0020 tons</b>	<b>0.0004 tons</b>
<b>Total PM, per day, each truck</b>	—	<b>0.0003-0.0004 tons</b>	<b>0.00002 tons</b>

\* 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 <b>14</b> trucks (tons per year)	23.1		1.54	21.56
	23.1	8.82		14.28
Emissions of <b>18</b> 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

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

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

# Recommendations

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- 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

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