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Two generations of CNG buses traverse Patasouras Plaza in this photo.

PHOTO: DENIZ DURMUS

Metro Marks 11th Anniversary of Alternative Fuels Policy

- Agency converting Metro Bus fleet to CNG

In this report:

By DAVE SOTERO

(Dec, 15, 2004) This year marks the 11th anniversary of a major policy decision by Metro to buy only alternative fuel buses.

That's why, today, the great majority of transit riders no longer smell diesel fumes or inhale diesel soot when boarding or alighting from Metro Buses.

Since 1993, Metro has phased in the purchase of alternative fuel vehicles (AFVs) and phased out the use of diesel buses, a move counter to most procurement and deployment practices in the transit industry.

Metro now operates the largest compressed natural gas bus fleet in the country, with 1,970 buses – about 80 percent of its entire fleet – running on CNG. In 11 years, Metro's AFV buses have logged more than 450 million operating miles, an industry record.

Metro's Clean Air Numbers

- 1,970 Metro Buses powered by CNG
- 450 million miles on alternative fuels since 1993

- 6,400 tons of nitrogen oxide (NOx) prevented
- 50 tons of particulate matter (PM) prevented
- 55% fewer NOx with CNG than diesel
- 96% less PM with CNG than diesel

Reduction in NOx and PM

Metro estimates that it has reduced approximately 6,400 tons of nitrogen oxide (NOx) and 50 tons of particulate matter (PM) since it began using CNG buses in its fleet.

For NOx, that is equivalent to removing 104,500 cars from the road on a yearly basis. For PM, it is the equivalent of removing 32,300 cars yearly.

By not operating diesel, Metro projects that it has reduced potential emissions by about 1,000 tons for NOx and seven tons for PM per year.

Metro's experience with CNG buses has been positive.

While maintenance costs are typically 15-20 percent higher than diesel buses due to higher parts costs and increased maintenance requirements, Metro expects this price differential to decrease as diesel engines and exhaust systems are reconfigured to meet increasingly stringent California Air Resource Board emission reduction rules.

Metro's Commitment to Alternative Fuels Drove Bus Innovations

Metro's long-standing commitment to alternative fuel vehicles (AFV) has helped drive innovations in bus technology.

New CNG buses such as the light-weight, all-composite 'CompoBus' and advanced design, 60-foot articulated Metro Liner transit bus are outgrowths of the agency's advanced technology bus programs, and will be complementing Metro's CNG fleet in large numbers beginning next year.

"Metro's 1993 decision to only buy AVFs was a significant paradigm shift for this agency," says Deputy CEO John Catoe. "It was a bold move, one that required a long-term commitment to meeting the operational demands of CNG. We now see on a day-to-day basis the fuel's advantages in reducing emissions."

What led to Metro's decision to switch to AFVs?

In 1993, Metro was considering the purchase of 245 diesel buses as part of a 300-vehicle procurement. With the

CNG Engines Produce Fewer Emissions than Diesel Engines

(Dec. 15, 2004) A comparison of nitrogen oxide (Nox) and particulate matter (PM) emissions between Metro's workhorse diesel engine and the most common CNG engine in the agency's fleet reveals that CNG produces 55 percent fewer NOx emissions and 96 percent fewer PM emissions.

"Because Metro still operates a small fleet of diesel buses, it can compare specific emissions profiles from both fuels," said John Drayton, vehicle acquisition manager. "These profiles reveal that CNG provides specific reductions in nitrogen oxide and particulate matter, which helps keep our air clean."

According to the South Coast Air Quality Management District (SCAQMD), diesel vehicles contribute 23 percent of all NOx emissions, a key ingredient in particulate pollution.

Heavy-duty diesel vehicles such as transit buses and other diesel equipment are reported to be responsible for 70 percent of the total cancer risk from air

feedback of environmental organizations such as South Coast Air Quality Management District and others, Metro developed an alternate procurement plan calling for the purchase of AFV-only buses.

Alternative fuels only

The new plan also required that all future bus purchases would be alternative fuel vehicles only.

The SCRTD had already been experimenting with methanol buses starting in 1989. By 1993, Metro owned the country's largest methanol bus fleet, with 333 methanol-powered buses in revenue service.

Ultimately, these buses proved mechanically unreliable for the rigors of daily transit operations, and had to be repowered with diesel engines.

Metro then set its sights on CNG, and within the 10-year period between 1994 and 2004, took delivery of 1,970 CNG buses from three different bus manufacturers: Neoplan, Newflyer and North American Bus Industries.

With the addition of new CompoBuses and Metro Liner CNG buses next spring, Metro's CNG fleet will pass the 2,000 mark. By 2006, the agency plans to have nearly 100 percent of its fleet running on CNG.

--Dave Sotero

pollution in Southern California.

Metro's alternative fuel vehicle (AFV) policy has proven a catalyst for new air quality regulatory policies in the state.

Demonstrated the rule

In 2000, SCAQMD adopted Fleet Rule 1192 requiring selected public fleets in Southern California to begin phasing in low-emission transit buses. Metro's existing fleet of CNG buses was a significant, positive factor in demonstrating the feasibility of the rule.

Metro's proactive AFV policy has also garnered industry kudos.

The agency received WestStart-CALSTART's 2001-2002 Blue Sky Award for successfully integrating CNG with its countywide Metro Rapid Bus system.

In 1994, Metro received SCAQMD's Clean Air Award for its work in transportation and promotion of clean fuels.

Metro continues to be a leader in the area of clean fuel vehicle technology, evaluating hybrid electric technologies and fuel cells that can improve operating efficiency, reliability and lower emissions.

-- **Dave Sotero**