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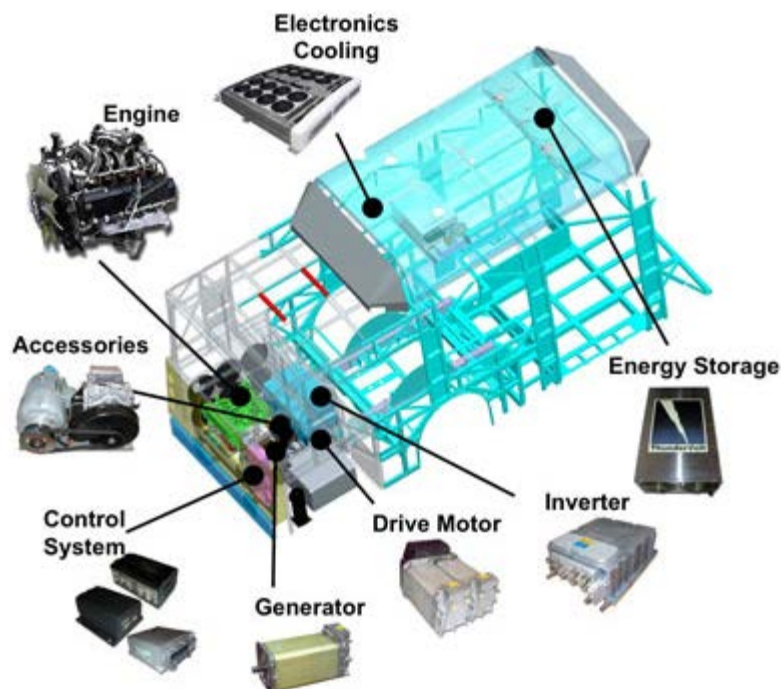
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Metro's 45-foot hybrid buses, to be built by NABI, will use a gasoline-powered engine to generate electricity for the electric motors that drive the bus. A regenerative braking system captures the energy during braking and returns it to the vehicle's energy storage system placed on the roof.

*Illustration courtesy of ISE Corporation.*



## Purchase of Hybrid Buses Continues Metro's History of Innovation

- Vehicles expected to replace oldest diesel buses

By NED RACINE

(Oct. 19, 2007) When the Board approved the purchase of up to 260 new 45-foot, high-capacity composite buses at its September 20 meeting, it added to Metro's long history of bus innovation.

That's because part of the order includes 25 gasoline-powered hybrid vehicles to be purchased in FY 2009 and 25 more in FY 2010. These would be Metro's first hybrid buses in regular service.

Those 50 vehicles – powered by unleaded gasoline, considered an alternative fuel by the State of California – are expected to replace some of Metro's oldest diesel buses assigned to Venice Division 6. Although the division cannot fuel CNG buses, it could fill the unleaded-gasoline-powered hybrid

### Electric Trolleys, Steam Buses – LA had 'em First

Metro and its predecessor agencies have always sought new bus solutions in addressing Los Angeles County's transit needs.

In 1910, the Laurel Canyon Utilities Company put into service a hand-built, electrically powered trolley coach. The electric trolley, built in Los Angeles, was the nation's first.

In 1929, The Los Angeles Motor Coach Company introduced what was then an unusual coach design. Its engine was in the rear.

vehicles.

To prepare for the hybrids, Metro is purchasing six, 42-foot hybrid buses and will operate these buses in three service sectors. North American Bus Industries (NABI) will build the vehicles; the hybrids Metro will purchase later.

More recently, the California Steam Bus experiment resulted in the first modern steam buses in the nation, carrying passengers along Metro's routes beginning in 1974.

Unfortunately, the steam bus used more energy than diesel buses.

Hybrid buses already move passengers in several major cities: Chicago, New York, Seattle, and Long Beach.

The engine of a Metro hybrid bus will generate electricity for the electric motors that power the bus. A regenerative braking system captures the energy during braking and returns it to the vehicle's energy storage system.

**Advantages of hybrids**

One advantage the hybrids bring to Metro is how cleanly they run. Over a one-hour period, the gasoline-powered hybrid are designed to run cleaner than Metro's present CNG bus, estimates Mike Bottone, director of Equipment and Vehicle Acquisition, who has worked 33 years at Metro.

After speaking with other transit agencies, Bottone expects higher gas mileage as well. "Omnitrans out in San Bernardino was realizing about 4.5 miles per gallon, which is pretty good for a 40-foot vehicle."

A typical Metro CNG bus averages 2.1 miles per gallon. "Long Beach is doing it in a diesel format, and they see an increase in their diesel economy," Bottone said. Another benefit of hybrid buses is that they are quieter than CNG or diesel-powered buses.

Initial plans would deploy two test hybrids to the San Fernando Valley, two to the Westside and two to the downtown Los Angeles area. Bottone sees the hybrids as ideal for local routes in downtown areas.

"You're constantly stepping on the brakes—stop and go—it's constantly keeping your energy storage system charged," said Bottone. "So it's really best suited for stop and go driving."