

# Mixing Yellow and Green

*School buses make ideal electric vehicles, but cost is a hurdle*

December 2011

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The Wall Street Journal

As long as Americans enjoy driving far, fast and carefree, electric cars may never be the perfect answer to our green transportation needs.

Electric school buses, on the other hand, may well be.

Earlier this year, a company called Trans Tech Bus announced that it would start making an electric school bus in partnership with Smith Electric Vehicles. The eTrans bus is one of a new generation of zero-emission electric and hybrid-electric models that are slowly making their way to school districts around the country.

## FREQUENT STOPS

It's hard to imagine the bulky, boxy school bus being at the forefront of clean-energy and fuel-saving technology. Most buses run on diesel fuel, get gas mileage in the single digits and have the aerodynamic profile of, well, a school bus.



With their predictable routes, frequent stops and long downtime, school buses make ideal electric vehicles

But the fact is, school buses are almost ideally suited to be electric vehicles. For one thing, they cover fairly short distances on their daily runs, rarely leaving city limits on the way to and from school. And they follow set, predictable routes. That reduces the chances of a bus accidentally running out of battery power before it finishes its route and returns to the lot.

Second, school buses make frequent stops. While that's bad for fuel efficiency on a conventional gasoline or diesel vehicle, electric vehicles can capture some of the energy used in applying the brakes to recharge their batteries, extending their range.

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One big plus: School buses are off the streets sitting in a depot for much of the day, giving them plenty of time to recharge their batteries.

"They have fixed routes and downtime in the day," says Bryan Hansel, CEO of Smith Electric Vehicles, which makes the electric motors, batteries and underbody for the eTrans bus. "It really does allow you to maximize the use of that battery and make the money work."

### **'A REAL PINCH POINT'**

But money remains an obstacle. While electric buses could save budget-conscious school districts on fuel costs over the long term, the upfront costs are high.

A hybrid, gas-electric bus costs about 60% more than a diesel model, says David Hillman, a marketing manager for Navistar International, which makes school buses under the IC Bus brand.

Navistar was the first bus maker in the U.S. to come out with a hybrid model and has sold about 200 hybrids and plug-in hybrid-electric buses since 2007. The hybrids improve fuel economy by 30%, and the plug-ins can improve it by up to 65%, he says. But because of the price, most districts can't afford to buy more than one or two.

"The performance so far has been very good," Mr. Hillman says. "We've got some customers that are thrilled with them and wish they had more funding to put them in the fleet. The problem is school districts are hurting, so funding has become a real pinch point."

Trans Tech hasn't released the pricing of its new electric school buses, but Smith's other electric vehicles typically sell at a \$30,000 or larger premium over the diesel version of the same vehicle. Dan Daniels, president of Trans Tech, says he plans to price the eTrans so that districts could expect to recover the added cost through fuel savings over three to five years.

Some districts are ready to take the gamble. The first eTrans electric bus from Trans Tech will go to King's Canyon School Unified District near Fresno, Calif. The 10,000-student district has long been a leader in purchasing low-emission buses, partly because the air quality in the area is poor, says John Clements, the director of transportation at the school district.

"We are looking at it as an opportunity to bring in new technology" that reduces air pollution, Mr. Clements says. "We have some of the worst air quality in the nation."

The King's Canyon district will be paying a total of \$35,000 for the bus after receiving grants that will cover much of the cost. "We hope to get a second electric and share an electric bus with neighboring school districts," Mr. Clements says.

The average school bus gets about 5 to 6 miles per gallon and travels around 14,000 miles each year in Mr. Clements's district. An electric bus would save his district about 16 gallons of fuel a day, or \$50 to \$60 worth of diesel, he says. Recharging the battery on the electric bus would cost about \$17.