

Electric Buses Are Not Only Clean but Less Costly to Run

Skip Descant | December 4, 2018



Sixteen of the roughly 130 school buses operated by the Twin Rivers Unified School District in Sacramento County, Calif., are powered by electricity. That number is set to more than double in the next year or two as the district explores additional clean energy funding sources to transition more of the fleet to electric power.

The school district wants to switch to electric power for two reasons. “No. 1, clean up the air for kids; and No. 2, get school buses that would actually be able to run, because they are breaking down all the time,” said Timothy Shannon, director of transportation for the Twin Rivers school district.

The move by Twin Rivers follows that of a number of school districts and transit agencies as they slowly phase out diesel, gasoline or natural gas buses for electric versions. The reasons are varied, but often center on reduced — or indeed eliminated — emissions, and lower operational costs.

Half of the electric buses in Sacramento have been in operation for just over a year, while the other eight were launched at the beginning of this school year. The district has reduced fuel costs by approximately 80 percent for these vehicles, compared to diesel or compressed natural gas-powered buses, said Shannon. As a point of reference, the

electric buses cost about 19 cents per mile to operate, compared to the district's diesel buses, which cost 82 cents a mile, according to Shannon.

California school districts have more than 150 electric school buses on the road, according to the recent report [Paying for Electric Buses](#) by the U.S. PIRG Education Fund. School districts in New York, Massachusetts and Minnesota also operate electric buses. Similarly, transit agencies are finding value in electric buses. In 2017, some 568 electric transit buses were in operation across the United States, according to the report.

Upfront costs for electric buses are also high. An electric transit bus generally costs about \$200,000 more than a diesel bus, while an electric school bus is about \$120,000 more expensive than a diesel version. The added costs can be offset by fuel and maintenance savings over the course of the bus' life cycle, which tends to be about 12 to 16 years, said Matthew Casale, director of the 21st Century Transportation Campaign at U.S. PIRG and one of the authors of the report.

"Diesel-powered buses often need a mid-life overhaul, which an electric bus should not need," Casale added. "It is possible that an electric bus would need a battery replacement at some point during its lifetime, but as far as I have seen, that hasn't had to happen yet."

But the primary reason school districts and transit agencies are switching to electric vehicles is emissions-related. "Many transit agencies are concerned with the environmental impact and sustainability of their service," said Casale. "Most school districts are primarily concerned with their students' exposure to diesel fumes and the negative health effects associated with that exposure."

The report found that some 60 percent of transit buses and 95 percent of school buses are powered by diesel today. There are 480,000 yellow school buses on the road, according to the American School Bus Council. The country has another 65,000 public transit buses, according to Statista.com.

"I'd say the reduced operational costs are a secondary driver, though an important one that can help convince bus operators to actually go ahead and make the switch," he added.

Purchasing electric buses is just one expense. Agencies also need charging infrastructure. In many cases, electric utilities and other organizations are offering grants or other incentives to lessen this hurdle.

The Twin Rivers school district received approximately \$92,000 in funding from the Sacramento Municipal Utility District (SMUD) to fund its charging infrastructure, said Shannon. Also, the district was able to negotiate a rate of 10 cents per kilowatt-hour to charge the buses because they are charged in the middle of the night when demand is lowest. (Residential SMUD customers pay about 14 cents per kilowatt-hour.)

Public transit agencies like Dallas Area Rapid Transit (DART) are also exploring electric buses. DART recently launched seven battery-powered electric transit buses, paid

for in part by general obligation bonds and a grant from the Federal Transportation Administration. The buses, manufactured by Proterra, are projected to save the agency \$2.1 million in fuel costs over the course of the life cycle of the buses.

“Electric buses are significantly more expensive on the front end than traditional CNG or diesel buses,” remarked Morgan Lyons, vice president of external relations at DART. “We believe we will generate enough operational savings over the life of the vehicles to perhaps reduce the price difference.

“One of the things we want to learn with this pilot is the service life of the vehicles. There’s simply not that much industry experience with them,” he added, while agreeing with the conventional wisdom that an electric transit vehicle is expected to last about 12 years.

The transportation sector, which includes personal cars, buses and freight vehicles, makes up 40 percent of greenhouse gas emissions in the United States, according to the report. Even though the adoption of EVs among owners of personal cars [is growing](#), they add up to about 1.5 percent of all cars on the road. However, increasing the number of EVs in public and private fleets as well as [heavy-duty vehicles](#) could have an outsized impact on reducing planet-warming emissions.

“Public organizations often have to be a role model and show the way to others,” said Patrick Gervais, a spokesman for Lion Electric Co., a maker of electric school buses based in Canada. The company recently opened an “Experience Center” in Sacramento to showcase electric buses.

“The acquisition price can be scary for private operators but in the long run they will save a lot more,” Gervais added.

The move by the Twin Rivers school district in Sacramento is catching the attention of other school transportation officials interested in considering a switch to electric buses.

“My phone and email ring off the hook, from all over the country,” said Shannon. “I talk directly to the school districts in New York City. I’ve talked to Duke Energy in North Carolina. I’ve talked to people in Wyoming and Southern California.”

<http://www.govtech.com/workforce/Electric-Buses-Are-Not-Only-Clean-but-Less-Costly-to-Run.html>