

Student Transporters Determine Affordability of Electric School Buses

By **Kari Lydersen** September 15, 2021



Stock photo of a CE Electric 2 IC Bus.

Grants and incentives are bridging the upfront costs of electric school buses. Transportation directors shared their perspectives and how EVs can be an affordable clean energy option for districts. Read more in the October issue of *School Transportation News*.

A Positive Equation in Michigan

Dave Meeuwsen, transportation director of Zeeland Public Schools and executive director of the Michigan Association for Pupil Transportation, started doing the math years ago regarding the return on investment of electric buses. And the outlook has only gotten better since.

He became interested in electric buses more than a decade ago after buying cleaner-burning propane buses and attending a webinar hosted by the Environmental Law & Policy Center about electric buses. He helped develop a working group of Michigan districts interested in electric buses, and today five Michigan districts have a total of 17 electric buses: 11 LionC buses and six additional Thomas Built buses. The buses arrived in late 2019 and hit the roads that winter. While student routes halted during the pandemic, the buses were used to deliver 8,000 meals a week to students.

"I like to try new stuff, I like to be proactive instead of reactive," said Meeuwsen, who will soon retire but added that he hopes his successor continues to prioritize electric buses. "Our district is green, our buildings are built to get the most of natural light...we have blueberries growing on the roof."

Zeeland's four buses cost \$340,000 each, Meeuwsen said, but after grants from the Volkswagen settlement, the district paid between \$105,000 and \$110,000 per bus, similar to the cost of a conventional bus.

He noted that the Lion buses cost more but have more durable chassis that will not rust as quickly in Michigan's harsh winters, especially as Zeeland serves an area about 12 miles inland from Lake Michigan. The electric buses also cost about 17 cents a mile to fuel versus 40 cents a mile for diesel buses, and the savings on maintenance is significant.

"Diesel has 270 moving parts in the motor, there are only about 30 moving parts in the electric motor," Meeuwsen added. "Twice a year, you change oil in the diesel buses. That's two oil filters, 24 quarts of oil. Guess what? We don't do that in an electric bus, ever."

While electric buses still need brake maintenance and replacement, he said drivers of the Lion buses have learned how to bolster the bus's charge with its regenerative braking.

"They have a contest with each other now to see who has the most charge left when they get back," he said. "It's pretty cool some of the things the drivers have done."

The districts awarded the electric buses spent little or nothing on charging infrastructure, as the Volkswagen funding covered 70 percent of it. Plus, utilities including DTE and Consumers Power picked up a majority of the remaining cost. Zeeland received a \$25,000 grant for charging from the city public works board.

Meeuwsen acknowledged that without grants, it would currently be hard to buy an electric bus; the return on investment might be too long. But he expects that to change over time.

"In the future, you're seeing great big strides in technology, bigger batteries, longer-lasting," he said. "Electric is where people want to invest."

Taking the Lead in Indiana

The Monroe County Community School Corporation that serves the area around Bloomington, Indiana, has the most electric buses in the state, with three Thomas/Proterra Jouley buses purchased since last December. Already the district is well on its way to reaching full return on investment, Transportation Director Nathan Oliver explained.

That's because his department was able to leverage two rounds of Volkswagen Mitigation Trust Fund, with \$315,000 in the first round to help buy a \$437,000 bus and about \$500,000 in the second round to buy two more buses that cost about \$419,000 each.

"So, we paid just a little more than we would have for a normal diesel bus, but not bad," Oliver said.

The first bus ran 46 days straight, going 1,928 miles. "We saved 275 gallons of diesel fuel in 46 days, and avoided 6.5 tons of carbon dioxide," Oliver reported. "And that's just the first one."

It has cost \$2.38 in electricity each day per bus, compared to \$17 to \$18 a day for the diesel buses, he said. The district bought a 25kw charger for the maintenance shop that cost about \$16,000 and two 60kw Proterra chargers for the parking lot, with control cabinets and four dispensers to handle eight buses, Oliver explained. Those cost \$82,000 to purchase and \$46,000 to install, which the district did without any grants or support.

Oliver noted that the buses are "loaded with every option — lap/shoulder seatbelts, six cameras inside, total view, crash mitigation, anti-roll, they even have the auto-reversing door — we were the first school in Midwest to get that," he said.

Oliver made it a point to paint EV1, EV2, EV3 on the buses so parents and residents know they are electric buses, and he said the community has responded enthusiastically.

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The district is currently looking at purchasing five more electric buses, and Oliver hopes for 10 after that, which would bring their fleet to 18 — with numbers up to EV18 painted on the side. He said the district is in talks with the local energy cooperative, hoping for funding of about \$100,000 to \$200,000 per bus. It's less than from the VW settlement funding, so he noted the district is also looking at other options.

Oliver said his drivers love the buses, and they've noticed an unexpected benefit: the centralized weight means they handle better than diesel buses on snow and ice.

He recalled one driver enthusing about how students have reacted to her electric bus. "They aren't yelling over the diesel engine and rogue noise, it's so quiet it's unreal," he relayed. "I even

have video of our high school students telling other students, 'Don't trash the bus, we have the nicest bus in the fleet.'"



Editor's note: Nathan Oliver speaks about the Monroe County School Corporation experience with electric school buses on Oct. 1 during the [STN EXPO Indianapolis](#).

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