

DEUSA Fleet Success Stories: Mount Desert Island School System



Location: Mount Desert Island, Maine

Fleet type: Medium-duty electric vehicles



Narrative: The Mount Desert Island Regional School System (MDIRSS) is made up of nine schools across Mount Desert Island, Maine, including eight K-8 schools and one high school. In recent years, the district has demonstrated a strong commitment to environmental sustainability through a range of initiatives aimed at reducing greenhouse gas emissions, transitioning to clean energy, electrifying transportation, and fostering environmental stewardship among students and staff. A key component of these efforts has been the establishment of the MDI High School EcoTeam in 2017. The EcoTeam has led numerous sustainability initiatives, including zero-waste programs, educational outreach, fundraising for environmental projects, and collaboration with higher education institutions and community organizations. Among its most significant accomplishments was supporting the transition of MDI High School to operate on 100% solar-generated electricity, resulting in an estimated reduction of approximately 810,000 pounds of carbon dioxide emissions annually. Building on this commitment to clean energy, the district has also begun electrifying its transportation fleet through the adoption of electric school buses. MDIRSS currently operates three electric school buses, including Maine’s first electric school bus deployed at Pemetic Elementary School. Together, these initiatives have positioned the district as a leader in school sustainability and have served as a model for other schools and organizations throughout the region.



Additionally, the district has institutionalized its commitment to climate action through formal policy adoption. At its October 20, 2025 meeting, the MDIRSS Board approved the “AOS 91 Won’t Wait” Resolution, establishing ambitious long-term sustainability goals. The resolution commits the district to achieving carbon neutrality by 2030, eliminating fossil fuel use by 2045, and becoming carbon negative by 2050.



The first electric school bus in Maine parked at Mount Desert Island High School.
(Photo courtesy of [Sarah Madronal/TNC](#))

In addition, MDIRSS has partnered with [A Climate to Thrive](#), a MDI-based sustainability non-profit, to advance district-wide energy planning and emissions reduction efforts. Through this partnership, the district has pursued energy planning initiatives, funding opportunities, and sustainability projects that complement its transition to electric school transportation. These efforts have helped create a framework for reducing greenhouse gas emissions across district operations, and reinforced the district's commitment to clean energy. The partnership has also expanded opportunities for student engagement and environmental education, helping connect the district's electric school bus program to broader climate and sustainability initiatives throughout the school system.

Nearly half of Maine's greenhouse gas emissions are a result of transportation, making it the state's largest emissions sector. Medium- and heavy-duty vehicles contribute 27% of transportation emissions and approximately 10% of statewide emissions across all sectors. In addition to the prioritization of reducing transportation emissions in the State's Climate Action Plan, [Maine Won't Wait](#), the Maine Legislature enacted LD 1579 in 2022. The law sets a goal that 75% of school bus acquisitions will be zero-emission vehicles by 2035.

To support this target, the U.S. The Environmental Protection Agency's Clean School Bus Program has provided more than \$5 billion in funding between fiscal years 2022 and 2026 to replace conventional school buses with zero-emission and clean-fuel alternatives. More than 8,000 school buses have been replaced nationwide, including three from Mount Desert Island Regional School System (MDIRSS)'s school bus fleet. The electric buses serve Pemetic Elementary School and Mount Desert Island High School, with each vehicle acquired at a cost of approximately \$375,000 and an additional \$20,000 required for charging infrastructure. Charging infrastructure was installed at the district's bus storage yard, where the buses are primarily charged overnight. To accommodate the chargers, the district upgraded electrical service at the facility from 100-amp to 200-amp capacity, providing sufficient power to support daily bus operations.

Building on these investments, MDIRSS hopes to continue expanding its electric school bus fleet and has identified additional buses as candidates for electrification as future funding opportunities become available.

Outputs

Reduced Greenhouse Gas (GHG) Emissions: The Vermont Energy Investment Corporation (VEIC) conducted a 10-month [Electric School Bus Evaluation Report](#) on Mount Desert Island's electric school buses. The evaluation ran from September 2021 through June 2022 and was done in partnership with A Climate to Thrive (ACTT) and Mount Desert Island High School. It found that MDIHS's first electric school bus reduced greenhouse gas emissions by an estimated 15.3 short tons of CO₂-equivalent emissions compared to a conventional diesel school bus. That reduction is equivalent to the amount of carbon dioxide captured by 638 mature trees in one year.

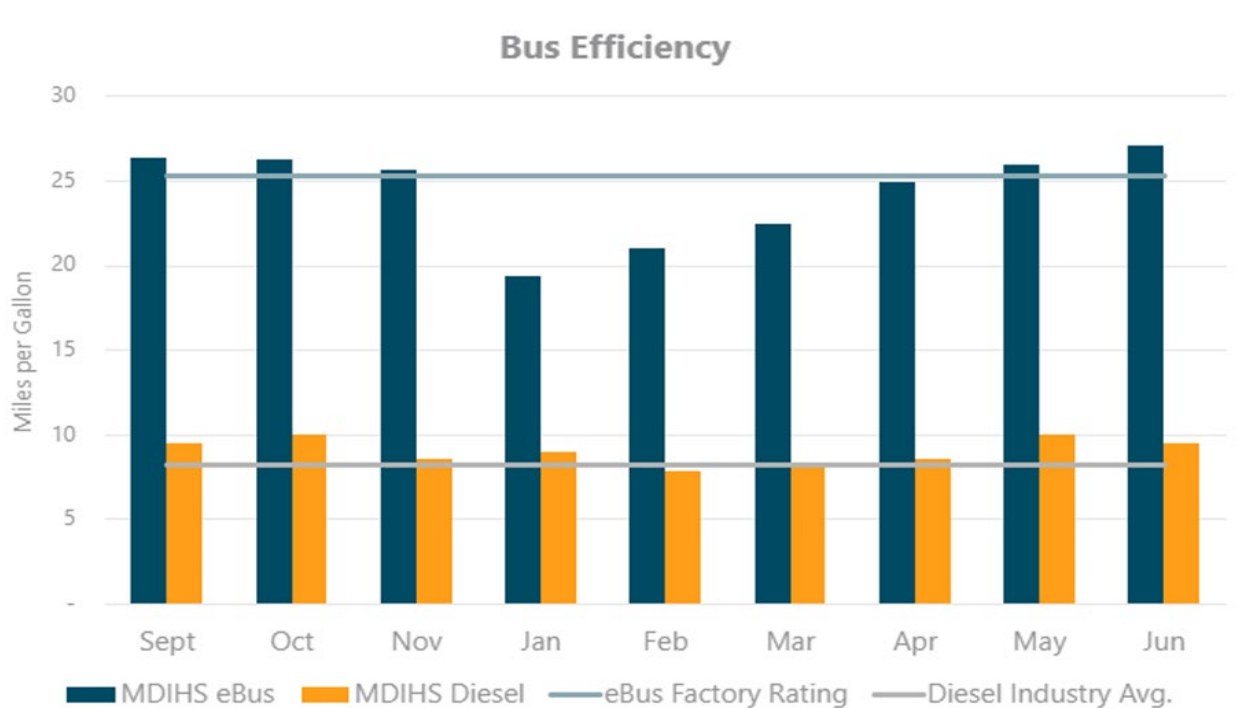
Cost Savings: On average, the electric buses had over 50% energy cost savings compared to their diesel counterparts, even during colder months. MDIHS's operational data and The U.S. Department of Energy's Alternative Fuel Life-Cycle Environmental and Economic Transportation (AFLEET) model estimated that one EV bus could save about \$5,000 in fuel costs alone in a given year.

The electric buses also had significantly lower direct maintenance costs than their diesel counterparts. VEIC compared the two and found that diesel buses had maintenance and repair costs ranging from \$6,796 to

\$8,873, with about \$2,694 of that attributable to routine maintenance. The electric bus, by contrast, only cost \$455 in fluid and filter expenses and was still under warranty for repairs. Although most of the diesel buses' repair costs were due to their extended age, they still had significantly higher routine maintenance costs than the electric school bus.

Increased Efficiency: The electric buses were found to be three times as efficient (24MPGe vs 9MPG) when compared to the diesel buses.

Fuel Savings: The total estimated net fuel savings for one electric bus over the 10-month study period was 999 gallons.



Monthly average operating efficiency of the ESB compared to the two diesel baseline buses

(Source: [VEIC Mount Desert Island Electric School Bus Evaluation](#))

Outcomes:

Route Coverage: The VEIC assessment concluded that battery-electric buses were able to successfully meet route requirements year-round, regardless of seasonal weather conditions. Performance modeling demonstrated that the vehicles possessed sufficient range to accommodate both existing routes and certain longer-distance service scenarios. Furthermore, strategically located on-route charging infrastructure enabled buses to recharge during operations, maintaining an adequate range reserve and supporting reliable daily service.

Health, Safety, and Environment: The absence of the usual smell created from the diesel engine and exhaust pipes provides a better working environment for the bus driver as well as better commuting experience for the students on the bus. There was also a notable difference in noise, as the fundamental absence of an engine and exhaust pipe led to a quieter, more enjoyable ride.

Reliability: The drivetrain of the electric buses were reported to be remarkably reliable, however, there were warranty replacements of body-related equipment. One challenge associated with electric bus adoption is that specialized maintenance and repair services may not be as widely available as they are for conventional diesel buses, particularly in rural areas. MDIRSS addressed this challenge by identifying a local mechanic capable of performing necessary maintenance and repairs, helping ensure the vehicles remained operational.

Best Practices & Lessons Learned:

Cold Weather: From January to March, when temperatures were at or below freezing, the range of the electric buses decreased by about 22% of its ambient temperature output. However, this decrease did not have any effect on the operation of the bus's normal routes. In interviews conducted as part of the VEIC evaluation, one electric school bus driver noted that "if there's a reduction in range during cold weather it's negligible."

Sourcing Issues: While MDIRSS staff reported occasional challenges related to sourcing replacement parts from Canadian suppliers—including cross-border logistics and communication delays—these constraints are expected to diminish as the U.S. electric vehicle market continues to expand and domestic supply chains mature. Based on the district's experience, school systems pursuing fleet electrification may benefit from developing in-house maintenance capacity to improve operational efficiency and reduce reliance on external service providers.

Training Needed: Drivers of the electric school buses found it very easy to operate and noted the similarities with driving their other non-electric buses. However, one driver noted that they would have appreciated more in-depth training on the operation aspects that differ from their diesel buses, especially from the manufacturer, as the person sent down from Lion Co. was not properly informed of these mechanics, and drivers ended up having to do a lot of hands-on learning. This could highlight the need for ongoing engagement between EV manufacturers and receiving entities, as well as proper training for both drivers and EV representatives.

Solar Pairing: As noted by the VEIC [Electric School Bus Evaluation Report](#), MDI High School has the potential of pairing their on-site solar installations with their EVs. Those with pre-existing solar systems also interested in EV acquisition should consider co-operation.

Electrical Grid Capacity: Fleet managers should work with their local electric utility to ensure adequate capacity for new electric additions to their fleet, as well as to avoid any excess fees and charges associated with EV charging. According to the VEIC report, MDIRSS reported that they only needed to make one utility-related infrastructure upgrade: increasing electrical service in the bus storage yard from 100-amp to 200-amp service for charging. For future EV additions to the school bus fleet, MDIRSS will most likely have to upgrade their electric service once again and work with local utilities to find rates that avoid demand charges for excessive power usage.