

Electric School Buses

Cold Weather Performance



NYSERDA
Clean Transportation

As New York State transitions to electric school buses (ESBs) it is good to understand their performance in cold weather. While ESB battery range can decrease in lower temperatures, experience in cold-weather regions within and beyond New York shows that ESBs still reliably complete their routes. This is also the case in rural areas with longer distances to travel.

Do electric school buses work in cold weather?

Yes. ESBs are already on the road in dozens of New York school districts, including in cold-weather areas such as Western New York, the North Country, and the Southern Tier. While battery ranges can decrease in cold weather, they are still sufficient to complete operations on most local bus routes. For example, an ESB's range can be 70-80% of its rated range in cold weather and 50–60% in the most extreme circumstances.



- Despite colder-than-average temperatures in New York during the winter of 2024–25, ESBs remained reliably functional. Some districts even reported ESBs completing full routes on days of early weather-related school dismissals.
- Lake Shore Central School District, near Buffalo, has had ESBs on the road for three years, and they are consistently performing well through notoriously cold winters.
- Even outside of New York — with the growing use of ESBs across the U.S. and beyond — their ability to work effectively in cold weather has been repeatedly demonstrated in places like Canada, Colorado, Minnesota, and South Dakota. Today, ESBs are on the road in 49 states.
- ESBs can handle and grip the road better in snowy conditions because their weight is distributed more evenly with the battery located between the axles while diesel and gasoline buses tend to have weight concentrated in the front where the engine is located.

How can districts ensure that electric school buses meet school districts' needs in cold-weather?

- Districts can create fleet electrification plans (FEPs) with engineering firms that account for area weather conditions, among other district-specific factors, when recommending appropriate buses and chargers.
- NYSERDA provides funding to help districts create FEPs.
- FEPs assess expected ESB performance in both warm and cold weather.
- As districts replace existing diesel vehicles, they can gradually be replaced with ESBs. This phased approach allows districts to monitor their progress, put ESBs on appropriate routes, and adjust as needed.

"This is the third year Lake Shore CSD has had zero emission buses in service. Our students enjoy the quiet ride, drivers appreciate less shouting, and staff have gained valuable experience in safely operating battery electric vehicles."

- Perry Oddi, Transportation Supervisor, Lake Shore Central School District, Western NY

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