Electric School Buses in NYS

Adam Ruder
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Agenda

> State of the Market
> NYS ESB Mandate
> NYSERDA Efforts and Support
Buses are available and meet range requirements for most school bus trips.

Manufacturers are scaling up production capacity based on expected demand (supply chain issues).

Vehicle charging options also exist, at a variety of speeds, costs, and layouts.

Technology is improving on…
  • Vehicle range
  • Charging speed
  • Charger space and layout
## State of the Market: what are the options?

<table>
<thead>
<tr>
<th>Type</th>
<th>Passenger Capacity</th>
<th>Bus Range</th>
<th>Manufacturers</th>
<th>Cost Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type A</td>
<td>16-20</td>
<td>100-150 miles</td>
<td>Lightning eMotors, Lion Electric, Micro Bird, Motiv Power Systems, Phoenix Motor Cars</td>
<td>$265,000-$450,000</td>
</tr>
<tr>
<td>Type B</td>
<td>20-30</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Type C</td>
<td>60-72</td>
<td>100-120 miles</td>
<td>Blue Bird, IC Bus, Lion Electric, Thomas Built</td>
<td>$300,000-$400,000</td>
</tr>
<tr>
<td>Type D</td>
<td>72-90</td>
<td>120-155 miles</td>
<td>Blue Bird, BYD, GreenPower Motor Company, Lion Electric</td>
<td>$345,000-$410,000</td>
</tr>
</tbody>
</table>
> Buses charge with AC or DC power (or both)
> Charging rates are between 10 and 150 kW
  > Between 2 and 10 hours to charge fully
  > Level 2 chargers (slower) cost $10k installed
  > DC chargers (faster) cost $25k to $100k installed, depending on power level
> For a fleet of 50+ buses, major electrical upgrades would likely be needed to charge all buses at the same time
  > However, smart management of charging can reduce need for upgrades and overall costs; Coordinating charging times can reduce overall peak charging
  > Companies have expertise in reducing costs while ensuring buses are fully charged when they need to start their routes
> Even with managed charging, a fleet may still need electrical upgrades – talk to your electrical utility early!
NYS ESB Mandate

> Full transition of the school bus fleet from combustion engine vehicles (diesel, gas, natural gas) to zero-emission vehicles ESBs and fuel-cell ESBs

> By 2027: all school bus purchases must be zero-emission vehicles

> By 2035: all school buses in operation must be zero-emission

Today:
NYSERDA ESB
Roadmap & Guidebook
in development

2027: All new bus
purchases required to be
zero-emission

2035: All buses on
the road required
to be zero-emission
NYSERDA: ESB Roadmap & Guidebook

> NYSERDA is developing a Guidebook to provide guidance to school stakeholders on how to begin the fleet conversion process

> Roadmap: a resource for policymakers to:
  - Identify challenges, roadblocks, and gaps
  - Develop solutions to support districts, operators and stakeholders to navigate the transition
  - Identify funding needs and resources
  - Propose policy changes

> Guidebook: resource to help with:
  - Navigating the ESB market
  - Comparing bus & charger models
  - Planning purchases
  - Exploring funding options
  - Engaging with utilities
  - Planning site & facility upgrades
  - Incorporating solar and battery upgrades
  - Understanding workforce impacts
  - Developing job (re)training programs
  - Scaling to full fleet conversion
Support development of ESB Roadmap and Guidebook by providing guidance and information on:

- Best practices
- Implementation strategies
- Key stakeholders and how best to reach them
- Operational issues, e.g., safety, routing, charging, workforce training
- Information about existing conditions
- Critical needs for achieving ESB goals
NYSERDA: Technical Support

> **P-12 Clean Green Schools Initiative** ([https://www.nyserda.ny.gov/All-Programs/P-12-Clean-Green-Schools-Initiative](https://www.nyserda.ny.gov/All-Programs/P-12-Clean-Green-Schools-Initiative))
  
  • Program for schools designated as High-Need by SED or located in a disadvantaged community
  • Provides up to 100% of the cost for technical assistance for energy efficiency and electric school bus projects

> **P-12 Green and Clean Energy Solutions** ([https://www.nyserda.ny.gov/All-Programs/P-12-Green-and-Clean-Energy-Solutions](https://www.nyserda.ny.gov/All-Programs/P-12-Green-and-Clean-Energy-Solutions))
  
  • Green and Clean Energy Solutions is for any schools that pay into SBC on their electric bills
  • Provides up to 75% of the cost for technical assistance for energy efficiency and electric school bus projects

> Schools may choose their own contractor or use a NYSERDA FlexTech contractor to complete their studies
NY Truck Voucher Incentive Program

- $58.3M incentive pool supporting adoption of clean trucks, transit buses, school buses, and repowers
  - $6M for zero-emission school buses
- Vouchers reduce the upfront purchase cost and accelerate or eliminate the payback period associated with cleaner vehicles
- Brings together vehicle manufacturers, dealers, and fleets to get cleaner trucks and buses on the road
- Scrappage ensures removal of the oldest, dirtiest diesel engines from New York State roads
- Vouchers of up to $220,000 per bus for electric school buses
- More information at https://www.nyserda.ny.gov/All-Programs/Truck-Voucher-Program
Utility Support for Electric Bus Charging

> Utility make-ready programs can support a portion of the cost of charging station installations
  - Cover up to 100% of the installation costs on the utility side of the electric meter
  - Fleets must participate in the NYTVIP

> Utilities also offer fleet advisory services to provide technical assistance, particularly on electrical needs of electric buses
Additional State and Federal Funding

> EPA Clean School Bus Program
  • $5 billion program from IIJA that funds electric school buses and associated charging stations, to be committed over five years
  • First awards expected soon

> NYS Environmental Bond Act (public referendum, Nov 2022)
  • Includes $500 million to support school bus electrification that would be available if the referendum passes
How You Can Get Involved

> Help get responses to our survey (link to follow soon)

> Keep your school districts updated and engaged, and encourage collaboration (transportation, facilities, communications, business officials all have a role!)

> Encourage districts to apply to Clean Green Schools Technical Assistance

> Encourage districts to connect with their utility provider early: many provide fleet assessment services to help fleet owners get started
Questions?

> Adam Ruder, adam.ruder@nyserda.ny.gov
> Vinny Riscica, vincent.riscica@nyserda.ny.gov