



ELECTRIC SCHOOL BUS BUYERS' GUIDE



SIERRA CLUB
NEW JERSEY CHAPTER



NEW JERSEY ELECTRIC SCHOOL BUS BUYERS' GUIDE

DISCLAIMER

This document was prepared by the Transportation Committee of the New Jersey Chapter of the Sierra Club and the New Jersey Clean Cities Coalition. Our organizations are dedicated to environmental stewardship and sustainable transportation solutions. The Sierra Club New Jersey Chapter & New Jersey Clean Cities Coalition neither endorse nor recommend any specific products, manufacturers, dealers, lessors, or purchase arrangements. The included lists of companies are provided for informational purposes only. The New Jersey Chapter of the Sierra Club and New Jersey Clean Cities Coalition are solely responsible for the content of this document. While we have attempted to confirm and verify all information, school districts should contact the appropriate companies and sales reps for current updates to their offerings.

NEW JERSEY ELECTRIC SCHOOL BUS BUYERS' GUIDE

Replacing our state's diesel fuel school buses with zero emission, battery electric buses is a win-win solution for our school districts. Diesel exhaust not only pollutes the air where children wait to board, but also seeps into the bus cabin while students are driven between their homes and schools. Diesel exhaust from school buses and other vehicles is a leading cause of asthma affecting school age children, especially in our urban core.

Electric school buses reduce more than just air pollution. Since these buses do not require oil changes or diesel fuel, leaking diesel and oil tanks will become a thing of the past, reducing pollution of ground and surface water and costly cleanup in the event of a spill or leakage. Bus operators will save on maintenance and repair costs, offsetting the higher initial cost of these buses over their 20 year useful life.

As of October 2025, a total of 57 electric buses are operating in our state with another 150 in various stages of being ordered or delivered.

As you navigate through the pages of this guide, we hope that you will find valuable insights, tools and actionable information for where, when, and how to purchase electric school buses in New Jersey.

We understand that this transition may come with its challenges, but we are here to support you. Our shared goal is to make this transition successful, ensuring that you reap the full benefits of this forward-thinking decision. Your decision to embrace electric school buses is not only a testament to your commitment to the well-being of your students, but also a powerful step toward a greener tomorrow.



Bill Beren
eBook Author &
Transportation Chair
Sierra Club, New Jersey Chapter



Caroline McCallum
eBook Designer &
Director
New Jersey Clean Cities Coalition

ABOUT

OUR ORGANIZATIONS



SIERRA CLUB - NEW JERSEY CHAPTER

The New Jersey Chapter has been leading the charge to replace the state's 20,000 school buses with zero emission non-polluting electric battery buses. Our advocacy was a major factor in the passage of the state's Electric School Bus Program, which allocates \$45 million over three years to fund electric school buses and which directs the Dept of Environmental Protection to develop a long term plan to convert all of New Jersey's school buses.

Visit our chapter's web page [Electric School Bus Campaign | Sierra Club](#) for up to date information on federal and state incentives and grants and a curated library of case studies and fact sheets.

Bill Beren

Transportation Chair



beren1@verizon.net



973-746-9661



sierraclub.org/new-jersey/electric-school-bus-campaign

Anjuli Ramos

Executive Director



New Jersey Sierra Club
1 North Johnston Ave. - Suite A203
Hamilton, NJ 08609



609-656-7612



NEW JERSEY CLEAN CITIES COALITION

NJ Clean Cities is an independent nonprofit dedicated to the deployment of advanced vehicles using clean, domestic fuels. The coalition is a part of the Electric School Bus Academy which seeks to encourage the use of electric bus fleets in school districts. NJ Clean Cities provides school districts, school bus contractors and their stakeholders with electric school bus education, ride and drive opportunities, fleet demonstrations and other tools.

Caroline McCallum

Director



caroline.mccallum@njcleancities.org



610-740-4395



njcleancities.org

Chuck Feinberg

Senior Advisor



chuck.feinberg@njcleancities.org



973-886-1655



New Jersey Clean Cities Coalition
30 Union St., Suite 3
Elizabeth, NJ 07202

TABLE OF CONTENTS

1	Getting Started	6
2	Aquiring the Bus	7
	Bus Manufacturers and Dealers	13
	Subscription Services	16
	Repowers	17
	System Integrators	18
3	Vehicle Specifications	19
4	Charging Stations & Technology	22
	Charging & Technology Consultants	26
5	Infrastructure and Facility Planning	28
	Utility Engagement	31
6	Disaster Recovery Planning	33
7	Grants, Subsidies and Tax Credits	34
8	Myth Bus'ing	39
9	Additional Resources	41

1. Getting Started

Embarking on the journey towards a cleaner, more sustainable future requires not just vision, but also commitment and collaboration. It's a journey that school districts, charter schools, bus contractors, and private schools are increasingly embracing by turning to electric school buses. These innovative vehicles not only reduce emissions but also offer long-term cost savings. However, tapping into the plethora of state and federal grant and subsidy programs supporting this transition requires strategic planning and proactive engagement.



Step 1: Lay the Foundation

Begin by familiarizing yourself with electric school bus technology, infrastructure requirements, and available funding, such as grant programs, federal and state tax credits and utility programs. Sign up for notifications from relevant agencies such as NJDEP, NJEDA, NJBPU and US EPA to stay informed about grant cycles.



Step 2: Gather Essential Information

Whether your school district owns and operates its buses or contracts with private companies, create a route data base detailing each route's frequency and daily mileage. If you own your own buses, compile an inventory listing number of buses by class, model year, and fuel type. For districts that contract out their transportation, investigate contract renewal timelines and how you can give priority in the bidding to contractors with electric buses.



Step 3: Engage Key Partners

Collaborate with school bus vendors or project integrators to refine your project scope and assemble the necessary team for planning and implementation. Before reaching out to your local utility company, have an electrician and your infrastructure consultant assess your current power capacity and estimate the new required load. Secure support from crucial stakeholders within your district, including the Superintendent, Business Administrator, Transportation Supervisor, and School Board.

With groundwork laid and a supportive team in place, you'll be poised to seize opportunities as grant cycles open, ensuring a swift and effective response to funding opportunities.

2. ACQUIRING THE BUS

Districts that own and operate their own bus fleets have numerous ways to acquire electric school buses.

Options include purchasing outright, financing a lease over a number of years (typically 5 with an option to buy or sell at the end of the financing period), or turnkey subscription services. Districts can negotiate various leasing or financing arrangements by working with their dealers.

When acquiring an electric school bus, other costs to consider are the purchase, installation, and ongoing maintenance of charging stations and charge management systems, along with the hiring of an electrical contractor to install the charging stations and connect them to the utility.



PURCHASE VS. LEASE

Electric school buses can be procured outright using a combination of district funds, and federal, state, and utility grants and other incentives.

Buses may be purchased directly by the district from your local dealer or through contracts negotiated by buying cooperatives such as the Hunterdon County Educational Services Commission (HCESC) and the Educational Service Commission of NJ (ESCNJ). Buses may also be purchased through SourceWell, a national educational purchasing co-op. Districts may also purchase related goods and services, including electrical contractors and charging stations through these buying cooperatives.

Buying through one of the established contracts is easier and less time consuming, in that the district does not need to go through a separate bid process. However, this limits the district to a single bus manufacturer, and prices for buses purchased through the buying cooperatives may be higher than the district can obtain in direct negotiation with the manufacturer and dealer. For example, HCESC's offerings provide for a 25% discount from list, but offer a bulk purchase discount of only \$100/bus when 2 or more electric school buses are purchased.



An alternative is putting out a bid for a generic bus. This may allow for price competition between different manufacturers, but obviously it is more time consuming and resource intensive for the district.

New Jersey recently made leasing an electric school bus more attractive. Under a new law enacted in 2024 (P.L.2024, c.38), New Jersey now allows school districts to lease or enter into a lease purchase agreement for the acquisition of an electric school bus and related charging equipment and service for "service life of the electric school bus." Previously, lease and lease to purchase agreements were limited to 10 years, a limit that still applies to diesel and gasoline powered buses. Under NJ statute C.39:3B-5.2, electric school buses with a Gross Vehicle Weight of 25,000 pounds or more may remain in service for 21 years provided that the bus is deemed safe for student transportation.

In any case, the district is advised to bundle the buses, charging stations, and charge management system as a package. This will ensure that the 3 components are compatible with each other and reduces the potential for finger pointing between different vendors if problems arise later on.

The district should consult with the dealer to recommend an electrical contractor with the necessary technical expertise and experience in installing charging stations and high-voltage utility hookups. The contractors' responsibilities will include collaborating with the local utility to provide the required high-voltage service to your bus yard and help plan for future expansion in a cost-effective manner.

The manufacturer or dealer should also provide all necessary training for bus operators, maintainers, maintenance supervisors, and local emergency response personnel.

As with any large purchase, a maintenance contract, including a spare parts inventory, is advised for both the buses and charging equipment.



SUBSCRIPTION SERVICES

An alternative to outright purchase or lease is a subscription service. There are firms that provide turnkey subscription deals. For example, Montgomery County in Maryland recently announced a 10-year deal to acquire 326 electric school buses using this model.

In these arrangements, a private company will design the system, purchase the vehicles, hire an electrical subcontractor, interface with the utility company, purchase and install the charging stations, and complete all the necessary hookups, training, and software configuration. Regularly scheduled and routine maintenance are also included in these contracts.

At least one company will even contract back with the school district for routine and scheduled maintenance work, ensuring that existing maintenance staff continue to be employed by the district. School bus drivers remain district employees, and the district continues to be solely responsible for scheduling transportation services.

Prices for the subscription service should be set so that the annual cost is less than the district's current annual total cost of ownership per bus.



Liability insurance may remain the responsibility of the district; however, this should be reviewed and confirmed with the provider.

Each of the companies providing these services has their own billing procedure; these are described starting on page 13.

For contracts that involve replacing a large number of buses, deployment will typically be phased in over the 10-year term of the contract.

Districts need to do a thorough evaluation of the life-cycle costs and benefits of entering into a turnkey subscription deal compared with outright purchase or traditional lease, paying particular attention to what happens at the end of the contract term. If the district does not renew the contract, the ownership of all vehicles, charging stations, and energy management systems remains with the lessor. The district should ensure that the contract clearly defines the options for continuing operations at the end of the contract term.



REPOWERING (DIESEL TO ELECTRIC CONVERSIONS)

Districts that have a relatively new fleet and do not feel that their fleet is ready to be replaced may have another option. Diesel buses can be converted to battery electric buses. The retrofitting process typically costs less than purchasing an entirely new vehicle, making it a financially attractive option. Additionally, repowering extends the useful life of the existing bus chassis, while minimizing the environmental impact of manufacturing a new vehicle. It is recommended that buses selected for repowering should be around 5 years old so that existing warranties are not voided and that the bus is in good operating condition.

The cost to repower an electric school bus depends on several factors, including the bus selected for repower, who will perform the upfit, and where the work will be completed. Ballpark costs for a conversion completed at a third party provider's facilities may be in the range of \$150,000 for a small Class A size bus, and up to \$200,000 for a Class C/D bus. The argument has been made that the total cost of purchasing a new Type C/D bus currently between \$140,000 - \$190,000 and converting it to electric is a cost effective way to obtain an electric bus. While most type A/B school buses are upfitted for electric by a third party provider, unconverted OEM electric models are now available.

The only company on the East Coast to offer repowers is UES on Long Island. UES has recently contracted with ABC Companies in Jersey City to perform the conversions. Kits are available to have the work done by local mechanics trained by UES. The company claims that mileage range is equal to or better than OEM electric buses.



Currently, neither the EPA Clean School Bus Program nor the NJ RGGI programs will fund repowers. However, repowers are an eligible funding option under the EPA's Diesel Emissions Reduction Act (DERA). See Chapter 7 for more details.

BUS MANUFACTURERS AND DEALERS

BLUE BIRD

Blue Bird/Micro Bird Electric buses are offered in School, Commercial and Shuttle configurations. Buses can be charged using both Level 2 (AC) or Level 3 (DCFC) and can get up to 150 miles per charge. Hoover Truck and Bus Centers offer assistance with in state and federal funding, grant guidance, along with submittals. Blue Bird buses may be purchased through Educational Services Commission of N.J.(Bid # ESCNJ 24/25-20). or SourceWell Co-op Purchasing(#063020-BBB).

Dealer Contact:

Richard Weber Jr.

EV Truck & Bus Sales

Hoover Truck & Bus Centers



149 Gold Mine Road
Flanders, NJ 07836



973-347-4210



1784 US Route 9
Toms River, NJ 08755



732-341-2128



4313 Rote 130 South,
Edgewater Park, N.J. 08010



856-773-4600



101 Stanhope - Spart Road
Stanhope, N.J. 07874



973-527-7302



r.weberjr@hoovertruckcenters.com



908-202-2317



blue-bird.com

THOMAS BUILT BUSES

Thomas Built Buses offers buses for purchase through the Hunterdon County Educational Services Commission, Educational Services Commission of NJ, or SourceWell co-ops. Thomas Built offers numerous leasing and financing options, including a subscription service through Highland Electric Fleets. All Thomas Built buses require DC fast charging stations.

Dealer Contact:

Brandon Lewis

Electric Vehicle and Business Development
Specialist



H.A. DeHart & Sons, Inc.
311 Crown Point Road
Thorofare, NJ 08086



856-845-2800



thomasbusnj.com



brandon@hadehart.com



908-509-4287

IC BUSES

IC buses may be purchased outright through the Educational Services Commission of NJ, or through a lease-to-buy arrangement from the dealers. IC provides federal and state grant preparation assistance through their dealers.


North Jersey (north & east of Mercer and Monmouth Counties)


Dealer Contact:


Eric Marello

Sales Manager

 emarello@Allegiancetrucks.com

 201-481-0105

 Allegiance Trucks Newark
46-100 Paris Street
Newark, NJ 07105

 732-495-0440


 Allegiancetrucks.com


South Jersey (includes Mercer and Monmouth)


Dealer Contact:


Ryan Lackay

Branch Manager

 rlackay@wolfington.com

 609-234-4220

 Wolfington Body Company, Inc.
1315 Route 38, PO Box 160
Mount Holly, NJ 08060

 609-267-0763

 wolfington.com

RIDE BUSES


Model 1 offers Ride type B, C and D school buses and Collins Type A electric school buses. They also offer Ford E-Transit 9 passenger and wheel chair accessible electric school vans. Model 1 is available through the ESCNJ contract. Rental and lease program options are available on all new and used school bus inventory.


Dealer Contact:


Al Mayro

Sales Representative - Public Sector - Northeast

 amayro@modell.com

 201-776-1082

 Model 1
51 Kero Rd.
Carlstadt, NJ 07072

 201-507-8500x902


 modell.com


Motiv Power Systems


Van-Con, Inc is a 50 year old NJ based company that builds Type A & B school buses. Its electric school buses are built on the Ford E-450 chassis using the Motiv Power Systems' electric drivetrain system. Van-Con, Inc. E-bus purchases can be made through the ESCNJ Co-op. All buses can be configured with a wheelchair lift.


Dealer Contact:

Gordon Horst

 732-371-6733

 info@vanconbus.com

 Van-Con, Inc.
123 William St
Middlesex, NJ 08846

 732-356-8484

 www.vanconbus.com

ENDERA BUSES

Endera is a manufacturer of Type A 24 passenger school buses based in Ohio. Their electric school bus model A6 is designed with 92 inches of interior width and an all galvanized steel cage construction. The bus comes with a 150 kWh battery and a claimed 150 mile range. Charge time with a DC Fast Charger is estimated to be 50 minutes.


Dealer Contact Endera Motors

Dealer Contact:

Eric Marelo

School & Commercial Bus Sales Manager

 emarelo@Allegiancetrucks.com

 201-481-0105



Allegiance Trucks Newark
46-100 Paris Street
Newark, NJ 07105



732-495-0440



Allegiancetrucks.com

SUBSCRIPTION SERVICES

HIGHLAND ELECTRIC FLEETS

Highland Electric Fleets is North America's leading provider of Electrification-as-a-Service. Founded in 2019, Highland partners with school districts, municipalities, and fleet operators to make the transition to electric fleets simple and affordable. Highland proudly serves as the Official Electric School Bus Provider of the LA28 Olympic and Paralympic Games and Team USA. From pioneering vehicle-to-grid technology to managing some of the nation's largest electric school bus fleets, Highland delivers reliable, cost-effective solutions that support local communities and drive the future of transportation. Highland has helped its partners secure \$525 million+ in federal, state, and local incentives for school bus electrification.

Dealer Contact:

Christopher Stockwell

Regional Business Manager, Mid Atlantic



Highland Electric Fleet
200 Cummins Center, Suite 273-D
Beverly, MA 01915



christopher.stockwell@highlandfleets.com



978-288-1105



[717-808-6295](tel:717-808-6295)



highlandfleets.com

INCHARGE ENERGY

InCharge Energy provides a similar service specifically in association with Blue Bird Corporation. Blue Bird will survey your property and design, purchase, install and configure your electric bus fleet. Depending on how the contract is structured, the payments are based on either on vehicle miles traveled or kWh usage within the billing period. The typical time frame is 10 years. At the end, the district or contract bus company can buy back the equipment for continued use or extend the contract.

Dealer Contact:

Michael Heller

Account Executive



InCharge Energy
3760 Motor Ave.
Los Angeles, CA 90034



michael.heller@inchargeus.com



833-772-4638



[973-303-5752](tel:973-303-5752)



inchargeus.com

CLEAN BUS SOLUTIONS

Clean Bus Solutions is a new subsidiary of Blue Bird that offers school districts/contractors fleet electrification-as-a-service solutions that eliminate the need for upfront capital, reduce the complexity associated with charging infrastructure and grid connection, and lower the cost of student transportation. Clean Bus Solutions will provide buses and associated charging infrastructure for an ongoing fee, all under the trusted Blue Bird umbrella.

Contact:

Brian Taylor

Sr. Business Development Manager



brian.taylor@cleanbus.com



973-534-8968



Clean Bus Solutions
3920 Arkwright Rd. Suite 200
Macon, GA 31210



blue-bird.com/clean-bus-solutions/

REPOWERS

UNIQUE ELECTRIC SOLUTIONS

UES has been converting class 5-7 buses and class 4-8 trucks from diesel to electric including Type A-D school buses for nearly two decades. Their system can be tailored to achieve a vehicle range of 150+ miles. The cost of the repower on a Type C is roughly \$215,000. Conversions can be done at their facility in Jersey City or in the field with qualified local labor and a kit provided by the company. The company offers a 5-year warranty for the complete system and optional subscription service for the battery pack, thereby lowering the upfront cost of conversion. UES has experience converting factory new vehicle combustion engines with electric, as well as older bus models.

Dealer Contact:

Michelle Montague

Business Development Officer



michelle.montague@uesmfg.com



505-333-0073 ext. 524



Unique Electric Solutions
630 Broadway Ave
Holbrook, NY 11741



505-333-0073



info@uesmfg.com



uesmfg.com

SYSTEM INTEGRATORS

Systems Integrators are vendor neutral consultants that act as a grant writer and general contractor for districts interested in electrifying their fleets.

CLIMATE CHANGE MITIGATION TECHNOLOGIES LLC

CCMT has been an independent fleet advisor, system integrator, and project manager since 2013 and provides support to public and private school bus fleet owners and operators to go electric. CCMT manages the whole process, from design to engineering, procurement, installation, and commissioning of Level 2 and DCFC charging systems. CCMT also evaluates the environmental, energy, and total cost of ownership (TCO) of going electric as well as grant-writing assistance. In 2023, CCMT secured \$18.9 million in USEPA Clean School Bus grants for 42 electric school buses for the Bloomfield, Elizabeth, Newark, and Union City public school districts and for Klarr Transportation, a private school bus contractor in Lakewood, NJ.

Dealer Contact:

James Sherman
CEO



Climate Change Mitigation Technologies
1018 Broad Street
Bloomfield, NJ 07003



jsherman@ccmtdg.com



www.ccmtdg.com



973-303-2106

REI-V2G

REIV2G is a systems integrator, bringing together renewable energy, EV chargers, E buses and grid expertise to plan, assemble and manage the necessary team of teams (financial, grant/rebate, vehicle, charging, utility, grid, communications, reporting, measurement and Verification) to make fleet electrification produce economic, energy and environmental benefits for the fleet and School District.

Dealer Contact:

Dennis Rowan
Managing Partner



REI-V2G
Philadelphia, PA 19026



drowan@rowanenergyintegration.com



REIV2G.com



484-716-6183

3. VEHICLE SPECIFICATIONS

BUS SIZE AND SEATING CAPACITY

School buses come in a variety of shapes and sizes, which are classified by letter designation — A, B, C, or D.

Class A and B buses are smaller buses with a seating capacity of 10 – 24 passengers. Class C and D buses typically seat 54 passengers, and differ in design in that Class C buses are built with their engine in front of the bus, while Class D buses have a flat front similar to an NJ Transit bus.

MATCHING MILEAGE REQUIREMENTS AND BATTERY CAPACITY

Battery capacity is the single biggest variable affecting the initial cost of an electric school bus. Therefore, it is important to match the battery capacity specified when purchasing or leasing a vehicle to the expected route mileage within a district.

Nationally, the average driving distance per shift for a typical school bus is about 32 miles, for a total of about 73 miles (and 5 hours of driving) per day ([NREL](#)). ESBs currently on the market are all more than capable of serving most school districts’ short to medium-length routes.

Districts need to inventory their routes and the maximum mileage for each route. Battery capacity can then be matched to the required mileage to minimize costs. Focusing on shorter routes initially may allow a district to deploy more cost-effective buses with smaller battery packs.



The example below is based on a Class C Thomas Built bus, which uses a 226 kWh rated battery pack.

The largest batteries now available have a maximum battery capacity in the range of 246 kWh. However, manufacturers also specify a “usable capacity,” which is the recommended limit above which the battery should not be drained. Typically, the recommended maximum usable energy for its 246 kWh battery is 199 kWh.

The other variable in calculating theoretical range is the vehicle efficiency, expressed in kWh/mile. This will vary based on the manufacturer, bus size, and other factors. Theoretical mileage is then calculated by dividing usable capacity by efficiency.

For a Thomas Built bus with a 199 kWh usable capacity and a 1.44 kWh/mile efficiency, the theoretical range is $199 \text{ kWh} / 1.44 \text{ kWh/mile}$, or 138 miles per charge.

Smaller battery packs can be specified if the daily morning and afternoon round-trip mileage is less than 90 miles. Similarly, Class A and B buses should have a higher kWh/mile efficiency, which will also allow a smaller battery pack.

However, as with gas-powered vehicles, actual mileage will vary from calculated miles/charge based on weather conditions, how often the vehicle starts and stops, whether the road is hilly or flat, the heating or air conditioning load, and other similar factors. Driver training is also an important tool to improve energy efficiency.

Monitoring real time kWh/mile usage is critical to maximizing the vehicle’s range. New Jersey’s first electric school buses hit the road in the fall of 2022, so there is limited in-state experience with which to compare actual versus theoretical mileage. Focusing on your shortest, most predictable routes first, and investing in driver training may offer the best path to successfully integrating ESBs into your service.

HEATING & COOLING SYSTEMS

Options include heat pumps, electric resistance heaters, and diesel powered auxiliary heaters. The choice of these systems may affect mileage range and energy use. Your dealer can discuss what options the manufacturer offers and which would be best for your environment.

With electric HVAC systems, expect that bus mileage range may decrease by 15% during summer months due to air conditioning requirements and by up to 30% or more on the very coldest days due to heating requirements. Optional fuel-fired auxiliary heaters can improve range, but electric heat pumps are recommended as the most efficient heating option.

TELEMATICS

One innovation that is now mostly standard on electric school buses is what is referred to as “telematics.” These are diagnostic systems that display and report operating data in real time for use in analyzing operating problems and tracking remaining battery power. Some buses are outfitted with internet access via SIM cards that can provide the owner, operator, and manufacturer with real-time vital statistics such as average kWh/mile, average mileage per full charge, remaining battery charge, mean distance between failure (MDBF), and equipment status.

Charging stations may also be configured to download this data while the vehicle is being charged. This option will require either a cable connection or secure Wi-Fi connection to the facility’s local area network.

The manufacturer will also provide the software needed to receive, view, and report on this information.

The NJ Department of Environmental Protection provides, installs, and covers the monthly subscription for telematic devices on all vehicles funded with state grants.

4. CHARGING STATIONS & TECHNOLOGY

CHARGING STATIONS

Charging stations range from slower charging stations using standard AC current to fast charging stations that use DC current.

Options for fleet charging include:

- **Single, stand alone chargers**
- **Power control systems** that can pair with up to 4 charging dispensers
- **Overhead pantograph systems** that are suitable for a garage environment housing a large bus fleet

Chargers are also classified by how much power they can deliver in a set period of time. You might be familiar with the classification of chargers used for passenger vehicles.

Level 1 Chargers

Level 1 chargers use a common 120-volt household outlet. Level 1 is the slowest way to charge an EV. This option will probably not require any increased capacity delivered by the utility company, and is therefore the easiest to implement. Due to the long time (multiple days) required to fully charge a bus, this is usually not the appropriate charging system for a school bus, but could be used in an emergency.



Level 2 Chargers

Level 2 chargers require 208–240 volt connections and can deliver up to 80 amps of power. Level 2 EV chargers can range from 3.7 kW to 22 kW of power. For electric school buses, a charger rated at a minimum of 18 kW would be needed to minimize the time to recharge the bus. Depending on the existing service to the facility, this may require either an added 208 volt service on your electrical panel or additional capacity on the part of the utility, particularly if multiple charging units are required. Level 2 chargers can cost in the neighborhood of \$2,000 –\$5,000 for equipment and \$1,000–\$10,000 or more for installation.

Level 3 or DCFC Chargers

Level 3 chargers, often referred to as DCFC (Direct Current Fast Chargers), are high-powered charging stations. It's important to note that the DCFC chargers typically used for school buses are much smaller—usually no more than 60kW, from the DCFCs people may see at malls or highway rest stops, which are often 150kW or higher. DCFCs require a 3-phase 400–900 volt connection and may require additional capacity from your local utility. Due to their power requirements, these chargers can be more expensive, typically costing between \$10,000 and \$40,000 for the equipment alone, and installation costs can range from \$10,000 to over \$50,000, depending on the complexity of the site.

RECHARGE TIME

Chargers are rated in kilowatts. To determine how long it will take to fully recharge an electric bus's battery pack, divide the usable battery capacity by the charger power rating:

$$\text{Usable Battery kWh} / \text{Charger kw} = \text{Time}$$

While there are other factors to consider, here's a very simple example:

A 200 kWh usable battery capacity being charged by a 60 kw DCFC will take 3 hours and 20 minutes to charge: **$200 \text{ kWh} / 60 \text{ kw} = 3.33 \text{ hours}$**

CHARGE MANAGEMENT SYSTEMS

Charge management systems are a critical component of the electric school bus procurement process for efficient operations. This software manages the charging process to ensure that buses are charged at the appropriate times to minimize demand and peak power surcharges, thus holding down electricity costs. Charging systems can also manage vehicle-to-grid (V2G) or vehicle-to-building (V2B) systems, in which excess power stored in the bus battery can be resold to the utility company or used to power air conditioning or lighting systems in the school buildings.

Charge management systems are typically third-party products in addition to the chargers themselves that the manufacturer or lessor may bundle with the charging stations to ensure compatibility and functionality. Anticipate monthly or yearly subscriptions as part of the service.

COMMUNICATION REQUIREMENTS

A robust internet connection is imperative for efficient electric school bus charging stations. It enables real-time monitoring of charging stations and facilitates remote diagnostics and troubleshooting. This connectivity allows operators to track energy usage patterns, optimize charging schedules, and remotely initiate software updates for enhanced performance and security. Moreover, it enables seamless integration with charge management systems, grid operators, and third-party platforms, ensuring interoperability and smooth data exchange. Reliable and high-speed internet connectivity forms the backbone of charging stations, enabling them to deliver a seamless and user-friendly experience for school districts.

V2G AND V2B EXPLAINED

V2G and V2B are two ways in which stored electricity in the bus's battery can be used to obtain additional revenue or to reduce the cost of utility electricity in school buildings.



In these scenarios, the electric charging station is configured to allow bi-directional flow of power to and from the vehicle and either the utility grid (V2G) or the school campus (V2B).

Buses that are fully charged and sitting idle in the bus yard can be programmed to feed their stored energy back to the utility grid, in which case the school district earns revenue from the utility or sees a reduced payment to the subscription company. In a V2B arrangement, the energy is fed back to the district's building(s) to help run air conditioning, lighting, and other electrical loads, thereby reducing the amount of electricity purchased from the local utility company. The buses' batteries are then recharged at off-peak rates prior to being placed into route service.

If the school district is interested in using the school bus batteries as storage devices to sell power back to the utility company or to provide power to the school buildings during peak load periods, additional equipment, specialized charging stations, and software are required to facilitate and monitor bi-directional power flow.

If the district intends to employ V2G or V2B, this should be specified when the buses are initially purchased, as both the charging stations and the charging port on the bus need to be designed for bidirectional power flow. There will likely be additional requirements by the utility that should also be confirmed.

There is not yet an established rate structure for utility buyback of power from a V2G system, and no such systems have been installed in New Jersey. NJDEP has initiated a V2B Eco Hub pilot with 5 districts (see page 32).



CHARGING & TECHNOLOGY SOLUTIONS

PROTON GROUP

Proton Group delivers reliable and scalable EV charging solutions to support the efficient operation of electric school bus fleets, empowering schools to transition to clean, sustainable transportation.

Dealer Contact:

Brad Denker

Vice President



Proton Group
88 Route 173
Hampton, NJ 08827



brad@protongroupusa.com



848-412-1500



484-546-9401



www.protongroupusa.com

ENCORE ENERGY GROUP

Dealer Contact:

Anthony Barlotta

General Manager



ENCORE ENERGY GROUP
342 Changebridge Road, Suite 101
Pine Brook, NJ 07058



anthony@encoreledusa.com



866-694-4533



973-907-4731



encoreenergygroup.com

PLUGIN STATIONS ON LINE

Contact:

Douglas Greenwald

Commercial Leader - Mid-Atlantic



Plugin Stations Online, LLC
7 Cotton Mill Lane
Valatie, NY 12184



dgreenwald@pisoev.com



855-467-3751



973-985-8709




pisoev.com


MOD ENERGY SOLUTIONS


Contact:


Monica Walters

Chief Executive Officer

 monica.walters@gomodenergy.com

 732-301-4727

 848-448-6480

 gomodenergy.com


PIONEER POWER SOLUTIONS


Contact:


Scott Bradley


Director of Sales

 scott@pioneer-emobility.com

 Corporate Headquarters
8900 109th Avenue North, Suite 800
Champlin, MN 55316

 (617) 337-3537

 (855) 584 -3483

 pioneer-emobility.com


EV EDISON


Contact:

David Daly

President

 info@ev-edison.com

 908-312-1242

 908-312-1242

 www.ev-edison.com


NUVVE


Contact:


Lonnie Russell

Senior Sales Manager

 lrussell@nuvve.com

 NUVVE
12488 Historic Decatur Rd., Suite
200 San Diego, CA 92106

 843-469-5111

 619-483-3448

 nuvve.com

5. INFRASTRUCTURE AND FACILITY PLANNING

Detailed site planning is critical to a smooth transition to electric school buses. Close coordination between your school bus provider, your local utility, your electrical contractor, and any EV consultants is essential to avoid delays and excess costs. The location of charging stations is perhaps the most important decision, as it will affect the cost of installing the charging stations and ensure that buses can be moved around the parking area while buses are being charged.

SITE PLANNING

Siting your charging stations needs to be carefully thought out. To reduce utility and trenching costs, you want the charging stations to be located as close as possible to your existing electrical service infrastructure.

However, you also need to look at how the proposed location of the charging stations impacts bus movement in your storage yard. Buses may have to be moved around to allow multiple buses to be charged at the charging station each night.

A qualified EV consultant can help with planning and design.

UTILITY CONNECTIONS

Connections to the local utility company is a critical component of the process of putting electric school buses into service. A fleet of electric school buses will require higher voltage service than is typically delivered to a bus facility, and due to supply chain issues, there may be a long wait time for the necessary service to be delivered.

Your electrical contractor, in conjunction with your dealer, can help define how much power capacity the utility needs to deliver.

In planning your electrical requirements, contact your local electrical utility service provider as soon as you start thinking about acquiring electric school buses to let them know that you are planning to electrify your bus fleet. Ask them to do a site survey with you and your consultant, if you have one.

Information that the utility will need includes:

- The number and type of vehicles to be charged
- The anticipated deployment timeline
- The number and type of charging stations you will purchase (e.g., Level 2 or DCFC)
- Where on your property you will locate the charging stations

The utility needs to determine if they have existing capacity to bring the additional power load to your facility. If capacity in the form of higher voltage service needs to be installed, the utility may charge you for the cost of this “make ready” service. Under proposed state guidelines, the utility company may be able to include these costs in its rate base and would therefore not charge the district. But at this time, the district is still liable for all “make ready” costs incurred by the utility.

As most locations will gradually phase in their transition to electric school buses, discuss with your utility and contractors the most cost-effective schedule to expand utility service to your facility consistent with your transition schedule for fleet conversion.

GREENER BY DESIGN

Contact:

Chuck Feinberg

Partner & Senior Consultant



GREENER BY DESIGN, LLC
30 Union Street, Suite 3,
Elizabeth, NJ 07202



cfeinberg@gbdtoday.com



732-253-7717



973-886-1655



gbdtoday.com

UTILITY ENGAGEMENT

Depicted in this map are New Jersey's four private electric utility service areas, along with several municipal power authorities that serve local communities across the state. Working closely with your electric utility is essential – reach out early in the process to discuss your plans, understand available programs, and ensure that electrical capacity and infrastructure needs are addressed from the start.



ROCKLAND ELECTRIC CO.

- 877-434-4100
- oru.com
- ev@oru.com

PSEG

- 800-249-1837
- PSEG
- PSEG-Electric.Vehicles@pseg.com

JCP&L

- 888-352-0908
- JCP&L
- NJEVDriven@firstenergycorp.com

ATLANTIC CITY ELECTRIC

- 800-642-3780
- atlanticcityelectric.com
- evsmart-ace@icf.com

LOCAL PERMITTING

Once your infrastructure plans are complete, they must be submitted to your municipal zoning and building inspection officials for approval.

Your electrical contractor will submit the permit applications to your local zoning officials. A site survey is normally required as part of the application process.

Following zoning approval, building, electrical, and construction permits must be obtained from your municipality. These applications must include the proper sub code sheets and construction drawings.

Failure to schedule site inspections in advance may delay your ability to begin service with the electric school buses even if all the infrastructure has been installed and the buses delivered.



6. DISASTER RECOVERY PLANNING

While not a particularly critical issue when you begin purchasing electrical school buses, disaster recovery planning may become a major issue over time as a larger percentage of your fleet is electrified. With storm intensity and frequency increasingly impacting the ability of the electrical grid to provide power, districts should incorporate disaster recovery strategies into their long term plans.

The integration of solar power and battery storage systems within school districts represents a quantum leap in disaster recovery preparedness. Solar panels, with their capacity to convert sunlight into electricity, provide a sustainable and decentralized power source. In the event of a disaster or grid failure, this clean energy can be harnessed to charge electric school buses, ensuring they remain operational for crucial transportation needs. What's more, excess energy generated by the solar panels can be stored in on-site battery systems. This stored energy serves as a vital reserve, guaranteeing that even in the absence of direct sunlight, buses can be charged and deployed swiftly, offering a lifeline for evacuation and relief efforts.

The synergy between solar power and battery storage not only safeguards transportation resources but also fortifies the resilience of the entire district. During emergencies, battery systems kick into action, seamlessly taking over to power essential facilities, including electric school bus charging stations. By reducing reliance on the grid, these integrated solutions ensure uninterrupted service, even in the face of widespread power outages. This innovative approach not only underscores the vital role of sustainable technologies in disaster recovery planning but also exemplifies how school districts can be proactive leaders in creating resilient, eco-conscious communities for the future.



7. Grants, Subsidies, and Tax Credits

STATE OF NEW JERSEY GRANT PROGRAMS

The State of New Jersey has three grant programs available to school districts, charter schools and other private schools to purchase electric school buses and charging infrastructure. Private school bus contractors are also eligible to apply for funding on behalf of the school districts they support.

New Jersey Regional Greenhouse Gas Initiative

The state's participation in the Regional Greenhouse Gas Initiative (RGGI – commonly pronounced Reggie) provides variable funding based on programmatic revenue. Money raised by the RGGI program is allocated to the NJ Dept of Environmental Protection, Board of Public Utilities, and Economic Development Authority to fund various grant programs aimed at reducing greenhouse gases generated by the transportation sector. These programs are described below.

NJ Dept. of Environmental Protection – Electric School Bus Program

Under legislation signed by Governor Murphy in 2023, NJDEP administers the Electric School Bus Program. The program allocates \$15 million annually for 3 years starting in 2024 to fund grants to school districts and school bus contractors to purchase electric school buses and associated charging infrastructure. Districts typically are reimbursed for the cost of the buses and chargers after they have paid the vendor, but advance payment may be requested.

The funding cycle for year 2 of the program closed on September 26, 2025. Districts and school bus contractors who are interested in applying for these grants should sign up to receive notifications of new funding cycles at [NJDEP| Stop the Soot | Electric School Bus Program](#).

Under this program, NJDEP will provide \$304,000 per bus for each bus and Level 2 charging station, or up to \$320,000 per bus with a DCFC charging station. Buses that are designated for use in overburdened school districts are eligible for an additional \$30,000 per bus plus charging station. NJDEP is limiting funding to Class C & D school buses with a minimum of 44 or 70 student seating capacity, with allowances made for wheel chair accommodations. Other minimum requirements for the buses are described in the grant solicitation documentation [Electric School Bus Grant Solicitation Round 2](#).

Districts can apply for a minimum of 2 and a maximum of 16 buses per grant cycle. Buses must be new, zero emission electric battery powered; neither hydrogen fuel cell nor repowered buses are eligible for funding.

Districts may opt to purchase or lease buses under the grant program. While the grant program does not require a district to scrap diesel buses, those that do will be awarded additional points during the application scoring process.

School bus contractors are eligible to apply but their application must be paired with a specified school or district.

Districts and contractors who receive grants under this program are able to piggy back their grant with incentives offered by PSEG, Atlantic City Electric, and JCP&L for charging infrastructure.

In Round 2, NJDEP allocated half of the grant program to districts participating in an Eco-hub demonstration project which will pilot Vehicle to Building technology integrated with solar panels.

Applicants awarded grants under the ESB Program are automatically enrolled in NJDEP's Fleet Advisor Program, which provides free, upfront, personalized technical support including an on-site electric infrastructure assessment, vehicle options, cost projections, and other recommendations to ensure projects are successful.

NJ Economic Development Authority – NJ Zero Emission Incentive Program (NJZIP)

Phase 3 of NJ ZIP will be a \$75.5 million voucher pilot launched by New Jersey Economic Development Authority (NJEDA) for medium and heavy duty zero-emission vehicles.

Funding will be split between two \$37.5 million rounds. The maximum amount for any individual applicant is \$3 million in each round. As with the NJDEP's Electric School Bus Program, all vehicles will be equipped with telematics to track and verify usage for 3 years, paid for by the NJEDA.

On a single voucher, the amount is capped at 100% of the vehicle cost. Vouchers may be stacked with other state or federal funding up to the 100% cap. Vouchers may only be used to purchase the school bus, and may not be used for charging infrastructure, taxes, nor registration or delivery fees. Vehicles must be owned by the applicant – leases are not eligible for funding.

Vehicles must be purchased from authorized licensed NJ vehicle dealers who are pre-registered with NJEDA. Eligible vehicles are any new zero-emission Class 2b – Class 8 (GVWR 8,501 lbs. – 33,000+ lbs.) vehicle, used for commercial, industrial, or institutional purposes.

To stay up to date on funding cycles, interested districts may sign up at [NJ ZIP – NJEDA](#).

NJ Board of Public Utilities Clean Energy Program

The BPU's Clean Fleet Electric Vehicle Incentive Program supports local and state governments as they transition their fleets to EVs. Eligible entities include local schools, municipal commissions, state agencies or boards, state commissions, state universities, community colleges, county government and county authorities in addition to municipalities, municipal utility authorities, state agencies, and nonprofits.

Awards for eligible entitles include:

- Up to \$4,000 for eligible light-duty battery electric vehicles (BEVs)
- Up to \$10,000 toward the purchase of eligible Class 2B-6 BEVs
- Up to \$5,000 each for public Level 2 charging equipment (up to 90% of the cost of the charger)
- Up to \$4,000 for fleet Level 2 charging equipment (not available to the public) up to 90% of the cost of the charger
- Up to \$180,000 for DCFC stations (up to 90% of the cost of the charger)
- Up to \$5,000 toward make-ready costs for fleet Level 2 charging equipment (up to 50% of cost)
- Up to \$50,000 toward the make-ready costs for DCFC charging stations (up to 50% of cost)

Awards are capped based on population, as follows:

Population	Electric Vehicles	Dual Port L2 Charging	DCFC Charging
Up to 20,000	4	2	1
20,001-50,000	10	4	2
50,001-100,000	14	8	4
Over 100,000	20	15	8

Districts must first apply for the incentive and be approved before purchasing and installing the equipment. Once approved, the district will be reimbursed after the equipment is purchased and installed.

For more information and application forms, visit the BPU's Charge-Up Fleet EV Program webpage at [Clean Fleet EV Program | Charge Up New Jersey \(njcleanenergy.com\)](http://Clean Fleet EV Program | Charge Up New Jersey (njcleanenergy.com)).

FEDERAL GRANT PROGRAMS

Clean School Bus Program

Under the budget adopted by Congress in the spring of 2025, unobligated federal funding under the Inflation Reduction Act has been rescinded. Clean School Bus grants and rebates that have been approved previous to the passage of the budget bill are still being processed. The NJ Sierra Club and New Jersey Clean Cities will publicize new grants cycles if and when they are announced on our websites and newsletters.

Information on the EPA's Clean School Bus Program can be found on their website: [Clean School Bus Program | US EPA](#)

FEDERAL TAX CREDITS

Under the Inflation Reduction Act of 2022, governmental agencies and tax exempt organizations that buy a battery electric or fuel cell vehicle may qualify for a federal tax credit of up to \$40,000 (Internal Revenue Code 45W) even though they normally do not pay taxes. The credit equals the lesser of:

- A) 30% of the cost of the vehicle, or
- B) The incremental cost of the vehicle compared with a standard diesel vehicle.

The maximum credit is \$7,500 for qualified vehicles with gross vehicle weight ratings (GVWRs) of under 14,000 pounds and \$40,000 for all other vehicles. Districts that have placed an order for new electric school buses by September 30, 2025 may still claim the credit if they file a 2025 tax return. ESBs placed into service after that date will no longer be eligible for the tax credit.

8. EV MYTH BUS'TING

MYTH: ELECTRIC SCHOOL BUSES PRESENT A FIRE HAZARD



A 2016 USDOT study found that on average, there is one diesel or gasoline school bus fire every day, mostly starting in the engine area, running gear, or wheel area. The presence of a tankful of flammable diesel fuel or gasoline makes these fires extremely dangerous. In contrast, we know of 11 school bus fires since 2023* in both the US and Canada involving an electric battery bus in 8 separate incidents (most of which were parked at the time the fire started). There were only 27 fires involving an electric transit bus globally since 2010 out of 250,000 vehicles [Source: [Why do ebuses catch fire? \(evfiresafe.com\)](#)].

- No one was injured in any of the school bus fires, and none of the fires were caused by the buses' electric batteries. A NJ News12 report from May 14, 2024 implied that a school bus which had caught fire in Sayreville was an electric school bus, but in fact the vehicle was actually a diesel bus. There have been no incidences of an electric school bus fire in New Jersey.

The lithium ion batteries used in electric school buses are specially designed to minimize the impact of a fire should one start. The batteries are located under the bus chassis, and are contained in a 10 mm thick aluminum casing. In addition, the battery management system optimizes temperatures within the battery regardless of external temperatures. Also, the battery packs are built with thousands of smaller cells so that any thermal event in one cell is isolated and cannot spread to neighboring cells.

In the event of a fire, the fire is contained by cooling the battery with water until there is no excessive heat (which may take several hours.) At that point, the battery can be removed from the bus and moved to a safe location. (Source: [Are Electric School Buses Safe? - Greater New Haven Clean Cities Coalition \(nhcleancities.org\)](#)). There are also fire extinguishers specifically designed to put out lithium ion battery fires.

MYTH: ELECTRIC SCHOOL BUSES USE MORE ENERGY THAN DIESEL ONES



Researchers found a striking insight while monitoring energy consumption at bus barn chargers for the MOVER project in Hood River, OR. The chargers share an electrical meter with several 120-volt circuits installed to power block heaters, which keep diesel bus engines warm in cold weather. Over the course of three winter months, the data showed that each of the 11 diesel buses consumed 313 kWh per month simply to maintain engine warmth—nearly identical to the 314 kWh that an electric passenger van used in that same period to transport students over hundreds of miles.

Credit: LinkedIn post by Joseph Wachunas. New Buildings Institute MOVER Project in Hood River, OR.

MYTH: ELECTRIC SCHOOL BUSES EXCEED THE WEIGHT LIMIT ON LOCAL BRIDGES



Both Blue Bird and Thomas Built electric buses have the exact same GVWR as their diesel models, 33,000 GVWR. The GVWR for IC's Next-Gen Electric CE Series bus is slightly greater at 35,000 GVWR. The GVWR applies to the maximum weight permitted, not what the actual weight is. No vehicles can exceed the GVWR and most school buses are well under, as the GVWR applies to a fully occupied school bus. While NJ limits the vehicle capacity of school buses to 54 passengers, diesel powered school buses with higher seating capacities up to 72 passengers all easily meet the 33,000 GVWR restrictions, as do 54 passenger electric powered school buses.

9. Additional Resources

- **Sierra Club**

[Electric School Bus Campaign | Sierra Club](#)

Check out the New Jersey Chapter's webpage for the latest information on legislation, bills and funding.

- **New Jersey Clean Cities Coalition**

[Electric School Bus Training Video Library](#)

This comprehensive YouTube playlist provides resources on all school bus electrification topics from various national Clean Cities & Communities partners.

[Electric School Bus Initiative](#)

Provides information on opportunities to participate in NJ based ESB projects.

- **New Jersey Department of Environmental Protection**

[Drive Green](#)

An important guide to New Jersey's electric vehicle funding program.

[Electric School Bus Grant Program](#)

The Electric School Bus Grant program provides funding to replace diesel school buses with battery-electric school buses per [P.L. 2022, c.86](#).

[Diesel Modernization Program](#)

Provides funding for diesel-to-diesel and diesel-to-electric projects designed to improve air quality, especially in areas that do not meet the national standards.

- **World Resources Institute**

[Step by Step Guide for School Bus Electrification](#)

A detailed guide to the things to know, steps to take, stakeholders to consult, and questions to ask for a successful and equitable transition to electric school buses. WRI also offers [technical assistance](#) for ESB related questions.

● **National Renewable Energy Laboratory (NREL)**

Technical Assistance & Resources for School Districts

The National Renewable Energy Laboratory (NREL) has a team of experts offering a variety of support and resources for school bus fleet managers. This includes help for planning and implementation of both zero-emissions buses and the infrastructure necessary to operate them. Support is available to awardees, applicants, and potential applicants of the EPA Clean School Bus Program. Other tools & resources include:

- ESB Route Analysis spreadsheet
- ESB Charging Station Planning Form
- ESB RFP Template
- Guide for Fleet Managers to plan and implement charging infrastructure
- An Electric School Bus Forum message board

● **CalStart**

Making the Right Connection: A Guide to Selecting Chargers that Fit Your Electric School Bus Fleet

CalStart's guide helps school bus fleets through selecting the most suitable charging technology—AC, DC fast, or bidirectional—by comparing costs, power needs, and operational impacts. It helps fleet managers and school administrators make informed decisions to ensure electric school buses operate efficiently, meet range requirements, and align with financial and infrastructure goals.

Electronic version available for download at



This document was prepared by the Transportation Committee of the Sierra Club, New Jersey Chapter and the New Jersey Clean Cities Coalition.

Bill Beren, Author
Caroline McCallum, Designer
Chuck Feinberg, Editor
Tony Hagen, Editor

Revised and Updated October 2025

