



NEW YORK LEAGUE OF CONSERVATION VOTERS EDUCATION FUND

Clean Bus Guide



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How to Use the Clean Bus Guide

This guide is a toolkit of fact sheets, tips, and resources for community groups in New York State to start building momentum locally for school bus electrification. Guide contents include:

- Environmental and health benefits of electric school buses
- A myth vs. fact sheet outlining common myths about electric school buses
- Electric School Bus Facts & Figures
- Available funding sources for electric school buses
- A chart of relevant stakeholders to involve in your campaign
- Case studies for the White Plains and Bay Shore pilot programs
- Recommended metrics to track for an electric school bus pilot program
- A social media guide and tips
- General organizing and campaign planning tips
- Petition and letter templates

NYLCVEF ATTENDED THE LAUNCH OF BLUE BIRD'S NEW ELECTRIC SCHOOL BUS IN SPRING 2018.



Introduction

The New York League of Conservation Voters Education Fund (NYLCVEF) leads programs across New York State to educate and engage New Yorkers on environmental issues and encourage them to get involved in the decision-making process. For the past three years, NYLCVEF has been working on a campaign to promote electric school buses.

Our Clean Buses for Healthy Niños (CBHN) campaign is a national initiative of **Chispa**, a group created by the League of Conservation Voters (LCV) to empower community activism on climate justice issues. Chispa provides partial funding for our campaign and we work collaboratively on campaign strategy. Since 2017, NYLCVEF has built a network of partner organizations and elevated the issue of diesel school bus pollution to a statewide conversation.

In September 2018, we released **a white paper** documenting the public health and environmental impacts of diesel pollution. The impacts of this pollution on children's health are particularly distressing given that children are uniquely susceptible to the health impacts of air pollution and that diesel exhaust is often worse inside the cabin of a school bus.

In 2018, we gathered more than 7,000 signatures on a petition to the New York State Department of Environmental Conservation (DEC) and NYS Governor Cuomo asking

them to prioritize the Volkswagen (VW) Settlement for electric school buses, particularly in environmental justice communities that experience higher rates of air pollution and asthma. In September 2018, the DEC announced it would allocate 40% (\$52.4 million) of the Settlement for mitigating emissions from New York’s bus fleets, including school buses, transit buses, and paratransit buses. Since this announcement, we have been focused on ensuring that NY school bus companies and school districts are aware of this opportunity and have the resources to take advantage of these funds.

In addition to supporting investments in electric school buses at the state level, we have been building momentum locally. In New York City, we held a town hall in Brooklyn that presented the case for electrifying school buses and held a press conference calling on the NYC Department of Education to follow-through with their promised electric school bus pilot program.

To date, NYLCVEF has celebrated many victories for school bus electrification, but the fight is not even close to being over. We created this Clean Bus Guide to share lessons learned and provide community groups with the tools and resources to launch their own successful campaigns for electric school buses.

General Campaign Guidance

Before you launch your campaign, we recommend creating a campaign plan to identify objectives, activities, and a timeline. This will help guide the campaign and make sure that you and your partners are staying on track. Successful campaigns will run differently, but we recommend following some key steps:

1. Identify partners and supporters
2. Set up a campaign website
3. Use social media to build support for your campaign
4. Develop your case with research and key messages
5. Create materials both digital and hard copy
6. Start a letter writing campaign
7. Start a petition
8. Get press involved
9. Engage community members at local events and meetings

GOOD LUCK WITH YOUR CAMPAIGN!
WE HOPE YOU FIND THIS GUIDE USEFUL.



In May 2020, NYLCVEF held a drawing contest for school-aged kids, inviting them to draw an electric school bus. This guide features the top five winning drawings from that contest.

LANGSTON, AGE 7, NEW YORK, NY

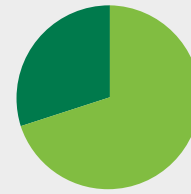
Environmental and Health Benefits of Electric School Buses

NO MORE DIESEL

Diesel school buses—the largest form of public transportation in the country—emit harmful exhaust that damages kids’ developing lungs. In a 2005 landmark study, researchers found that kids riding diesel school buses were breathing in 5 to 15 times more toxins than they would have otherwise. Diesel school buses also travel thousands of miles through neighborhoods each year, polluting our communities. Diesel exhaust is known to shorten life spans; increase rates for lung, bladder and other cancers; and has been linked to various heart and lung illnesses.

TRANSITION TO ELECTRIC

Electric school buses are the cleanest option available. They produce zero tailpipe emissions, and could help school children breathe cleaner air. In a 2019 California study, researchers found that a decrease in nitrogen



70% LOWER

Electric buses have 70% lower greenhouse gas emissions than diesel and natural gas buses everywhere in the country.²



FEWER TOXINS

This means improved air quality, better health for children and our communities, and fewer toxins harming our environment and worsening climate change.



KIDS OF COLOR

Children of color are more likely to ride diesel school buses. Children of color are more likely to live in neighborhoods with unhealthy air.



TWO TIMES

Children living in urban areas have twice as many cases of asthma linked to nitrogen dioxide pollutants.

1 Garcia E, Berhane KT, Islam T, et al. Association of Changes in Air Quality With Incident Asthma in Children in California, 1993-2014. *JAMA*. 2019;321(19):1906–1915. doi:10.1001/jama.2019.5357

2 HORROX J, CASALE M (2019) Electric Buses in America, Lessons from Cities Pioneering Clean Transportation. Retrieved from: https://uspig.org/sites/pig/files/reports/Electric-BusesInAmerica/US_Electric_bus_scrn.pdf

dioxide was associated with a decrease in the number of asthma cases.¹ Electric school buses are the only clean, zero-emissions model that will help improve air quality and improve children's health.

DIESEL & ASTHMA

Diesel fumes can also cause or exacerbate children's asthma. Asthma is the number one chronic illness for children and a top cause of school absences, leading kids to miss school and fall behind in class.

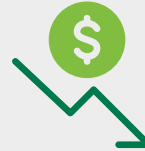
ASTHMA & COMMUNITIES OF COLOR

Asthma disproportionately hurts communities of color. Latino and Black children are more likely to ride school buses than their white peers. That means they are more likely to breathe in diesel toxins and suffer the corresponding health complications, like asthma. Communities of color are already more likely to carry the burden of air pollution, living or working near pollution sources or in cities with dirtier air. For low-income communities of color, the inequities are even greater. Poverty is associated with a shortened lifespan due to poor air quality. When coupled with lower health insurance rates, the risks to our health increase.



6,000,000 CHILDREN

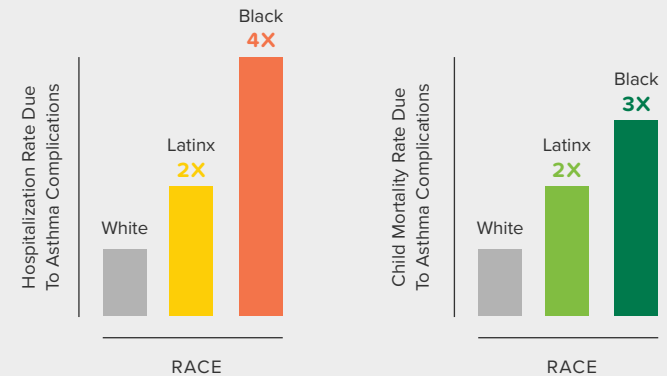
According to the Asthma and Allergy Foundation six million children have asthma. Asthma is the number one chronic illness for children *and* the number one cause of school absences.



\$82 BILLION

In one year, asthma can cost the U.S. economy nearly \$82 billion in missed work and school days, deaths, and medical costs. For uninsured and low-income individuals, average costs are even higher.

THE DISPROPORTIONATE IMPACT OF ASTHMA



Latinos overall are twice as likely to visit the ER for complications with asthma, while Latino children are twice as likely to die from asthma than their white peers.

Non-Hispanic African-Americans are three times more likely to die from asthma, while Black children are four times more likely to be hospitalized because of asthma than their white peers.

For more information about these electric school bus facts, check out [Chispa's Health Benefits of Electric School Buses 1 & Health Benefits of Electric School Buses 2](#).

Bringing Electric School Buses to New York City: Myths vs. Facts

The New York League of Conservation Voters Education Fund supports the electrification of NYC's school bus fleets. Mayor Bill De Blasio and NYC Council Speaker Corey Johnson have also expressed their support for electric school buses. NYLCVEF believes that NYC can transition the city's fleet to improve air quality, protect children's health, and make good on our citywide commitments to fighting climate change. Below we address common misconceptions about electrifying NYC's school bus fleet.

While electric school buses are a significant investment, they are investments in our children's health and future and our local air quality, which is why we recommend federal and state investments in school bus electrification.

MYTH: *There is not enough grid capacity in NYC to electrify an entire school bus fleet.*

FACT: There is enough grid capacity. On an average day, NYC uses approximately 11,000 megawatts (mw) of energy. It would take around 42 mw to sustain the city's approximately 9,000 school buses. If buses are charged efficiently and not during peak hours, NYC's grid would easily have enough capacity to meet this demand.

MYTH: *There will not be enough charging infrastructure in NYC for electric school buses.*

FACT: The City's plan to electrify its fleet by 2040 will require constructing more EV charging infrastructure within the city. Federal and state funding programs are available to alleviate some of the costs of purchasing new charging infrastructure. One of these programs is the **Make Ready NY** program, which can cover up to 90% of the cost of charging infrastructure for fleets. Additionally, in July of 2020, Governor Cuomo announced that an additional \$750 million will be available through the Make Ready program.



MYTH: *Electric school buses don't have enough range to be practical in NYC.*

FACT: “Range anxiety” is common with all EVs but is often a myth. An average electric school bus can get around 70 miles per charge. In NYC, the Department of Education mandates that each bus route cannot exceed a total one-way route distance of five miles to ensure that students do not spend more than 115 minutes on a bus. While cold weather can affect bus range, technologies are being developed to address this issue. In addition, while one electric school bus pilot program on Long Island reported that cold weather lowered bus range to 35 - 40 miles per charge, routes in NYC bus routes are not long enough for this to be an issue.

MYTH: *The upfront costs of purchasing electric school buses are too high.*

FACT: Probably the biggest barrier to school bus electrification, the upfront cost of an electric school bus can be double or triple the amount of its diesel counterpart. While this cost is expected to drop over time, it's important to remember that this transition can happen gradually, starting with the oldest buses. State and federal grant and rebate funding can offset part of the incremental costs of purchasing electric school buses. In addition, diesel fuel and maintenance savings reduce operating costs over time. Emerging technology, like vehicle-to-grid charging, can also help reduce costs. Lastly, while electric school buses are a significant investment, they are investments in our children's health and future and our local air quality, which is why we recommend federal and state investments in school bus electrification. According to the NYC Comptroller, asthma hospitalization costs taxpayers \$1.3 billion a year, and families with an asthmatic child spend upwards of \$1,000 per child per year.

Electric School Bus Facts & Figures

TYPE A ELECTRIC SCHOOL BUSES

- Type A school buses weigh less than 10,000 pounds and are designed to carry up to 30 passengers.
- Electric Type A school buses cost around \$230,000 - \$250,000 depending on their manufacturer. The price of a diesel type A school bus ranges from \$50,000 - \$65,000.



	VISION ELECTRIC	LION eLionC	TRANS TECH STARCRAFT QUEST XL
Type	A	A	A
Battery capacity	87 kW	220 kW	260 kW
Range with standard battery	100 miles	65 - 155 miles	120 miles
Passenger capacity	30	54 - 72	42
Charging system	SAE J117	J1772	N/A

For more information about these electric school bus facts, check out [Chispa's Available Electric School Buses 1](#) & [Available Electric School Buses 2](#).

Electric School Bus Facts & Figures

TYPE C & D ELECTRIC SCHOOL BUSES

- The Type “C” school bus is often called a “conventional” bus and is the most common. Type D buses are similar except the front of the bus is flat. Both weigh more than 10,000 pounds, and are designed for carrying up to 72 people.
- Electric Type C & D school buses cost around \$320,000 - \$440,000 depending on their manufacturer. Type C and D diesel school buses cost around \$90,000 - \$110,000.



	MICRO BIRD G5 ELECTRIC	STARCRAFT STARCRAFT QUEST XL	ALL AMERICAN REAR ENGINE (RE) ELECTRIC	THOMAS BUILT BUSES (DAIMLER) SAFE-T-LINER C2 JOULEY
Type	C	C	D	C
Battery capacity	100 kW and 160 kW	180 kW	100 kW and 160 kW	100 kW and 160 kW
Range with standard battery	120 miles	85 miles	80 - 100 miles	120 miles
Passenger capacity	77	39 - 47	66 - 84	81
Charging system	SAE J117	208/240V 3-phase	SAE J117	J1772

For more information about these electric school bus facts, check out [Chispa's Available Electric School Buses 1](#) & [Available Electric School Buses 2](#).

INFRASTRUCTURE COSTS

Electric school buses require at least Level 2 chargers. Level 2 chargers cost anywhere from \$1,200 - \$12,000. Factors affecting cost include available power, how close the power panel is to where the station will be, what kind of charging hardware is needed, and whether it's necessary to upgrade or bring in a new electrical service to meet capacity. DC Charging stations (fast charging) cost around \$50,000 each.

OTHER ALTERNATIVE FUEL POWERED SCHOOL BUSES

- Propane school buses cost \$10,000 more per bus on average than their diesel counterparts. On average, propane fuel costs 40% - 50% less than diesel fuel.
- Compressed natural gas (CNG) powered school buses cost on average \$25,000 more than their diesel counterparts. On average, CNG fuel costs 30% - 50% less than diesel fuel.
- Even though these alternative fueled buses are less expensive than electric and emit less than their diesel counterparts, the process of extracting these fuels contributes to climate change. Also, the sites of

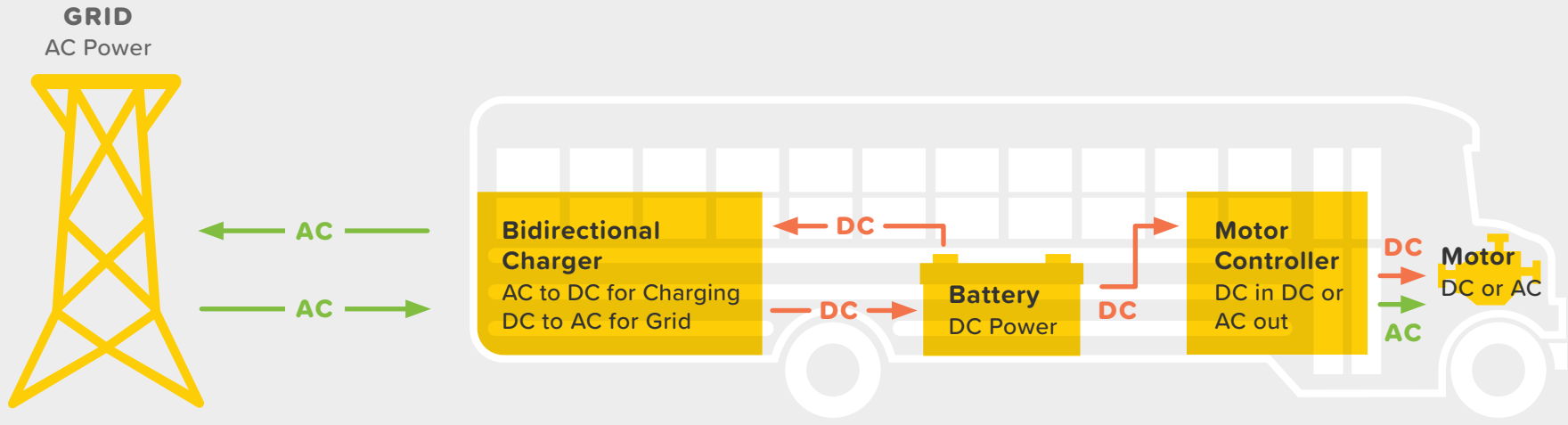


BLUE BIRD ELECTRIC SCHOOL BUS

extraction impact local air quality and create public health concerns. Electric school buses are ultimately the cleanest and safest option for communities and the environment.

REPORTED COST SAVINGS

Diesel school buses can have high fuel and maintenance costs. Electric school bus pilot programs have reported cost savings after transitioning to electric school buses due to decreased need for maintenance. Also, electricity costs are typically lower than fuel costs.



V2G TECHNOLOGY

- The buses are all electric & can be used as portable batteries.
- When not in use, they can be tapped as an energy resource through vehicle-to-grid technology.
- If energy needs are high or if renewable resources are intermittent, the batteries can provide stability to the grid.
- During a power outage or emergency, the batteries could serve as mobile power stations.

However, electricity costs vary depending on location and time of day. Cost savings can be maximized if buses are charged efficiently, for example during off-peak hours. Twin Rivers, CA uses 25 electric school buses and reports an 80% savings on maintenance and fuel costs. Costs to operate the electric school buses, for both the e-Lion and Trans Tech electric school buses, are between \$0.16 and \$0.19 per mile, versus the \$0.82 - \$0.86 it costs to run diesel buses. Overall, the school district estimates they're saving \$15,000 annually.

VEHICLE TO GRID TECHNOLOGY

Vehicle to Grid technology (V2G) enables electric school bus batteries to feed energy back into the local grid during peak energy times. Since peak energy times usually occur during the summer, when school buses are not in operation, V2G presents a unique opportunity to use electric school bus batteries as backup energy for the grid. Depending on a range of factors, school buses equipped with V2G technology have the potential to generate from \$2,000 to \$6,000 a year in revenue.



CHLOE, AGE 7



Electric School Bus Current* Funding Sources

NEW YORK STATE FUNDING

New York State Energy Research & Development Authority (NYSERDA)'s Truck Voucher Incentive Program (TVIP)

The TVIP provides vouchers for fleets across New York to purchase or lease all-electric, hydrogen fuel cell electric, plug-in hybrid electric, conventional hybrid electric, compressed natural gas, or propane medium and heavy-duty vehicles. Eligible groups must follow scrappage requirements for retiring or scrapping old diesel buses to receive funding. For more information on the program and its requirements, please consult [NYSERDA's website](#) or the [New York TVIP Implementation Manual](#).

The TVIP is broken up into two funding streams for electric school buses, the 2016 Volkswagen Settlement funds and New York State's allocations from the Federal Highways Administration's Congestion Mitigation and Air Quality Improvement Program.

NY Volkswagen (VW) Settlement Funds

In September 2018, Governor Cuomo and the NYS Department of Environmental Conservation committed \$52.4 million of the VW Settlement toward cleaning up buses, including

transit, school bus, and paratransit bus fleets. These funds will provide funding for approximately 400 new alternative fuel, all-electric or diesel powered school and paratransit buses with a priority for all-electric school buses. This funding will be released later in 2020. Read more about the settlement [here](#) and [here](#).

Congestion Mitigation and Air Quality (CMAQ) Improvement Program

CMAQ provides funding for eligible projects that reduce emissions and help achieve the National Ambient Air Quality Standards for ozone, carbon monoxide and particulate matter. Currently, \$10 million is available through CMAQ for select New York counties. More about CMAQ funding [here](#).

FEDERAL FUNDING

Environmental Protection Agency's (EPA) Diesel Emissions Reduction Act (DERA) Funds

The EPA is authorized under DERA to offer funding to accelerate the upgrade of diesel fleets with the goal of lowering diesel emissions, improving air quality and protecting public health. DERA funds provide grants, rebates, and loans for replacing or retrofitting diesel engines with pollution control technologies. Learn more about DERA funding [here](#).

Funding from DERA is available through the **DERA National Grant** and DERA's **School Bus Rebate Program**.

- **DERA National Grant**

The DERA National Grant provides funding for projects that achieve significant reductions in diesel emissions, particularly from fleets operating in poor air quality areas, as designated by the EPA. In early 2020, the EPA awarded approximately \$44 million in funding through this grant.

For more information on the DERA National Grants, including eligibility, consult [EPA's website](#).

- **School Bus Rebate Program**

The DERA School Bus Rebate Program only provides funding for school bus vehicle replacement. In 2019, the EPA offered over \$10 million to public and private fleet owners for the replacement of old diesel school buses through this program. The EPA will award selected applicants \$15,000-20,000 per bus for scrapping and replacing old school buses.

For more information on the School Bus Rebate Program, including eligibility, please consult [EPA's website](#).

*This document presents the latest information available as of September 1, 2020.

Engaging Relevant Stakeholders on Electric School Buses

HOW TO USE THIS CHART:

1. Build your base by developing relationships with relevant stakeholders, including state and local nonprofit organizations, community members, parent associations, or any other groups that are affected by diesel emissions and are willing and able to help you advocate for clean school buses.
2. Develop a list of stakeholder targets, including school officials, school bus companies and other decision-makers that can help you bring electric school buses to your community.

BUILDING YOUR BASE

COMMUNITY MEMBERS

Parents & students, local faith congregations, healthcare workers, teachers, elected officials, etc.

Having strong community support will only strengthen your purpose! Plus, the whole community will benefit from cleaner air.

PARTNERS

Organizations with relevant missions, including social justice, environment, public health, and education groups.

Having the support of the nonprofit community is important for getting the word out and helping you connect with relevant decision-makers.

LABOR UNIONS OR ASSOCIATIONS

Transit unions with school bus drivers as members, like the Transport Workers Union (TWU) & Amalgamated Transit Union (ATU). Teachers unions like the New York State Union of Teachers (NYSUT) and United Federation of Teacher (UFT) might be interested too.

Having support of bus drivers and teachers will strengthen your campaign. Along with students who ride the bus, bus drivers are exposed to diesel emissions while on the job. These union groups often have pre-existing relationships with decision-makers and can help promote the campaign.

IDENTIFYING YOUR TARGETS

SCHOOL DISTRICTS

School administration, the school district's transportation department, the board of education, and others.

- District decision-makers manage the district's budget and can negotiate with their school bus operators to utilize electric school buses.
- The school board can help spread awareness about the campaign.

LEGISLATORS

Mayor, town officials, county officials, state Assemblymembers and Senators, congressional members, etc.

- Legislators can publicly support the campaign.
- Legislators have relationships with school officials and the rest of the community, making them an asset to the campaign.
- Legislators can introduce and advocate for legislation that requires a transition to electric school buses and secure funding.

ELECTRIC SCHOOL BUS MANUFACTURERS

Manufacturers such as Blue Bird Buses, Lion Electric Bus Company, Thomas Built Buses, IC Bus make and sell electric school buses.

- School bus manufacturers supply the electric school buses for schools or bus companies to operate.
- These companies know the technology and sometimes offer training for bus drivers.

SCHOOL BUS OPERATORS

Some school bus operators in NY include First Student, National Express, Academy Bus, Suffolk Transportation Service, Gallagher Bus Service, Mid State Bus Service, etc. These services are contracted by school districts and other entities that require bus service.

- Operators provide the busing service. Sometimes they own their fleet. Other times school districts own the fleet and contract with the operator to provide the service.
- Operators that own their fleet can purchase electric school buses to add to their fleets.
- Operators can apply for state and federal funding to offset some of the costs of an electric school bus program.

LOCAL ENERGY AND POWER UTILITIES

Major NY power utilities include Central Hudson Gas & Electric, ConEdison, National Grid, New York State Electric & Gas (NYSEG), Orange and Rockland Utilities, PSEG Long Island, and Rochester Gas & Electric (RG&E)

- Utilities provide the electricity required to charge the buses.
- They can also help install charging infrastructure. As we've seen from other pilot programs, utilities can help facilitate vehicle to grid technologies so that the utility can utilize the power from school bus batteries during peak hours, also potentially generating revenue for the bus operator.

Electric School Bus Pilot Programs NY Case Studies

WHITE PLAINS, NY

WHERE: White Plains School District in Westchester County, NY

DETAILS: This pilot has been running since the fall of 2018. White Plains School District serves more than 7,000 students and transports at least 5,000 students each day. About 57% of students are Latinx and 55% of students come from “economically disadvantaged” families. Additionally, Westchester County is known for its poor air quality, often receiving an “F” on the [American Lung Association’s State of the Air report card](#).

PLAYERS:

- ConEdison, the local electric utility
- New York State Energy Research and Development Authority (NYSERDA)
- National Express LLC, school bus service provider
- Lion Electric Bus Company, electric school bus manufacturer



COSTS: Each bus costs approximately \$365,000, compared to their diesel counterparts that cost approximately \$110,000.

The project was partially funded by NYSERDA’s Truck Voucher Incentive Program, which provides state grant funds for electric vehicles. National Express received a NYSERDA grant that was used to offset \$120,000 of the cost of each vehicle. ConEdison paid \$100,000 per bus. ConEdison and National Express paid for the chargers. National Express is paying the energy costs during the school year and all of the maintenance costs.

VEHICLE-TO-GRID: ConEdison and National Express have an arrangement where ConEdison will use the buses as a grid asset during the summer peak months when they are parked at National Express’s bus depot.

CHARGING: Buses are housed and charged at the White Plains National Express depot. National Express is working with Nuvve, an EV charging company, to track metrics such as miles per charge and energy consumed using new “smart chargers” that record data from each electric school bus.

DETAILS:

- Lion Electric offered bus driver and operator training in the beginning of the program. Training for drivers is essential for efficiency and driver comfort.
- ConEd is running a Vehicle to Grid (V2G) demonstration with these buses. This two-way charging technology allows the school bus batteries to be plugged into the grid over the summer to provide increased grid capacity during peak periods. Incorporating V2G technology into electric school bus infrastructure is one of the best ways to offset some of the high upfront costs of the buses. If run efficiently, the V2G technology could generate around \$3,000 per vehicle per year, offsetting electricity costs and potentially generating additional revenue. White Plains’ V2G program will run fully for the first time during summer 2020.
- As of now, the buses can run 70 miles on a single charge, more than enough for the 10 mile routes they typically do. Vehicle uptime, or the percentage of time the vehicle is available to perform its intended function, is currently at 95%. Unlike reports from other pilot

programs, cold weather has not affected the school buses’ batteries or operation.


CHALLENGES:

- V2G integration: Since the technology is new, the V2G program has been delayed several months. The V2G program launched in summer 2020.
- Charging infrastructure: The bus depot needed to be reconfigured so the buses could be positioned correctly and receive enough energy to charge.




KEY TAKEAWAYS:

1. Overall, the buses run very well and have had few operational issues. Stakeholders report savings on fuel and maintenance costs, estimated to be about \$10,000 per year.
2. Uncharted territory: This program will serve as a good example of what V2G technology could look like for electric school bus programs in the future. Many electric school bus stakeholders are looking to White Plains for more answers on how V2G could make electric school buses more economically feasible.
3. While experts expect costs to fall in the future, upfront costs are still a barrier for large-scale electrification of school bus fleets. Small programs will likely need third party investment. More funding sources for school bus electrification could help communities start the transition.
4. Community response has been positive. The community and school district are passionate about clean school buses. Some students have nicknamed the e-school buses “singing buses” because the buses are so quiet the school installed a bell for safety. The superintendent of the White Plains school district called the pilot “a tremendous learning experience.” The pilot program has been an opportunity to teach children about climate change and air pollution issues.



“Within seven years, we think electric school buses will get to a similar price as diesel. But it’s all changing so fast. Three years ago, there was a lot of skepticism about whether electric buses were even feasible. Now, we’re not talking about whether they’re feasible. It’s all about how to make the business case work.”

—**MARC BÉDARD**, chief executive of Lion Electric
(via The New York Times)



BAY SHORE, NY

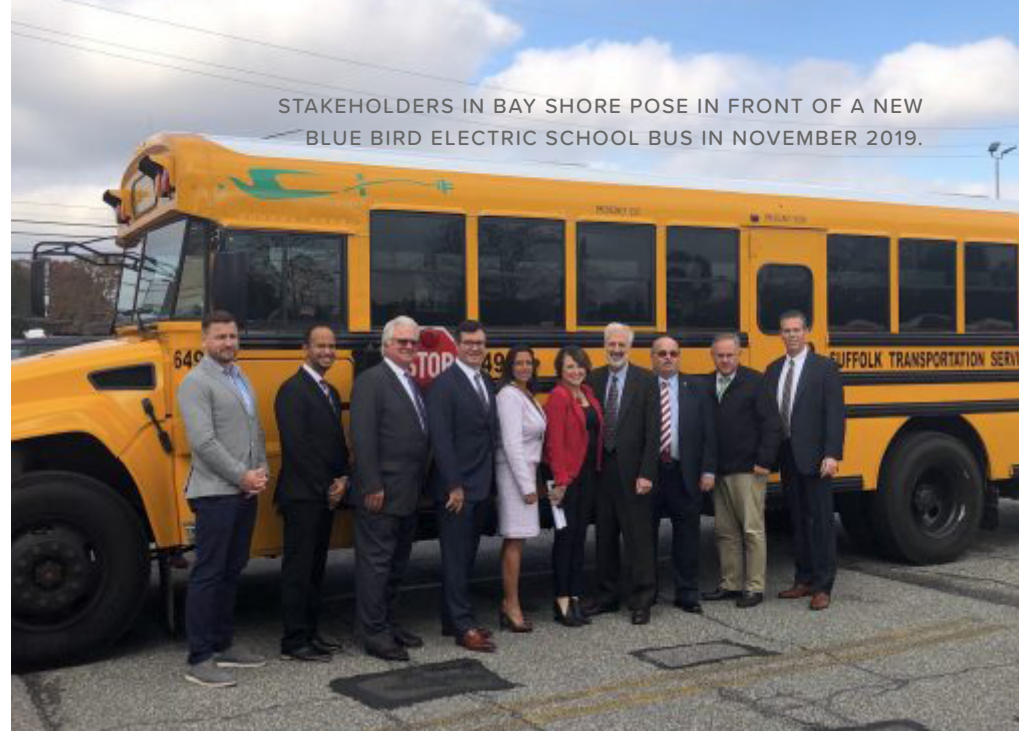
WHERE: Bay Shore School District in Suffolk County on Long Island, NY

DETAILS: This pilot started in the fall of 2019. Bay Shore’s population is 38.3% Hispanic, 36.7% white and 20% African American. Its poverty rate is 9.7%, 3% above the average poverty rate on Long Island. Additionally, Bay Shore is home to multiple New York State superfund sites. This pilot is part of the district’s commitment to an emission-free transportation system. Their CLEAN BUSES program is an acronym for Continuously Lowering Emissions and NOx (Nitrogen Oxide) Building Uses of Sustainable Environmental Systems.

KEY PLAYERS:

- Bay Shore School District
- Suffolk Transportation Service (STS), school bus service provider
- Blue Bird Buses, electric school bus manufacturer
- McBride Consulting & Business Development Group

COSTS: Each bus cost around \$330,000, significantly higher than their diesel counterparts, which cost approximately \$110,000. Suffolk Transportation Service,



STAKEHOLDERS IN BAY SHORE POSE IN FRONT OF A NEW BLUE BIRD ELECTRIC SCHOOL BUS IN NOVEMBER 2019.

with the help of McBride Consulting, was awarded a \$695,509 grant through the U.S. Environmental Protection Agency’s (EPA) Diesel Emissions Reduction Act (DERA) to partially fund the program. With the help of the DERA funds, STS purchased four Blue Bird Vision Series electric school buses for the start of the 2019-2020 school year, a project totaling more than \$1 million.

CHARGING: The Blue Bird electric buses are being charged by standard Level 2 chargers at one of STS’s depots in Bay Shore and are using charging efficiency measures like overnight charging to reduce the energy load on the grid.

PILOT DETAILS:

- The buses are fully electric and use standard battery powered heaters.
- The bus routes chosen for the pilot were the longest routes that run in the district, each around 10.1 miles.
- Fuel cost savings were noticed right away. The buses replaced had an annual fuel usage rate of 6.6 miles per gallon. By replacing four diesel school buses with electric, Bay Shore School District is saving a total of 1,667 gallons of fuel per school year, which is equivalent to 17 metric tons of CO2 emissions and around \$6,000 in fuel costs.

CHALLENGES:

- Although the buses are supposed to run 120 miles per charge, according to STS, the Blue Bird electric buses received 35 to 36 miles per charge during the winter months. Blue Bird fixed this issue by reducing the cold air intake for the bus batteries during the winter. As a result, the bus range doubled.

KEY TAKEAWAYS:

1. The groups facilitating the program are very dedicated to electric school buses and clean transportation. The teams involved have worked diligently to ensure that issues get addressed quickly.
2. The important role McBride Consulting played in this program highlights the need for more technical assis-

tance to be made available to school bus operators for state and federal grant applications.

3. Suffolk Transportation Service will continue to expand their pilot programs across Long Island, targeting environmental justice communities that experience air quality issues. They are looking to implement the program in the Brentwood and Central Islip school districts, both have similar demographics and pollution issues as Bay Shore.



“The addition of these four electric buses will greatly reduce the impact of transporting our students to and from school.”

—**JOSEPH BOND**, Bay Shore Superintendent
(via School Transportation News)

“The school bus of the future is here today. These fully electric buses are clean, efficient and provide a smooth, quiet ride.”

—**JOHN CORRADO**, Suffolk Transportation Service founder *(via Patch)*



Recommended Metrics to Track



As more communities launch electric school bus pilot programs, it becomes increasingly important that they track and report findings so that others can learn and adapt best practices. NYLCVEF has identified a list of metrics that we recommend tracking. While not exhaustive, we hope these recommendations will help inform future programs.

DATA POINTS TO TRACK:

- Vehicle range (estimated and actual) including under different temperature conditions
- Kilowatt-hours (kWh) consumed (estimated and actual)
- Overall bus efficiency (kwh/mile)
- Maintenance costs and types of issues experienced
- Air quality inside the cabin
- Mileage
 - Total vehicle miles traveled
 - Average daily mileage
 - Average monthly mileage
 - Miles traveled from full battery charge to half battery charge vs. miles traveled from half battery charge to empty, to develop a sense of the battery's reliability
- Satisfaction & Testimonials of stakeholders
 - Drivers, maintenance workers, school administration, students, and families



MANU, AGE 9
TOWN OF NEWCASTLE, NY

BEST PRACTICES

LATEST TECHNOLOGY: When it comes to charging, avoid peak demand charges by charging the bus overnight. Use a networked charger and buses with charging management technology so charging can be monitored and managed remotely. Avoid heating the bus with an auxiliary heater that runs on diesel to avoid harmful emissions.

EQUITY AND ACCESSIBILITY: Consider the accessibility of the buses and ensure that students of all abilities and backgrounds have access to cleaner buses. Given the harmful health impacts of diesel exhaust, we suggest prioritizing bus routes that operate in environmental justice communities.

DRIVER SUPPORT: Allow time for drivers to become comfortable with operating the electric bus. Ensure drivers are comfortable by providing training and support.

CONSISTENCY: When possible, maintain consistency of bus routes throughout the school year to allow for more accurate tracking of bus performance.

Social Media Guide & Tips

Grassroot movements have gone digital! Phonebanking, canvassing, and rallies are still valuable advocacy tactics, but a lot of campaign outreach has made its way to the internet. Social media has become an essential and convenient tool for disseminating information quickly and effectively. It's now easier than ever to raise awareness, connect with the community, grab the attention of key stakeholders, and broadcast calls to action. Elevate and drive support for your electric school bus campaign with our social media guide.

HOW TO POST

If you're unfamiliar with social media and how to make a post, we recommend these resources:

HOW TO POST ON FACEBOOK

HOW TO TWEET ON TWITTER

HOW TO POST ON INSTAGRAM

FACEBOOK GUIDE

Facebook is the most popular social media platform worldwide, with over two billion monthly users. Like individuals, non-profit organizations and businesses use Facebook to advertise their campaigns, events, and products. With so many entities competing for attention, it can be hard to engage Facebook users. However, we have a few tips to help you out:

- Change your cover photo to reflect your campaign.
- Share a variety of post types using the 70 / 20 / 10 rule: 70% of your content should be original and add value to your community; 20% of your content should be shared posts from partners; 10% of your content should be promotional (events, fundraisers, etc.)
- Post 1 - 4 times a day, depending on your audience. Remember, quality over quantity!
- Increase engagement by prompting your Facebook followers to "Like if..." or respond to a prompt in the comments section of your post.
- Visuals are always a plus to accompany your post. We've included some suggestions for you on the next page.
- Keep in mind that most Facebook users are on their phone, so post visuals and content that's mobile friendly.
- Videos usually receive more engagement than other types of content.

INSTAGRAM GUIDE

Instagram is all about the visuals; you can't post without an image. Instagram is a great tool for advocacy, as visuals can help tell a story and can evoke an emotional response. As you know "a picture is worth a thousand words," so follow our recommendations and elevate your campaign on Instagram.

- Instagram's biggest user group is millennials, so keep in mind that your target audience falls between the ages of 22-37 years old.
- Encourage followers to engage with your content by asking them to repost or tag someone in the comments section.
- Afternoon is the best time to post.
- You can upload more than one photo to a post. Use this feature to tell a story. Use numbers in the caption to share something about each photo.
- Use the Instagram stories feature to give followers a "behind the scenes" look at campaign activities.
- Go Live on Instagram for exclusive, special events. Advertise that you'll be live streaming in the days leading up.
- Instagram does not allow links in picture captions, so always include a link to your campaign website in your profile description. Direct users to your campaign website using the very common Instagram phrase, "link in bio" in your picture captions.
- Use hashtags after your photo captions. Use hashtags that are both specific to your organization and campaign, and general hashtags that are relevant to your cause. We provide electric school bus specific hashtags in the Twitter section below.



RIVER, AGE 7
BROOKLYN, NY

FACEBOOK / INSTAGRAM SAMPLE POSTS

Did you know that levels of asthma-causing toxic exhaust are four times higher in diesel school buses than in gasoline cars? This is concerning when you consider that 2.5 million children in New York ride diesel school buses when school is in regular session. Replacing diesel buses with clean, all-electric school buses is crucial for the health and future of school-aged children and all New Yorkers! *[Insert call to action here]*

According to the American Lung Association, exposure to particulate matter has been linked to increased hospitalization for asthma attacks. With over 40,000 diesel-powered school buses on the roads in NYS every school day, it is no surprise that 1 in 10 children suffer from asthma statewide. It's time to take dirty diesel buses off the road and invest in our children's future by switching to zero-emissions electric school buses! *[Include here a call to action]*

Asthma is the leading chronic illness and number one cause of school absences among children and adolescents. Breathing in diesel air pollution from school buses can aggravate asthma symptoms. That's why we support the switch to all-electric school buses in New York. No child should miss school because of an asthma attack caused by the bus that gets them there! *[Include here a call to action]*

The health impacts from diesel school buses come with a price tag. Asthma in New York State costs taxpayers billions and is projected to rise. Asthma also puts a strain on New York families who pay extra for medical expenses and miss time from work to care for an asthmatic child. We must invest in cleaner school buses for the health and economic stability of New York's families. We need a **#CleanRide4Kids!**

[Insert here a call to action]

Children living in environmental justice communities and children of color are growing up with higher rates of asthma and higher chances of developing other respiratory illnesses. We must prioritize electric school buses in environmental justice communities that are already disproportionately burdened by air quality issues. New York needs a **#CleanRide4Kids** *[Include here a call to action]*

Diesel engines release a toxic exhaust that accelerates climate change, contributes to air, water, and soil pollution, and harms human health. It's time that we invest in our future by switching to electric school buses. Taking diesel school buses off the road will protect the health of our children and help New York reduce greenhouse gas emissions from the transportation sector, the number one contributor in the state. It's time for a **#CleanRide4Kids** *[Insert a call to action here]*

TWITTER GUIDE

Twitter has over 5,000 tweets published every second! Twitter is most effective for targeting elected officials, the media and other advocates. Follow our guidelines to ensure your Twitter content is engaging and stands out amongst the rest:

- Posts should be engaging but concise. You're only allowed 280 characters in each Tweet, including spaces, links, or hashtags.
- As you make updates to your campaign website, Twitter is a great way to promote your posts in real time. Direct Twitter users to your website by including the link in your tweet. Ask your partner organizations to amplify your Tweets by retweeting so their followers also see the information, and tag them where appropriate. Tag key stakeholders (elected officials, companies, decision-makers, etc.) in your posts. Tagged accounts will receive a notification of your post.
- Hashtags were born on Twitter, so it's no wonder 40% of Tweets include one. Hashtags can help users find posts with ease. We recommend using 1-2 hashtags per Tweet.
- Twitter is a great way to receive feedback from your followers. Ask for suggestions on your campaign or start a contest with your followers.
- We recommend including a visual with your Tweet.

SUGGESTED VISUALS

Here are some suggested visuals from the National Chispa Clean Buses for Healthy Niños campaign. We also suggest using local pictures to elevate storytelling and make your content as relevant to your local community as possible.



TWITTER SAMPLE POSTS (280 character limit)

Toxic fumes are 4x higher in diesel-powered school buses than passenger cars. Join our campaign and stand up for the 2.5 million children in New York who ride diesel school buses! Tell **@stakeholder** you want **#zeroemissionbuses** now!

[Insert petition/webpage link] **#hashtag**

Asthma is the **#1** cause of absences among children and is aggravated by air pollution from diesel exhaust. No child should miss school due to the dirty school bus that gets them there! Demand zero emission **#electricschoolbuses** now and sign our petition! *[Insert petition/webpage link]* **#hashtag**

In NYS, 1 in 10 children suffer from asthma. It's time to clean up our school bus fleets and invest in all-electric school buses for the health of our children. **@Stakeholder**, let's switch to **#zeroemissionbuses**! Join our campaign:

[Insert petition/webpage link] **#hashtag**

We must prioritize replacing diesel school buses with electric alternatives in **#environmentaljustice** communities that already face air pollution issues at much higher rates. *[Insert petition/webpage link]*

Exhaust from diesel school buses release toxic chemicals that accelerate climate change and pollute our communities. It's time for **[COMMUNITY]** to invest in electric school buses. Join our campaign for **#electricschoolbuses** at *[Insert petition/webpage link]*

Campaign Tactics



Grassroots organizing begins in communities and unites individuals or groups around a common interest with the intention of making a change. With the help of RE-AMP's Grassroots Tactics Planning Guide, we've put together some suggestions for how to plan and execute an effective electric school bus campaign.

MAKE A PLAN

Brainstorm with a team and write down your goals, target audiences, activities, and timeline. Keep in mind that some aspects of your plan may change over time. Communicate and collaborate with the members of your team about the plan, document important information, and keep resources up to date.

GRASSROOTS TACTICS

TABLING AT EVENTS

Set up a table at a public event with informational and visual materials to raise awareness about your campaign and connect one-on-one with attendees. When tabling, you can gather names and signatures

of supporters for petitions, recruit volunteers, and network with allies. Have a plan in place for following up with any interested parties and engaging newly recruited people.

DOOR-TO-DOOR CANVASSING

Canvassing is a personal way to connect with a specific community. Canvassers can ask for petition signatures, monetary donations, or promote an event. Make sure to train your volunteers with talking points before they go out into the community. Also, be sure to follow state issued guidelines on social distancing.

HOUSE PARTIES

Hosting a small event in someone's home can be a fun way to engage the community and get people involved in your campaign in an informal way.

LOBBY DAYS & DISTRICT MEETINGS

Lobby days and district meetings connect community members to their local government offices to share their stories and educate elected officials on a range of issues. This type of activity can show your elected

officials that constituents support your campaign. If you can't go in person, set up a virtual meeting.

RALLIES AND PUBLIC DEMONSTRATIONS

These activities consist of gathering a group of supporters in a public space or at a targeted location to demonstrate public support for your issue. Be clear with your audience about why it's important to join and provide directions to the location and transportation if possible. Make signs and materials to visualize your message. Make sure to take pictures! You can also organize virtual rallies.

TOWN HALL MEETINGS

A town hall meeting is an educational event on a particular issue, with the goal of facilitating discussion in the community and gathering input. It's important to invite key stakeholders to participate. Recruit experts to attend and answer difficult questions. This can be done in person or virtually. Guidance on what stakeholders are relevant to school bus electrification is available our [Stakeholders Document](#).



SOCIAL MEDIA CAMPAIGN

Social media campaigns have a specific goal and run for a specific amount of time on social media platforms. Establish a campaign hashtag to distinguish campaign posts from the rest. Link to petitions, call to actions, pledges, and encourage engagement on the posts. For more information about how to use social media to elevate your campaign, see our [Social Media Guide](#).

LETTER WRITING

Start a letter writing campaign to educate your elected officials and let them know you care about the issue. Ask your supporters to do the same. Provide suggestions or a letter template to help your supporters stay on message. Be clear about the instructions and how letters will be sent. Make sure to keep supporters updated on social media.

PHONEBANKING

Making phone calls to elected officials or key targets is an easy and personal way to send a message. Recruit staff and/or volunteers to make calls. Phone scripts are helpful for callers, and “asks” should be conducted towards the end of the call once a rapport has been established.



TESSA, AGE 8
COBLESKILL, NY

VIRTUAL OPTIONS

If in-person activities are not feasible, virtual campaign tactics can be an effective option. The basic necessities for virtual events are a digital platform (like Zoom), an event plan, speakers (if applicable), and guests! Most in-person events can be moved online using video conference services, social media, or platforms with livestream capabilities such as Youtube. Here are some of our tips for organizing a virtual event:

- Promote the event through email and social media. Collaborate with others to better market the event.
- Be clear about how to access the event: share links, passwords, and other important information in your event advertisements.
- Do a test-run before the event and take note of issues that may arise.
- Have any guest speakers and organizers sign onto the event platform early to review the agenda and work through any technical issues.
- Encourage engagement during the event by leaving time for Q&A.
- Livestream in-person events for increased accessibility to the event.
- Record the event and make it available for people to view later.

EVALUATING CAMPAIGN ACTIVITIES

Along the way, it's important to track progress on your campaign plan. This may inform any adjustments you need to make to your campaign activities. Some metrics you can track are:

- Event attendance
- Petition signatures
- Social media engagement (likes, shares, comments on posts)
- Legislative progress and outcomes
- Feedback
- Letters of Support
- Coalition members

Many of these grassroots tactics are in-person actions. For more information about online organizing and engaging, see our [Social Media Guide](#).

Thanks to RE-AMP's Grassroots Tactics Planning Guide, where much of this information was sourced. For more information, [click here](#).

Petition & Letter Templates

SEND A LETTER TO YOUR ELECTED OFFICIALS OR SCHOOL DISTRICT

LETTER TEMPLATE

Dear XX,

I am writing as a constituent of [town or city] or as a member of *[organization or coalition]* to ask for your help in a campaign to improve our air quality and protect our children's health. It's time for *[Insert your town or city]* to transition away from dirty diesel school buses to cleaner all-electric alternatives.

School buses offer a vital public service, but diesel-operated buses emit a toxic cocktail of chemicals, including nitrogen oxide, particulate matter, and carbon dioxide, all of which contribute to climate change and pollute our air. Children are especially susceptible to the negative impacts of this pollution due to their smaller, developing lungs. Often, the air quality is worse in the cabin of the school bus than outside of it! The chemicals that comprise diesel exhaust have been shown to cause respiratory illnesses, including asthma, which is a leading chronic illness and the number one cause of school absences among children and adolescents. *[Optional: include information about asthma rates in your community]*

(continued on next page)

Unfortunately, our most vulnerable populations are hit hardest by this pollution. In low-income communities and communities of color, poor air quality impacts public health at drastically higher rates. There are higher rates of diagnoses, hospitalization, and mortality for respiratory disease in these communities, and in some environmental justice neighborhoods, 1 in 4 children suffers from asthma. In addition, children with disabilities are exposed to this exhaust at much higher rates given the longer time they spend riding the bus. *[Add language here about a particular community of concern].*

Fortunately, there are cleaner alternatives available. In September 2018, the NYS Department of Environmental Conservation (DEC) and Governor Cuomo allocated \$52.4 million of the Volkswagen Settlement toward cleaning up buses and prioritizing environmental justice communities. *[Your school bus contractor or school district]* can retire an old diesel school bus and apply for these funds to help offset the cost of an electric school bus. We urge you to support our effort to clean up *[your town or city]*'s school bus fleet. As *[title of official]* of *[name of town or city or school district]*, you have the platform and power to help transition our community toward a healthier and more sustainable future.

Going to school should never endanger a child's health or ability to pursue an education. With your commitment and leadership, we can make clean school buses a reality in *[town or city]*!

Sincerely,

Your name or list your coalition partners

START A PETITION TO RAISE AWARENESS AND BUILD IMPACT

PETITION TEMPLATE

Tell your elected officials it's time to ditch diesel school buses!

The majority of *[your town or community]*'s school buses currently run on dirty diesel fuel, allowing diesel pollution to negatively impact children's health and our environment. The exhaust and its byproducts have been linked to respiratory diseases like asthma, cardiovascular illnesses, cancer, and higher mortality rates.

We have the opportunity to change that. Zero-emissions, electric school buses provide a clear alternative but we need funding to bring them to our community.

Sign our petition to send a message to *[Mayor, school board or target elected official]* urging them to dedicate funding for electric school buses now!

NOTE: *you can collect petition signatures for a number of asks, including to support a bill or for a program to be included in a budget. This petition calls on elected officials to allocate funds in their budget for electric school buses.*

ABOUT NYLCVEF

The New York League of Conservation Voters Education Fund (NYLCVEF) is a statewide environmental organization that educates, engages, and empowers New Yorkers to be advocates for the environment. For the past two years, we have been promoting electric school buses with our Clean Buses for Healthy Niños (CBHN) campaign. To get involved with our work, visit us at nylcvef.org/cleanride4kids.

This guide was developed by Angela Hotaling, NYLCVEF Program Director and Caroline Hahn, NYLCVEF Clean Bus Fellow. We want to thank Chispa, VEIC, Lion Electric, Con Edison, McBride Consulting, and National Express for their input and help.

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