



Electric School Bus Funding & Planning

Get AMPED Forum
July 25, 2023 – 12:00–1:00 pm

Agenda

- Introductions & webinar goals
- What is AMPED?
- Electric school bus funding overview
- The Journey: Ithaca City Schools
- The Journey: Gates Chili Central Schools
- Panel Q&A

Presenters



Jeremy Johnston
Director of Sales
New York Bus Sales LLC,
School Lines CT Inc.



Elizabeth Fox
Transportation Supervisor
Ithaca City Schools



Matthew J. Helmbold
Transportation Supervisor
Gates Chili Central Schools

Webinar Goals

- Understand available sources for electric school bus funding and next steps for learning more
- Learn from school districts at different points in their electrification process and get your questions answered
- Understand the early steps towards an electric school bus transition



Mitigating the impacts of climate change by reducing carbon pollution caused by fossil fuels through the promotion of beneficial electrification in the Genesee/Finger Lakes region.

Funders



Climate Solutions Accelerator

of the Genesee-Finger Lakes Region



Steering Committee Members

Causewave Community Partners
Center for Community Health & Prevention
Common Ground Health
Dutton Properties
EMCOR Betlem
Empire State Development
Gallina Development
Genesee/Finger Lakes Regional Planning Council
Genesee Transportation Council
Greater Rochester Chamber of Commerce

Monroe County
PathStone Corporation
Piekunka Systems Inc.
Rochester Gas and Electric Corporation
Rochester Institute of Technology
Rochester Housing Authority
Rochester Regional Health
Regional Transit Service
SWBR
University of Rochester



Electric School Bus Funding

Jeremy Johnston

Director of Sales, New York Bus Sales LLC, School Lines CT Inc.



ELECTRIC SCHOOL BUSES



BLUE BIRD®

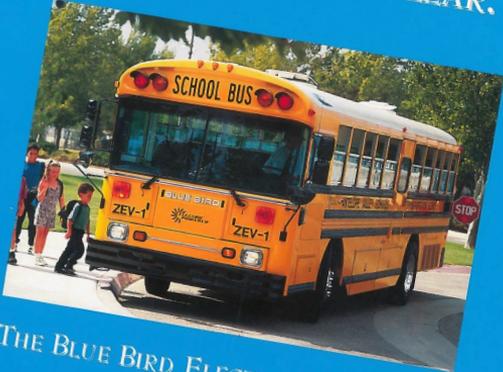


GIRARDIN
ENERGY

Blue Bird – First to Market with EV



THE FUTURE IS CLEAR.



THE BLUE BIRD ELECTRIC SCHOOL BUS.



BLUE BIRD



THE BLUE BIRD ELECTRIC SCHOOL BUS



DRIVER'S AREA
No gear shifting and an expansive display area including battery monitor, provides to ease driver operation.



MOTOR
The three-phase AC induction motor allows an electric drive to 55 mph in just 32 seconds with 412.13 mile rechargeable efficiency.



CHASSIS
The electric bus incorporates the same kind of rugged, reliable chassis found on Blue Bird's independent vehicles.

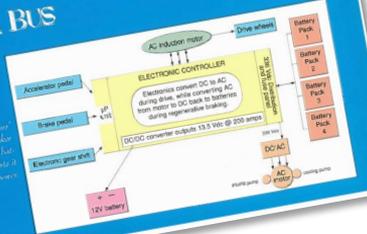
BATTERIES
The 112 stacked, vented-type deep cycle batteries provide 300 volts (118 amps) in an electric vehicle.



The Electric School Bus stores enough power to run for up to 22 passengers.



BLUE BIRD



The Electric Bird's electronic controller takes 120 current from four large battery packs and converts it to produce AC power.

The diagram shows the following components and flow:

- Inputs: Accelerator pedal, Brake pedal, Electronic gear shift.
- Power Source: 12V battery.
- Controller: ELECTRONIC CONTROLLER (receives signals from pedals and gear shift).
- Conversion: DC/DC converter outputs 13.5 Vdc @ 200 amps.
- Motor: AC induction motor (receives power from the DC/DC converter).
- Storage: Battery Pack 1, 2, 3, 4 (connected to the system).

...Since 1994!

New York State School Bus Mandate



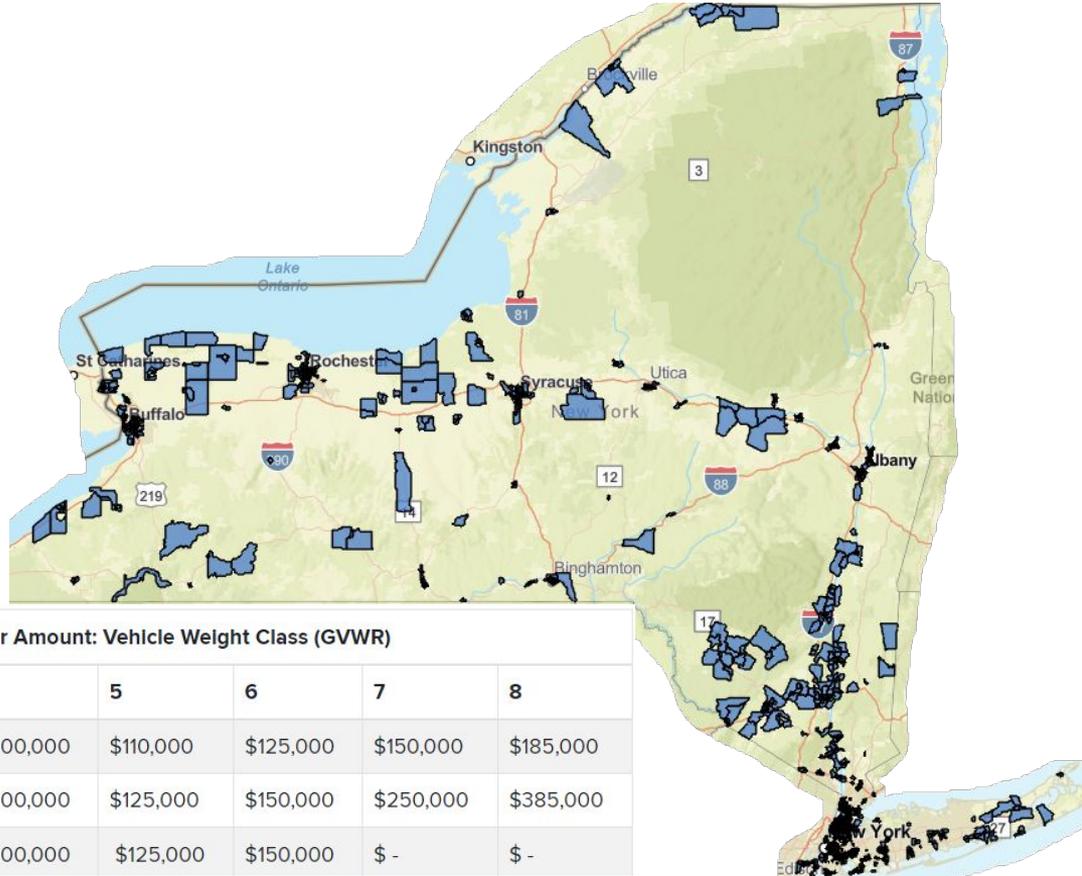
2027- All New School Buses Purchased MUST BE
ELECTRIC

2035- 100% Of School Bus Fleets MUST BE
ELECTRIC

2018 - NYSERDA- NY TRUCK VOUCHER



- Scrappage Required
- Service A “DISADVANTAGED COMMUNITY”
- Reporting For THREE Years
- Maximum 5 Buses Under Program
- Funds \$200,000 Per Bus
- \$200,000 Does NOT Cover Infrastructure
- DOES Help Qualify For Joint Utilities of NY Infrastructure Program



Vehicle Type	Fuel Type	Incremental Cost %	Voucher Amount: Vehicle Weight Class (GVWR)					
			3	4	5	6	7	8
On-Road Trucks	BEV / FCEV	95%	\$ -	\$100,000	\$110,000	\$125,000	\$150,000	\$185,000
Transit Buses	BEV / FCEV	100%	\$ -	\$100,000	\$125,000	\$150,000	\$250,000	\$385,000
Paratransit Buses	BEV / FCEV	100%	\$ -	\$100,000	\$125,000	\$150,000	\$ -	\$ -
School Buses	BEV	100%	\$ -	\$100,000	\$120,000	\$150,000	\$200,000	\$220,000

EPA – CLEAN SCHOOL BUS FUNDING



\$5 BILLION Spread Over 5 Years

- Focus is on electric
- Propane and CNG are still open for applications

Eligible entities: state & local governments, nonprofit school transportation associations, tribes, tribal organizations and contractors that sell clean or zero emission school buses

Must Sell, Scrap, Trade Or Donate One Bus For Every Bus Listed On Application To Qualify

Application submission through www.grants.gov and www.SAM.gov



Funding Levels - Dependent on applicant

School District Prioritization Status	Zero Emissions Class 7+	Zero Emissions Class 3-6	Propane Class 7+	Propane Class 3-6
Buses serving districts that meet one or more criteria	\$375,000	\$285,000	\$30,000	\$25,000
Buses serving districts that are not prioritized	\$250,000	\$190,000	\$20,000	\$15,000

2022 – EPA Round 1- Rebate Program



Who Qualified For Funding?

- 1) High-need School Districts and low-income areas.
 - School districts that are listed in the SAIPE (Small Area Income and Poverty Estimates) for 2020. To qualify these districts have 20% or more students living in poverty.
 - Also, school districts not listed in the SAIPE data that self-certify as having 20% or more students living in poverty pursuant to the federal poverty threshold.
- 2) Rural- School districts identified with locale codes “43-Rural: Remote” and “42-Rural: Distant” by the NCES (National Center for Educational Statistics).
- 3) Tribal- Bureau of Indian Affairs funded school districts and school districts that receive basic support payments under section 2003(b)(1) of title 20 for children who reside on Indian Land.

CLOSED

There were NO School Selected That Were NOT Prioritized

2023 EPA – Round 2 – GRANT PROGRAM



\$4 BILLION Left Over 4 More Years

- Focus is STILL on electric
- Propane and CNG are still open for applications

Eligible entities: state & local governments, nonprofit school transportation associations, tribes, tribal organizations and contractors that sell clean or zero emission school buses

\$400 Million announced for second round GRANT program but more will be allocated if there are enough applications submitted.

Application submission through www.grants.gov not through SAM.GOV

Monday, April 24, 2023

Wednesday, July 26, 2023

Tuesday, August 22, 2023

November 2023 to January 2024

February to March 2024

Notice of Funding Opportunity (NOFO) Opens

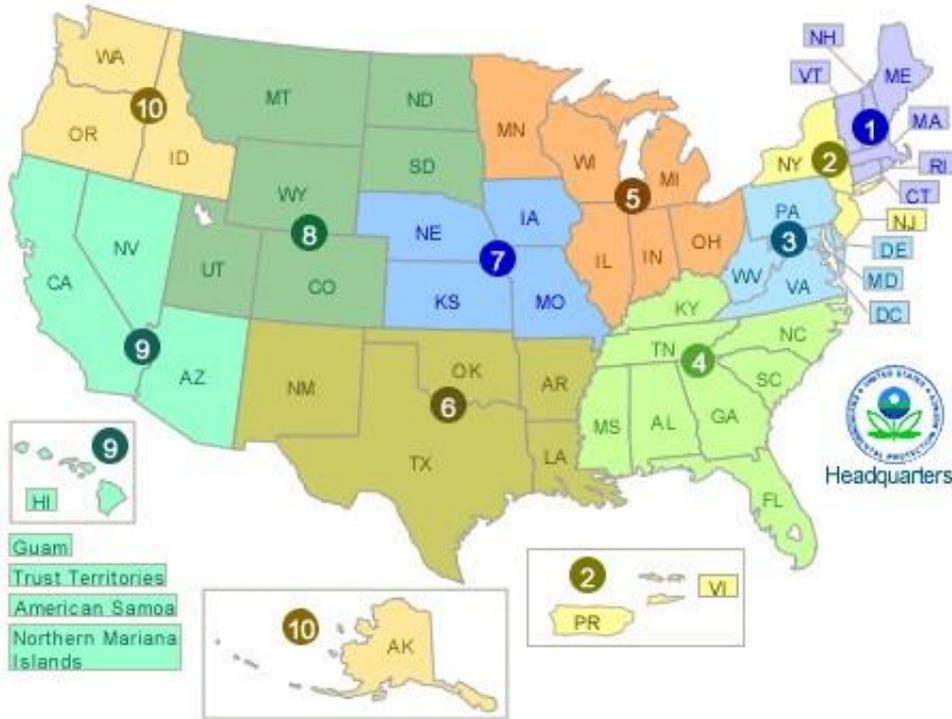
Final Date to Submit Questions

NOFO Closes – Application Deadline

Anticipated Notification of Selection

Anticipated Awards

How Much Money Is Available Locally?



- EPA Has Earmarked \$37,062,100 for REGION 2.
- REGION 2 Includes New York, New Jersey, Puerto Rico, Virgin Islands

Funding can split between bus or charger



REFLECT MAXIMUM AMOUNTS	Zero Emissions Class 7+	Zero Emissions Class 3-6	Propane Class 7+	Propane Class 3-6
Priority Status	\$395,000	\$315,000	\$35,000	\$30,000
Non-Priority	\$250,000	\$195,000	\$25,000	\$20,000

Class size is based on GVWR. Class 3-6 have a GVWR of 10,001-26,000 lbs. Class 7+ have a GVWR of 26,001 lbs. or more.



Is Scrappage required? YES, but good news!



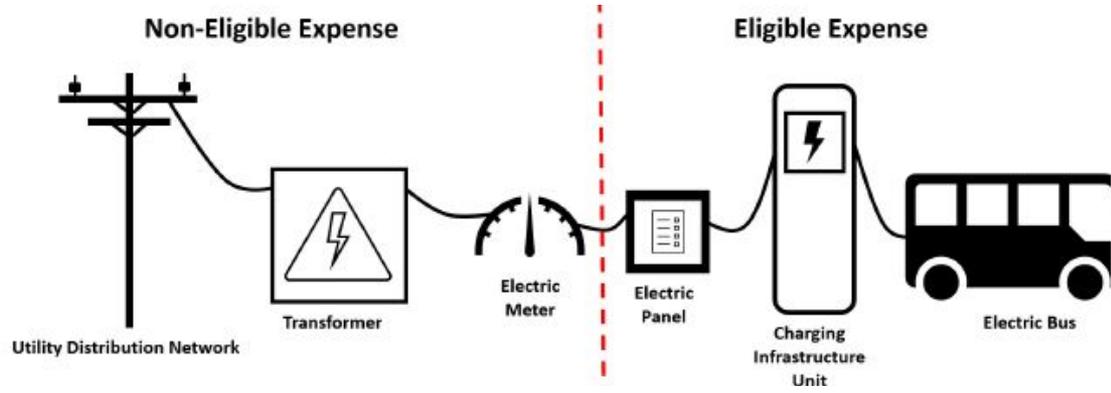
NO CHANGE FROM ROUND ONE

1. Be vehicle model year 2010 or older diesel-powered school buses that will be scrapped if selected for funding
 - a. If a fleet has no eligible 2010 or older diesel school buses and is requesting zero-emission school bus replacements, the fleet can either:
 - i. Scrap 2010 or older non-diesel internal combustion engine buses; or
 - ii. Scrap, sell, or donate 2011 or newer internal combustion engine buses
2. Have a Gross Vehicle Weight Rating (GVWR) of 10,001 lbs or more
3. Be operational at the time of application submission – Able to start, move in all directions, and have all operational parts
4. Have provided bus service to a public school district for at least 3 days/week on average during the 2021/2022 school year at the time of applying, excluding COVID-related school closures

Charging Infrastructure IS Covered



Level 2 and Level 3 (DC Fast Charge) are eligible for funding. Rebate amounts will be funded per unit awarded. One bus qualifies for one infrastructure funding.



Selectees pursuing ZE bus replacements are allocated funding for eligible infrastructure costs per Section 4. While most charging equipment costs can be reported in a purchase order following the guidance above, **EPA will accept approved quote in lieu of purchase order ON eligible infrastructure installation costs, such as design, engineering, labor.**



Costs For Training and Consulting Covered



SHUTDOWN PROCEDURE COMPONENTS

Wait 10-minutes for system to de-power after procedure completion

Shutdown Steps

1. Check Wheelie to apply spring brake, if possible
2. Turn off ignition, if possible
3. Disconnect the low voltage negative battery cables (wrench or cut or screw)
4. Remove the hood if possible
5. Wait 10-minutes for the system to de-power

STEERING COLUMN & DASHBOARD

Electric Bus Key Switch

Parking Brake

LOW VOLTAGE SWITCH

Bus Exterior

Remove the apparel service elements parts by using the following:

1. Disengage the locking bar
2. Slide the locking bar about 45°
3. Disengage the locking bar system
4. Slide the locking bar another 45°
5. Pull MPD out

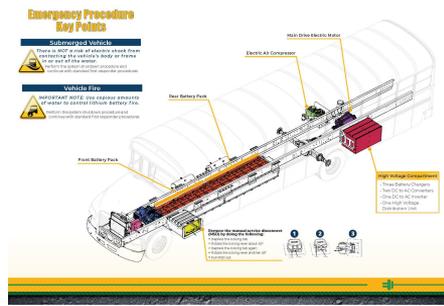
PERSONAL PROTECTIVE EQUIPMENT LEVEL C EQUIVALENT

- BUNKER GEAR**
Thermal Barrier Helmet
- Thermal Gloves
- Flame & Water-Resistant Pants & Overcoat
- Insulated Rubber Boots

Full SCBA should be included (not part of the outfit)

FIRST RESPONDERS GUIDE WARNINGS & SAFETY

- All high voltage components are identified by either a high voltage symbol or orange coloring
- DO NOT cut or remove the high voltage battery cables
- DO NOT cut into or open the energy/storage (for most vehicle applications, battery systems, generator motor or the power inverter)



Line Items for these must be shown on application and quote to qualify.

CVEV Pre-Trip Inspection List

Bus No. _____

Zone 1: Rear Passenger side of Bus

- Disconnect the charging cable at the rear, passenger side of the bus.
 - Replace the cap on the charging plug
 - Close the charging plug access door.

Zone 2: Front Hood Area

- Open the hood at the front of the bus.
 - Check the level of the power steering fluid by looking at the reservoir;
 - The fluid should be in between the "COLD" and "HOT" marks. The power steering fluid is pink.
 - Check the level of the coolant by ensuring that the coolant fluid is between the "COLD FULL" and "HOT FULL" marks. The coolant fluid is orange.
 - Visually check the area around the radiator for any coolant leaks.
 - Close and latch the hood.

Zone 3: Battery Area

- Open the battery access door and pull out the battery tray.
 - Inspect the battery connections making sure they are clean and are not corroded.
 - Check the tightness of the cables to their connection points by grabbing the cables and moving them back and forth. There should be no movement where the cables are connected to the battery.
 - Push the battery tray back in and close and latch the access door.
- Check under the bus around the front axle, the area under the high voltage batteries and the area behind the rear axle for any fluid on the ground which would indicate a coolant leak.

Zone 4: Driver Compartment Area

- Sit in the driver's seat.
 - Insert the key in the ignition and start the bus.
 - DO NOT put on the seat belt and DO NOT close the entrance door.
 - Firmly press the brake pedal, disengage the parking brake and press "D" or "R" on the gear selector.
 - Warning indicators should flash on the dash, audible alarms should be heard and the bus should not move.
 - Press "H" on the gear selector, set the parking brake and release the brake pedal.
- While still sitting in the drivers seat.
 - Put on the seat belt and DO NOT close the entrance door.
 - Firmly press the brake pedal, disengage the parking brake and press "D" or "R" on the gear selector.
 - Warning indicators should flash on the dash, audible alarms should be heard and the bus should not move.
 - Press "H" on the gear selector, set the parking brake and release the brake pedal.
- With the seat belt still on, close the entrance door.
 - Firmly press the brake pedal, disengage the parking brake and press "D" or "R" on the gear selector.
 - The bus should not display any warnings on the dash and no audible alarms should be heard.
 - Slowly release pressure on the brake pedal and the bus should move.
 - The bus is now ready for operation

LOCAL Funding Opportunities



STATE AID REIMBURSEMENT PUSHED TO 12 YEARS FOR REIMBURSEMENT

FEDERAL FUNDS WILL BE ABLE TO BE “STACKED” WITH STATE FUNDS TO HELP OFFSET THE INITIAL INCREMENTAL COST OF DIESEL TO ELECTRIC SCHOOL BUSES.

MORE INFORMATION TO COME BUT NYSERDA WILL BE DISPERSING THE FUNDS BUT QUALIFICATIONS AND FUNDING LEVELS HAVE YET TO BE ANNOUNCED.

NYS 2023 Budget: Bond Act

Albany, N.Y. – The New York League of Conservation Voters (NYLCV) and the World Resources Institute’s [Electric Bus Initiative](#) applaud Governor Hochul and the New York State Senate and Assembly for including in this year’s budget nation-leading legislation that aims to have all new school bus purchases be zero-emission starting in 2027 and requires all school buses statewide be 100% zero-emission by 2035.

Dedicating \$500 million in the Clean Water, Clean Air, and Green Jobs Environmental Bond Act for electric school buses and charging infrastructure will ensure that school districts serving disadvantaged communities will be at the front of the line to put electric buses on the road.

THANK YOU

QUESTIONS?

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Ithaca City Schools Electrification




Elizabeth Fox
Transportation Supervisor



Ithaca's Journey

- Building Our Team
- Our Path
- Plan for Implementation
- Q and A



Meet the Team

- Manufacturer- New York Bus Sales
- Architect – Tetra Tech
- IT Director
- Business Official
- Facilities Director
- Transportation Supervisor
- Fleet Manager
- Electricians/ Construction Management

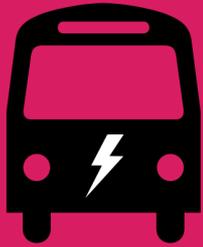


Business Official- Expert in avenues of funding: Reserve funds, general funds, capital projects. Necessary to have at all meetings to develop budgeting around the EV project.

Facility Director- Expert in existing bus garage site and services, relationships with municipalities, partners like local BOCES, relationships with existing staff and contractors for the district.

IT Director- Early onboard for charger installation to ensure connection, involved in dashboard management and supports training.

Transportation Director/ Fleet Manager- Expert in local operation, current routing, current staff, implementing safety training necessary for drivers and mechanics.





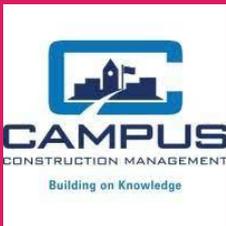
New York Bus sales/ Girardin Energy



Tetra Tech



Nelcorp

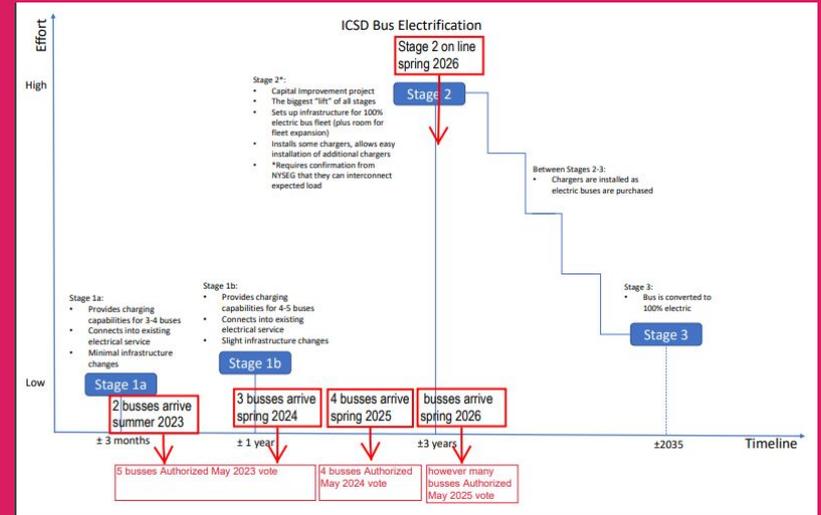


Campus Construction

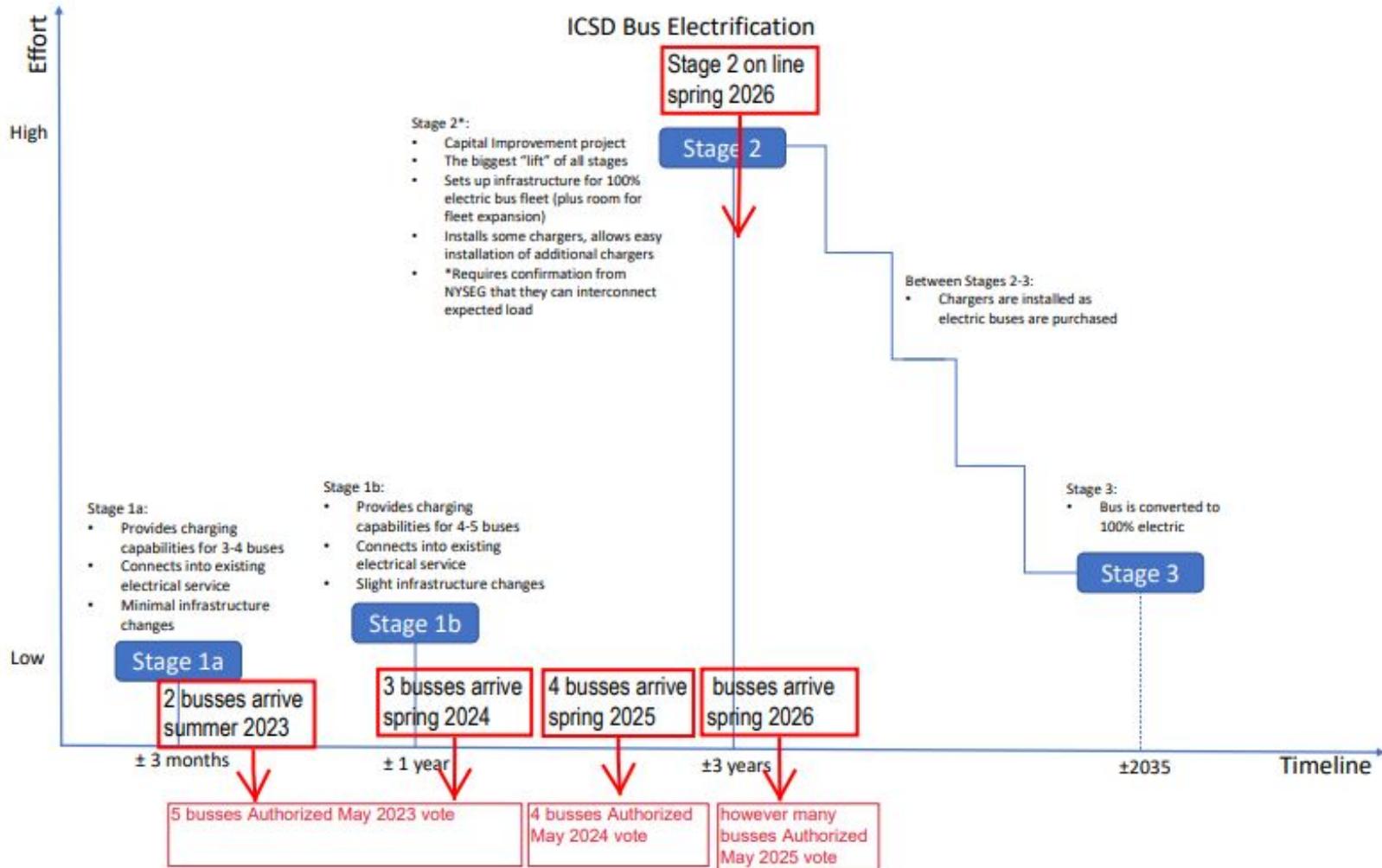
- Provides support on all team calls, provides training, resources for grant writing, energy consultant services, community and BOE education
- Provides professional electrical engineer drawings, partnership with construction company to manage capital project, developed staging for project, professional project management
- Experienced, professional Electricians, working with engineers to troubleshoot issues and resolve them. Experience with other Electric vehicle projects at many campuses.
- Campus Construction works in partnership with the BOE, facility director, contractors to ensure professional work is done at ICSD.

Our Path

- Our team has built our plan into stages for both purchasing of buses and infrastructure.
- We have received 2 electric buses on site, 3 additional buses will arrive 2023.
- (4) Additional level 2 chargers will be added 2024 for future bus purchases.
- We are engaging in a capital project of \$11 M 2026 to complete infrastructure work.
- We have used NYVTIP (\$200,000 per bus) funding towards purchase of 5 buses.
- We are currently applying for Clean EPA grant.



ICSD Bus Electrification





Implementation

Things to take into consideration when implementing your new bus:

- The routes that are optimal to be electrified.
- What population, community and number of students the route will serve.
- Pick drivers that will be advocates for Electric Vehicles.
- Create internal training process for drivers to drive electric vehicles. (Protect students and assets)
- Provide mechanic training.
- Provide first responder training.
- Provide charging management training for dispatching staff.
- Brainstorm how EV buses will change your operation(union issues, bidding process, charger location not at garage etc.)

1

Why is purchasing electric buses important to ICSD?

“ There are many strategies, policies, and behavioral shifts needed for the type of sustainability our school community deserves. Scaling the use of electric buses is one of those efforts in the ICSD ”

- Superintendent Luvelle Brown

2

What does an equitable transition to electric school buses mean?

An equitable transition to electric school buses means that the communities most impacted by diesel exhaust pollution have access to the benefits of electric school buses first.

3

Where do I start in the process of electrification?

Build your team of experts and start one step at a time, hold meetings on a regular basis.



GIRARDIN
ENERGY



“Great things in business are never done by one person. They are done by a team of people - Steve Jobs”

Contact Info- Elizabeth Fox- 607-444-1557
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Contacts-

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Nelcorp- Bfox@nelcorpelectrical.com

New York Bus Sales- jjohnston2@newyorkbussales.com

Girardin Energy(Polara Energy)- zakaria.botros@polara.energy



ELECTRIC SCHOOL BUSES

AT GATES CHILI CENTRAL SCHOOL DISTRICT

Matthew Helmbold, Director of Transportation



***SCAN WITH YOUR PHONE
TO FOLLOW ALONG WITH
OUR SLIDES***



Electric school buses at Gates Chili



Summer 2020

Gates Chili begins exploring the purchase of electric school buses to reduce costs, district's carbon footprint



Spring 2021

District residents vote to approve a proposition to purchase two electric school buses

Summer 2021

Gates Chili and Matthews Buses, Inc. apply for grant funding to offset the cost of purchasing electric school buses



Winter 2021-22

Gates Chili is approved to receive a voucher from NYSERDA totaling \$400,000 to purchase electric school buses

Spring 2022

Gov. Hochul announced a plan for 100% electric school buses by 2035



Summer 2022

Gates Chili unveils two new fully-electric school buses manufactured by Thomas Built Buses



Fall 2022

Gates Chili electric buses hit the road in the new school year!

Conversations with NYSED are ongoing in regards to charging.

Additional electric school buses coming soon!



BUS FEATURES AT-A-GLANCE



INFRASTRUCTURE FEATURES AT-A-GLANCE



CURRENT INFRASTRUCTURE:

- Two 24 kilowatt charging stations (wall boxes on pedestals)
- Utilizes InControl management software
- Based on 208 voltage

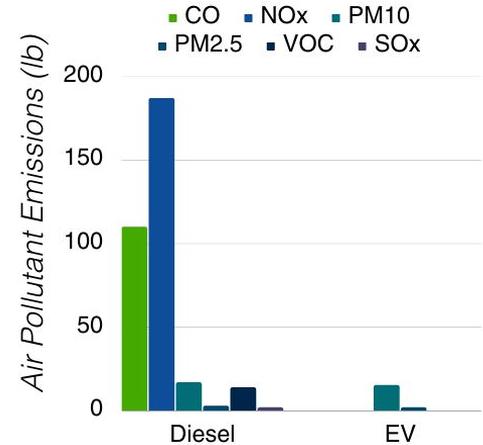
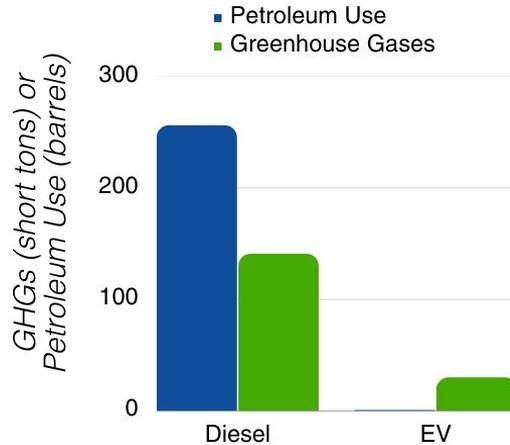
FUTURE INFRASTRUCTURE:

- Two additional 24 kilowatt charging stations
- One 60 kilowatt charging stations
- Will be 208 and 480 voltage



ENVIRONMENTAL BENEFITS

Electric buses produce significantly lower greenhouse gas emissions and other air pollutants than conventional diesel buses.



FINANCIAL BENEFITS



Electric buses will provide nearly \$92,000 in savings over conventional diesel buses over the life of the vehicle.*

	<u>Diesel</u>	<u>EV</u>
Price of school bus	\$138,000	\$382,036
Incentive amount		-\$200,000
Fuel (\$/gallon or \$/kilowatt-hour)	\$4.00	\$0.09
Fuel economy (MPDGE)	7	24
Maintenance and repair (\$/mile)	\$0.54	\$0.17
<u>TCO Categories</u>		
Depreciation	\$96,047	\$65,895
Fuel	\$45,028	\$10,752
Diesel exhaust fluid	\$695	\$0
Maintenance and repair	\$38,880	\$12,240
ESTIMATED COST OF OWNERSHIP*	\$180,651	\$88,886



LESSONS LEARNED



Pack your patience--buses may not arrive on time.

Expect to learn and adjust as you go--the industry is still evolving.

Don't be the hero--that's somebody else's job.

Anticipate conflicting information--agencies are learning too.

Stay the course--you'll get there eventually.



QUESTIONS?





ELECTRIC SCHOOL BUSES

AT GATES CHILI CENTRAL SCHOOL DISTRICT

Matthew Helmbold, Director of Transportation



Q&A

AMPED Resources

Join us for our next **FREE webinar** Click for details and to register!

AMPED
GO ALL ELECTRIC.

Electrify Your Building Electrify Your Vehicles What is AMPED? Events Blog f in

Fully electric buildings come in all shapes and sizes.

Taking your facility from "piped in" to "plugged in" improves the health and safety of your workers, and can drastically lower operating costs.

Get Started Learn More

Information, resources, and connections to trusted advisors

The case for **electrified buildings** is getting stronger every day.



Electrify Your Building **Electrify Your Vehicles** What is AMPED? Events Blog

Let's get started!

The EV needs of businesses and individuals vary greatly and constantly change as vehicles are replaced and new options are brought to market. In this rapidly-changing landscape, the best place to start is getting a **FREE CONSULTATION** from one of our non-profit partners, Greater Rochester Clean Cities. You'll be connected with an expert who can help you understand your options and get you started with whatever steps you decide to take.

If you'd rather move forward independently, use the button below to take advantage of New York State programs for electric vehicles.

Connect to an expert at Greater Rochester Clean Cities

OR

Explore NYS Programs for Clean Energy Transportation

A Green Future for Public Transit
Electric Buses for Regional Transit Service (RTS)

PROJECT DESCRIPTION

1. Planned acquisition of 20 electric buses
2. Charging infrastructure

TEAM & CONTACTS

New Flyer Electric vehicle services	CSE On-trip feasibility study
Black & Veatch On-site site assessment	AMPEX Electric Inc. Construction services and financing
EV Connect On-site site assessment and management services	NYSDOT Funding and program administration
AMPEX Electric Inc. Construction services and financing	AMPEX Electric Inc. Construction services and financing

A Green Future for Public Transit

Steering Toward Sustainability
Electric Fleets for the City of Rochester

PROJECT DESCRIPTION

1. Fleet conversion of 100 vehicles
2. Charging infrastructure

TEAM & CONTACTS

Black & Veatch On-site site assessment	AMPEX Electric Inc. Construction services and financing
EV Connect On-site site assessment and management services	NYSDOT Funding and program administration
AMPEX Electric Inc. Construction services and financing	AMPEX Electric Inc. Construction services and financing

Steering Toward Sustainability

Electric Fleets for the City of Rochester

Explore how the city of Rochester's push into electric fleets is both beneficial to the environment and economically-savvy. Manager of

A Skeptic Goes Electric
Electric Fleets at Monroe County

PROJECT DESCRIPTION

1. Fleet conversion of 100 vehicles
2. Charging infrastructure

TEAM & CONTACTS

Black & Veatch On-site site assessment	AMPEX Electric Inc. Construction services and financing
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AMPEX Electric Inc. Construction services and financing	AMPEX Electric Inc. Construction services and financing

A Skeptic Goes Electric

Electric Fleets at Monroe County

Meet Rob Tyndall, Safety and Training Analyst for Monroe County and electric vehicle's biggest skeptic turned complete convert. Learn why Monroe County has recently purchased all-electric

A Healthy Investment
Charging Stations at Rochester Regional Health

PROJECT DESCRIPTION

1. Installation of 10 charging stations
2. Charging infrastructure

TEAM & CONTACTS

Black & Veatch On-site site assessment	AMPEX Electric Inc. Construction services and financing
EV Connect On-site site assessment and management services	NYSDOT Funding and program administration
AMPEX Electric Inc. Construction services and financing	AMPEX Electric Inc. Construction services and financing

A Healthy Investment

Charging Stations at Rochester Regional Health

Discover how Rochester Regional Hospital has helped reduce its carbon footprint by installing EV charging stations at virtually zero cost. The hospital's Director of

Next Steps

1. Follow AMPED on [LinkedIn](#) or [Facebook](#) to stay in the know about electric school buses updates
2. Explore decision-making [resources](#) for school districts from the Alliance for Electric School Buses
3. Visit the [EPA website](#) to learn more about this round's applications – due August 22nd
4. Email info@GRCC.us for a free 1:1 coaching session about your fleet needs



Next AMPED Webinar

November 16th, 2023