



R'EVing Up: Electric School Bus Adoption Strategies

New Jersey School Board Association
Workshop 2024

October 23, 2024

IG: [Sustainable_Jersey](#) | X: [@SJ_Program](#) and [@SJ_Schools](#) | FB: [@SustainableJersey](#) | LinkedIn: [sustainable-jersey](#)



Today's Speakers

Gabrielle Baet

NJ Department of Environmental Protection

Bill Beren

Sierra Club

John Blair

Jackson Township School District

Pamela Boozer-Strother

Prince George's County (MD) Board of Education

Nancy Quirk

Sustainable Jersey



Introducing Sustainable Jersey for Schools

- **Certification program** for municipalities and schools in New Jersey
- **Tools, resources, and guidance** to help municipalities and schools become more sustainable
- **Grants and funding** for municipalities and schools
- **Regional Hubs**



Statistics

2014
Program
Started

67%
Districts
Participating

1,191
Schools
Registered



150
BRONZE

307
Bronze
Certified



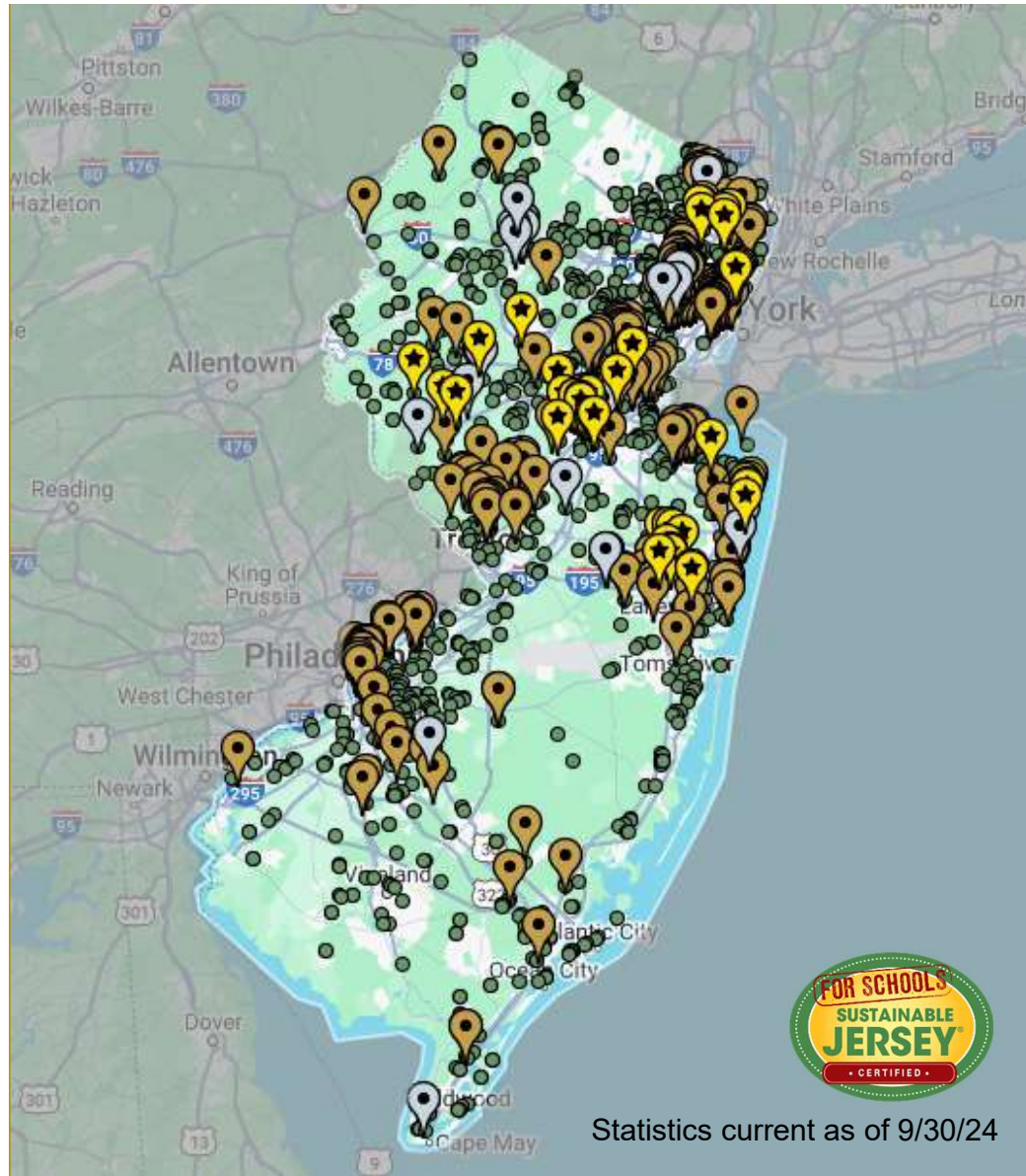
350
SILVER

68 Silver
Certified



48
Digital
Schools
Stars

9,864
Actions
Implemented



Statistics current as of 9/30/24



SJS Energy Actions

Facilities and Operations

Energy Efficiency	Renewable Energy	Alternative Fuel Vehicles
<ul style="list-style-type: none"> • Carbon Footprint * • Energy Tracking and Management • Energy Efficiency for School Facilities * 	<ul style="list-style-type: none"> • On-Site Solar Energy + 10 pt storage/resilience + 5 pts solar thermal • On-Site Geothermal • Buy Renewable Energy 	<ul style="list-style-type: none"> • Sustainable Fleets

Student Engagement

Student Engagement and Community Outreach Actions
<ul style="list-style-type: none"> • Behavior-Based Energy Efficiency in Schools • Civic & Stewardship Volunteer Initiatives • Community Education and Outreach * • Education for Sustainability • Enrichment Programs through Partnership • Green Challenges • Professional Development for Sustainability *

* = priority action

Sustainable Fleets for Schools Action

- Nation's largest fleet
 - 480,000 school buses in operation
 - Largest form of mass transit
- Alternative fuel vehicles cost more than diesel
- Save 40-50% on fuel costs
- Bi-Directional Charging
 - V2B

- Healthier Air
- Reduced CO2 emissions
- Less particulate matter pollution
- Quieter
- Less expensive O&M





Total Cost of Ownership

Purchase price of vehicle
(with incentives)

+ Fuel cost

+ Maintenance
less to maintain than
ICE vehicles

= Total Cost of Ownership

When comparing the cost of an EV with a traditional vehicle consider **Total Cost of Ownership.**

*University of Michigan. *Relative Costs of Driving Electric and Gasoline Vehicles in the Individual U.S. States.* 2018.

<http://umich.edu/~umtriswt/PDF/SWT-2018-1.pdf>

** U.S. DOE. Argonne National Laboratory. *Comprehensive Total Cost of Ownership Quantification for Vehicles with Different Size Classes and Powertrains.* 2021. <https://publications.anl.gov/anlpubs/2021/05/167399.pdf>



IRS Clean Energy Tax Credits

Direct Pay (also known as “Elective Pay”)

- Tax credit for tax-exempt entities
 - Municipalities
 - School Districts
 - Nonprofit Organizations
- Non-competitive incentive
- Authorized for 10 years
- Eligible entities typically must be project owner
 - Vehicle leasing, PPAs are not included

Disclaimer: This a general overview of the IRS Direct Pay tax provisions for informational purposes only.

Eligible Project Examples

- Electric Vehicles
- Some EV Charging Equipment
- Solar, Wind Geothermal
- Battery Storage
- Microgrids




sustainablejersey.com/grants/direct-pay-tax-credits-for-municipalities-school-district-and-nonprofits/



SUSTAINABLE JERSEY GRANTS PROGRAM

Currently Accepting Applications for Sustainability Projects at your School or District!

Start an online grant application today for a sustainability project that can get your school points in the Sustainable Jersey for Schools certification program. Eligible project categories include equity & diversity, health & wellness, climate change education, outdoor classrooms, SEL, STEAM, food waste & recycling, school gardens & more!

CYCLE SPONSOR	PROJECT TYPE	ELIGIBLE APPLICANTS	GRANT AMOUNTS	CYCLE OPENED	APPS DUE	LEARN MORE
 njea NEW JERSEY EDUCATION ASSOCIATION	General Sustainability	NJEA-Affiliated Schools	\$2k & \$10k	7/22/24	10/28/24	SCHOOL GRANTS 
 PSEG Foundation	General Sustainability	Public Schools	\$2k & \$10k	10/21/24	3/7/25	

UPCOMING EVENTS

CLIMATE CHANGE LEARNING COLLABORATIVE WEBINARS: SUSTAINABLE JERSEY FOR SCHOOLS

Join the Stockton University's Climate Change Learning Collaborative (CCLC) for live webinars covering resources and programs available through Sustainable Jersey for Schools to address sustainability in your school district. The webinars will include ideas to implement a school-wide Green Team and develop a school or district Sustainability Plan. The live webinars are scheduled for a variety of dates and times in 2024 and 2025 all at various times. These sessions are free and require pre-registration.

Nov 13, 2024, Dec 11, 2024, Jan 6, 2025, Feb 12, 2025, Mar 13, 2025
Register: bit.ly/4gQk0Rx

READY, SET, CERTIFIED

This webinar will discuss the requirements and benefits of being a certified school, green team best practices, and resources available to implement sustainability actions.

Tuesday, Nov 12, 2024, 3:00pm-4:00pm
Register: bit.ly/3XzZgEF

COUNTDOWN TO CERTIFICATION

This webinar will help your school and/or district submit its certification application by reviewing how to access your application, the steps to upload documentation, the Digital Schools Star application process, submission tips, and resources.

Thursday, Dec 12, 2024, 3:00pm-4:00pm
Register: bit.ly/3zvsdJQ

TRI-COUNTY SUSTAINABILITY GENERAL MEETINGS

This Sustainable Jersey Regional Hub will host virtual meetings on a variety of sustainability topics throughout the year. The last meeting of the year is December 4.

Tuesday, Dec 4, 2024, 7:00pm-8:00pm
Register: bit.ly/Tri-CountySustainability

COMING SOON! 2024-2025 NEW JERSEY STUDENT CLIMATE CHALLENGE & INFORMATION SESSION

The New Jersey Student Climate Challenge is open to New Jersey public school students in grades 6 to 12. It is an innovative way for teachers to motivate their students to learn about climate change through a fun place-based project that aligns with the new Climate Change Education Student Learning Standards. Students work in small groups to complete a school or community project that addresses a cause or impact of climate change and then share what they accomplished in a short digital story video. School winners receive grants to advance their climate education initiatives.

SAVE THE DATE: 2025 SUSTAINABILITY SUMMIT

Friday, May 9, 2025, 9:00am-4:00pm; Bell Works, Holmdel, New Jersey;
Doors open at 8:00am

For more information and to register for an upcoming event visit: bit.ly/SJSchoolsEvents



Are you signed up for the Sustainable Jersey for Schools mailing list?

Bi-weekly emails with program updates, new funding opportunities, partner event information, and more!



Join Sustainable Jersey For Schools
Mailing List

Join

Sign-up button located at the bottom of the Sustainable Jersey for Schools website homepage at sustainablejerseyschools.com

Sustainable Jersey for Schools Underwriters and Sponsors

Program Underwriters



Corporate Sponsors



*Digital Schools Underwriters and Sponsors

IG: Sustainable_Jersey | X: @SJ_Program and @SJ_Schools | FB: @SustainableJersey | LinkedIn: sustainable-jersey



Prince George's County Public Schools

R'EVing Up: Electric School Bus Adoption Strategies

NISBA Workshop 2024 – Quest for Student Success – 10/23/24

Pamela Boozer-Strother, Board of Education Member
Prince George's County Public Schools

Climate Change Action Plan EXECUTIVE SUMMARY

Eight Priority Recommendations: Taking Action for a Carbon Neutral Future



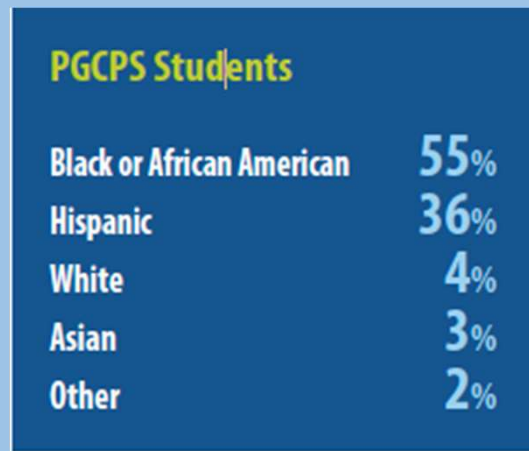
Where the PGCPS Board of Education Started.... April 2021-April 2022

- 133,000 students
- 22,000 employees
- \$2.8 Billion annual operating budget
- 1,251 buses 🚌
- 208 Schools & Centers 🍏🏫
- ~45 additional facilities (central office, bus lots, maintenance)

Challenges

- School systems are responsible for 8% of carbon emissions in U.S.
- PGCPS \$8 Billion backlog in school construction and deferred maintenance, high cost to environment and tax-payer

Solution – Climate Action!!

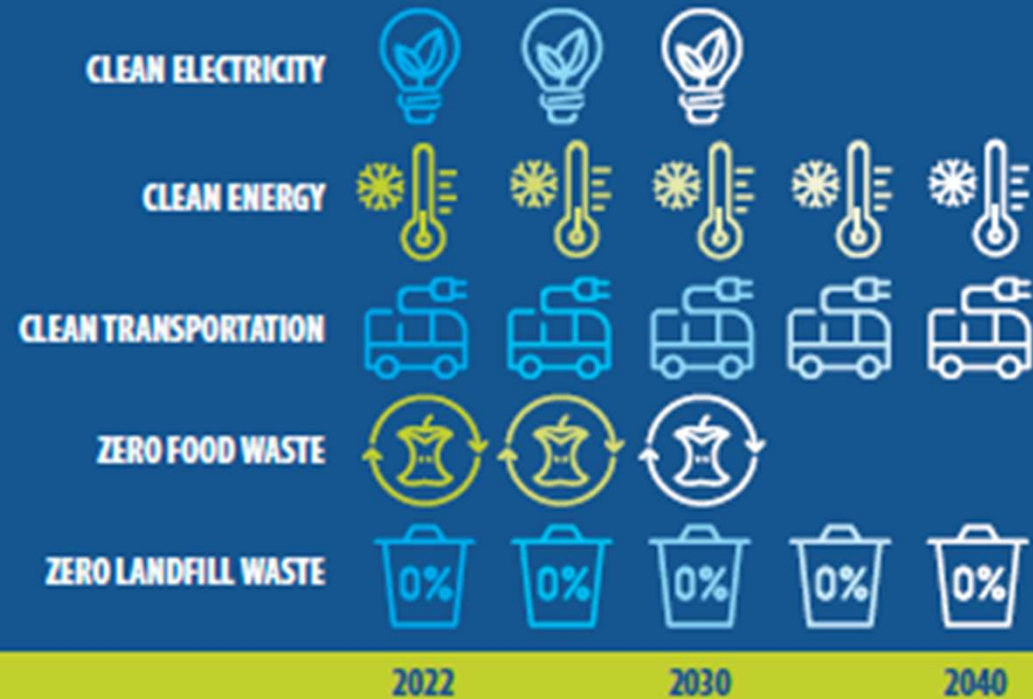


PGCPS Board of Education Climate Action Policy











Policies By Year

IPCC Emission Reduction Targets



PGCPS CCAP: 8 Priority Recommendations

58 Action Items

1		Support Environmental Justice Through Climate Curriculum, Training and Partnerships
2		Reduce Carbon Footprint from PGCPS Buildings
3		Commit to Renewable Energy Sources for a Net Zero Emissions Future
4		Commit to Low Carbon School Transportation
5		Reduce Food Waste and Grow Climate-Friendly Food
6		Commit to Sustainable Materials Management and Procurement
7		Commit to Climate Resilient Land Management
8		Lead by Example to Support Transformational Change



I've always wanted to be a part of something bigger than myself that creates positive change. As a student and community member of Prince George's County, I hope that the Climate Change Action Plan will positively impact our schools and communities and inspire further action on a larger and stronger scale."

Nithin Gudderra, Oxon Hill High School
Class of 2023 and Work Group Member



NJSBA Workshop 2024
pgcps.org/climate

PGCPS Priority #4: Commit to Low Carbon Transportation

Operational Action	Recommendations	Within PGCPS Control	Existing Initiative Alignment	Operational Readiness	Cost Effectiveness	Timeline (Years)
1	Modify Bus Route to Fuel Use	●	●	⦿	●	3-5

Mitigation Action	Recommendations	Within PGCPS Control	Existing Initiative Alignment	Operational Readiness	Cost Effectiveness	Timeline (Years)
1	Electrify All Buses by 2040	●	●	●	●	1-15
2	Increase Walking/Biking/Public Transit Use	⦿	⦿	●	●	3-5
3	Eliminate Unnecessary Idling from School Buses	●	●	●	●	1-3
4	Increase the Safety and Other Amenities Available on School Buses	●	⦿	⦿	●	1-15
5	Electrify All Light-Duty Vehicles and Other Equipment by 2040	●	⦿	⦿	●	1-15

KEY: Yes ● Emerging ⦿ To Be Developed ○

NOTES: Timeline from 2022. For details of each operational recommendation, view the full *Climate Change Action Plan*.







FOUNDATION SETTING



BUILD AND EDUCATE PROJECT TEAM

Get educated on technology and process, establish our approach to centering equity, engaging stakeholders and research funding and financing options



ENGAGE KEY STAKEHOLDERS

Stakeholders who will be impacted by fleet electrification, to include utilities and bus vendors



RESEARCH FUNDING AND FINANCING OPTIONS

Assess federal, state and local grant sources, Local utility grants, etc



CREATE A ROADMAP WITH EQUITY STRATEGIES

Develop time-bound vision statements that include context, goals, criteria and conditions





CHARGING INFRASTRUCTURE AND OPERATIONS PLANNING

CONDUCT FACILITY ASSESSMENT

Discuss site constraints,
costs to upgrade and
electrical infrastructure

DEVELOP CHARGING INFRASTRUCTURE PLAN

Long term planning
with utilities

DEVELOP OPERATION PLAN

Plan the
infrastructure
needed to charge
ESBs and operational
shifts



PROCUREMENT AND INSTALLATION



Research industry paths

Develop our specifications

Align procurement
specifications



Procure Buses and Other Services
Align procurement practices for ESB services



Select and Procure Chargers
Chargers can be procured through turnkey asset management



Upgrade Facilities and Install Electrical Infrastructure
Evaluate the needs and cost for all facilities



TRAINING, TESTING AND DEPLOYMENT



Train Drivers, Maintenance Workers and First Responders



Test Fleet and Charging Systems



Deploy Buses





PERFORMANCE BENEFITS AND SCALING

Tracking and monitoring bus performance and benefits for reduced greenhouse gas emissions.



Monitor and Report on Performance and Benefits

Ensure our buses and chargers are functioning as expected.



Leverage Project for Learning and Other Impacts

Opportunities for STEAM students to help build a pipeline



Update Our Roadmap and Scale

After the initial deployment use findings to efficiently, equitably and cost effectively scale the r fleet.

HMS_PGCPS
@HMS_PGCPS

Shout out to @pgcps for this new electric bus. The kids love it, and it's great for the environment!



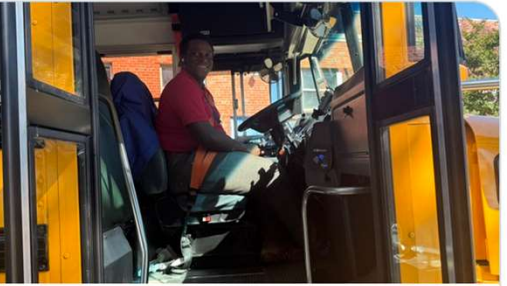
9:18 PM · Oct 14, 2024



Where the PGCPS Board of Education is today....

Tito P. Villosillo Jr., Ph.D., PD-SML
@teach2dfuture

Excited to see the new electric bus roll in at High Point HS today! It looks so modern and sleek—plus, it's soundless! Students are now required to wear the seatbelts! 🌱 Let's go for safety & go green! Thank you @pgcps 🙌👏



2:25 PM · Oct 11, 2024 · 1,025 Views



NJSBA Workshop 2024

Climate Change Action Plan Resources for Boards of Education

This is Planet Ed (Aspen Institute PreK12 program)

- <https://www.thisisplaneted.org/>



UndauntedK12 Board Member Resources

- <https://www.undauntedk12.org/for-school-boards>



Generation 180 SLICE Network

- <https://generation180.org/electrify-our-schools/electrify-our-school-buses/>

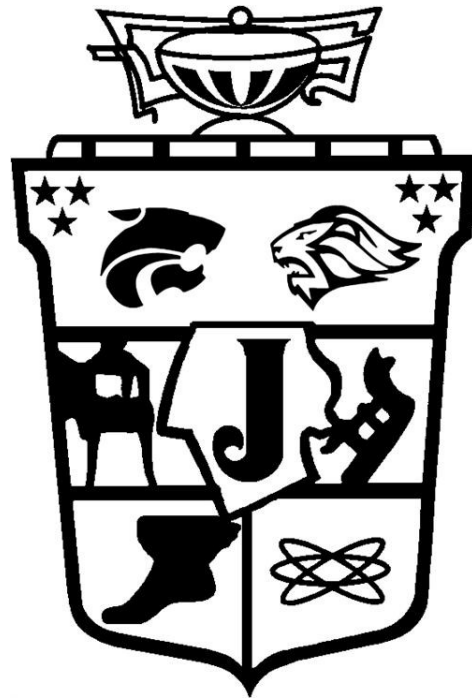


WRI Electric Bus Initiative

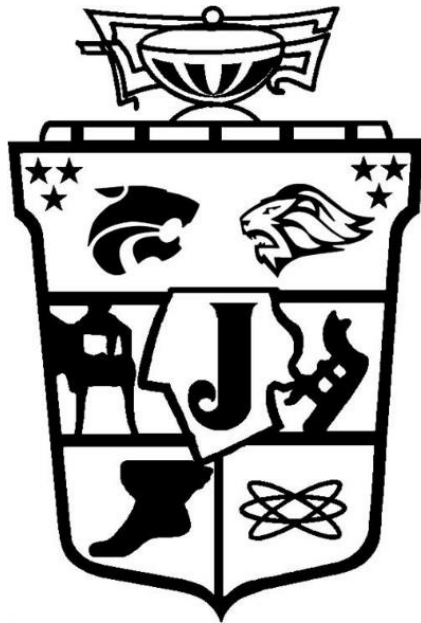
- <https://www.wri.org/initiatives/electric-school-bus-initiative>



Jackson School District



Jackson School District



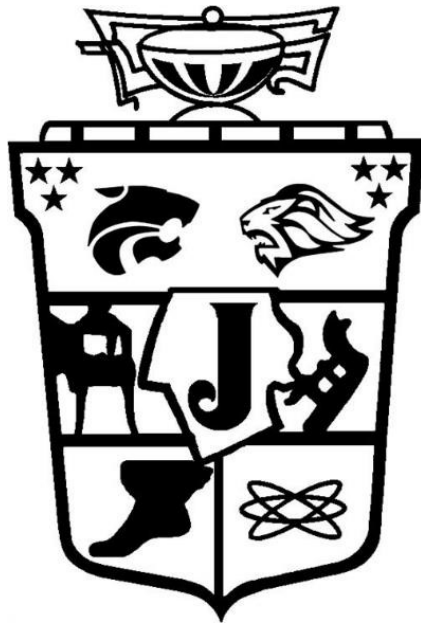
All Schools are at least Bronze Certified with Sustainable Jersey for Schools

Elms ES – Silver Certified

Elms ES is the only Silver Certified School in Ocean County



Jackson School District



U.S. DEPARTMENT OF EDUCATION



Elms ES - 2022

Switlik ES - 2021

Volkswagen EV Grant \$1,354,400



One truck is dedicated to recycling

\$10,000/year in fueling savings

Level 2 Charging Station included in Grant



LRIG - \$64,000

SSB-NPFA Plumbing Grant

\$595,290



EV School Bus Awards Received



RGGI 8 @ \$300,000

NJ CSB 6 @ \$300,000

EPA CSB 5 @ \$200,000

Total = 19 @ \$5,200,000

NJ Clean Fleet

4 DC Fast
Charging
Stations

\$50,000 Each

Total = \$200,000



RGGI Bus Grant				
	Single Bus		8 Buses	
	<u>Diesel</u>	<u>EV</u>	<u>Diesel</u>	<u>EV</u>
Cost per Vehicle	\$161,000	\$448,000	\$1,288,000	\$3,584,000
RGGI Bus Grant		-\$300,000		-\$2,400,000
IRS Commercial Clean Vehicle Credit		-\$40,000		-\$320,000
Level 3 Charging Station (2 ports)		\$40,669		\$162,676
RGGI Charging Station Grant (\$20,000 per station)		-\$20,000		-\$80,000
NJ Clean Fleet Charging Station Grant		-\$50,000		-\$200,000
<i>Total</i>	<i>\$161,000</i>	<i>\$128,669</i>	<i>\$1,288,000</i>	<i>\$1,029,352</i>
	Savings	\$51,331	Savings	\$458,648

Operational Cost Savings

Fuel and Maintenance

EV Trucks - \$10,000/yr in fuel savings



Positives and Negatives



New Technology

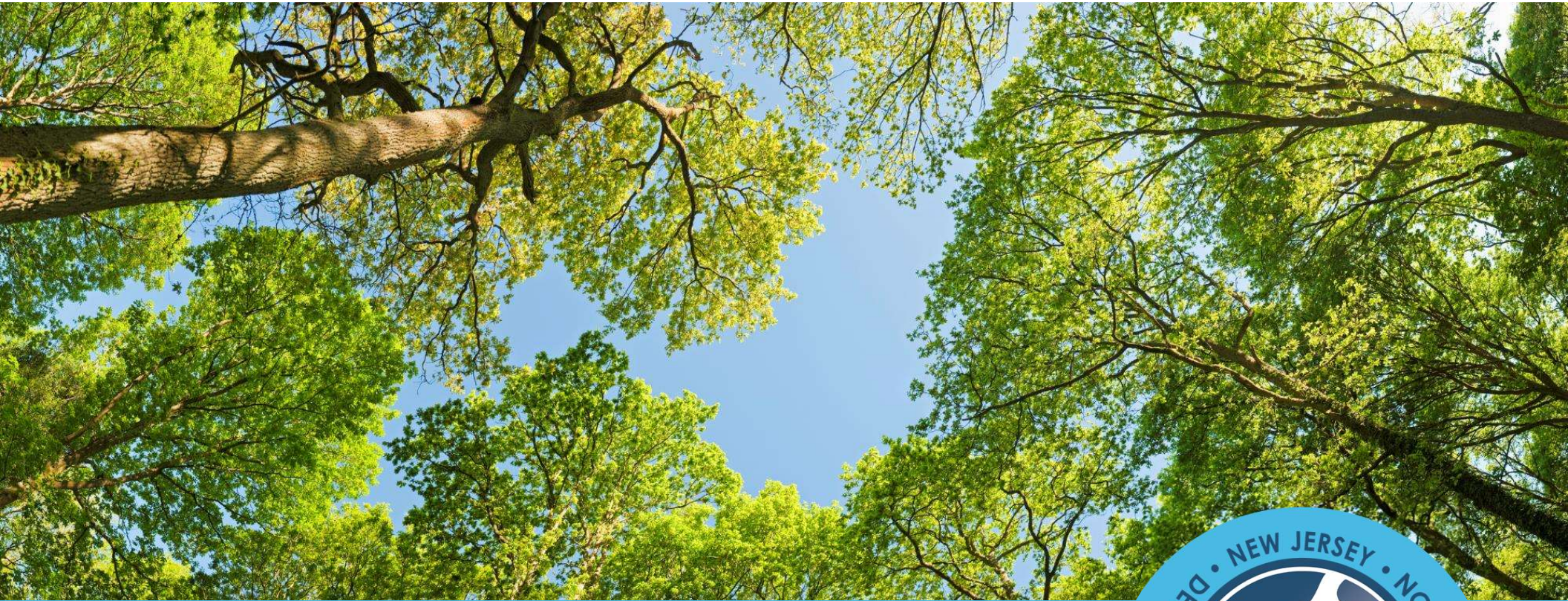
Infrastructure

Delays

Cost Analysis

Resistance to Change





New Jersey School Board Association NJ Electric School Bus Program



NJ Department of Environmental Protection -
Gabrielle Baet

The New Jersey Electric School Bus Law

P.L.2022, c.86 (C.26:2C-8.58 et al.)

The Law: What Exactly?

... the Department of Environmental Protection shall implement a three-year “Electric School Bus Program” to determine the operational reliability and cost effectiveness of replacing diesel-powered school buses with electric school buses for the daily transportation of students.



Grants to purchase or lease all-electric school buses and charging infrastructure

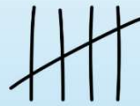
10 or more passenger capacity

90 miles minimum electric range

Grantee reporting and telematics data required

Training for personnel required

The Law: Who and How Much?



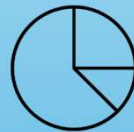
Award a minimum of six projects per year for three years



Include a mix of districts and contractors. Contractors must have a district partner.



Spread awards across state



At least 50% of funding must go to overburdened communities



\$15 million per year, \$45 million total

Year 1 Funding amounts

Program Funding Amounts*

Program	Standard Amount	Overburdened School District Amount
Bus + Level 2 charging station	\$270,000	\$300,000
Bus + DC fast charging station	\$290,000	\$320,000
Bus + Bi-directional charging option	\$320,000	\$350,000

*Up to \$40,000 in tax credits are offered by the federal government for applicants acquiring qualified clean vehicles. These tax credits can be combined with the funding amounts shown here.

**Overburdened school districts include school districts located in municipalities categorized as [overburdened communities](#).

ELECTRIC SCHOOL BUS GRANT PROGRAM



Electric School Bus Law

\$15M a year for 3 years

48 buses were awarded with Year
1 funding

Eligible Applicants

School districts that
own their own buses

School bus contractors
providing busing
services to schools.

Eligible Buses

All electric

Type C or D

New
(No repowers or used
buses)

Purchase or leased
(A minimum five-year lease is
required)

**Vehicle to Building
Pilot Program**



Scan the QR Code below to begin your
application!



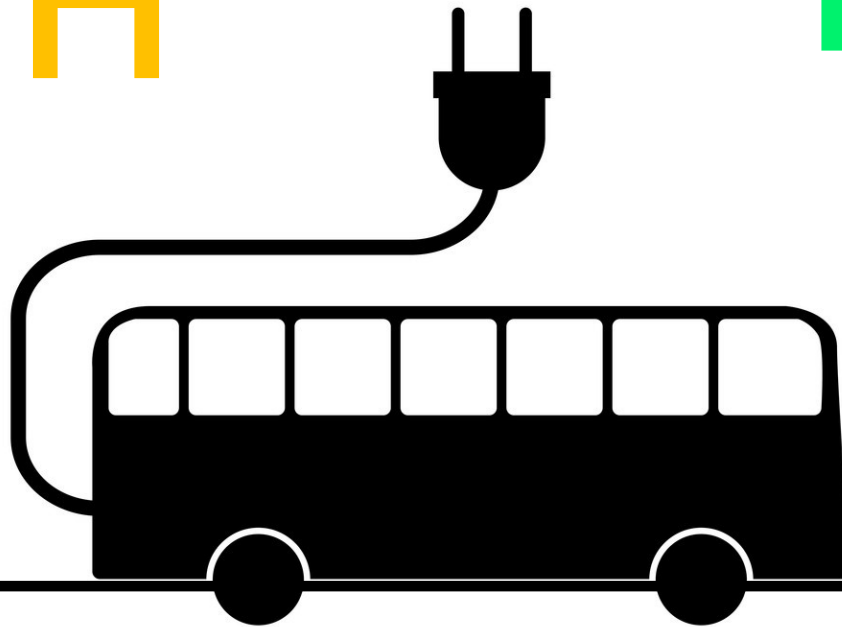
~\$76M has been awarded
for 253 electric school
buses

Rolling application
process

MYTH

OR

FACT



MYTH

ESBs can't drive far enough on a single charge

FACT

NJ's largest municipality is 114 sq miles. Unless you plan to use 1 bus to drive throughout the whole municipality for 1 school bus run AND it is really hot or really cold, there won't be an issue.

MYTH

ESBs don't work well in the cold weather

FACT

Currently, conventional buses use engine block heaters in the cold. ESBs warm their batteries year-round to maintain good performance. ESBs can be turned on while still charging to ensure optimum temperature of the batteries and in the cabin without affecting range.

MYTH

Maintenance on
ESBs will be
expensive and we
will have to find
specially
certified
mechanics.

FACT

Warranty work will still be done by the dealer. Maintenance that does **NOT** change by having an ESB.

- Air compressor
- Coolant system
- Power steering system
- Mounting hardware
- Chassis and body components - the same as conventional buses

Maintenance benefits of ESBs

- No aftertreatment systems
- No oil
- Fewer moving parts
- Reduced use of braking system (regenerative braking)
- Reduced labor costs
- Reduced regular maintenance

MYTH

ESBs have a higher chance of catching on fire

FACT

School buses are designed to be safer than any other passenger vehicle type and are the most regulated vehicles on the road by the Federal Motor Vehicle Safety Standards.

- The NFPA reports that 2/3 of all vehicle fire deaths result from fires that begin with flammable or combustible liquids or gas.
- ESB batteries go through extensive battery testing and include safety specific standards with additional safety certifications performed by the battery cell manufacturer.
- Batteries packs are enclosed in weather durable metal casing and laid in between guard rails of the bus chassis for maximum protection.
- ESBs have automatic electrical disconnects that activate in the event of a crash or if electrical system short circuits.
- Battery management system provides an added layer of safety by controlling the temperature of the battery pack.
- ESBs are less likely to roll over because of the location of the batteries in the base of the bus which lowers the vehicle's center of gravity.

ELECTRIC SCHOOL BUS RESOURCES

- [Types of Electric School Buses](#)
- [2024 ESB market report and buyer's guide](#)
- [All About Charging Infrastructure](#)
- [Step by Step Guide for ESB electrification](#)
- [Cold Weather Impacts on Electric School Buses](#)
- [Technical Assistance Menu](#)
- [WRI weekly office hours for 1:1 support](#)
- [Power Planner- coordinating with your utility](#)
- [NJ Utility Contact Sheet](#)
- [Explainer on how school districts can access IRA tax credits](#)
- [ESB batteries and battery safety](#)





Important Links

1. [MUD Toolkit](#)
2. [Model EV Ordinance](#)
3. [NJ's Medium & Heavy - Duty Vehicle Incentives](#)
4. [EDA NJZIP](#)
5. [NJDEP Diesel Modernization Program](#)
6. [Electric Vehicle and Charging Incentives](#)
7. [Alternative Fuel Vehicle Refueling Property Credit](#)
8. [Commercial Clean Vehicle Credit](#)
9. [Electric Vehicle Law P.L.2007, c.340 and P.L.1999, c.23](#)
10. [Right to Charge Law P.L. 2020, c. 108](#)
11. [Electric Vehicle Installation Requirement Law P.L. 2020](#)

Follow NJDEP Bureau of Mobile Sources on social media!



[NJ DEP Instagram](#)

[NJ DEP Bureau of Mobile Sources Instagram \(@DriveCleanNJ\)](#)

[NJ DEP Facebook](#)

[NJ DEP Air, Energy & Materials Sustainability \(AEMS\) Facebook](#)

[NJ DEP Twitter @NewJerseyDEP](#)

[NJ DEP YouTube Channel](#)

Visit NJ DEP Bureau of Mobile Sources webpages

- www.nj.gov/dep/drivegreen
- www.stophesoot.org

Join our DEP mailing list for updates and
funding announcements

www.state.nj.us/dep/stophesoot/sts-listserv.htm

- ▶ WELCOME TO THE 2024
 - ▶ NJSBA WORKSHOP
 - ▶ **Visit the Sierra Club at**
 - ▶ **BOOTH 553**

BILL BEREN, TRANSPORTATION CHAIR
TRANSPORTATION@NEWJERSEY.SIERRACLUB.ORG



New Jersey Chapter

NJ School Board Association
October 23, 2024

ELECTRIC SCHOOL BUS PLANNING SUPPORT TOOLS



New Jersey Chapter

NJ School Board Association
October 23, 2024

▶ ELECTRIC SCHOOL BUSES IN NEW JERSEY TODAY

- ❖ Sixty Districts/Contractors/Private Schools have applied for and received ESB grants since 2019
- ❖ Total amount of approved grants was \$122 million for 372 buses – \$87 million in state grants and \$35 million in federal grants
- ❖ State funds came from the VW Settlement Agreement, income from our participation in the regional green house gas initiative (RGGI) and the Electric School Bus Program
- ❖ Total number of buses in service is 23
- ❖ Total number of buses pending is 289
- ❖ Total number of buses cancelled is 83 - \$30 million returned



New Jersey Chapter

NJ School Board Association
October 23, 2024

Sierra Club Electric School Bus Website

The Sierra Club's web site has a page dedicated to school bus electrification with links to

- ❖ Technical white papers
- ❖ Videos
- ❖ State and Federal Grant Programs and Tax Incentives
- ❖ NJ Electric School Bus Buyers' Guide

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



New Jersey Chapter

NJ School Board Association
October 23, 2024

Sierra Club Electric School Bus Website

NJ ESB Buyers' Guide

Covers

- ❖ Options for buying, leasing, and entering into service contracts for ESBs
- ❖ How to specify options such as battery capacity, heating & cooling systems, operator and maintainer training, and telematics
- ❖ What you need to know about charging systems, infrastructure and facility planning
- ❖ How and when to deal with your utility companies and local zoning and building inspectors
- ❖ Disaster Planning



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Sierra Club Electric School Bus Website Grants & Tax Credits

State Grants

- ❖ NJDEP ELECTRIC SCHOOL BUS PROGRAM
- ❖ NJDEP REGIONAL GREEN HOUSE INITIATIVE
- ❖ NJEDA NJ ZIP PROGRAM
- ❖ NJBPU CLEAN FLEET EV PROGRAM

Federal Incentives

- ❖ EPA INFRASTRUCTURE INVESTMENT & JOBS ACT (IIJA)
- ❖ EPA INFLATION REDUCTION ACT (IRA)
- ❖ EPA DIESEL EMISSIONS REDUCTION ACT (DERA)
- ❖ IRS DIRECT PAY TAX CREDITS FOR GOVERNMENT AGENCIES



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October 23, 2024

NATIONAL RENEWABLE ENERGY LABORATORY

PROVIDES FREE SUPPORT FOR FLEET MANAGERS INTERESTED
IN ZERO EMISSION SCHOOL BUSES.

- ❖ This includes help planning for, installing and operating zero-emissions buses and the infrastructure necessary to support them.
- ❖ Available to awardees and applicants of the EPA Clean School Bus Program.

driveelectric.gov/school-districts



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NREL ESB TECHNICAL ASSISTANCE

- ❖ Brochures on topics such ESB basics and how to operate ESBs in hot and cold weather
- ❖ Personalized Technical assistance via email to districts applying for or receiving EPA CSBP grants email cleanschoolbusta@nrel.gov
- ❖ Free one-on-one support for six months to draft and implement customized transition plans



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October 23, 2024

NREL ESB PLANNING TOOLS

- [ESB Route Analysis Tool](#) to determine what kinds of buses and charging infrastructure you will need based on your district's routes
- [ESB Charging Station Planning Guide](#) that helps you gather the information needed by your local utility company to bring additional power to your site
- [School Bus Electrification Center Guide](#) to plan and optimize your charging infrastructure



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NREL WEBINARS

- ❖ Part 1 in April
Overview for ESB Operators
- ❖ Part 2 in August covered
Electric School Bus Technology Overview
- ❖ Part 3 in October
High-voltage Safety
- ❖ Part 4 for technicians will be presented in
Nov 2024.



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NREL PEER-TO-PEER ON-LINE MESSAGE BOARD

The Joint Office hosts an [Electric School Bus Forum](#), an online message board for school districts to ask questions of each other, share experiences, or have general discussions on electric school buses. This is only available to fleet staff to promote collaboration and open conversation; no others allowed. [Sign up](#) to participate.



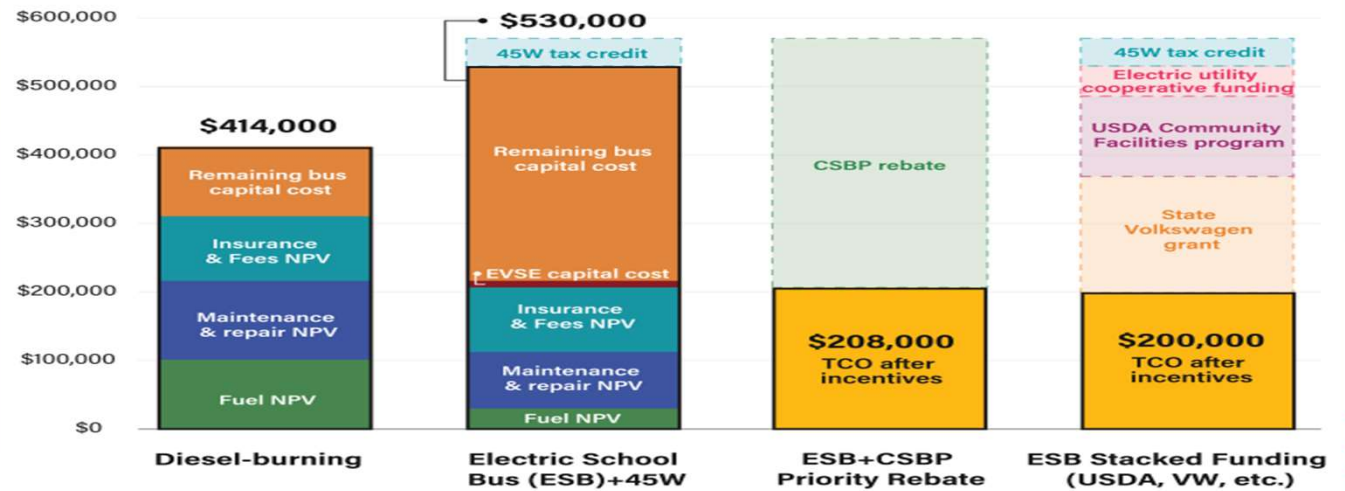
New Jersey Chapter

NJ School Board Association
October 23, 2024



WORLD
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Total cost of ownership (TCO) for Type C diesel and electric school buses



Notes: NPV= net present value. USDA= U.S. Department of Agriculture.
Source: WRI.
23.05.04

WORLD RESOURCES INSTITUTE

Electric School Bus Initiative – World Resources Initiative



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[ELECTRICSCHOOLBUS
INITIATIVE.ORG/TOOLS](https://ELECTRICSCHOOLBUSINITIATIVE.ORG/TOOLS)



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▶ **Visit the Sierra Club at**
▶ **BOOTH 553**

BILL BEREN, TRANSPORTATION CHAIR
TRANSPORTATION@NEWJERSEY.SIERRACLUB.ORG



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Thank you!

Gabriella Baet, NJ Department of Environmental Protection

Gabrielle.Baet@dep.nj.gov

Bill Beren, Sierra Club

beren1@verizon.net

John Blair, Jackson Township School District

jblair@jacksonsd.org

Pamela Boozer-Strother, Prince George's County (MD) BoE

pamel.boozerstrother@pgcps.org

Nancy Quirk, Sustainable Jersey

quirkn@tcnj.edu