WELCOME!

New Jersey Electric School Bus Roundtable
October 13, 2021
Let's Accelerate New Jersey's Electric School Bus Future!
Please **Sign In**: First, Last + Organization in chat box now

We will be **recording** this roundtable (and share later, with slides)

**Speaker Bios** are hyperlinked in agenda - we will send though chat

**Chat**: Please use chat for questions throughout the session

**Tech Help**: Please chat privately **ECTECH**

**Survey**: Please give us feedback on our post-meeting survey

@ElectricRoadmap  
@WRIRossCities  
@eschoolbus4kids  
#cleanair4kids  
#cleanride4kids  
#PlugInNJ
GET SET FOR SOME GREAT SPEAKERS!

First Lady
Tammy Murphy

Congressman
Frank Pallone Jr.

Melissa Miles
Executive Director, New Jersey Environmental Justice Alliance

Hannah Thonet,
Policy Advisor, Energy + Environment, NJ Office of the Governor

Christine Sadovy
Chief Of Staff at New Jersey Board of Public Utilities

Pallavi Madakasira
Director of the NJEDA’s Clean Energy Products

Peg Hanna
Manager at NJ Department of Environmental Protection

Senator Patrick J. Diegnan Jr.

Assemblyman Sterley Stanley

Matt Stanberry
Managing Director, Highland Electric

Jim Woods
Director of Business Development, First Student, inc.

Orville Thomas,
Government Relations Director, Lion Electric

Jackie Piero
VP of Policy at Nuve Corp.

Todd Hranicka, Director of EVs and Storage, PSEG

Trisha Dello Iacono
National Field and Legislative Manager, Mom’s Clean Air Task Force or
Getting to Know Each Other
Who We Are

The Electrification Coalition (EC) is a nonpartisan, non-profit organization committed to promoting policies and actions that facilitate the deployment of electric vehicles on a mass scale in order to combat economic and national security dangers caused by our dependence on oil.
90% of U.S. transportation is powered by oil.

Transportation is New Jersey’s largest GHG emitting sectors
Freight Electrification Pilot

Ev Purchasing Collaborative

American Cities Climate Challenge

State EV Policy Accelerator

Local EV Accelerators

Federal Policy Work

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Local EV Accelerators

Federal Policy Work
$514 BILLION IN GLOBAL EV INVESTMENT

• Automakers and other stakeholders continue to rollout EV investment as sales recover

• $55 Billion in new private investment announced Jan-April 2021

• $112 billion could land in U.S.
WHAT MAKES SCHOOL BUSES WELL SUITED TO ELECTRIFICATION?

• Travel consistent routes that rarely exceed 100 miles
• Adequate time to recharge between routes
• Proximity to vulnerable populations (school kids)
• Well suited for vehicle-to-grid
ELECTRIC SCHOOL BUSES HIT THE ROAD

Electric School Buses in the United States
1,164 Electric School Buses announced, procured, delivered or in operation

Available School Bus Models

<table>
<thead>
<tr>
<th>Model</th>
<th>Range (Miles)</th>
<th>Estimated Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>IC Bus CE</td>
<td>200</td>
<td>$365,000</td>
</tr>
<tr>
<td>LionC</td>
<td>155</td>
<td>$330,000</td>
</tr>
<tr>
<td>LionD</td>
<td>155</td>
<td>$350,000</td>
</tr>
<tr>
<td>GreenPower BEAST</td>
<td>150</td>
<td>Unknown</td>
</tr>
<tr>
<td>LionA</td>
<td>150</td>
<td>$300,000</td>
</tr>
<tr>
<td>Thomas Built Saf-T-Liner C2…</td>
<td>138</td>
<td>$325,000</td>
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<tr>
<td>Blue Bird All American</td>
<td>120</td>
<td>$362,605</td>
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<tr>
<td>Blue Bird Vision</td>
<td>120</td>
<td>$345,765</td>
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<tr>
<td>Collins Type A</td>
<td>105</td>
<td>$230,000</td>
</tr>
<tr>
<td>Blue Bird Microbird</td>
<td>100</td>
<td>$275,000</td>
</tr>
</tbody>
</table>

Largest Electric School Bus Order In US History — Montgomery County Orders 326 Buses

ECONOMIC

- Cost effectiveness over total cost of ownership expected by 2030
- Potential for vehicle to grid (V2G) revenue, with multiple utility pilot programs underway
- Potential for more than $200,000 in lifetime energy cost savings when paired with a distributed energy resource (NREL 2019)


Nominal Cost Per Mile of School Buses (Type C) by Fuel Type

<table>
<thead>
<tr>
<th>Year</th>
<th>Diesel</th>
<th>Electric</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>$2.37</td>
<td>$2.83</td>
</tr>
<tr>
<td>2025</td>
<td>$2.27</td>
<td>$2.63</td>
</tr>
<tr>
<td>2030</td>
<td>$2.45</td>
<td>$1.87</td>
</tr>
</tbody>
</table>

PUBLIC FUNDING ON THE RISE

Public Funding for Electric School Buses by Year

- $9.0 million in 2016
- $7.5 million in 2017
- $22.6 million in 2018
- $141.0 million in 2019
- $189.0 million in 2020
- $113.2 million in 2021

Public Funding for Electric School Buses By Program

- California Clean Energy Jobs Act 16%
- California Climate Investments 22%
- VW Settlement 39%
- Other 6%

- $485 million awarded or made available to date.
- 1,439 electric school buses funded or committed
- 36.6 percent of Volkswagen Settlement Funds awarded to school bus projects.
UTILITIES LEADING THE WAY

Investments driven by energy storage potential of vehicle-to-grid enabled electric school buses

- Pilot project in White Plains with five fully operational vehicle-to-grid school buses
- Buses act as batteries during summer months when not in use
- Bus operator gets paid by Con Edison for grid services

Source: Con Edison

- Investing $13.5 million in 50 electric school buses
- Buses to serve as a grid resource to support integration of renewable electricity
- State of Virginia has since committed more than $20 million in public funds

Source: Dominion Energy
ABOUT WRI
WRI is a global research organization that turns big ideas into action at the nexus of environment, economic opportunity and human well-being.
WRI is a global research organization with over 1,000 experts working across 60+ countries.
Why Electrify the U.S. school bus fleet?

Electrification can accelerate decarbonization while bringing direct, tangible benefits to every community in the U.S.

- **Improved health** and cognitive outcomes for children
- **Cleaner air**, especially in high-pollution corridors and communities of color
- **Reduced operating expenses** for school districts
- **New jobs** in green manufacturing
- **A tipping point** for MHD+ electrification
- **Enhanced resiliency** and **renewables integration** with V2G
Our Aim: ELECTRIFY the entire U.S. fleet BY 2030

$30 million in 5 years to:

- Partner with communities, school districts, industry experts, manufacturers, utilities, and policy makers to transform and electrify the school bus market.

- Together, build unstoppable momentum to electrify 480,000 school buses in the U.S. by 2030.

- Ensure an equitable transition by focusing on frontline communities.
Our vision involves multiple stakeholders

Goal: An Equitable Transition to Electric School Buses

Foundation: Equity, Communications, Engagement
School bus Health & equity impacts

Diesel buses are harmful to children’s health and development:

• School buses produce nearly **twice as much soot** per mile as a tractor-trailer truck.

• Children riding on diesel school buses are exposed to **up to 12 times** more particulate matter and air toxics inside the bus than ambient levels.

• There are **documented impacts** on respiratory health and academic performance.

The burden of air pollution is NOT shared equally:

• **70% of low-income students** take the bus compared to 50% of non-low-income students

• **PM exposure from on-road sources can be 75% higher** for Latino residents, 73% higher for Asian American, and 61% higher for African American residents.

• Children with disabilities often **ride longer** than other kids
Challenges facing school bus electrification

- Higher upfront costs
- Infrastructure development
- New technology
- Technology myths
- Need to scale quickly

THESE DISPROPORTIONATELY IMPACT DISADVANTAGED COMMUNITIES
The status of electrification

- 480,000 school buses in the U.S., 80% of all buses nationwide

- Less than 1% are electric

- Electrifying every school bus will reduce 8 megatons of GHG per year, 35% of annual GHG emissions from all buses in the U.S.
1,100+ ESBs procured, delivered or in operation:

- Less than 1% of fleet
- At least 1 in 33 states
- 258 districts or 2% of all SDs
  - 1/3 in top 25% most vulnerable counties
  - Most in suburban areas (36%); cities (30%); towns (17%); and rural areas (17%)
Thank you

Find out more at wri.org/electric-school-buses
First Lady
Tammy Murphy
Congressman
Frank Pallone
Melissa Miles
Executive Director, New Jersey Environmental Justice Alliance

How ESBs Can Help Address Environmental and Health Injustices
Electric School Buses in the Garden State
Senator Patrick J. Diegnan Jr.
Assemblyman Sterley Stanley
ESBS & THE PRIVATE SECTOR: ACTION & OPPORTUNITIES

JACQUELINE PIERO
VP Policy,
Nuvve

ORVILLE THOMAS
Government Relations Director,
Lion Electric

MATT STANBERRY
Managing Director,
Highland Electric

JIM WOODS
Director of Business Development,
First Student, inc.

TODD HRANICKA
Director of EVs and Storage,
PSEG
Trisha Dello Iacono
National Field and Legislative Manager,
Mom's Clean Air Task Force

Funding and Financing – Federal Opportunities
Electric School Bus Facts and Figures
New Jersey School bus Indicators

On the Road*
- 15,703 School Buses as of 2019
- 2.9% of National Total

New Registrations*
- 1,986 New School Buses Registered Since 2019
- 0% Electric

Alternative Fuel Vehicles on the Road*
- 167 Propane School Buses
- 0 Electric School Buses

Utility Investment
- Approved: $0
- Pending: $0
- Rejected: $50.3 Million

Policy Environment
- 3 Supportive Policies
- 2 Incentive Programs

Government Funding
- $12.2 Million Awarded
- 6th in the Nation
- 32 Buses Committed

*School Buses on the Road represents a snapshot from 2019. New Registrations represents new school buses registered from 2019 to date. Turnover in the existing fleet during this time is unknown. Data may omit electric school buses that don’t use a unique chassis.
More than 15,000 School Buses in New Jersey

School Buses by County

School Buses by Fuel Type

- Diesel: 14,377 (92%)
- Gas: 1,159 (7%)
- Propane: 167 (1%)

Vehicle Count
- 195
- 712
- 1,228
- 1,745
- 2,261
- 2,778

School Bus Stock Data as of EOY 2019.
$12.2 Million Announced for Electric School Buses in NJ (2019 to 2021)

32 Vehicles Committed*

- Belair Transport (Orange): 7
- Student Transportation of America (Trenton): 5
- Durham School Services (Elizabeth): 5
- Jersey City Public Schools: 5
- D&M Tours Inc. (Patterson): 4
- Belleville Public School District: 2
- Kearny Public Schools: 2
- Elizabeth Public Schools: 2

*Buses may not yet be deployed.

$12.2 Million Announced

- VW Settlement: $5,736,010
- RGGI: $6,495,804
Policy Support Ramping Up

**New Jersey Zero Emission Incentive Program**
$24.25 million pilot program that provides vouchers for zero-emission medium and heavy-duty (MDHD) vehicles

**Clean Trucks Rulemaking**
Draft rule proposed requiring manufacturers to sell an increasing percentage of zero-emission MDHD vehicles

**Zero Emission Vehicle Tax Exemption**
MDHD vehicles added to the sales tax exemption for zero-emission vehicles.
Utility Investment in electric school buses in NJ

$0 Approved Funding

$50 M Rejected Funding

2 Programs Rejected

1 Open Rulemaking

Public Service Electric and Gas Company
$44.8 million Vehicle Innovation proposal rejected in January 2021 deferring to future proceeding for MDHD vehicles

Atlantic City Electric
$5.5 million Electric School Bus Fund proposal rejected in February 2021 deferring to future proceeding for MDHD vehicles

NJ Board of Public Utilities currently developing guidelines for utilities’ MDHD filings (as referenced in filing rejections)
Available Funding

Diesel Emissions Reduction Act (DERA): School Bus Rebates*
- $10 M across all technologies
- $65,000 per bus (electric)

American Rescue Plan: Electric School Bus Rebates*
- $7 M dedicated for electric buses
- $300,000 per bus

New Jersey Zero Emission Incentive Program
- $24.25 M budget
- Up to $100,000 per bus

*Federal Programs
An electric school bus produces less than half the GHG Emissions of a Diesel School Bus

- **Study (2019)** shows emissions of MDHD vehicles based on national average grid emissions
- Average electric school bus emits less than half the GHG emissions of diesel school bus
- Even greater emissions reductions in New Jersey due to cleaner grid
new jersey grid
Cleaner than National Average

- Composition of RFC East Region:
  - 46% gas
  - 37% nuclear
  - 12% coal
  - 5% other
- Lower share of fossil fuels than national average
- Lower CO\textsubscript{2} emissions than national average due to high proportion of nuclear
Next Steps

For School Districts, Interested Policy Makers, and Advocates
Engage Stakeholders

School district administrators, superintendents, city council members, utility representatives, school bus fleet managers, bus drivers, maintenance staff, school facility managers, parents, and students
Identify Partners

Utilities, States & Municipalities, NGOs,
Set Goals

When do you want your fleet to be 100% Electric? Work backwards from there, based on carbon goals, contracts, rate of existing fleet retirement.
Pathways to Funding

Utilities, States & Federal Programs (existing or possible), Public/Private Partnerships, Pay as You Save financing models
Plan Routes and Charging Schedules

Ensure EVSE and ESB deployments are able to meet anticipated needs
Acquire and install EVSE and ESB. Match deployment timelines to acquisition opportunities.

See [http://driveevfleets.org](http://driveevfleets.org) to see ESBs available via the Climate Mayors EV Purchasing Collaborative, a partnership with EC, Climate Mayors & Sourcewell.

For more information visit: [https://www.electrificationcoalition.org/schoolbus/](https://www.electrificationcoalition.org/schoolbus/)
Melissa Miles, Executive Director, NJ Environmental Justice Alliance

“It is so important that we have an equity lens throughout this entire process.”
“New Jersey is charting a path forward to be a leader on medium- and heavy-duty charging infrastructure planning.”

Christine Sadovy, Chief Of Staff
NJ Board of Public Utilities
“Various tools and incentives are necessary to address the transition of medium- and heavy-duty vehicles at the intersection of environment, energy, and economy.”

Pallavi Madakasira, Director, NJ Economic Development Authority
Clean Energy Products
“The electric school bus pilot program will put in place reliable information we need to move forward. We are light years from where we started, but we still have a long way to go.

Senator Patrick J. Diegnan Jr.
“Electric school buses will be a step in the right direction to protect the health of students ... Overall, we want to build a better, sustainable infrastructure that will reduce noise and air pollution.”

Assemblyman Sterley Stanley
“We are confident that there is a business model that is developing. We believe that we will be able to finance electric school buses and charging infrastructure over the life of the vehicle.”

Jackie Piero, VP of Policy, Nuvve Corp.
"We have over 400 electric school buses on the road in the United States and Canada."

Orville Thomas, Director, Gov’t Relations, Lion Electric
"A transportation director’s North Star is delivering kids safely back and forth, to and from their homes … We provide a turn-key solution to schools, with the goal of making school bus fleet electrification simple and affordable."

Matt Stanberry, Managing Director
Highland Electric
“We need to do this on a large scale. We’ve made a commitment to convert 20,000 buses in the next 10 years.”

Jim Woods, Dir. of Business Development First Student, Inc.
“Children are more vulnerable to diesel pollution than adults. … The air inside a diesel school bus can be more polluted than the air outside. … No parent wants to put their child in harm’s way.”

Trisha Dello Iacono, Nat’l Field & Legislative Manager
Moms’ Clean Air Force
THANK YOU to Our Speakers Today!

New Jersey Electric School Bus Roundtable  
October 13, 2021

Contact:

Justin Balik  
justin.balik@wri.org

Aaron Viles  
aviles@electrificationcoalition.org
Here is the link to register for the afternoon participation session:

https://us02web.zoom.us/meeting/register/tZMpd-uspjsiGtPICPxBSAhj0HdXP4bQ_8BO