WELCOME!

Michigan Electric School Bus Roundtable

May 10, 2023
Let's Accelerate Michigan'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 through 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
#cleanair4MIkids #cleanair4kids #PlugInMI
GET SET FOR SOME GREAT SPEAKERS!

Aaron Viles
Director of Campaigns, Electrification Coalition

Sue Gander
Director, Electric School Bus Initiative, WRI

Governor Gretchen Whitmer
Governor of Michigan

Janine Ward
Program Manager, Office of Future Mobility & Electrification, State of Michigan

Cathy Cole
Director of Strategic Operations Division, Michigan Public Service Commission

Cory Connolly
Climate and Energy Advisor, Head of Office of Climate & Energy, Michigan DOE

Amaad Hardy
Director of Policy and Engagement, Greater Grand Rapids NAACP

Nina Wimberley
Project Coordinator, Southwest Detroit Environmental Vision

Kareem Scales
CEO & Founder, Scales Consulting; Co-Chair of C4

Leah Brams
Market Development Associate, Highland Electric Fleets

Dick Johnson
Sales Manager, EV Charging Systems for Borg Warner

Mujeeb Ijaz
Founder & CEO, Our Next Energy

Nate Baguio
Senior VP of Commercial Development, The Lion Electric Co.

U.S. Representative Debbie Dingell

State Rep. Ranjeev Puri
District 24

Francisco J. Acevedo
Mobile Source Program Manager, U.S. EPA - Region 5

Michelle Levinson
Manager of eMobility Financial Solutions, US Energy Program, WRI

Kindra Weid
RN, BSN, MPH, MI Air MI Health, Coalition Coordinator

Bethany Tabor
Product Manager, Commercial Electric Vehicles - Electric Transportation Consumer Products

Stephen C. Seelye
Superintendent, Pellston Public Schools

Kern Jean Schrader
Transportation Supervisor, Three Rivers Community Schools

Milena Marku
Manager, EV Strategy & Programs, DTE Electrification Business Development

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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 Michigan's largest GHG emitting sectors.
The EC National Presence
EV Adoption Programs Around the U.S.

- **Technical Lead**
  - Climate Mayors EV Purchasing Collaborative

- **State EV Policy Accelerator**
  - NV, MI, PA, VA, NC

- **Electrification Advisor**
  - Bloomberg American Cities Climate Challenge

- **Lead Electrification Partner**
  - Smart Columbus

- **Federal EV Infrastructure Program**
  - State agency collaboration on EV infrastructure investments (NEVI fund)

- **Electric Freight Consortium**
  - Private-sector collaboration
Join us in the afternoon breakout groups to discuss taking actions to deploy ESBs
1:20pm-
2:00 pm

Register here:
bit.ly/MI-ESB-Breakouts
Buckle Up!
Let's Get Started
We're at Lunch!
Meet us back here at 12:20pm ET
ELECTRIC SCHOOL BUSES HIT THE ROAD

Committed Electric School Buses in the United States
5,612 Electric School Buses awarded, ordered, 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>
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<tr>
<td>LionC</td>
<td>155</td>
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<td>155</td>
<td>$350,000</td>
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<tr>
<td>GreenPower BEAST</td>
<td>150</td>
<td>Unknown</td>
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<td>150</td>
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<tr>
<td>Thomas Built Saf-T-Liner C2 Jouley</td>
<td>138</td>
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<td>Blue Bird All American</td>
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<tr>
<td>Blue Bird Vision</td>
<td>120</td>
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<td>Collins Type A</td>
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<tr>
<td>Blue Bird Microbird</td>
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<td>$275,000</td>
</tr>
</tbody>
</table>

Image from WRI Electric School Bus Initiative. Data from Lazer and Freehafer, 2023. Data as of December 2022. Includes buses awarded, ordered, delivered, or in operation.
Public Funding for Electric School Buses by Year and by Program

- $1.4 billion awarded to date
- 3,962 electric school buses awarded
- $400 million currently available under 2023 EPA Clean School Bus Program
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
EQUITY

Transportation pollution experienced most by communities of color
(Clark et al. 2017)

Low-income students ride school buses (70%) more than non-low-income students (45%)
(FHA data 2019)

Black Americans are exposed to 24 percent more air pollution from vehicles than the average American
(Reichmuth 2019)
CLIMATE

• 480,000 school buses nationwide, less than 1 percent electric
• Potential reduction of 8 million tons of greenhouse gases per year if U.S. achieves total electrification of school buses (WRI 2021)
• Zero tailpipe emissions and less than half the overall greenhouse gas emissions of a diesel school bus (2018 Massachusetts Pilot)*

*Depends on emissions profile of the grid. Will continue to get cleaner as more renewable energy is deployed.
Fine particulate concentrations ($\text{PM}_{2.5}$) on school buses often five to ten times higher than average levels

(Wargo 2002)

Replacing diesel school buses linked to "reductions in bronchitis, asthma, and pneumonia"

(Beatty 2011)

Replacing diesel school buses means “less pulmonary inflammation, more rapid lung growth over time”

(Adar et al 2014)
Recipients of funding for clean school buses saw higher attendance equivalent to 6 additional students per day (Pedde et al. 2023)

Link between cleaner school buses and higher test scores and school attendance (Austin et al. 2019)

Proximity to highways linked to lower test scores (Institute of Labor Economics 2019)
• 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)

MICHIGAN GRID HIGHER EMISSIONS THAN NATIONAL AVERAGE

- RFC Michigan Grid Mix:
  - 39% coal
  - 31% gas
  - 17% nuclear
  - 8% wind
  - 5% other
- Higher share of coal than national average
- Higher CO₂ emissions than national average
- Michigan grid emissions down 8 percent from 2018 to 2021

Source: Power Profiler | US EPA
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

MICHIGAN SCHOOL BUS INDICATORS

On the Road*
- 19,894 School Buses as of 2019
- 3.6% of National Total

Commitments*
- 157 Electric School Buses Committed
- 8th of All States

Utility Investment
- Approved: $29 Million
- Filed: $1.5 Million

Alternative Fuel Buses on the Road*
- 438 Alternative Fuel School Buses
- 6+ Electric School Buses

Policy Environment
- 2 Supportive Policies
- 3 Incentive Programs

Government Funding
- $4.4 Million Awarded
- 12th in the Nation
- 18 Buses Committed

*School Buses on the Road represents a snapshot from 2019. Commitments represents electric school buses awarded, ordered, delivered, or in operation from Lazer and Freehafer, 2023.
NEARLY 20,000 SCHOOL BUSES ON THE ROAD IN MICHIGAN

School Buses by County

School Buses by Fuel Type

- Diesel: 18,027 (91%)
- Gas: 1,429 (7%)
- Propane: 437 (2%)
- CNG: 1 (0%)

School Bus Stock Data as of EOY 2019.
$54 MILLION AWARDED FOR 135 ELECTRIC SCHOOL BUSES FROM CLEAN SCHOOL BUS PROGRAM

Top 5 School Districts by Buses Awarded

- Pontiac City School District: 25
- Jackson Public Schools: 21
- Dearborn City School District: 18
- Ypsilanti Community Schools: 10
- Homer Community School District: 7

Recipient Locations
UTILITY INVESTMENT IN ELECTRIC SCHOOL BUSES IN MICHIGAN

DTE – approved to invest $44 million in Charging Forward program including advisory services, make-ready infrastructure, and EVSE rebates for electric school bus fleets

Consumers Energy – approved to invest $12 million in PowerMiFleet program including make-ready infrastructure and rebates for electric school bus fleets
POLICY SUPPORT RAMPING UP

Infrastructure Investment and Jobs Act
President Biden signs IIJA, including $5 billion for a clean school bus program to be administered by the EPA

November 2021  August 2022
BUSES IN INFRASTRUCTURE INVESTMENT AND JOBS ACT

- The Act (HR 3684) was signed into law on November 15, 2021
- Total funding of $50.3 billion in EV eligible funding including:
  - $8 billion for EV dedicated funding
- Funding for electric school buses
  - Clean School Bus Program ($5 billion)
    - $2.5 billion for zero emissions vehicles
    - $2.5 billion for low emission vehicles (including electric)
  - State Energy Plans ($500 million)
  - Grants for Energy Efficiency Improvements and Renewable Energy Improvements at Public School Facilities ($500 million)
BUSES IN INFLATION REDUCTION ACT

• The Act was signed into law in August 2022. Funding that may go to electric school buses includes:
  • $1 billion in grants for clean heavy-duty vehicles
  • Up to $40,000 in tax credits for zero-emission commercial vehicles
  • $3 billion for direct loans to finance advanced vehicle technology manufacturing
  • $2 billion for grants to support clean vehicle manufacturing.
  • Up to $100,000 in tax credits for charging infrastructure
  • $50 million in grants to reduce pollution at schools
Next Steps

For School Districts, Interested Policy Makers, and Advocates
"Time and time again... You hear people say we want to be part of the EV revolution."

Ean Thomas Tafoya, GreenLationos
THANK YOU to Our Speakers Today!

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Contact:

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

https://us02web.zoom.us/meeting/register/tZ0lf-CtpjIpG9U54rAKoDqoPu6klvmebAGA