State and Local Climate and Energy Program

Electrifying School & Transit Bus Fleets: Lessons from Early Adopters

July 26, 2022| 2 PM Eastern

Three audio options:

1. Listen via computer
2. Use the “Call Me” feature
3. Dial 1-415-655-0002 or 1-855-797-9485; Event number: 2436 845 3409

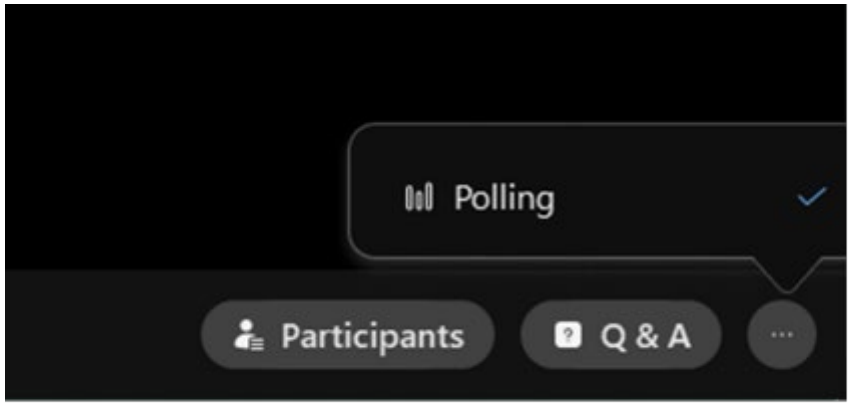
Webinar Panels

We'll use three panels

- Participants, Slido, and question and answer (Q&A)
- Use the arrow to expand or collapse the panels

Adding Panels

- If some panels don't appear, hover over the bottom of the screen and select the desired panels
- Select More Options (…) for additional panels
- Highlighted backgrounds indicate active panels

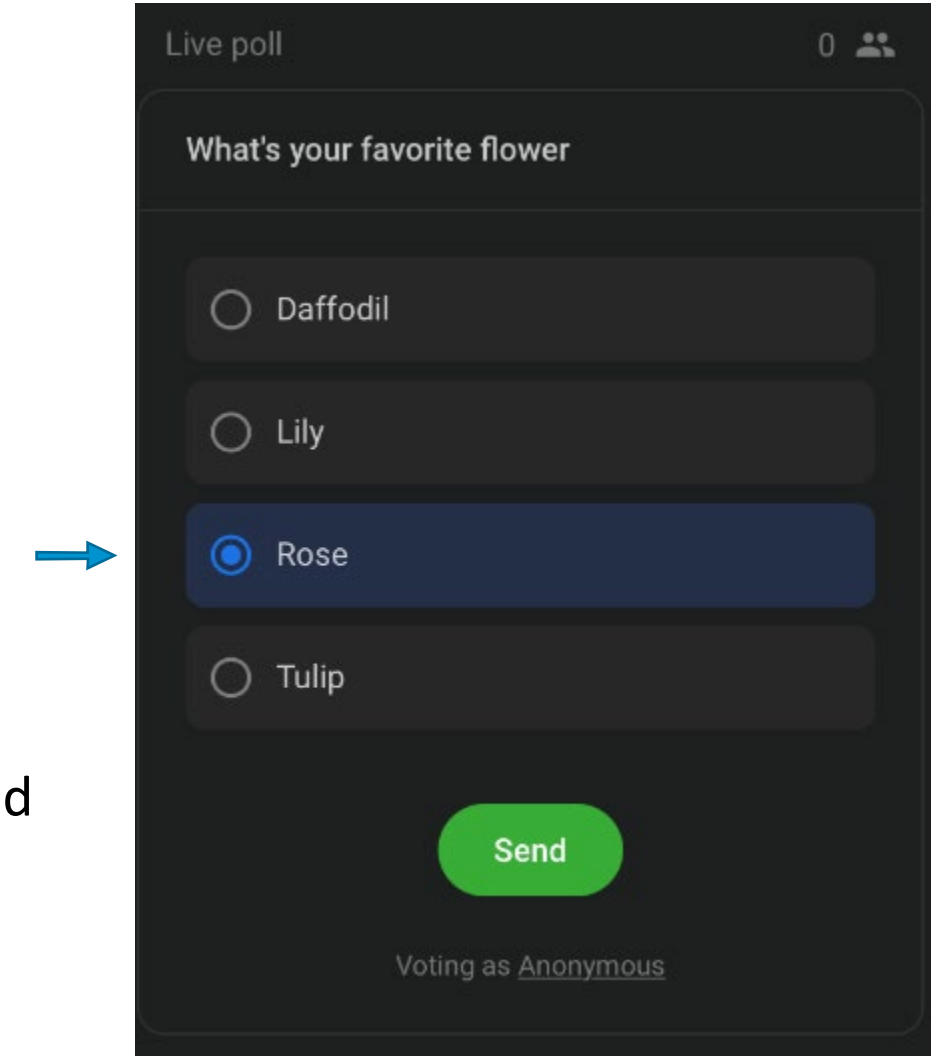


Participants **Q&A** **More polling options**

Polling and Feedback

Polling

- We'll ask a poll question during the webinar
- The Slido panel will appear when we open the first poll
- Select your desired response and hit "Send"



Webinar Feedback

- A feedback form will pop-up in the Slido panel near the end of today's webinar with several questions
- Please make your selections and select "Send"

Q&A

- Participants are muted
- Questions will be moderated at the end
- To ask a question:
  1. Select “All Panelists” from the drop-down menu
  2. Enter your question in the Q&A box
  3. Hit “Enter”

- EPA will post final materials on the Webinar Series page:

www.epa.gov/statelocalenergy/state-local-and-tribal-webinar-series

Today's Agenda

- Introduction – Andrea Denny and Jessica Daniels, U.S. Environmental Protection Agency (EPA)
- Overview of EPA's 2022 Clean School Bus Rebates – Jason Wilcox, Legacy Fleet Incentives and Assessment Center, U.S. EPA
- Educate Drivers and Staff to Make your Fleet Electric Vehicle (EV) Conversion Successful – Nancy Jensen, Certified School Bus Driver Instructor, Twin Rivers Unified School District
- Low or No Emission Grant and Grants for Buses and Bus Facilities Competitive Program – Amy Volz, Program Manager, U.S. Department of Transportation (DOT) Federal Transit Administration (FTA)
- Metro Transit (Minnesota) Electric Bus Pilot Program Update – Brian Funk, Deputy General Manager and Chief Operating Officer, Metro Transit
- Question and Answer Session

The views expressed by speakers on this webinar are solely those of the participants and EPA does not endorse any products or commercial services mentioned in this webinar.

INTRODUCTION

Andrea Denny
State and Local Climate and Energy Program
U.S. EPA

Jessica Daniels
Office of Transportation and Air Quality (OTAQ)
U.S. EPA

U.S. EPA's State and Local Climate and Energy Program

- We offer free tools, data and technical expertise about energy strategies, including energy efficiency, renewable energy and other emerging technologies, to help state, local and tribal governments achieve their environmental, energy and economic objectives

- Access these resources at: www.epa.gov/statelocalenergy

- Electrification Webinar Series
  - Get notifications by subscribing to our newsletter: www.epa.gov/statelocalenergy/state-and-local-energy-newsletters
  - Past Webinars: www.epa.gov/statelocalenergy/state-local-and-tribal-webinar-series

Select Electrification Resources

- **Electrification Toolfinder:** screen tools and resources to evaluate environmental and economic benefits of electrification programs
  www.epa.gov/statelocalenergy/tool-finder-local-government-clean-energy-initiatives
- **Avoided Emissions and geneRation Tool (AVERT):** quantifies the emissions benefits of energy efficiency and renewables
  www.epa.gov/avert
- **Co-Benefits Risk Assessment Health Impacts Screening and MappingTool (COBRA):** calculates health impacts of emissions changes and their economic value
  www.epa.gov/cobra
- **ENERGY STAR Electric Vehicle Chargers:** offers guidance on how to identify and procure Energy Star certified charging equipment
  www.energystar.gov/products/other/ev_chargers

U.S. EPA's State, Local, and Tribal Transportation Resources

- EPA's OTAQ protects human health and the environment by reducing air pollution and greenhouse gases from mobile sources and the fuels that power them, advancing clean fuels and technology, and encouraging business practices and travel choices that minimize emissions.

- We help state, local, and tribal governments achieve their environmental and other objectives by providing expertise on:
  - State Implementation Plans
  - Transportation Conformity
  - Vehicle Emissions Inspection & Maintenance and state fuel programs
  - Travel Efficiency and Greenhouse Gas (GHG) Planning
  - MOtor Vehicle Emission Simulator (MOVES), Calculators, and Tools

- Access these resources at the State and Local Transportation Resources page: www.epa.gov/state-and-local-transportation

OTAQ's Voluntary Programs and Initiatives

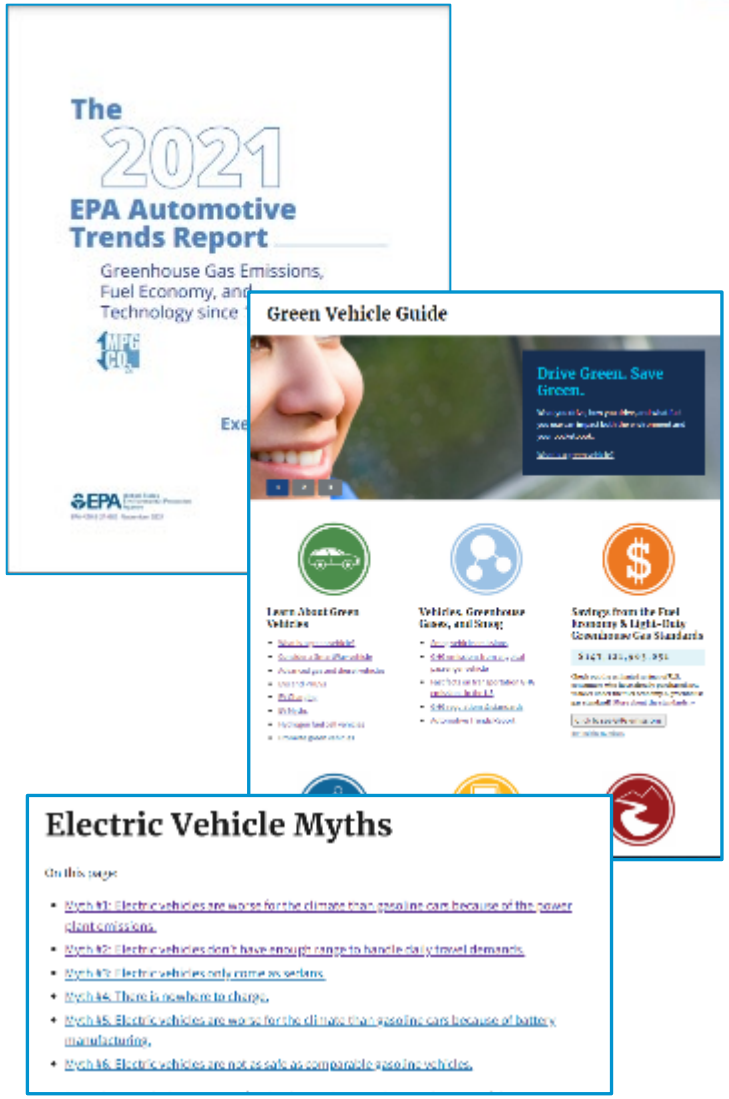
- Diesel Emissions Reduction Act (DERA) – To reduce diesel emissions that impact public health
  - Includes grants and rebates under www.epa.gov/dera
- Ports Initiative – To reduce diesel emissions at ports
  - www.epa.gov/ports-initiative
- SmartWay – To advance sustainable transportation supply chains
  - www.epa.gov/smartway

www.epa.gov/cleanschoolbus

Transportation Trends

- EPA Automotive Trends Report
  - Public information about new light-duty vehicle greenhouse gas emissions, fuel economy data, technology data, and auto manufacturers' performance in meeting the agency's GHG emissions standards
  - www.epa.gov/automotive-trends

- EPA Green Vehicle Guide
  - Learn more about emerging options in transportation like zero emission vehicles (ZEVs), shared mobility, and self-driving cars
  - www.epa.gov/greenvehicles



Contact Information

Andrea Denny
denny.andrea@epa.gov

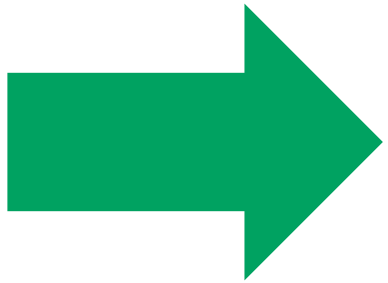
Jessica Daniels
daniels.jessica@epa.gov

State and Local Climate and Energy Program

Visit Our Website | www.epa.gov/statelocalenergy
Sign Up for Our Newsletter | www.epa.gov/statelocalenergy/state-and-local-energy-newsletters
Follow Us on LinkedIn | https://linkedin.com/showcase/epa-state-and-local-climate-and-energy-program

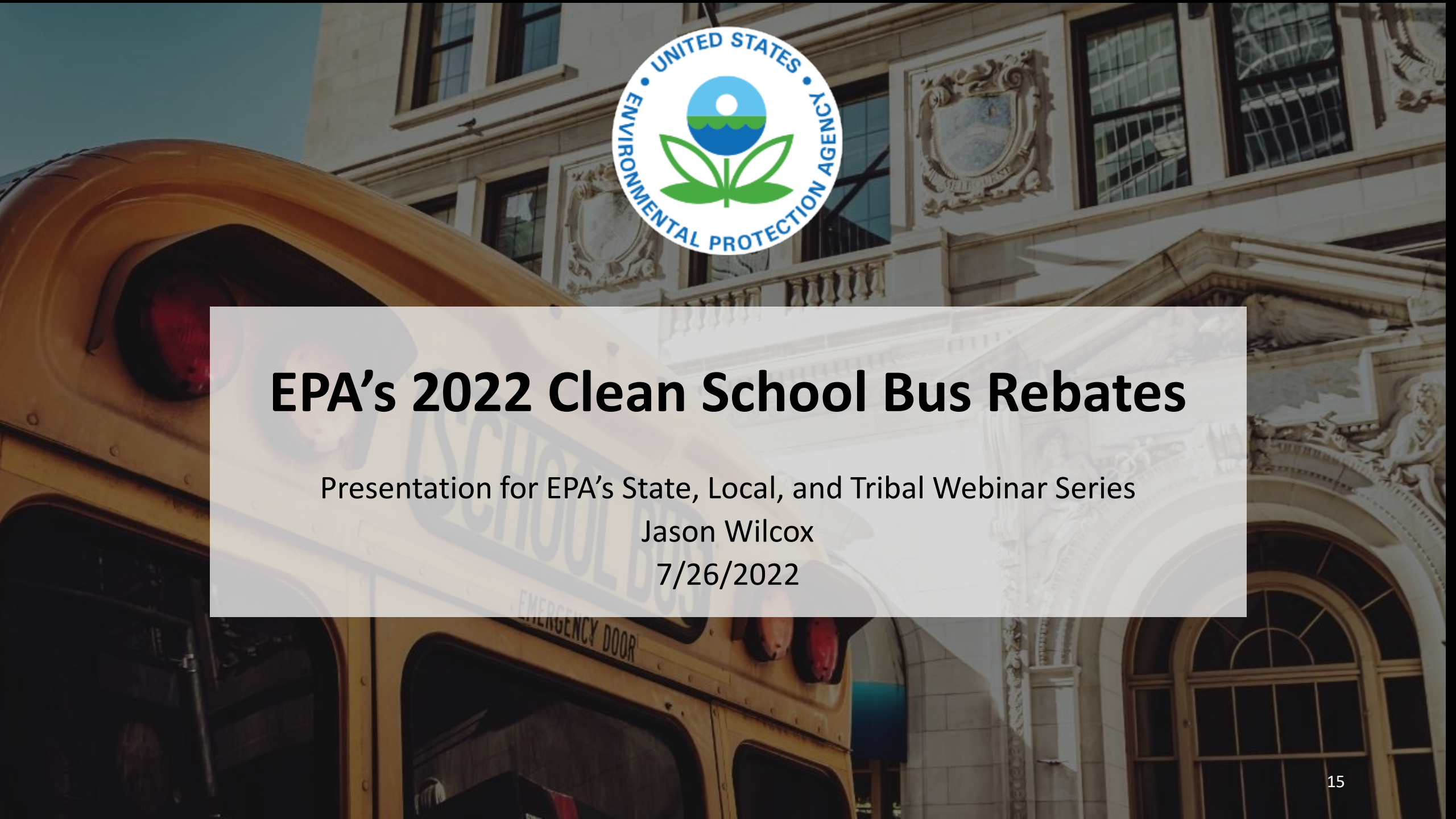
What are your community's biggest barriers to school and transit bus electrification (multiple answer)?

- Staff availability or capacity
- Lack of interest from decision makers
- Lack of interest from school districts
- Lack of interest from transit agencies
- Utility-related challenges
- Misperceptions of electric vehicles
- Limited financial resources
- Other (enter in Q&A box)



Overview of EPA's 2022 Clean School Bus Rebates

Jason Wilcox
U.S. EPA



EPA's 2022 Clean School Bus Rebates

Presentation for EPA's State, Local, and Tribal Webinar Series

Jason Wilcox

7/26/2022

Overview of the Bipartisan Infrastructure Law Clean School Bus Program

Under **Title XI: Clean School Buses and Ferries**, the Bipartisan Infrastructure Law (BIL) provides **$5 billion** over five years (FY22-26) for the replacement of existing school buses with clean school buses and zero-emission school buses.

These new clean school bus replacements will produce either zero or low tailpipe emissions compared to their older diesel predecessors.

School bus upgrades funded under this program will result in cleaner air on the bus, in bus loading areas, and in the communities in which they operate.

The first funding opportunity under this program is the 2022 Clean School Bus Rebates.

Clean School Bus Program Available Funding

Half of the $5 billion total funding is dedicated for **zero-emission school buses**

Half of the $5 billion total funding is dedicated for **clean and zero-emission school buses**

Funding Pools and Number of Applications

School districts applying directly for funds may only submit one application to replace up to 25 buses.

EPA will not fund multiple applications for bus replacements that will serve the same school district.

$500 Million in Available Funding for 2022 Clean School Bus (CSB) Rebates	
Zero Emission Funding Pool:	Clean School Bus Funding Pool:
Applications **exclusively requesting zero-emission** buses	Applications requesting **zero-emission, propane, and/or compressed natural gas (CNG)** buses

Clean School Bus Rebate Timeline

Activity	Date
2022 CSB Rebates open. EPA begins accepting applications submitted via online form	May 20, 2022 – August 19, 2022 11:59 pm ET
EPA reviews applications and begins the selection process	September 2022
EPA notifies applicants of selection status. Selectees can proceed with purchasing new buses and eligible infrastructure.	October 2022
Selectees submit Payment Request Forms with purchase orders demonstrating that new buses and eligible infrastructure have been ordered	October 2022 - April 2023
Project period deadline for selectees to receive new buses, install eligible infrastructure, replace old buses, and submit Close Out Forms	October 2024

Eligible Applicants

State and local governmental entities responsible for:

1) providing bus service to one or more public school systems; or 2) the purchase of school buses

Nonprofit School Transportation Associations

Indian Tribes, Tribal Organizations, or tribally controlled schools

Eligible Contractors

Prioritized Applicants

- The Bipartisan Infrastructure Law allows EPA to prioritize certain applicants.
- Applicants requesting funds to replace school buses that serve a school district that meets one or more of the **prioritization criteria** will be offered more funding per bus and receive preference in the selection process.
- EPA offers equal prioritization for school districts that meet one or multiple prioritization criteria.
- School districts that qualify under one or more of the prioritizations are identified in **EPA's prioritized funding list**.

Prioritization Criteria

1. High-need school districts and low-income areas

- School districts listed in the Small Area Income and Poverty Estimates (SAIPE) School District Estimates for 2020 as having **20% or more students living in poverty**
- School districts not listed in the SAIPE data, including most charter schools, **that self-certify as having 20% or more students living in poverty.** *EPA may ask for supporting documentation to confirm this self-certification.*
- School districts located in the U.S. Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands

2. Rural school districts

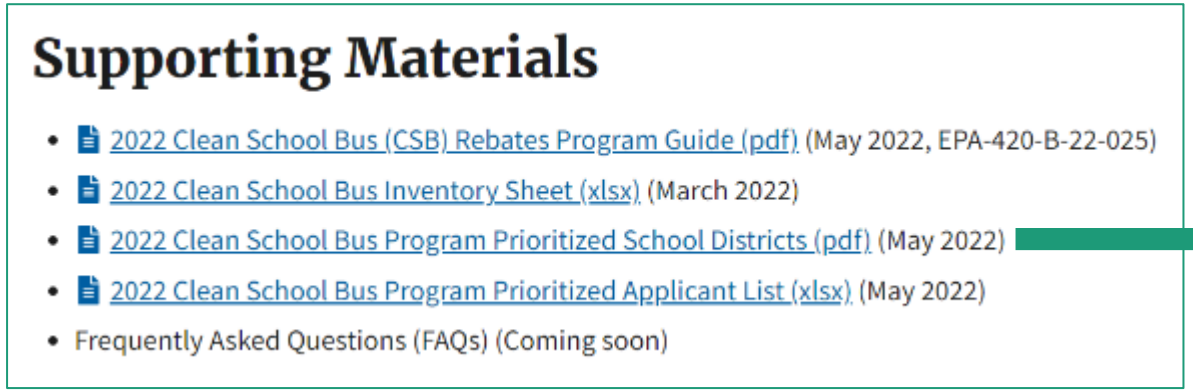
- School districts identified with locale codes “43-Rural: Remote” and “42-Rural: Distant” by the National Center for Education Statistics (NCES)

3. Tribal school districts

- Bureau of Indian Affairs funded school districts and school districts that receive basic support payments for children who reside on Indian land

Prioritized School Districts Lists

- Posted under Supporting Materials
  - www.epa.gov/cleanschoolbus/school-bus-rebates-clean-school-bus-program
- Portable Document Format (PDF) lists prioritized school districts with the state, name, and NCES ID
  - https://nces.ed.gov/ccd/districtsearch/
- Excel version adds the city and the prioritization criteria that each district meets



Supporting Materials

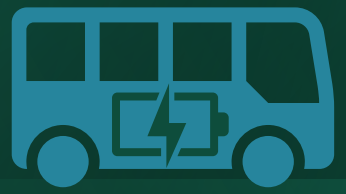
- 2022 Clean School Bus (CSB) Rebates Program Guide (pdf) (May 2022, EPA-420-B-22-025)
- 2022 Clean School Bus Inventory Sheet (xlsx) (March 2022)
- 2022 Clean School Bus Program Prioritized School Districts (pdf) (May 2022)
- 2022 Clean School Bus Program Prioritized Applicant List (xlsx) (May 2022)
- Frequently Asked Questions (FAQs) (Coming soon)

AR	QUITMAN SCHOOL DISTRICT	0511880
AR	RECTOR SCHOOL DISTRICT	0504370
AR	RIVERCREST SCHOOL DISTRICT #57	0500045
AR	RIVERSIDE SCHOOL DISTRICT	0500012
AR	RIVERVIEW SCHOOL DISTRICT	0508400
AR	ROSE BUD SCHOOL DISTRICT	0512000
AR	SALEM SCHOOL DISTRICT	0512090
AR	SAU-TECH CAREER CENTER	0500002
AR	SCRANTON SCHOOL DISTRICT	0512180
AR	SEARCY COUNTY SCHOOL DISTRICT	0509480

School Bus Replacement Guidelines

- Buses eligible for replacement must be 2010 or older diesel-powered school buses that will be scrapped if selected for funding.
- If a fleet has no eligible 2010 or older diesel school buses and is requesting zero-emission school bus replacements, the fleet can either:
  - Scrap 2010 or older non-diesel internal combustion engine buses; or
  - Scrap, sell, or donate 2011 or newer internal combustion engine buses

School Bus Replacement Guidelines



New replacement buses must:

- Have a battery-electric, CNG, or propane drivetrain.
- Be EPA certified vehicle model year 2021 or newer.
- Have a Gross Vehicle Weight Rating (GVWR) of 10,001 lbs. or more.
- Not be ordered prior to receiving official notification of selection for EPA funding.
- Be purchased, not leased or leased-to-own.

School Bus Replacement Funding

The maximum rebate amount per bus is dependent on:

- Bus Fuel Type
- Bus Size
- Whether the school district served by the buses meets one or more prioritization criteria

The table displays maximum funding levels. EPA will not disburse rebate funds in excess of the actual cost of the replacement bus and any costs above the maximum funding level are the sole responsibility of the applicant/awardee.

Maximum Bus Funding Amount per Replacement School Bus

School District Prioritization Status	Replacement Bus Fuel Type and Size					
	Zero emission (ZE) – Class 7+	ZE – Class 3-6	CNG – Class 7+	CNG – Class 3-6	Propane – Class 7+	Propane – Class 3-6
Buses serving school districts that meet one or more prioritization criteria	$375,000	$285,000	$45,000	$30,000	$30,000	$25,000
Buses serving other eligible school districts	$250,000	$190,000	$30,000	$20,000	$20,000	$15,000

Infrastructure Funding

Talk to your utility now if you are interested in zero-emission buses!

This table displays the maximum funding levels per bus. EPA will not disburse rebate funds in excess of the actual infrastructure costs.

School District Prioritization Status	ZE – Class 3+ Infrastructure Funding
Buses serving school districts that meet one or more prioritization criteria	$20,000/bus
Buses serving other eligible school districts	$13,000/bus

Application Process

- Applicants must submit applications using EPA's Clean School Bus Rebate forms.
  - To apply, organizations must:
    1. Have an *active* System for Award Management (SAM.gov) entity registration
       - Note: SAM.gov is transitioning from using a Data Universal Numbering System (DUNS) number to having a new Unique Entity ID (UEI). Organizations applying for rebates must know their UEI.
    2. Have Points of Contact listed under their organization's System for Award Management (SAM) entity registration in SAM.gov
- EPA will post a Q&A document and anticipates updating the Q&A document every two weeks during the application period. Novel questions submitted to CleanSchoolBus@epa.gov during that period, including those from program webinars, will be added to this document.
- The application deadline will be August 19, 2022 at 11:59pm Eastern Time. *Late applications will not be accepted.*

Selection Process

- Applications received by the deadline will be placed in a single ordered list using a random number generator lottery process.
  - This funding opportunity is not first-come, first-served, but EPA recommends not waiting until the deadline to submit.
- EPA will select applicants for funding, working from the top to the bottom of the list, until all funds are allocated from both the Clean School Bus and Zero Emission halves of funding.
  - Prioritized applicants will be selected first when making selections for the two halves of funding.
- To ensure a broad geographic distribution of funds, EPA will select at least one application per state or territory provided there is at least one eligible application.
- Applicants not selected by lottery will remain in random number order on a wait list.

For more information, please visit: epa.gov/cleanschoolbus

If I don’t get to your question today, please reach out to: CleanSchoolBus@epa.gov

Educate Drivers and Staff to Make your Fleet Electric Vehicle Conversion Successful

Nancy Jensen
Twin Rivers Unified School District

Educate Drivers and Staff to Make your Fleet Electric Vehicle Conversion Successful

Nancy Jensen
State Certified School Bus Driver Instructor

TwinRivers UNIFIED SCHOOL DISTRICT

Change is Good

Basic Observation Research and Adapt

Know your needs:

Routing expectations - How far do you travel?

Where do you travel? – Mountains, Desert, City, Icy roads.

Charging infrastructure access – Do you have more than one location?

Take Your new EV for a spin with the manufacturer representative if available.

Be ready to adapt procedures and policies.

The vehicle manufacturers are adapting as we speak. Making these vehicles even better.

Training - What will be new? Who needs training and terminology

- Teach all of your staff directly involved in your operations. Don't forget Routers and dispatchers.
- Range anxiety – The fear of not having enough range(miles to go) on a vehicle to make it back to the charger.
- Hypermiling - A way of driving that allows the driver to extend their fuel economy in a given vehicle. It was traditionally measured in miles per gallon.
- Conditioned Response – an automatic response established by training to an ordinarily neutral stimulus.
- Point and Say – Safety practice used in many Asian countries and the New York subway system to provide for safety when operating dangerous equipment.

RANGE ANXIETY!
How far will it go?

- How to determine if you will make it there?
- Know your intended route miles. Know your EV range
- “Turtle mode” or “Limp mode” Driver beware!
- What happens if a driver runs the battery to 0?

Hypermiling in an electric school bus

- Many of the traditional hypermiling techniques transfer effectively to electric vehicles and extend usable range.
- Timing lights, Gentle acceleration, Gentle braking
- Use downgrades to extend range – On a long downgrade you can add range.
- Anticipate lights and speed bumps to extend range.
- Practicing improves range. Drivers will get better range over time.

Safety when it is so quiet and adding sound

- Use “Point and Say” for safety.
- Conditioned responses and sensory input.
- Using more than one sensory input is proven to prevent mistakes.
- Use the sound generator at low speeds 0 to 15 mph when installed.
- DOU, DOU, DOU (bus sounds)

Besides Clean Air

- Yes, The transition to EV cleans our air. I heard someone talking about EV trash trucks the other day. Think about this: Trash Trucks are noisy.
- When you choose EV you also choose to address Noise pollution, Electric grid storage solutions, better worker health just to name a few .
- Grow your EV fleet and take advantage of the Grant programs available.
- The Clean School Bus Program (CSBP) closes August 19, 2022.

Low or No Emission Grant & Grants for Buses and Bus Facilities Competitive Program

Amy Volz
U.S. DOT FTA

Low or No Emission Grant & Grants for Buses and Bus Facilities Competitive Program

July 26, 2022

Amy Volz, Program Manager
Office of Program Management
Federal Transit Administration

FTA
FEDERAL TRANSIT ADMINISTRATION

U.S. Department of Transportation
Federal Transit Administration

Program Description

Program	Description	Fiscal Year (FY)22 Funding
Grants for Buses and Bus Facilities (Bus Competitive) **49 U.S.C. 5339(b)**	Authorizes FTA to award grants "to assist in the financing of buses and bus facilities capital projects including; • Replacing, rehabilitating, purchasing, or leasing buses or related equipment • Rehabilitating, purchasing, constructing or leasing bus-related facilities" • A minimum of 15% must be allocated to rural projects	$545 million
Low or No Emission Vehicle Program (Low-No) **49 U.S.C. 5339(c)**	Authorizes FTA to award grants to assist in the financing of low or zero-emission vehicles and supporting facilities and equipment. • A minimum of 25% of the amount awarded will be for low emission projects (e.g., CNG, propane, hybrid, etc.)	$1.176 billion

Authorized Funding: Buses and Bus Facilities Formula, Competitive, and Low-No Program (Section 5339)

Program Component	FY 2021	FY 2022 Enacted (in millions)	FY 2023 (in millions)	FY 2024 (in millions)	FY 2025 (in millions)	FY 2026 (in millions)
(a) Formula	$583	$604	$617	$633	$646	$662
(b) Bus Competitive	$414	$545	$384	$394	$402	$412
(c) Low-No	$180	$1,176	$1,123	$1,125	$1,127	$1,128
5339 Program TOTAL	**$1,177**	**$2,101**	**$2,123**	**$2,151**	**$2,174**	**$2,203**

Note: Funding amounts before subtracting administrative and oversight takedown.

FY21 Competitions

Low-No Program

187 applications from 46 states/territories requesting approximately $917 million

39 projects funded for a total of $182 million

List of funded projects can be found at:
www.transit.dot.gov/funding/grants/fiscal-year-2021-low-or-no-emission-low-no-bus-program-projects

Bus Competitive Program

303 applications from 50 states/territories requesting approximately $2.6 billion

70 projects funded for a total of $409 million

List of funded projects can be found at:
www.transit.dot.gov/funding/grants/fiscal-year-2021-buses-and-bus-facilities-projects

FY22 Low-No & Buses and Bus Facilities Competition

Important FY22 Competition Dates	
Notice of Funding Opportunity	March 4, 2022
Applications Due	11:59pm EST May 31, 2022
Project Evaluations	June-July, 2022
Award Announcement	No Later than August 15, 2022
Pre-Award Authority	Starts on date of project announcement
Available for Obligation	The year of award plus 3 years – September 30, 2025

Eligible Applicants

Recipients

- Designated recipients, states, local governmental authorities or federally recognized Indian Tribes are eligible.
  - **Bus Competitive**: Recipients listed above must allocate funds to or operate fixed route service.
- Rural areas must submit as part of a consolidated state application, unless the applicant is a tribe.

Subrecipients

- Same as recipients above, with these exceptions for Bus Competitive only:
  - Private nonprofit organizations engaged in public transportation are eligible.
  - The fixed route requirement does **NOT** apply to subrecipients.

Eligible Projects

- Replace, rehabilitate, purchase, or lease buses, vans and related equipment
  - This includes leasing power sources (i.e., batteries)
- Rehabilitate, purchase, construct, or lease bus-related facilities
- Rehabilitating or improving existing facilities to accommodate low or no emission buses and vehicles
- Costs incidental to the acquisition of buses or construction of a facility
  - Including activities such as functional landscaping (green space)
- Workforce Development

Note - Projects to the **Low-No Program** must be for low or no emission projects only.

Ineligible Projects

Projects not eligible for funding:

- Non-public transportation projects (e.g., *school buses, prisoner transport, intra-facility shuttles, services not open to the general public, see: 49 U.S.C.* § *5302(14)*)
- Operating expenses
- Preventive maintenance
- Development or deployment of prototype/demonstration vehicles
- Previous project expenses
- Mobility management
- Planning and design studies

Evaluation Criteria

FTA will evaluate proposals based on the criteria described in the Notice of Funding Opportunity (NOFO).

1. Demonstration of Need
2. Demonstration of Benefits
3. Planning and Local/Regional Prioritization
4. Local Financial Commitment
5. Project Implementation Strategy
6. Technical, Legal, & Financial Capacity

Important Links

FY22 Notice of Funding Opportunity:

www.transit.dot.gov/notices-funding/low-or-no-emission-and-grants-buses-and-bus-facilities-competitive-programs-fy2022

Low-No Program Webpage: www.transit.dot.gov/funding/grants/lowno

Buses and Bus Facilities Program Webpage: www.transit.dot.gov/bus-program

Frequently Asked Questions:

www.transit.dot.gov/funding/grants/low-no-and-buses-and-bus-facilities-faqs

Contact: amy.volz@dot.gov

Metro Transit (Minnesota) Electric Bus Pilot Program Update

Brian Funk
Metro Transit

Metro Transit (Minnesota) Electric Bus Pilot Program Update

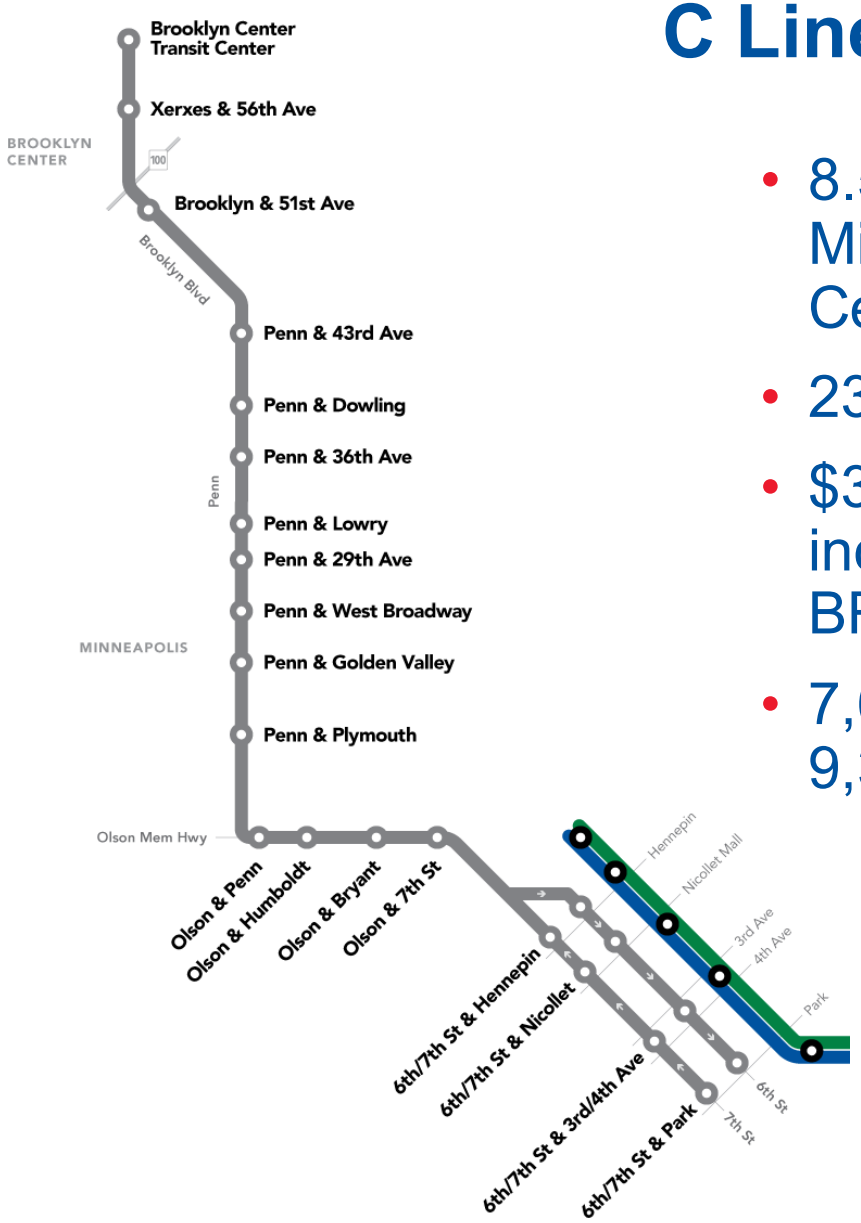
Brian Funk

Deputy General Manager/Chief Operating Officer

Agenda

- Project Review
- Electric Bus Update
- Charging Update
- Next Steps
- Q&A

C Line Opened June 8, 2019



- 8.5 miles from downtown Minneapolis to Brooklyn Center
- 23 stations
- $37 million project cost including new stations and BRT buses
- 7,600 daily rides pre-covid, 9,300 by 2030

Buses


C LINE RAPID
8704
it's
ELECTRIC!


metrotransit.org
METRO
it's
ELECTRIC!

8 New Flyer XE60 Battery Electric Buses

- First battery electric buses procured by Metro Transit via 2017 FTA LowNo Emission Grant
- First buses to be built start to finish in St Cloud, Minnesota
- Delivered in early 2019
- 466 kilowatt-hour (kWh) battery
- Electric driven center and rear axles
- Diesel fired auxiliary heater to preserve range in cold weather

Bus Successes

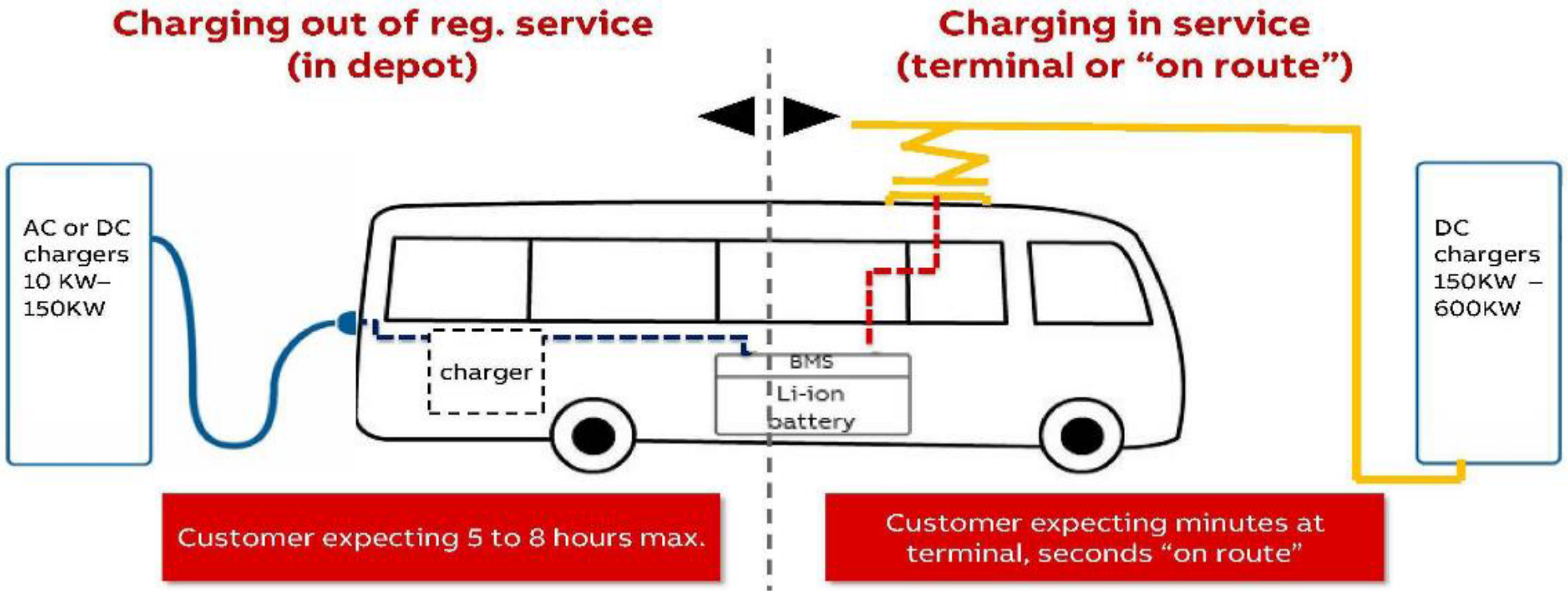
- Smoother, quiet operation
- Positive feedback from operators and customers
- Have operated in-service while enduring Minnesota's weather extremes
- Generally met expectations of estimated energy consumption

Bus Challenges

- Range
- System Software Updates
- Battery Balancing
- Center Axle Bearing Failures
- New Flyer tech on-site 100%

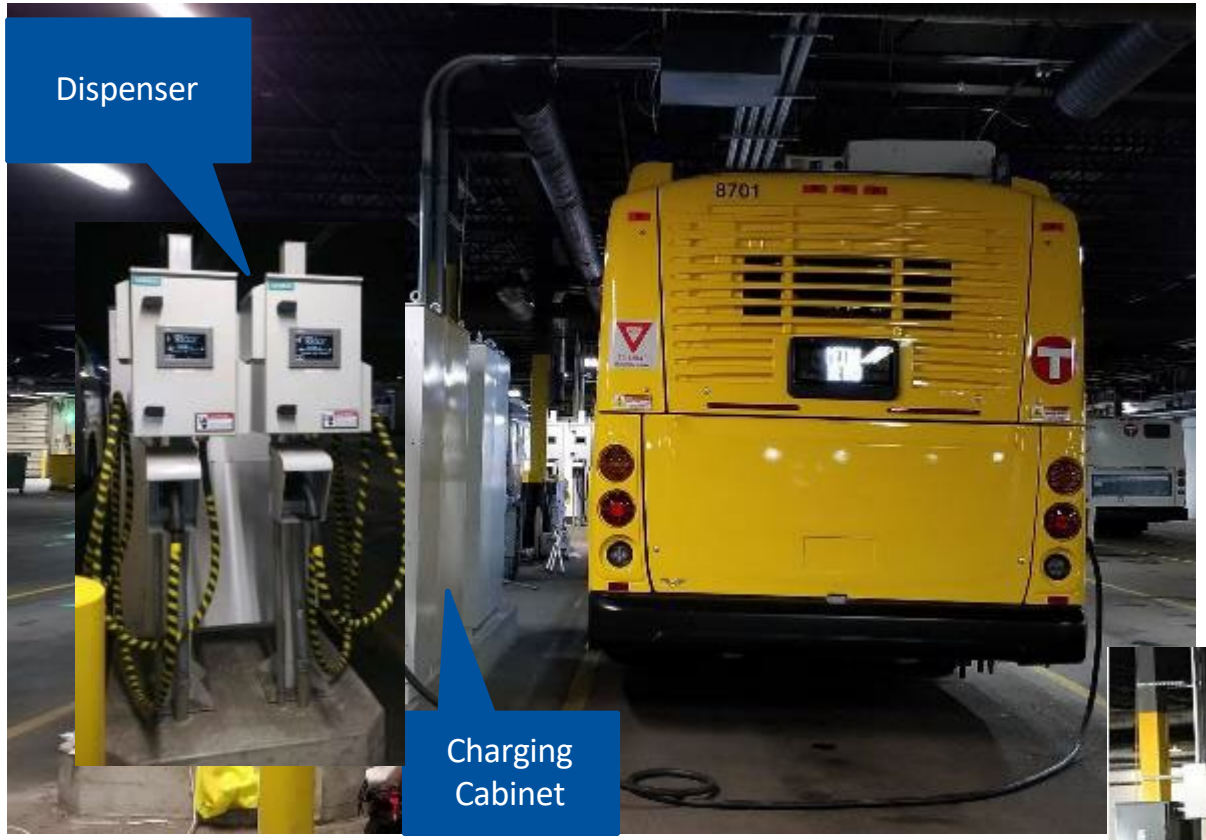
Charging Strategy

Combination in-depot and on route for range extension



AC: Alternating current
DC: Direct current
BMS: Battery management system

Depot Chargers at Heywood Garage



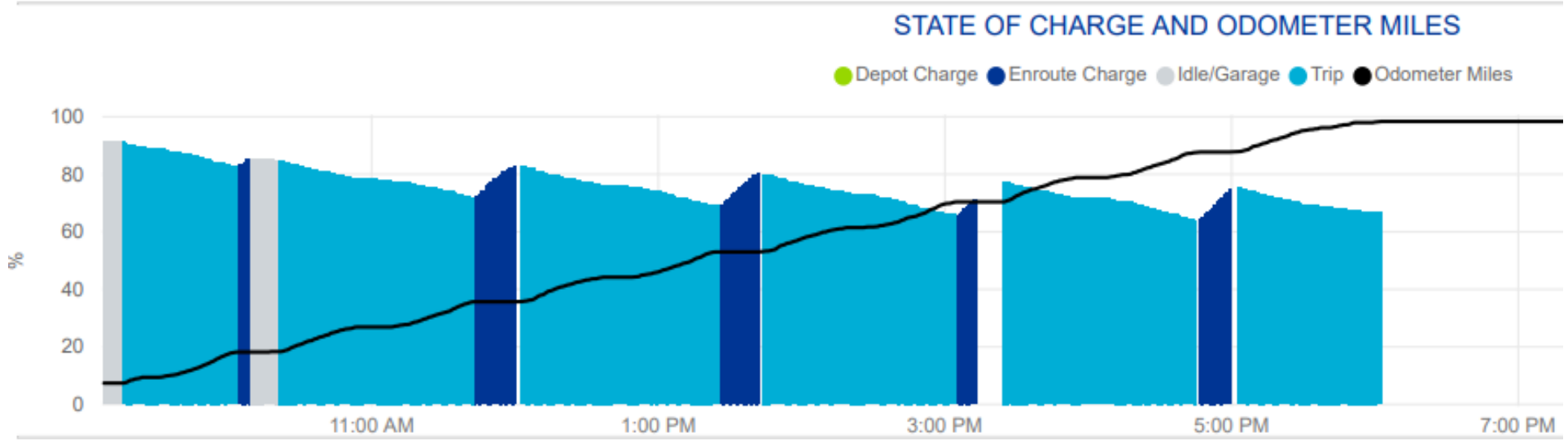
METRO

On Route Chargers at Brooklyn Center Transit Center

Charger Successes

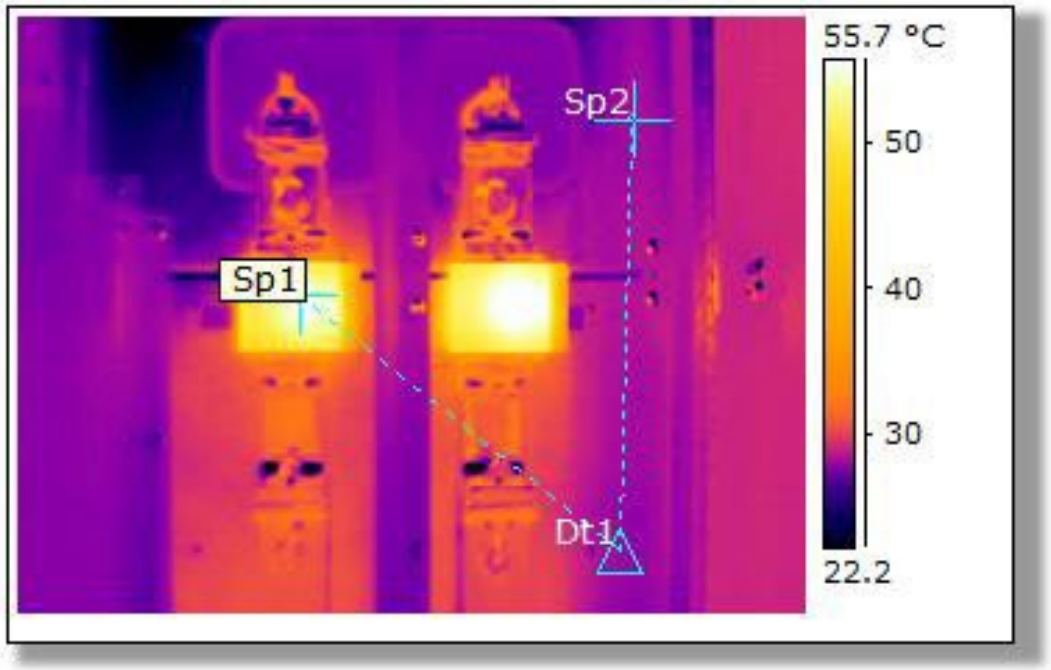
- Combination charging strategy effective *when* on-routes working reliably – *"~1 mile per minute"*
- Solutions-oriented collaboration with vendors
- Strong partnership with Xcel Energy assists with capital and technical needs
- Hands on agency approach to design, construction, testing/commissioning, operations & maintenance

DATE	BUS	MODEL	ESS CAPACITY
Sun, Feb 21, 2021	8700	XE60	466 kWh



Charger Challenges

- Lack of reliability
- Timely and conclusive root cause analyses
- Engineering tolerances and factors of safety
- Heat management and fuse performance
- Robust testing & commissioning and performance specifications



Upfront Capital Investment – Charger

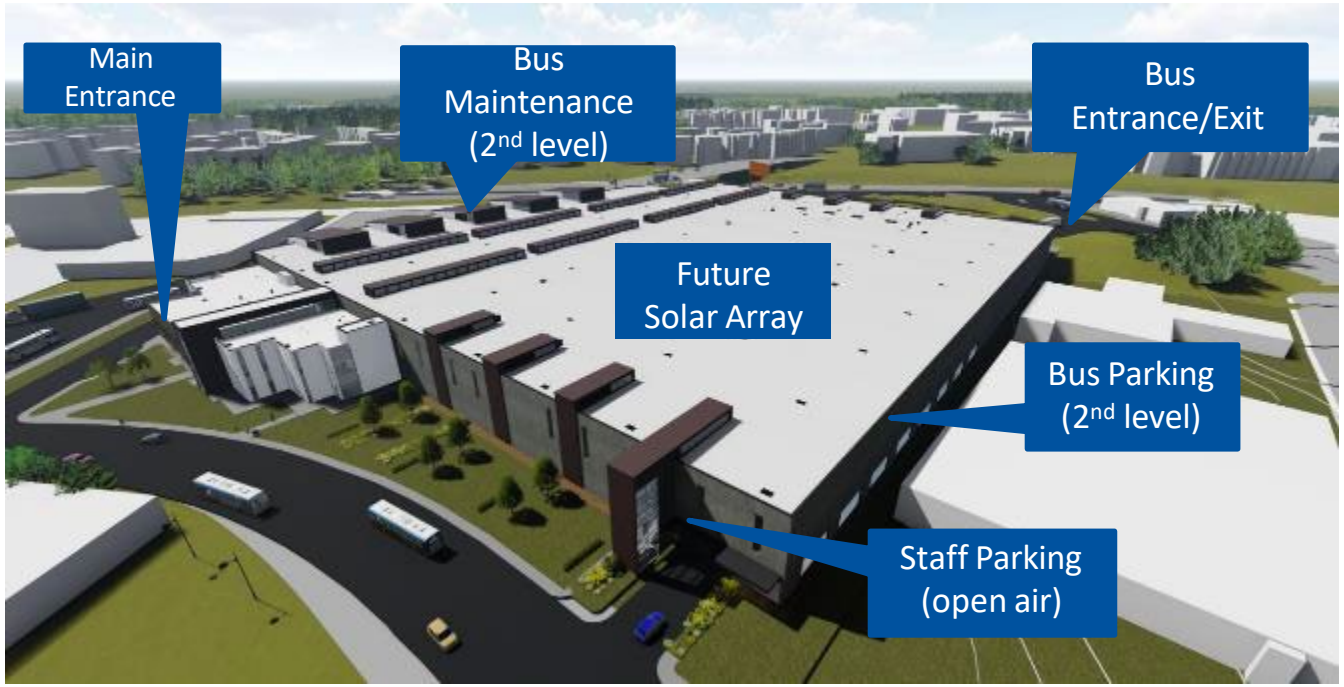
- Planning estimates for large fleet deployment

- 1 depot charger needed per 2 electric buses
  - $250k for charger and infrastructure costs
  - Must also factor State of Good Repair (SOGR) replacement (estimated at ~8 years)
  - Need 1:1 for small scale deployments

- 1 on-route charger needed per 10 electric buses
  - $1.0M for charger and infrastructure costs
  - Minimum 2 per deployment for redundancy and scheduling
  - Must also factor SOGR replacement (estimated at ~8 years)

Where do we go from here?

- Master Planning Completed Feb 2022
- 8 new Proterra 40’ buses coming in 2023
- New Minneapolis Bus Garage – Phased Electrification
- New Minneapolis Bus Garage – Solar and Battery Storage



Discussion and Questions

Brian.Funk@metrotransit.org

State and Local Climate and Energy Program

Question and Answer Session

Upcoming Webinars

EPA Clean School Bus Program: 2022 Clean School Bus Rebates
July 27, 1 PM ET – How to Apply with Live Q&A
www.epa.gov/cleanschoolbus/events-related-clean-school-bus-program

States Taking Action to Align Utility Policies with Environment, Energy, and Equity Goals
August 9, 3 PM ET
www.epa.gov/statelocalenergy/state-local-and-tribal-webinar-series

Connect with the State and Local Climate and Energy Program

Andrea Denny
U.S. Environmental Protection Agency
Denny.Andrea@epa.gov

State and Local Climate and Energy Program

Visit Our Website | www.epa.gov/statelocalenergy

Sign Up for Our Newsletter | www.epa.gov/statelocalenergy/state-and-local-energy-newsletters

Follow Us on LinkedIn | https://linkedin.com/showcase/epa-state-and-local-climate-and-energy-program