How to Tap Into Clean School Bus Funding

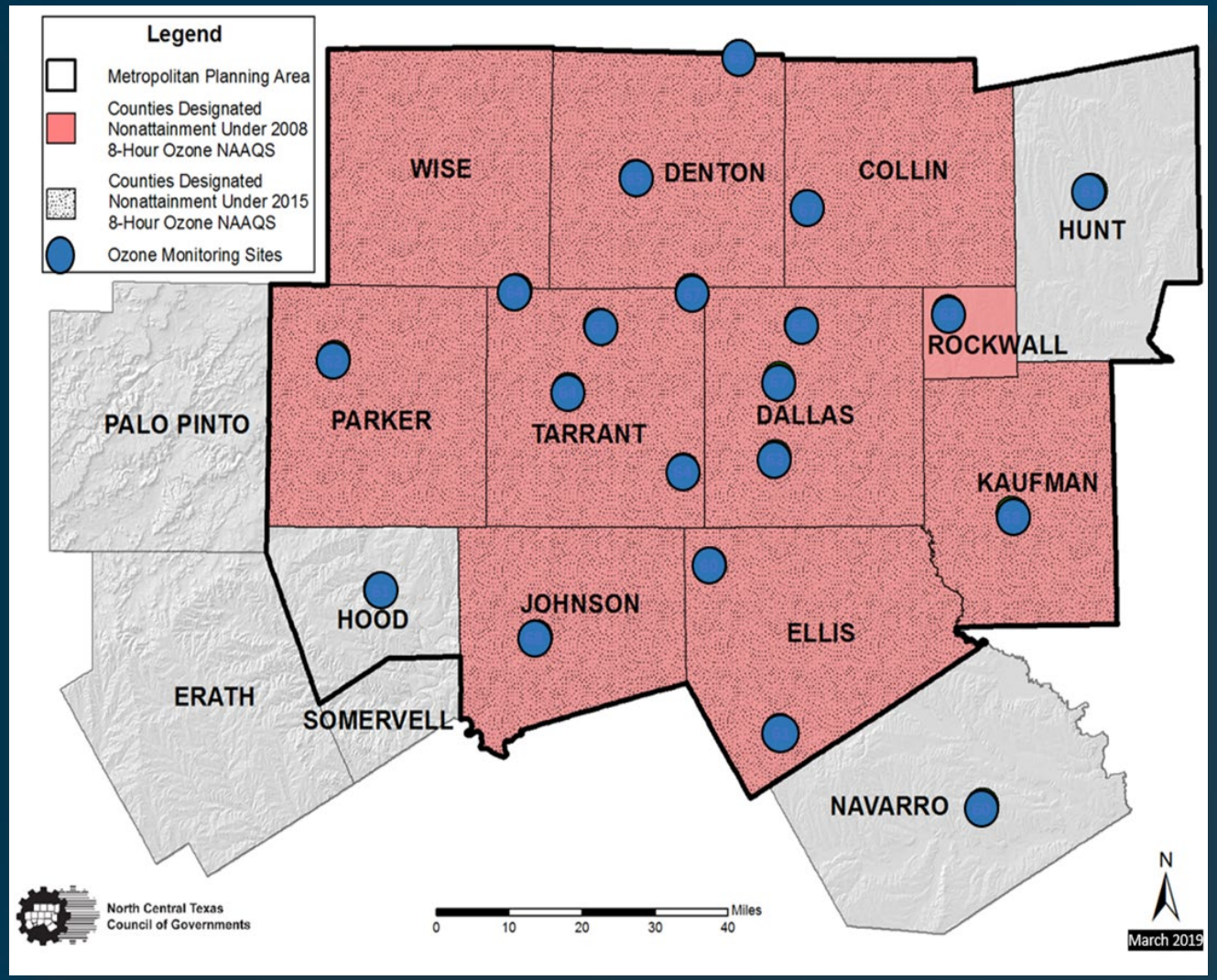
Savana Nance, Air Quality Planner III

Wednesday, July 20, 2022

Dallas-Fort Worth CLEAN CITIES

North Central Texas Council of Governments

Who We Are



North Central Texas Council of Governments

Regional Planning Agency

Regional Transportation Council

Metropolitan Planning Organization (MPO)

Dallas-Fort Worth CLEAN CITIES

Local Clean Cities Coalition

Agenda

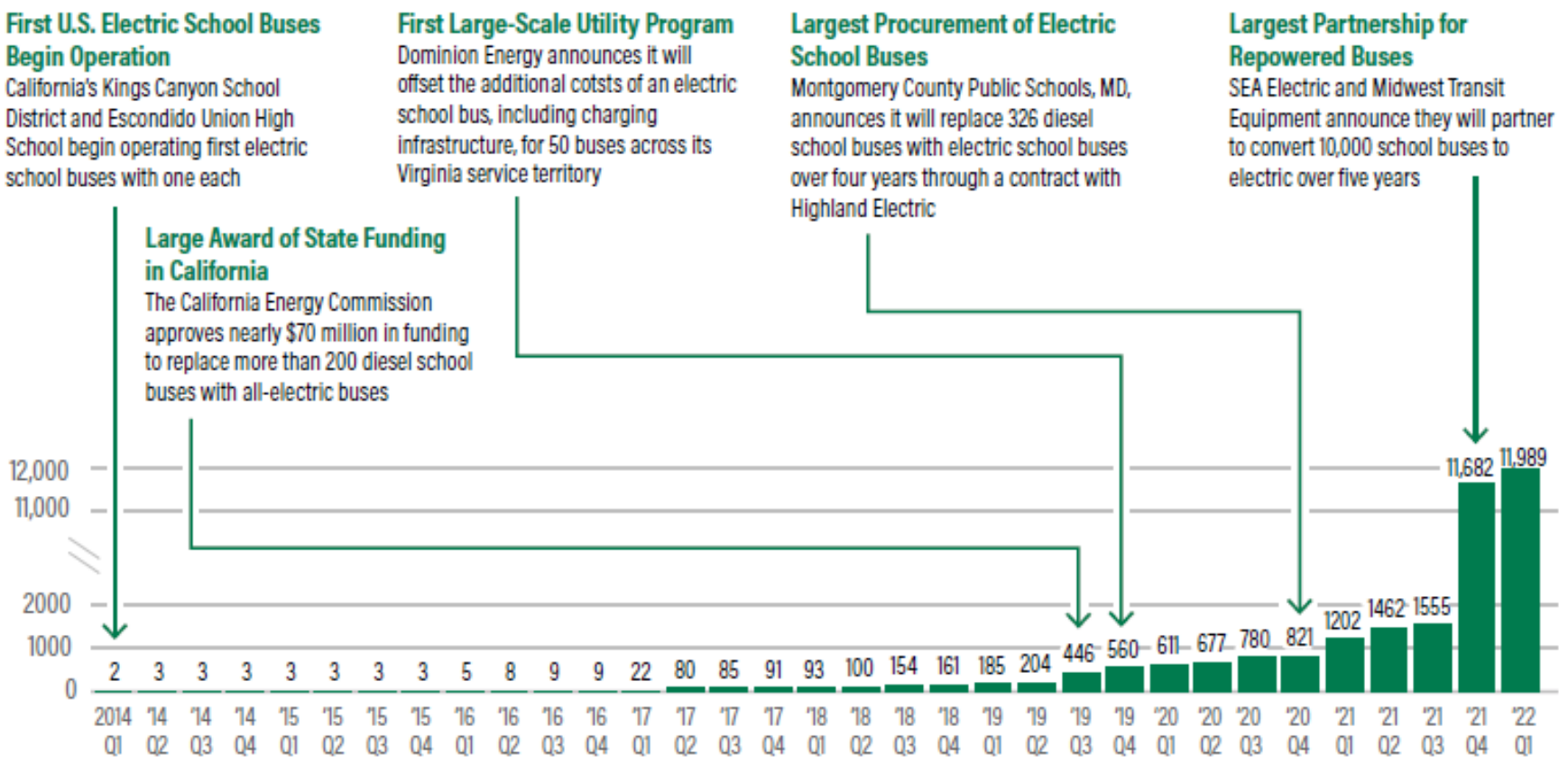
1. Introductions and Overview of Electric School Buses, Dallas-Fort Worth Clean Cities (DFWCC)
2. 2022 EPA Clean School Bus Rebates, Environmental Protection Agency (EPA)
3. Q&A on EPA's Clean School Bus Rebates, EPA
4. Federal, State and Local Funding Opportunities, DFWCC
5. Resources to Plan for Electric School Buses, DFWCC
6. Q&A

Please send your questions in the chat box!

Committed Electric School Buses in the US

FIGURE 1

CUMULATIVE NUMBER OF ELECTRIC SCHOOL BUSES COMMITTED BY QUARTER IN THE UNITED STATES (2014–2022)

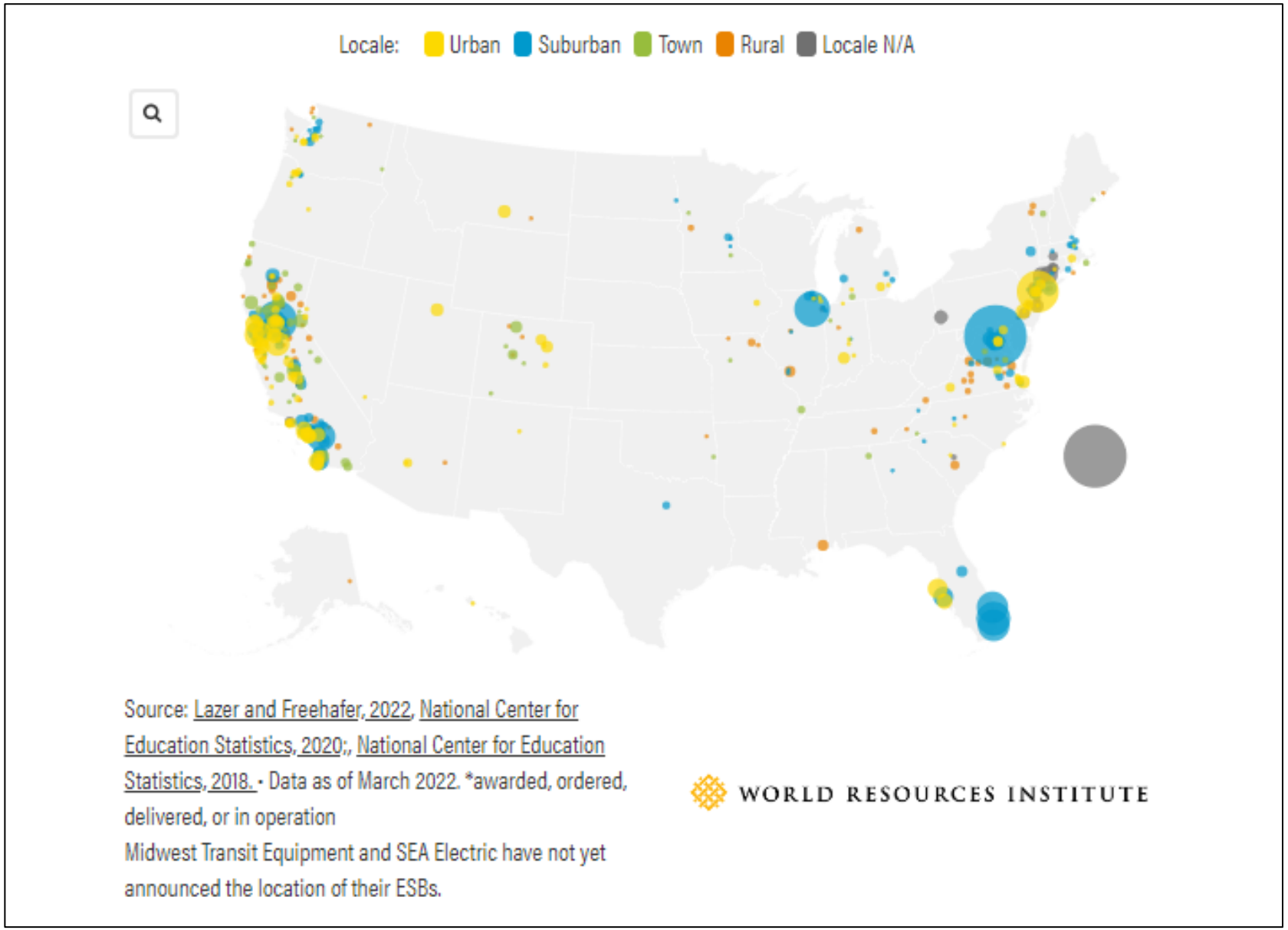


Notes: This graph depicts electric school bus (ESB) commitments at the earliest confirmed phase in the commitment process (awarded, ordered, delivered, or first operating)—286 ESBs were excluded due to unknown dates of their commitment stages. Abbreviation: Q = quarter.

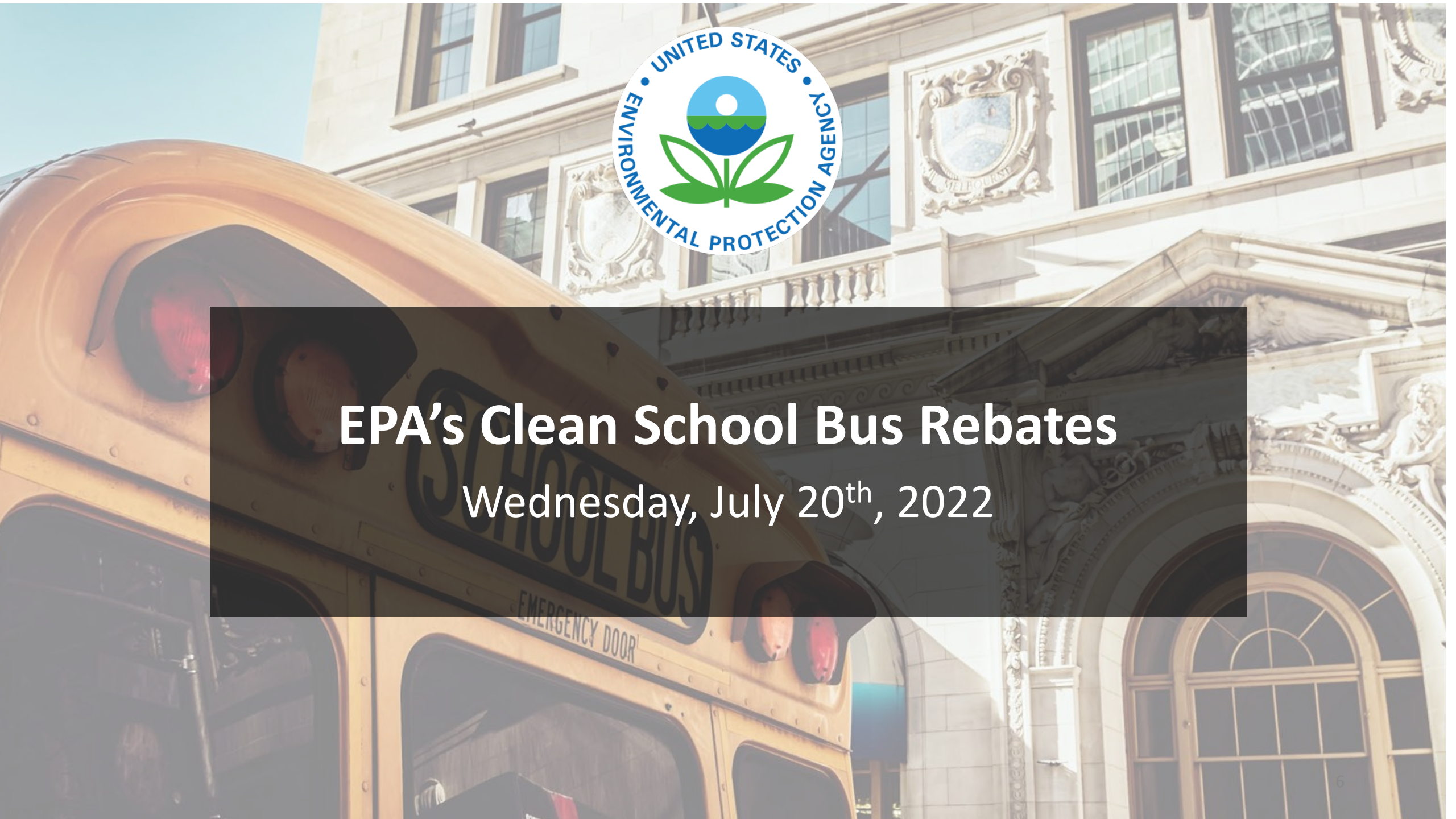
Source: Based on Lazer and Freehafer 2022.

Source: [Electric School Bus Initiative | World Resources Institute (wri.org)]

Committed Electric School Buses in the US



Source: Electric School Bus Initiative | World Resources Institute (wri.org)



EPA's Clean School Bus Rebates

Wednesday, July 20th, 2022

This presentation aims to provide information related to the Clean School Bus Program. EPA does not endorse any specific companies or products by allowing external parties to present at Clean School Bus Program events. The presenters at this event are not intended to be a comprehensive list of companies or products related to the Clean School Bus Program.

Mention of or referral to commercial products or services, and/or links to non-EPA sites does not imply official EPA endorsement of or responsibility for the opinions, ideas, data, or products presented at those locations, or guarantee the validity of the information provided. Mention of commercial products/services on non-EPA websites is provided solely as a pointer to information on topics related to environmental protection that may be useful to EPA staff and the public

The Bipartisan Infrastructure Law's Clean School Bus Program provides an unprecedented $5 billion to spur the transformation of the nation's fleet of school buses.

EPA's Clean School Bus Program Goals

Engage	Engage stakeholders in program development
Evolve	Evolve the programs, as needed, based on successes and lessons learned
Promote	Promote cost parity between bus technologies
Allow	Allow school districts multiple opportunities to apply for funding
Maximize	Maximize the number of zero emission and clean buses that get funded
Ensure	Ensure a broad geographic distribution of awards

Agenda

- Overview of the Bipartisan Infrastructure Law's Clean School Bus Program
- 2022 Clean School Bus Rebate Program Highlights
- Timeline
- Eligible and Prioritized Applicants
- School Bus Replacement Guidelines
- Funding
- Developing infrastructure to charge electric vehicles
- Application Process
- Selectee Requirements
- Conclusion

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 will be 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**

Benefits of Zero-Emission and Clean School Buses

Benefits of zero-emission buses	Benefits of alternative-fuel buses
Zero tailpipe pollution	Reduced tailpipe pollution
Reduced greenhouse gas emissions compared to diesel school buses	Potential for reduced greenhouse gas emissions compared to diesel depending on the alternative fuel that is used
Potential for reduced maintenance and fuel costs	Potential for reduced fuel costs compared to diesel depending on the alternative fuel that is used
Potential for fleets to partner with local utilities to feed power back into the grid when buses are not in use and electricity demand is high	

Why is EPA Running a Rebate Program?

Fastest funding program to develop

Quickest timeline fleets to receive funding

Straightforward rules - rebates are for bus replacements and infrastructure only

Streamlined application, selection, and funding processes

*** EPA is exploring options for future grant programs and other funding opportunities.**

Funding Pools and Number of Applications

$500 Million in Available Funding for 2022 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

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.

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
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 1 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

Eligible Contractors

- For-profit, not-for-profit, or nonprofit entities that have the capacity to (1) sell clean or zero-emission school buses or related charging or fueling infrastructure to school bus owners or (2) arrange financing for such a sale.
- School bus dealers and original engine manufacturers (OEMs) that meet these criteria are eligible contractors.

Eligible Contractors

- Private school bus fleets cannot apply directly for funding under the 2022 CSB Rebates. However, any of the **eligible applicants can partner with a private fleet that owns and operates buses to replace buses that serve a school district under an active contract**.
- For example:
  - A bus dealer, Big Yellow Bus Sales, could apply to replace buses owned and operated by a private fleet, Safety-First Bus Company.
  - These buses serve Washington County School District under a contract.
  - When applying for funds, Big Yellow Bus Sales will need to list the private fleet that owns the buses and the school district served by the buses in the application.
  - If selected for funding, Big Yellow Bus Sales must pass rebate funds on to the private fleet via a point-of-sale discount on the new buses or other financial arrangement.
  - The buses must continue serving Washington County School District for at least 5 years from the date of delivery.

Example 1: Bus Dealer Applying for Private Fleet Partner

While applying:

Bus Dealer:
Yellow Bus Sales

Can apply to replace buses owned by

Private Fleet:
Safety-First Bus Company

Old buses serve

Public School District:
Washington County School District (under contract)

Bus dealer must list the **private fleet that owns the buses** and **the school district served by the buses** in the application.

If selected:

Bus Dealer:
Yellow Bus Sales

Must pass funds to (e.g., via point-of-sale discount)

Private Fleet:
Safety-First Bus Company

New buses serve*

Public School District:
Washington County School District (under contract)

*Buses must serve district for least 5 years

Example 2: School District Applying for Private Fleet Partner

While applying:

Public School District:
Washington County School District*

Can apply to replace buses owned by

*Has existing contract with the private fleet for bus service

Private Fleet:
Safety-First Bus Company

If selected:

Public School District:
Washington County School District

Must pass funds to

***Private fleet** would replace old buses. New buses must serve same public school district for at least 5 years

Private Fleet:
Safety-First Bus Company*

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 will be 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

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 (Continued)

Buses eligible for replacement must:

- Have a Gross Vehicle Weight Rating (GVWR) of 10,001 lbs. or more.
- Be operational at the time of application submission.
- Be owned by the fleet receiving the replacement bus.
- Have provided bus service to the school district for at least 3 days/week on average during the 2021/2022 school year at the time of applying.

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 Guidelines (Continued)

New replacement buses must:

- Serve the school district listed on the application for at least 5 years from the date of delivery.
- Meet federal safety standards and be maintained, operated, insured, registered, and charged/fueled according to manufacturer recommendations and state requirements.
- Not include an unvented diesel passenger heater.
- Not be funded with other federal funds.
- Upon request, be made available for inspection by EPA or its representatives for 5 years from the date of delivery.

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					
	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

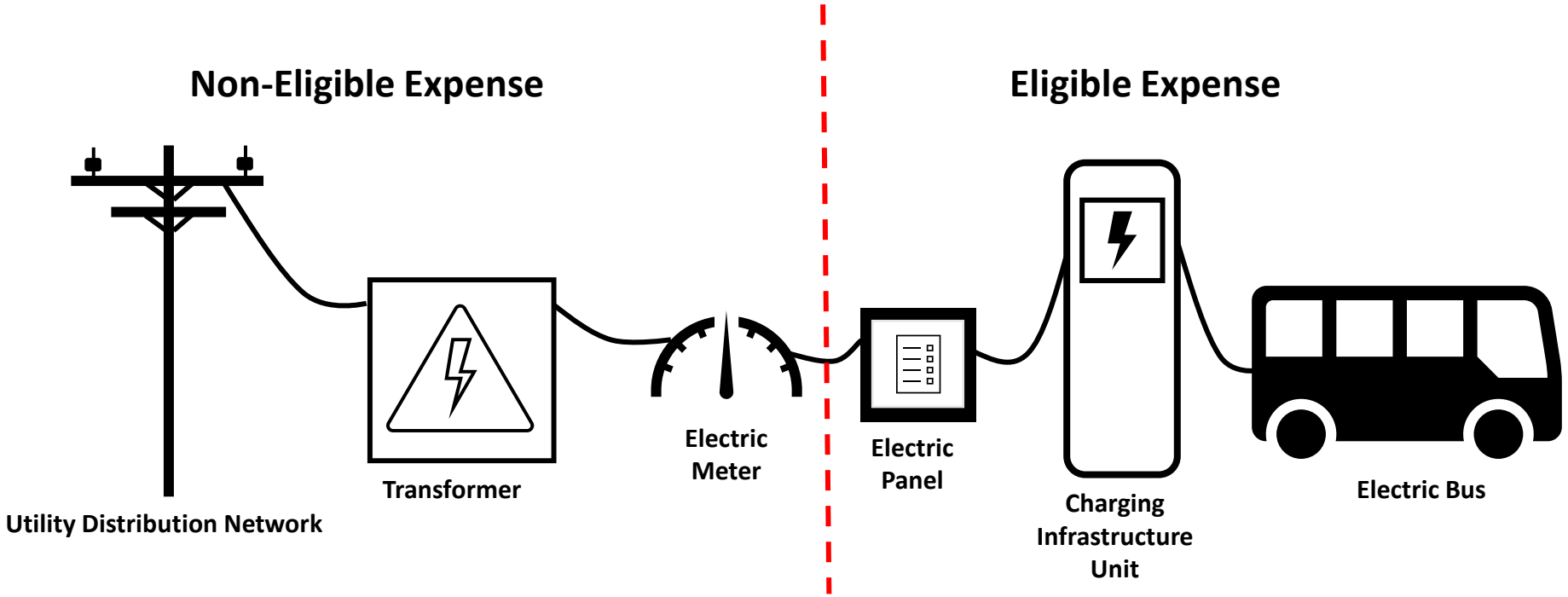
Talk to your utility now if you are interested in zero-emission buses!

This table displays the maximum funding levels. 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
Buses serving other eligible school districts	$13,000

Infrastructure Funding Restrictions

- EPA funding for infrastructure is limited to the fleet's side of the meter (as shown on the right side of the diagram).
- All Level 2 charging infrastructure purchased under this program must be EPA ENERGY STAR certified chargers.
  - EPA strongly recommends that all other charging infrastructure under this program be listed by a Nationally Recognized Testing Laboratory (NRTL).



Utility Planning

- **Local Grid Infrastructure:** Assess local grid infrastructure to determine whether an upgrade is needed in terms of transmission lines, transformers and electric meter etc.
- The grid infrastructure upgrade is decided based on the needs and feasibility e.g., in more remote rural areas, installations using off-grid power sources may provide an appealing option for avoiding expensive grid upgrades
- **Determine electricity rate and pricing structure:** To coordinate with utilities early in the planning process to understand aspects of electricity pricing that may significantly impact the financial viability of an EVSE installation. (Basic price, demand charges and time of use rates)

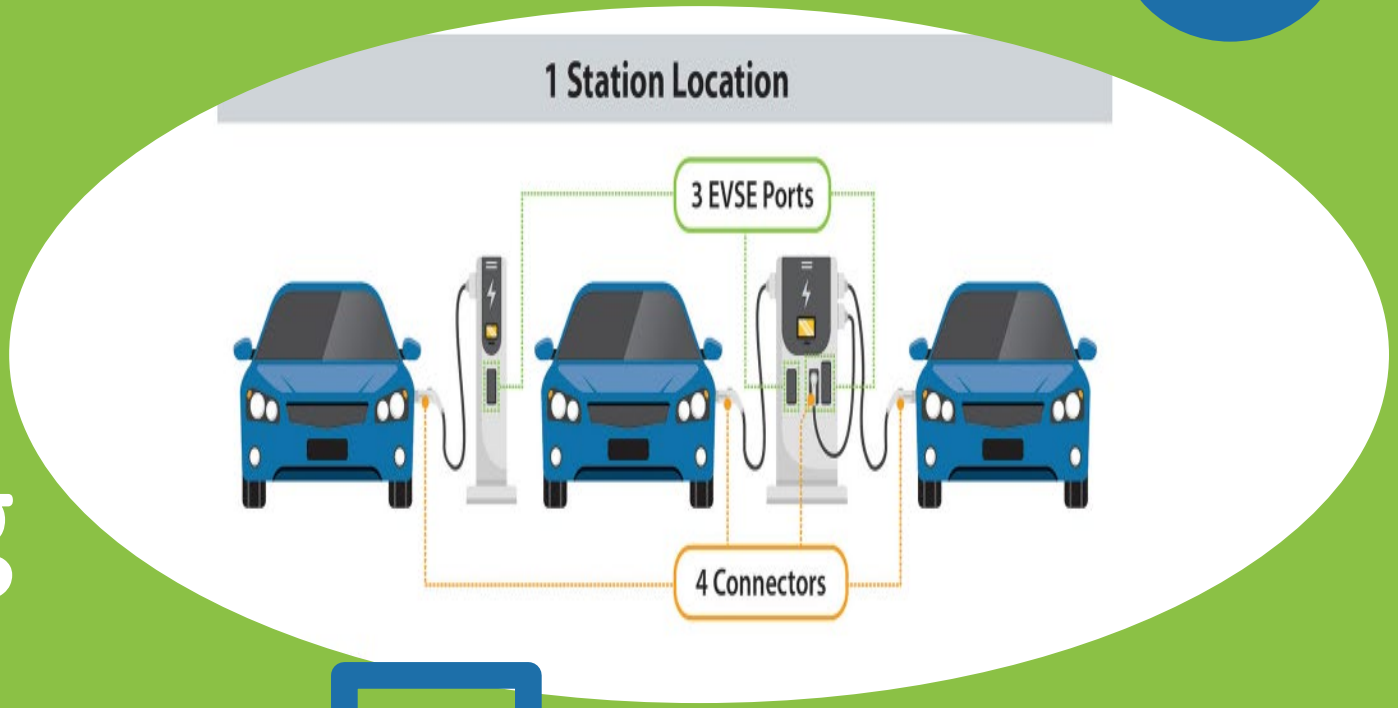
Developing infrastructure to charge Electric Vehicles

- Charging infrastructure terminology

  - **Station Location:** A station location is a site with one or more Electric Vehicle supply equipment (EVSE) ports at the same address. Examples include a parking garage or a mall parking lot.

  - **EVSE Port:** An EVSE port provides power to charge only one vehicle at a time even though it may have multiple connectors. The unit that houses EVSE ports is sometimes called a charging post, which can have one or more EVSE ports.
  - **Connector:** A connector is what is plugged into a vehicle to charge it. Multiple connectors and connector types (such as CHAdeMO and CCS) can be available on one EVSE port, but only one vehicle will charge at a time. Connectors are sometimes called plugs.

Typical charging station



Charging Equipment

Charging type	Voltage	Typical power (kW)	Setting	Range
Slow (Level 1)	120 V AC	1.2-1.8 kW	Primarily residential, in North America.	5 miles of range per 1 hour of charging assuming 1.9 kW charging power
Regular (Level 2)	200-240 V AC	2-7 kW	Home, workplace and public.	Approximately 25 miles of range per 1 hour of charging assuming 6.6 kW charging power
AC Fast (Level 2)	240 V AC	7-43 kW	Public such as curbside and parking lots.	Same as above
DC Fast (rapid)	480+ V DC	50+ kW	Public, particularly for taxis, and intercity. Works only with select (mostly long range) BEVs.	Approximately 100 to 200+ miles of range per 30 minutes of charging and charging power varies by vehicle and battery state of charge

Charging Station Design

Critical Design Guidelines for Charging Stations

EV charging stations should be highly visible and easy to access. As such, the following are some key tips for charging station design:

1. **Strong colors**
2. **Lights**
3. **Good height**
4. **Cords/cables included**
5. **Cord/cable holders**
6. **Clear Instructions**
7. **Clear and simple pricing information**
8. **Customer support information**

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 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 SAM.gov entity registration in SAM.gov
- EPA will post a Questions and Answers 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 in August- please check the website for exact date. *Late applications will not be accepted.*

Important! SAM.gov Registration

Check the Systems for Award Management (SAM.gov) to ensure your organization is *actively* registered as an entity

- An individual user account on SAM.gov is not the same thing as an organization's entity registration
- Review all SAM.gov entity registration information for accuracy, including bank accounts, addresses, the Unique Entity Identifier (UEI), and Points of Contact
- If your organization has no record of a SAM.gov registration, expired or active, and needs to create a new registration, the simplest entity registration type that can participate in the Clean School Bus Rebates is the "Federal Assistance Awards Only" registration.
- For help with SAM.gov, reach out to the Federal Service Desk at: https://www.fsd.gov

Only individuals with email addresses listed as one of the following Points of Contact (POC) under an *active* SAM.gov entity registration will have access to create, edit, save, and submit a Clean School Bus Rebate application for that entity:

- Electronic Business POC
- Alternate Electronic Business POC
- Government Business POC
- Alternate Government Business POC

Note: When entering the rebate application, applicants must use the same email as is listed in their POC information in SAM.gov. They will be prompted to sign-in to, or create, a free login.gov account.

Selection and Notification

- Applications received by the deadline will be placed in a single ordered list using a random number generator lottery process.
- 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.
- 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.

Selectee Requirements

- EPA anticipates notifying applicants of their selection status within 60 days of the application deadline. Applicants that are selected for funding will receive an electronic status update that includes (1) that they have been selected for funding, (2) the maximum amount of funds that have been reserved for them, and (3) instructions on proceeding with the purchase of new buses and eligible infrastructure.
- After receiving notice of selection, selectees must submit an online **Payment Request Form** that includes an attached scan of the **purchase order(s) for the new school buses and eligible infrastructure within six months**.

Selectees can request extensions to the project period deadline. EPA will review these requests on a case-by-case basis and may grant extensions if sufficient justification is provided.

Selectee Requirements

- Once selectees have received their new buses and eligible infrastructure and have replaced their old buses, they must submit an online Close Out Form. The **Close Out Form** must be submitted **within two years** of the date of the selection notification.

- The Close Out Form will require selectees to attach:
  - For old buses being scrapped, scrappage photos and letter for buses being replaced
  - For old buses eligible to be sold or donated, documentation of the vehicle sale or donation
  - A scan of the invoices for the new buses and eligible infrastructure
  - A scan of proof of delivery for the new buses and eligible infrastructure (e.g., dated bill of lading)
  - One photo of the exterior of each new bus, labeled with the last 4 digits of the bus VIN
  - One photo of each charging pedestal if EPA funds were used for charging infrastructure.

- Selectees must retain all financial records, supporting documents, accounting books and other evidence of Rebate Program activities for five years after delivery of the new buses. If any litigation, claim, or audit is started before the expiration of the five-year period, the recipient must maintain all appropriate records until these actions are completed and all issues resolved.

Recap

- EPA anticipates awarding $500 million in rebate funding for zero-emission and clean school buses.
- Don’t forget to start on your SAM.gov registration!
- Initiate discussions with your utility now if you will apply for zero-emission buses.
- EPA has posted the program guide and prioritized applicant list.
- Online application period is open and will close August 19, 2022.

Your Contribution

- Help us by playing your part by engaging with school districts
- Reach out to others and spread the word to as many people as possible to submit applications

Thank You!

Questions??

EPA Region 6 Clean School Bus Contacts:

Austin Vela	**214-665-9792**
Hafiz Muhammad Aamir	**214-665-6523**
Nina Evans	**214-665-8568**
Valicia Cisneros	**213-665-8528**

Federal, State, and Local Funding

Preparing for Grants

1. **Connect with your local Clean Cities Coalition, Council of Governments (COG), or Metropolitan Planning Organization.**
   - Clean Cities - https://cleancities.energy.gov/coalitions/
   - COG - https://txregionalcouncil.org/regional-councils/
   - MPO - https://www.texasmpos.org/texas-mpos/

2. **Identify Potential Projects:**
   - Create a fleet inventory list & research your fleet's duty cycle.

3. **Research Funding Opportunities and sign-up for SAM.gov account!**
   - Grants available for the Dallas-Fort Worth region can be found at www.nctcog.org/AQfunding.
   - Agencies will need active System for Award Management (SAM.gov) entity registration with a Unique Entity ID (UEI) to apply for grants.
     - For help with SAM.gov registration, reach out to the Federal Service Desk at https://www.fsd.gov
     - In 2022, NCTCOG hosted a webinar on Applying for Federal Funding, which included information on SAM.gov.

4. **Apply for Grant Funding!**

To stay up-to-date on grants and webinars go to https://www.nctcog.org/stay-informed or text **DFWCLEANCITIES** to **22828** to join our e-mailing list!

Texas Commission on Environmental Quality's Texas Emissions Reduction Plan

The Texas Emissions Reduction Plans (TERP) various programs provides financial incentives to eligible individuals, businesses, or local governments to reduce emissions from polluting vehicles and equipment.

TERP Heavy-Duty Vehicle Replacement Programs-

- Texas Clean School Bus Program – **Open Now!**
  - Provides up-to 80% funding for replacement of diesel school buses.
- Texas Clean Fleet Program – **Open Now!**
  - Up to 80% of the eligible incremental costs.
- Rebate Grants Program
  - Up to 80% of the eligible incremental costs.
- Emissions Reduction Incentive Grants
  - Up to 80% of the eligible incremental costs.
- Texas Natural Gas Vehicle Grant Program
  - Up to 80% of the eligible incremental costs.
- Governmental Alternative Fuel Fleet Program
  - Funding level varies.

Other TERP Funding Programs-

- Alternative Fueling Facilities Program
  - Offers grants to construct or expand alternative fueling stations.
- Light-Duty Motor Vehicle Purchase or Lease Incentive Program (LDPLIP)
  - Offers rebates to purchase or lease eligible light-duty vehicles.

Go to https://www.tceq.texas.gov/airquality/terp/ for more information!

Local Funding

NCTCOG Funding Programs

- North Texas Clean Diesel Project – **Open Now**
  - Source: Diesel Emissions Reduction Act (DERA)

For a list of funding in North Texas go to **https://www.nctcog.org/trans/quality/air/funding-and-resources**

Utility Rebates

- United Cooperative Services Rebates
  - 50% up to $500 on a Level 2 (240 Volt) electric vehicle (EV) charger.
- Denton Municipal Energy Rebates
  - $300 Electric Vehicle Rebate, solar rebates, and more.
- Garland Power & Light (GP&L) Rebates
  - Provides credits for participating in the GP&L EnergySaver Program.
- Austin Energy Rebates
  - Workplace or multifamily charger: up-to $4,000 for a Level 2 or $10,000 for a DCFC

Considerations for Combining Funds

Timeframe:
- Identify when funding program(s) will open and close and when funds will be awarded.

Funding Source:
- Identify if federal, state or local.
- Usually, an applicant cannot **profit from funding program(s).**

Reporting Requirements:
- Consider activity life, reporting on operations (such as mileage) and the administrative burden of complying with two funding programs.

Vehicle Eligibility
- Old (if scrappage required) and new vehicles will have to meet requirements for both programs, which could include:
  - **Engine/Chassis Model Year**
  - **Operational Requirements**
    - Days-of-use, annual mileage, in-use on a weekly basis, etc.
  - **Eligible Costs**
    - Certain funding may not fund driver training, infrastructure, warranty, etc.
  - **Scrappage**
    - Confirm if scrappage requirements are the same for both programs.

Federal Funding Programs

The U.S. Department of Agriculture

Community Facilities Direct Loan & Grant Program

- Provides grants and loans for the purchase, construct, and/or improvement of essential community facilities, or to purchase equipment.
- Funding is awarded based on population size and median household income.
- Program can be used by school districts to purchase buses, no scrappage is required.

Department of Energy

$500 Million Program for Better School Infrastructure

- Will fund energy upgrades to public schools. Potential projects include installing or expanding renewable power sources, energy efficiency upgrades, installing EV chargers and/or electric school buses (EVSB).
- Expected Fall 2022.

State Energy Conservation Office (SECO)

SECO Funding Programs

- LoanSTAR Program (texas.gov) – **Open Now!**
  - Provides low interest loan rates for energy-related cost-reduction projects.

Previous SECO Funding Programs

- "Cool Schools & More" Loan Program
  - Provided loans to assist Texas ISDs in purchasing HVAC systems.

SECO's Schools Energy Programs

- Preliminary Energy Assessments (PEA)
  - SECO's PEAs provide free recommendations for cost-effective facility improvements to reduce energy consumption and costs.
- Watt Watchers
- Technical Assistance for Schools
- Energy Reporting

SECO
State Energy Conservation Office

Go here to sign-up for updates from SECO!

Resources to Plan for Electric School Buses (EVSB)

Planning for Electric School Buses

- **Seek Community and Decision-Makers Support:**
  - World Resource Institute's (WRI) Pitch Deck - Provides information on the benefits of EVSB.
  - Alternative Fuel Life-Cycle Environmental and Economic Transportation (AFLEET) Tool – Can be used to calculate emissions reductions, total cost of ownership, and simple payback from transitioning to alternative fuels.

- **Research Bus Models:**
  - Alternative Fuel Data Center (AFDC) Vehicle Search - Provides a list of currently available EVSB.
  - WRI's Electric School Bus Initiative's Market Study and Buyer's Guide – Provides a list of currently available EVSB.

- **Confirm Bus can be Operated and be Repaired in Texas**
  - TX Department of Public Safety School Bus Specifications
  - Contact your local dealer and inquire about maintenance and technician/driver training.

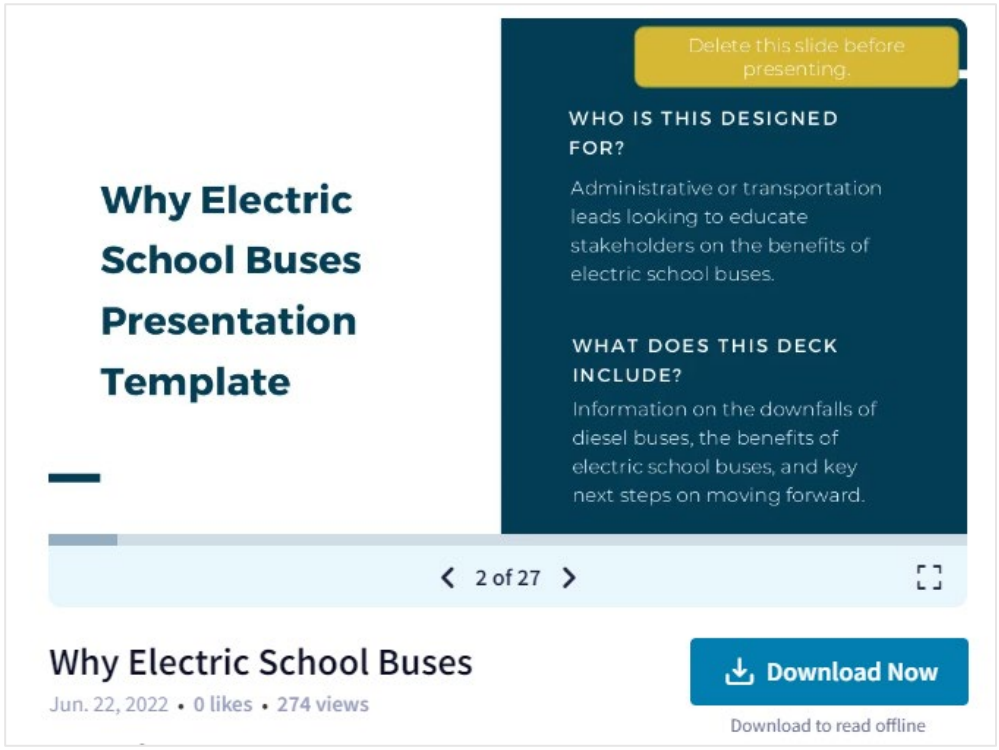
- **Identify Charging Requirements:**
  - For information on electric vehicle supply equipment (EVSE), go to AFDC EV Charging Station Webpage
  - In 2021, the NCTCOG hosted an *informational* webinar on planning for EVSE. Go here to watch!

The Alternative Fuel Data Center has developed resources to assist in planning for electric school buses. Go here for more information!

Community Support

WRI Pitch Deck

The WRI Pitch Deck can be downloaded and customized by school districts to help convince decision makers and the community of the benefits of EVSB.

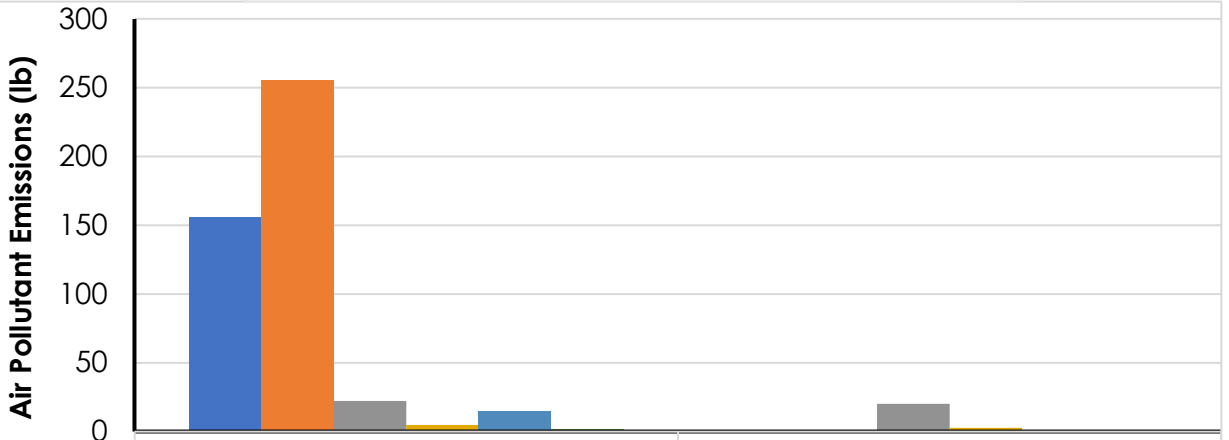


AFLEET

Fleets can use AFLEET to calculate the emissions reduced from utilizing alternative fuel vehicles with the following information:

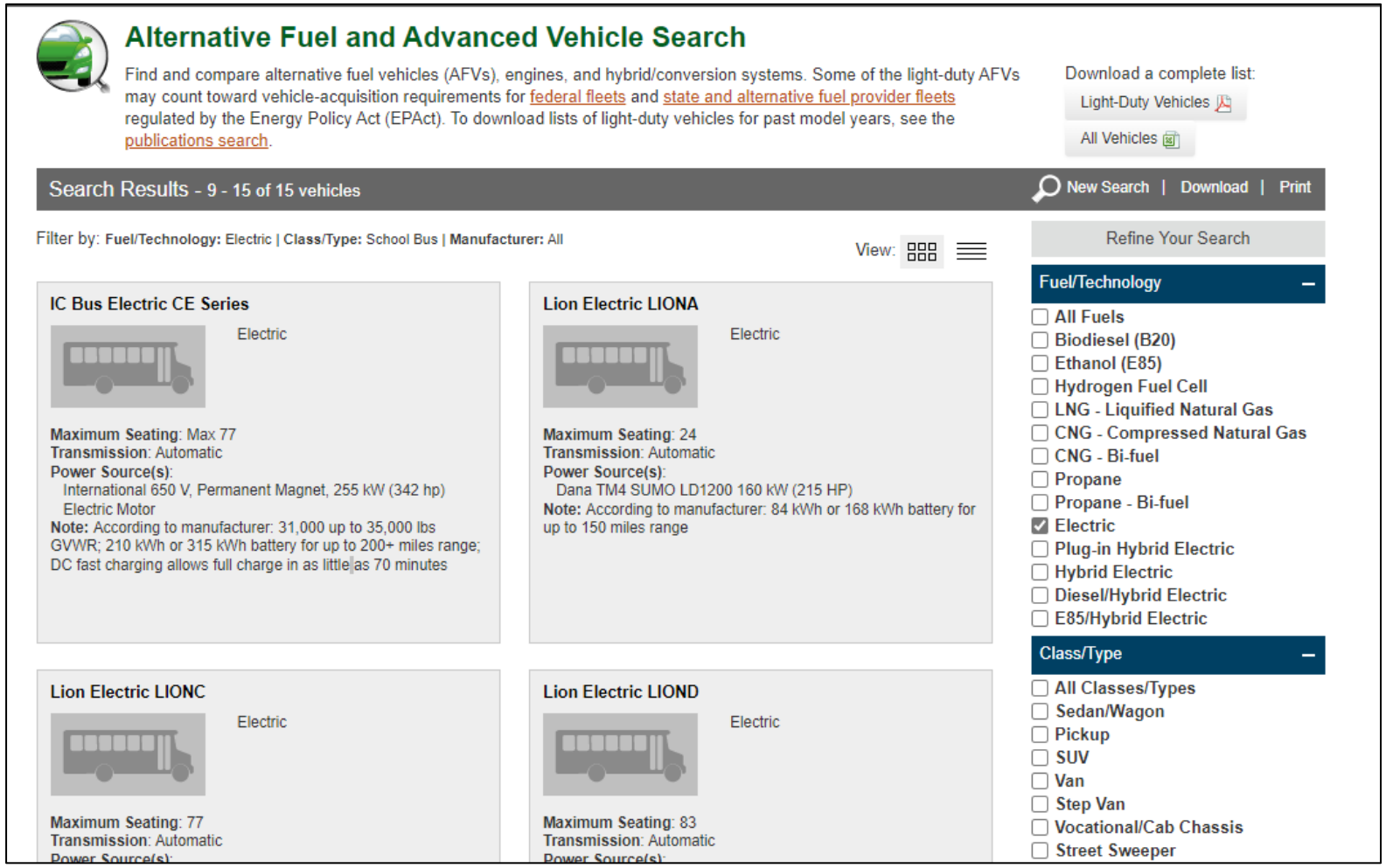
- Vehicle model year(s)/fuel type(s)
- Annual mileage

Lifetime Vehicle Operation Air Pollutants



	Diesel	EV
CO	156	0
NOx	256	0
PM10	22	20
PM2.5	5	3
VOC	15	0
SOx	2	0

Available Electric School Buses – AFDC



Go to: https://afdc.energy.gov/vehicles/search/

Select: School Bus

Filter: Fuel/Technology and Class/Type

In 2020, NCTCOG hosted a 3-part webinar series on electric school buses. Go here to watch the recordings!

Available Electric School Buses – WRI Market Study and Buyer's Guide

TABLE 3

AVAILABLE NEWLY MANUFACTURED ELECTRIC SCHOOL BUSES (TYPE C)

	Blue Bird	Lion	Thomas	IC Bus/Navistar	BYD
MODEL	BLUE BIRD VISION	LIONC	SAF-T-LINER C2 JOULEY	IC CE SERIES ELECTRIC BUS/ PB10E	TYPE C
Price range	$326,810–$365,000[a]	$338,253–$422,302[b]	$335,287–$437,000[c]	$347,870–$364,123[d]	Not available
Length (L)/width (W)/height (H)	L: Max 477" W: 96" H: 123"	L: 473" W: 96–102" H: 122"	L: 396" W: 96" H: 144"	L: 303.9"/474.9" W: 96" H: 123"	L: 435"/462" W: 102" H: 132.9"
Passenger capacity	77	77	81	29–72	78
Charger connector	L2: J1772 DCFC: CCS1	L2: J1772 DCFC: CCS1	DCFC: CCS1	L2: J1772 DCFC: CCS1	L2: J1772 DCFC: CCS1
Capable of bidirectional charging	Yes	Yes	Optional	Yes	Optional
Battery size (kWh)	155	126/168	226	210/315	255.5
Range (miles)	120	100/125	138	135/210	155
Battery thermal management	Liquid cooled	Liquid cooled	Set to maintain 70°F battery temp	Set to maintain 70°F battery temp	Water cooling
Recharge time	L2 (19.2 kW): 8 hours DCFC (60 kW): 3 hours	L2 (19.2 kW): 6.5–11 hours DCFC: (24 kW) 5–9 hours or (50 kW) 2.5–4.25 hours	DCFC: (25 kW) 8.25 hours or (60 kW) 3.4 hours	L2 (19.2 kW): 8 hours DCFC (60 kW): 3 hours	L2 (20 kW max): 12.5–13 hours DCFC (150 kW): 1.5–2 hours

Provides Information on:

- Price Range
- Passenger Capacity
- Charger Connector
- Battery size (kWh)
- Range
- HVAC System and Heater
- Battery, Drive, and Chassis Warranties
- And More!

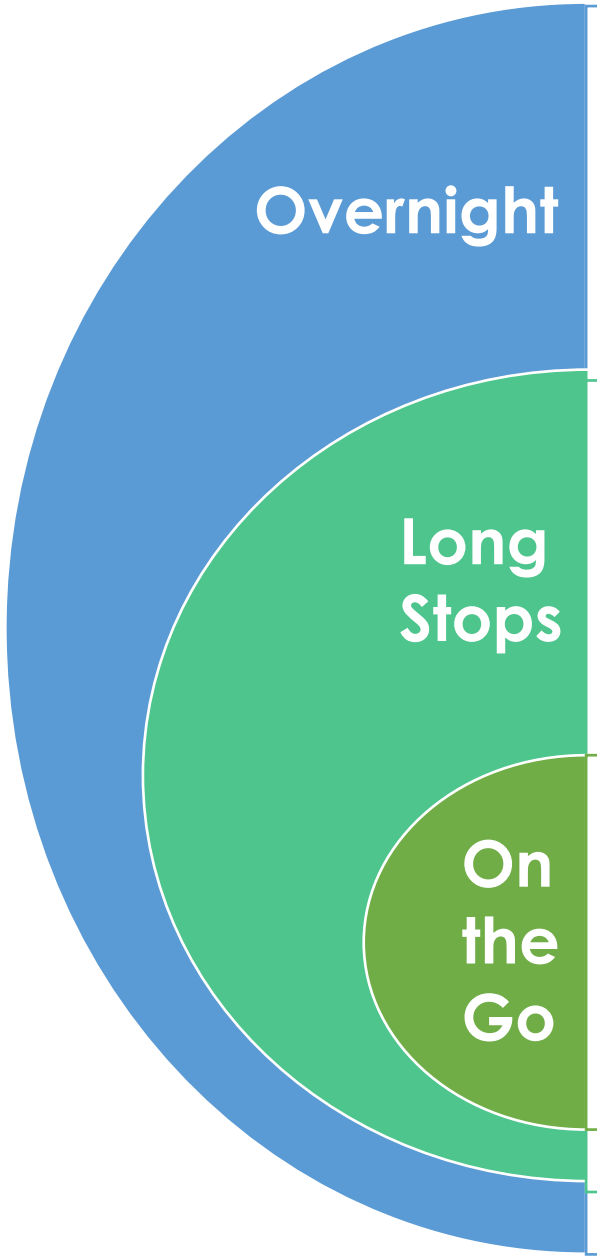
https://www.wri.org/research/electric-school-bus-us-market-study-and-buyers-guide-resource-school-bus-operators

Available Electric School Buses (EVSB) – Cooperative Purchases

1. Sourcewell, via Texas SHARE
   - TXShare is a cooperative procurement program operated by NCTCOG that is free for local Texas governments and Independent School Districts. TXShare participants are automatically eligible to access Sourcewell contracts through NCTCOG's relationship with Sourcewell, as well as take advantage of the custom-cooperative contract options available with TXShare.
2. Climate Mayors Collaborative's Electric Vehicle Purchasing Collaborative
3. HGAC Buy
4. BuyBoard

NCTCOG, TxSHARE, and Sourcewell co-hosted a webinar on purchasing EVs and EV Chargers through cooperatives. Go here to see the recording.

TYPES OF EV CHARGING INFRASTRUCTURE



LEVEL 1

- 120 V
- 2-5 miles per hour of charge
- Less than $500

LEVEL 2

- 204-220 V
- 10-20 miles per hour of charge
- Equipment: $500 - $8,000
  Installation: $600 - $13,000

DC Fast Charge

- 480 V
- 180-240 miles per hour of charge
- Equipment: $15,000 - $40,000
  Installation: $8,000 - $50,000

Range per Hour source: https://afdc.energy.gov/fuels/electricity_infrastructure.html

Station cost estimates provided from AFDC Electric Vehicle Charger Selection Guide: https://afdc.energy.gov/files/u/publication/EV_Charger_Selection_Guide_2018-01-112.pdf

Bringing EVSE to Your Property

Step 1 Engage your Electric Utility Early About EVSE Plans

- Engaging with your local utility early about EVSE plans is critical, so they can prepare for the need to generate and deliver more electricity to the site.
- Utilities can help ensure adequate electricity to support the planned EV charging site and advise about the electrical service and metering equipment options to support installations.
- **Email cleancities@nctcog.org to find the best EV contact for your utility service area.**

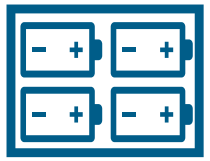
Step 2 Determine Funding, Installation & Operation Costs

- **Installation and Primary Cost Factors:** EVSE equipment and installation; adequate building wiring electrical capacity, and other construction requirements, including trenching
- **Permitting:** EVSE installations generally require a building permit, electrical permit, or both
- **Operation Costs:** These may include monthly EVSE network access fees, equipment maintenance, and any demand charges that might apply to commercial electric rates if the property owner pays for EVSE in common areas. Utilities can assist with this billing analysis so property owners can plan to recover those costs.
- **Find available funding opportunities at nctcog.org/aqfunding.**

Step 3 Ensure Visibility & Promote

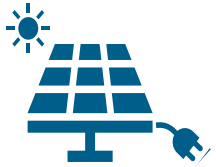
- Use and maintain signage so EV users are aware of station locations and find other ways to differentiate the area, such as painting parking spots.
- Consider adequate lighting for safety and compliance with ADA for full accessibility.
- **Add station data to EVSE search tools including AFDC Station Locator or email cleancities@nctcog.org so EV users are aware of your station.**

Strategies to Build Resilient EV Infrastructure



Infrastructure Battery Storage – Utilizes batteries to store electricity to allow for faster charging, charging off-grid, and reduce demand charges.

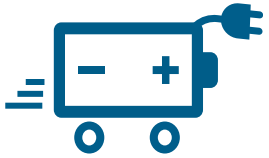
Vehicle Battery Storage – Storing electricity in vehicle batteries could provide the power for the grid, buildings, or equipment in the case of grid-outages or in times of high demand.



Solar – Enables zero–emission and/or off-grid charging for greater resiliency.

Smart Charging – Software system looks at available energy and identifies optimal times to charge. Utilizing smart charging can help prevent additional costs during times of peak demand, since demand charges can be 30-70% of a utility bill.*

Microgrids – A local energy grid which can disconnect from the traditional electric grid and operate autonomously.



Mobile – Allows for portable and emergency charging of EVs without any additional infrastructure installation.

* Information derived from "USDA", https://www.fs.fed.us/eng/pubs/htmlpubs/htm00712373/index.htm

As-a-Service Business Models

As-a-service business models aim to lower the upfront costs of electric school buses and reduce the risk of deploying new technology.

Fleet-as-a-Service

- Services can include bus ownership, site energy management, project management, procurement assistance, operations and maintenance services, or different combinations of services depending on the specific needs of each customer.
- Can include vehicle to grid (V2G).
- Read about successful fleet-as-a-service models in WRI's Market Study and Buyer's Guide.

Energy-as-a-Service

- Services can help districts reduce charging costs, finance infrastructure upgrades, and manage energy needs.
- Fleet would usually own the vehicles.
- Read more on the benefits of energy-as-a-service at Encouraging Electrification through Energy Service Subscriptions

Resources

AFDC Electric Vehicle Charger Selection Guide (PDF)

This report provides an overview of different types of chargers for electric vehicles and best practices.

AFDC Electric School Bus Initiative

Provides information on implementing EVSB.

AFDC Vehicle Search

The AFDC Vehicle Search identifies available alternative fuel vehicles on the market and has search filtering capability.

AFLEET Online

AFLEET Online compares new alternative fuel vehicles to gasoline (light-duty) and diesel (heavy-duty) vehicles.

Dallas-Fort Worth Clean Cities Events

Resources from previous Dallas-Fort Worth Clean Cities meetings/events and information on future events can be found here.

Encouraging Electrification through Energy Service Subscriptions (PDF)

Working paper from the Resources for the Future (RFF) Future of Power Initiative discussing the benefits and types of Energy-as-a-Service models.

NCTCOG Clean School Bus Homepage

Resources on alternative fuel school buses and information on funding.

NCTCOG AQ Funding

NCTCOG maintained list of all available funding.

State Energy Conservation Office (SECO)

SECO partners with Texas governmental entities including public schools to reduce utility costs and maximize efficiency through various funding, incentives and programs. SECO also adopts energy codes for single-family residential, commercial, and state-funded buildings.

Texas Emission Reduction Plan

The TERP program provides financial incentives to reduce emissions from polluting vehicles and equipment.

World Resource Institute (WRI) Electric School Bus Initiative

The WRI aims to assist in electrifying U.S. school buses and has developed resources for districts to use.

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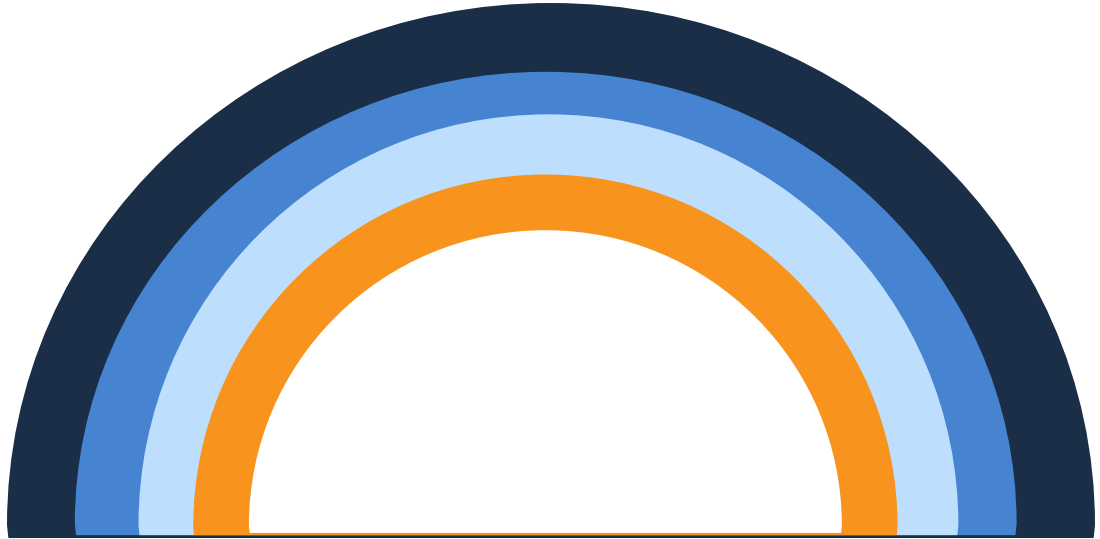
Dallas-Fort Worth
CLEAN CITIES



North Central Texas
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