

## School District's Resource Guide to Clean School Buses August 2024

This guide was developed by the Texas Clean Cities coalitions—Alamo Area Clean Cities, Central Texas Clean Cities (formerly known as Lonestar Clean Fuel Alliance), Dallas-Fort Worth Clean Cities, and Houston-Galveston Clean Cities. The fuels covered in this Resource Guide include Battery-Electric, Compressed Natural Gas (CNG), and Propane. This guide is not meant to be comprehensive, and the information included is subject to change.



### General Information:

#### Organizations & Resources for Planning Assistance

- National Clean Cities and Communities Website - [Clean Cities and Communities \(energy.gov\)](https://www.energy.gov/clean-cities-and-communities)
- Texas Clean Cities Websites:
  - Alamo Area Clean Cities - [Clean Cities | AACOG](https://www.aacog.org)
  - Central Texas Clean Cities (formerly known as Lonestar Clean Fuel Alliance) - [Lone Star Clean Fuels Alliance \(lonestarcfa.org\)](https://www.lonestarcfa.org)
  - Dallas-Fort Worth Clean Cities - [Dallas-Fort Worth Clean Cities \(dfwcleancities.org\)](https://www.dfwcleancities.org)
  - Houston-Galveston Clean Cities - [Houston-Galveston Clean Cities Coalition \(houston-cleancities.org\)](https://www.houston-cleancities.org)
- [Texas Electric School Bus Project \(texaselectricschoolbusproject.org\)](https://www.texaselectricschoolbusproject.org)
- Department of Energy (DOE) - [CleanSchoolBusTA@nrel.gov](mailto:CleanSchoolBusTA@nrel.gov)
- Joint Office of Energy and Transportation (Joint Office) Technical Assistance - [Clean Bus Planning Awards \(driveelectric.gov\)](https://www.driveelectric.gov)
- World Resource Institute (WRI) - [Talk To an Expert \(electricschoolbusinitiative.org\)](https://www.electricschoolbusinitiative.org)
- [Alliance for Electric School Buses \(electricschoolbuses4kids.org\)](https://www.electricschoolbuses4kids.org)
- [Center for Transportation and the Environment \(CTE\) \(cte.tv\)](https://www.cte.tv)
- [Alison Wiley | Electric School Bus Newsletter | Public Transportation \(electricschoolbus.org\)](https://www.electricschoolbus.org)
- [The Transport Project – The National Voice For The Natural Gas Vehicle Industry \(thetransportproject.org\)](https://www.thetransportproject.org)
- [Propane Council of Texas \(propanecounciloftexas.org\)](https://www.propanecounciloftexas.org)
- [Texas Propane Gas Association \(txpropane.com\)](https://www.txpropane.com)
- [Propane | PERC - Propane Education & Research Council \(propane.com\)](https://www.propane.com)

#### Funding Resources

- North Central Texas Council of Governments - [Funding and Resources \(nctcog.org\)](https://www.nctcog.org)
- Texas Electric School Bus Project Funding Guide - [Funding Opportunities \(texaselectricschoolbusproject.org\)](https://www.texaselectricschoolbusproject.org)

- Texas Commission on Environmental Quality Air Grant Programs - [Air Grants: Funding for Vehicles, Equipment, and Fuel Infrastructure \(tceq.texas.gov\)](https://tceq.texas.gov)
- DOE - [Alternative Fuels Data Center: Texas Laws and Incentives \(energy.gov\)](https://energy.gov)
- Internal Revenue Service Tax Credits for Tax-exempt Organizations - [Elective pay and transferability \(irs.gov\)](https://irs.gov)
  - [Tax-Exempt Organizations Elective Pay Fact Sheet \(irs.gov\)](https://irs.gov)
- Environmental Protection Agency (EPA) Video - [Going Deeper on IRA Tax Credits for Schools \(youtube.com\)](https://youtube.com)
- WRI Electric School Bus Initiative - [Federal Electric School Bus Tax Credits 101 \(electricschoolbusinitiative.org\)](https://electricschoolbusinitiative.org)

### General Alternative Fuel Resources

- National Transportation Decarbonization Blueprint - [The U.S. National Blueprint for Transportation Decarbonization: A Joint Strategy to Transform Transportation \(energy.gov\)](https://energy.gov)
- DOE Alternative Fueling Station Locator - [Alternative Fuels Data Center: Alternative Fueling Station Locator \(energy.gov\)](https://energy.gov)
- EPA - [Benefits of Clean School Buses \(epa.gov\)](https://epa.gov)

### Vehicle & Infrastructure Calculators - Emissions and Total Cost of Ownership

- DOE Argonne National Laboratory (ANL) AFLEET Tool - [AFLEET Tool - Argonne National Laboratory \(anl.gov\)](https://anl.gov)
- DOE Tools - [Alternative Fuels Data Center: Tools \(energy.gov\)](https://energy.gov)
- EPA Fueleconomy.gov 'Calculators and Other Tools' Section - [Fuel Economy \(fueleconomy.gov\)](https://fueleconomy.gov)
- WRI Electric School Bus Initiative - [Total Cost of Ownership Calculator for Electric School Buses \(electricschoolbusinitiative.org\)](https://electricschoolbusinitiative.org)
- EPA Diesel Emissions Quantifier Tool - [Diesel Emissions Quantifier | Diesel Emissions Reduction Act \(DERA\) \(epa.gov\)](https://epa.gov)
- DOE ANL EVolution Tool - [EVolution Home \(anl.gov\)](https://anl.gov)
- DOE ANL Heavy-Duty Vehicle Emissions Calculator - [Heavy-Duty Vehicle Emissions Calculator \(anl.gov\)](https://anl.gov)
- Atlas EV Hub DRIVE Tool - [Dashboard for Rapid Vehicle Electrification \(DRVE\) Version 2.0 \(atlasevhub.com\)](https://atlasevhub.com)

## Battery-Electric School Bus Resources:

### General Information on Battery-Electric School Bus Deployment

- WRI Electric School Bus Initiative - [Electric School Bus Initiative \(electricschoolbusinitiative.org\)](https://electricschoolbusinitiative.org)
  - [Step-by-Step Guide for School Bus Electrification \(electricschoolbusinitiative.org\)](https://electricschoolbusinitiative.org)
  - [School Bus Electrification Template Roadmap \(electricschoolbusinitiative.org\)](https://electricschoolbusinitiative.org)
  - [Tools | Electric School Bus Initiative \(electricschoolbusinitiative.org\)](https://electricschoolbusinitiative.org)
- DOE - [Alternative Fuels Data Center: Electric School Bus Education \(energy.gov\)](https://energy.gov)
  - Electric Vehicles for Fleets checklist - [ev-fleets-checklist.pdf \(energy.gov\)](https://energy.gov)
- Joint Office - [Technical Assistance and Resources for School Districts \(driveelectric.gov\)](https://driveelectric.gov)
- School Bus Fleet - [Thinking About Electric School Buses? \(schoolbusfleet.com\)](https://schoolbusfleet.com)

- Environmental Defense Fund (EDF) - [Fleet Electrification Comprehensive Guide \(electricfleet.org\)](https://www.edf.org/transportation/fleet-electrification-comprehensive-guide)
- EDF Report - [Economic and environmental benefits electric school bus updated final.pdf \(edf.org\)](https://www.edf.org/transportation/economic-and-environmental-benefits-electric-school-bus)
- Atlas EV Hub - [Resource Library – Electric Buses \(atlasevhub.com\)](https://atlasvehub.com/resource-library/electric-buses)

### Infrastructure

- WRI Electric School Bus Initiative - [All About Charging Infrastructure \(electricschoolbusinitiative.org\)](https://www.electricschoolbusinitiative.org/all-about-charging-infrastructure)
- [Electric Vehicle Chargers \(energystar.gov\)](https://www.energystar.gov/ia/ev/chargers) (EPA CSB requirement for EV chargers)
- WRI Electric School Bus Initiative - [8 Tips For Common Electric School Bus Charging Challenges \(electricschoolbusinitiative.org\)](https://www.electricschoolbusinitiative.org/8-tips-for-common-electric-school-bus-charging-challenges)
- CTE Study - [Blueprint for Medium- and Heavy-Duty Zero-Emission Vehicle Infrastructure \(cte.tv\)](https://www.cte.tv/blueprint-for-medium-and-heavy-duty-zero-emission-vehicle-infrastructure)

### Technician & Driver Training

- WRI Electric School Bus Initiative - [Electric School Bus Technician Training Database \(electricschoolbusinitiative.org\)](https://www.electricschoolbusinitiative.org/electric-school-bus-technician-training-database)
  - Training offered in Texas (from database):
    - Automotive Management Institute (North Richland Hills, TX) - Accredited Master Electric Vehicle Manager (Online). [Certificates and Designations | Automotive Service Association Management Institute \(amionline.org\)](https://www.amionline.org/certificates-and-designations)
    - Northeast Texas Community College (Mount Pleasant, TX) - Carroll Shelby Electric Vehicle Service Technician (In-person). [Automotive Technology - Carroll Shelby Electric Vehicle Service Technician Level 1 Certificate | Northeast Texas Community College \(ntcc.edu\)](https://www.ntcc.edu/automotive-technology)
    - Texas State Technical College (Waco, TX) - Tesla Start Automotive Training (In-person). [Tesla START \(tstc.edu\)](https://www.tstc.edu/tesla-start)
  - Other trainings (not listed in database):
    - National Alternative Fuels Training Consortium - [Electric Drive Vehicle Automotive Technician Training | naftc \(wvu.edu\)](https://www.naftc.wvu.edu/electric-drive-vehicle-automotive-technician-training)
    - Alternative Fuel Vehicle institute (AFVi) - [Electric Courses \(afvi.com\)](https://www.afvi.com/electric-courses)
    - Transit Workforce Center - [ZEB Workforce Transition Resources \(transitworkforce.org\)](https://www.transitworkforce.org/zeb-workforce-transition-resources) & [TWC Battery Electric Bus Familiarization Course \(transitworkforce.org\)](https://www.transitworkforce.org/twc-battery-electric-bus-familiarization-course)
    - Amalgamated Transit Union - Zero Emission Bus Training offered to members [Amalgamated Transit Union \(atu.org\)](https://www.atu.org)
  - Certification Exam option - [Accredited Renewable Energy Certifications \(etai.org\)](https://www.etai.org/accredited-renewable-energy-certifications) - Electric Vehicle Technician (EVT)
  - Specific to transit but still useful - [APTA BTS-ZBT-RP-001-23 - American Public Transportation Association \(apta.com\)](https://www.apta.com/bts-zbt-rp-001-23)
- DOE Driver and Technician Training - [Alternative Fuels Data Center: Electric School Bus Education \(energy.gov\)](https://www.energy.gov/alternative-fuels-data-center/electric-school-bus-education)
- EPA List - [Workforce Development and Training Resources \(epa.gov\)](https://www.epa.gov/workforce-development-and-training-resources) - other helpful links to trainings, webinars, and information.
  - Electric Vehicle Infrastructure Equipment (EVSE) Specific Training - [Training \(evitp.org\)](https://www.evitp.org)

- Joint Office - [Technical Assistance and Resources for School Districts \(driveelectric.gov\)](https://driveelectric.gov)
  - Fact sheet on cold weather impacts - [esb-cold-weather-help-sheet.pdf](https://driveelectric.gov/esb-cold-weather-help-sheet.pdf)
  - Fact sheet on hot weather impacts - [transit-hot-weather-help-sheet.pdf](https://driveelectric.gov/transit-hot-weather-help-sheet.pdf)
  - [Training Webinars \(driveelectric.gov\)](https://driveelectric.gov)
    - [Overview for Electric School Bus Operators](https://driveelectric.gov/overview-for-electric-school-bus-operators) - (April 10, 2024)
    - [Zero-Emission Bus Resources](https://driveelectric.gov/zero-emission-bus-resources) (March 14, 2024)
    - [Workforce Development Tools and Resources](https://driveelectric.gov/workforce-development-tools-and-resources) (March 5, 2024)
    - [Clean School Bus: Training, Maintenance Considerations, and Electric Bus Myths](https://driveelectric.gov/clean-school-bus-training-maintenance-considerations-and-electric-bus-myths) (July 26, 2023)
- School Bus Fleet - Electric School Bus Fleet Student Curriculum - [Thomas Built Creates Electric School Bus Student Curriculum \(schoolbusfleet.com\)](https://schoolbusfleet.com)

#### Talk to Other School Districts:

- [Electric School Bus Forum - A forum for electric school bus fleets \(nrel.gov\)](https://nrel.gov)

## Natural Gas School Bus Resources:

### General Information on CNG School Bus Deployment

- DOE Compressed Natural Gas (CNG) Basics - [Alternative Fuels Data Center: Natural Gas \(energy.gov\)](https://energy.gov)
- DOE Report Natural Gas Basics - [natural\\_gas\\_basics.pdf \(energy.gov\)](https://energy.gov)
- The Transport Project - [Natural Gas for Schools \(transportproject.org\)](https://transportproject.org)
- DOE Report - [What Fleets Need to Know About Alternative Fuel Vehicle Conversions, Retrofits, and Repowers \(CNG & Propane\) \(energy.gov\)](https://energy.gov)
- List of EPA-Compliant Alternative Fuel Conversion Systems - [Lists of EPA-Compliant Alternative Fuel Conversion Systems \(epa.gov\)](https://epa.gov)
- DOE Case Study - [Alternative Fuels Data Center: Natural Gas School Buses Reward Utah District with Fuel Savings, Breath of Cleaner Air \(energy.gov\)](https://energy.gov)
- The Transport Project Study - [NGVAmerica-White-Paper-Fleets-Run-Cleaner-on-Natural-Gas\\_V2.pdf \(transportproject.org\)](https://transportproject.org)

### Vehicles & Infrastructure

- DOE Natural Gas Vehicles - [Alternative Fuels Data Center: Natural Gas Vehicles \(energy.gov\)](https://energy.gov)
- DOE Natural Gas Stations - [Alternative Fuels Data Center: Natural Gas Fueling Stations \(energy.gov\)](https://energy.gov)
- DOE Vehicle Maintenance Facility Modification Handbook - [cng\\_maintenance\\_facility\\_mod.pdf \(energy.gov\)](https://energy.gov)
- The Transport Project - [Natural Gas Vehicles \(transportproject.org\)](https://transportproject.org)
  - [Vehicle Availability & List of Manufacturers & Modifiers](https://transportproject.org)
- School Bus Fleet - [Breaking Down Alternative Fuel Infrastructure Costs \(schoolbusfleet.com\)](https://schoolbusfleet.com)

### Technician & Driver Training

- National Alternative Fuels Training Consortium - [naftc | National Alternative Fuels Training Consortium \(wvu.edu\)](https://wvu.edu)
  - [Alternative Fuel and Advanced Technology Vehicles Training | naftc \(wvu.edu\)](https://wvu.edu)
  - [Compressed Natural Gas | naftc \(wvu.edu\)](https://wvu.edu)
  - [Heavy-Duty Natural Gas Vehicles | naftc \(wvu.edu\)](https://wvu.edu)
- Alternative Fuel Vehicle Institute - [Natural Gas Courses \(afvi.com\)](https://afvi.com)

- [CNG Fuel System Inspection Requirements \(afvi.com\)](https://afvi.com)
- [CNG Fuel System Inspection Labels \(afvi.com\)](https://afvi.com)

## Propane School Bus Resources:

### General Information on Propane School Bus Deployment

- DOE Propane Basics - [Alternative Fuels Data Center: Propane \(energy.gov\)](https://energy.gov)
- Propane Council of Texas - [Clean Propane School Buses \(propanecounciloftexas.org\)](https://propanecounciloftexas.org)
- Texas Propane Gas Association - [ABOUT PROPANE \(txpropane.com\)](https://txpropane.com)
- Propane Education & Resource Council (PERC) - [School Transportation \(propane.com\)](https://propane.com)
- DOE Report - [What Fleets Need to Know About Alternative Fuel Vehicle Conversions, Retrofits, and Repowers \(CNG & Propane\) \(energy.gov\)](https://energy.gov)
- List of EPA-Compliant Alternative Fuel Conversion Systems - [Lists of EPA-Compliant Alternative Fuel Conversion Systems \(epa.gov\)](https://epa.gov)
- Propane School Bus Fleet Case Study - [FINAL\\_AFV17\\_Grain-Valley-School-District-Case-Study.pdf \(metroenergy.org\)](https://metroenergy.org)
- Propane School Bus Emissions Testing Study - [WVU-School-Bus-Emissions-Final-Report-June-2019.pdf \(propane.com\)](https://propane.com)
- DOE Study - [Alternative Fuels Data Center: Propane School Bus Deployment in Pennsylvania Showcases Environmental and Economic Benefits \(energy.gov\)](https://energy.gov)

### Vehicles & Infrastructure

- DOE Propane Vehicles - [Alternative Fuels Data Center: Vehicle Search \(energy.gov\)](https://energy.gov)
- DOE Propane Stations - [Alternative Fuels Data Center: Propane Fueling Stations \(energy.gov\)](https://energy.gov)
- Texas Propane Gas Association 2024 Propane Buyers Guide - [BUYERS GUIDE \(txpropane.com\)](https://txpropane.com)
- PERC Propane Supplier Search - [Where to Buy Propane | Propane Supplier Near Me \(propane.com\)](https://propane.com)
- Northwest Propane - [Propane Vehicle Conversion - School Buses \(northwestpropane.com\)](https://northwestpropane.com)
- School Bus Fleet - [Breaking Down Alternative Fuel Infrastructure Costs \(schoolbusfleet.com\)](https://schoolbusfleet.com)

### Technician & Driver Training

- PERC - [Propane Workforce Resources \(propane.com\)](https://propane.com)
  - Training Certifications - [Workforce Development Resource Catalog \(propane.com\)](https://propane.com)
  - Trainer Materials - [Resources for Postsecondary Instructors \(propane.com\)](https://propane.com)
  - Student Curriculum - [Resources for K-12 Educators \(propane.com\)](https://propane.com)
- National Alternative Fuels Training Consortium - [naftc | National Alternative Fuels Training Consortium \(wvu.edu\)](https://wvu.edu)
  - [Alternative Fuel and Advanced Technology Vehicles Training | naftc \(wvu.edu\)](https://wvu.edu)
  - [Propane Autogas Vehicle Technician Training | naftc \(wvu.edu\)](https://wvu.edu)
- Alternative Fuel Vehicle Institute - [Propane Courses \(afvi.com\)](https://afvi.com)

## Places Where You Might Find Vehicle and Engine Data

### Vehicle Information

Year	Door Jam (For trucks, driver side); Sun Visor; Bottom of Glove Box; Above Driver Window (for Bus); Underneath steering column; TITLE
Make	
Model	
VIN (Vehicle Identification Number)	
GVWR (Gross Vehicle Weight Rating)	

### Engine Information

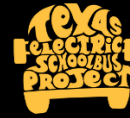
Year	<b>Cummins / Detroit Diesel:</b> Driver Side- Top of Engine Near the Front; Top - Middle of Engine Block (Detroit Diesel); Front of Engine Above Oil Cooler Housing
Make	
Model	<b>Paccar / Navistar:</b> Top - Middle of Engine Block
Engine Number	<b>Caterpillar:</b> Driver Side- Top of Engine Near the Front; Near Injection Pump; Engine Number Stamped on Block (Lower Driver Side)
NOx Rating	
Family Code	<b>Mack:</b> Passenger Side- Top of Engine Near the Front; Number Stamped Near Top of Gearhouse
Sometimes the Engine Information Can Also Be Found on a Decal on Bottom of Glove Box, or Sun Visor; Older Maintenance / Repair Documents	

### Useful Websites to Help Look Up Information

Website	Needed Information	Data Returned	Web Address
CARB (California Air Resources Board) Sheet Engine Certifications	Engine Year, Make, and Model	Family Code; Nox Rating	<a href="https://ww2.arb.ca.gov/new-vehicle-and-engine-certification-executive-orders">https://ww2.arb.ca.gov/new-vehicle-and-engine-certification-executive-orders</a>
VIN Decoder	VIN	Vehicle Specs Including Year, Make, and Model of both Vehicle and Engine	<a href="https://vpic.nhtsa.dot.gov/decoder/">https://vpic.nhtsa.dot.gov/decoder/</a>



Texas Electric School Bus Project



# FUNDING GUIDE



Scan the QR code to explore funding opportunities to help bring Electric School Buses to your community. Check back often for updates.



Grants, Loans, Rebates and more!



[www.texaselectricschoolbusproject.org](http://www.texaselectricschoolbusproject.org)







# TXVEMP

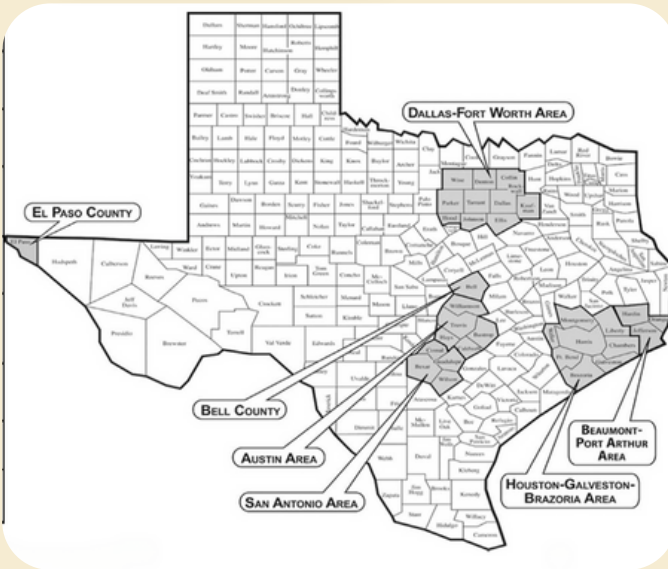
## All Electric Grants Program



### What is the VW Settlement/TXVEMP?

- Volkswagen entered into settlement agreements to resolve violations for vehicles that emitted nitrogen oxides (NOX) above the federal standards.
- There is \$87 million in grants available in Texas.

### Funding Areas



### What is the eligibility criteria?

- Ownership, registration, and operation by applicant in Texas for two years prior to application signature date
- Used in its primary function in the applicant's routine operation in Texas for two years prior to application signature date
- Diesel engine certified to United States Environmental Protection Agency (EPA) heavy-duty on-road engine emission standards
- Operating condition with at least five years of useful life remaining

### Replacement

- Certified to emit at least 25% less NOX than the old vehicle
- Electric engine (including hydrogen fuel cells and battery-electric vehicles)
- Vehicle model year no more than one year older than the calendar year in which the vehicle was purchased
- Same type and intended use as the old vehicle

### Repower

- Repowering of existing eligible on-road vehicles or non-road equipment with a new, rebuilt, or remanufactured engine
- Existing vehicle or equipment must have a least five years of useful life remaining
- New engine certified or verified to emit 25% less nitrogen oxides (NOX) than the engine being repowered
- Replacement engine must be electric (including hydrogen fuel cells and battery-electric vehicles).

### Infrastructure

- Additional funding for refueling infrastructure for replaced or repowered buses is available
- Allowable alternative fuels: Electricity and hydrogen
- Requirement: Ownership or ability to install, operate, and maintain the infrastructure at proposed site for contract duration and throughout the activity life
- Must be purchased by the applicant and not leased

