

Clean Fleet Annual Report

Prepared by the City of Cambridge Clean Fleet Committee

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Overview

The City of Cambridge has committed to achieving net zero emissions for municipal operations by 2050. The City's goals align with the Commonwealth of Massachusetts' commitment to net zero emissions by 2050 and the Metro Mayors Climate Task Force commitment to carbon neutrality by 2050.

As a dense city of 118,000 residents in six square miles, the bulk of Cambridge's greenhouse gas emissions comes from its buildings. However, reducing vehicle emissions will mitigate the impacts of climate change and improve local and regional air quality, providing public health benefits and promoting health equity.

The City previously set, and exceeded, a 2020 greenhouse gas emission reduction goal for municipal operations and has committed to establishing a 2030 goal by December 31, 2023.

This first Annual Report of Cambridge's municipal Clean Fleet program can serve as an example of leadership for public and private fleets and help others learn from our experiences.



Introduction

On February 21, 2023, the City issued a citywide **Clean Fleet Policy** to accelerate the transition to electric vehicles. The policy contains greenhouse gas emission targets, acquisition guidelines and a plan for the installation of charging stations and electrical infrastructure. While working to speed up the adoption of electric vehicles, the policy also ensures that vehicles will be able to perform the necessary functions such as 24/7 snow operations, have regional repair shop capability and have charging infrastructure available.

A Clean Fleet Committee (CFC) was established to support the implementation of this Policy. Currently, it comprises of the following City staff:

- John Cotter (Assistant Chief, Fire Department)
- Charles Creagh (Transportation Planner, CDD)
- John Keeter (Fleet Manager, DPW)
- John Nardone (Deputy Commissioner, DPW)
- Irina Sidorenko (Project Manager for Energy & Sustainability, DPW)
- Peter Vellucci (Deputy Superintendent, Police Department)

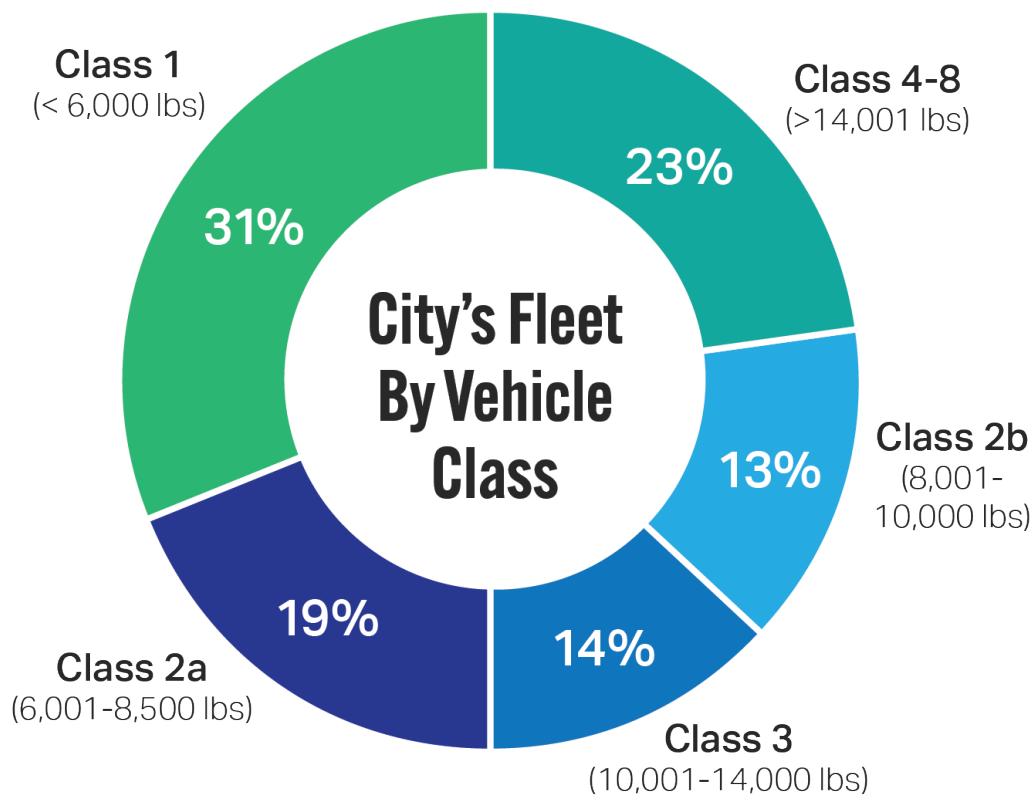
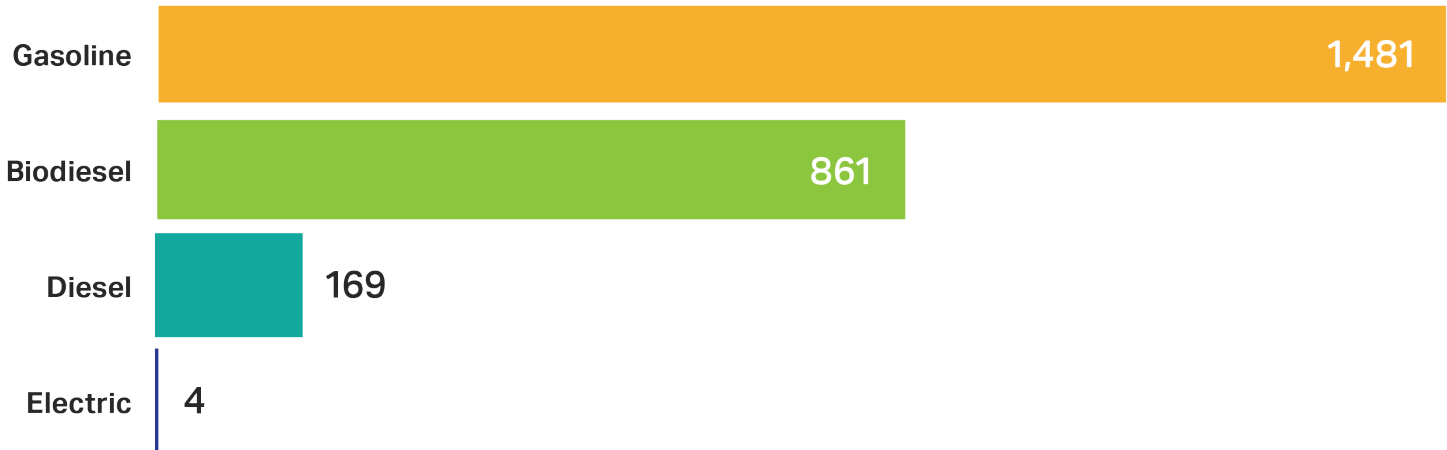
As part of the Clean Fleet Policy, the City committed to preparing an annual report. This report describes progress toward the Policy goals and provides relevant updates. The report includes:

- Description of the City's actions in implementing this Policy over the past year.
- Progress in achieving Policy targets.
- A list of zero- and low-emission vehicles that have recently become available on the market and/or are good candidates for City use. This will help encourage fleet standardization and development of expertise among staff
- Recommended changes to the Policy.



City's Fleet Composition: 372 Vehicles

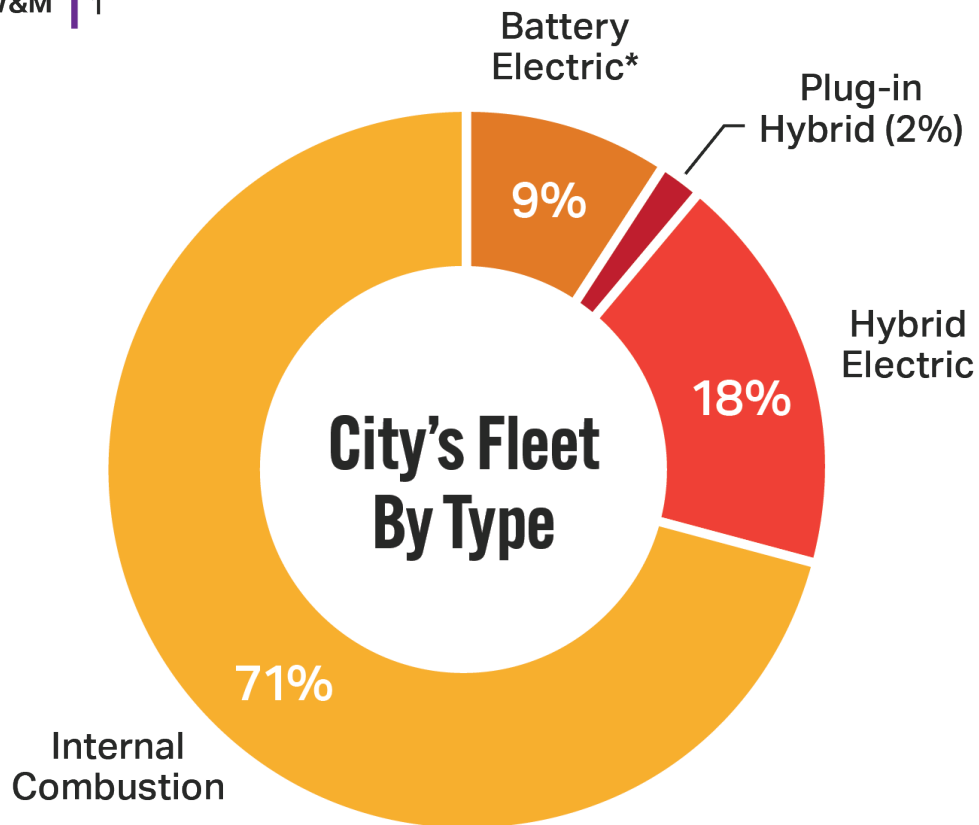
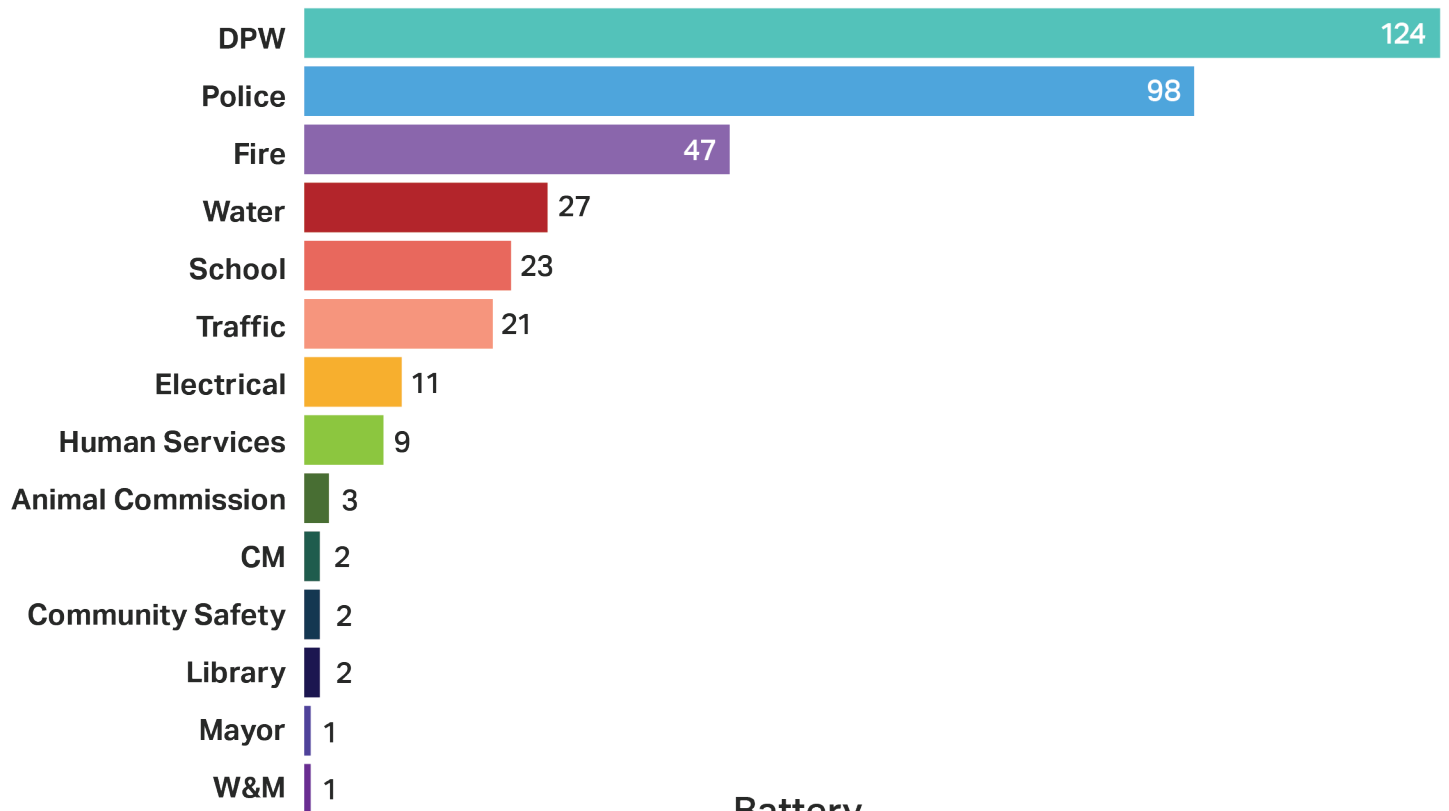
2022 Fleet Emissions By Fuel (MT CO2e)



The U.S. EPA defines vehicle categories by Gross Vehicle Weight Rating (GVWR) for the purposes of emission and fuel economy certification. EPA also classifies vehicles as Light Duty (GVWR < 8,500 lbs) or Heavy Duty (GVWR > 8,501 lbs).



City's Fleet By Departments



*Includes Awaiting Delivery



Progress in Achieving Policy Targets:

Vehicle Category Ownership Target

1 75% zero emission Light Duty vehicles (LDV) (< 8,500 lbs) by June 30, 2030, stretch target of 100%



On Track to Reach Target

Out of 149 Light Duty vehicles, there are currently 21 Battery Electric vehicles (BEV) and 4 Plug-in Hybrid Electric Vehicles (PHEV) – 14% of LDV fleet.

Since adopting the policy in February 2023, the City has acquired 6 BEVs and leased 18 BEVs across 7 departments. All passenger vehicle purchases under 6,000 lbs were battery electric.

2 100% zero emission Marked Police Cruisers by June 30, 2035



On Track to Reach Target

35 Marked Police Cruisers, currently 1 BEV – 3% of fleet.

There are 2 more BEVs in the Police Department's fleet: 1 Detective and 1 Administrative Ford Mach-E

3 100% zero emission Solid Waste Collection vehicles by June 30, 2035



On Track to Reach Target

18 Solid waste collection vehicles, currently 3 PHEV, awaiting 3 BEV, 4th order pending grant approval – 17% of fleet.

Daily, DPW operates 13 refuse trucks and 5 serve as spares.

Greenhouse Gas Emissions Reduction Target

4 2008: Baseline
2025: 20% reduction / stretch target of 25%



On Track to Reach Target

In 2022, Citywide emissions from municipal fleet were 18% lower than 2008 baseline.

Electric Vehicle Charging Infrastructure Target

5 To support the targets above, the City shall increase the number of electric vehicle charging station ports for fleet use to a total of: 30 in 2025



On Track to Exceed Target

In FY24, there are 24 fleet charging ports at various fleet locations and 21 ports are in progress.

Description of the City's Actions in Implementing the Clean Fleet Policy Over the Past Year

New Clean Fleet Committee (CFC)

The updated CFC began meeting monthly in April 2023 to begin the work to support Clean Fleet Policy implementation. During monthly meetings, the Committee reviewed incoming vehicle acquisition requests to make sure they aligned with the Policy and provided approvals. A general group e-mail cleanfleetcommittee@Cambridgema.gov was established to ensure transparent and clear communication.

Electronic Clean Fleet vehicle acquisition form

As part of the updated Clean Fleet Policy, the original vehicle acquisition form was updated. Currently, all departments procuring any new vehicles are to fill out the Smartsheet Clean Fleet acquisition form. The electronic form helps to keep better records and allows for easier approval processes.

Departmental Implementation Plan

In FY24, the Clean Fleet Committee started to work with City departments to develop and support their implementation planning to meet the goals of the Clean Fleet Policy. The Plan will lay out annual projected vehicle acquisition plans for the first five years followed by longer term plans in five-year increments. The Plan will include fleet and heavy equipment, associated charging infrastructure, fleet maintenance and staff training needs.

Enterprise lease

The City entered into an agreement with Enterprise Fleet Management to lease 18 all-electric vehicles. The Department of Public Works (8), Traffic, Parking and Transportation (5), Community Safety (2), City Manager's Office (2) and the Mayor (1) received all-electric vehicles.

Leasing in general allows the City to replace more vehicles in a year and, by shortening the replacement cycle to a 5-year schedule, helps to reduce maintenance and repair costs.



EVSE Engineering study

Adding new Electrical Vehicle Supply Equipment (EVSE), especially Direct Current Fast Charging (DCFC), can pose a challenge. Therefore, the City hired an engineering consultant for technical support services to focus on a comprehensive infrastructure assessment to expand fleet charging. The scope of work includes electrical infrastructure assessment at seven sites where municipal fleets are located, design development for the selected sites and cost estimation to inform budgeting.

Eversource's Make Ready Program

The City is currently participating in Eversource's Phase 2 of the Make Ready Program, where infrastructure upgrades are in progress to support EVSE expansion for fleet and public use at the following locations:

- Walter J. Sullivan Water Treatment Plant (10 fleet Level 2 ports, 6 public Level 2 ports)
- DPW Complex (2 DCFC ports, 2 Level 2 ports)
- Robert W. Healy Public Safety Facility (2 DCFC ports, 2 Level 2 ports).

The Water Treatment Plant and Healy Facility EVSE projects are critical for the Water and Police Departments to continue to expand their electric vehicle fleets.

More than \$530,000 has been pre-approved in Eversource's funding to support electrical infrastructure upgrades at those locations. The City estimates hardware and installation costs to be \$400,000, to be covered from capital funds.

Eversource Fleet Advisory Services Program

The City has partnered with Eversource to receive analytic and technical support to transition the municipal fleet from internal combustion vehicles to fully electric vehicles.

The program will provide a customized fleet assessment report that will include a cost and emissions analysis and other information necessary to help inform the City's decision-making process. The work required to complete this report is primarily conducted by the utility's preselected vendor, PowerOptions, and is 100% funded by Eversource.

Current Grants & Rebates

Diesel Emissions Reduction Act (DERA). In 2022, a \$305,625 grant was awarded to the City by the Mass. Department of Environmental Protection (MassDEP) under the Massachusetts Diesel Emissions Reduction Act (DERA) Electric Solicitation Grant.



The grant will partially fund the purchase of one all-electric rubbish packer that will replace an old diesel-powered truck.

VW Solicitation MassDEP. The City is pursuing a 2023 VW Solicitation grant administered by MassDEP. The City has applied for funding toward the purchase of an all-electric rubbish packer.

MassEVIP program. Where applicable, the City takes advantage of the Massachusetts Electric Vehicle Incentive Program (MassEVIP) rebates for leasing or purchase of all-electric vehicles and plug-in hybrids.

Earmark Hazmat Grant. Fire Department received funding in FY23 to replace two older internal combustion engine (ICE) vehicles with two fully electric Ford F-150 Lightnings.

Green Communities Grant. Managing snow operations is one of the biggest challenges the City faces in adopting EV technology. The need to (1) operate plows on a continuous 24-hour basis, (2) identify equipment with the appropriate power to plow snow and (3) maintain vehicle warranties have been critical considerations. As part of a 2022 Massachusetts Department of Energy Resources Green Communities Grant, the City received funding to pilot an aftermarket retrofit of an all-electric Ford F-250 truck with a plow package. Before fully committing to the expense of retrofitting an existing truck, the City will lease a ZEVx truck for one month in early 2024 to test in real life snow operations. If proven successful, Cambridge would consider converting several gasoline trucks to all-electric alternatives.

Fleet Management Best Practices:

The City's fleet management practices ensure that municipal vehicles are used and maintained in the most efficient and cost-effective manner. Below are some key best practices:

Strategic Rightsizing. Each new vehicle purchase is assessed for current and anticipated needs, including eliminating underutilized vehicles and ensuring vehicles are sized for specific tasks.

Fleet Management Software. Major fleet departments are utilizing the fleet management software Fleetio to track vehicle usage, maintenance schedules, fuel or energy consumption, and costs. Using Fleetio helps with informed decision-making and streamlined operations.



Telematics Integration. DPW expanded its telematics program, and all vehicles and off-road equipment are using Samsara software to monitor driving metrics such as mpg, vehicle location and more. The Water Department has begun using the Samsara devices as well on their fleet vehicles.

Anti Idling Initiative. DPW launched a campaign to minimize vehicle idling focusing on reducing fuel consumption, GHG emissions and air pollution. Meetings were held with all major DPW Divisions and their staff in the late Summer/ early Fall of 2022. Weekly reports are provided to Division Supervisors, and idling alerts were set up to inform when a vehicle idles over a certain period of time.

Training: Mechanics and Drivers. The City recognizes that the transition to electric vehicles (EVs) and new technologies requires proper training for fleet maintenance staff as well as drivers. Mechanics need specialized knowledge to maintain, diagnose, and repair them safely and efficiently. The DPW, Police and Fire Departments' mechanics received an "EV and hybrid safety, service, and repair" training through NAPA Auto Parts in May 2023. Police mechanics received additional training through Ford Motor Company on "High Voltage Vehicles, Components and Operation." DPW mechanics will receive training on all-electric refuse trucks when the first vehicles arrive. This training will be focused on safety, service and diagnostics of vehicles and administered by Mack Truck's training team.

Furthermore, drivers are introduced to EV best practices for battery care, charging protocols, and the unique driving dynamics of electric vehicles. Proper training ensures optimal vehicle performance, maximizes battery lifespan, and most importantly, ensures safety on the road.

Biodiesel Use. All City Departments use a more sustainable, regionally sourced biodiesel blend – a form of diesel fuel partly derived from waste grease, oils and fats. Use of biodiesel reduces particulate matter (PM), carbon monoxide (CO) and hydrocarbons (HCs) emissions, reducing air pollutants and providing a healthier environment for our residents and fleet mechanics.

Recommended Changes to the Policy

Currently in the first year of implementation, there are no recommended changes to the Policy

Current List of City Owned and Leased BEVs and PHEVs

BEV

PHEV

DEPARTMENT	TYPE	YEAR	MAKE	MODEL
CPSD	BEV	2017	Lion	ELION
DPW	PHEV	2021	International	Odyne PHEV
DPW	PHEV	2021	International	Odyne PHEV
DPW	PHEV	2021	International	Odyne PHEV
T&P	PHEV	2021	Subaru	Crosstrek
Animal Commission	BEV	2022	Ford	E-Transit
Animal Commission	BEV	2022	Ford	E-Transit
DHSP	BEV	2022	Ford	Transit Lightning retrofit
DPW	PHEV	2022	Ford	Escape Plug-In Hybrid
DPW	PHEV	2022	Ford	Escape Plug-In Hybrid
Fire	PHEV	2022	Ford	Escape Plug-In Hybrid
DPW	BEV	2023	Ford	E-Transit
Fire	BEV	2023	Ford	F-150 Lightning
Fire	BEV	2023	Ford	F-150 Lightning
Police	BEV	2023	Ford	Mustang Mach-E
Police	BEV	2023	Ford	Mustang Mach-E



DEPARTMENT	TYPE	YEAR	MAKE	MODEL
Police	BEV	2023	Ford	Mustang Mach-E
DPW	BEV	2023	Hyundai	IONIQ 5
DPW	BEV	2023	Hyundai	IONIQ 5
DPW	BEV	2023	Hyundai	IONIQ 5
DPW	BEV	2023	Ford	Mustang Mach-E
DPW	BEV	2023	Hyundai	IONIQ 5
DPW	BEV	2023	Ford	E-Transit
DPW	BEV	2023	Hyundai	Kona
DPW	BEV	2023	Hyundai	Kona
City Manager	BEV	2023	Hyundai	IONIQ 5
City Manager	BEV	2023	Hyundai	IONIQ 5
Mayor	BEV	2023	Hyundai	IONIQ 5
T&P	BEV	2023	Ford	F-150 Lightning
T&P	BEV	2023	Ford	F-150 Lightning
T&P	BEV	2023	Hyundai	IONIQ 5
T&P	BEV	2023	Hyundai	IONIQ 5
T&P	BEV	2023	Nissan	LEAF
Community Safety	BEV	2023	Hyundai	IONIQ 5
Community Safety	BEV	2023	Hyundai	IONIQ 5



Awaiting Delivery

DEPARTMENT	TYPE	YEAR	MAKE	MODEL
CPSD	BEV	2023	Ford	E-Transit
CPSD	BEV	2023	Ford	Mach E
DPW	BEV	2023	Mack	LR Electric
DPW	BEV	2023	Mack	LR Electric
DPW	BEV	2023	Mack	LR Electric
DPW	BEV	2023	Ford	F-150 Lightning

Please use the links below to access Alternative Fuels Data Center’s list of zero- and low-emission model year 2023 and 2024 vehicles.

Model Year 2024 Alternative Fuel and Advanced Technology Vehicles:

<https://afdc.energy.gov/vehicles/search/download.pdf>

Model Year 2023 Alternative Fuel and Advanced Technology Vehicles:

<https://afdc.energy.gov/vehicles/search/download.pdf?year=2023>

