FY24 Clean Fleet Annual Report

Prepared by the City of Cambridge Clean Fleet Committee

October 2024

Report Contents

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 last year established a 75% reduction target for 2030 from a 2008 baseline.

This is the second Annual Report of Cambridge's municipal Clean Fleet program and will continue to 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 of Cambridge 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 necessary functions such as 24/7 snow operations and have regional repair shop capability and charging infrastructure available.

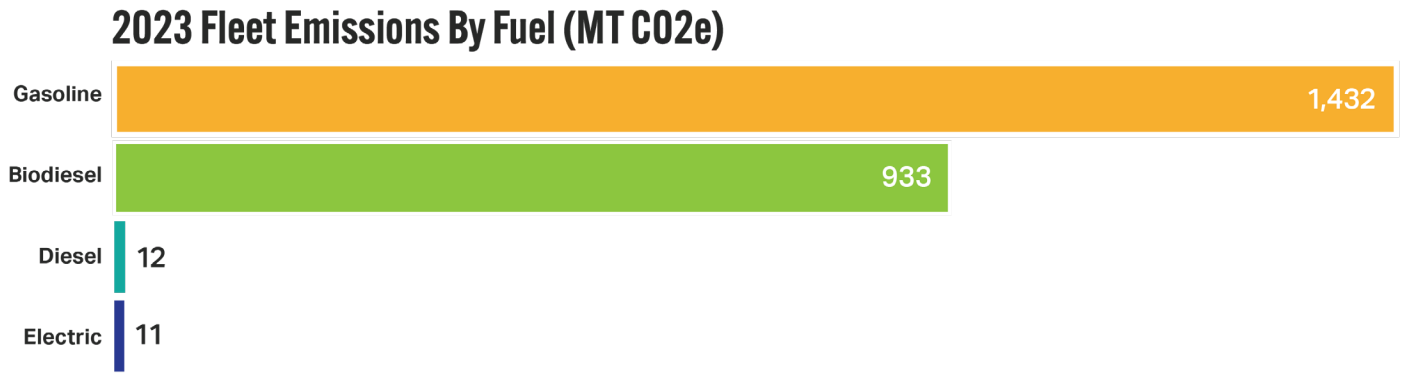
A Clean Fleet Committee (CFC) was established to support the implementation of this Policy. It comprises the following City staff:

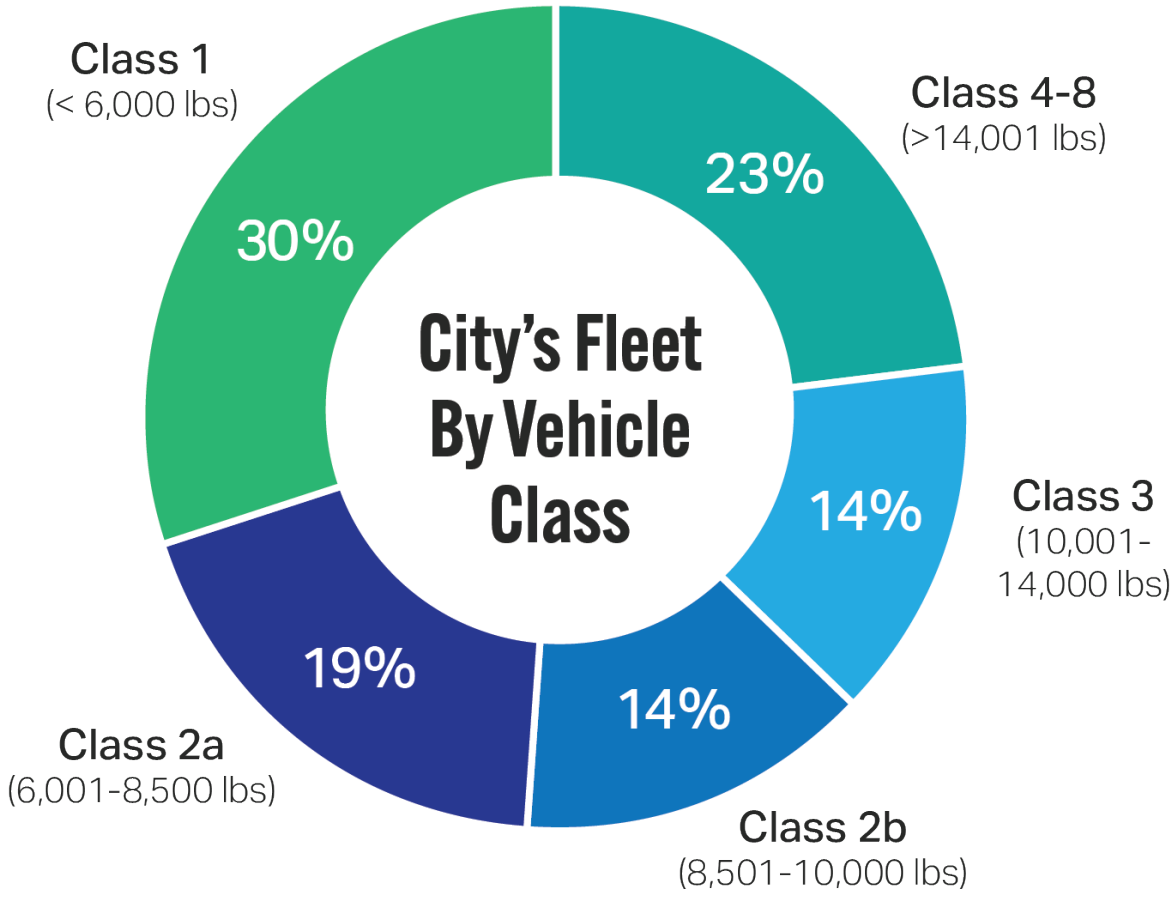
- John Cotter (Assistant Chief, Fire Department)
- Charles Creagh (Transportation Planner, CDD)
- John Keeter (Fleet Manager, DPW)
- John Nardone (Deputy Commissioner, DPW)
- Irina Sidorenko (Project Manager for Energy & Sustainability, DPW)
- Peter Vellucci (Deputy Superintendent, Police Department)

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 updates through June 30, 2024. The report includes:

- Description of the City's actions in implementing this Policy over the past year.
- Progress in achieving Policy targets.
- 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.

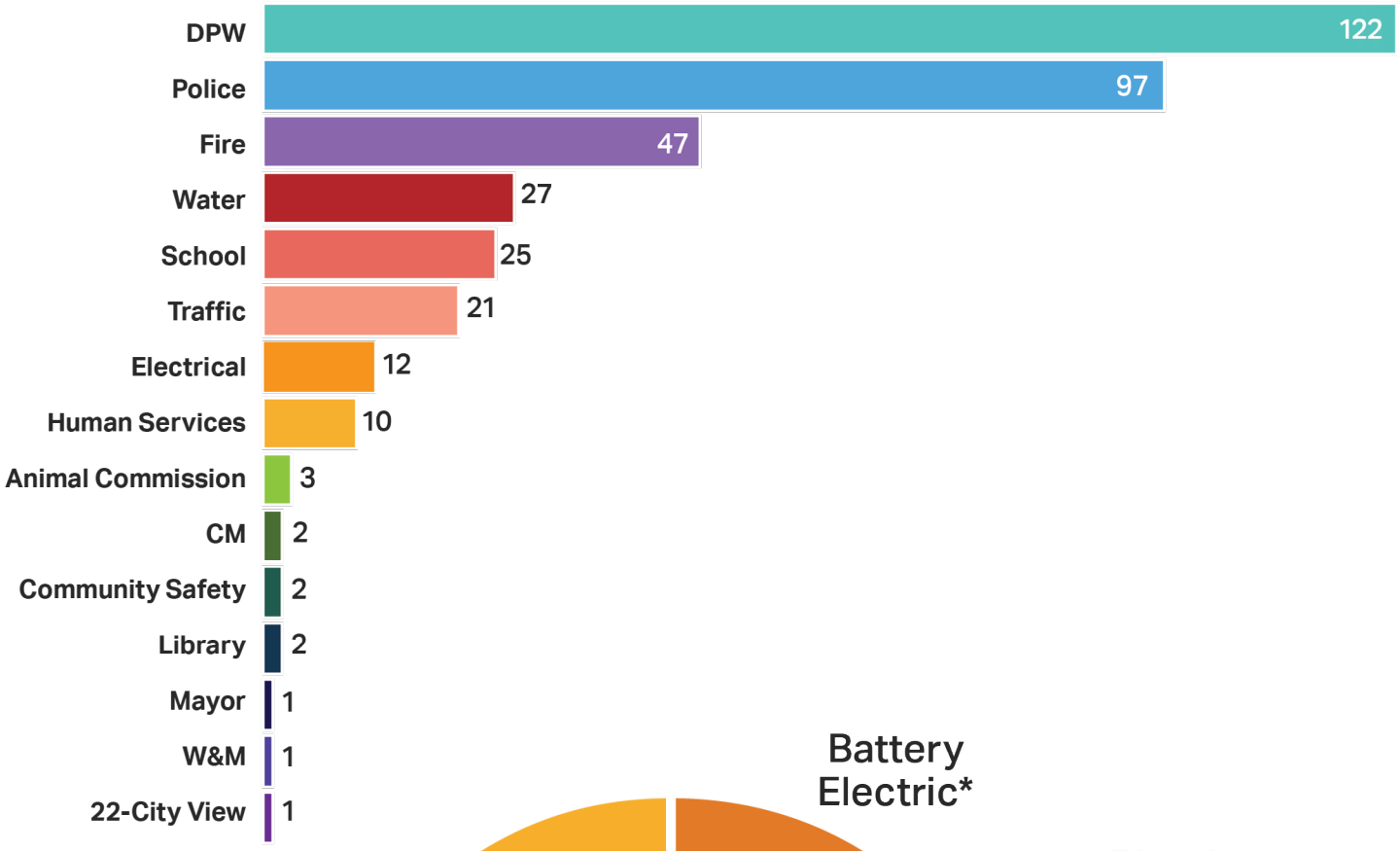
City's Fleet Composition: 373 Vehicles

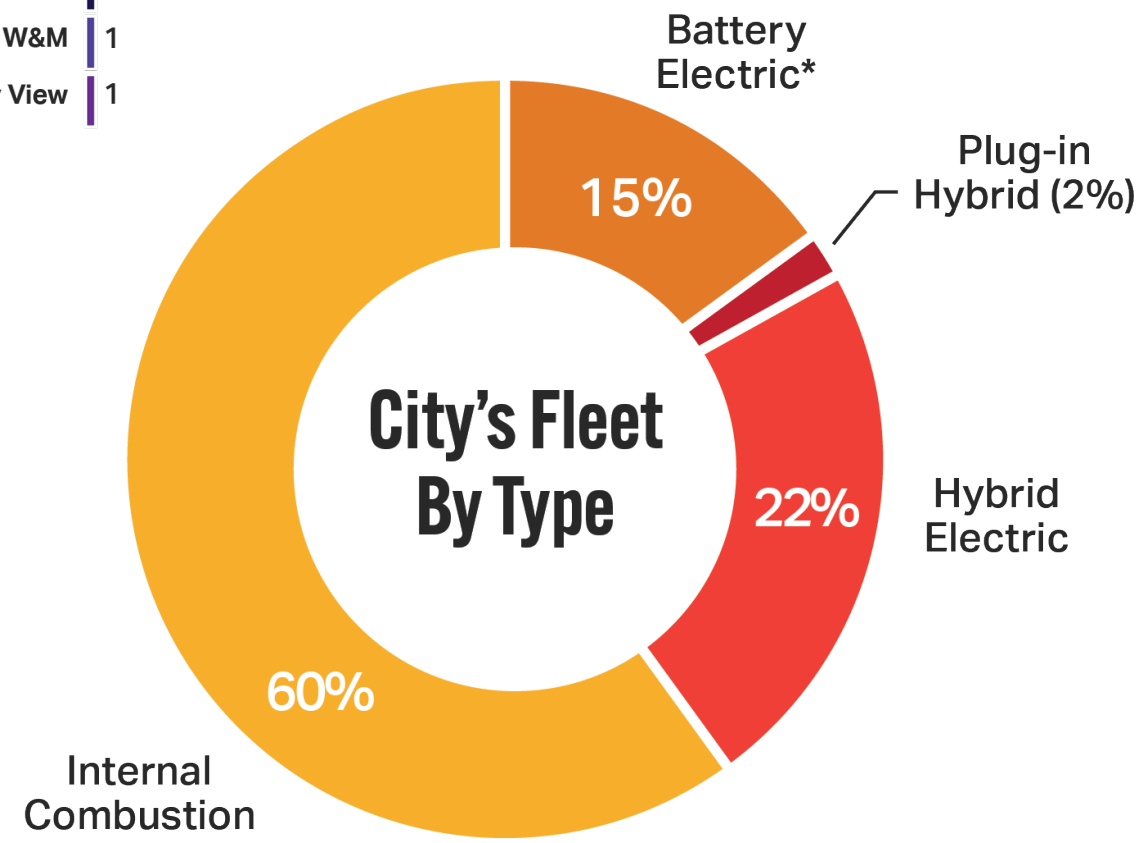




The U.S. EPA defines vehicle categories by Gross Vehicle Weight Rating (GVWR) for the purposes of emission and fuel economy certification. EPA also classifies vehicles as Light Duty (GVWR < 8,500 lbs) or Heavy Duty (GVWR > 8,501 lbs).

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 148 Light Duty vehicles, there are currently 33 Battery Electric vehicles (BEV) and 5 Plug-in Hybrid Electric Vehicles (PHEV) – 26% of LDV fleet, including awaiting delivery.

Since adopting the policy in February 2023, the City has acquired 18 BEVs and leased 32 BEVs across 7 departments, including awaiting delivery. 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 4 more BEVs in the Police Department's fleet: 2 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 1 BEV and 3 PHEVs, awaiting 3 BEVs – 22% 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 2023, Citywide emissions from the municipal fleet were 21% 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

There are 54 fleet charging ports at various fleet locations and 14 ports are in progress.

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

Clean Fleet Committee (CFC)

The Clean Fleet Committee continues to meet monthly to support Clean Fleet Policy implementation. During monthly meetings, the Committee has been reviewing vehicle acquisition requests to make sure they align with the Policy. Currently, all departments procuring new vehicles fill out a 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 worked with City departments to develop and support their implementation planning to meet the goals of the Clean Fleet Policy. Each department presented to the Clean Fleet Committee annual projected vehicle acquisition plans for the first five years which included fleet and heavy equipment, associated charging infrastructure, fleet maintenance and staff training needs.

Enterprise lease

The city leased 43 vehicles since entering into an agreement with Enterprise Fleet Management in 2023, 32 battery-electric, 2 plug-in hybrid, and 9 hybrid 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. The City hired an engineering consultant for technical support services to focus on an infrastructure assessment to expand fleet charging. The scope of work is continuing and 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. Make Ready projects are either complete or nearing completion 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).

All three locations required extensive electrical infrastructure updates that were fully funded by Eversource. The City's cost share included hardware and installation costs.

Eversource Fleet Advisory Services Program

The City partnered with Eversource to receive analytic and technical support in transitioning the municipal fleet from internal combustion vehicles to fully electric vehicles. The program provided a customized fleet assessment report that included a cost and emissions analysis, along with other essential information to inform the City's decision-making process. The study was conducted by the utility's preselected vendor, PowerOptions, and was fully funded by Eversource.

Grants & Rebates

Climate Mitigation Trust MassDEP. In July 2024, the City was awarded $416,991 from the Climate Mitigation Trust towards the purchase of the City's fourth all-electric rubbish packer.

Earmark Hazmat Grant. Fire Department received $725,678 funding to replace an older diesel Hazmat vehicle with an all-electric Hazmat truck built by Rosenbauer.

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.

Fueling software. In several fueling locations, the City will be updating fueling systems along with the software that integrates with Fleetio and Samsara telematics software used by some departments. This upgrade will better capture fueling transaction data and support enhanced reporting.

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 continues to use Samsara devices on its fleet vehicles, and there are discussions with other departments on adding telematics to their fleets.

Anti Idling Initiative

DPW continues work to minimize vehicle idling focusing on reducing fuel consumption, GHG emissions and air pollution. Another round of meetings was held with all major DPW Divisions and their staff in the Spring of 2024. 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.

DPW mechanics will receive specialized 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 Trucks' training team.

In addition, Vision Zero safety training is planned for DPW staff who will operate all-electric trucks, as their bodies are different from conventional diesel trucks.

Furthermore, all new EV 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

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 hydrocarbon (HC) emissions, reducing air pollutants and providing a healthier environment for our residents and fleet mechanics.

Challenges

Vehicle Availability

While there has been substantial progress in the availability of EVs, significant gaps remain, particularly for medium/heavy-duty and specialized vehicle classes. There is still a lack of viable electric vehicle options for emergency vehicles and small/medium/heavy duty trucks with snowplow packages, as well as limited options for various specialty and off-road vehicles. Moreover, more options are available outside the US market, particularly in Asia and Europe. With the limited choices, the City at times has had to consider a vehicle of a different size/class. For example, with no EV options available for smaller vans like the Ford Transit Connect, the City has been buying or leasing bigger alternatives like the Ford E-Transit Cargo van.

Electrical Infrastructure

A significant challenge in expanding Electric Vehicle Supply Equipment (EVSE) is bringing in new electrical infrastructure and working with utility companies to make sure that specific locations have grid capacity and sufficient power. In some cases, the City is working with the utility to design and build substations to have sufficient capacity for future EVSE expansion. In general, the City has found that electrical infrastructure upgrades are time consuming, can increase project cost significantly, and can delay EVSE installation.

Recommended Changes to the Policy

The Clean Fleet Committee is proposing to amend the policy to incorporate the Direct Vision philosophy, Vision Zero and similar safety initiatives into the evaluation process of a new vehicle.

The Clean Fleet Committee is proposing to amend the policy target #3: 100% zero emission active Solid Waste Collection vehicles by June 30, 2035.

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
DPW	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

DEPARTMENT	TYPE	YEAR	MAKE	MODEL
DPW Electical	BEV	2024	Ford	F-150 Lightening
Fire	BEV	2024	Ford	Mach E
Fire	BEV	2024	Rosenbauer	Hazmat Electric
Mayor	PHEV	2024	Mazda	CX-90
T&P	BEV	2024	Ford	F-150 Lightning
DPW	BEV	2024	Mack	LR Electric
Fire	BEV	2024	Ford	F-150 Lightning
DPW	BEV	2024	Chevrolet	Blazer EV
DPW	BEV	2024	Hyundai	Kona
DPW	PHEV	2024	Toyota	RAV4 Prime
Police	BEV	2024	Ford	Mach E
Police	BEV	2024	Ford	F-150 Lightning

Awaiting Delivery

DEPARTMENT	TYPE	YEAR	MAKE	MODEL
DPW	BEV	2023	Mack	LR Electric
DPW	BEV	2023	Mack	LR Electric
DPW	BEV	2023	Mack	LR Electric
Fire	BEV	2024	Ford	E-Transit
CPSD	BEV	2024	Ford	E-Transit
CPSD	BEV	2024	Ford	E-Transit
CPSD	BEV	2024	Ford	E-Transit
CPSD	BEV	2024	Ford	E-Transit
CPSD	BEV	2024	Ford	E-Transit
CPSD	BEV	2024	Ford	E-Transit
CWD	BEV	2024	Chevrolet	Blazer EV
CWD	BEV	2024	Chevrolet	Blazer EV

Please use the links below to access Alternative Fuels Data Center's list of zero and low-emission model year 2025 vehicles.

Model Year 2025 Alternative Fuel and Advanced Technology Vehicles:
https://afdc.energy.gov/vehicles/search/download.pdf