



Subject/Title

Sustainable and Resilient Fleet Policy

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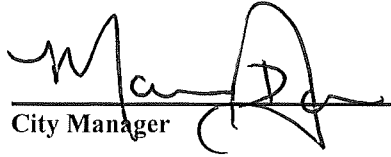
Revision Date Effective

Code Number

GS 18

General Services

Responsible Department


City Manager

POLICY STATEMENT

The City of Charlotte is committed to operating its vehicle fleet responsibly and sustainably. The City of Charlotte City Council unanimously passed the city's Strategic Energy Action Plan (SEAP) in December 2018. The SEAP is the city's comprehensive plan to reduce its carbon footprint through a number of building and fleet initiatives. The SEAP resolution states:

“NOW, THEREFORE, BE IT FURTHER RESOLVED that the City of Charlotte will strive to source 100% of its energy use in its buildings and fleet from zero carbon sources by 2030.”

In order to meet the goal of the resolution, the SEAP identified five stages to advance the city to a zero-carbon future by 2030:

1. Shifting energy demand;
2. Reducing energy consumption;
3. Changing the energy the city consumes away from fossil fuels;
4. Generating energy on-site; and
5. Meeting the remainder through energy purchases.

The Sustainable and Resilient Fleet Policy is intended to direct city departments to procure sustainable vehicles and meet SEAP goals by focusing on two of the stages named above:

- *Reducing energy consumption:* Reduce fuel consumed by internal combustion engines by right-sizing the fleet and by deploying managed idle technologies.
 - Establish a process for fleet-right sizing to reduce fuel demand by minimizing the number of city-owned vehicles.
 - Establish guidelines for the deployment of managed idle technologies to reduce fuel consumption on new and legacy fossil fuel-powered vehicles.
 - Implement and maintain route optimization.
- *Changing the energy that city operations consume away from fossil fuels:* Incorporate alternative energy sources into the city fleet. This will be accomplished by:
 - Ensuring fleet procurements align with SEAP goals by purchasing zero or low emission vehicles; and
 - Ensuring electric vehicle (EV) and alternative fuel infrastructure deployment is aligned with vehicle purchases.

POLICY

A. Strategies for Fleet-Wide Carbon Reductions:

1) Data Collection

- In order to support this process, the city must be informed by a thorough data collection and analysis of available fleet-wide information.
- A number of methodologies may be used, and three types of data in particular should be leveraged whenever possible:
 - Automatic Vehicle Locator (AVL) data: This data includes vehicle movement patterns, vehicle utilization, and vehicle idling time.
 - Electric Capacity and Efficiency: The capability of city facilities to support the deployment of EV charging infrastructure, and the extent to which the city is optimizing the use of EV charging assets.
 - Total Cost of Ownership (TCO) model: The model includes the total cost of maintenance, fuel, and upfront capital cost of the vehicle.

2) Purchase of Zero Emission Vehicles (ZEVs)

- To ensure that vehicle purchases align with the city's carbon reduction goals, proposed vehicle purchases will be assigned to a tiered system based on the degree of emissions reduction.
- Fleet Management will identify the highest tier in which a suitable replacement vehicle is available, based on available vehicle technologies.
- Fleet Management will identify the specific vehicle make and model that supports fleet standardization goals identified in the Fleet and Motorized Asset Management Policy.
- Consideration will be given to operational needs (ex. pursuit-rated public safety vehicles) in assessing the available vehicle options.

B. Vehicle Replacement Process:

1) Vehicle Replacement Tiered Structure

- Departments will purchase replacement vehicles based on the assigned tier and Fleet Management recommendation. The tiers are structured as follows:
 - Tier I – Zero emission vehicle
 - Tier II – Alternative fueled internal combustion engine
 - Tier III – Hybrid internal combustion engine
 - Tier IV – Conventional internal combustion engine – Gasoline
 - Tier V – Conventional internal combustion engine – Diesel

2) Appeals

- Departments can appeal the assigned tier and request assignment to a different tier.
- As part of the appeal process, departments must provide a total cost of ownership evaluation between the assigned replacement vehicle, and the department's requested replacement type.
- Departments must also include a detailed business case that explains why purchase of a vehicle within the assigned tier is not feasible.
- Neither limited availability of capital funding, nor limited pre-existing charging infrastructure alone will be considered valid justifications for appeals.
- Appeals will require the following approvals:
 - Fleet Management review
 - Fleet Management Advisory Team (FMAT) review panel
 - Strategy and Budget review
 - City Manager's Office review

3) Exceptions

- This section applies to all vehicles acquired through purchase, lease, donation, or rental with the exception of:
 - Vehicles rented for the purpose of emergency response deployment.
 - Unmarked law enforcement vehicles used primarily for covert operations. For the purposes of this policy, these vehicles are defined as vehicles that receive a confidential license plate and are used in such a way that their identification as city vehicles would incapacitate them from performing their normal duties.

4) Charging Infrastructure for Electric Vehicles

- The city will deploy a mixture of Level 1, Level 2, and Level 3 EV charging stations.
- Infrastructure capacity will be aligned to actual charging needs as determined by automatic vehicle locator data.
- Infrastructure deployments will be prioritized based on:
 - Site EV charger readiness - factors include existing electrical load capacity of site, underground conduit, and electrical line capacity;
 - EV suitability of vehicles by site;
 - Existing EV deployments; and
 - Departmental requests.
- Departments will be responsible for identifying charging opportunities for new and existing

fleet EVs.

- Departments should utilize the most efficient mix of charging infrastructure that is sufficient to maintain a minimum daily charge (based on operational need) for the EV fleet.
- All city owned charging infrastructure shall be networked and centralized under a common account.

5) Funding Options for Electric Vehicles and Infrastructure

- Vehicles will be funded through the capital equipment program.
- Departments are encouraged to seek alternative funding sources such as grants, for instances where the grant allows for purchasing vehicles from the approved tier, as laid out in this policy.
- Vehicle leases and long-term rentals must be approved by Fleet Management and Strategy and Budget Office and must comply with the EV purchasing requirements established in this policy.
- General Services department will select and manage the EV infrastructure accounts and all potential public/private partnership agreements.
- All city facility renovations or new construction projects will include EV charging infrastructure per the City Sustainable Facilities policy.
- Funding for EVs and other alternative fueled vehicles should follow the vehicle replacement process that is laid out in this policy.
- The Strategy and Budget department, Fleet Management, and the Office of Sustainability will work with departments to find the most effective source of funding if outside resources are needed to pilot new technologies in order to advance the city toward achieving SEAP goals (i.e. grants, lease options, etc.).

C. Carbon Reduction Strategies for Legacy Internal Combustion Engine Vehicles

1) Fleet Right-Sizing and Reorganization

- Fleet Management will perform an annual vehicle utilization analysis using AVL data to identify vehicles that are underutilized by miles or hours of operations.
- The analysis will include a comparison between the total cost of ownership model for a vehicle compared to the actual usage.
- Fleet Management will collaborate with departments to determine whether vehicles are reassigned to other areas of need, absorbed into the motor pool, or eliminated from the fleet.

2) Reduction of Fuel Consumed by Vehicle Idling

- Fleet Management will annually review AVL data to identify excess vehicle idling.
- Fleet Management, in partnership with departments, will use vehicle idling data to perform a return on investment analysis to calculate whether a vehicle idle reduction technology would make financial sense to purchase. In those cases, the department will purchase the idle reduction technology and it will be installed on the vehicle.
- Legacy vehicles that frequently idle will be fitted with a managed idle solution specified by Fleet Management, when it makes financial and environmental sense.
- New vehicles purchased with an internal combustion engine will be specified to include the managed idle solution, when it makes financial, operational, and environmental sense.
- The managed idle solution will be configured to power off the vehicle engine while maintaining operation emergency warning, heating, and cooling systems after five minutes of vehicle idling.

D. Reporting

To measure progress toward SEAP goals, the city will report on the following measures on an annual basis:

1) Carbon Reduction

- Total fleet carbon output: The total carbon output for fleet vehicles per year.
- Carbon output per mile driven: The total carbon output for fleet vehicles will be divided by the total miles driven to measure the carbon efficiency of the fleet.
- Gallons of petroleum-based fuels avoided: The total number of gallons of gasoline saved as a result of using alternative fuels will be reported as well as the associated carbon avoidance.
- Vehicle idle hours avoided: Idle hours avoided through the use of managed idle systems will be reported, as well as the associated carbon avoidance.

2) Charging Infrastructure

- City owned EV chargers per fleet vehicle: City EV chargers will be measured per fleet EV.
- Electric charger utilization: The utilization rate for charging infrastructure will be reported across the city; this data will support future charging infrastructure prioritization among city facilities.

3) Fleet Efficiency

- Miles driven per vehicle: **The total miles driven will be reported both in total and on a per vehicle basis.** The miles driven per vehicle will be used to measure the efficiency of vehicle utilization.
- Percentage of under-utilized vehicles: The percentage of fleet vehicles that do not meet utilization standards (based on vehicle class type).
- Average fleet miles per gallon: The fleet miles driven divided by the total quantity of fuel consumed in gallons or gallon-equivalent units.

4) Fleet Demographics

- Zero emission vehicles: The number of zero emission vehicles will be reported in total, as a percentage of overall fleet, and by department.
- Alternative fuel vehicles: The number of reduced emission vehicles will be reported in total, as a percentage of the overall fleet, and by department.
- Conventional internal combustion engine vehicles: The number of conventional internal combustion engine vehicles will be reported in total, as a percentage of the total fleet, and by department.

REFERENCES

This Policy aligns with and complements the following City Policies and Plans:

- Automatic Vehicle Locator Policy;
- Fleet and Motorized Equipment Asset Management Policy;
- Motor Pool and Vehicle Rental Policy;
- Sustainable Facilities Policy; and
- Strategic Energy Action Plan.

Updated versions of the referenced documents are available on CNET.

DEFINITIONS¹

- **Automated Vehicle Locator:** a device that uses a global positioning system to remotely track the location, speed, and other vehicle specific data.
- **Level 1 Charging System:** refers to a 120-volt charging system; similar to a regular household outlet. It is usually the easiest and cheapest to install, but it has the slowest charge rate.
- **Level 2 Charging System:** refers to a 240-volt charging system; it usually requires additional infrastructure to install, and it has a relatively quick charging capacity.
- **Level 3 Charging System:** refers to a 480-volt charging system; it is the most expensive and difficult to install, however, the system typically provides an 80 percent charge in 30 minutes.
- **Long term rental** – Any vehicle rented for more than two days that performs regular city business. Vehicles rented for out-of-town travel or support of special events are excluded from this definition.

¹ Charging infrastructure definitions sourced from <http://www.evtown.org/about-ev-town/ev-charging/charging-levels.htm>