MEMORANDUM

TO: Mayor and Council

FROM: Howard S. Lazarus, City Administrator

DATE: February 5, 2018

SUBJECT: Staff Response to Council Resolution R-17-237 – Green Fleets Policy Update

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I am forwarding this memorandum in response to City Council Resolution R-17-237, which directed the City Administrator to take the following actions:

- Update and revive the City's Green Fleets Policy incorporating all of the major elements of the original policy (goals, objectives, measures of success and targets, team approach, etc.), accounting for changes in departmental units and organizational structure that have changed since the original adoption of the policy;
- That the updated policy promote the purchase of PEVs (electric vehicles) and their charging by City-owned solar PV to be installed according to the Subject referenced "Resolution to Adopt City Policy on Solar Power Generation and Energy Efficiency in City-owned Facilities";
- That the updated policy incorporate best practices and lessons learned from peer municipality policies, including alternatives to travel (e.g. virtual meetings), the use of alternative modes of transportation, use of telematics, signage proclaiming City-owned zero emission vehicles, and aggressive, regularly updated targets;

Staff, with input from the Energy and Environmental Commissions, has completed the policy update and satisfactorily addressed the requested elements. This new policy heavily emphasizes:

- Vehicle electrification opportunities as a primary alternative when deemed feasible for purchase;
- Continued fleet evaluation for right-sizing and eliminating under-utilized vehicles;
- Setting a 25 percent greenhouse gas (GHG) emissions reduction goal by 2025, consistent with our Climate Action Plan;
- Steps to routinely evaluate and report on progress towards the goals of the policy, and the re-establishment of a Green Fleets Team of relevant staff from the organization;
- The promotion of alternatives to vehicle travel, including but not limited to, minimizing travel for meetings if unnecessary, and the use over time of intelligent devices and systems (e.g., telematics) that can optimize route planning for service trips.

Staff has also assisted on an initial evaluation of emerging electric vehicle (EV) alternatives and life cycle cost estimates. Some of the salient takeaways from this initial assessment just for EV conversions are as follows:

1) Current funding mechanisms are not adequate to address the additional budgetary impacts to implement the Policy for both vehicle purchases and charging infrastructure, and so will need to evolve alongside the policy.

2) Light duty pickup trucks and vans (in addition to heavy-duty vehicles) do not currently have commercially available or viable alternatives (particularly large cargo vans), so opportunities to convert sedan vehicles will be the initial emphasis for electrification.

3) When doing an initial assessment for converting all 170 eligible light duty vehicles (those sedans, pickups and vans/SUVs with an EV option) from internal combustion to electric-charge vehicles there would be a one-time capital investment cost of approximately $6.3M for the initial purchases over the current replacement costs for the existing vehicles. In addition to the initial purchase cost, the life cycle costs for this conversion when factoring in vehicle replacement costs, fuel and operational savings forecasts are estimated at approximately $3.8-4M over a 7-year timeframe, which is the typical replacement evaluation life of City fleet vehicles. When removing electric cargo vans (which account for a majority of cost sensitivity due to very high upfront costs) the one-time initial purchase capital cost would be reduced to approximately $3.5M with the life cycle conversion costs of these vehicles being reduced to $1.5M over the 7-year period. However, an immediate full-scale conversion of this sort is not recommended in the policy, but illustrates a cumulative picture in today's market. Cost savings through anticipated reductions in operational maintenance of EVs may have the potential to further drive savings among certain, especially smaller, vehicle classes such that payback may be achieved within the useful life of vehicles.

4) The policy will need to be dynamic with respect to the greening of heavy-duty vehicles that are currently reliant on diesel/bio-diesel fuel and without meaningful options for electrification at present. Decisions on fuel alternatives should adapt with technology and emerging opportunities not explicitly advocated in the new policy but that may be a possible pathway to reducing even if not eliminating emissions. However, future decisions on alternative fuel options and emerging technologies, such as compressed natural gas (CNG), must be fully and carefully examined and evaluated taking into account all costs and effects, including supporting infrastructure, market volatility and availability, etc.

Without directly being able to take advantage of tax incentives available to other/private sector customers, the upfront cost for EVs are invariably higher than conventional alternatives and a commitment to budget additional funding will be needed to implement this policy. This policy update does position the City to begin the process of adapting the City's fleet in the direction of these new technologies, and as costs continue to decline as is anticipated, we will be nimble in our effort to acquire and deploy lower emissions vehicles that support our community vision for sustainability.

As always, please do not hesitate to contact me if I can be of further assistance.

cc: C Hupy
C Slotten
M Naud

M Kulhanek
N Geisler

Attachment: Green Fleets Policy Update

CITY OF ANN ARBOR – GREEN FLEETS POLICY

Green Fleets Policy Background and Update

Ann Arbor City Council adopted a resolution on August 21, 2000 requesting that the City Administrator develop a “Green Fleets” policy for Council approval that reduces both fuel use and emissions of the municipal operations through more intelligent use and purchase of vehicles and fuel-using equipment. The Green Fleets policy was prepared to stimulate programmatic efforts to reduce the impact of fossil fuel use on public health, the environment, and cost of City operations. In June of 2017 City Council passed a resolution updating the Green Fleets Policy, emphasizing vehicle/equipment electrification.

Existing City programs have already contributed to the goals of the Green Fleets policy. On October 20, 1997, Ann Arbor became a member of the Cities for Climate Protection program, a coalition of over 500 local governments worldwide that promote community-based initiatives to reduce global warming emissions. In April 1999, the City of Ann Arbor, along with a coalition of local fleets and fuel providers, became a designated member of the US Department of Energy’s Clean Cities Program. This allows local participation in the distribution of federal funds for the purchase of alternative fuel vehicles and the establishment of alternate fuel infrastructure. These Clean Cities vehicle and fuel initiatives continue to improve local air quality and reduce greenhouse gas emissions, protecting public health and enhancing the quality of life in member cities and surrounding areas. Ann Arbor also adopted a Climate Action Plan in 2012 to community reduce greenhouse gas (GHG) emissions 25% by 2025 and 90% by 2050; the updated Green Fleets Policy is expected to enable municipal efforts to reach these targets.

This updated policy, beginning in calendar year 2018, helps the City purchase the most cost-effective, least polluting, and fuel-efficient vehicles and fuel using equipment possible that still meet the operational requirements of the intended use. To accomplish this objective, life cycle cost, fuel type, and fuel efficiency standards are to be considered in procurement decisions. The Green Fleets review process also includes "right-sizing" fleets by reducing vehicle size and eliminating old and underused vehicles and equipment. It will be important to continue to benchmark against best practices and lessons from peer communities and institutions as the policy evolves and is updated in the future.

The Mission

This updated Green Fleets policy directs all Service Units that own/operate vehicles and fuel-using equipment to decrease carbon dioxide equivalent (CO_2e) emissions, achieving a fleet-wide 25 percent reduction by 2025, from a baseline year of 2017, in furtherance of Ann Arbor's Climate Action Plan. By 2026, the policy targets will be revisited and updated.

1 Goals

1.a The goal of all City Service Units shall be to eliminate unnecessary vehicles and purchase and use the most cost-effective and lowest emission vehicle or equipment possible, while still meeting operational requirements. Fleet assets shall be utilized in a manner that supports City operations through environmentally responsible fleet management.

1.b Focus of replacements of fleet vehicles will be primarily toward all-electric and secondarily hybrid-electric technologies, consistent with Resolution R-17-237. Contracted services with third party fleets (e.g., solid waste collection) shall also demonstrate compliance with this policy (e.g., procurement shall be with third party closest to fully complying with this policy).

2 Objectives

2.a Optimize the fleet size – eliminate unused or underused vehicles and equipment through continuous review and evaluation of vehicle utilization and redundancy. Respective Service Unit Administrators should work with the Green Fleets Team (see Section 4) to accomplish this based on the policy (other triggering events such as vehicle condition inspections should also inform this process)

2.b Increase the fleet average fuel economy for each Service Unit – use miles per gallon (mpg) and fuel type (e.g., electric) critical purchase criteria

2.c Minimize vehicle miles traveled (VMT) – route optimization, trip elimination, shared utilization, vehicle tracking technology solutions (e.g., telematics)

2.d Reduce vehicle size, weight, and other factors affecting fuel use when appropriate

2.e Reduce emissions of carbon dioxide (CO_2), carbon monoxide (CO), nitrous oxide (NO_x), volatile organic compound (VOCs), particulate matter (PM) and other greenhouse gasses through elimination of fossil fuel combustion

2.f Increase the use of alternative fuel vehicles and equipment, with a focus on increasing the use of all-electric vehicles

3 Measures of Success

3.a The primary measure of the City's success in implementing the updated Green Fleet Policy is the reduction of carbon dioxide equivalent (CO_2e) and other emissions.

3.b The secondary measure of the City's success in implementing the updated Green Fleet Policy is the decrease in annual total gallons of gasoline and diesel fuel used.

3.c A third measure of the City's success in implementing the updated Green Fleet Policy is a decrease in total fleet size, with increase in the percentage of electric and hybrid-electric vehicles replacing combustion-engine vehicles where opportunities exist and are deemed feasible.

4 Green Fleets Team

4.a This Team will include, but not be limited to, one representative from the listed Units or Service Areas to be appointed by the respective Service Area Administrator:

4.a.1 Public Services (Systems Planning, Fleet Services, Public Works)

4.a.2 Finance & Administrative Services

4.a.3 Safety Services

4.a.4 Community Services

4.b The function of this Team shall be to develop and monitor policies, procedures and practices related to the purchase and use of City vehicles and fuel-using equipment to achieve the goals and objectives of the updated Policy. The Team will receive Fleet Service's inputs and report progress and findings to the City Administrator and the Energy and Environmental Commissions at least annually and as appropriate, including any proposed alterations to the policy.

5 Funding

5.a The purchase of Policy-compliant vehicles and equipment with better fuel economy or lower emissions may be more expensive in initial years. A "Green Incentive" shall be put in place that allows the purchase of said vehicles and equipment if their price is within 20 percent including Incentive,

of the lowest bid for that vehicle or equipment class. The 20 percent funding Incentive shall serve as a guideline, but not as a limit, to determine the vehicle recommendation and written justification to the Green Fleet Team. The Team will be responsible for reviewing the vehicle recommendation from the Unit and either approving such or offering commentary/resolution.

5.b Funding from outside sources such as State and Federal grants shall be pursued to assist in the purchase of Policy-compliant vehicles, including alternative fuel vehicles and fueling facilities.

5.c Lifecycle costs should be used to determine total savings of vehicles. A vehicle replacement depreciation process must also address and fairly accommodate potential higher upfront purchase costs necessary to meet the policy's mission.

5.d Budgetary mechanisms that fund this premium must be developed and refined to ensure equitable means for all Service Units to accomplish the policy's directives. These processes will be recommended and modified as appropriate by the Green Fleets Team and provided to the City Administrator and/or relevant decision-makers.

6 Fleet Inventory

6.a The City shall create and maintain a complete inventory of the vehicles in its fleet, by Service Unit/department. This inventory should include not only the type and number of fleet vehicles, but also each vehicle's intended use, and the amount and types of fuel used, the costs associated with their use, and the resulting pollution. This inventory is critical if goals are to be set and success measured for the fleet.

7 Baseline for Evaluation of Effectiveness

7.a The original baseline year for determining the effectiveness of the Green Fleets program was FY2002-2003. This updated policy establishes a new baseline year of FY2017-2018. Fleet Services shall develop a FY2017-2018 fleet baseline to facilitate the evaluation of annual Green Fleets Plans. Baseline information should to the extent possible include:

- 7.a.1 Vehicle number, year, make, model, drive train (2- or 4-wheel drive), transmission type, and primary use
- 7.a.2 Miles per gallon per vehicle -- actual if possible, published EPA rating if actual not available;
- 7.a.3 Type(s) of fuel used;
- 7.a.4 Average cost per gallon (or gallon equivalent) of fuel(s);
- 7.a.5 Average fuel cost per mile, if available;

7.a.6 Annual miles driven per vehicle per fuel type, if available;
7.a.7 Total fuel(s) consumption per vehicle per year;
7.a.8 Vehicle function and utilization (e.g., hours of use divided by total hours) with commentary on continued need or alternatives;
7.a.9 Estimated emissions per mile for each pollutant by vehicle type/class (defined in 1 above) based on EPA tailpipe standards for carbon monoxide (CO), nitrogen oxides (NO_X), and particulate matter (PM); and
7.a.10 Carbon dioxide (CO_2) calculations based on gallons (or equivalent) of fuel consumed.

7.b Systems Planning Unit/Sustainability Office shall assist with items 7.a.9 and 7.a.10 for the Green Fleets Team.

7.c Fleet Services shall be responsible for providing this baseline data in a reliable and verifiable manner to the Green Fleets Team.

8 Green Fleets Strategies To Be Employed By the City

8.a Optimizing Fleet Size

8.a.1 The vehicles targeted for a reduction in fleet size shall include the following:

8.a.1.i Light duty vehicles (passenger cars, light duty pick-up trucks and vans) that use less than 200 gallons per year.

8.a.1.ii Light duty vehicles over 7 years old or heavy-duty (>8,500 lbs) trucks over 10 years old.

8.a.2 Vehicles in this these category will be earmarked for removal from the City fleet through the annual vehicle auction. It is anticipated that these vehicles will be removed over a number of years to reduce the impact to the fleet. The determination of which vehicles are to be eliminated shall be at the discretion of the fleet manager and Unit heads, who currently are being asked to justify vehicle usage. These vehicles will be eliminated with agreement from the Green Fleets Team.

8.a.2.i Flexibility is necessary to allow exemptions when warranted.

8.a.3 No vehicle will be purchased to replace the removed vehicle. It shall be removed from the fleet database, and the miles normally

traveled by the removed vehicle will be distributed to other transportation modes.

8.a.4 Specialized function vehicles may be exempted from removal if the purchasing Service Unit can justify retention and the Green Fleets Team approves this justification. Justification for exemptions must be presented in writing to the Team. It is expected that there will be exceptions with regard to some emergency services vehicles because of special uses. However, there still may be viable green vehicle/equipment options to support some emergency needs and functions. It shall be the policy of the City to purchase or lease emergency response vehicles that comply with the requirements of this section to the extent that the purchase or lease of such vehicles does not unacceptably reduce the ability to provide safe, quality services.

8.b Increase Average Fuel Economy

8.b.1 When purchasing new vehicles, fuel efficiency targets (miles per gallon or mpg) shall be determined for each of four vehicle classes. Targets slightly above the average fuel economy for each vehicle class should be the minimum attained. For model year 2016 the targets would have been:

VEHICLE CLASS*	**MPG TARGET****
Compact Cars	34
Midsize and Full-Size Cars	27
Minivans/Mini-pickups	21
2X4 Trucks	21
Passenger/Cargo Vans	14
4X4 Trucks	18

* Vehicle class is based on EPA categories for combined cargo and passenger volume in the Model Year 2016 Fuel Economy Guide. This table is meant to be illustrative and needs to change with updates based on year of purchase activity

8.b.2 MPG targets shall be reviewed annually by the Green Fleets Team and modified based on vehicles available for that model year.

8.b.3 Vehicle purchase requests shall be reviewed and minimum fuel economy targets will be employed when possible. Managers are encouraged to purchase the most fuel-efficient vehicle available that can meet the operational needs of the Unit.

8.b.4 Request for exemptions to the fuel economy targets in vehicle procurements shall be submitted in writing to the Green Fleets

Team and exemptions awarded if the Team feels there is sufficient justification. Vehicle purchase without such an exemption is not allowed.

8.c Minimize Vehicle Miles Traveled (VMT)

8.c.1 For vehicles that operate on fixed routes, such as solid waste pick-up, route optimization should be employed by the Service Unit. In general, all routes should be planned to optimize the route and trips chained together to reduce required travel time and distance. VMT optimization shall also be managed by each Service Unit; vehicle/equipment purchase should be avoided through practices such as centralized meetings, teleconferencing, use of alternate transportation modes (e.g., buses, bicycles), and carpools and combined-purpose trips. The deployment of telematic vehicle devices or similar technology that monitors and optimizes routes and analyzes patterns and potential adjustments to best meet this policy's aims should be strongly considered.

8.d Reduce Vehicle Size

8.d.1 Encourage the selection of vehicles of a smaller class size whenever possible to achieve increased miles per gallon. Requests for new vehicle purchases must be supplemented with written justification addressing the need for a specific model and type. Fleet Services shall work with the Unit and vehicle operators to determine whether a proposed vehicle could be downsized and still complete its required function. For example, whenever possible, full-size trucks and vans should be downsized to light duty vehicles, four-wheel drives replaced with two-wheel drives, and large gasoline/diesel engines replaced with smaller electric engines.

8.e Reduce Vehicle Emissions of Greenhouse Gases

8.e.1 Combusting one gallon of gasoline (fossil fuel) produces approximately 20 pounds of CO_2. Increasing fuel economy reduces the amount of fuel required to travel the same distance, and consequently reduces the amount of CO_2 produced by City operations.

8.e.2 Vehicles shall not be left idling for more than 5 minutes in a 60 minute period unless a running engine is necessary to protect

public safety, to prevent harm to contents of the vehicle, run auxiliary equipment in performance of a job, or to maintain health of occupants while performing duties, or is exempt per Ann Arbor's Idling Reduction Ordinance, Chapter 72. Vehicles are not to be left idling to warm up a vehicle.

8.f Reduce health-threatening emissions of carbon monoxide (CO), nitrous oxides (NO_x), volatile organic compounds (VOCs), and particulate matter (PM).

8.f.1 The City and each Service Unit shall attempt to obtain the "cleanest" vehicles possible as measured by available emissions certification standards.

8.f.2 Emissions targets shall be reviewed by the Green Fleets Team and modified if cleaner vehicles become available. For example, some ultra-low emission vehicles (ULEV) are available in California but are not sold in Michigan today. When they are distributed nationwide the City may have more purchase options. Technology trends in the last decade and beyond have vastly improved CO, NOX, VOCs and PM emissions in vehicles, so the necessity to continue focus on these sources will need to be monitored and adapted to the extent variation among fleet options can even substantially be differentiated.

8.g Increase Use of Alternate Fuel Vehicles and Equipment

8.g.1 All-electric, primarily, and Hybrid-electric vehicles, secondarily and when an all-electric option is not available, shall be the preferred option for light duty vehicle replacements; the Service Unit should singularly or jointly consider solar-powered charging options as they become available and feasible.

8.g.2 Fleet Services shall provide a list of alternate fuel vehicles to the Green Fleets Team to evaluate incremental progress of the policy.

8.g.3 Both internal budgets and external grants would be eligible to cover the anticipated premiums for an alternate fuel version of a fleet vehicle or piece of motorized equipment.

8.g.4 Gasoline alternative fuels (such as low-sulfur diesel, compressed natural gas, ethanol and biodiesel) shall be considered when feasible if an electric alternative is not available and any negative environmental impacts from such fuels do not negate benefits. The

latest scientific consensus on the environmental advantages or disadvantages of such fuels should be factored into decision-making.

9 Fuel-using Equipment

9.a City Units shall purchase or lease portable or stationary fuel-using equipment that is powered by alternate fuels if available and within the 20 percent green incentive, including rebates. If an alternate fuel option is not available, strong consideration shall be given to purchasing the most fuel efficient, cleanest, fuel-combusting equipment.

10 Exemptions

10.a The Green Fleets Team may grant an exemption from the requirements of this Policy to a City Service Unit requesting an exemption under the following circumstances:

10.a.1 Where the requesting Service Unit demonstrates that no model of motor vehicle or motorized equipment is available which will comply with the requirements of this Policy and still meet the specifications of the Service Unit for its intended purpose.

10.a.2 Where the requesting Service Unit demonstrates to the satisfaction of the Team each of the following:

10.a.2.1 That the cost of the vehicle or motorized equipment that complies with the requirements of this Policy is more than 20 percent higher than the cost of an equivalent vehicle or motorized equipment powered by gasoline or diesel fuel; and

10.a.2.2 That the Service Unit has attempted to apply for, but failed to receive, grant funding for the purchase or lease of the vehicle or motorized equipment that complies with the requirements of this Policy from sources other than the City's General Fund; and

10.a.2.3 That the amortized cost differential cannot be recovered over the operating life of the vehicle or motorized equipment that complies with the requirements of this Policy through a reduction in fuel, maintenance, and other costs incurred during the operating life of such vehicle or equipment.

10.a.3 Where the requesting Service Unit demonstrates to the satisfaction of the Team that the use of a vehicle or motorized equipment that complies with the requirements of this Policy would significantly disrupt Service Unit operations due to the lack of reliability, adequate fueling, and/or maintenance facilities for that motor vehicle or motorized equipment.

10.b In the case that the Team grants an exemption, the requesting Unit shall purchase or lease the model of motor vehicle or motorized equipment that will meet Service Unit specifications and has the highest fuel efficiency and lowest available emissions ratings available within the 20 percent Green Incentive purchase price.

11 Vehicle Maintenance

11.a All vehicles shall be inspected at least once per year.

11.b Ecologically sound products, such as coolants and specialized oils, shall be used where available, when cost effective, and when they do not void vehicle or equipment manufacturer's warranty.

11.c Re-treaded tires shall be purchased for large-wheeled or slow-moving vehicles.

12 Reducing Other Environmental Impacts

12.a In addition to tailpipe emissions, motorized vehicles and equipment may have other negative environmental impacts that can occur in their production, operation, and eventual disposal. Radiator fluids and other substances used in vehicles or equipment can have harmful consequences for the environment. Of particular concern are persistent, bioaccumulative, and toxic materials (PBTs), such as mercury, lead and arsenic, which can be released at the end of the service life. When opportunities are identified, Service Units and City/fleet management should attempt to reduce the production, operation and end-of-life environmental impacts of the vehicles/equipment it purchases.

13 Annual Reporting

13.a Fleet Services shall provide an annual report by September 1st to the Green Fleets Team for the prior fiscal year providing information to demonstrate how

well each Service Unit's fleet is in compliance with the Green Fleets Policy as well as any recommended upgrades to the Policy.

13.b This report shall include an updated inventory of all vehicles and fuel using equipment as well as a list of vehicles/equipment purchased and vehicles and equipment removed from the City fleet in the prior fiscal year.

13.c In addition, the report shall contain or summarize the following:

- 13.c.1 A list of Vehicles classes by year; a similar list for all fuel-combusting equipment
- 13.c.2 Make and model
- 13.c.3 Drive train (2-wheel drive or 4-wheel drive)
- 13.c.4 City vehicle number and VIN number
- 13.c.5 Type of fuel used
- 13.c.6 Annual miles driven per vehicle
- 13.c.7 Annual fuel consumption and cost per vehicle
- 13.c.8 Annual maintenance costs
- 13.c.9 Vehicle function and utilization (hours)
- 13.c.10 Estimated emissions per mile for each pollutant by vehicle type/class (defined in 1 above) based on EPA tailpipe standards for the following:
    - Carbon Dioxide (CO_2) per gallons (or equivalent) consumed.

13.d Fleet Services shall be responsible for providing these data in a reliable and verifiable manner. These data will be submitted to the Team in conjunction with an annual Green Fleets plan for evaluating approaching replacement opportunities.

13.e Annual Reports shall be reviewed by the Green Fleets Team and the City Administrator and shall be used to determine program effectiveness and to target under-utilized vehicles for removal, working in concert with each Service Unit.

13.f The annual Green Fleets plan shall be developed using any/all of the options listed above plus any other alternatives deemed appropriate to achieve the goals of the Plan. These strategies allow considerable margin for the creative development of a plan that will have greatest potential to green each Service Unit's (and City's) fleet.

Definitions

- “Alternate Fuel” means any fuel other than gasoline, diesel, and other substantially petroleum-based fuels that are less polluting than gasoline or diesel fuel. Alternate Fuel shall include, but is not limited to, natural gas, propane, ethanol (E-85), biodiesel (20 percent blend or above) and electricity.

- “All-electric Vehicle” or BEV (Battery-only Electric Vehicle), is a vehicle operating exclusively on a battery charge and does not possess or require an internal combustion engine.

- “Alternate Fuel Vehicle” means any motor vehicle powered by alternate fuels.

- “Bi-Fuel Vehicle” means any motor vehicle designed to operate on two distinct fuels, one of which is an alternative fuel. These vehicles do not run on a mixture of fuels.

- “City Service Unit” means any organizational Unit that provides services to the City of Ann Arbor.

- “Compact Car” means a light duty vehicle with total interior volume between 100 and 109 cubic feet.

- “Fuel Burning Equipment” means any implement powered by an internal combustion engine.

- “Heavy Duty Vehicle” means any motor vehicle, licensed for use on roadways, having a manufacturer's gross vehicle weight rating greater than 8,500 pounds.

- “Hybrid Vehicle” or “Hybrid-electric Vehicle” means a motor vehicle that draws propulsion energy from onboard sources of stored energy that are both an internal combustion/heat engine that runs on combustible fuel, and a rechargeable energy storage system.

- “Large Car” means a light duty vehicle with total interior volume of 120 or more cubic feet.

- “Light Duty Vehicle” is any vehicle with a gross vehicle weight of less than or equal to 8,500 pounds. Light duty vehicles include passenger cars, light duty trucks, sport utility vehicles (SUV), minivans and pick-up trucks. Light duty vehicles are currently subject to Tier 1 emissions standards under the Clean Air Act Amendments of 1990.

- “Light Duty Truck” means any motor vehicle, with a manufacturer's gross vehicle weight rating of 8,500 pounds or less, which is designed primarily for purposes of transportation of property or is a derivative of such a vehicle, or is available with special features enabling off-street or off-highway operation and use.

- “Midsize Car” means a light duty vehicle with total interior volume between 110 and 119 cubic feet.
- “Motor Vehicle” means a vehicle powered by energy from a motor, as opposed to a vehicle powered by human effort.
- “NO_X” means oxides of nitrogen.
- “Particulate Matter (PM)” means solid or liquid particles of soot, dust, smoke, fumes, aerosols or other airborne material.
- “Passenger Vehicle” means any motor vehicle designed primarily for transportation of persons and having a design capacity of twelve persons or less.
- “Tier 1” means emissions standards enacted by 1990 amendments to the Clean Air Act that required a 40 percent reduction in emissions from the 1981 standard by 1994. Tier 1 light-duty standards apply to all light duty vehicles, permitting higher acceptable emissions levels for heavier light duty vehicles like trucks.