Clean Fleet Purchasing Policy
Town Of Truckee

PURPOSE

The Town of Truckee has committed to reducing greenhouse gas (GHG) emissions by 80% by 2040 (relative to a 2008 baseline), and achieving 100% renewable energy by 2050. According to the Town's 2016 Greenhouse Gas Emissions Re-inventory, the Town's vehicle fleet contributes 960 metric tons of carbon dioxide equivalent ($MTCO_2e$) to the Town's total municipal emissions of 2,208 $MTCO_2e$ (43%).

The purpose of this policy is to document the process for purchasing and managing the Town of Truckee's vehicle fleet and motorized equipment in a manner that minimizes greenhouse gas (GHG) emissions, considers lifecycle economics, and effectively meets the operational needs of the organization. Additionally, the policy will contribute to the achievement of the Town's GHG emission goals as well as the Town's fair share of the State's GHG emission goals.

The implementation of this policy complements the recent purchase of the NSAQMD-funded Tesla pool vehicle and the adoption of the Sustainable Purchasing and Practices Policy. Through adoption of this policy and implementation of future municipal emissions-reduction projects, the Town will continue to demonstrate leadership in reducing local GHG emissions.

POLICY

The Town shall make every effort to purchase and use the lowest emissions vehicles and motorized equipment possible, while also considering the vehicle or motorized equipment's lifecycle costs and the ability to support Town operations and services.

The overall objectives of this policy are to:

- Ensure that the Town considers zero emission, low emission, or alternative fuel vehicles and equipment as the priority when replacing Town vehicles or motorized equipment.
- Reduce total Town vehicle fleet emissions, and emissions from motorized equipment to reduce emissions of carbon dioxide (CO_2), carbon monoxide (CO); nitrous oxides (NO); and particulate matter (PM 2.5 and PM 10), which

are all pollutants produced by combustion of carbon fuels that contaminate local air quality and can endanger public and employee health.
- Lead by example through the Town's adoption of zero emission, low emission, or alternative fuel vehicles as an important strategy in the Town's commitment to GHG reduction.

Prior to the acquisition of any new or replacement vehicle or motorized equipment, the following will be considered and carefully examined:

- Justification for the class, size, type (vehicle)
- Alternative fuel vehicle or equipment availability
- Environmental impact
- Suitability for intended purpose
- Frequency of use
- Fuel efficiency
- Lifecycle costs

Success in accomplishing the above objectives will bring the Town closer to its GHG emissions reduction targets. In addition, it will reduce the amount of carbon-based fuels used by Town vehicles and motorized equipment, reduce total fuel costs, reduce particulate matter emissions to improve local air quality, and in many cases, reduce the total cost of fleet maintenance operations per vehicle.

CLEAN FLEET STRATEGIES TO BE EMPLOYED BY THE TOWN

1. Prioritize procurement of alternative fuel vehicles and equipment when they meet the use requirements (adequate size, range, all-wheel drive, fueling infrastructure needs, etc.)

2. Make every effort to obtain the lowest-emission vehicles and equipment possible as measured by available emissions certification standards and those published by manufacturers, while meeting the operational needs of the Town department. Preference should be for vehicles with zero tailpipe emissions.

3. Encourage selection of vehicles of a smaller class size whenever possible to achieve increased fuel efficiency and lower emissions.

4. Encourage minimizing the number of vehicles and motorized equipment in the fleet overall to a.) reduce costs associated with maintaining a large fleet

without impacting operational efficiency, and b.) increase the usage, and thereby the cost effectiveness, of each remaining vehicle.

5. The requesting Town department will work with the Fleet Division to identify if an alternative fuel vehicle is available that meets the department's operational needs. Unless it is determined that no viable alternative fuel vehicle is available, a comparison shall take place between any proposed fossil fuel-powered vehicle and at least one alternative fuel vehicle option.

6. Once an alternative fuel vehicle option is identified, the Fleet Division and sustainability staff will estimate lifecycle costs and GHG emissions for both the fossil fuel-powered vehicle and alternative fuel vehicle. Appendix A includes formulae to aid in the following calculation steps:

    a. Calculate the GHG emissions of the fossil fuel-powered vehicle (status quo vehicle purchase, e.g. Chevrolet Tahoe for PD patrol) and the alternative fuel vehicle using formulae 1 and 2. If the alternative fuel vehicle is non-electric but reduces fossil fuel consumption, both calculations will be completed using the formulae for "fossil-fuel powered vehicle".
    b. Calculate the annual equivalent lifecycle cost for both vehicles using formula 3.If the annual equivalent lifecycle cost of the alternative fuel vehicle is less than that of the fossil fuel-powered vehicle, the alternative fuel vehicle will be selected.
    c. If the annual equivalent lifecycle cost of the alternative fuel vehicle exceeds that of the fossil fuel vehicle, calculate the cost effectiveness (cost per metric ton of CO2e reduced) of the alternative fuel vehicle selection (formula 4). KTG staff will use this cost effectiveness calculation to make recommendations regarding the relative cost effectiveness of the alternative fuel vehicle compared to other potential viable GHG reducing investments. As part of the annual budget process, more cost effective projects or equipment purchases will be prioritized.

Council staff reports, or capital budget descriptions, for new vehicle purchases must include written justification addressing the need for an internal combustion engine, if not an alternative fuel vehicle, or the need for a particular vehicle class, type, and/or size. The Town Manager or designee shall make every effort to ensure that the approved vehicle or motorized equipment is the lowest emission vehicle or equipment possible, while also taking into account the vehicle or motorized

equipment's lifecycle costs, environmental impacts, and ability to support the Town of Truckee's operations and services. This policy shall also comply with approved Purchasing Rules and Regulations, with any purchase above the current threshold subject to Town Council approval, unless it is included in both the Fleet Replacement Plan and the current adopted fiscal year Capital Improvement Project budget.

EFFECTIVE DATES

This Policy shall take effect on 6/22/21
Staff will provide an update to Town Council after the first year of implementation. Thereafter, the Policy will be reviewed at least annually by staff, and every 5 years by Council.

DEFINITIONS

Alternative Fuel: Any fuel other than gasoline, diesel, and other substantially petroleum-based fuels that is less polluting than gasoline or diesel fuel. Standard hybrid (non-plug-in) vehicles do not qualify as "alternative fuel", although they are preferred to non-hybrid internal combustion engine vehicles.

Alternative Fuel Vehicle: Any motor vehicle powered in whole or in part by non-petroleum-based fuels.

Battery Electric Vehicles: BEVs are powered solely by a rechargeable electric battery and contain no gas engine parts. BEVs have zero tailpipe emissions.

Clean Vehicles: Vehicles that emit low or zero emissions; typically powered by fuels other than gasoline or diesel.

Fleet: The Town of Truckee's inventory of motorized vehicles and equipment.

Fossil Fuel-Powered Vehicle: A vehicle powered by an engine that runs exclusively on gasoline or non-renewable diesel.

Hybrid Electric Vehicles: HEVs are powered by an internal combustion engine and an electric motor that uses energy stored in a battery. The vehicle is fueled with gasoline to operate the internal combustion engine, and the battery is charged through regenerative braking instead of through a plug-in system.

Plug-In Hybrid Electric Vehicle: PHEVs use batteries to power an electric motor and use another fuel, such as gasoline or diesel, to power an internal combustion engine or other propulsion source.

Incremental Cost: The difference in the acquisition cost between a fossil fuel-powered vehicle and a comparable alternative fuel vehicle.

Lifecycle Costs/Economics: The total costs associated with a vehicle or equipment accrued over the vehicle's or equipment's life, including but not limited to initial purchase costs, fueling costs, maintenance costs, and accompanying infrastructure.

Low Emission Vehicle: Any motorized vehicle that meets or exceeds the standards set forth by the United States Environmental Protection Agency for Low Emission Vehicles.

Motorized Equipment: Motorized machinery or equipment, including but not limited to power tools, garden and maintenance equipment.

Renewable Diesel: Fuel with an identical chemical composition to conventional diesel, made from renewable agricultural raw materials. Has the potential to reduce life-cycle greenhouse gas emissions 50%-90%, depending on the raw materials used to create the fuel.

RESOURCES FOR ALTERNATIVE FUEL AND LOW EMISSIONS VEHICLES

DriveEVFleets.org: Find discounted alternative fuel and plug-in hybrid vehicles available for government fleets.
https://driveevfleets.org/electric-vehicles/

Appendix A
Calculations Formulae

Annual GHG Emissions:

1. a. Fossil fuel-powered vehicle:

$$\frac{Estimated\ annual\ mileage}{Estimated\ miles\ per\ gallon} x \frac{19.6 lbs\ CO2e\ per\ gallon}{2205 lbs\ per\ metric\ ton} = MT\ CO2e$$

b. Battery electric vehicle:

$$\left(\frac{Estimated\ annual\ mileage}{\left(\frac{Battery\ range\ in\ miles}{Battery\ capacity\ kWh}\right)}\right) x \left(\frac{.38 lbs\ CO2e\ per\ kWh\ TDPUD}{2205 lbs\ per\ metric\ ton}\right) = MT\ CO2e$$

Annual Equivalent Lifecycle Cost:

2. Annual equivalent lifecycle cost
   a. Annual operating cost, fossil fuel:

$$\left(\frac{Estimated\ annual\ mileage}{Estimated\ miles\ per\ gallon}\right) x\ Avg\ fuel\ price\ in\ \$/gal\ +\ \$5,000\ annual\ maintenance\ cost\ =\ Annual\ operating\ cost$$

   b. Annual operating cost, Battery Electric:

$$\left(\frac{Estimated\ annual\ mileage}{\frac{Battery\ range\ miles}{Battery\ capacity\ kWh}}\right) x\ \$0.10\ per\ kWh\ +\ \$2,500\ annual\ maintenance\ cost\ =\ Annual\ operating\ cost$$

   c. Annual equivalent lifecycle cost (AEL cost), fossil fuel and electric:

$$\left(\frac{Purchase\ price + Infrastructure + Police\ package\ (if\ applicable)}{Useful\ life\ in\ years}\right) +\ Annual\ operating\ cost\ =\ Annual\ equivalent\ lifecycle\ cost$$

Cost Effectiveness of Vehicle:

Cost effectiveness of vehicle:

$$\frac{(AEL\ cost\ alternative\ fuel\ vehicle - AEL\ cost\ fossil\ fuel\ \ vehicle)}{(Output\ from\ Formula\ 1a\ in\ MT\ CO2e - Output\ from\ formula\ 1b\ in\ MT\ CO2e)}\ ==\ \$\ per\ MTCO2e\ reduced\ annually$$

Appendix B
Example Calculations

Annual GHG Emissions:

1. Fossil fuel-powered vehicle: *Chevrolet Tahoe, Police patrol vehicle*

$$\frac{33{,}500\ miles}{14\ mpg} x \frac{19.6 lbs\ CO2e\ per\ gallon}{2205 lbs\ per\ metric\ ton} = 21.3\ MTCO2e\ annual\ emissions$$

2. Battery electric vehicle: *Tesla Model Y*

$$\left(\frac{33{,}500\ miles}{\left(\frac{326\ miles}{75\ kWh}\right)}\right) x \left(\frac{.38 lbs\ CO2e\ per\ kWh\ TDPUD}{2205 lbs\ per\ metric\ ton}\right) = 1.3\ MTCO2e\ annual\ emissions$$

Annual Equivalent Lifecycle Cost:

3. Annual equivalent lifecycle cost
    d. Annual operating cost, fossil fuel:

$$\left(\frac{33{,}500\ miles}{14\ mpg}\right) x \frac{\$2.65}{gal} + \$5{,}000\ annual\ maintenance\ cost = \$11{,}341.07\ Annual\ operating\ cost$$

    e. Annual operating cost, Battery Electric:

$$\left(\frac{33{,}500\ miles}{\frac{326\ miles}{75\ kWh}}\right) x\ \$0.10\ per\ kWh + \$2{,}500\ annual\ maintenance\ cost = \$3{,}270.71\ Annual\ operating\ cost$$

    f. Annual equivalent lifecycle cost, fossil fuel:

$$\left(\frac{\$46{,}000 + \$0 + \$11{,}500}{4\ years}\right) + \$11{,}341.07 = \$25{,}716.07\ Annual\ equivalent\ lifecycle\ cost$$

    g. Annual equivalent lifecycle cost, battery electric:

$$\left(\frac{\$53{,}000 + \$2{,}000 + \$12{,}650}{6\ years}\right) + \$3{,}270.71 = \$14{,}545.71\ Annual\ equivalent\ lifecycle\ cost$$

Cost Effectiveness of Vehicle:

In the above case, cost-effectiveness need not be calculated because the annual equivalent lifecycle cost of the BEV is less than that of the fossil fuel vehicle. A separate example is used below to demonstrate the cost-effectiveness calculation.

Fossil fuel-powered vehicle:

- Annual emissions: 21.5 MTCO2e
- AEL cost: $20,000

Alternative fuel vehicle:

- Annual emissions: 1.5 MTCO2e
- AEL cost: $25,000

4. Cost effectiveness of alternative fuel vehicle:

$$\frac{\$25{,}000-\$20{,}000}{(21.5\ MTCO2e-1.5 MTCO2e)} = \$250\ per\ MTCO2e\ reduced\ annually$$