

A green road sign with white text that reads "Alternative Fuel". The sign is mounted on a wooden post and is set against a blue sky with scattered white clouds. The sign has a reflective border and is slightly tilted.

Alternative Fuel

**Fleet Services use of Alternative Fuel
Technologies**



Current Fleet

Alternative Fuel Type	Vehicle Count
Propane Vehicles (LPG/Autogas)	37
Bio-Diesel Vehicles	492
Hybrid Vehicles	19
Electric Vehicles	2
Total	550 Vehicles

1,478 total rolling stock

37% of the Fleet are alternative fuel

Propane- Autogas/LPG



- Started in FY 2018/2019- Retro-fit kits- PRINS Bi-fuel vapor sequential injection systems
 - 12 departments
 - Majority on 1500/2500/3500 pickups
 - Demo on 2 WSPD pursuit vehicles
 - Vehicle starts using gasoline, gets up to running temperature it automatically switches to propane
 - 90% usage rates for vehicles results in significant green house gas reduction
 - 60% Carbon Monoxide
 - 18-25% Carbon Dioxide
 - 20% Nitrogen Dioxide
 - 9,800 Gallons(7,369 GGE) in FY21-22
 - Offset of 65.5 metric tons of CO₂ = 14 gas powered vehicles driven for 1 year(162,555 miles of driving)

Biodiesel

- Domestic product made from vegetable oils, animal fats and/or recycled restaurant grease.
- Blended with petroleum diesel for transportation fuel
 - B-5- 5% biodiesel
 - B-20- 20% biodiesel
- Energy Positive- Carbon Dioxide released in biodiesel combustion is offset by the carbon gained while growing the feedstock. B5- reduces carbon dioxide by 5%
- FY 21-22 : 489,364 Gallons
 - Difference of B5 vs petro diesel
 - 4,968 metric tons of Co₂ =1,070 gas powered vehicles driven for 1 year(12,331,183 miles)



Hybrid Vehicles(HEV)

- Hybrid Electric Vehicles- ICE/Electric Motors
- Energy is stored in batteries
- Battery recharged through regenerative braking and the vehicle engine
- Battery typically on at low speeds, idling and stopped
- Mostly midsize vehicles- Camry
 - 15/20mpg improvement over gas
 - 52 MPG Combined
- Normal use vehicle savings
 - 144 gals fuel/vehicle
 - 1440 gals/year





Electric Vehicles

- Chevy Volt (pictured)
- Nissan Leaf
- 2 charging stations

Propane- Autogas/LPG

The Future



- CFAT Application is pending to expand to 30 WSPD pursuit vehicles
 - High utilization-15/18k miles year
 - Alternate fuel source in cases of scarcity/market volatility
 - NET EFFECTS:
 - Gas reduction of 738 gals/vehicle
 - 30 vehicles- 22,140 gallons/year
 - Fuel savings: Approx. 30% fuel savings for these vehicles. At current fuel prices that's estimated \$55k/year.
 - 197 Metric Tons of CO₂ = 43 gas vehicles driven for 1 year (488,394 miles)

Hybrid Vehicles The Future



- Aggressive to use this as “gap” measure to expand throughout the fleet depending on application to reduce fuel costs and consumption while we work to get the infrastructure for Electric vehicles
- (5) HEV WSPD Pursuit vehicles
 - Offer +7mpg(combined)- 340 gals fuel year per vehicle
 - Idle time battery use- additional 725 gal fuel saved
 - 1,065 gallons/vehicle
 - TOTAL 5,325 gals/year
 - Reduction 25,540lbs co2 per vehicle, total reduction 47.3 metric tons(10 vehicles 117,466 miles)
 - R.O.I.= 1 year

Bio-diesel The Future

- Continue to run bio-diesel in City vehicles
- More OEM's are certifying their engines for higher bio-diesel mixtures. As more do, we will work to determine if we can transition our fleet to use higher mixtures to get greater environmental benefits



Electric Vehicles The Future



- Energy Efficiency and Conservation Block Grant (EECBG 2022)
 - Approx. \$300K in funding
 - Funds should be available this fiscal year
 - Expand our EV Fleet, charging abilities/locations, technician training
- Refuse/Recycling- pending battery technology improvements