

Hybrid and Alternative Fuel Vehicles



Department of Executive Services
Finance and Business Operations Division
Procurement and Contract Services Section
Environmental Purchasing Program
www.kingcounty.gov/procurement/green
206-263-9294 TTY Relay: 711

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INTRODUCTION

King County has been a leader in investing in new technologies, from alternative fuel vehicles in the 1990s, to hybrids in the last decade,

USAGE HISTORY & EXPERIENCE

Metro Transit became an early adopter of hybrid buses with a major purchase in 2004, and continued to expand its fleet with the purchase of 93 hybrids in 2010. County agencies also purchase alternative-fuel vehicles and hybrid passenger cars. In 2010, the Fleet Administration Division purchased eight propane-powered vehicles and two specialty hybrid trucks that use electricity from the battery, rather than gas from the idling engine, to operate many functions. Although these products have an initial higher cost, a number of county-owned hybrids are documenting a 30 percent reduction in fuel use. In 2011, Fleet purchased all-electric passenger cars for the first time. The County has received federal grants to support green vehicle purchases.

Flexible Fuel Vehicles

In 2010, King County Fleet purchased 88 flexible-fuel vehicles (FFV), including 60 police cars and eight propane-powered vehicles. Most of these vehicles are equipped to use ethanol, gasoline, or "E85," the term for fuel blends of 85 percent ethanol and 15 percent gasoline. Using E85 reduces carbon dioxide (CO₂), hydrocarbon and benzene emissions when compared to vehicles running on gasoline.

Hybrid Vehicles

King County has purchased hybrid electric vehicles (HEVs) to replace older model vehicles as they are retired, since 2001. Hybrids are fuel-efficient and contribute less to greenhouse gas emissions. The county purchased 45 hybrid vehicles, including Ford, Toyota and Hondas brands for various fleets in 2010.





Plug-in Hybrid-Electric Vehicles

The Department of Transportation joined with three other local government agencies to convert 13 Toyota Prius hybrid sedans to plug-in hybrid electric vehicles (PHEVs).

The County also purchased 35 of the new all electric Nissan Leaf's in 2011. Grant funding will be used for the plug-in technology portion of the price.

Hybrid Trucks

In 2010, Fleet purchased two specialty hybrid trucks, one with an aerial lift and the other for mobile lubrication. This is in addition to the two already in service. These hybrids all have the unique capability to operate lift/tow/fill functions in electric only mode, so the engine does not have to be idling. "We're easily seeing a 30 percent fuel savings with the new hybrid trucks," said Fleet Equipment Manager Bob Toppen. "They have been performing at or above our expectations in all areas."



Hybrid Buses

In 2010, Metro Transit replaced 93 old 40-foot



buses with new hybrid diesel-electric vehicles that are 30 percent more efficient. These vehicles are heavily grant funded and allowed King County to add 84 more hybrids than were planned. The addition of these buses saves the fleet \$4.7 million annually in fuel costs and reduces greenhouse-gas emissions by 18,000 tons of carbon dioxide.

Bid and Contract Specifications

King County purchases most of its vehicles, including alternative and flexible fuel vehicles (FFV) through contracts maintained by the State of Washington. The State consults with political subdivisions to estimate how many vehicles will be purchased and plan their bids accordingly.

State of Washington contracts:

These contracts are bid every year. Here are links to 2011 contracts:

[Vehicles, 2011 Electric Vehicle \(#05410\)](#) – Nissan Leaf

[Vehicles, 2011 Hybrid Alt/Flexible Fuel \(#05510\)](#) - Honda Civic HEV, Toyota Prius HEV, Ford Escape HEV

King County

King County established two contracts for specialty vehicles, including one for propane powered vehicles and electric vehicles, bid in 2011:

OFF-ROAD, ELECTRIC UTILITY VEHICLES ([B22717B](#) & [B22718B](#))

PROPANE POWERED VEHICLES ([B22765B](#))

FOR MORE INFORMATION

- [King County Department of Transportation](#)
 - [Plug-ins](#)
 - [Report on Electric Vehicles \(9/2008\)](#)
 - [Hybrid Buses](#)
- [King County Metro Transit Hybrid Articulated Buses: Final Evaluation Results - NREL Report \(2006\)](#)
- [National Renewable Energy Lab - Hybrid Electric & Fuel Cell Vehicles](#)
- [King County Climate Change Commute Solutions](#)
- [How Hybrid Cars Work](#)
- [US Department of Energy - Alternative Fuels & Vehicles](#)

VENDOR INFORMATION

- [Toyota Prius](#)
- [Ford Escape SUV hybrid](#)
- [Honda Civic CNG](#)
- [Nissan Leaf](#)
- [A123 Systems](#) – lithium ion batteries for PHEV
- Hybrid bus models
 - [New Flyer](#)
 - [Orion](#)
 - [Gillig](#)
 - [Allison Transmissions](#)