

# Hybrid and Alternative Fuel Vehicles



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## INTRODUCTION

As King County agencies search for alternatives to gas and diesel fuels, they are experimenting with hybrid and other alternative technologies.

## USAGE HISTORY & EXPERIENCE

King County has been purchasing alternative fuel vehicles since the 1990's. The county also began purchasing gasoline-electric hybrid passenger vehicles in 2001, hybrid buses in 2004, and heavy-duty hybrid trucks in 2007. King County Executive Ron Sims drives a Toyota Highlander hybrid for county business.

### Flexible Fuel Vehicles

King County Fleet Administration Division purchased 149 flexible-fuel vehicles (FFV), including 110 Chevy Uplanders for vanpools, 5 Chevrolet Impalas, 4 Chevrolet Express and 30 Ford Crown Victoria for a total of \$2.7 million in the past year. 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 (CO<sub>2</sub>), hydrocarbon and benzene emissions when compared to vehicles running on gasoline. The Division acknowledges that regional supply infrastructure may limit the availability of ethanol and E85. These vehicles were purchased through the State of Washington vehicle contract.

### 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 Fleet Administration Division of the King County Department of Transportation purchased 17 Toyota Prius hybrid cars for \$380,500 and 4 Ford Escape hybrid SUVs for \$94,000 in the past year. The county now maintains over 200 hybrid vehicles and uses State of Washington contracts for new purchases.



## Plug-in Hybrid-Electric Vehicles

Fleet Administration Division joined with other local and regional governments to create a PHEV demonstration project, funded by a grant from the Idaho National Laboratory of the United States Department of Energy. King County purchased four battery conversion kits in 2008 to convert conventional hybrids already in its fleet into PHEVs, which brings the total to five in the fleet.



## Hybrid Trucks

The King County Department of Transportation's Fleet Administration Division purchased its second hybrid utility work truck. It is a medium-duty vehicle designed to transport damaged or broken-down vehicles to and from Fleet maintenance shops. All the tow functions can be operated in the electric-only mode, so the engine does not have to be idling. This technology has achieved a 25 percent reduction in fuel consumption compared to conventional diesel trucks.

## Hybrid Buses

King County Metro Transit received delivery of 22 articulated hybrid buses in 2008, with 30 more to be delivered in the spring of 2009. This brings the total number of hybrid buses in the Metro system to 236 – one of the largest articulated hybrid fleets in North America. These buses have demonstrated a reduction in greenhouse gas emissions, saved fuel, and shown increased reliability. They achieve better fuel economy than regular buses and deliver a smoother and quieter ride for passengers. According to Metro Transit, in the first 10 months of 2008, their use of hybrid buses reduced diesel fuel consumption by about 36 percent, saving more than 200,000 gallons of fuel.



At a cost of approximately \$719,000 per bus, the buses are funded through a combination of local, state and federal sources. The U.S. Department of Transportation Federal Transit Administration (FTA) will provide approximately 80 percent of these funds.

## Compressed Natural Gas Vehicles

During the 1990's, Fleet had approximately 275 vehicles operating on flexible-fueled CNG and Propane and the largest police vehicle fleet operating on CNG in the nation. To support these vehicles, they also built three CNG fueling facilities at county facilities. Fleet's use of CNG vehicles was suspended for reasons related to refueling infrastructure and performance. With the development of improved technologies, Fleet purchased two CNG Honda Civic vehicles in 2007 and plans to purchase a total of ten, using available incentives and grants to invest in three new fueling facilities.

## 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.

### State of Washington contracts:

[Vehicles, 2008 Hybrid, Alternative/Flexible Fuel](#) (Toyota Prius or Camry Hybrid Sedan) #04206

[Vehicles, 2007 Hybrid, Alternative/Flexible Fuel](#) (Honda Civic HEV, Chevrolet Malibu HEV, FFV Chevrolet Express Cargo Van, FFV Chevy Tahoe, Ford Escape HEV) #04907

### King County

In 2006 King County established two contracts for Toyota Prius and Ford Escape hybrids. Following are links to the contracts, which includes specification. *These contracts are no longer active.*

[Vehicle, Automobile, Gas-Electric Hybrid Sedan](#) IT15948-AAB

[Vehicle, SUV, Gas-Electric Hybrid](#) IT13052-AAB

## FOR MORE INFORMATION

- [King County Department of Transportation](#)
- [King County EP Bulletin #100: Green Fleets](#)
- [King County EP Bulletin #102: 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](#)
- [Puget Sound Green Fleets Tool](#) - emissions calculator
- [US Department of Energy - Alternative Fuels & Vehicles](#)
- [Responsible Purchasing Network](#)

## VENDOR INFORMATION

- [Toyota Prius](#)
- [Ford Escape SUV hybrid](#)
- [Honda Civic CNG](#)
- [A123 Systems](#) – lithium ion batteries for PHEV