

## Hybrid Electric Vehicle Fleet Cost Calculator Tool ([www.eere.energy.gov/cleancities/hev/cost\\_calc.html](http://www.eere.energy.gov/cleancities/hev/cost_calc.html))

### Clean Cities and Hybrid Electric Vehicles (HEVs)

The U.S. Department of Energy's Clean Cities portfolio includes HEVs because they reduce our nation's dependence on imported petroleum. In addition, HEVs can produce 30% to 50% fewer greenhouse gas emissions and emit fewer health-harming pollutants. Because they are powered by a combination of internal combustion engines and battery-operated electric motors, HEVs can achieve up to twice the fuel economy of conventional vehicles without the need for new infrastructure or fueling stations.

### What is the HEV Fleet Cost Calculator Tool?

The HEV Fleet Cost Calculator, an online tool, was developed for Clean Cities by the National Renewable Energy Laboratory, in conjunction with the Center for a New American Dream and the American Council for an Energy Efficient Economy. It enables fleets to estimate the long-term savings and benefits of operating HEVs. Armed with this information, public and private institutions can make better decisions about HEVs and how best to integrate them into their fleets.

Although the retail price of HEVs can exceed that of their conventional counterparts by up to several thousand dollars, HEVs can save money when the total cost of vehicle ownership is taken into account. Higher resale values, strong warranties, and lower fuel costs (as much as 50% lower depending on terrain and other driving conditions) can offset HEVs' higher initial purchase price. In addition, the HEV's reduced air pollution and greenhouse gas emissions attract environmentally conscious consumers, including those seeking to meet air quality goals. The HEV Cost Calculator Tool can help fleets determine the range of emissions benefits and monetary savings HEVs can offer over their lifetimes.

### Why focus on fleets?

For governments and businesses wanting to reduce their dependence on imported petroleum, improve air quality,



and set an example of environmental stewardship for their community, HEVs can be an attractive option. And because nearly 20% of all new car registrations are fleet vehicles, fleets not only have the potential to shape the future of the vehicle market, but also to make advanced technologies more widely available and affordable for both fleet purchasers and everyday consumers. HEVs can be used in a wide range of fleet applications and, because they get excellent city mileage, they are especially well suited for short-distance and "stop-and-go" driving.

### How does the Cost Calculator work?

The HEV Cost Calculator is actually composed of two parts—a single vehicle tool and a fleet tool—both of which allow users to compare the *lifetime costs* of HEV and conventional vehicle ownership. They also compare emissions of carbon dioxide, carbon monoxide, nitrogen oxides, particulate matter, and hydrocarbons.

The *Single Vehicle Tool* allows users to select one HEV and one conventional vehicle for comparison. Factoring



in purchase price, fuel costs, repair and maintenance costs, resale value, and applicable tax incentives, the tool calculates expected lifetime costs for both vehicles, as well as cost and emissions savings associated with purchasing the HEV.

The **Fleet Tool** allows users to compare two fleets of up to five vehicles—one composed of HEVs and the other made up of conventional vehicles. The tool calculates lifetime costs and emissions for each vehicle fleet.

### Who should use this tool?

This tool is geared toward public and private fleet purchasers wishing to assess the cost and environmental impacts of integrating HEV vehicles into their fleets. This information can be helpful for gaining management support for the purchase of HEVs.

### What do you need to know to use the tool?

The Single Vehicle Tool requires users to select one HEV and one conventional vehicle from drop-down menus. Users can then choose to customize the calculation by inputting their own data for the following fields:

- Purchase price
- Fuel cost
- Annual miles driven
- Annual repair and maintenance costs
- Resale value
- Years in use
- Tax incentives
- Discount rate.

If the user does not have this information, default values—which represent national averages—are used.

The Fleet Tool asks users to select up to five HEV models and up to five conventional vehicle models. The user must also indicate:

- Number of each model purchased per year

- Number of consecutive years that model will be purchased
- Years in use
- Annual miles driven.

Again, users can then choose to customize the calculation by inputting their own data. Default values are used if this information is not available.

### How do I interpret the HEV Cost Calculator Tool results?

The tool provides lifetime cost and emissions data for each vehicle, as well as lifetime, annual, and per-mile savings associated with purchasing HEVs. Users should be advised, however, that many factors influence the real-life cost and emissions levels of vehicles, and not all of them can be taken into account in this tool. Differences in location and vehicle use patterns, for example, affect the actual costs of vehicles. As actual miles per gallon achieved during real driving conditions differs from U.S. Environmental Protection Agency estimates (both for conventional and HEVs) individuals should be cautious about using the tool to determine the exact mileage a vehicle might achieve. Furthermore, because HEVs are relatively new to the market, resale and maintenance data can only reflect the best estimates available at this time. This tool is better suited to comparing relative costs than to predicting the actual costs of owning a particular vehicle.

### Additional Resources

U.S. Department of Energy Clean Cities  
Hybrid Electric Vehicle Page  
[www.eere.energy.gov/cleancities/hev/](http://www.eere.energy.gov/cleancities/hev/)

Center for a New American Dream  
Hybrid Electric Vehicle Page  
[www.newdream.org/hev/](http://www.newdream.org/hev/)

ACEEE Green Book Online  
[www.greencars.com](http://www.greencars.com)

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[www.eere.energy.gov](http://www.eere.energy.gov)

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