

Your Mileage May Vary

JOHN DAVIS: One of the most important shopping tools for comparing cars these days is fuel economy. MPG estimates are stated on the window label affixed to every new car and can be found online for both new and used cars at the Department of Energy's fuel economy website.

Those fuel economy estimates are obtained through testing developed and regulated by the Environmental Protection Agency at their lab in Ann Arbor, Michigan, although carmakers perform the actual tests on each model they make.

All of the tests are run in a controlled environment, on a dynamometer, with a human driver exercising the vehicle through a set pattern of acceleration, cruising deceleration and braking.

Fuel economy is determined by the amount of energy used by the vehicle over the course of the exercise, through measuring exhaust emissions or energy drained from the batteries, as the case may be.

These test procedures have evolved over time, as driving behaviors have changed and new types of vehicle drivetrains have been developed.

MARIA PERALTA: "We want to make sure that we're evaluating in a fair manner and we work with a number of different manufacturers, especially when there's a new technology, on how are we going to evaluate this? How are we going to use some of the tests that we have today, in a different way, to really evaluate that and make sure we're all together."

JOHN DAVIS: There are five test cycles in total -- simulating city, highway, mixed driving, hot weather and cold weather, and the test results are weighted and averaged to obtain the figures that wind up on the window label.

The same drive cycles are used for all cars, regardless of fuel type, but for plug-in hybrids and other advanced technology vehicles, the tests are repeated for each drive mode the vehicle is capable of.

For instance, pure electric cars provide a combined fuel economy rating based on electricity used, stated in mpg-equivalents, along with how many kilowatt hours of electricity are needed to travel 100 miles.

Likewise, plug-in electric hybrid vehicles have their combined rating in mpg-e as well, and in straight miles-per-gallon when running on gasoline alone.

JEFF ALSON: "The labels we give consumers, we want them to be able to compare across different technologies...and while some of these alternative-fuel vehicles do make it a challenge, we've designed our labels to be as fair and as neutral as possible, to allow people to make those comparisons across technologies."

JOHN DAVIS: But how do these laboratory numbers translate to the real world? Surprisingly well, actually: but the old caveat of "your mileage will vary" does come into play here, with weather conditions, terrain, temperature, and especially driving behavior all having an effect on mileage.

Common-sense tips like keeping the tires inflated and excess weight out of the trunk apply to all cars, but for hybrid and electric vehicles, there are other variables to consider:

JEFF ALSON: "So for example when you have regenerative braking in an electric vehicle, the more moderately you brake, the longer it takes for you to brake, you will recapture a higher percentage of the braking energy than if you jam on the brakes."

JOHN DAVIS: Many EVs and hybrids have an "economy mode" that may limit other aspects of the vehicle's performance, such as acceleration rate, to save fuel.

Keeping the battery charged at every opportunity will help maximize your electric-only driving range.

Using accessories wisely...Heating, air conditioning, and entertainment systems affect fuel economy on all vehicles, but can have a greater effect on hybrids and electrics.

Pre-heating or pre-cooling the cabin of a plug-in hybrid or EV while the vehicle is still plugged in, for example, can extend its electric range.

And last but not least, consult your owner's manual for tips specific to your vehicle.