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The Miles per Gallon Gap - Consumer Reports Magazine

12-16 minutes

Some window stickers promise too much

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When comparing the fuel economy of cars, consumers often rely on window stickers that display mpg estimates from the Environmental Protection Agency. But in our testing, we've found that the figures for certain vehicles can be far higher than many drivers will actually get. And the largest differences involve some of the most fuel-efficient cars, particularly hybrids. So the people who care most about gas mileage could feel the most shortchanged.

When we compared the EPA estimates of 315 vehicles with the results of our real-world fuel-economy tests, we also found notable gaps in cars that use small turbocharged four-cylinder engines,

intended to provide the power of larger engines and the gas mileage of smaller ones.

Sticker shock

In our testing, hybrids generally get some of the best overall gas mileage in their classes, led by models such as the [Toyota Prius](#) (44 mpg) and hybrid versions of the [Honda Civic](#) (40), [Ford Fusion](#) (39), and [Toyota Camry](#) (38). But an owner expecting to get the same mpg shown on the window sticker and in advertising for some of the cars might be disappointed.

Of the hybrids we've recently tested, 55 percent fell short of their EPA combined city/highway estimates by 10 percent or more, with hybrids built by Ford showing the largest discrepancies.

At 34 mpg overall, the [Lincoln MKZ Hybrid](#) is invitingly thrifty. But it gets 11 mpg less, or 24 percent lower, than its 45-mpg EPA figure. The [C-Max](#) and Fusion hybrids fall 10 and 8 mpg, respectively, below their advertised 47 mpg. Similarly, the [Volkswagen Jetta Hybrid](#) also falls 8 mpg short. For consumers who buy the MKZ, for example, that can amount to paying \$1,510 more in gas over five years than they might have expected (assuming gas costs \$3.50 per gallon and the car is driven 12,000 miles annually).

“We believe the current testing regulations account for some variability of driving styles, patterns, and environmental conditions,” Ford spokesman Todd Nissen told us in an e-mail. “The latest-generation hybrids may be more sensitive to driving consistently outside of these factors.”

Similarly, we found that 28 percent of cars with small turbo engines also fell short of their EPA estimates by 10 percent or more. Those

include models such as the [Buick Encore](#), [Ford Fusion](#), and [Nissan Juke](#).

What's going on?

EPA estimates don't always reflect real-world driving performance largely because they are based on outdated tests designed to measure vehicles with conventional powertrains in particular driving situations rather than today's increasingly sophisticated gas/electric systems. In fact, according to Mike Duoba, a research engineer at Argonne National Laboratory who works on keeping the tests up to date, the EPA tests "were originally designed to test emissions, not fuel economy. They wanted to test a variety of speeds and accelerations."

The EPA test for city fuel economy is conducted at very low speeds, with gentle acceleration and minimal idling. The highway test includes quite a bit of stop-and-go driving, with a maximum speed of 60 mph and an average speed of 48.

Hybrids are most efficient in those conditions. With a light foot on the throttle, the latest models can often cruise in electric mode up to about 60 mph, so they can perform portions of the EPA tests without consuming a drop of gas. By contrast, Consumer Reports' highway mpg tests are performed by driving at a steady 65 mph, reflecting a driver cruising on an interstate highway. In that situation, a hybrid is constantly running its gas engine, so it doesn't get the full benefit of using its electric power. Thus, it gets fewer mpg than in the EPA test.

Similarly, small turbocharged engines rarely need to spool up their turbos to develop sufficient power for the EPA tests. Our test calls

for larger throttle openings so that cars can accelerate from, say, 20 to 40 mph within 500 feet, which results in more turbo use and more air and fuel being pumped into the engine.

Closing the gap

Overall, fuel-efficiency shortfalls have narrowed considerably over the years. When Consumer Reports conducted a similar study in 2005 that compared our gas-mileage results with the EPA estimates, we found that most cars got significantly fewer mpg than their window stickers promised. Conventional gas-powered vehicles missed their EPA estimates by an average of 9 percent, and hybrids by 18 percent.

For 2008 models, the EPA updated its testing formula, which brought most vehicles closer in line with our measurements. Now we find that, on average, conventional cars missed their EPA estimates by only about 2 percent in our tests, and hybrids by about 10 percent.

Enesta Jones, an EPA spokeswoman, says that the 2008 revision reduced the mpg estimates for hybrid vehicles by up to 30 percent for city driving and 25 percent for highway use. “This is a significant reduction that clearly better reflects real-world operation.”

In our tests, most cars exceed their EPA highway estimates but fall well short in city mpg. That is especially true for hybrids, which have fallen an average of 28 percent short of EPA city estimates.

Of course, automakers try to put their best foot forward in the EPA tests, taking advantage of any variables that might improve their results. Duoba notes two ways to get the best result: using the

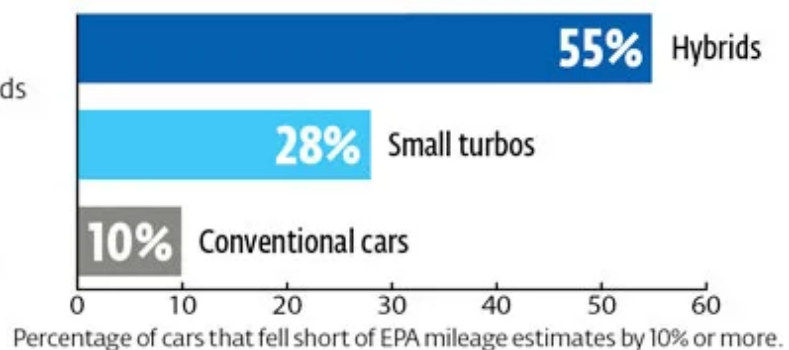
best car, optimized for the test, and driving efficiently. “How much the driver can improve the mpg can vary a lot from car to car,” he says. “Some hybrids are very sensitive to how they are driven.”

Those factors can further increase the difference in a vehicle’s performance between the EPA estimates and real-world driving. “Many times, your average car off the lot will not perform as well as a certification test car,” Duoba adds.

We have discussed our findings with the EPA, and the agency says it is reviewing its tests and is considering updating them. In the meantime, consumers should be aware that they might not get the efficiency promised on the window sticker. You can see our fuel-economy test results in our [road tests](#). Also, check out our lists of the [best and worst vehicles for fuel economy](#).

Missing the mark

In our tests, 55 percent of hybrids and 28 percent of cars with small turbocharged engines fall short of EPA estimates by 10 percent or more. That compares with only 10 percent of conventional vehicles



The government’s tests vs. ours



Lab measurements. The EPA estimates you see on a car’s window sticker are the result of fuel-economy tests run in a lab on

a rolling treadmill called a dynamometer.

They are performed by the automakers, using test protocols formulated by the EPA. The agency then spot-checks about 15 percent of the models in its own lab.

The automakers pick the cars they test. Protocols require test results for every major variation of engine, transmission, and drivetrain, but minor variations such as different axle ratios on pickups and a special performance version of a model are often lumped into the results of higher-selling versions.

On the dynamometer, cars are driven on precise simulated routes. But maximum speed and acceleration in the tests are slow by the standards of modern traffic. To help bring the results for most cars in line with real-world driving, three new “routes” were added in 2008, reflecting higher speeds, more use of air conditioning, and driving in colder temperatures.

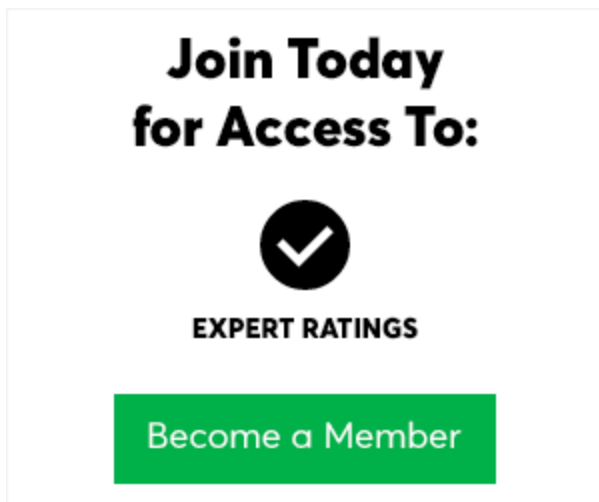
But automakers are allowed to comply with the new ratings for many models using mathematical simulations of the new tests. And because those simulations were developed before many modern hybrids were on the road, they might be inaccurate for today’s drivetrains.

Road tests. Consumer Reports’ fuel-economy tests are conducted on our track and on public roads. Testers splice a precise fuel meter into each test car’s fuel line to measure how much gas is consumed. Each car is then run through highway and city drive loops, with each performed multiple times by two drivers.

The city test is conducted on a loop that’s set up on our track to reflect driving in a suburban area. It’s marked so that a driver must maintain specific speeds in certain sections and stop the car at

specific points for set idling times. Highway mpg is measured by driving on a particular stretch of sparsely used freeway near our test track at a steady pace of 65 mph. Each driver runs the test in both directions to compensate for wind and the slight difference in grade.

Our raw results are corrected for temperature using a formula established by the Society of Automotive Engineers. But we don't test if it's too hot, too cold, too wet, or too windy. Our overall mpg is a weighted composite of city and highway mpg measurements.



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Fuel Economy News



[Chevrolet and Buick Sedans and GM SUVs Recalled for Fire Risk, Power Loss...](#)

GM is recalling 194,105 cars and SUVs to fix a faulty part that can cause the vehicles to lose power while moving, or even catch fire. The majority of recalled vehicles are 2018 and 2019 Chevrolet Cruze, 2018 Chevrolet Malibu, and 2018 and 2019 Buick Lacrosse vehicles, but some SUVs are also being recalled in very small numbers. According to documents from the National Highway Traffic Safety Administration, an oil leak may cause the veh...



[Ford Explorer Recalled Because Corrosion Can Cause Rear Suspension to Crack...](#)

Ford is recalling about 350,000 Ford Explorer SUVs from the 2013 to 2017 model years in states where corrosion is common. Some customers reported fractures in the rear suspension after a prior recall was performed, also to address a potential fracture in the rear suspension that could occur due to heavy use or hitting a curb. Explorers most likely to experience the original problem are those that frequently travel ov...



[How to Choose the Right Tires for Your Car, SUV, or Truck](#)

Tires do a lot more than just stand between the road and your 2-ton car, SUV, or truck. These four rings of grooved rubber are integral to a car's performance, affecting braking, handling, ride, and even noise and fuel economy. So your tire choice really matters. But with new brands and a growing selection of models for SUVs entering the market, deciding which tire is best for you

can be a challenge. “Shoppers can be faced with an overw...



[Electric Cars 101: The Answers to All Your EV Questions](#)

Electric vehicles (EVs) are becoming increasingly common, with many manufacturers currently offering models that plug in. Dozens more are expected to hit the market over the next few years. Although sales of pure electric vehicles and plug-in hybrids account for less than 2 percent of U.S. light vehicle sales currently, there has been increasing interest from car shoppers. In 2010, just 1,919 EVs were sold in the U.S. In 2018, sale...





[Hot New Electric Cars Are Coming Soon](#)

The coronavirus pandemic has slowed auto production this year, but manufacturers' plans to introduce electric vehicles (EVs) continue unabated. A record number of almost 100 pure electric EV models is set to debut by the end of 2024 if all goes according to plan. On the menu are cars, and an increasing number of SUVs and pickups, along with a broader array of plug-in hybrid models, which can run on mostly electric power for stretch befo...

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