

What impacts actual fuel economy?

Driving Habits

Accelerating. Hard, fast acceleration guzzles gas and wears out your engine and tires quicker. Avoid unnecessary slowdowns or holdups by taking your foot off the accelerator well in advance of the intersection and coast toward it.

City traffic. A European test showed that "jackrabbit" starts from traffic lights and hard braking reduced travel time by only 4% while fuel consumption increased by 37%. The more fuel-efficient option is to accelerate smoothly and maintain a steady speed.

Highway driving. It takes energy to get a vehicle up to cruising speed therefore accelerate smoothly when passing other cars or when merging with faster traffic and avoid hard braking. With most vehicles, increasing cruising speed from 100 km/h to 120 km/h will increase fuel consumption by about 20 %.

Pedal use. Some motorists drive with their left foot resting on the brake pedal, a habit that increases fuel consumption and wears out the brakes prematurely.

Idling. More than 60 seconds of idling can use more fuel than turning off the engine and restarting it again. Excessive idling can contaminate engine oil and damage engine components.

Air Conditioning. Minimize your use of air conditioning to improve your fuel efficiency in summer.

Aerodynamics. The impact of aerodynamic drag is relatively small at low speeds. Ski racks and roof racks increase aerodynamic drag.

Weight. Extra weight just means wasted fuel and unnecessary emissions.

Vehicle Maintenance

Engine oil. Oil removes dirt, metal shavings and other impurities from the engine and captures them in the oil filter, while lubricating the moving parts of the engine, which promotes better fuel efficiency. You can pay a severe penalty for neglecting engine oil, possibly even needing to replace the engine itself.

Cooling systems. The cooling system keeps the engine at its optimal operating temperature. Outside this range, fuel consumption increases. Coolant degrades over time, and it's important to change it as specified by the manufacturer.

Ignition systems. If one or more of the plugs or wires are worn or malfunctioning, the engine will misfire, and some fuel will remain unburned, which wastes fuel, produces higher levels of emissions and generally performs poorly.

Air filter. A dirty air filter reduces performance and increases fuel consumption. Replace the air filter according to the recommendations of your owner's manual

Tires and wheel alignment. Rolling resistance results in premature tread wear when your tires are under-inflated or mis-aligned, increasing fuel consumption. Measure tire pressure (when tires are cold) at least once a month. Also check your tires for uneven wear. Rotating your tires also helps prolong their life and improve fuel economy.

Brakes. Dragging brakes (when the brake pad or shoe fails to release from the disc or drum) can significantly increase fuel consumption because the vehicle must work harder to overcome the resistance. It is important to have your brakes inspected at the interval specified in the owner's manual supplement.

Environmental Conditions

Cold weather. An engine can burn up to 50 % more fuel for a short trip in the winter than for the same trip in the summer. In temperatures below 0°C, block heaters can improve overall fuel economy by 10 % or more.

Snow and Vehicle Weight. Snow building up in wheel wells, under bumpers and on top of the vehicle adds weight and rubs against tires, further increasing rolling resistance and fuel consumption.

Tire Inflation. Cold temperatures decrease the air pressure in tires adding to the rolling resistance caused by snow and slush.

Tire Type. Tires marked with "M + S" (Mud and Snow) or "all season" tires that do not have the peaked mountain with snowflake symbol, may provide safe performance in most weather conditions, but are not designed for snow and ice-covered roads. Snow tires will improve traction, reduce tire slippage, improve safety and save fuel." All-season tires do not provide the same grip at temperatures below -15°C, The more your vehicle slips and slides and spins its wheels, the more fuel you waste.

Hilly terrain. It's more fuel efficient to let your speed drop going uphill and build it up again going down the other side.

Information for this document was obtained from the following websites:

Natural Resources Canada <http://oee.nrcan.gc.ca/>
Transport Canada <http://www.tc.gc.ca/>

How is fuel consumption calculated?

Federal Test Procedure (FTP)

The Federal Test Procedure (FTP) is a standardized laboratory test method used in Canada and the United States for new vehicle testing. Selected pre-production prototypes of new vehicle models are driven by a trained driver in a laboratory on a dynamometer. The same test parameters and driving cycles are used to ensure that each vehicle is tested under identical conditions, and that the results are consistent and repeatable.

The FTP is composed of two tests: the city test and the highway test.

The city test simulates a 12-kilometre, stop-and-go trip with an average speed of 32 kph and a top speed of 91 kph. The test runs for 23 minutes and includes 18 stops. Approximately 4 minutes of test time are spent idling to represent waiting at traffic lights. This test begins from a cold engine start which is similar to starting a vehicle after it has been parked overnight. When the test is completed, the test cycle starts again with a hot engine start and the first 8 minutes of the test are repeated. This simulates restarting a vehicle after it has been warmed up, driven, and then stopped for a short time.

The highway test simulates a 16-kilometre trip with an average speed of 77 kph and a top speed of 97 kph. The test runs for 13 minutes and does not include any stops, however, the speed varies to simulate different kinds of rural and highway roads. This test begins from a hot engine start.

The FTP is used to certify that vehicles meet Canadian emission standards. In addition, fuel economy estimates may be calculated from the emissions generated during the city and highway tests.

The FTP uses a standardized test fuel with a known carbon content. During a test, carbon compounds expelled in the exhaust are measured and a fuel economy test value is calculated using a specific carbon balance equation.

City Test

- Ambient temperature = 20°-30°C (68°-86°F)
- Time = 1369 seconds (22.82 minutes)
- Length = 12 km (7.45 miles)
- Top Speed = 91.3 kph (56.7 mph)
- Average Speed = 32 kph (19.59 mph)
- Number of Stops = 18
- Total Time at 0 Speed = 220 seconds (3.66 minutes) or 16% of total time

Highway Test

- Ambient temperature = 20°-30°C (68°-86°F)
- Time = 765 seconds (12.75 minutes)
- Length = 16 km (10.26 miles)
- Top Speed = 96.5 kph (59.9 mph)
- Average Speed = 77 kph (48.3 mph)

Fuel efficiency values are the result of controlled tests under laboratory conditions following strict government test protocols. All vehicles are tested under the same conditions. As such, fuel efficiency values are most useful when used as a comparison tool for comparison shopping purposes. Your ability to achieve label values when driving your vehicle will depend on a wide variety of factors, not all of which are within the driver's control and are not duplicated in the laboratory tests.

Why is the fuel consumption of any given vehicle in Canada lower than that of the same vehicle in the U.S.?

The fuel consumption ratings in Canada are different from those in the U.S. for several reasons.

- First, in some cases, different configurations of the same vehicle models, with different fuel consumption ratings, are sold in the two countries.
- Second, the Canadian fuel consumption adjustment factors, used to reflect average, real-world driving conditions, are not exactly the same as those used in the U.S.
- Third, beginning with 2008 models, the EPA (U.S. Environmental Protection Agency) has revised testing procedures. Three new procedures were added to the existing City and Highway scenarios. High speed/rapid acceleration driving, use of air conditioning, and cold temperature operation were added in an effort to replicate real world conditions.
- Finally, and perhaps most importantly, the U.S. fuel economy figures are reported in U.S. miles per gallon, whereas fuel economy in Canada is reported in Imperial miles per gallon. The imperial gallon is 20% more voluminous than the U.S. gallon.

1 U.S. gallon 1.2 = 1 imperial gallon
 Imperial gallon = 4.456 litres
 U.S. Gallon = 3.785 litres