

Vehicle EE Tips, Ideas, and Solutions

<http://oee.nrcan.gc.ca/transportation/personal/driving/autosmart-maintenance.cfm?attr=8>

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Plan Ahead

If you have errands to run, think ahead and plan your route to avoid backtracking or sitting in traffic jams at rush hour. Sometimes a somewhat longer route that lets you maintain a steady speed can be more fuel efficient than a shorter route that has a lot of traffic lights. Avoid routes that have steep hills that require your vehicle's engine to work harder.

- Use public transit whenever possible. This will be cheaper than driving everywhere, and it can be much less stressful. Leaving your car at home will have an immediate and direct impact on greenhouse gas emissions.
- Car and van pools are another excellent way to save money and reduce emissions. An average van pool of seven passengers emits about seven times less pollution per kilometer than drive-alone commuting. Many cities that have van pool programs and benefits.
- Give yourself enough time to get where you're going – racing against the clock causes you to brake hard, accelerate quickly and drive too fast, all of which burn fuel needlessly. Listen to the radio for traffic reports on accidents, road construction and other trouble spots to avoid. You'll save time as well as gas.
- Short trips can be especially hard on your pocketbook. Trips of less than five kilometers generally do not allow the engine to reach its peak operating temperature, especially in cold weather. That means fuel consumption and exhaust emissions will be significantly higher than when covering the same distance with a warm engine.

Planning is also important for long-distance trips. Use the latest road maps available to plan your route, keeping in mind that the most direct route is not always the best. For example, you might want to avoid driving through suburban areas (use bypass roads around major cities), since stoplights, intersections and pedestrian traffic all mean multiple stops and starts and extra fuel consumption. Using a four-lane highway is generally more fuel efficient than using a two-lane highway.

Defensive Driving

You can save fuel, reduce exhaust emissions, and protect yourself and your family on the road by practicing defensive driving techniques – in other words, by anticipating what is happening ahead of you on the road and reacting accordingly.

- Accelerating is by far the "thirstiest" work you can ask your vehicle to do. Hard, fast acceleration guzzles gas and wears out your engine and tires quicker. You can minimize the need to accelerate by avoiding unnecessary slowdowns or holdups in the first place. That means trying to anticipate traffic disruptions so that you can maintain a steady speed. Racing to a red light or stop sign and then braking at the last minute is a futile and costly habit that wastes fuel and wears out the brakes. Instead, take your foot off the accelerator well in advance of the intersection and coast toward it. The red light may turn green before you get there, so you won't even have to stop.
- Aggressive driving in city traffic saves very little time but greatly increases fuel consumption and emissions. It is also hard on the engine and brakes. A European test showed that aggressive driving – "jackrabbit" starts from traffic lights and hard braking – reduced travel time by only 4 % (the equivalent of 2½ minutes out of a 60-minute trip). However, fuel consumption increased by 39 %, and some toxic emissions were more than five times higher. The safer, more fuel-efficient option is to accelerate smoothly and maintain a steady speed.
- The same holds true for highway driving. It takes energy to get a vehicle up to cruising speed, and that energy is lost every time the vehicle is forced to slow down unnecessarily – for example, if you approach other vehicles too quickly. Accelerate smoothly when passing other cars or when merging with faster traffic. Also, avoid hard braking by leaving plenty of room between your vehicle and the one in front of you.
- Many drivers save fuel by using cruise control to maintain a constant speed on the highway. In certain circumstances, however, skilled driving can be more fuel efficient than using cruise control. In hilly terrain, for example, it's more fuel efficient to let your speed drop going uphill and build it up again going down the other side. In practice, however, traffic conditions rarely permit such a technique. With most vehicles, increasing your cruising speed from 60 mi/h to 75 mi/h will increase fuel consumption by about 20 %. On the other hand, reducing your speed from 60 mi/h to 55 mi/h improves fuel economy by about 10 %.
- Some motorists drive with their left foot resting on the brake pedal, a habit that increases fuel consumption and wears out the brakes prematurely. It can also be dangerous because it causes heat buildup in the brakes, which reduces braking power. In addition, your brake lights stay on all the time, which means that motorists traveling behind you have no warning when you actually apply the brakes to slow down or stop.

Teaching Student Drivers

If you have a novice driver in the family and you want to get him or her started on the right foot in terms of fuel efficiency, look for Driver Education school.

Idling

Believe it or not, unnecessary idling is one of the biggest problems among motorists. Idling wastes fuel, it's hard on your vehicle, and it's damaging our environment.

The good news is that we can all be part of the solution. In many cases, a simple turn of the key is all it takes to prevent unnecessary greenhouse gas emissions and other pollutants from escaping your vehicle. Don't be fooled by the old notion that idling is good for your vehicle. In fact, the opposite is true: excessive idling can contaminate engine oil and damage engine components.

So what can you do to curb the idling habit? For starters, if you are going to be stopped for longer than 10 seconds, except in traffic, turn off the engine. More than 10 seconds of idling can use more fuel than turning off the engine and restarting it again.

Find out how you can work with others in your community and schools to raise awareness and mobilize action to stop unnecessary vehicle idling. Whether acting alone or as part of a community-wide effort, you can make a difference!

Preparing for Winter Driving

Fuel consumption soars in cold weather – sometimes by as much as 50 %. That's hard on your pocketbook and on the environment.

Fuel consumption and pollution output are much higher in the first minute or two after a cold start than when the engine has achieved normal operating temperatures. One reason is that when your engine starts up, it has to pump oil throughout the block to lubricate moving parts. In a cold engine, the oil is thick and resists flow, which means that the engine has to work harder to overcome internal friction. Thick oil also takes longer to circulate, which allows metal-to-metal contact and increases engine wear.

An engine can burn up to 50 % more fuel for a short trip in the winter than for the same trip in the summer. Fuel combustion is also much less efficient in a cold engine, and the air-fuel mixture is richer (i.e., there is more fuel and less air). The combined effect is a sharp increase in pollutants. To make matters worse, the catalytic converter doesn't work when it is cold. Until the converter warms up, all the engine's emissions pass through the exhaust untreated.

One answer to this cold-engine dilemma is to use a block heater to warm the coolant, which in turn warms the engine block and lubricants. The engine will start more easily and reach its peak operating temperature faster. In temperatures below 0°C, block heaters can improve overall fuel economy by 10 % or more. Use an automatic timer to switch on the block heater two hours before you plan to drive the vehicle. This is all the time needed to warm the engine.

Warm Up by Driving

Once a vehicle is running, the best way to warm it up is to drive it. With computer-controlled, fuel-injected engines, you need no more than 30 seconds of idling on winter days before driving away. Anything more simply wastes fuel and increases emissions.

Besides, more than the engine needs to be warmed up. So do the wheel bearings, steering, suspension, transmission and tires, and that can happen only when the vehicle is moving. For a typical vehicle, it takes at least five kilometers of driving to warm up these components.

Although it is important to drive away as soon as possible after a cold start (but not before the windows are defrosted!), you should avoid high speeds and rapid acceleration for the first five kilometers or so. The goal is to bring the whole vehicle up to peak operating temperature as quickly as possible while maximizing fuel economy.

To prevent your car windows from fogging up, open a window as soon as you enter the vehicle. Clear snow from the air intake on top of the hood. Otherwise, the defroster will draw moisture into the system and fog the windshield.

Snow and Vehicle Weight

You already know that extra weight increases fuel consumption. Snow building up in wheel wells and under bumpers adds weight and rubs against tires, further increasing rolling resistance. And snow piled on top of the vehicle increases aerodynamic drag and vehicle weight. For safety as well as fuel economy, clear snow off your vehicle before you drive away.

Tire Inflation

Your tires need special attention during the winter. Cold temperatures decrease the air pressure in tires. This just adds to the rolling resistance caused by snow and slush. Each tire that is under-inflated by 2 psi (14 kPa) causes a 1 % increase in fuel consumption. So check tire pressures regularly, especially after a sharp drop in temperature.

Correct tire pressure is vital for fuel economy, safe vehicle handling and long tire life. Before adding air to your tires, let some air out of each valve and blow some air out of the hose. This prevents moisture from gathering in the tire valve, where it can freeze and cause the valve to leak. If possible, use your own tire pressure gauge, since the gauges built into air pumps at service stations are often inaccurate or missing.

Snow Tires vs. All-Season Radials

For most drivers, all-season radial tires are sufficient for winter driving. City and suburban dwellers do not need snow tires, which have a heavy tread that increases rolling resistance and fuel consumption. On the other hand, if you live in an area where roads are regularly snow-covered, snow tires will improve traction, reduce tire slippage, improve safety and save fuel. For the best results, use snow tires on all four wheels. All-season tires do not provide the same grip at temperatures below -15°C.

Plan Your Trips

Trip planning is particularly important in the winter: the fewer cold starts you make, the better. Instead of several quick trips, combine all your errands into one run and select your route carefully. If you leave the vehicle briefly, the engine should stay relatively warm. As a result, fuel consumption and pollution levels will be minimized when you restart it (but don't idle!). Avoid up-hill parking so that it will be easier to pull away when it's time to leave.

Take It Easy

One last tip for winter driving – take it easy. The more your vehicle slips and slides and spins its wheels, the more fuel you waste and the more you increase the chance of an accident. In winter conditions you also need more room to stop, so increase the distance between you and the vehicle in front of you.

More Energy Efficient Thinking

- To get full benefit from a manual transmission, shift up to the next gear as soon as possible and always keep the vehicle in the highest gear possible without "lugging." Most modern cars can run in top gear even at speeds below 40 mi/h.
- Minimize your use of air conditioning to improve your fuel efficiency in summer. To stay cool at highway speeds, use your car's flow-through ventilation. When driving in the city, open a window.
- The impact of aerodynamic drag is relatively small at low speeds, so your car will hardly feel the increased drag caused by an open window. If you still need air conditioning, keep the windows closed and use the air conditioner only as needed.
- Your vehicle could stand to lose a few pounds. Those heavy bags of sand and salt you may carry around in your trunk during winter serve no useful purpose in spring, summer and fall. The extra weight just means wasted fuel and unnecessary emissions. Treat your trunk to a spring cleaning!
- Ski racks, like roof racks, increase a vehicle's aerodynamic drag. It's a good idea to remove them when they are not in use.