



Sustainable Car Use



CLACKMANNANSHIRE
COUNCIL

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Introduction

Clackmannanshire is a great place to live, work and visit. But recent regeneration has led to increasing levels of traffic. And while cars offer convenience and mobility, these benefits come at a high price to our environment and to quality of life.

The Council is working with its partners to invest in public transport, walking and cycling facilities so that we can all choose healthy, safe and convenient alternatives to the car for trips wherever possible, helping to reduce the environmental and social burden of traffic growth.

However, for some journeys there will be no convenient or viable alternative to using the car. This booklet provides useful tips on how you can reduce the financial and environmental costs of running your car when leaving it at home isn't possible.



Planning the Journey

Think ahead and plan your journey. Use a road atlas or an on-line mapping service such as www.theaa.com or www.rac.co.uk to get the most direct route - this should also stop you getting lost. Try to avoid travelling during the rush hours or in busy towns and cities where you will be sitting in traffic. It is often more fuel efficient to take a slightly longer route that lets you maintain a steady speed than a shorter route with lots of traffic lights.

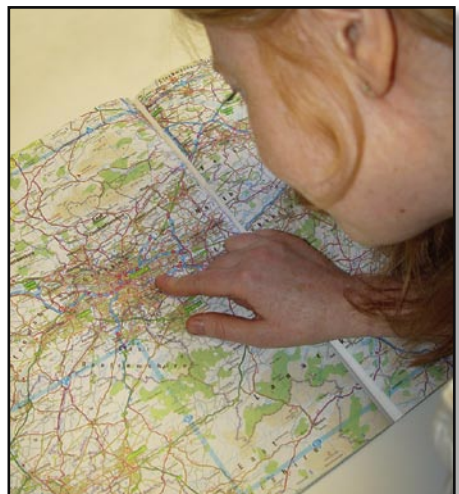
Allow enough time to undertake the journey. If you are rushing you are likely to drive faster, accelerate quickly and brake harder all of which increase fuel use needlessly and rushing could lead to an accident. Listen to the radio for traffic updates during your journey or check on-line at www.trafficscotland.org before you go to avoid roadworks and other delays.

Try to use public transport for all or part of the journey, or walk or cycle for short journeys. This can often be cheaper and less stressful than driving. Information on bus and rail travel is available from Traveline at www.travelinescotland.com or by phoning 0870 608 2 608.

Lots of short trips can cost more in both time and fuel. Short trips can be hard on your car and the environment as a cold engine uses almost twice as

much fuel and catalytic converters can take up to 5 miles before they become effective. One of the most effective ways to reduce your impact on the environment is to link a number of short journeys together. For example after driving to the supermarket, you might stop at the bank and then travel on to the library, combining three trips into one.

Car sharing is a good way to use your car in a more sustainable manner. This involves a group of people travelling to and from similar areas getting together to share one car. It suits commuters where everyone starts and finishes at the same time. Car sharing helps reduce emissions, congestion and parking problems and saves you money. Find out more at www.TripshareClacks.com or call 08700 11 11 99.



Driving More Efficiently

How you drive can have a considerable influence on the amount of fuel you use and so by being aware of your own driving technique and adjusting it accordingly you can save fuel, reduce exhaust emissions and drive more safely.

Smooth driving is a simple method of saving fuel and reducing accidents. Accelerating is one of the fuel thirsty jobs your car has to do. Hard, fast acceleration uses up fuel rapidly and wears out the engine and tyres quicker. Hard braking is equally draining on fuel and then requires acceleration again to get moving from slower speeds or standstill. By anticipating the road ahead and leaving an adequate gap between vehicles you can maintain a steady speed. Avoid accelerating towards signals at red, instead take your foot off the accelerator and allow the momentum of the car to coast towards the stop line.

A European test demonstrated that quick acceleration from traffic lights and hard braking at the next set only reduced travel time by 4%, the equivalent of 2½ minutes out of a 60 minute journey, but increased fuel consumption by 37% and some



emissions were more than five times higher. It is therefore more efficient to accelerate smoothly and maintain a constant speed where possible. This is also true when travelling on motorways and overtaking, changing lanes frequently requires acceleration and braking. If done frequently this can reduce fuel economy by up to 30%.

The efficient use of gears can improve fuel consumption. So select the correct gear and change up through the gears into top gear as soon as possible without accelerating harder than necessary. Petrol cars should be changed up before 2500 rpm, 2000 rpm for diesel cars. Most modern cars can run in top gear at speeds of around 40mph, but don't allow the engine to labour in high gears when driving up hills or into corners. Automatic transmissions will change through the gears more quickly and efficiently if you ease back slightly on the accelerator as the car gathers speed.

The speed of your vehicle can influence the rate of fuel use and the level of exhaust emissions. Different vehicles reach optimum fuel economy at different speeds, however fuel economy generally decreases rapidly at speeds above 60mph. By staying within the speed limit you are not only driving safer but allowing your fuel to take you further. A car travelling at 80mph uses up to 15% more fuel than the same car travelling at 70mph. A recent study indicated that by enforcing the 70mph speed limit 1 mega tonnes of carbon from vehicle emissions could be saved in the UK (1.9 mega tonnes of carbon at 60mph). So by easing off the accelerator and slowing down you can save money on fuel and reduce carbon emissions.

Unnecessary weight in the boot of your car, roof boxes, roof racks and cycle carriers can increase fuel consumption and emissions. Ask yourself whether you really need the golf clubs in the car when making a trip to the shops or travelling to work? An extra 100lb/28kg of weight can cost you 2% more in fuel.

The use of electronic equipment in your car can also increase fuel consumption, so when not in use switch them off. Air conditioning is especially draining on vehicle fuel, using up to 10% extra fuel when operating. At low speeds use the air vents or open a car window instead

of the air conditioning - the impact of aerodynamic drag is relatively small at low speeds. However, when travelling at speeds above 50mph air conditioning is more fuel-efficient than opening a window.

Idling is a large problem, especially in towns and cities. Contrary to popular belief, idling is bad for your car. Excessive idling can contaminate engine oil and damage engine components. Modern cars do not require warming up, except in exceptionally cold weather where around 30 seconds of idling will be sufficient. So when you start up your car, drive away immediately, otherwise you waste fuel, generate emissions and create rapid engine wear. If you stop for more than 10 seconds, except in traffic, turn off the engine. You will get better fuel consumption switching off the engine and restarting than allowing the car to idle for longer than 10 seconds. If you are stuck in a traffic jam, consider switching off and restarting, especially if the traffic is not moving.

Finally if you own more than one vehicle, drive the one that gets the best mileage wherever possible.

Maintaining Your Vehicle

A poorly maintained vehicle can increase fuel consumption by up to 50% and increase exhaust emissions by even more. Modern vehicles with sophisticated engines and on-board computer systems should be maintained by professionals. You can perform some simple maintenance yourself on a monthly basis to solve simple problems, saving you fuel and money.

Changing the engine oil regularly will keep your car's engine in top running condition. The oil lubricates the moving parts of the engine to prevent metal-to-

metal contact, minimising friction and removing excess heat. This promotes better fuel efficiency and reduces emissions. Oil also removes dirt, metal shavings and other impurities by trapping them in the oil filter. The circulation of oil in the car's engine is critical and if poorly maintained can cause the engine to seize, which can lead to a very costly repair. If you can change the oil yourself, remember to recycle the old oil where facilities exist. One litre of engine oil can contaminate 2 million litres of water.

The cooling system is designed to keep the engine at its optimal operating temperature. If the system is operating outwith this range, fuel consumption increases, as do the vehicle emissions and the wear on the engine. Coolant degrades over time and it is important to have it changed as required by the manufacturer. Antifreeze concentration should be checked every autumn and replaced if necessary before the winter. You can ensure the cooling system is performing well by checking the coolant level in the overflow tank, inspecting hoses for cracks and loose clamps and checking water levels in the radiator.





The spark plugs in a petrol engine are required to ignite the air-fuel mixture. However if the spark plugs are worn or not functioning correctly, the engine will misfire and some fuel will remain unburned. An engine which is misfiring wastes fuel, performs poorly and produces higher emission levels. Regular spark plugs should be replaced every 30,000 miles. Vehicles with distributors require additional ignition system maintenance.

Modern vehicles are fitted with catalytic converters to treat exhaust emissions before being released into the atmosphere. The exhaust system is responsible for reducing the amount of greenhouse gases emitted by cars and it is therefore important that the system be replaced when required. If your car produces black or blue smoke, experiences poor acceleration or makes loud noises then the exhaust system and car should be checked out.

The air system in a vehicle should be inspected annually. Air for the engine passes through the air filter and removes dust and dirt which could otherwise be harmful to the engine. A clogged air filter can increase fuel consumption by 10%.

Fuel also passes through a filter from the fuel tank to the engine. Fuel filters, fuel lines, tank and cap should be inspected on a regular basis. A leaking fuel system can be dangerous - it can increase fuel consumption and give off evaporative emissions when fuel is released into the atmosphere.

The tyres and alignment of the wheels are the key factors in fuel efficiency and safety and the easiest to maintain. Tyres create friction with the road surface creating a rolling resistance. Reduce this resistance by inflating them to the correct pressure recommended by the manufacturer - remember when the vehicle is fully loaded, pulling a trailer or in very cold weather the tyre pressure may have to be adjusted. Driving a vehicle with under inflated tyres can increase fuel consumption by 3% and reduce the lifespan of the tyre by 6,000 miles. On average, tyres lose 1psi per month, so tyre pressure should be checked at least once a month, when the tyres are cold. In addition the tyres should be checked for uneven wear, embedded stones and other foreign objects. From

an energy efficiency perspective when replacing tyres buy long-life low rolling resistance. In general a 10% reduction in rolling resistance will result in a 2% reduction in fuel consumption.

The alignment of the wheels should be checked annually. If wheels are misaligned, tyres will drag instead of rolling freely. This will increase the fuel consumption, reduce tyre life and create problems with the handling and ride of the vehicle. If the wheels are not balanced the driver will feel a pounding or shaking through the steering wheel. This could shorten the life of the suspension components. Where possible avoid rough roads and potholes as these can be hard on tyres and wheel alignment.

Dragging brakes can significantly increase fuel consumption because the vehicle has to work harder to overcome the resistance. Dragging occurs when the brake pad or shoe does not release from the disk or drum properly. Warning signs that the brakes need servicing are squealing and grinding noises, the pulling of the car to one side, brake fade or a soft or pulsating brake pedal. If the warning signs are ignored then the pad or shoes could wear to the extent that other components become damaged resulting in a more costly repair and the vehicle's engine having to work harder.

Clackmannanshire Recycling Facility

Forthbank Depot - Engine oil, car batteries, vehicle tyres and metal parts (not whole car)

Winter Driving

In the winter your car has to work harder to warm up the engine until it reaches peak operation. Fuel consumption in cold weather soars, sometimes by as much as 50%. It is still important to drive the car as soon after starting to allow the other vehicle components such as wheel bearings, steering, suspension, transmission and tyres to warm up too. For the first three miles you should avoid rapid acceleration and high speeds. This will help bring the car up to peak operating temperature while maximising fuel efficiency.

To prevent the car windows from fogging up, open the window as soon as you get into the car. Clear any snow from the air intake vents on the bonnet, otherwise the defroster will draw in moisture and fog the windscreen.

Snow adds extra weight to your car, which in turn increases fuel consumption. Snow should be removed from the car body, as well as the wheel wells and under bumpers where the snow can rub against the tyres and increase rolling resistance.

When driving in snow and ice remember to take it easy. The more the car slips and slides the more the wheels spin and the more fuel you waste. It is also safer to control your driving in these conditions and where possible avoid excessive braking which can cause skids. Correct use of the gears can slow the vehicle in these conditions. Remember in the winter you will need more room to stop, so increase the gap between you and the car in front. If the car behind is too close then slow down, at higher speeds you need more stopping distance.



Buying a New Car

If you are thinking about buying your first car or replacing your current one, there are a number of things to consider both to save yourself money and to lessen your impact on the environment.

Firstly consider the type of car you need. The type of journeys you make, where you are driving, what kind of loads will you be carrying and who will be travelling with you, can all influence your final choice. Do you really need a large car for travelling in town or would a smaller one be more suitable and easier to park?

In general, smaller cars are more fuel-efficient than larger cars. There are numerous websites providing information of fuel economy, tax and emissions, try visiting www.vcacarfueldata.org.uk. The Environmental Transport Association www.eta.co.uk provides a car buyer's guide for the environmental rating of new cars.

It is easy to overlook the true cost of motoring, there are the everyday running costs, such as fuel. There are the annual standing charges, such as tax and insurance. There are also the other costs, such as servicing, repairs, parking charges and breakdown cover to factor in. Again the smaller the car the cheaper many of these are.



Alternative Fuels

Petrol and diesel are the most common types of fuel in the UK, however alternative fuels such as Liquefied Petroleum Gas (LPG) are making some presence on the market. The Government has set a target of 5% uptake of biofuels by 2010, however early indications suggest that the distribution of these fuels is not yet widespread enough, especially in Scotland. As this is a growing market keep an eye out for development in this market in the future.

