The truth about fuel -

We've compared eco cars with their standard counterparts to see whether they really are more economical

There's an increasing demand for lower-CO2, fuel-efficient cars in the UK – not surprising when you consider fluctuating fuel prices (see p20), the fact that road and company car tax are based on CO2 emissions, and our growing awareness of the environmental impact of motoring.

In response, carmakers are producing an ever-expanding array of models that use new technology to improve efficiency, giving them labels such as ECOnetic (Ford) and BlueMotion (Volkswagen).

Official economy figures

There have been various attempts to make cars more fuel efficient in the past. In the 1980s, Austin Rover produced Metros and Maestros that had aero-dynamic tweaks; the latter pioneered the electronic fuel economy indicator. And in 1991, Volkswagen introduced an 'Umwelt' (environment) special of its Mk2 Golf that included rather clunky start-stop technology (see 'Eco cars explained', p33).

These days, carmakers are subject to government conditions when they test their cars' fuel economy, but the test is a simple urban/extra urban (town and country) simulation, which doesn't account for cold starting or motorway use. Increasingly, manufacturers are tweaking engine management systems and gear ratios to suit this test.

To counter this, we've performed our own lab tests to find out how efficient some popular eco cars really are, using a cold start and motorway section to give a more realistic indication of real-world fuel economy. We've found that some are only slightly more fuel-efficient than their standard 'sister' models, while others are streets ahead. The cars use some or all of the features in the 'Eco cars explained' box on p33.

VAUXHALL CORSA

The Corsa offers its ecoFLEX box of tricks across a wide spread of trims – and prices. Starting at £11,295 for a three-door ecoFLEX Life, the range tops out with the £14,345 five-door ecoFLEX Design. The standard 1.3 CDTi's 90bhp output makes a small but noticeable difference to performance over the 75bhp ecoFLEX. Braking distances are longer in the ecoFLEX, and ride and handling take a hit, too. It's questionable whether this is worthwhile for the likely financial savings.

	1.3 CDTi Design 3dr	1.3 CDTi ecoFLEX Design 3dr
Price	£13,985	£13,595
Annual road tax	£120	£35
Fuel economy (tested/official)		
Town (mpg)	**46.3** / 45.6	**48.7** / 49.6
Country (mpg)	**72.4** / 70.6	**72.4** / 74.3
Motorway (mpg)	**52.3** / n/a	**52.3** / n/a
Combined average (mpg)	**57.6** / 58.9	**58.9** / 62.8
Fuel cost for 10,000 miles	£832	£813
CO2 emissions		
Tested/official (g/km)	**129** / 127	**115** / 119
Over 10,000 miles (tonnes)	2.08	1.85
Road test scores		
Refinement and noise	★★★	★★★★
Performance	★★★★★	★★★★
Gear stepping	★★★★	★★★★
Ride and handling	★★★★	★★★
Brakes	★★★★★	★★★
Braking distance from 62mph	36 metres	40.5 metres

£19
Fuel saving
over 10,000 miles

PHOTOGRAPHY MARC WRIGHT

efficient cars

VOLKSWAGEN PASSAT

VW's latest BlueMotion cars use 'second-generation' technology, including a stop-start system. The Passat BlueMotion 2 has a new 2.0-litre TDI engine. It's not as swift as the top-spec 170bhp VW diesel shown here, but it's quieter and more refined than previous BlueMotion models. We think a six-speed gearbox would have been better than the five-speed 'box for quieter cruising. The Passat Bluemotion 2 offers reasonable fuel and tax savings over a standard diesel, although it is a little sluggish.

	2.0TDI Highline 5dr estate	2.0TDI Bluemotion 2 5dr estate
Price	£21,960	£19,265
Annual road tax	£150	£120
Fuel economy (tested/official)		
Town (mpg)	**36.7** / 38.2	**44.8** / 44.8
Country (mpg)	**58.9** / 60.1	**65.7** / 68.9
Motorway (mpg)	**44.8** / n/a	**48.7** / n/a
Combined average (mpg)	**47.1** / 49.6	**54.3** / 57.6
Fuel cost for 10,000 miles	£1,017	£882
CO2 emissions		
Tested/official (g/km)	**158** / 149	**137** / 129
Over 10,000 miles (tonnes)	2.40	2.08
Road test scores		
Refinement and noise	★★★★	★★★★
Performance	★★★★★	★★★
Gear stepping	★★★★★	★★★★
Ride and handling	★★★★★	★★★★
Brakes	★★★★	★★★
Braking distance from 62mph	37 metres	39 metres

£135
Fuel saving
over 10,000 miles

Four more eco cars tested

FORD FIESTA

Our tests show the ECOnetic Fiesta diesel is more economical than the conventional model, but you'll need to be prepared for longer stopping distances. However, the Fiesta's impeccable ride and handling haven't been affected by the green makeover.

	1.6 TDCi Zetec 3dr	1.6 TDCi ECOnetic 3dr
Price	£14,495	£13,795
Annual road tax	£35	£0
Fuel economy (tested/official)		
Town (mpg)	**52.3** / 54.3	**56.5** / 61.4
Country (mpg)	**74.3** / 78.5	**78.5** / 88.3
Motorway (mpg)	**48.7** / n/a	**52.3** / n/a
Combined average (mpg)	**58.9** / 67.2	**62.8** / 76.3
Fuel cost for 10,000 miles	£813	£763
CO2 emissions		
Tested/official (g/km)	**122** / 110	**115** / 98
Over 10,000 miles (tonnes)	1.96	1.85
Road test scores		
Refinement and noise	★★★	★★★
Performance	★★★★	★★★★
Gear stepping	★★★	★★★★
Ride and handling	★★★★	★★★★
Brakes	★★★★	★★★
Braking distance from 62mph	36.5 metres	40 metres

SKODA FABIA

The spacious Skoda Fabia is one of our Best Buy superminis. The Greenline 1.4 diesel costs £355 more than the normal version. It offers an excellent 11.8mpg uplift in fuel economy overall, but we felt the gearing was a little compromised and it's quite a harsh drive. It also took 4.5 metres further to stop when braking from 62mph.

	1.4TDI 2 5dr estate	1.4TDI Greenline 5dr estate
Price	£12,435	£12,790
Annual road tax	£35	£35
Fuel economy (tested/official)		
Town (mpg)	**40.4** / 49.6	**51.4** / 53.3
Country (mpg)	**61.4** / 70.6	**78.5** / 83.1
Motorway (mpg)	**45.6** / n/a	**54.3** / n/a
Combined average (mpg)	**49.6** / 61.4	**61.4** / 68.9
Fuel cost for 10,000 miles	£966	£780
CO2 emissions		
Tested/official (g/km)	**146** / 120	**119** / 109
Over 10,000 miles (tonnes)	2.35	1.92
Road test scores		
Refinement and noise	★★★	★
Performance	★★★★	★★★★
Gear stepping	★★★	★
Ride and handling	★★★★	★★★★
Brakes	★★★★★	★★★
Braking distance from 62mph	36.5 metres	41 metres

MITSUBISHI COLT

The Colt ClearTec stands out from other eco cars featured here as it's fuelled by petrol. The ClearTec does bring economy improvements but these come at the expense of braking efficiency. And our measured CO2 emissions are noticeably higher than the 119g/km recorded in the official government test.

	1.3 CZ2 5dr	1.3 CZ2 ClearTec 5dr
Price	£9,779	£10,189
Annual road tax	£125	£35
Fuel economy (tested/official)		
Town (mpg)	**37.7** / 38.2	**45.6** / 44.8
Country (mpg)	**57.6** / 58.9	**58.9** / 65.7
Motorway (mpg)	**38.2** / n/a	**39.8** / n/a
Combined average (mpg)	**44.8** / 48.7	**48.7** / 56.5
Fuel cost for 10,000 miles	£1,054	£970
CO2 emissions		
Tested/official (g/km)	**146** / 143	**134** / 119
Over 10,000 miles (tonnes)	2.35	2.16
Road test scores		
Refinement and noise	★★★	★★★
Performance	★★★★	★★★★
Gear stepping	★★★★	★★★
Ride and handling	★★★★	★★★
Brakes	★★★★	★★★
Braking distance from 62mph	37 metres	40 metres

FORD FOCUS

The Focus ECOnetic diesel is more frugal on the motorway than the 2.0 diesel, but you might not like its noisier engine and longer braking distance. Ford also offers a normal 1.6 TDCi Focus, but we haven't tested it.

	2.0 TDCi Titanium 5dr hatch	1.6 TDCi ECOnetic 5dr hatch
Price	£20,945	£18,695
Annual road tax	£125	£35
Fuel economy (tested/official)		
Town (mpg)	**40.4** / 40.3	**41.5** / 50.4
Country (mpg)	**62.8** / 62.7	**57.6** / 78.3
Motorway (mpg)	**42.2** / n/a	**49.6** / n/a
Combined average (mpg)	**48.7** / 51.3	**49.6** / 65.6
Fuel cost for 10,000 miles	£984	£966
CO2 emissions		
Tested/official (g/km)	**153** / 144	**129** / 115
Over 10,000 miles (tonnes)	2.46	2.08
Road test scores		
Refinement and noise	★★★★	★★★★
Performance	★★★★★	★★★★
Gear stepping	★★★★	★★★★★
Ride and handling	★★★★	★★★★
Brakes	★★★★	★★★★
Braking distance from 62mph	36.5 metres	40 metres

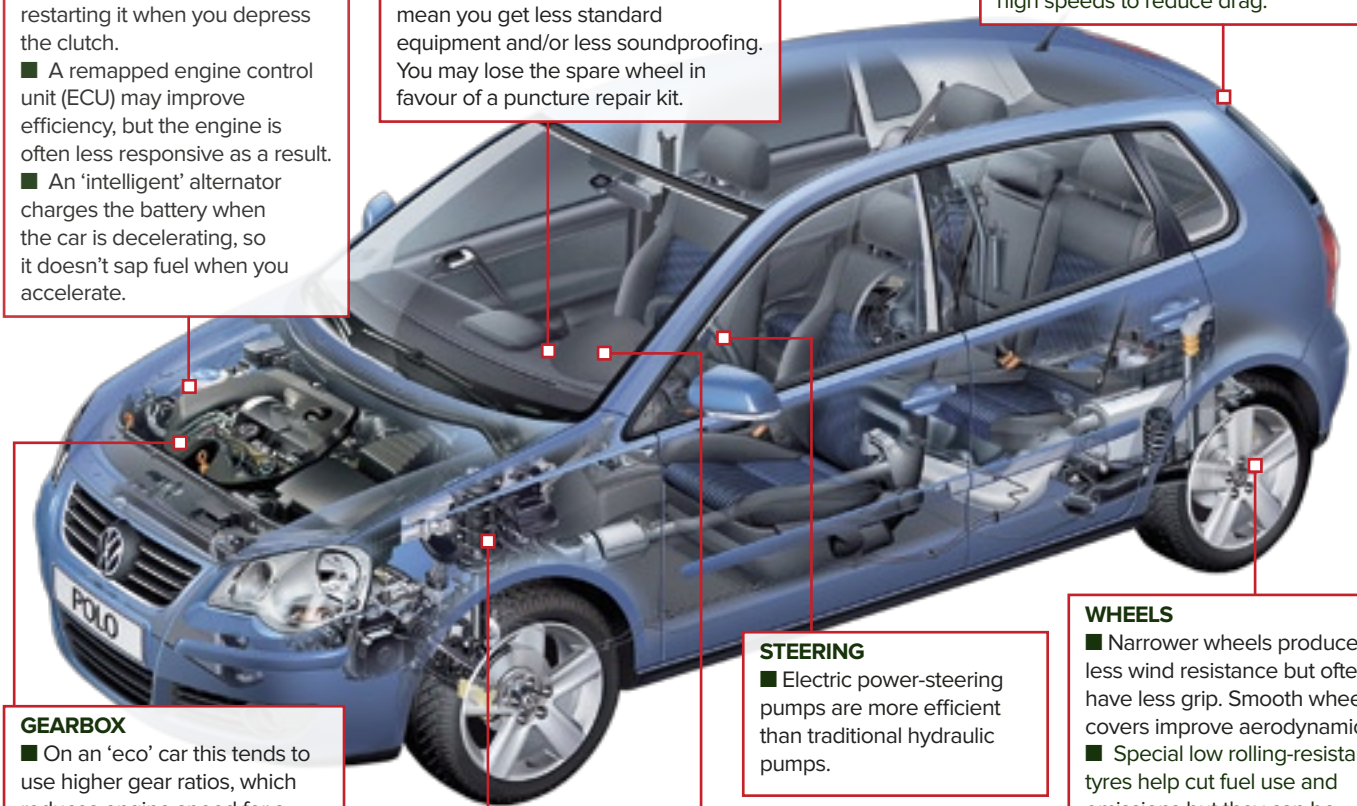
ECO CARS EXPLAINED

Car manufacturers use several techniques to improve the efficiency of an eco car

ENGINE
- 'Start-stop' systems cut the engine in stationary traffic, restarting it when you depress the clutch.
- A remapped engine control unit (ECU) may improve efficiency, but the engine is often less responsive as a result.
- An 'intelligent' alternator charges the battery when the car is decelerating, so it doesn't sap fuel when you accelerate.

WEIGHT REDUCTION
- Removing material from the car reduces the weight, but this may mean you get less standard equipment and/or less soundproofing. You may lose the spare wheel in favour of a puncture repair kit.

BODYWORK
- Spoilers can smooth the airflow around the car. Smoothing the underside of the car can reduce drag, too.
- 'Active' aerodynamic parts open cooling vents while stationary, but shut them up at high speeds to reduce drag.



GEARBOX
- On an 'eco' car this tends to use higher gear ratios, which reduces engine speed for a given road speed – but this does dent acceleration. The gearbox is sometimes filled with special 'low friction' oil.

SUSPENSION
- Lowered suspension can improve aerodynamics at the expense of ride quality.

STEERING
- Electric power-steering pumps are more efficient than traditional hydraulic pumps.

INSTRUMENTS
- A 'shift light' shows the driver the best time to change gear.

WHEELS
- Narrower wheels produce less wind resistance but often have less grip. Smooth wheel covers improve aerodynamics.
- Special low rolling-resistance tyres help cut fuel use and emissions but they can be more expensive. Our tests show they can be noisier than standard tyres and their grip can be poorer.

OUR RATINGS
The more stars the better.

Fuel economy
Tested on a 'rolling road' to simulate wind resistance, tyre friction and vehicle inertia. Fuel consumption and emissions are measured during the 'Artemis' cycle, an industry-standard simulation of city, out-of-town and motorway driving.

Combined average
A weighted average of each condition, based on average mileages driven in each situation.

Refinement and noise
Engine smoothness, as felt inside the cabin when car is idle and under acceleration. A sound meter also records steady-state cruising noise, but this score also accounts for perceived wind, road and engine noise.

Performance Measured by acceleration tests performed on the rolling road and test track.

Gear stepping An assessment of how each gear ratio is used by the driver. Widely spaced gears can be difficult to use, and are marked down accordingly.

Ride and handling
Ride: expert assessment of the car's ability to soak up bumps. Handling: this score is based on the Which? emergency avoidance test and vehicle behaviour at the limit of grip; how the car reacts during cornering (excessive roll or adverse reaction to mid-corner bumps reduce the score); the feel and the weight of the steering– too light or too heavy is penalised; and the turning circle.

Which? says

Disappointingly, we've generally found that eco cars deliver fewer savings than their makers claim. They're good for company car users looking to cut tax bills, but their cost premium and driving compromises may prove too much for low-mileage private buyers – especially when it comes to safety issues such as longer braking distances. Improving your driving technique is just as likely to cut fuel bills and CO2 (our video at www.which.co.uk/greenermotoring shows you how), and remember that it pays to keep your car and tyres in good condition.