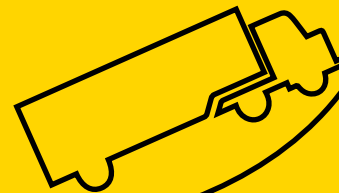


Energy efficiency guide for commercial vehicle fleets

A guide produced by ExxonMobil



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Running a commercial vehicle fleet is a constant challenge.

Competition continues to ramp up. Margins are being squeezed.

Regulations are more complex. Technology is more advanced than ever.

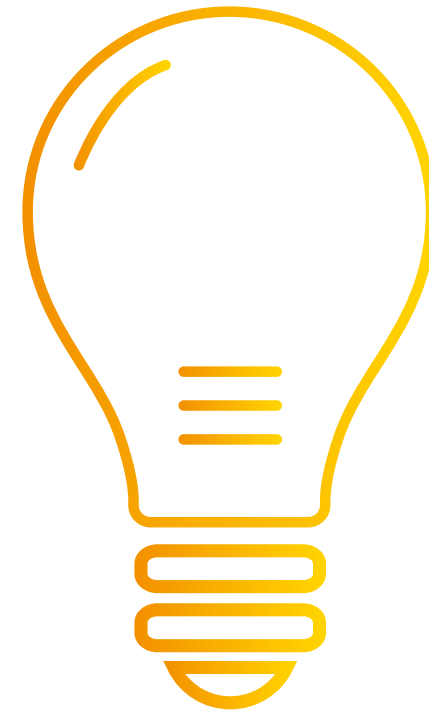
Fleet operators face increased legislation in order to ensure they meet emission regulations, such as Euro VI.

In such a tough environment, energy efficiency may not be top of your long list of priorities. But, making it a focus area for your business could make a real difference.

Maybe you focus on fuel efficiency at the moment? Or in your office, you look at ways to operate more smartly?

Looking at efficiencies across your operation, from simple changes in the office through to investment in the latest technology on the road, is a holistic approach that can really impact the bottom line.

This Guide provides a straightforward look at immediate and longer term steps that you can take to help you become a more efficient, successful business.



Understanding legislation



Understanding legislation

CO₂ standards for new heavy duty vehicles

The European Commission (EC) has developed a vehicle energy consumption calculation tool (VECTO) to measure fuel consumption and carbon emissions from heavy-duty vehicles (HDVs) operating in Europe. In Japan, the US and Canada, legislation has been introduced already to limit carbon emissions from HDVs; Europe is now under pressure to catch up. Eventually, mandatory limits on average emissions from newly registered HDVs will be introduced, as is the case for cars and vans presently.

But there is concern among logistics businesses that a certification scheme may be too simplistic, considering the wide variety of models and sizes and the differing weights and loads carried. All these factors affect the carbon efficiency of HDVs.

The use of alternative fuels, choosing the right lubricant, driver training and improved aerodynamics.

The EC has quite rightly sought expertise from vehicle manufacturers to develop VECTO, but will the industry buy in to a standard when there has already been scepticism about car and van CO₂ emission accuracy?

Anecdotal evidence from truck operators places carbon emissions alongside a multitude of other reasons for purchasing a particular truck. Price, reliability and after sales service are just as important.

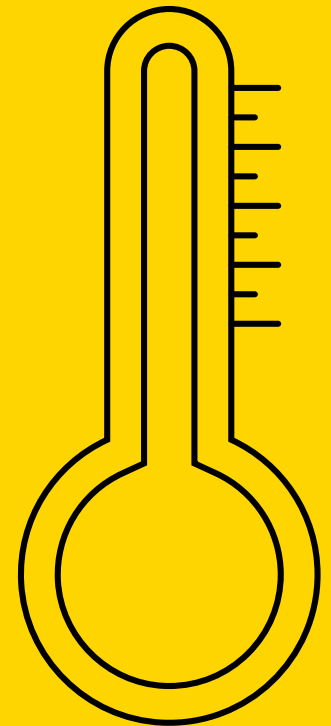
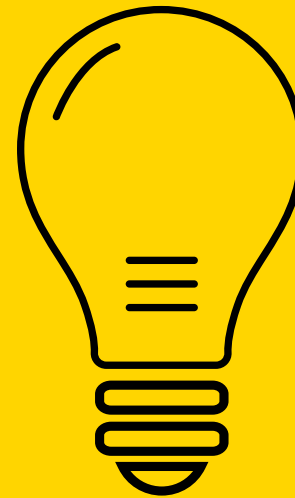
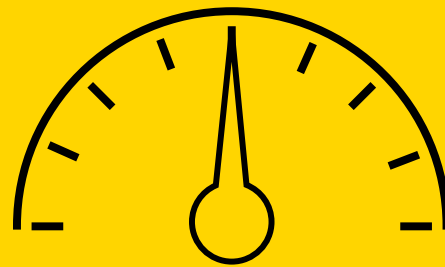
However, CO₂ standards for HDVs should be viewed as just one measure to drive a reduction in carbon emissions.

Businesses should consider the variety of ways they can reduce emissions from their fleets, such as the use of alternative fuels, choosing the right lubricant, driver training and improved aerodynamics. These methods, along with best practice advice and tips on how to reduce the energy consumption of a fleet operation, are included in this guide.

Kevin Green, Marketing & Communications Director, Logistics UK

LOGISTICS UK

Saving energy off the road



Saving energy off the road

Managing your business' energy consumption is effectively down to good housekeeping. How you work off the road is just as important as the drive itself.

Walk-around energy survey



The quickest way of identifying if and how energy is being wasted is to walk round an office, workshop or production facility, and visually carry out an energy

survey using a simple checklist to record any issues (good or bad). Walk-around surveys should be carried out regularly in order to raise awareness, e.g. every fortnight.

The aim of the survey is to identify the more easily recognisable issues, such as workshop doors being left open or computers being left on overnight.

Meter readings

It won't always be possible to easily notice where energy is being wasted. Analysing utility meter readings will provide an indication of actual trends and highlight any unexpected fluctuations in energy use. So having calibrated metering in place is essential. Ask the utility energy suppliers to either confirm meter accuracy or replace existing inaccurate meters.

Smart metering

Smart meters may be of further benefit to small businesses as they can provide:

- **A clear record of when the energy has been used**
- **Calculation of how much energy is costing**
- **Real-time accurate information.**

Third party building assessments

There are specialist consultants that can offer independent assessments to identify opportunities and solutions that will reduce energy consumption, carbon emissions and costs.

This investment will often pay for itself and let users carry on with running their businesses.

Saving energy off the road

Helpful tips: Offices and buildings

Heating/hot water, ventilation and air-conditioning Space heating is a major energy cost. It's not unusual for half of an office's energy cost to be for heating, and these heating costs could be **reduced by 30% with simple energy saving measures**.¹

Check	Action/Benefit
Areas are not being overheated.	Turning the thermostat down by 1°C can reduce heating costs by 8%. ²
Areas are not being heated and cooled at the same time.	Setting a dead band between heating and cooling might reduce the effect of this set heating at 19°C and cooling at 24°C. ³ Solar effects can have an impact, use window blinds to stop unwanted heating.
Control timers are set correctly.	Switch off heating/cooling overnight and at weekends and bank holidays if it's not required.
Ensure boilers are working efficiently and regularly serviced.	Poorly operating boilers can add 30% to heating costs. ⁴
Areas with a low hot water requirement without heating.	Areas with a low hot water requirement without heating. Use local water heaters – main boilers could then be switched off.
Air conditioning systems - units with dirty air filters will operate inefficiently.	Regularly maintain equipment.
Ventilation systems - if fans are left running.	Ensure ventilation systems are only used when required. Fit timers to fan controls.

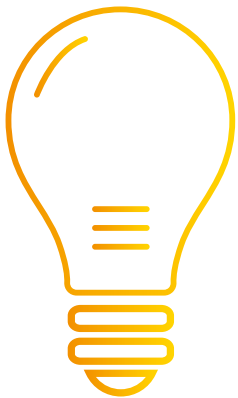
Saving energy off the road

Helpful tips: Lighting

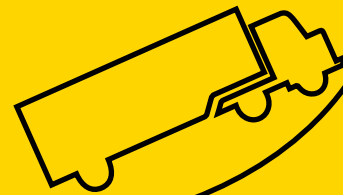
Lighting can be responsible for up to 40% of a building's electricity use.

It's possible to **cut lighting costs by up to 30% by implementing energy saving measures.**⁵

Check	Action/Benefit
Lighting left on in unoccupied rooms, cupboards and corridors.	Awareness training to turn lights off when not required or fit occupancy sensors.
Natural light sources.	Use wherever possible, but also consider the solar heating effects.
Light fittings are not old, dirty, or working inefficiently.	Fit low energy efficient lighting, time controls and keep diffusers clean.
External lighting.	Turn off floodlights during daylight and fit low energy floodlights.



Saving energy on the road



Saving energy on the road

Consistently achieving top performance from commercial vehicles is a major challenge. However, a properly maintained fleet can contribute to improving performance and fuel efficiency. Here are a few tips on how to get the most from your vehicles on the road:

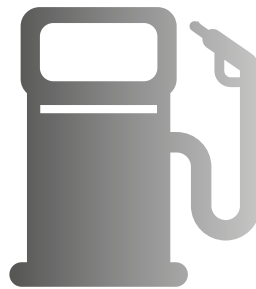
Aerodynamic vehicle enhancements

Fuel-saving potential of drag-reducing devices retrofitted on heavy vehicles is high. Fuel reductions from using aerodynamic devices on a large truck range from less than 1% to almost 9% of fuel cost of a vehicle doing annual mileage of 80,000 miles (128,000 kms).⁶

Results show that the performance of these aerodynamic devices depend both on their functions and how the vehicles are operated. Vehicles on long-haul routes generally save twice as much fuel as those in urban areas.

Driver training

Equally as important as equipment efficiency measures in commercial vehicles is driver training. There are many measures that can be taken to help drive more energy and cost efficiently.



Fuel reductions from using aerodynamic devices on a large truck range from less than 1% to almost 9% of fuel cost of a vehicle doing annual mileage of 80,000 miles (128,000 kms).

Saving energy on the road

Helpful tips: Driver training

Training Principle	How to increase efficiency
Gear changes	Train your drivers to operate in as high a gear as possible and to skip gears when practical.
Brakes	Braking wastes energy, so anticipate potential hazards and take preventive measures early to reduce the amount of times and level of pressure applied to the brakes.
Finding the 'sweet spot'	Drivers should find the speed at which the truck's fuel economy is at its optimum and use it wherever possible. ⁷ Find out from the truck manufacturer where the truck engine's 'sweet spot' is and help drivers identify it. This is where the engine's rotational speed is at its most efficient, usually no higher than 1,500 RPM.
Build on momentum	Drivers should use the momentum a truck gathers on flat terrains to get over uneven or hilly areas more economically. It pays to plan ahead, especially when entering road features and roundabouts, keep brake applications to a minimum and take advantage of the topography to keep moving with the least energy possible.



Saving energy on the road

Telematics

To manage a fleet efficiently, understanding where your vehicles are and how they are being used is vital.

Telematics is one way to achieve a competitive advantage. By bringing cutting-edge technology on board, you can track your fleet's location, speed, fuel use, driver performance and more, all in real time.

The increased visibility telematics provide lead to smart decisions that help save money, reduce the risks of accidents and optimise operations.



Saving energy on the road

Tyres

Checking tyres is simple but essential

While it's widely acknowledged that well looked after tyres help reduce the risk of accidents, commercial vehicles are especially susceptible to the additional problems that come with unchecked tyres.

How costly can it be? The increased fuel consumption from under inflated tyres is twice as high for HGVs as it is for cars.

So, how can you avoid this and ensure a safer, more efficient drive?

Top tips:

Ensuring correct pressure:

Low pressure can increase rolling resistance and waste fuel. Tyres at the optimal pressure with good grip are critical to operating safely.

Regular checks:

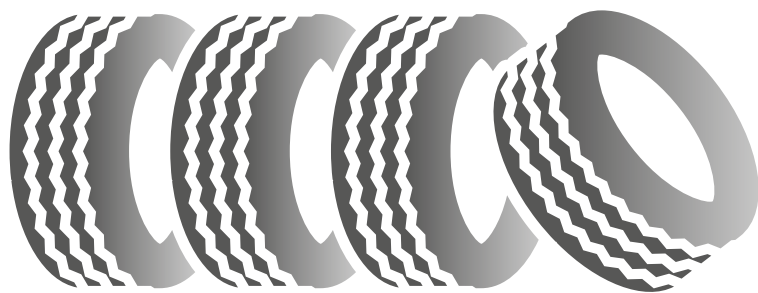
By regularly checking tyres, problems can be picked up early and adjustments made to keep the fleet running at the optimum rate. This should be an essential part of a regular maintenance routine, at least twice a month.

Outside temperature matters:

Hotter outside temperatures will expand the air in tyres, raising the pressure, and cooler temperatures will cause a reduction. Check tyre pressure regularly to ensure your fleet is performing at optimum efficiency.

Upgrade to fuel efficient tyres:

Leading tyre manufacturers have developed advanced options to help reduce fuel consumption.



This should be an essential part of a regular maintenance routine, at least twice a month.

Saving energy on the road

Lubricants

Advanced lubricants can help reduce fuel costs

Take note of the vehicle manufacturer's guidance on oil change intervals, but more than that, consider the type of oil used too.

Switching from a mineral engine oil to a fully synthetic high performance alternative has many benefits. Whether you're hauling trailers in the height of a Mediterranean summer, or moving supplies during the depths of a Baltic winter, synthetic lubricants provide excellent protection in some of the harshest conditions.

Designed to deliver improved performance for longer periods, tests have shown that a change from mineral to synthetic lubrication in commercial vehicles also provides potential for significantly improved fuel economy* on-the-road, and better protection against wear and deposit formation, which can cause costly maintenance bills. For these reasons, a switch to synthetic lubrication across your fleet may ultimately help improve your bottom line.

Synthetic lubrication provides potential for significantly improved fuel economy*



Saving energy on the road

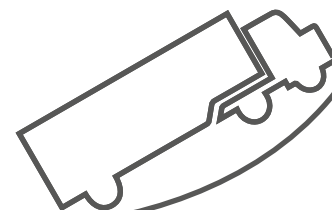
High performance lubricants in action

2015 saw ExxonMobil team up with leading Nordic haulage company SPF Denmark

In a trial, fully-synthetic lubricants were used in place of conventional mineral based products in the engine, transmission and rear axle of the company's Scania trucks.

Results:

- Fuel consumption saving of 3.4% versus the previous eight months' consumption figures**.
- Based on these trial results, use of ExxonMobil fully synthetic lubricants could provide approximately 1,196 EUR fuel savings potential per vehicle.



References

*Product specific example: Mobil Delvac 1 LE 5W-30 fully synthetic engine oil:

A fuel economy evaluation was conducted using two Volvo FM440 Euro V trucks, loaded to 75% payload (circa 32 000kg). Testing was conducted on track at the Millbrook Proving Ground, Ltd. in the United Kingdom. Statistically significant fuel economy benefits were observed in the Volvo trucks, when comparing Mobil Delvac 1 LE 5W-30 to a mineral 15W-40 engine oil, with an average fuel economy gain of 1.8% for highway driving conditions. Corrections were applied when changes in test environment had a statistically significant impact on fuel economy. Fuel economy improvements are dependent on vehicle/equipment type, outside temperature, driving conditions and your current fluid viscosities.

**The data is based on the experience of a single customer. Actual results can vary depending upon the type of equipment used and its maintenance, operating conditions and environment, and any prior lubricant used.

¹https://www.carbontrust.com/media/10361/ctg065_heating_control.pdf

²<http://www.carbontrust.com/resources/guides/energy-efficiency/heating-ventilation-and-air-conditioning-hvac>

³<http://www.carbontrust.com/resources/guides/energy-efficiency/heating-ventilation-and-air-conditioning-hvac/>

⁴<https://www.east-ayrshire.gov.uk/Resources/PDF/E/EnergyAdvice-FocusonEnergy.pdf>

⁵<http://www.carbontrust.com/resources/guides/energy-efficiency/lighting/>

⁶Filippone A, Mohamed-Kassim, Z, 2010, Fuel savings on a heavy vehicle via aerodynamic drag reduction, Transportation Research Part D Transport and Environment.

⁷Always respect local driving and transport legislation as well as vehicle manufacturer's operating manual.

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Introduction

Understanding legislation

Saving energy off the road

Saving energy on the road