



Agriculture



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Get smart, save energy

The agriculture sector is one of the simplest to define (see right) and one where simple changes in key areas can lead to energy costs falling.

The Carbon Trust, a not-for-profit company supporting the UK's move to a low carbon economy, states that heating accounts for 90% of the energy used in greenhouses. The Trust also says that ventilation and air circulation amount to 14% of energy bills within this sector.

In the first scenario, opening doors and windows - where it's safe - can deliver natural ventilation for nothing. However, it's important to ensure that unwanted heat loss doesn't offset the advantages of free ventilation. In the second case, ceiling circulation fans can redirect warm air as it rises - helping you reduce the overall temperature (and your heating costs).

Energy efficiency measures like these can also help drive a public relations (and sales) strategy in this sector - just as they can in other industries, too. Adopting environmentally friendly practices and being more sustainable can generate positive media coverage, and may satisfy your customers' demand for "greener" products and even encourage sales.

In addition to focusing on specific areas of consumption, there are some general ways to cut back on your usage too.

What do we mean by agriculture?

When referring to this sector, we're including:

- horticultural and livestock farms
- garden centres and nurseries

5 steps to reducing your energy consumption

1. Commit to continuous improvement - involve staff, set goals and track progress
2. Analyse your start point performance, develop benchmarks, and track improvements
3. Set realistic, measurable goals and target dates to see how you're doing
4. Choose the steps you'll take to achieve those goals and involve your employees
5. Implement and measure results, communicating all wins, no matter how small

How your agriculture business can save energy – and money

We've used the Carbon Trust's energy saving report for agriculture and horticulture as a key source of information for the following suggestions.

These tips highlight areas of consumption that, with improved efficiency, could deliver valuable savings; the amount you recoup depends upon your organisation and your investment.

To help with your budgeting and energy efficiency planning, the tips cover (where possible) three options: no-cost, low-cost, and long-term savings.

No cost



You can make these simple changes quickly – and it won't cost a thing.

Low cost



For a minimal spend you can soon achieve worthwhile savings – and relatively easily too.

Long-term savings



Make a more substantial investment now – and you'll see the returns over time.

How your agriculture business can save even more money

If you're considering an investment in energy efficient equipment such as boilers, electric motors, air conditioning, and refrigeration systems, check the Government's [Energy Technology Product List](#) (ETPL, also known as ETL).

The energy-efficient plant and machinery on the list meets [specific energy-saving or energy-efficient criteria](#) and qualifies for full tax relief. The ETPL is part of the Enhanced Capital Allowance (ECA) tax scheme for businesses.

The Department for Business, Energy and Industrial Strategy (BEIS) reviews the products and technologies on the ETPL annually; the Carbon Trust manages the list on behalf of BEIS.

Ventilation/air conditioning (VAC)

No-cost changes

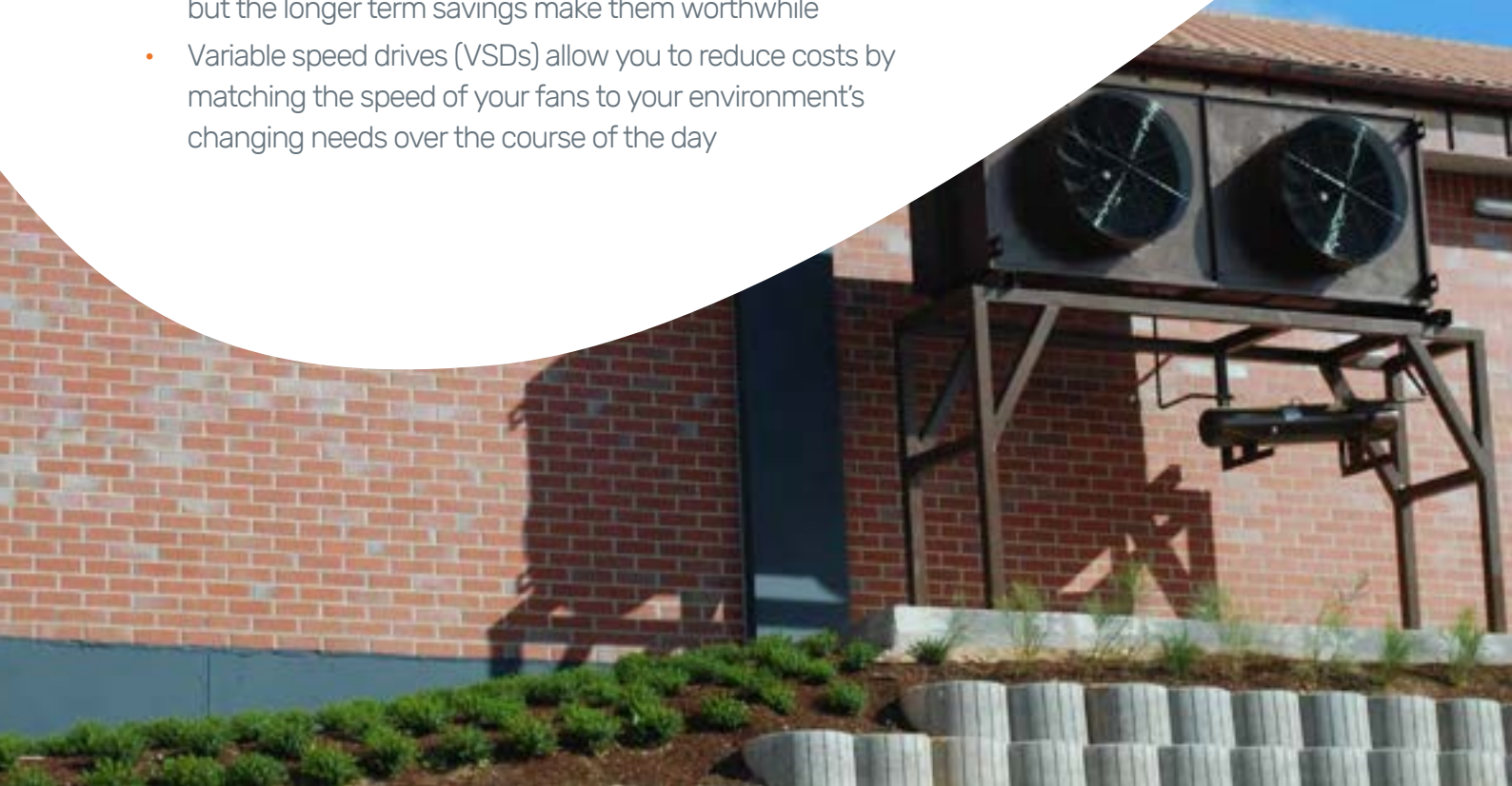
- Make sure air ducts and inlets are clean - this simple measure can extend the lifetime of the fan motor and increase efficiency
- Check that extraction fans and ventilation devices aren't left running unnecessarily (despite its small baseload, a single fan could reduce heat and lead to an increase in boiler fuel consumption of around 5%)

Low-cost changes

- Regular maintenance and performance reviews will ensure your VAC systems are operating at maximum efficiency

Long-term savings

- Consider interlocked control with time switches and sensors to automatically turn off ventilation when specific equipment is turned off
- Energy efficient fans may have a significant upfront cost, but the longer term savings make them worthwhile
- Variable speed drives (VSDs) allow you to reduce costs by matching the speed of your fans to your environment's changing needs over the course of the day



Heating

No-cost changes

- An overnight temperature of 10°C is high enough for most sites, except those where people are still working. Temperatures (in °C) should vary in relation to the activity (see below)
- Minimise and/or control access in and out of heated buildings and areas (e.g. greenhouses) so that heat-loss is reduced and thermostats don't kick in when extra heat isn't really needed
- Review temperature controls seasonally, based on the weather and daylight-saving time changes, and match the heat to the requirements of the environment
- Clean greenhouse glass regularly to optimise the light and heat transfer from the sun

Area	°C
Stores	10-12
Areas for heavy/manual labour	11-14
Workshops/light work	16-19
Sedentary work	19-21

Low-cost changes

- Clean/replace heating filters as often as manufacturers recommend
- If the location of your thermostats could affect their performance (e.g. because they're too close to sources of heat or heat loss), moving them - while implying an up-front cost - could improve accuracy, avoid raising or lowering the temperature unnecessarily, and save you money
- Service your gas boiler once a year and the oil boiler twice a year to save 10% on your annual heating costs (source: [Carbon Trust](#))

Long-term savings

- Insulate pipes, boilers and tanks to minimise heat loss
- Upgrade your heating controls so they respond to the variations of the British climate e.g. a compensator regulates the temperature of a building based on the weather outside; an optimum start controller learns the best time to turn on the heating before people arrive, subject to temperature changes outside, so the building reaches the desired temperature by the time people are at work
- Use radiant heating solutions to bounce back heat in spaces with high ceilings and high ventilation
- Invest in thermal screens to reduce heat loss from greenhouses by up to 30%



Lighting

No-cost changes

- Have a “switch off policy” and use simple light switch stickers so everyone feels confident they’re turning off the right lights
- Keep windows, skylights and light fittings clean to let through as much natural light as possible – without regular maintenance, light levels can drop up to 30% within 3 years

Low-cost changes

- Use timers to match artificial lighting to working hours and/or occupancy
- Replace conventional bulbs with compact fluorescent lamps (CFLs) – they last 8x longer and use 80% less energy
- See the Energy Saving Trust report: “ [The right light - selecting low energy lighting](#) ”

Long-term savings

- Occupancy sensors in equipment and product stores or other less-used areas can save you 30% - 50% on your lighting costs, while photocells (daylight sensors) turn artificial light off when there’s enough daylight

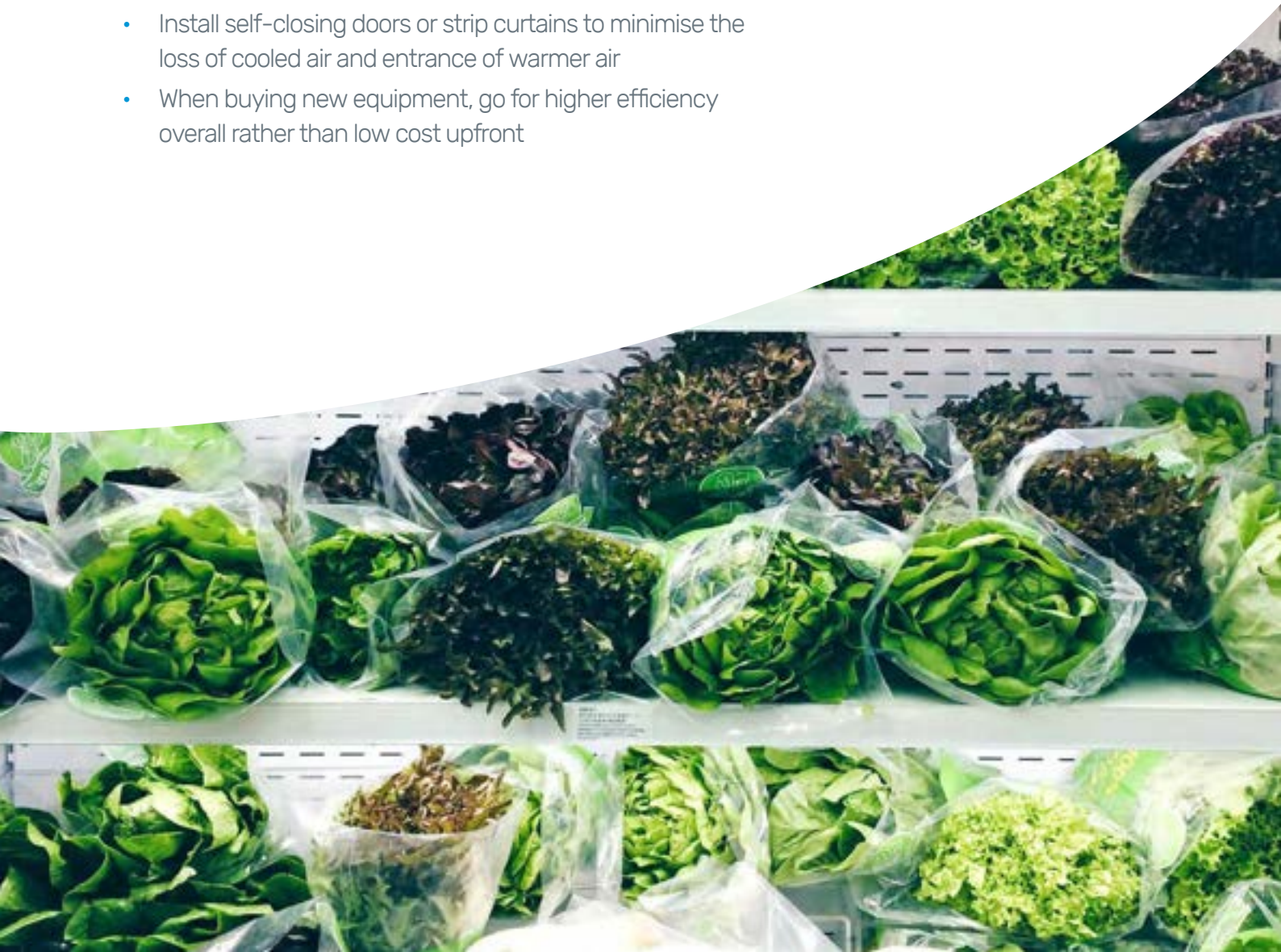
Refrigeration

No-cost changes

- Keep fridge and freezer doors closed whenever possible; if ice is building up, too many air changes are occurring - indicating that the doors are open for too long
- Have a maintenance plan (check for scaling, damaged vent fins, clear drip pipes) and clean condensers to avoid a 20% increase in consumption
- Defrost at least every 2 months and/or check manufacturer's advice on appliances
- Use correct temperatures: 1°C too low ramps up energy use by 2 - 4%

Low-cost changes

- Install self-closing doors or strip curtains to minimise the loss of cooled air and entrance of warmer air
- When buying new equipment, go for higher efficiency overall rather than low cost upfront





Building fabric (walls/floors/ceilings)

No-cost changes

- Regularly check buildings for damp, faulty gutters or downpipes, plus doors and windows for draughts – in a typical farm building, draught proofing and a regular housekeeping schedule can reduce energy consumption by more than 15%

Long-term savings

- Insulate walls, roof spaces, cavity walls and pipes
- Consider sealing unused windows or improve glazing to reduce draughts
- Reduce heat loss via delivery doors/bays by incorporating air locks, PVC curtains or warm air curtains, motorised doors
- If you have a large amount of land available for non-agricultural use, becoming a renewable energy generator could reduce your bills longer-term and be a viable additional source of income (by selling any surplus energy back to the grid)



What's next?

For further information email us at
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The cheapest unit of energy is
the one you don't consume
www.digitalenergyrevolution.co.uk