



Energy Savings Opportunity Scheme

The Carbon Trust guide to ESOS Phase 2

Updated October 2017



The Energy Savings Opportunity Scheme

Background and policy aims

The Energy Savings Opportunity Scheme (ESOS) is the UK implementation of the European Union 2012 Energy Efficiency Directive, Article 8.

ESOS is a policy aimed at increasing energy efficiency to improve business profits and competitiveness as well as mitigating climate change. The scheme requires all large 'undertakings' (the vast majority of which are commercial businesses; see below for a more detailed definition) in the UK to undergo a mandatory assessment of energy use and energy efficiency opportunities across sites that collectively represent the majority of the total energy use of the organisation.

The ESOS regulations require that the audit is repeated every four years.

The government estimates that the net benefit of the policy to the UK will be around £1.6 billion between 2015 and 2030, based on a conservative prediction that only 6 per cent by value of potential energy saving opportunities identified will be implemented.

The actual benefits for business, based on Carbon Trust analysis, are potentially far greater than estimates suggest, with possible savings on energy bills being two or three times higher.

Indeed the Carbon Trust's experience in delivering tens of thousands of energy audits across all business sectors shows that, on average, annual energy costs can be reduced by 20% through energy efficiency and improved energy management.

So whether or not an organisation is subject to the ESOS regulations, having an energy audit undertaken by a competent engineer is a smart business decision.

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How will it affect my organisation?

Check if the ESOS regulations apply to your organisation

Who is affected?

The criteria for inclusion to ESOS is not entirely straightforward, but essentially it applies to any large undertaking that carries out a trade or a business (most commonly a Company), and any corporate group where at least one member of the UK group meets the ESOS criteria.

An organisation is considered a large undertaking if it:

- Employs 250 or more people
- or
- Employs fewer than 250 people, but has an annual turnover in excess of €50 million *and* an annual balance sheet in excess of €43 million
- or
- Is a part of a group that includes at least one entity that meets either of the criteria above (see further details below)

This definition will also include some organisations that do not recognise themselves as traditional businesses, such as not-for-profit bodies outside the public sector, so long as they are large enough to meet the qualifying criteria.

ESOS defines an undertaking as any entity or enterprise which is 'engaged in an economic activity, irrespective of its legal form'. Beyond larger private sector companies, this means ESOS may also apply to:

- Partnerships
- Trusts
- Universities
- Charities and other not-for-profit bodies, if engaged in 'trade or business activities'

However, this is not clear cut and we would advise such organisations to check the wording of the ESOS regulation: for example, universities that are subject to the Public Contracting Regulations 2006 are outside the scope of ESOS.

The government estimates that the regulations will apply to approximately 6,700 organisations.

How do I comply with the regulations?

The step by step approach for Phase 2 compliance

The compliance approach remains the same as it was for Phase 1, details of which are provided below.

There are alternative approaches, for example where an organisation can demonstrate compliance with ISO 50001 for the entirety of its UK operations. In this case it is necessary to notify the Environment Agency¹ of compliance with ESOS through the appropriate ISO 50001 certification

It is also possible to comply through Green Deal Assessments or through Display Energy Certificates, and we advise organisations to consult the detailed regulation if they wish to explore these routes. The most popular compliance approach for Phase 1 was to conduct an ESOS Assessment and to appoint a **Lead Assessor** to confirm their compliance with ESOS.

The step by step approach for an ESOS Assessment is described in detail in the following section.

We're now in Phase 2 of the ESOS compliance scheme. The compliance deadline for Phase 2 is 5 December 2019.

What do I need to do, step by step, to complete the ESOS assessment?

The ESOS Phase 2 assessment must cover all **UK operations** over a **twelve month period** including 31st December 2018.

The assessment must include the following steps:

- Appoint a 'Lead Energy Assessor' to oversee the ESOS Assessment
- Measure the total energy consumption for buildings, industrial processes and transport
- Identify areas of significant energy consumption that account for at least 90% of total energy consumption
- Identify practical energy efficiency recommendations for areas of significant energy consumption and assess and report on the cost-effectiveness of each (based on a life-cycle cost analysis where practical)
- Report compliance to their national scheme administrator by 5 December 2019, after having had the ESOS Assessment reviewed by a Board-level Director (or senior manager where no Directors exist) and approved by a Lead Energy Assessor

In advance of this, it will be necessary to confirm that the boundary remains the same for Phase 2 as it was for Phase 1.

As a minimum, energy assessments need to use 12 months of energy consumption data and produce practical recommendations for the area being assessed, or confirm that there is no scope for cost-effective energy efficiency improvement.

¹ The Scottish Environment Protection Agency (SEPA), Natural Resources Wales (NRW) and the Northern Ireland Environment Agency (NIEA) are the compliance bodies for participants in Scotland, Wales and Northern Ireland respectively.

The assessment period of energy use needs to include 31 December 2018, hence it needs to begin on or after 1 January 2018, and end before 5 December 2019, by which time a qualifying organisation will need to submit a formal on-line notification to the Environment Agency stating that it meets the requirements of ESOS.

The energy saving recommendations may take place in a different 12 month period. It is possible to use existing energy savings opportunities identified anytime dating back to 6 December 2014 up until 5 December 2019.

Although there are recommended approaches, there is no prescribed methodology for assessments, as long as the Lead Energy Assessor is satisfied that it will meet the requirements of ESOS.

Assessments must include a minimum of one site visit, so that recommendations are not just theoretical. Organisations with a number of similar sites or assets can take a proportionate approach, applying recommendations from one audit across the wider portfolio.

Lead Energy Assessor

The formal ESOS Assessment must be carried out or reviewed by a qualified Lead Energy Assessor.

Since October 2014, a number of professional bodies that maintain a register of energy professionals have had their registration schemes accepted as fulfilling the requirements of PAS 51215:2014, the specification for the competence of a Lead Energy Assessor. This means that the members of these specific registers of energy professionals are approved to act as Lead Energy Assessors for ESOS. It is worth noting that individuals are not able to apply directly to the Environment Agency to become a Lead Assessor. For a list of currently approved registers please see [Appendix I](#). Other registers may be approved in the future.

It is possible for Lead Energy Assessors to be directly employed by an organisation that needs to comply with ESOS, or for them to be an external consultant. Through membership in the approved registers, the Carbon Trust has several accredited Lead Assessors.

ISO 50001 Energy Management Systems

Organisations that achieve certification to ISO 50001 for the entirety of their UK operations simply need to provide notification in order to comply with the ESOS regulations.

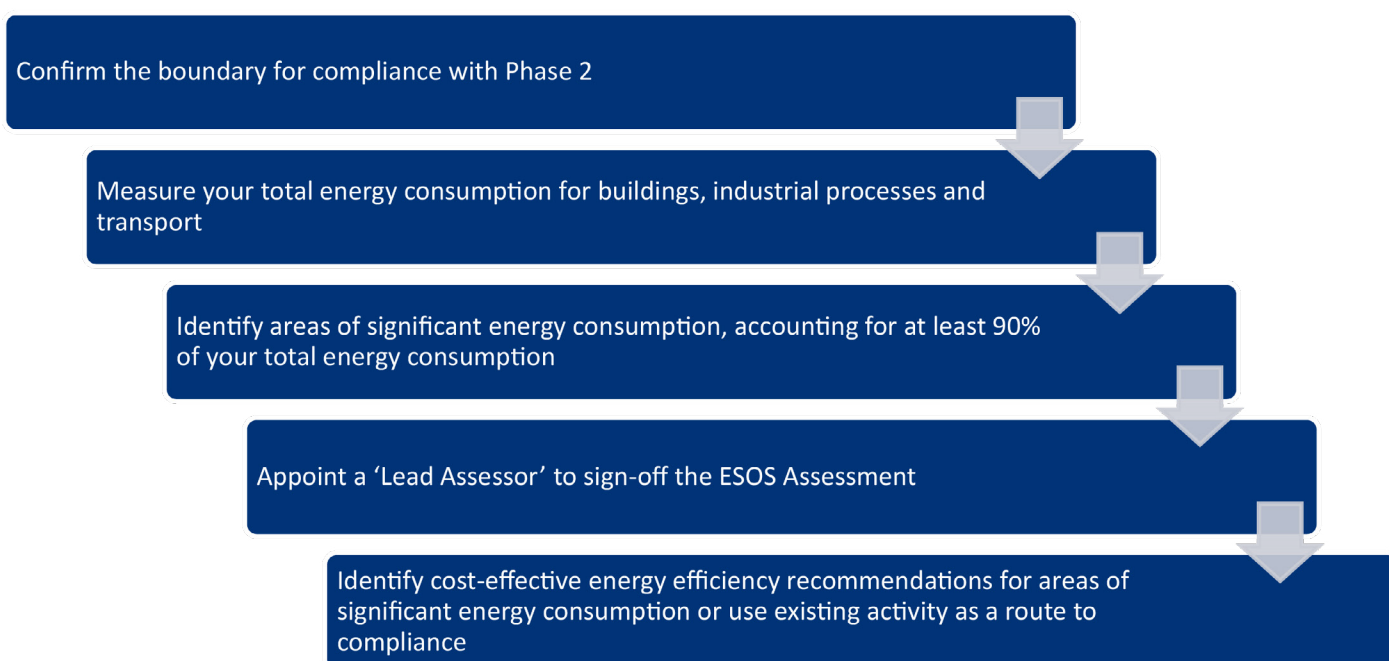
ISO 50001 provides a best practice framework for energy management, putting in place a systematic approach that drives continuous improvement in energy performance. A good quality energy management system delivers a number of benefits to an organisation: from reduced overheads and energy risks, to an improved reputation as a sustainable business.

The Carbon Trust offers implementation support services to help organisations put in place a best practice energy management system. For more information visit: <https://www.carbontrust.com/client-services/advice/technical/#iso50001>

The Carbon Trust's independent assurance body also offers certification services to ISO 50001 for organisations that have already implemented a best practice energy management system. For more information visit: <https://isocertification.carbontrust.com>

How to comply

The following diagram gives a simple guide to the key steps for compliance with ESOS.



* Organisations will not need to undertake an ESOS assessment if fully covered by ISO 50001. In this case it is just necessary to notify the National Scheme Administrator of compliance with ESOS. Compliance can be achieved for a building where a Display Energy Certificate has been issued or a Green Deal assessment has been carried out.

What are the benefits of ESOS to my business?

Should I do this even if I don't have to comply?

The Carbon Trust has provided over 200,000 fully costed energy saving recommendations to more than 35,000 UK businesses in the last 16 years. This experience has led us to conclude that approximately :

- 40% of simple recommendations with quick paybacks are implemented
- 20% of the more complex or long-term recommendations are taken forward

Our analysis indicates that large businesses can cost-effectively save around 15% of their energy expenditure through efficiency measures, with an average internal rate of return of 48% and payback within three years.

In many cases savings can be even higher. It is not uncommon in our experience to see reductions of as much as 25% to 30%.

These savings can be achieved through readily available and well-established technologies in areas such as lighting and heating, provided that the technology is properly specified and sized, and that the installer is appropriately skilled.

Even where an organisation does not need to comply, there is an opportunity cost of not undertaking a similar review, i.e. the cost of the wasted energy, the lost potential for taking competitive advantage, the opportunity to gain a better reputation for sustainable performance and the reputational benefit that can be developed with customers and stakeholders.

Accordingly, we encourage all businesses to proactively manage their energy in order to enjoy the cost and environmental benefits of eliminating avoidable energy wastage.

What are the penalties for non-compliance?

The Environment Agency found that in England there were around 500 organisations that qualified for ESOS in the first phase but had not engaged with the scheme. This has resulted in over 300 enforcement notifications sent out to date, with more to come. Civil penalty proceedings have commenced against a number of non-compliant organisations. Penalties include:

- Public disclosure of non-compliant organisations and details on non-compliance
- Financial penalties upward of £50,000 for fraudulent/non-compliance

How can the Carbon Trust help?

Support for ESOS compliance and beyond to help you take advantage of the business opportunities in energy efficiency

As the UK's leading mission-driven, 'not-for-profit' organisation helping businesses to accelerate the move to a sustainable low carbon economy, we are uniquely placed to help organisations comply with the ESOS regulations and go beyond compliance to take advantage the business opportunities in energy efficiency.

There are proven business benefits in addressing energy efficiency. Over the past 16 years the Carbon Trust has helped organisations to save over £5.5 billion in energy costs and to reduce carbon dioxide emissions by 60 million tonnes.

We offer a modular set of ESOS services to help companies achieve compliance in a cost effective manner, whilst at the same time highlighting the options for reducing energy consumption and maximising the associated business benefits. With qualified Lead Energy Assessors available to review and guide the approach, our ESOS services can provide support right the way through to full ESOS Compliance.

These services can be customised to match an organisation's individual situation and have been designed with an affordable entry level service to assist and guide each individual client through to the ESOS audit and full compliance.

200+

Number of organisations we supported during the first phase of ESOS

20%

Typical energy cost saving potential identified

£360k

Average annual savings identified, with far more possible in certain industry sectors

£1.8m

Typical energy spend of organisations we supported during the first phase of ESOS

ESOS Compliance Planning and Audit Strategy

Our modular approach to ESOS allows you to cost-effectively achieve compliance at the same time as maximising business benefits.

The entry point service for organisations who want to ensure that they are prepared for audit and compliance comprises the following:

- Web-delivered questionnaire for input data
- Half-day, facilitated workshop, utilising the questionnaire input
- Readiness review, detailing:
 - Approach for compliance (including disaggregation)
 - Boundary definition
 - Audit reference period
 - High level view of Data readiness, Assessor strategy, Audit methodology

This service pack has been deliberately designed to allow organisations at all stages of energy maturity access to first class leading energy and carbon management expertise, with options from just £1,495 (+VAT).

With qualified Lead Energy Assessors available to review and guide your ESOS approach, our follow-on services can support you through **full ESOS compliance**. Alternatively, our modular approach allows services to be selected depending on your individual circumstances, including:

- Delivery of organisational footprint, including:
 - Template to facilitate compliance footprint
 - Analysis of current footprint with energy and carbon hot-spotting advice
- Detailed ESOS audit strategy, including:
 - Audit methodology, Assessor strategy, Data readiness
 - Specification of compliance plan and detailed budget
- Full ESOS compliance audit by qualified Lead Energy Assessor

Case studies



Miller Homes

We advised Miller Homes on selection of bespoke compliance options to identify ESOS cost saving opportunities.

“The Carbon Trust helped us to fully understand our ESOS options, and develop a plan to achieve compliance in the most efficient, cost-effective, value-maximising way.”

Garry McDonald, Procurement & Sustainability Director, Miller Homes



Keepmoat

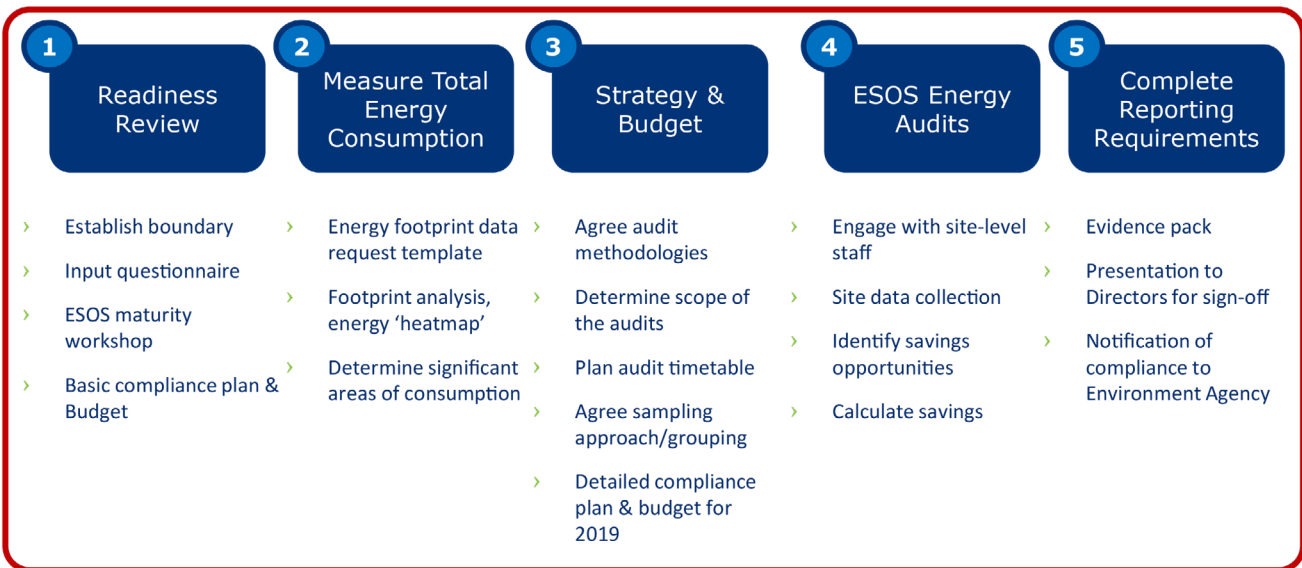
We helped housing provider Keepmoat become one of the first companies in the country to notify the Environment Agency of ESOS compliance.

“Keepmoat has found the ESOS process to be of significant benefit to the business, highlighting opportunities for increased awareness and cost savings across our offices, fleet and construction activities. In partnering with the Carbon Trust, we have benefitted from unrivalled expertise in energy management combined with an effective and supportive team.”

David March, Group Environmental Manager, Keepmoat

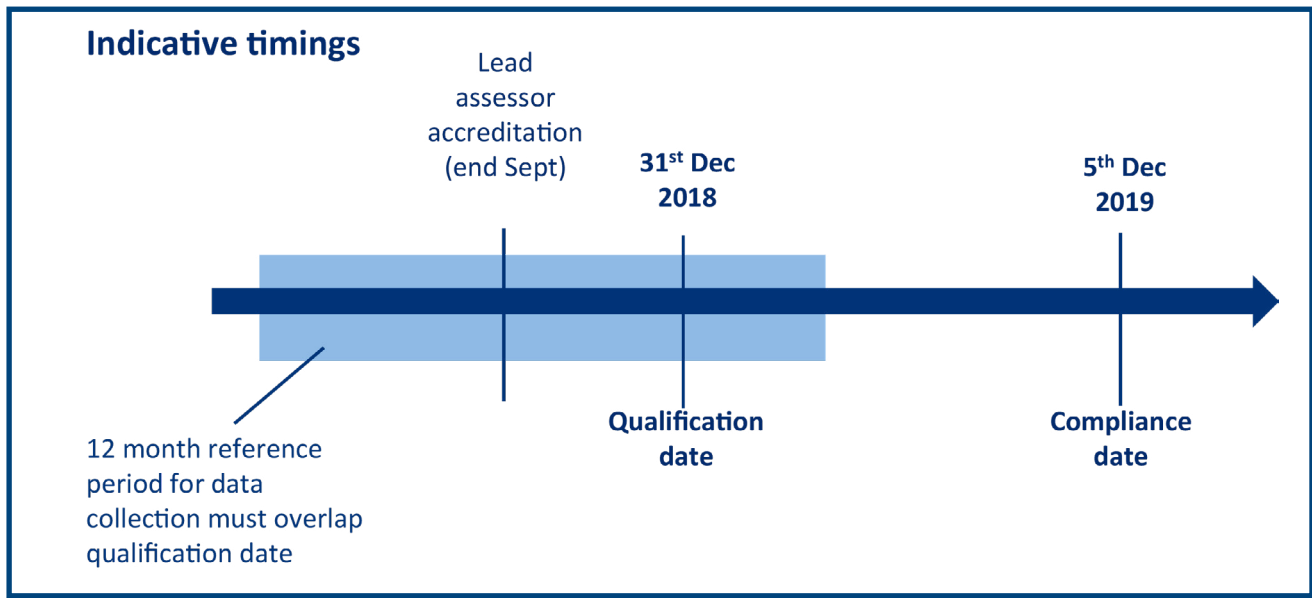
Carbon Trust support for ESOS compliance

Our modular approach to ESOS will allow you to comply cost-effectively while maximising business benefits. The following diagram summarises the five key steps for compliance.



Indicative timings for Phase 2 ESOS Compliance

The following diagram summarises the timetable for compliance.



Accessing the real value of ESOS

Carbon Trust services can help

It will be possible to achieve both ESOS compliance and the Carbon Trust Standard through the same consolidated process, through a single set of mechanisms. This represents a perfect proof point for best practice and differentiates an organisation from its peers. There will be significant efficiencies in aligning the process to achieve ESOS compliance with that for the Carbon Trust Standard.

With an in-house team of highly experienced Chartered Engineers and Energy Managers, the Carbon Trust is able to provide a full range of ESOS and Lead Energy Assessor services to ensure that organisations can cost-optimize their compliance with ESOS and maximise the benefits that flow from improved energy efficiency.



- Practical and strategic expert advice on how to make the most of the opportunities in energy efficiency
- Certification to the [Carbon Trust Standard](#), which allows an organisation to go beyond simple compliance and achieve recognition for real reductions in carbon, water and waste
- The [Green Business Directory](#) of Carbon Trust Accredited Suppliers, which provides details of high quality suppliers of energy efficiency and renewable technology.
- The [Carbon Trust Green Business Fund](#) - the new energy efficiency support service for small and medium-sized companies in England, Wales and Scotland. It provides direct funded support through energy assessments, training workshops, equipment procurement support and up to £5,000 capital contribution towards your energy saving equipment purchase.
- Guide to [Implementing Energy Savings Opportunities](#) - developed to support businesses in implementing the energy saving opportunities identified from ESOS assessments.

Reference

Full guidance on ESOS can be found on the [gov.uk website](https://www.gov.uk).

Appendix I

Approved registers of lead assessors: organisation and name of register

Carbon Trust assessors are accredited through the following organisations: CEA - I, CIBSE, Energy Institute (RPEC and Chartered EM).

Association of Energy Engineers	Certified Energy Auditor-International CEA-I
Association of Energy Engineers	Certified Energy Manager International (CEM-I)
ECMK Limited	ECMK ESOS Lead Assessor Register
Elmhurst Energy Systems	Elmhurst Approved ESOS Lead Assessor
Energy Institute (EI)	Chartered Energy Manager
Energy Institute (EI)	Register of Professional Energy Consultants (RPEC)
Institution of Chemical Engineers	Register of Chartered Chemical Engineers (MIChemE/FIChemE) ESOS LEA
Institution of Environmental Sciences	IES Lead Energy Assessor
National Energy Services Limited	National Energy Services ESOS Register
Quidos	ESOSRegister.com
Stroma Certification Ltd	ESOS Lead Energy Assessor Certification
The Chartered Institution of Building Services Engineers (CIBSE)	The CIBSE Low Carbon Consultant (LCC) Register, ESOS Lead Assessor Subset
The Energy Managers Association	EMA Energy Saving Opportunity Scheme Lead Assessor Register
The Institute of Environmental Management and Assessment	Environmental Auditor & Full membership of IEMA (ESOS Lead Assessor Subset)
The Institute of Environmental Management and Assessment	Principal Environmental Auditor (ESOS Lead Assessor Subset)

The Carbon Trust is an independent company with a mission to accelerate the move to a sustainable, low carbon economy.

The Carbon Trust:

- Advises businesses, governments and the public sector on opportunities in a sustainable, low carbon world.
- Measures and certifies the environmental footprint of organisations, products and services.
- Helps develop and deploy low carbon technologies and solutions, from energy efficiency to renewable power.

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