



Complying with the Energy Savings Opportunity Scheme

Environment Agency

Version 1.0

We are the Environment Agency. We protect and improve the environment and make it a better place for people and wildlife.

We operate at the place where environmental change has its greatest impact on people's lives. We reduce the risks to people and properties from flooding; make sure there is enough water for people and wildlife; protect and improve air, land and water quality and apply the environmental standards within which industry can operate.

Acting to reduce climate change and helping people and wildlife adapt to its consequences are at the heart of all that we do.

We cannot do this alone. We work closely with a wide range of partners including government, business, local authorities, other agencies, civil society groups and the communities we serve.

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Horizon house, Deanery Road,
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Version control

This guidance is published by the Environment Agency as the UK scheme administrator for the Energy Savings Opportunity Scheme, on behalf of all the UK regulators which are:

- Environment Agency for organisations whose registered office is in England.
- Natural Resources Wales for organisations whose registered office is in Wales.
- Northern Ireland Environment Agency for organisations whose registered office is in Northern Ireland.
- Scottish Environment Protection Agency for organisations whose registered office is in Scotland.
- Secretary of State for Energy and Climate Change for organisations whose activities consist wholly or mainly of offshore activities.

The Environment Agency, as scheme administrator is responsible for guidance, communications, helpdesk and collection of notifications of compliance throughout the UK. The regulators are individually responsible for checking compliance and enforcement activities in relation to qualifying participants.

Useful contact information is provided in Appendix C.

| Version Number | Amendment | Date |
|----------------|--|------------|
| 1.0 | Initial publication by the Environment Agency. Uses some text from Department of Energy and Climate Change's (DECC) guidance document - Guide to ESOS, Version 1.1, September 2014 and supersedes the DECC guidance. | 16/02/2015 |
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1. ESOS and who does it apply to?

The Energy Savings Opportunity Scheme (ESOS) is an energy assessment and energy saving scheme and is established by the Energy Savings Opportunity Scheme Regulations 2014 (ESOS Regulations).

The scheme applies to large undertakings and groups containing large undertakings in the UK.

An undertaking, as defined in the Companies Act 2006, is:

- a corporate body or partnership
- an unincorporated association carrying on a trade or business, with or without a view to profit

The scheme is estimated to lead to £1.6bn net benefits to the UK, with the majority of these being directly felt by businesses as a result of energy savings.

If after reading this guide you are still unsure about particular aspects of how to comply with ESOS then you should contact the Environment Agency ESOS help desk:

ESOS@environment-agency.gov.uk.

1.1. Who qualifies for ESOS?

You must take part in ESOS if your organisation qualifies as a large undertaking on the qualification date.

The qualification date for the first compliance period is 31 December 2014.

A large undertaking is:

- any UK undertaking that meets either one or both of the conditions below:

- **it employs 250 or more people**
- **it has an annual turnover in excess of 50 million euro (£38,937,777), and an annual balance sheet total in excess of 43 million euro (£33,486,489)**

You also must take part in ESOS if your undertaking is part of a corporate group which includes another UK undertaking that meets either of these conditions. Where a corporate group participates in ESOS, unless otherwise agreed the highest UK parent will act as a 'responsible undertaking' and be responsible for ensuring the group as a whole complies. Read section 1.7 for more detail on corporate groups.

- The definition of an undertaking includes an overseas company with a UK registered establishment which has 250 or more UK employees (paying income tax in the UK).

The UK registered establishment of an overseas company will also need to take part in ESOS, regardless of its size, if any other part of its global corporate group activities in the UK meets the ESOS qualifying criteria.

An 'establishment' is defined as a branch within the meaning of the Eleventh Company Law Directive (89/666/EEC) or a place of business that is not such a branch where there is some degree of physical presence in the UK.

You need to consider your organisation's corporate legal structure when assessing if your organisation qualifies. Your organisation may have several sites owned by one undertaking

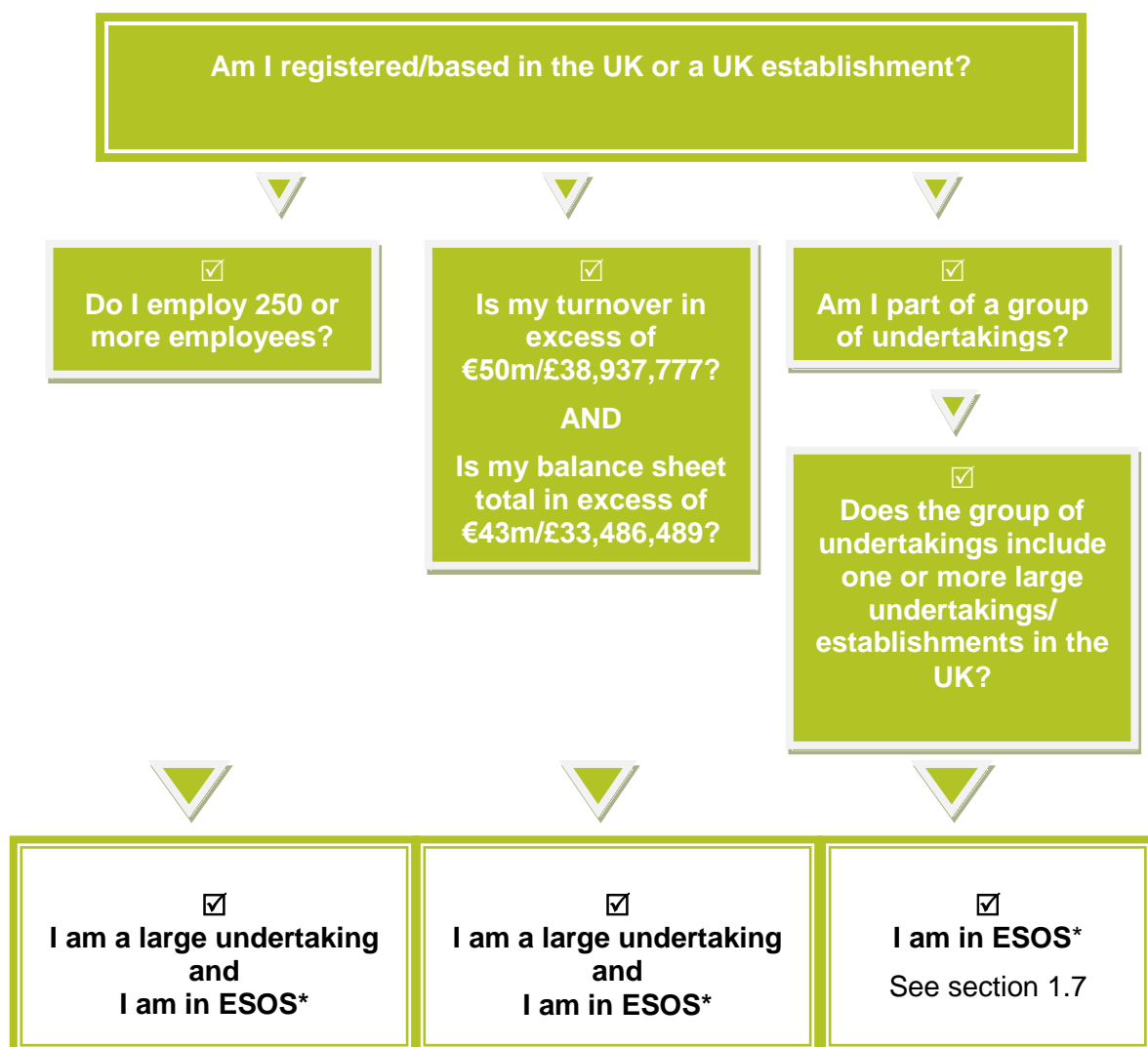
or each site may be a different legal undertaking owned by a common parent and this may affect whether your organisation qualifies for the scheme.

The type of work that your organisation carries out and the amount of energy your organisation uses are irrelevant to whether you qualify for the scheme. If your organisation is an undertaking and the qualification criteria above are met then you will need to participate in ESOS.

The financial qualification thresholds are specified in the ESOS regulations in euros. The equivalent pound sterling figures specified in brackets above were determined for the first compliance period based on the [Bank of England daily spot exchange rate on 31 December 2014](#).

If your undertaking is close to the qualification thresholds, or has grown/shrunk recently, read section 1.6 to help you establish if you qualify.

The flow chart below shows the qualification thresholds for ESOS:



*subject to section 1.2

Examples of undertakings that can qualify for ESOS include:

- limited companies
- public companies

- trusts
- partnerships
- private equity companies or limited liability partnerships
- unincorporated associations
- not-for-profit bodies (please note that most larger charities will be a corporate body and as such are considered to be an undertaking)
- universities which get more than half their funding from private sources.

1.2. Who does not qualify for ESOS?

You are not required to participate in ESOS if:

- your organisation is defined as a contracting authority by regulation 3 of the
 - [The Public Contracts Regulations 2006](#) in England, Wales and Northern Ireland
 - [The Public Contracts \(Scotland\) Regulations 2012](#) in Scotland
- your undertaking is subject to an insolvency procedure
- you do not meet the qualification criteria outlined in section 1.1.

Where you are part of a corporate group and only parts of the group fall into the categories above then the rest of the group will be required to participate in ESOS if they qualify.

If an undertaking only voluntarily complies with the Public Contracts Regulations 2006 or Public Contracts (Scotland) Regulations 2012 they will still need to participate in ESOS.

Where a private organisation is undertaking work as a subcontractor for an organisation subject to the public contracting regulations they will still need to assess their qualification in the normal way. If they qualify they will need to participate in the scheme and include energy supplies which are deemed to be their responsibility (see section 3.5 for details).

Where an overseas organisation has UK energy supplies but no UK establishment that employs at least 250 people in the UK it will not need to participate in ESOS unless any other part of its global corporate group activities in the UK meets the ESOS qualifying criteria.

Even if you do not qualify for ESOS, e.g. if you are an SME, you may wish to undertake an ESOS assessment in order to identify ways to reduce energy consumption and to demonstrate your commitment to energy efficiency. Organisations which wish to do so are able to voluntarily notify that they have complied with the requirements of ESOS through the ESOS notification process, and can then have their details published by the Environment Agency as part of the list of ESOS compliant organisations.

1.3. Calculating whether you meet the qualification thresholds

To find out if you qualify you will need to use your total employee numbers (calculated in accordance with section 1.4), and your turnover and balance sheet totals (see section 1.5) used in your accounts for the financial year ending either:

- on the qualification date of 31 December 2014
- in the 12 months immediately preceding the qualification date of 31 December 2014.

If your undertaking is close to the qualification thresholds, or has grown/shrunk recently read section 1.6 which includes additional information to help you establish if you qualify.

1.4. Definition of an employee

A person is employed by an undertaking if they are:

- an employee
- an owner / manager
- a partner.

An 'employee' is a person employed under contracts of service. Their contracted hours and status (full time / part time) are irrelevant to their classification as an employee.

The number of employees means the average number of people employed by the undertaking in the year.

To determine whether you meet the employee criteria you need to work out your average number of employees in the relevant accounting period:

- note the number of people employed by the company for each month of the financial year (whether for the whole month or part of it)
- add together the monthly totals
- divide by the number of months in the financial year

If you are a UK undertaking which directly (i.e. not via a foreign subsidiary) employs people who are based overseas, you must still include them in your employee count.

You usually don't have to count agency workers as employees but you should check their contracts with a legal advisor to confirm this.

If you sub-contract work then you should talk to HM Revenue & Customs to find out if the sub-contractors are considered your employees.

If you're a sub-contractor and you take on work for an organisation that's subject to the Public Contracting Regulations, this doesn't necessarily mean that the work you do for them is excluded from ESOS.

Under the Companies Act, your organisation is likely to be reporting the number of its employees in its annual reports to Companies House. The rules used to calculate the figures for the annual report should be used for the purpose of determining qualification with ESOS.

If you are an overseas company with a UK establishment you should determine your qualification based on the number of UK employees who pay income tax in the UK.

Example of calculating employees –

Company A's financial year runs from 1 April to 31 March the following year.

At the qualification date (31 December 2014) for the first ESOS compliance period, Company A's most recent set of financial statements are those for the year to 31 March 2014.

This means Company A must calculate the number of employees during that period.

On 1 April 2013, Company A had five directors and 235 employees. On 10 July 2013 Company A hired 20 more employees.

There were no further changes in employee or director numbers before the end of the year.

For 3 months in its financial year (April, May and June) Company A had a total of 240 staff (5 directors plus 235 employees).

For 9 months of the year (July 2013 to March 2014) the company had a total 260 staff (5 directors and 255 employees).

For ESOS purposes, Company A's number of employees for the year is:

$$[(240 \times 3) + (260 \times 9)] / 12 = 255$$

Company A exceeds the employee threshold of 250 at the qualification date. (However since they have recently gained staff they would need to look back over previous years' totals to establish if they qualify for ESOS - see section 1.6).

1.5. Meeting the financial conditions

To find out if you meet the financial threshold, you must calculate your turnover and balance sheet total.

You should start by checking your organisation's most recent annual financial statements, ending on or in the 12 months before 31 December 2014.

If you are unsure if your corporate group contains a large undertaking, each entity in a corporate group may need to look at the accounts required under the Companies Act 2006 Section 394 (duty to prepare individual accounts) or 395 (individual accounts: applicable accounting framework). Where an undertaking is not required under the Companies Act 2006 to produce individual accounts they may need to estimate the annual turnover and annual balance sheet total for the undertaking for a 12 month period including the qualification date.

In summary;

"turnover", in relation to an undertaking, means the amounts derived from the provision of goods and services falling within the company's ordinary activities, after deduction of—

- (a) trade discounts,
- (b) value added tax, and
- (c) any other taxes based on the amounts so derived;

"balance sheet total" means the aggregate of the amounts shown as assets in the company's balance sheet (that is before deducting both current and long-term liabilities).

If your undertaking is registered in the UK but directly owns or runs overseas activities (which aren't subsidiaries), then you should include the turnover and balance sheet total contributions of these activities as you assess whether that undertaking qualifies in its own right.

If a UK company owns overseas subsidiaries then the turnover and balance sheet totals of those companies aren't included in the assessment of qualification for the UK undertaking.

1.6. Organisations which are very close to the qualification thresholds or have recently shrunk or grown

If your organisation is very close to the threshold for qualification or has recently grown or shrunk then you may need to look back over several accounting periods to establish if you qualify. This is because the status of an organisation is determined by whether they have

maintained their size for at least two consecutive accounting periods. The exact wording from the regulations is as follows:

“Where, in any accounting period, an undertaking is a large undertaking (or a small or medium undertaking, as the case may be), it retains that status until it falls within the definition of a small or medium undertaking (or a large undertaking, as the case may be) for two consecutive accounting periods.”

So for example:

An organisation that was over the ESOS qualification threshold every year for the last 10 years and then shrunk in the accounts ending in April 2014 would still qualify for ESOS. This is because it has not maintained the smaller size for two consecutive accounting periods, so it is still considered as a large undertaking.

Conversely, if for the last five years a company did not meet the qualification thresholds and then has grown in its accounts ending in December 2014 (and now meets the qualification thresholds) then it would not qualify for ESOS. This is because it has not maintained the large undertaking size for two consecutive accounting periods, so it is still counted as a small or medium undertaking.

The table below provides additional examples:

| | | 2010 | 2011 | 2012 | 2013 | 2014 |
|------------------|-----------------|------|------|------|------|------|
| Company A | Over threshold | ✓ | ✓ | | | ✓ |
| | Under threshold | | | ✓ | ✓ | |
| Company B | Over threshold | ✓ | ✓ | | ✓ | |
| | Under threshold | | | ✓ | | ✓ |

Company A is an SME and is not in scope of ESOS - although it meets the criteria of a large undertaking in the 2011 and 2014 accounting periods, it is not in scope of ESOS because it does not meet the large undertaking criteria for two consecutive accounting periods.

Company B is a large undertaking and is in scope of ESOS - although it falls below the criteria of a large undertaking in 2012 and 2014, it is in scope of ESOS because the last time it had two consecutive accounting periods at the same size it met the large undertaking criteria.

If an organisation has been fluctuating above and below the threshold year-on-year then the organisation will have to go back as far as it takes to find two consecutive years where the same status exists. This will then determine the organisational status for the purpose of its ESOS qualification. There is no end date for how far back organisations may have to go to determine this information (i.e. they may have to go back to before the current ESOS compliance period).

If, since the organisation was formed, an organisation has never maintained two consecutive years at the same size then the size in the year it was formed will be what determines its organisational status for the purpose of its ESOS qualification. If an organisation has only been in existence for a few months it will take the average number of employees during that period and consider its finances on a pro-rata basis to determine its qualification status.

Please note, if you are close to the qualification threshold and are looking back at previous years' accounts then the exchange rate on the qualification date for the compliance period is

what determines the pound sterling qualification thresholds for all previous years (not the exchange rate at the time of the accounts). Therefore the figures which are relevant for compliance period one are an annual turnover in excess of £38,937,777, and an annual balance sheet total in excess of £33,486,489.

1.7. Corporate groupings for qualification and participation

If a corporate group contains at least one undertaking in the UK which meets the qualification conditions, its entire UK operation must take part in ESOS.

A corporate group is defined in the [Companies Act 2006](#). Sections 1158 to 1162 of that Act show how to identify if an undertaking is a parent to or subsidiary of another undertaking.

The highest UK parent of a group is the undertaking which has no parent, or only has parents which are overseas undertakings. All subsidiary undertakings of that highest UK parent would, by default, be part of the same participant for ESOS.

By default the highest parent acts as the responsible undertaking – this means it will complete the ESOS Assessment and notify the Environment Agency of compliance for itself and subsidiary undertakings.

Another undertaking within the highest parent group can be chosen to act as the responsible undertaking provided all undertakings in the highest parent group agree this in writing, and keep this agreement.

Undertakings within a highest UK parent group can disaggregate from one another for the purposes of compliance with ESOS, provided they agree in writing with their highest parent.

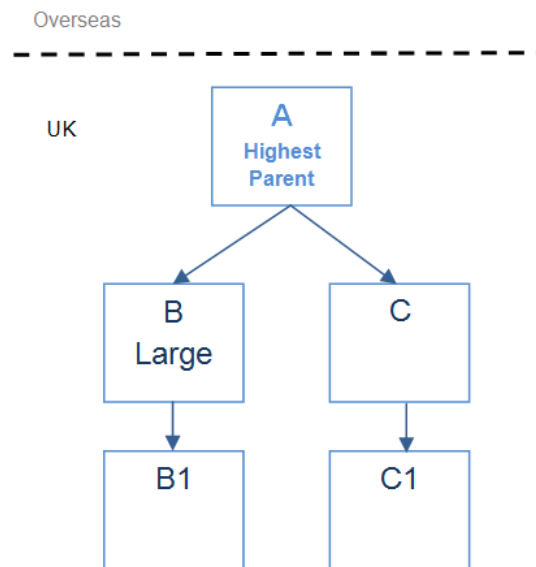
Undertakings that disaggregate will therefore report compliance as two or more separate participants. See section 1.8 for more details.

If a corporate group contains overseas parent undertakings, the corporate group may consist of more than one highest UK parent group. In this instance, if one highest UK parent group is in scope of ESOS then every other highest UK parent group in the same global group must also participate in ESOS. However, the default is that in this circumstance each highest UK parent group will participate separately.

If the highest UK parent groups within the same corporate group wish to comply as one participant (to 'aggregate') all highest parents in those highest parent groups must agree in writing which of them is to be the responsible undertaking in relation to the participant's compliance with the scheme. See section 1.9 for more details.

1.7.1. Examples of how to identify the corporate groupings for qualification

Example 1: when all companies are UK undertakings



Company A has two subsidiaries: B and C. Company B has one subsidiary, B1, and Company C has one subsidiary, C1.

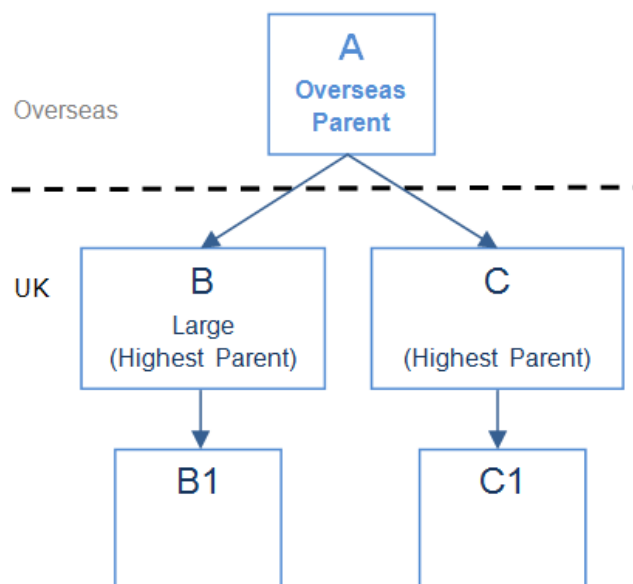
These companies make up a corporate group.

All the companies are UK undertakings.

B qualifies as a large undertaking and so they must all participate in ESOS.

Here, Company A is the highest parent and the companies jointly make up a highest UK parent group since they share a common highest UK parent.

Example 2: corporate group with overseas parent



A is an overseas undertaking. Both B and C are highest UK parents since neither has a UK based parent.

In this case there are two highest parent groups in the overall corporate group.

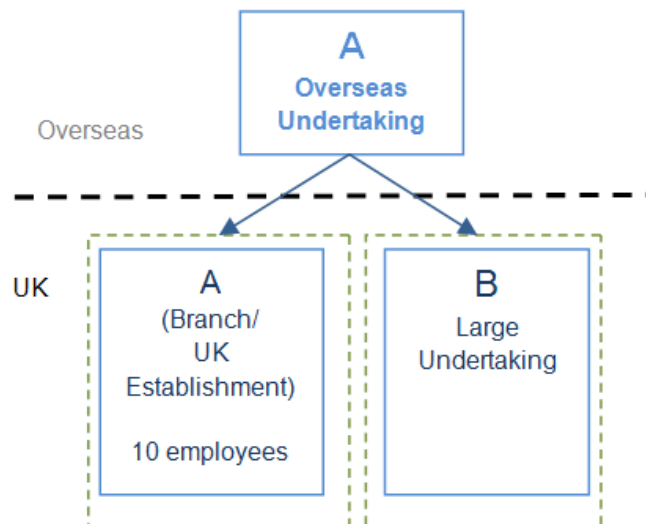
Even though B is the only large undertaking in the group, C and C1 will still need to comply with ESOS since they are part of the same corporate group as B.

The fact they aren't in the same highest UK parent group as B is irrelevant to their ESOS qualification.

For participation B and B1 would form one participant (highest UK parent group), while C and C1 would form another unless they agree to aggregate.

A would not be required to participate because it is not an undertaking in the UK.

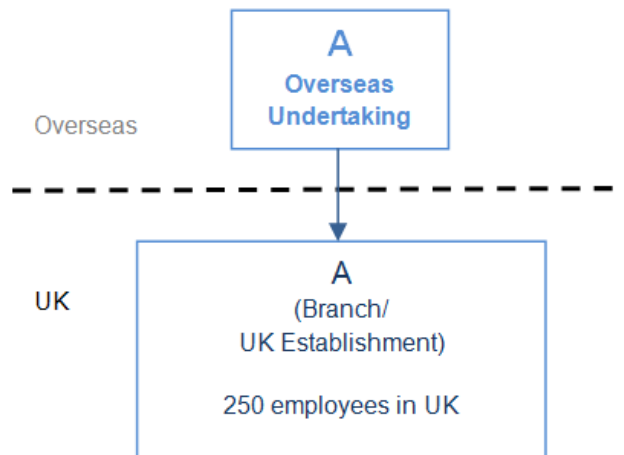
Example 3: corporate group with UK establishments and UK large undertakings



A is an overseas undertaking with a branch in the UK which is registered at Companies House as a UK establishment. As B is a large undertaking both A and B qualify for ESOS and they are both highest UK parents since neither has a UK based parent.

In this case there are two highest parent groups in the overall corporate group. They can agree to aggregate or participate separately to meet their obligations under ESOS.

Example 4: corporate group with UK large establishment



A is an overseas undertaking with a branch in the UK which is registered at Companies House as a UK establishment. A employs 250 staff in the UK. A therefore must comply with ESOS.

1.7.2. Joint ventures

An undertaking is a parent undertaking in relation to another undertaking (a subsidiary undertaking), if:

- it holds a majority of the voting rights in the undertaking, or
- it is a member of the undertaking and has the right to appoint or remove a majority of its board of directors, or
- it has the right to exercise a dominant influence over the undertaking —
 - (i) by virtue of provisions contained in the undertaking's articles, or
 - (ii) by virtue of a control contract, or
- it is a member of the undertaking and controls alone, pursuant to an agreement with other shareholders or members, a majority of the voting rights in the undertaking.

For the purpose of ESOS qualification assessment and compliance an investor (undertaking) will only be deemed to be in the same corporate group as a company it invests in if it meets one of the points above.

Joint ventures where:

- no organisation holds a majority of the voting rights in the undertaking, or
- no organisation is a member of the undertaking and has the right to appoint or remove a majority of its board of directors, or
- no organisation has the right to exercise a dominant influence over the undertaking—
 - (i) by virtue of provisions contained in the undertaking's articles, or
 - (ii) by virtue of a control contract, or
- no organisation is a member of the undertaking and controls alone, pursuant to an agreement with other shareholders or members, a majority of the voting rights in the undertaking

will need to assess their qualification for ESOS on their own and will participate in the scheme in their own right if they qualify.

1.7.3. Franchises

For the purpose of determining ESOS qualification franchisors are not grouped with their franchisees (unless they are also a parent undertaking of the franchisee undertaking).

If a franchisor and one or more franchisees all individually qualify and wish to comply as one participant this is allowed.

This is subject to a written agreement between all parties, and one undertaking becoming the responsible undertaking.

Please keep all details relating to which organisations are participating together in your evidence pack.

1.7.4. Trusts

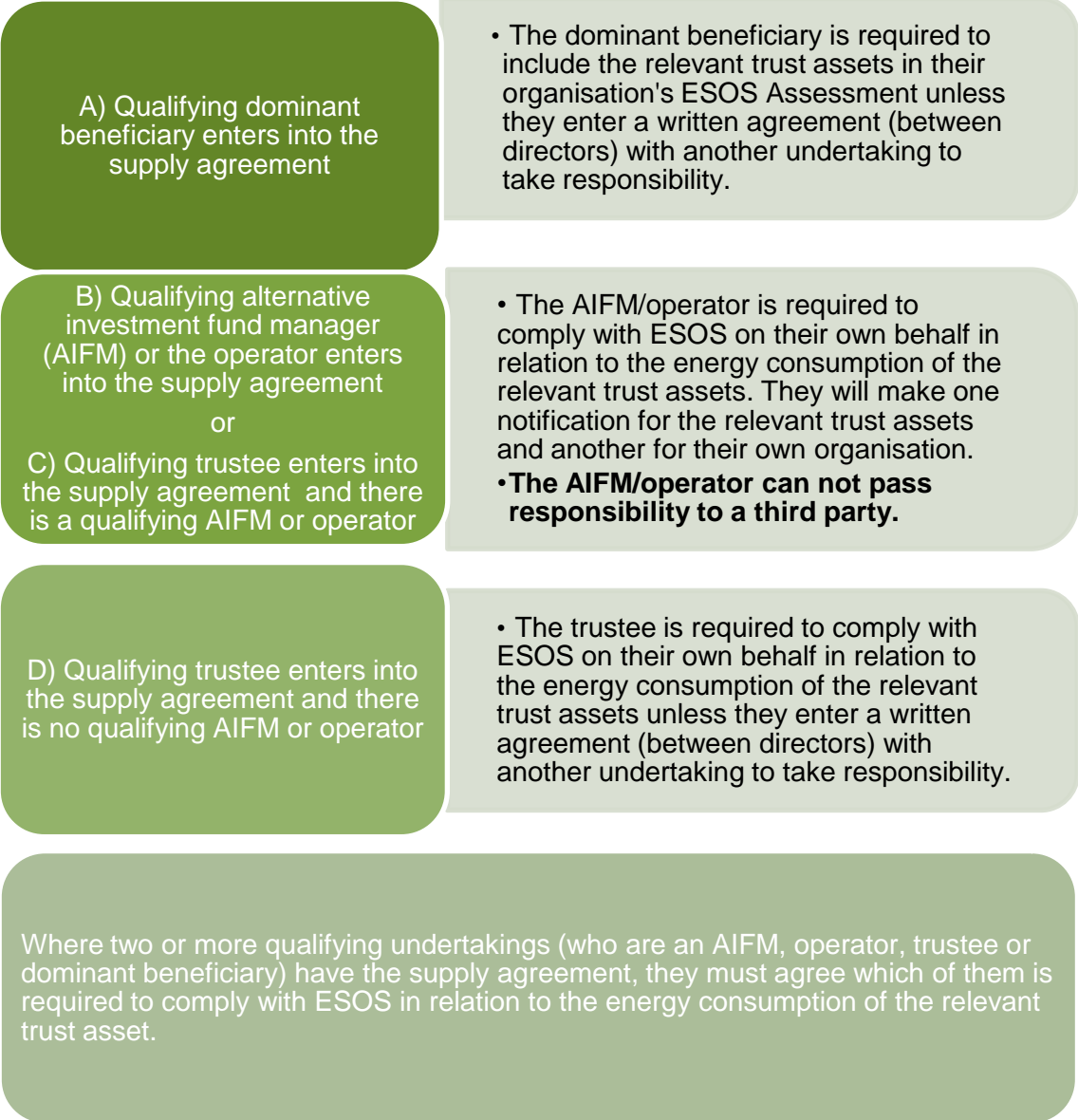
Assets held in trust must be included in ESOS if the organisation that's party to the agreement for the supply of energy to the assets qualifies for ESOS.

The qualification of these parties is determined in the normal way.

Where there is no energy supply the trust assets will not need to be included in an ESOS assessment because trust assets only fall into ESOS if an energy supply agreement is held.

Please note that the concept of a supply agreement being in place only affects the qualification of trusts for ESOS, all other types of undertaking which meet the qualification criteria will be required to participate in ESOS if they meet the qualification criteria.

The figure below summarises how responsibility for ESOS compliance for a trust asset is determined.



Trustees, operators/AIFMs and third party undertakings which have a responsibility to undertake an ESOS Assessment in relation to assets held in trust must participate separately in relation to the trust, themselves and any other trust for which they have ESOS responsibilities.

1.7.5. Private equity firms and Private Finance Initiatives (PFI)

Private equity firms and their portfolio companies are treated in the same way as other undertakings. They will need to establish whether they are legally part of the same corporate group in accordance with Sections 1158 to 1162 of the Companies Act 2006.

If having established the groupings the private equity firm is deemed the parent undertaking and at least one undertaking qualifies then the whole group would need to comply with ESOS. The parent could take responsibility for all the subsidiaries or could choose to disaggregate them if it chose to.

Undertakings involved in PFI arrangements will also have to determine whether they are legally part of any corporate group in accordance with the Companies Act 2006 or whether they are a standalone undertaking. If the undertaking qualifies or is part of a qualifying corporate group then they will need to participate in ESOS.

Having established whether an undertaking qualifies the responsibility for energy supplies is determined in the normal manner. See section 3.3 onwards.

1.8. Disaggregation of undertakings from the highest UK parent group

Undertakings within a highest UK parent group can disaggregate from the rest of the group if they wish.

This allows them to participate in ESOS individually, or as smaller groupings.

When undertakings choose to disaggregate:

- individual undertakings participating on their own act as their own responsible undertaking
- undertakings participating as smaller groups must agree which one will act as the responsible undertaking.

To disaggregate, an undertaking must have an agreement in writing with the highest parent.

The agreement in writing should be made between individuals with management control of the undertakings involved (board directors or equivalent).

Disaggregation may help you manage ESOS participation, for example, if parts of your group operate separate energy management processes or company finances.

Disaggregation does not exempt subsidiaries from participating in ESOS. Each resulting participant, after disaggregation has been agreed, will need to fully comply on their own behalf including working out their total energy consumption and ensuring that 90% of their energy is covered by a compliance route.

The answers you provide to the questions in the ESOS notification will show your regulator that disaggregation has occurred.

Where there is no agreement in writing from both parties, the liability for compliance will rest with the organisation that has been determined as the responsible undertaking for the participant containing the highest UK parent in the group (either the highest UK parent itself or another agreed undertaking).

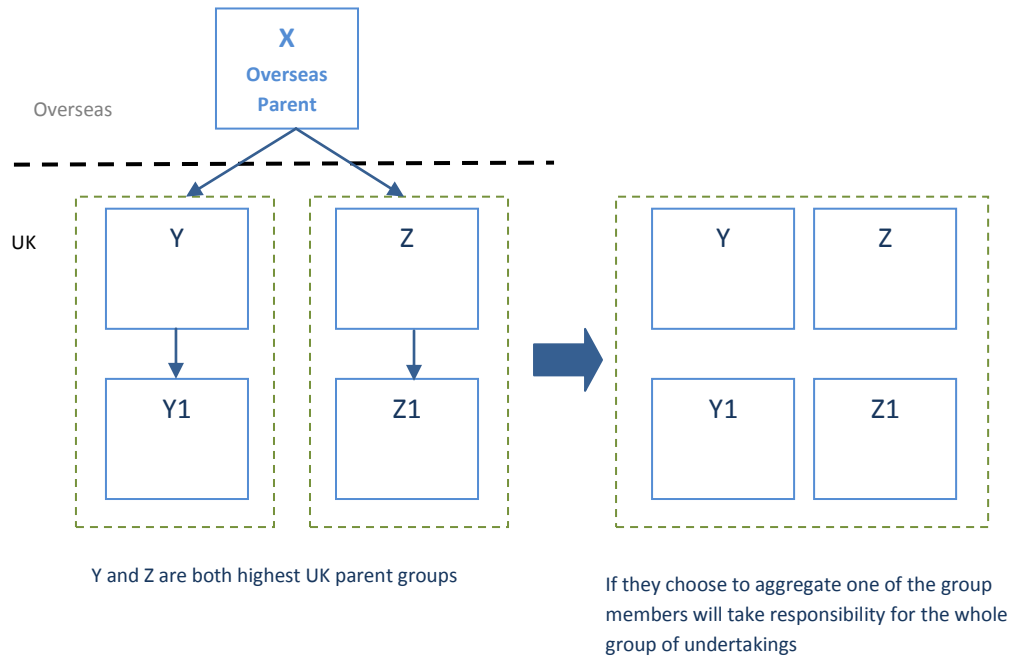
Where agreement in writing for the disaggregation for both parties can be evidenced and one party has not complied then liability for compliance will rest with the responsible undertaking of the participant that has not complied.

1.9. Aggregation of highest UK parent groups

If there's more than one highest UK parent in a corporate group, the highest UK parent groups can choose to aggregate if they want to comply as one participant. Aggregation between highest UK parents and their undertakings requires the mutual consent of the highest parents.

The aggregation of two or more highest UK parent groups does not prevent parts of any of those groups from disaggregating from the larger whole for the purposes of compliance – provided all the UK organisations in the overall corporate group comply.

The diagram below exemplifies aggregation:



1.10. Changes to groups of undertakings

If one or more undertakings leave a qualifying group between the ESOS qualification date (31 December 2014 for the first compliance period) and the compliance date (5 December 2015 for the first compliance period) the undertakings must still comply with ESOS.

An undertaking can comply:

- with its previous group,
- with its new group,
- on its own, in the absence of a written agreement with the previous or new group.

If a qualifying group purchases an undertaking (between the qualification date and the compliance date) from an organisation that did not qualify for ESOS then the energy supplies do not need to be included in your total energy consumption calculation and will not need to be audited or covered by an alternative route to compliance.

If a qualifying group sells an undertaking to an organisation that did not qualify for ESOS then the energy supplies of the purchaser do not need to be included in ESOS. Only the energy supplies of the undertaking that has been purchased will be subject to ESOS.

2. Deadlines

2.1. Compliance periods and compliance dates

Qualification is based on the status of your organisation on 31 December 2014, and every four years after that for each subsequent compliance period.

If your organisation qualifies, you must participate in ESOS and notify compliance to the Environment Agency by the last date of each compliance period ('the compliance date').

The table below shows the qualification dates, compliance periods and compliance dates.

| Compliance period | Qualification date | Compliance period | Compliance date |
|-------------------|--------------------|---|-----------------|
| 1 | 31 December 2014 | From 17 July 2014* to 5 December 2015 | 5 December 2015 |
| 2 | 31 December 2018 | From 6 December 2015 to 5 December 2019 | 5 December 2019 |
| 3 | 31 December 2022 | From 6 December 2019 to 5 December 2023 | 5 December 2023 |
| 4 | 31 December 2026 | From 6 December 2023 to 5 December 2027 | 5 December 2027 |

*The ESOS Regulations came into force on 17 July 2014. The first compliance period can only be specified as starting from the date of the regulations coming into force. However, energy audits and alternative compliance routes conducted up to 4 years before the first compliance date (i.e. since 6 December 2011) can be used towards compliance for the first compliance period.

2.2. Organisational status changes after the qualification date

If your status changes after the qualification date for a compliance period, this won't affect your eligibility for ESOS. You will still need to comply by the compliance date for the period if you qualified for the scheme on the qualification date. Therefore if you qualify for the first compliance period based on your organisational status on 31 December 2014 you will need to comply by 5 December 2015 regardless of any changes to your size or structure during the intervening 11 months.

Your status at the next qualification date, 31 December 2018, will determine whether you qualify for the second compliance period.

3. Carrying out an ESOS assessment

3.1. ISO 50001 certification covering all your energy use

If you have an ISO 50001 energy management system that's certified by an approved certification body and covers all your energy use (for the whole corporate group in the UK), this counts as your ESOS assessment.

To be compliant:

- the certification must remain valid at the compliance date.
- the Energy Management System must cover all of the assets held and activities carried on by your organisation as at the qualification date.

If you take on new assets, undertakings, or activities in the compliance period and your ISO certification covers your entire organisation or group, then these changes will not prompt a requirement for recertification for continuing compliance with ESOS, provided the newly acquired assets/undertakings/activities are within the scope of the certification.

If you are compliant via this route you would not need to calculate your total energy consumption and would not require a lead assessor to comply with ESOS. However you will still need to:

- get a board level director to confirm that they have reviewed findings of your ISO 50001 certification, the organisation is compliant and the information which is going to be entered in the notification is correct.
- make a notification to the Environment Agency (via the online notification available on the ESOS webpage on [.Gov.uk](https://www.gov.uk)) to specify that this is how you are compliant with ESOS.

If only some of your energy use is covered by ISO50001 you will need to continue reading the guidance to ensure you comply fully with ESOS.

3.2. No ISO 50001 certification or it only covers part of your energy use

If you don't have an ISO 50001 energy management system which covers **all** your energy use, you must carry out an ESOS assessment.

To do this you will need to do all of the following;

- measure your total energy consumption
- identify areas of significant energy consumption
- consider available routes to compliance
- ensure areas of significant energy consumption are covered by a route to compliance
- appoint a lead assessor
- get one or more board level directors to review the findings of the assessment
- make a notification of ESOS compliance online.

3.3. Measuring your total energy consumption

You must calculate your total energy consumption (unless you are fully covered by ISO 50001 - see section 3.1). This must be calculated in a common unit, which can either be an energy unit (such as kWh) or energy spend in pounds sterling. Please note that CO₂ is not an energy unit.

Your total energy consumption includes all input energy use, e.g. buildings, industrial processes and transport.

Use the [Government conversion factors for company reporting](#) to help you measure energy consumption in common units.

If a fuel you use isn't listed, you can contact your fuel provider to get information about its properties.

The purpose of this calculation is to help you identify what energy your assets/activities use and which assets/activities you will subsequently need to ensure are covered by a route to compliance.

This figure will not need to be provided in your ESOS notification. However, if you are audited by your regulator you may be required to provide this figure and the evidence used to determine it.

3.4. How energy is defined

Under ESOS, energy is defined as all forms of energy products, including:

- combustible fuels
- heat (excluding your organisation's surplus heat from industrial processes)
- renewable energy
- electricity.

There are no fuel type exemptions in ESOS.

3.5. What energy supplies to include in your total energy consumption calculation

Generally, energy that is both supplied to and consumed by an organisation is in the scope of ESOS.

For the purposes of calculating your total energy supply, which is done to identify your areas of significant energy consumption, you only need to consider input energy. Therefore where heat is one of your sources of energy you will only include it where you are importing the heat to your site or process. Where the heat is obtained by converting another source of energy such as gas into heat (on site) then exclude the heat produced to avoid double counting. However please note that all heat must be included in your audits and energy profiles.

'Energy supplied' means any energy that your organisation uses under an agreement with a supplier or third party. This includes energy that's supplied to assets you hold or activities your organisation carries on and includes buildings, installations, transport and construction activities.

Energy used in the offshore gas and oil industry within UK waters is included in ESOS.

Do not include energy which your organisation uses overseas unless it involves international travel in which case special rules can apply (see section 3.5.4).

3.5.1. Assets you hold and activities you carry on

You only need to include energy consumption in relation to activities that you are carrying on and any assets that you held on the qualification date (31 December 2014) and still hold on the compliance date (5 December 2015). You may elect to exclude from the total energy consumption calculation energy consumed by any asset which is no longer held by you, or by any activity which is no longer carried on by you on the compliance date. Note that holding an asset doesn't mean you have to own the asset (e.g. you may be borrowing, using, renting or leasing the asset).

3.5.2. Buildings

All energy use in buildings is included in ESOS.

In relation to multi-tenanted buildings and landlord-tenant relationships, under ESOS the responsibility to include energy within an organisation's total energy consumption calculation is determined by whether the participant is

- (1) supplied with that energy and
- (2) consumes that energy by the assets it holds or by the activities it carries out.

Where that participant supplies energy to another organisation and it is measured or can be reasonably estimated, that energy does not form part of their total energy consumption calculation.

The landlord and tenant should determine between themselves who is responsible for the energy based on the information above and bearing in mind that the organisation with the ability to control the energy use should take responsibility for the energy supply and audit it to identify energy saving opportunities.

Where an ESOS participant moves from one building, or asset, to another during the period between the qualification date (31 December 2014) and the compliance date (5 December 2015) then they will have to include in their total energy consumption calculation, the energy use for the activities that are carried out in the original building and are being moved to the new building (such as use of computers, copiers, manufacturing processes, etc), where measured or able to be reasonably estimated, but not energy uses associated with the buildings themselves (such as heating, ventilation air conditioning, lifts, etc).

You will need to include the energy used in the building in your total energy consumption calculation even if the building is unoccupied on the qualification date.

Where an employee is working from home you do not need to include the energy used by them, in their homes, in your total energy consumption calculation.

3.5.3. Installations (including Combined Heat and Power plants (CHP))

Large installations generating or using energy are included in your total energy consumption calculation.

In a CHP or other power generation process only the incoming fuel and mains electricity, needs to be included in the calculation of your total energy consumption for the purpose of ESOS. You don't need to include the heat created and used and electricity created and used by your organisation in the calculation however you will need to audit these if you choose to include the input fuel in your significant energy consumption, see section 4.

3.5.4. Transport

Energy consumption from transport is included in ESOS. You are only required to include transport where your organisation is supplied with the fuel for business purposes, not where you procure a transportation service that includes an indirect payment for the fuel consumption.

When calculating your energy consumption from transport activities, you may make reasonable estimations based on verifiable data (e.g. expenditure) in cases where you do not have actual usage data (e.g. litres). For instance, you could use the number of expensed miles multiplied by an average fuel consumption factor to estimate the usage (See Appendix A, section A.9 for a worked example).

Where estimates are used the reason and method of estimation should be kept in your evidence pack.

Energy consumed for the purposes of transport means energy used by a road going vehicle, a vessel, an aircraft or a train;

- “aircraft” means a self-propelled machine that can move through the air other than against the earth’s surface,
- “road going vehicle” means any vehicle in respect of which a vehicle licence is required under the Vehicle Excise and Registration Act 1994(1), or which is an exempt vehicle under that Act,
- “train” has the meaning given in section 83 of the Railways Act 1993(2), and
- “vessel” means any boat or ship which is self-propelled and operates in or under water.

The energy consumption of a participant includes energy which is consumed for the purposes of transport by an aircraft or a vessel during the course of any journey which—

- (a) starts,
- (b) ends, or
- (c) both starts and ends

within the United Kingdom. For the purposes of ESOS, the definition of a “journey” for both aircraft and sea vessels is the travel which takes place between the departure from one point, and arrival at the next point.

A participant may elect to include:

- (a) energy consumed for the purposes of transport by an aircraft or a vessel, during the course of a journey which both starts, and ends, outside the United Kingdom,
- (b) energy consumed outside the United Kingdom for the purposes of transport by a road going vehicle or a train.

The following activities should be included in your calculation of your total energy consumption:

- Fuel used in company cars on business use
- Fuel used in fleet vehicles which you operate on business use (see Appendix A, A.8)
- Fuel used in personal/hire cars on business use
- Fuel used in private jets, fleet aircraft, trains, ships, or drilling platforms which you operate

The following activities should not be included in your calculation of your total energy consumption:

- Fuel associated with train travel of your employees where you do not operate the train
- Fuel associated with flights your employees take where you do not operate the aircraft
- Fuel associated with taxi journeys your employees take where you do not operate the taxi firm.
- Fuel associated with transportation of goods where you subcontract a firm or self employed individual to undertake this work for you (this fuel will be included in the subcontractor's total energy consumption calculation if they qualify).

3.5.5. Construction Activities

Assets which you hold on the qualification date (31 December 2014) and still hold on the compliance date (5 December 2015) should be included in your total energy consumption calculation. Therefore assets which you hold such as portable buildings and machinery (regardless of which site they are on) should still be included in the calculation of total energy consumption because that is still an asset of your organisation on the compliance date.

Items that would not have to be included in the calculation of total energy consumption include show homes or the office building under construction where you use grid electricity in the building during the construction of it but which you will no longer have responsibility for on the compliance date. However if you are using generators on sites then you must include the input fuels in your total energy consumption if you hold them on the qualification date and the compliance date.

The nature of the construction sector is such that the approach to energy audits needs to be done in a way which is going to lead to the most benefit to the participant in terms of identification of energy saving opportunities. This may mean that it is more relevant to look at the overall activities you undertake (rather than target specific sites because construction sites are temporary and energy consumption is directly related to the stage of construction) and identify policies and opportunities that if instigated across the whole of your business would lead to energy efficiency savings. Hence for a range of construction activities such as excavation, site cabin use, on-site generators and so on, where the energy is your responsibility it will need to be audited and where practicable you should identify cost effective opportunities for energy savings.

Please ensure that you record in your evidence pack your rationale for your ESOS assessment.

3.5.6. Energy that isn't in scope

The following types of energy are not in scope of ESOS:

- unconsumed energy that your organisation doesn't use, and supplies to a third party
- energy consumed outside the UK
- energy consumed for international travel or shipping where the journey doesn't start or end in the UK (unless the organisation wishes to include their international travel)

You can deduct unconsumed supplies from your total provided:

- the supply is measured (for example with metering),
- the supply can be calculated based on verifiable data, or
- it can be reasonably estimated

Where a reasonable estimate is made, please keep the details of the assumptions and methodology in your evidence pack.

3.6. Reference period

You must calculate your total energy consumption over a reference period of 12 consecutive months.

The reference period must include the qualification date and end before the compliance date.

If you can't use data for a full 12 months, then you should use as close to 12 months as is reasonably practicable and explain why in your evidence pack.

The reference period should be the same 12 month period for all energy supplies. If you don't have data for part of your reference period, you can use estimates to fill in any gaps.

3.7. Using verifiable data

When calculating your total energy consumption, you must use verifiable data where reasonably practicable.

Verifiable data is data you can prove, for example:

- an invoice or delivery note
- meter reading records and schedules for electricity or natural gas
- stock records and readings for stored liquid, solid fuels and waste
- automatic meter reading or smart and half hourly meter data outputs, for electricity and natural gas

If you can't obtain verifiable data of energy use or spend you should:

- explain why in your evidence pack
- use a reasonable estimate derived through calculation (based on other verifiable data, if possible), and show how you got this figure
- keep records in your evidence pack

ESOS participants may also be part of other energy management/reporting schemes, like:

- the EU Emissions Trading System (EU ETS)
- Climate Change Agreements (CCAs)
- the CRC Energy Efficiency Scheme (CRC)
- mandatory greenhouse gas (GHG) reporting for quoted UK companies.

Please note that simply being part of these other schemes does not automatically count as ESOS compliance for the energy covered by those regimes. You can use energy data you collect as part of your compliance with these schemes to calculate your total energy consumption for your ESOS Assessment but you are likely to have to do additional work to ensure you are also compliant with ESOS.

The scope of energy you must include in your total energy consumption under ESOS is broader than what's covered by these mandatory and voluntary schemes. This means that it's unlikely you'll be able to calculate your total energy consumption based on what data you collect for these schemes alone.

3.8. How to estimate

If you can't get verifiable data, you can fill in the gaps by estimating data.

To do this, you could use:

- direct comparison
- pro-rata extrapolation
- benchmarking

Direct comparison means using figures from another comparable time period to fill the gap, (for example the same day/week/month in another year).

Pro-rata extrapolation means using figures you have for one period of time to get average consumption figures for a shorter period.

For example, you could use the average day rate of energy use for 1 March 2015 to 25 March 2015 to estimate the energy used between 26 and 30 March 2015.

Benchmarking means using the energy consumption of one asset or activity as a proxy to estimate the consumption of another asset.

For example, you could use the annual energy use of one retail outlet to estimate how much energy another retail outlet uses, particularly if they were similar size, age, or build.

4. Identifying areas of significant energy consumption

After you've calculated your total energy consumption, you must identify assets and activities that amount to at least 90% of your total energy consumption.

These are your areas of significant energy consumption and comprise the assets and activities you will audit or ensure are covered by an alternative route to compliance.

This means you can exclude up to 10% of your total energy consumption from any audit or alternative compliance measures.

This 10% is your "de minimis energy consumption".

You can classify whichever activities you choose as de minimis energy consumption.

This means you can exclude energy on:

- a group basis – for example excluding the consumption of a one or more undertakings
- a site basis – for example excluding the consumption of a particular site or number of sites
- an asset/activity basis – for example excluding the consumption of an asset or activity, or a defined list of assets or activities
- a fuel basis – for example excluding consumption associated with the use of a particular fuel or fuels

You could also exclude energy using a combination of the above.

If you do not choose to identify your areas of significant energy consumption then you must audit your total energy consumption or cover it under another route to compliance.

Supplies which were not required to be included in the total energy consumption calculation (in accordance with the rules set out in section 3.5) are excluded from all future calculations. As a result these supplies would not have to be included in your significant energy consumption, would not need to be covered by a route to compliance or included in the de minimis energy use.

5. Considering available routes to compliance

You must choose one or more routes to compliance that cover all your areas of significant energy consumption (see section 4).

You can demonstrate that you've made a compliant ESOS assessment using:

- ISO 50001 certification
- Display Energy Certificates (DECs)
- Green Deal Assessments (GDAs)
- ESOS compliant energy audits.

If you choose to comply with ESOS using an existing certification or assessment, it must have been issued after 5 December 2011 and be valid at the compliance date – 5 December 2015 for the first compliance period.

Previous audit work, for instance performed as part of other energy audit schemes, can be used towards compliance for ESOS, provided it:

- was conducted within the compliance period, and
- meets the minimum requirements of an ESOS energy audit (see section 5.4.1)

You should keep a record of how your areas of significant energy consumption are covered by your compliance routes, in your ESOS Evidence Pack.

5.1. ISO 50001 certification as a partial compliance route

If you have a certified ISO 50001 energy management system that covers all your energy usage, you don't need to do an assessment (see section 3.1).

If you are using ISO 50001 as one of your routes to compliance then the energy management system must be certified by one of the following:

- a United Kingdom Accreditation Service (UKAS) accredited certification body
- a body accredited by another EU member state's national accreditation body
- a body accredited by a body which is a member of the International Accreditation Forum

The proportion of the total energy consumption covered by the ISO50001 certification will need to be determined. If it covers over 90% (all your significant energy consumption) no further compliance routes would be needed for your compliance. However, you would need a lead assessor to sign off your compliance. If it does not cover 90% of your total energy consumption then you will need to combine the energy covered by the ISO 50001 certification with the energy covered by the other compliance routes to ensure that overall at least 90% is covered.

5.2. Display Energy Certificates

Display Energy Certificates (DECs) promote the improvement of the energy performance of buildings and form part of the implementation in England and Wales of the European Directives 2002/91/EC and 2010/31/EU on the energy performance of buildings.

DECs are defined by the [Energy Performance of Buildings Regulations 2008](#), in Northern Ireland and by the [Energy Performance of Buildings Regulations 2012 \(as amended\)](#), in England and Wales.

DECs are not available in Scotland and as such cannot be used as a compliance route for buildings in Scotland.

A DEC can be part of an ESOS compliant energy assessment for the types of energy consumption it covers, if:

- the assessment was made and the certificate issued (and accompanying recommendation report provided) within the compliance period (for the first compliance period, the assessment can have been made any time after 6 December 2011)
- it is still valid on the compliance date of a compliance period

Only buildings holding a valid DEC with accompanying recommendation report can be deemed to be compliant with ESOS via this route. Where no valid DEC is held an alternative method of ESOS compliance would need to cover the building's energy, for instance an audit meeting the minimum criteria for ESOS. Please note that ESOS audits do not always have to include a site visit of a building if similar buildings have been visited and energy saving opportunities identified which can be applied to the building in question.

A DEC and its accompanying advisory report can only be used as a compliance route for the specific energy they both cover. If all of the energy use in the building is not covered by the certificate and advisory report then the remaining energy supplies would need to be covered by an alternative route to compliance, unless you chose to include it in your de minimis. For example, if a building contains significant process energy that the advisory report did not consider then this energy would need to be covered by an alternative route to compliance.

The proportion of the total energy consumption covered by your DECs will need to be determined. If they cover over 90% (all your significant energy consumption) no further compliance routes would be needed for your compliance. However, you would still need a lead assessor to sign off your compliance. If they do not cover 90% of your total energy consumption then you will need to combine the energy covered by the DECs with the energy covered by the other compliance routes to ensure that overall at least 90% is covered.

Energy Performance Certificates (EPCs) are not a valid route for ESOS compliance. This is because EPCs aren't based on the occupied energy consumption of the building so don't meet minimum requirements of the EU Energy Efficiency Directive, which is the Directive which the Energy Saving Opportunity Scheme Regulations 2014 have been implemented to comply with.

5.3. Green Deal assessments

Green Deal Assessments (GDAs) are provided under the government's Green Deal scheme for domestic and non-domestic buildings.

They can be part of an ESOS compliant energy assessment for the types of energy consumption they cover, if they qualify as per regulation 7 of the [Green Deal Framework \(Disclosure, Acknowledgement, Redress etc.\) Regulations 2012](#).

GDA's must have been carried out within the compliance period and they must still be valid at the compliance date.

For the first compliance period, the assessment can have been made any time on or after 6 December 2011.

The proportion of the total energy consumption covered by your GDA's will need to be determined. If they cover over 90% (all your significant energy consumption) no further compliance routes would be needed for your compliance. However, you would still need a lead assessor to sign off your compliance. If they do not cover 90% of your total energy consumption then you will need to combine the energy covered by the GDA with the energy covered by the other compliance routes to ensure that overall at least 90% is covered.

A GDA can only be used as a compliance route for the specific energy it covers. If all of the energy use in the building is not covered by the assessment (for example, GDA's do not consider the energy efficiency potential in industrial processes contained within a building) then the remaining energy supplies would need to be covered by an alternative route to compliance, unless you chose to include it in your de minimis.

5.4. Auditing areas of significant energy consumption

You must audit your areas of significant energy consumption which aren't covered by one of the alternative routes to compliance.

You can do this specifically to comply with ESOS, or you can use previously undertaken energy audits to contribute to ESOS compliance.

Any audits you use must meet the minimum energy audit requirements set out below.

5.4.1. Minimum energy audit requirements

The data used in any ESOS energy audits must:

- detail a period of 12 consecutive months' energy use for the asset or activity
- begin no earlier than 12 months before the start of the compliance period (for the first compliance period they must begin no earlier than 6 December 2010)
- begin no earlier than 24 months before the start of the ESOS energy audit by the participant in the compliance period (for example, for an ESOS energy audit on say 1 April 2015, data must begin no earlier than 1 April 2013)
- not extend beyond the compliance date (that is, not extend beyond 5 December 2015 for the first compliance period)
- not have been included in energy audits for a previous compliance period

The energy audit must, so far as reasonably practicable:

- analyse your organisation's energy consumption and energy efficiency
- identify any way in which you can improve your organisation's energy efficiency
- recommend practical and cost effective energy saving measures for your organisation
- identify the estimated costs and benefits of any energy saving opportunity.

Where you are unable to use 12 months' data for your audits please provide justification in your evidence pack (see section 8.4) and make a reasonable estimate (see section 3.8) of the missing data.

All energy audits must be reviewed by an ESOS lead assessor (see section 6).

While your assessment of total consumption must use data for 12 months including the qualification date and be the same period for all assets and activities, you can use 12 months' data from other periods for the energy audits. The data used for the audits also does not need to cover the same 12 month period for all the assets/activities being audited.

For the purpose of the energy audits energy consumption should be analysed in energy units such as kWh. You can use whichever units of energy are most suitable for the area of energy use being assessed.

Energy cost data cannot be used for ESOS energy audits. The use of cost units when measuring energy consumption is only appropriate for the initial measurement of total energy consumption and identification of areas of significant energy use.

ESOS does not mandate specific energy auditing methodologies that must be used. Further guidance on some potential methodologies you may choose to use, for instance ISO 50002 or BS EN 16247, is included in Appendix A, section A.4.4.

'Energy supplied' means any energy that your organisation uses under an agreement with a supplier or third party. This includes energy that's supplied to assets you hold or activities your organisation carries on and includes buildings, installations, transport and construction activities. It also includes any energy your organisation generates itself, except capturing and consuming surplus heat from an industrial process.

Where a source of energy is used to create heat or electricity you will be expected to audit (and use energy consumption profiles for) both the process of converting the energy to heat and the assets/activities that use the heat and electricity.

5.5. Identifying energy saving opportunities

Your ESOS energy audit must include recommendations for cost-effective energy efficiency improvements in all aspects of your energy consumption (including efficiencies in generation, if you self generate, and the use of the energy), if there are any.

These recommendations could include, for instance:

- installing smart meters and energy monitoring tools.
- changing your service and maintenance strategy to ensure vehicles or machinery operate more efficiently
- replacing enterprise travel with video conferencing where cost-effective
- capital investment projects
- behaviour change projects

Your ESOS energy audit should calculate how much you could save from improved efficiency.

Where practicable, an ESOS energy audit should use life-cycle cost analysis (LCCA) instead of simple payback period (SPP) for cost-benefit analyses (see Appendix A section A.6 for more details).

5.6. Energy consumption profiles

You must use energy consumption profiling in your analysis of energy use for the ESOS energy audit.

Energy consumption profiles are a breakdown of how energy is used by a particular asset or activity and how that energy use varies.

For example, in an office building, the energy consumption profile could include energy used for heating, ventilation, air conditioning, lighting, and appliances.

Your ESOS energy audit should review the energy consumption profile of buildings or groups of buildings, industrial processes and transportation.

ESOS provides flexibility in the use of energy consumption profiles for ESOS energy audits, as it may not always be possible or proportionate to develop energy consumption profiles.

If you do not include an analysis based on energy consumption profiles for an ESOS energy audit, you should outline the justification for this in your ESOS Evidence Pack and make reference to this in your compliance notification to the Environment Agency.

Different types of profiles that may be useful are:

- Static profiles: these are useful in situations where there are many different energy uses within an asset or activity (e.g. at a manufacturing site) at any given time and the profile of energy use is poorly understood.
- Time profiles: these are useful in situations where there is a cyclical or identifiable pattern of energy use over time within an asset or activity and you want to (further) understand what is driving that pattern – e.g. seasonal demand, weather, or human behaviour (e.g. shift patterns)
- Time interval profiles: this is where two or more time profiles are undertaken at intervals to identify any changes in energy use highlighted by the changing profiles (e.g. conducting short time profiles before and after the implementation of an energy saving measure).

5.7. Site visits

You must carry out site visits as part of your ESOS energy audit, but you don't have to visit every site where large undertakings hold more than one site.

You must make sure you've collected and analysed data for all your areas of significant energy consumption regardless of the number of site visits.

Organisations with multiple sites or assets that are identical or very similar can take a proportionate approach and apply the energy saving opportunities identified in their site visits to their wider portfolio.

The lead assessor and participant organisation should determine a suitable site visit sampling approach to reflect the energy consumption patterns of their assets and activities.

This is not prescribed in legislation and as such it is up to your organisation and lead assessor to agree this.

You need to explain in your evidence pack how the approach you took reflects the energy consumption patterns and saving opportunities for your portfolio of assets and activities.

In a compliance audit the regulators will look for well-reasoned and documented justifications for the approach you took and why conclusions from your sample of site visits would be applicable to the other sites covered in the sample.

In a multi-tenanted building where several parties may have responsibilities for ESOS compliance, one site visit and audit could be done for the whole building and all the supplies consumed within it. This audit could be used as evidence of compliance in relation to a number of participants who had ESOS compliance responsibilities in relation to the building. If this approach were adopted, each participant would just need to record the energy saving opportunities applicable to them in their evidence pack. This arrangement is something that will have to be agreed, as appropriate, between the parties involved. Alternatively, individual participants can carry out their own audits of their specific energy use in the building.

6. Appointing a lead assessor

You must appoint a lead assessor to check that your assessment meets ESOS requirements unless 100% of your energy use is covered by ISO 50001 certification.

You must specify who your lead assessor is when notifying the Environment Agency that you comply with ESOS.

6.1. Finding a lead assessor

Your lead assessor must be a member of an approved ESOS lead assessor register.

You can find a lead assessor using the hyperlinks to the approved registers on the [ESOS page on .GOV.UK](#). On the webpages of the approved registers there will be information on how to apply to be a lead assessor and lists of contact details and specialisms for approved lead assessors who are willing to act as lead assessors for third parties.

A lead assessor can be an employee of your business ("in-house") or a third party.

If you hire a lead assessor from outside your business, the overall ESOS Assessment, recommendations of any audit or alternative routes to compliance must be checked and signed off by one director.

If your lead assessor works for your business, the overall ESOS Assessment, recommendations of any audit or alternative routes to compliance must be checked and signed off by two directors.

When deciding which lead assessor to use, you may want to consider if they:

- have energy auditing experience in the right sector
- are familiar with technology and processes in your industry
- have experience of auditing against particular standards (e.g. ISO standards)

It is your responsibility to choose an individual with appropriate skills for your business.

6.2. What lead assessors do

Your lead assessor must review your ESOS assessment to consider whether it meets the requirements of the scheme.

This will involve;

- reviewing the calculation of total energy consumption
- reviewing the determination of the assets and activities in your significant energy consumption (90% of the total energy consumption)
- confirming that the necessary certifications and evidence exist for any alternative routes to compliance
- reviewing that the audits undertaken meet the minimum criteria for ESOS

Your lead assessor can either:

- carry out your ESOS assessment and audits themselves
- check that the assessment and audits done by people who aren't lead assessors meet the requirements

Their role in the ESOS audits could involve undertaking, advising on, or reviewing the following activities:

- determining energy use profiles
- calculating energy/cost savings of measures identified – life-cycle cost analysis (LCCA) or another method like Simple Payback Period (SPP)
- identifying energy saving opportunities
- presenting audit recommendations
- developing a process for how new audits should be done
- developing a sampling approach
- developing an audit timetable
- determining the number of site visits required
- pulling together data for the ESOS evidence pack – this is an information pack that shows how you carried out the assessment and audit

Alternatively, other individuals can undertake these activities and the lead assessor can review them.

You're still solely responsible for:

- compliance with ESOS (your lead assessor will not be held responsible for compliance by the regulators)
- appointing a lead assessor
- highlighting any audit work that's already been done and which you wish to have reviewed by a lead assessor for the purposes of ESOS compliance
- agreeing the work that the lead assessor is undertaking
- getting directors or senior managers to sign off that they have reviewed the audit findings or recommendations

On this basis you should ensure that someone from the organisation understands the ESOS requirements and works together with the lead assessor to agree the approach your organisation is taking to its ESOS compliance.

Overall the lead assessor will need to sign off that your organisation is compliant with ESOS regardless of the level of their involvement in the work undertaken for the ESOS assessment.

6.3. Templates for collating ESOS data and reporting findings

The Environment Agency and the other regulators will not be requiring data to be collated or recorded in particular formats, and so are not providing standard templates for these activities or the presentation of findings to directors. As long as the ESOS assessment has been conducted, 90% of the total energy consumption is compliant via ESOS audits or an alternative route to compliance, and the data to evidence this work and its findings is recorded, this will be sufficient.

This is to reduce the administrative burden on organisations who have existing data management procedures and tools which may be able to be used in or referenced from their evidence pack.

The only standardised element is the notification of compliance. This is available on the ESOS webpage on .GOV.UK. <https://www.gov.uk/energy-savings-opportunity-scheme-esos#submit-your-esos-notification-of-compliance>.

You can see a list of the information that you will need to provide as part of your notification of compliance in [Appendix B](#) of this guidance. You will also need to maintain additional

information in your evidence pack, such as copies of ESOS audits, to demonstrate compliance if you are asked to do so by the scheme regulators.

7. Director Sign off

Having completed the ESOS Assessment, board level director(s) from one of the undertakings in the participant group will need to confirm that they:

- have reviewed the recommendations of your organisation's ESOS assessment or alternative routes to compliance (e.g. Display Energy Certificates)
- are satisfied, to the best of their knowledge, that the organisation is within the scope of the scheme
- are satisfied, to the best of their knowledge, that the organisation is compliant with the scheme
- are satisfied, to the best of their knowledge, that the information provided in the organisation's notification is correct .

Where your lead assessor is external, one director will need to provide this confirmation in writing (to be kept in your evidence pack). Where your lead assessor is internal, two directors will need to provide this confirmation in writing (to be kept in your evidence pack).

There is no prescribed format for how you need to present the findings of your assessment to your director(s). As long as you have confirmation in writing to confirm the four points above and keep this in your evidence pack then that is sufficient.

8. Notifying compliance

8.1. Confirming your compliance with the Environment Agency

Use the [online notification system](#) to notify the Environment Agency that you are ESOS compliant. The Environment Agency will collate the notifications from all participants on behalf of all the other regulators.

You don't need to log in to the system first or create an account, in order to be able to submit your notification details. There is no charge for submitting your ESOS notification.

You can start your notification whenever you are ready. You can also partially complete your notification and save it for submitting later. The system will send you an email with a link to use to resume. Don't lose this email otherwise you'll have to start again. As long as you have the email the saved information will not disappear/expire. You can return to it at any time.

Anyone can submit the notification on behalf of a participant (therefore you could instruct a consultant or lead assessor to do this on your behalf) but remember that the responsible undertaking is liable for the compliance of the participant so they should be happy with the accuracy of the information being submitted.

If you later discover the information you submitted was inaccurate, you must email ESOS@environment-agency.gov.uk to explain the inaccuracy in your original submission. You'll need to quote the date of the original notification, the name and, if applicable, the Companies House registration number of the organisation. Do not just resubmit the information online.

To minimise the risk of late submission we recommend you submit your notification as soon as possible before the compliance date of each compliance period.

8.2. Details you need

In your online notification, you will be asked for basic details about:

- the participant (including contact details for the responsible undertaking, individual(s) who can be contacted about your ESOS compliance and directors who reviewed the ESOS assessment findings)
- any aggregation or disaggregation of group members
- the lead assessor
- what proportion of your total energy consumption is covered by each compliance route

Unless you are audited by your compliance body, you won't be asked for:

- energy consumption details
- the results of any audits
- the energy saving opportunities you've identified.

Details of exactly what you are required to provide in your notification are given in Appendix B.

8.3. After you've submitted

You'll be emailed a copy of your responses shortly after you submit your notification online. You should keep the email in your evidence pack as a record of your submission.

The Environment Agency will publish the information provided in your notification, apart from personal or commercially sensitive details and feedback. The Environment Agency will not publish any information on organisations we believe qualify for ESOS prior to the compliance date for a compliance period.

The information will be published on the [ESOS web pages](http://www.gov.uk/energy-savings-opportunity-scheme-esos) (www.gov.uk/energy-savings-opportunity-scheme-esos) in 2016.

You may be selected by your organisation's regulator to have your compliance with the scheme checked. In the event of a compliance check you will be required to provide evidence of how you have complied with the scheme.

8.4. Keeping records

You must keep an ESOS evidence pack that includes:

- contact details of the participating undertakings and the responsible undertaking
- details of any board level directors or equivalents who've reviewed the ESOS assessment findings
- written confirmation from the director(s) to evidence that they reviewed the ESOS assessment
- contact details of your lead assessor and the name of the approved register which they are a member of
- written confirmation from the lead assessor to evidence that they signed off the ESOS assessment
- the calculation for your total energy consumption
- a list of your identified areas of significant energy consumption
- details of the energy audits undertaken including the audit methodology used in your ESOS energy audits
- details of the energy saving opportunities identified
- details of the routes to compliance used to cover each area of significant energy consumption and where applicable evidence (e.g. certificates) of the alternative routes to compliance
- written agreements to support any disaggregation or aggregation of group members
- written agreements to support any alternative responsible undertaking chosen (other than the default highest UK parent)
- reasons for using less than 12 months of data for the measurement of total energy consumption, if you couldn't do this
- reasons for using less than 12 months of data to support an ESOS energy audit, if you couldn't do this
- reasons for being unable to use verifiable data on energy use or energy expenditure to support your calculation of total energy use
- the methodology you used for any estimates you've made for energy use or energy expenditure
- justification, where applicable, where your lead assessor has not used an energy consumption profile in your audit of an area of significant energy use

You must keep the evidence pack for the compliance period to which it relates and the two subsequent compliance periods.

9. Compliance, enforcement and appeals

9.1. Compliance and Enforcement

Organisations that are subject to ESOS, but do not meet the requirements, may be liable to compliance and enforcement activities. Three types of notice are available under the ESOS Regulations.

These are:

- A compliance notice – This is an information request from the regulator to the participant. The compliance notice asks for information so the regulator can determine if the participant is complying with its obligations under ESOS
- An enforcement notice – this tells you what you must do to comply with a requirement of ESOS
- A penalty notice – this imposes civil penalties for breaches of the ESOS regulations

The civil penalties which can (at the discretion of the regulator) be applied are listed in the table below:

| Non-compliance | ESOS Regulation | Penalties |
|---|-----------------|---|
| Failure to notify | Regulation 43 | A fixed penalty of up to £5,000 An additional £500 for each working day starting on the day after service of the penalty notice until the notification is completed, subject to a maximum of 80 days Publication |
| Failure to maintain records | Regulation 44 | A fixed penalty of up to £5,000 The cost to the compliance body for undertaking sufficient auditing activity to confirm that an organisation has complied with ESOS Publication The penalty notice may specify steps to remedy the breach. |
| Failure to undertake an energy audit | Regulation 45 | A fixed penalty of up to £50,000 An additional £500 for each working day starting on the day after service of the compliance notice, until the breach is remedied, subject to a maximum of 80 days Publication The penalty notice may specify a requirement to undertake an ESOS Assessment. |
| Failure to comply with a compliance | Regulation 46 | A fixed penalty of up to £5,000 An additional £500 for each working day starting on |

| | | |
|--|---------------|---|
| notice, an enforcement notice or a penalty notice | | the day after service of the penalty notice, until the breach is remedied, subject to a maximum of 80 days Publication |
| False or misleading statement | Regulation 47 | A fixed penalty of up to £50,000 Publication |

If you're subject to the publication penalty, the regulator will publish details on their webpages of:

- the person on whom the penalty was imposed
- the legal requirement that was not complied with
- the amount of any financial penalty imposed

9.2. Appeals

You can appeal against enforcement actions by the regulators.

You have the right to appeal any determination, enforcement notice or penalty notice that you consider to be based on an error of fact, wrong in law or unreasonable.

If the registered office of the responsible undertaking for the participant is based in England, Wales or UK Offshore, you can appeal to the First-tier Tribunal.

If the registered office of the responsible undertaking for the participant is based in Scotland, you can appeal to the Scottish Minister.

If the registered office of the responsible undertaking for the participant is based in Northern Ireland you can appeal to the Planning Appeals Commission.

If enforcement action is taken the relevant notice will include details on how you can appeal as appropriate.

Appendix A: Advice for complying with the Energy Saving Opportunity Scheme (ESOS)

A.1 Introduction

This Appendix provides additional information for participants on the approaches they might take to comply with ESOS in order to help them maximise the benefit to their organisation.

ESOS energy audits have the potential to increase your business profitability and competitiveness by identifying cost-effective savings which, if implemented, will improve energy efficiency. The scheme is estimated to lead to £1.6bn net benefits to the UK, with the majority of these being directly felt by businesses as a result of energy savings.¹

Optimising energy use leads to improved profitability and increased competitiveness. It also constitutes an integral part of the UK's climate change mitigation effort, as demonstrated by the CCA scheme, the CRC Energy Efficiency scheme and the EU ETS. There is significant potential to decrease energy consumption across all sectors, and yet opportunities to improve energy efficiency are often under-exploited.²

If all participants reduce energy consumption by an average of 0.7% as a result of ESOS, this would reduce their energy bills by over £250m per year and save around 3TWh of energy annually –enough energy to power nearly 160,000 households for a year.³

However, ESOS participants and the UK as a whole will only realise this benefit (which more than offsets the cost of complying with ESOS) if they implement the cost-effective recommendations identified in ESOS audits and engage with their lead assessor to ensure that they have access to the information and staff they need to develop meaningful recommendations.

A.2 Identifying areas of significant energy consumption

One of the key decisions that organisations will need to take is in determining their areas of significant energy consumption. Businesses have flexibility to determine this. For instance they could exclude particular assets, types of fuel, or activities.

In determining which energy consumption to deem "de minimis", businesses will want to consider where ESOS can have maximum potential for their organisation. Some businesses may opt to audit more than 90% of their total energy consumption in order to get the most benefits from the scheme.

A.2.1 Worked example of identifying areas of significant energy consumption

Group A is a UK registered corporate group in the transport industry. The group consists of A Ltd, the holding company, and its two subsidiaries: A Transport Logistics Ltd and A Services Ltd.

¹ Figure calculated on basis of NPV (2015-2030). Full detailed can be found in the final stage ESOS Impact Assessment, published here: <https://www.gov.uk/government/consultations/energy-savings-opportunity-scheme>

² [Energy Management Programmes for Industry](#)

³ Based on average household energy consumption of 19,140 kWh in 2012.

A Services Ltd has more than 250 employees and as such meets the definition of a large undertaking. As a result, the other members of the group, A Ltd and A Transport Logistics Ltd, both also qualify for ESOS through the group (see section 1.7 for details).

The default is that all three members of the group will participate as one participant (see section 1.7 for details of group participation and disaggregation/aggregation). To do so, the group must first select a reference period (see section 3.6) and determine its total energy consumption (in either energy units or energy expenditure) in this period.

Group A has mapped its organisational structure and the energy consuming activities of each group company, as presented in Figure A.1 and Table A.1.

The principal business activity of Group A is the shipping and transportation of goods by road and sea. Group A knows (prior to calculation) that the energy associated with fuel consumption in its freight operations will be the largest single item of significant energy consumption. As such, Group A decides to convert all energy use into Gigajoules (GJ) as a standard unit of energy use for all its activities.

Figure A.1: Group A's energy use map

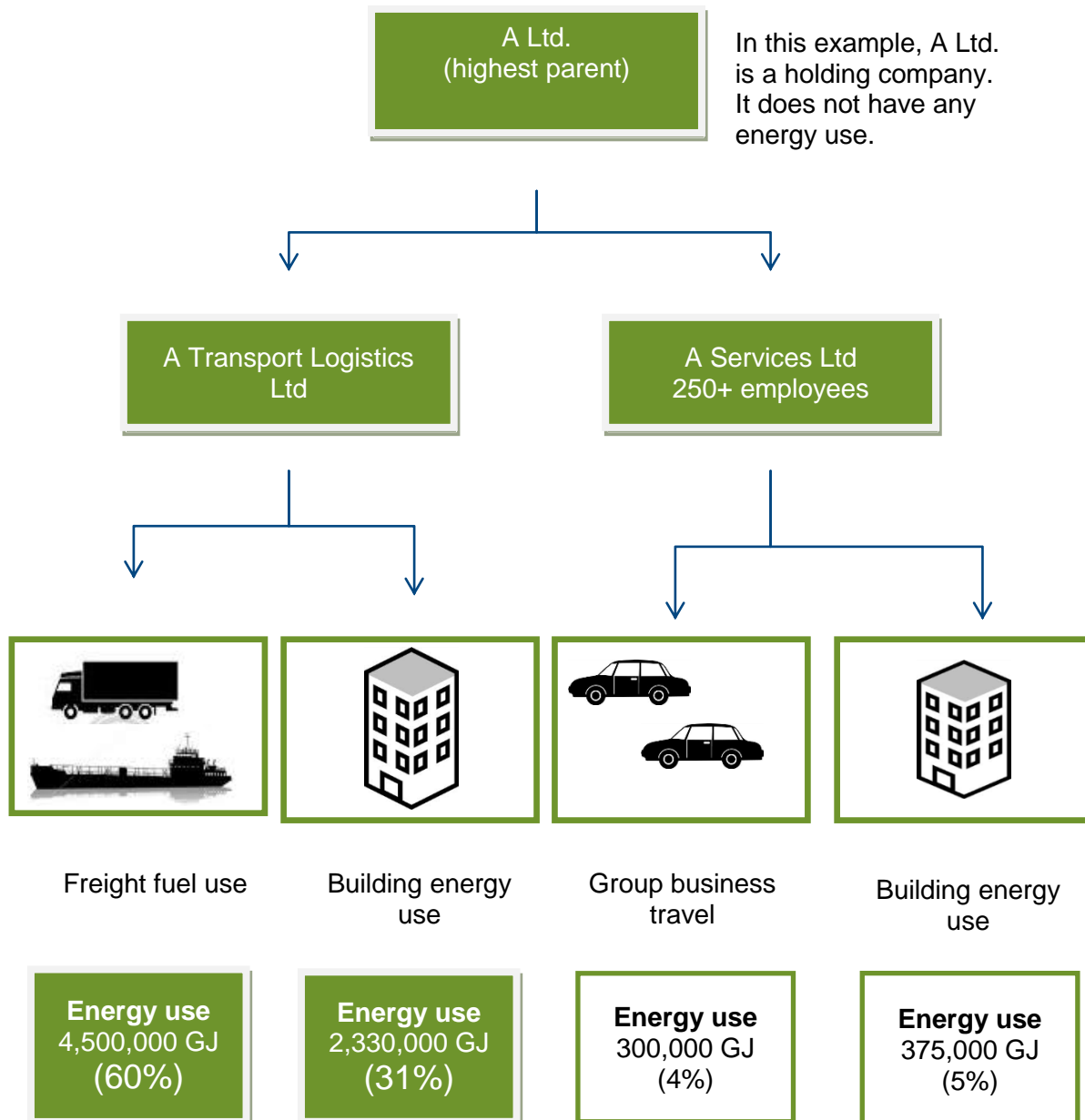


Table A.1: Group A's summary of energy using activities

| Activity | Fuel used | Fuel use | Density (litres/tonne) | Energy conversion* | Energy (GJ) | Percentage of total energy consumption |
|-------------------------------|---------------------|--------------------|------------------------|--------------------|-------------|--|
| Freight | Diesel | 125,244,755 litres | 1,194 | 42.90 GJ/tonne | 4,500,000 | 60% |
| Buildings | Electricity and gas | 8,388 kWh | N/A | 277.78 GJ/kWh | 2,330,000 | 31% |
| Buildings | Electricity and gas | 1,350 kWh | N/A | 277.78 GJ/kWh | 375,000 | 5% |
| Company vehicle travel | Diesel | 8,349,650 litres | 1,194 | 42.90 GJ/tonne | 300,000 | 4% |

* Government conversion factors for company reporting

After assessing total energy consumption, Group A decides its areas of significant energy consumption are:

- the energy used in its freight operations
- the energy used in the buildings of A Transport Logistics Ltd

A.3 Choosing compliance routes

ESOS participants have flexibility to choose from a number of different compliance routes. Each route has its own advantages and disadvantages, and some of these are considered in the table below. Participants will want to decide which routes are most appropriate for their type of business and will help maximise the value they get from ESOS energy assessment.

| Route to compliance | Advantage | Disadvantage |
|---------------------------|---|---|
| ESOS energy audits | <p>Covers all energy uses – buildings, industrial processes and transport.</p> <p>Can draw on data from existing energy efficiency compliance activities such as under the CRC Energy Efficiency Scheme and Climate Change Agreements to the extent that these support compliance.</p> <p>Organisations can use existing energy auditing/measurement activity to support compliance such as the Carbon Trust Standard or the Certified Emissions Measurement and Reduction Scheme</p> | <p>May duplicate work or assessments already carried out under other schemes.</p> |

| | | |
|--|---|---|
| | (CEMARS) provided that these are carried out in a way which meets the minimum requirements for ESOS audits. | |
| ISO 50001 | <p>Part of an overall energy management system for effective management of energy consumption.</p> <p>ISO 50001 could be employed by a multi-national company across its operations. This is likely to mean that, for operations qualifying for audits under other European mandatory auditing schemes, the requirements would be met through the energy management system.</p> | Additional effort, above minimum ESOS requirements, may be required to maintain a certified ISO 50001 energy management system. |
| Display Energy Certificates | Low cost assessment | <p>Restricted to building energy use (including regulated energy such as heating and building fabric) and also lifts and small power use (for example, IT). May require further assessment for activities carried out in the building.</p> <p>Certificate needed for each individual building, so may be less suitable for large portfolios</p> |
| Green Deal Assessments (domestic) | <p>Domestic GDAs are bespoke assessments that take account of the occupant's specific energy use behaviours.</p> <p>Domestic GDAs build on the established Energy Performance Certificate (EPC) assessment process.</p> <p>Providers are free to market assessments however they see fit – meaning some offer free or low cost assessments.</p> | <p>A good quality assessment is reliant on a good quality Domestic Energy Rating Software (RdSAP) assessment.</p> <p>One assessment is needed for each individual building, so the approach may be less suitable for large portfolios.</p> |
| Green Deal Assessments (non-domestic) | <p>Non-domestic GDAs are bespoke assessments that take account of the occupant's specific energy use behaviour.</p> <p>EPC and DEC data can be imported to inform these. GDAs build on the established EPC assessment process.</p> | <p>Non-domestic GDAs are restricted to building energy use (for example, heating, cooling, ventilation, lighting, hot water, refrigeration and building fabric) and do not cover energy used in industrial processes – though waste heat produced by industrial process, office equipment and so on is taken account of.</p> <p>One assessment is needed for each individual building, so the approach may be less suitable for large portfolios.</p> <p>Due to the range of assessment tools on the market, it is difficult to transfer GDA reports from one</p> |

| | | |
|--|--|--|
| | | <p>assessor to another.</p> <p>There is currently a shortage of available qualified assessors.</p> |
|--|--|--|

A.3.1 Additional information on ISO50001

ISO 50001:2011 provides a framework of requirements for organisations to:

- develop a policy for more efficient use of energy
- fix targets and objectives to meet the policy
- use data to better understand and make decisions about energy use
- measure the results
- review how well the policy works
- continually improve energy management

If you are considering an ISO 50001 certified energy management system as a route to comply with ESOS, there is guidance available online. For instance, the British Standards Institute (BSI) has a series of explanatory videos on YouTube:

[Getting Started – ISO 50001 Energy Management – Part 1](http://youtu.be/MCPL3qk2qKI) (<http://youtu.be/MCPL3qk2qKI>)

[Important Terms - ISO 50001 Energy Management – Part 2](http://youtu.be/g_kQve_-D3g) (http://youtu.be/g_kQve_-D3g)

[Measuring Performance - ISO 50001 Energy Management – Part 3](http://youtu.be/OPgyrYit3qM)
(<http://youtu.be/OPgyrYit3qM>)

[Top 10 Tips – ISO 50001 Energy Management – Part 4](http://youtu.be/PDIp9AFvXyY) (<http://youtu.be/PDIp9AFvXyY>)

Case studies are available from major certification bodies. For example you can [download case studies from the BSI website](http://shop.bsigroup.com/Browse-By-Subject/Energy-Management/BS-ISO-50001-case-studies/) (<http://shop.bsigroup.com/Browse-By-Subject/Energy-Management/BS-ISO-50001-case-studies/>).

A.3.2 Additional information on ISO14001

Many organisations operate a certified ISO14001 environmental management system.

The ISO 14001:2004 (Environmental management systems, EMS) certification does not expressly require energy audits that would meet the minimum requirements of ESOS.

However, ISO 14001 certified organisations may wish to use their ISO 14001 management system to support ESOS compliance.

One of the requirements of ISO 14001 is that organisations establish, implement and maintain procedures to ensure that legal requirements are taken into account in establishing, implementing and maintaining their environmental management systems. Therefore, organisations which operate a certified ISO 14001 environmental management system should either

- 1) already be managing and auditing their energy and fuel use to some extent, as part of their existing environmental management system; or
- 2) be driven by legal compliance requirements of ISO 14001 to engage in a process to integrate the requirements of ESOS into their EMS.

Integrating ESOS and an ISO 14001 certified Environmental Management System

Participants may be able to integrate ESOS compliance with their ISO 14001 environmental

management system through some of the following steps:

- Establish energy efficiency targets or energy auditing programmes as part of complying with the requirement of ISO 14001 to establish objectives and targets and implement programmes to achieve these.
- Consider the qualification of in-house energy managers under the ISO 14001 provisions relating to resources and roles, and competence, training and awareness.
- Using EMS documentation to support ESOS data collection and maintain the ESOS Evidence Pack in line with EMS documentation procedures.
- Using a suitable qualified ESOS lead assessor to conduct ISO14001 internal audits as well as considering an organisation's ESOS compliance.
- Incorporating sharing audit findings with top management through the management review processes established under the EMS.

ESOS participants may also wish to extend their existing ISO 14001 EMS in order to gain ISO 50001 certification.

A.4 Additional guidance on conducting energy audits

A.4.1 Benefits of energy audits

Energy audits are a valuable tool in understanding and improving the energy performance of your organisation.

Conducting energy audits allows you to:

- measure and understand the energy consumption of your assets and activities
- build an energy consumption profile showing where and how your organisation consumes energy – this can also be used to identify any variations in your energy use between areas and over time
- identify patterns, build explanations for these and identify any opportunities to reduce your overall energy use through increased levels of efficiency

This information could allow you to make long-term savings or reduce the impact of energy price increases on your organisation.

Improved energy efficiency could also boost your productivity and growth.

A.4.2 Measuring energy consumption

To make it easier to carry out an energy audit, it's helpful to have systems in place to collect, collate and analyse your energy data as often as possible.

It's also a good idea to make sure that you can 'drill down' into your data to identify trends and inform detailed analysis.

The following are some generic methods you could use to help you measure data:

- meter readings
- energy bills
- fuel or waste delivery notes
- transport receipts

- vehicle/shipping/aviation routes and average fuel consumption rates
- mileage claims (expense claims)
- heat imports

You can use this data to find patterns that may show you how you can save money.

If your organisation's accounting system already includes this data, define a report that incorporates all energy use and cost information.

This will mean you can easily retrieve the data in future.

If the data isn't included in your accounting system, nominate a person to record energy use and costs.

A.4.3 Validating data

You should validate and cross-check data which you use for auditing purposes.

You can do this by:

- previous period checks – comparing the data between two periods e.g. March 2013 and March 2014
- sample checks – checking a data point against another independent source, e.g. checking invoice totals against meter reads
- sense checks – comparing data points against reasonable expectations based on your knowledge of how your organisation has used energy in the past
- identifying data gaps and finding the missing information, or using an estimate
- making sure meter readings and equipment you use for them are as accurate as possible
- metering any energy you generate on-site

A.4.4 Choosing an auditing methodology

ESOS does not mandate a particular auditing methodology that must be followed.

Businesses may have their own preferred methodology developed in-house, or there are a range of European and International Standards that set out internationally recognised energy auditing practices. For example:

- ISO 50002 and BS EN 16247 energy audits set out a good practice method for identifying energy savings opportunities. These are useful for in-house managers or external consultants carrying out an energy audit, or as a guideline for organisations who want to understand what a good energy audit looks like.
- The EN16247 series of standards also includes more detailed standards setting out possible auditing approaches to buildings, transport and industrial processes.
- ISO 15099:2003 Thermal performance of windows, doors and shading devices -- Detailed calculations. This standard specifies detailed calculation procedures for determining the thermal and optical transmission properties (e.g. thermal transmittance and total solar energy transmittance) of window and door systems. This standard may be applicable as an auditing methodology when seeking to determine the energy saving potential associated with an organisation upgrading the windows (including glazing) and/or doors in its buildings.
- [ISO 16346:2013](#) Energy performance of buildings -- Assessment of overall energy performance. This standard defines the general procedures to assess the energy performance of buildings, including technical building systems. This standard may be an applicable auditing methodology for the assessment of energy saving potential from buildings.
- [ISO 15686-3:2002](#) Buildings and constructed assets, Service life planning, Part 3: Performance audits and reviews. The standard outlines the approach and procedures to

be applied to planning, briefing, design, construction and, where required, the life care management and disposal of buildings and constructed assets. This standard may be applicable as an auditing methodology when seeking to determine the whole-life energy saving potential related to the replacement or retrofitting of a building and its likely performance over time.

- [ISO 11011:2013](#) Compressed air -- Energy efficiency – Assessment. This standard sets out requirements for conducting and reporting the results of a compressed air system assessment from the energy input through the work performed by the compressed air system. This standard may be applicable as an auditing methodology when seeking to determine the energy saving potential associated with an upgrade/change to a compressed air system as part of an industrial process.
- ISO/DIS 14414 - Pump system energy assessment. This Standard sets the requirements for conducting and reporting the results of a pumping system assessment. This standard may be applicable as an auditing methodology when seeking to determine the energy saving potential associated with an upgrade/change to a pump system as part of an industrial process.

A.4.5 Using voluntary energy management and energy auditing schemes to support ESOS compliance.

There are a range of energy management schemes and programmes already run by private enterprises and other bodies in the UK. Some examples of these include the Carbon Trust Standard, Logistics Carbon Reduction Scheme, and Green Fleet Reviews.

ESOS is designed to allow companies to include activities under these schemes, or other business as usual reviews of energy efficiency opportunities, to contribute to compliance.

Where an organisation wishes to use such activities to support ESOS compliance, they will need to ensure that these meet the minimum requirements of ESOS. This includes ensuring that a lead assessor reviews records of the activities to confirm that they have been conducted to a satisfactory standard, in line with the requirements of ESOS.

A.4.6 How to make an energy audit timetable

It's for you to determine your energy auditing timetable in each compliance period.

You're not required to have the same timetable for each compliance period. Audit work undertaken at any point within a four year compliance phase can be used to support compliance provided it is completed by the compliance date.

For instance, you might choose to look at:

- All buildings in one year, all industrial processes in the next, and transport in the third; or
- Undertake a rolling assessment of different buildings/assets over the course of the compliance period.

The flexibility of undertaking a staged audit may be particularly useful if you have a large number of assets and activities in the UK and auditing all the assets/activities at once would either put a significant strain on internal resources or simply not be feasible.

It may be timely to conduct audits before and/or after:

- significant group acquisitions or disposals
- significant alterations to the layout and internal/external appearance of your building(s)
- upgrading of a building's HVAC (heating, ventilating, and air conditioning) or lighting
- an upgrade to your IT equipment
- a major replacement of process machinery or purchase of additional process equipment
- replacement of a fleet of owned or leased company vehicles
- implementation of a new working procedure for staff

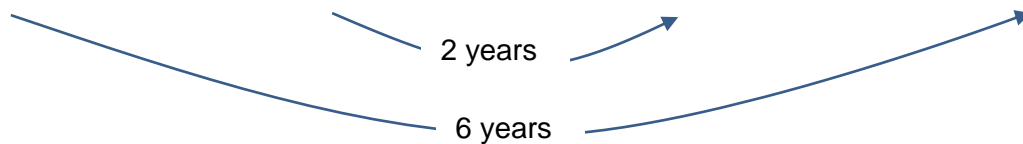
Conducting audits before such changes may inform investment or operational decisions. Conducting them after these changes may help to identify how effective they have been from an energy efficiency perspective and if further changes are necessary.

Alternatively, conducting audits before and after a 'pilot' measure has been implemented (within a defined area of your organisation or group) may help to inform your procurement processes in terms of the cost savings and benefits the measure has realised for your organisation.

ESOS requires organisations as a whole to be audited once every four years. Some areas of significant energy consumption could be audited more frequently or less frequently depending on how an organisation manages its audit of different assets. However, on average, each area will need to be audited once in each compliance period.

Example of a participant's audit timetable

| 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---------------------|----------------------|-----------|-------------------|---------------------|----------------------|-----------|-------------------|
| Compliance period 2 | | | | Compliance period 3 | | | |
| Buildings | Industrial processes | Transport | Sign off & Notify | Transport | Industrial processes | Buildings | Sign off & Notify |



In this example, transport energy audits are conducted two years apart and the building energy audits are conducted six years apart.

However, the organisation as a whole is audited once every four years, with sign off of the overall compliance by directors and the lead assessor and notification to the scheme administrator for the second and third compliance periods in 2019 and 2023, respectively.

You may choose to plan an audit timeline like this, staging audits before and after the implementation of an energy saving measure to best capture the effect of the measure compared with the anticipated impacts.

Planning an audit of transport energy in 2018 before implementing a new transport policy in 2019, and subsequently auditing transport energy again in 2020, may best capture the impact of the new policy and allow you to make amendments as part of continual improvement, as well as meet your ESOS requirements.

For compliance period one all auditing and compliance activity needs to have taken place between 6 December 2011 and 5 December 2015.

A.5 How to find energy saving opportunities

A.5.1 Examine your data

Look at your energy patterns to identify:

- minimum usage levels (base load)
- maximum usage levels (peak load)
- fluctuations in energy use (e.g. per unit output)

This can help you to help you identify any areas you can make more efficient.

You should also try to identify potential areas of waste, like unnecessary base load energy use.

A.5.2 Engage with your energy users

You should find out how employee behaviour or processes affect energy use in your organisation.

Talk to energy consumers (stakeholders) across your organisation about where they think savings could be made.

You should think about whether it's better to do this before, or after any analysis of energy data or physical auditing work.

You could also engage with stakeholders by setting up a system of more structured energy governance.

For example, you could set up an energy management committee to oversee energy measurement and performance reporting.

Feedback the results of any subsequent energy analysis or physical auditing work to stakeholders to obtain their views on:

- the practicality of any energy saving measures identified
- the magnitude of the estimated energy and cost savings highlighted

Engaging stakeholders and listening to feedback will help you to gain support to implement any new measures across your organisation, and maximise the benefits.

A.5.3 Examples of common energy saving opportunities

As part of carrying out or reviewing and approving your energy audit, your lead assessor may present you with recommendations on the most cost-effective and applicable energy saving opportunities specific to the organisation, sector, site or activity.

The table below presents some common examples of energy saving opportunities that you may find when conducting your energy audit.

| Area | Energy saving opportunities |
|------------------|--|
| Buildings | <p>Heating – turn heating down, replace inefficient boilers, install de-stratification fans (fans used in commercial and industrial buildings with high ceilings), shorten hours of operation</p> <p>Ventilation – specify higher efficiency motors, consider variable speed fans, review time settings and turn off when not in use</p> <p>Air-conditioning – review temperature controls, consider variable speed drives, free cooling (using external air as a source of cooling)</p> <p>Lighting – install occupancy sensors, install daylight sensors, review and improve the maintenance plan (more regular maintenance), replace inefficient incandescent bulbs with high efficiency LED lighting or energy saving fluorescent lighting (for example, T5 lighting)</p> <p>Building fabric – install cavity wall and roof insulation, install high</p> |

| | |
|-----------------------------|---|
| | <p>efficiency windows and glazing, draught proofing</p> <p>Building control – install a computer-based building management system, ensure control systems are set correctly for different weather conditions and occupancy levels, install variable speed drives</p> |
| Industrial processes | <p>Refrigeration – reduce the heat loads on systems through reduced air infiltration, free cooling, raise process temperatures, improve control of auxiliary equipment (pumps/fans), install better temperature control, keep doors closed, don't overfill units, ensure lights are off inside units when not in use, clean condensers regularly</p> <p>Motors and drives – install high efficiency motors, install variable speed drives, implement automatic switch off controls and procedures, install time switches, interlocks or sensors, monitor motor output to identify energy wastage</p> |
| Transport | <p>Fuel consumption – monitor fuel consumption, monitor driver fuel performance, conduct fuel efficiency driver training, invest in telematics systems that can identify areas for improvement</p> <p>Driver fuel performance – can be enhanced by switching off the engine when safe to do so, minimising idling, shifting to higher gears earlier, accelerating and braking gently and smoothly, avoiding excessive speeds, use of cruise controls and closing windows at higher speeds. (Could be supported by linking to driver incentives.)</p> <p>Routing and scheduling – review logistics routes, reduce empty running, maximise loads</p> <p>Maintenance and vehicle improvements – tyre management, implement fleet renewal programme, aerodynamic improvements, improved maintenance schedules</p> |
| Employees | <p>Awareness campaigns – employee engagement, communications on energy efficiency, targeted incentives</p> |

Further information and guidance on energy efficiency saving opportunities in buildings, industrial processes and transport, and through employee engagement is available from a range of sources including:

[Carbon Trust guides](http://www.carbontrust.com/resources/guides) (www.carbontrust.com/resources/guides)

Freight Transport Association's web page on its [Logistics Carbon Reduction Scheme \(LCRS\)](http://www.fta.co.uk/lcrs) (www.fta.co.uk/lcrs)

A.6 Measuring the benefits of energy saving opportunities

A.6.1 Using a life-cycle cost analysis (LCCA) or simple payback period (SPP)

You should usually assess the costs and benefits from energy saving measures you identify using a life-cycle cost analysis (LCCA).

For some organisations, it might not be practical to undertake an LCCA for all identified energy saving measures.

In this case, you can use simple payback period (SPP) calculations

These two methods are common ways that accountants assess financial investments.

For more costly measures and measures that might be more complicated to implement, an LCCA may be necessary to make a sound decision. LCCAs are financial decision making methods that consider all costs and benefits over the lifetime of the project.

A.6.2 Advantages and disadvantages of LCCAs

| Advantages of LCCAs | Disadvantages of LCCAs |
|---|--|
| Helps you compare measures like-for-like, financially even if they have different timings and magnitudes of costs and savings. | Is a more complex and time-consuming methodology to apply. |
| Provides you with a more complete financial picture by considering all costs and benefits over the lifetime of the measure. | Getting accurate input data (costs, timeframes) can be more challenging. |
| Enables you to compare different combinations of measures and choose the one that will maximise your savings and financial return. | |
| Allows you to present the financial benefits of your proposal in terms used by your directors/chief financial officer – for example, net present value (NPV), internal rate of return (IRR), and cash flows. | |
| Reduces your investment risk by projecting a more complete picture of the future. | |

It may be more appropriate to apply an LCCA where the energy saving measure identified has, for example:

- a long asset life
- a high upfront capital cost
- an initial downtime period (that is, a process has to be shutdown to implement the measure)
- additional quantifiable benefits other than reduced energy consumption
- associated maintenance costs
- a usage profile of the process/equipment that is likely to change (for example, increased usage of a new production line)

LCCAs are a way to consider if an investment will be economical over its entire life by predicting how much it will ultimately cost. LCCAs are particularly useful when implementing an identified energy saving measure that involves significant capital investment.

The ultimate aim is to calculate the net present value (NPV). An acceptable NPV will be specific to your organisation.

A.6.3 Example: a life-cycle cost analysis (LCCA)

In this illustration below of an LCCA, a company operates a boiler that is 10 years into a nominal 20-year life but which is inefficient compared with modern standards.

In scenario 1, the company continues with the current boiler for a further 20 years, incurring significantly increased maintenance costs to keep it operational over that period.

In scenario 2, the company installs a new more efficient boiler with a 20-year life and with lower fuel and energy tax costs and lower maintenance costs.

The new boiler would be installed in Year 0 during which time the current boiler would operate. For simplicity, no operational or maintenance costs for the current boiler are assumed in Year 0 as these would be the same in both scenarios. Again, for simplicity no consideration is given to decisions or resulting cash flows after Year 20.

The illustration attributes residual value as if the unused equipment were sold. Thus in scenario 2 there is residual value from sale of the current boiler at the end of Year 0 and sale of the new boiler at the end of Year 20. The current boiler is assumed to have no value at the end of Year 20.

Costs are assumed to be incurred at the end of each year. The discount rate is a typical commercial rate of 6%, although in practice the range of discount rates employed by companies varies widely.

Indirect impacts, such as wider societal impacts, are excluded from the assessment.

This analysis shows that, in this scenario, the NPV for installation of the new boiler is lower than that for retention of the old boiler. In other words, although it initially costs more money to install the new boiler, when all the costs are considered over the full life cycle this option will actually save money.

Example of LCCA

| 200kW boiler | Year 0 | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 |
|---|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Scenario 1: continue with current boiler | | | | | | | | | | | |
| Capital cost | – | – | – | – | – | – | – | – | – | – | – |
| Installation cost | – | – | – | – | – | – | – | – | – | – | – |
| Maintenance cost (1) | – | £3,000 | £3,000 | £3,000 | £3,000 | £3,000 | £3,000 | £3,000 | £3,000 | £3,000 | £3,000 |
| Fuel cost (2) | – | £20,215 | £20,215 | £20,215 | £20,215 | £20,215 | £20,215 | £20,215 | £20,215 | £20,215 | £20,215 |
| Energy tax (CCL) (3) | – | £1,348 | £1,348 | £1,348 | £1,348 | £1,348 | £1,348 | £1,348 | £1,348 | £1,348 | £1,348 |
| Residual value (4) | – | – | – | – | – | – | – | – | – | – | – |
| Total | £0 | £24,563 | £24,563 | £24,563 | £24,563 | £24,563 | £24,563 | £24,563 | £24,563 | £24,563 | £24,563 |
| Scenario 2: invest in new boiler | | | | | | | | | | | |
| Capital cost (5) | £18,000 | – | – | – | – | – | – | – | – | – | – |
| Installation cost | £4,000 | – | – | – | – | – | – | – | – | – | – |
| Maintenance cost6 | – | £2,000 | £2,000 | £2,000 | £2,000 | £2,000 | £2,000 | £2,000 | £2,000 | £2,000 | £2,000 |
| Fuel cost (7) | – | £16,774 | £16,774 | £16,774 | £16,774 | £16,774 | £16,774 | £16,774 | £16,774 | £16,774 | £16,774 |
| Energy tax (CCL) (8) | – | £1,118 | £1,118 | £1,118 | £1,118 | £1,118 | £1,118 | £1,118 | £1,118 | £1,118 | £1,118 |
| Residual value (9) | £4,000 | – | – | – | – | – | – | – | – | – | – |
| Total | £18,000 | £19,893 | £19,893 | £19,893 | £19,893 | £19,893 | £19,893 | £19,893 | £19,893 | £19,893 | £19,893 |

| 200kW boiler | Year 11 | Year 12 | Year 13 | Year 14 | Year 15 | Year 16 | Year 17 | Year 18 | Year 19 | Year 20 |
|---|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Scenario 1: continue with current boiler | | | | | | | | | | |
| Capital cost | – | – | – | – | – | – | – | – | – | – |
| Installation cost | – | – | – | – | – | – | – | – | – | – |
| Maintenance cost (1) | £3,150 | £3,308 | £3,473 | £3,647 | £3,829 | £4,020 | £4,221 | £4,432 | £4,654 | £4,887 |
| Fuel cost (2) | £20,215 | £20,215 | £20,215 | £20,215 | £20,215 | £20,215 | £20,215 | £20,215 | £20,215 | £20,215 |
| Energy tax (CCL) (3) | £1,348 | £1,348 | £1,348 | £1,348 | £1,348 | £1,348 | £1,348 | £1,348 | £1,348 | £1,348 |
| Residual value (4) | – | – | – | – | – | – | – | – | – | – |
| Total | £24,713 | £24,871 | £25,036 | £25,210 | £25,392 | £25,583 | £25,784 | £25,995 | £26,217 | £26,450 |
| Scenario 2: invest in new boiler | | | | | | | | | | |
| Capital cost (5) | – | – | – | – | – | – | – | – | – | – |
| Installation cost | – | – | – | – | – | – | – | – | – | – |
| Maintenance cost (6) | £2,000 | £2,000 | £2,000 | £2,000 | £2,000 | £2,000 | £2,000 | £2,000 | £2,000 | £2,000 |
| Fuel cost (7) | £16,774 | £16,774 | £16,774 | £16,774 | £16,774 | £16,774 | £16,774 | £16,774 | £16,774 | £16,774 |
| Energy tax (CCL) (8) | £1,118 | £1,118 | £1,118 | £1,118 | £1,118 | £1,118 | £1,118 | £1,118 | £1,118 | £1,118 |
| Residual value (9) | – | – | – | – | – | – | – | – | – | £500 |
| Total | £19,893 | £19,893 | £19,893 | £19,893 | £19,893 | £19,893 | £19,893 | £19,893 | £19,893 | £19,393 |

| | |
|--------------------------|----|
| Net present value | |
| Discount rate | 6% |

| | |
|---|----------|
| Current boiler | £285,314 |
| New boiler | £246,013 |
| Net discounted benefit of new boiler versus current boiler | £39,301 |

Assumptions:

1 £15 per kW boiler in Years 1–10, increasing by 5% year on year thereafter

2 78% boiler efficiency, 30% utilisation, fuel charged @ 3p/kWh

3 78% boiler efficiency, 30% utilisation, tax charged @ 0.2p/kWh

4 No residual value – costs of decommissioning equal scrap value of components

5 200 kW @ £90/kW

6 £10 per kW boiler

7 94% boiler efficiency, 30% utilisation, fuel charged @ 3p/kWh

8 94% boiler efficiency, 30% utilisation, tax charged @ 0.2p/kWh

9 Residual value of old boiler realised at start of replacement scenario is £4,000; residual value of new boiler after 20 years' life is £500.

A.6.4 Advantages and disadvantages of simple payback periods (SPP)

For relatively inexpensive, simpler measures, calculating the SPP can be enough to make a sound decision on investment. SPP is a method for determining how long it will take for the cumulative energy savings and other benefits to equal, or payback, your initial investment. The table below summarises the advantages and disadvantages of SPPs.

| Advantages of SPPs | Disadvantages of SPPs |
|---|---|
| A simple way to screen relatively low-cost measures based on payback | Can't compare complex measures where costs and savings vary in magnitude and timing |
| Easier to communicate to a non-technical audience | Doesn't account for benefits and costs after equipment has paid for itself, so can disadvantage projects with long useful lives |
| | Doesn't account for: maintenance costs, interest on any loans and disposal costs; and volatility of utility costs |
| | It can make economically sound improvements to efficiency look economically unviable |

It may be more appropriate to apply a SPP where the energy saving measure identified has, for example:

- a low asset life
- no or low associated capital and maintenance costs

A.7 Implementing energy efficiency opportunities

ESOS is intended to provide high quality and targeted advice to large enterprises on cost-effective energy efficiency opportunities, which will ultimately lead to financial savings.

If you invest more time and effort into your ESOS energy audit, you are more likely to identify ways that you can save money through reducing energy consumption.

A.7.1 Board level engagement

Large investment projects may require authorisation from your board of directors. In addition, your ESOS Assessment will need to be signed off by at least one director.

Engaging with the board at the most appropriate time and presenting the correct data will be essential in ensuring projects are authorised.

To enable this, it is important that your cost-appraisal methodology can stand up to financial scrutiny, is consistent and not biased.

ESOS audits will identify cost-effective recommendations, including the payback period for proposed measures.

Your board level director, or equivalent senior manager, will be responsible for reviewing these findings as part of the ESOS compliance process.

For organisations that don't already do so as a matter of routine, this provides an important opportunity to engage with board level managers on energy expenditure and potential savings.

Senior management buy-in is crucial to establishing a successful energy use reduction programme.

You may wish to propose that your board discusses the findings of the audit to ensure that all the directors are aware of the expenditure on energy and the potential savings that could be made.

A.7.2 Presenting findings and recommendations effectively

ESOS assessments will have a greater impact if the findings are presented in an accessible manner for directors or your board and others across your organisation.

To engage the board in particular when presenting recommendations, it will be important to make clear:

- the financial cost of energy to the organisation
- the financial benefits and payback periods from investing in recommended measures to improve energy efficiency

The table below provides an example of how you could present ESOS assessment findings. This is not a standard template and does not need to be used. It is just an example of how you may wish to present the recommendations for review by the board.

Example: presenting ESOS Assessment findings for sign-off

| Energy Savings Opportunity Scheme Assessment Report | |
|--|-----------------|
| Name of organisation: | ABC Solutions |
| ESOS compliance deadline: | 5 December 2015 |
| Total organisational energy consumption: | |
| Total energy consumption assessed (that is, minimum 90%): | |
| Total cost-effective energy saving potential identified (in energy): | |
| Total cost-effective financial saving identified: | |

| Assessment findings | | | | | | |
|---------------------|-------------------------------|-------------------|----------------------|----------------------------|----------------|--------------------------|
| | Detail of measure identified: | Assessed via: | Applicability: | Identified energy savings: | LCCA or SPP? * | Identified cost savings: |
| Measure 1 | LED lighting | ESOS energy audit | Building 1 | 8,000 kWh/year | SPP | £1,040 |
| Measure 2 | Boiler replacement | ESOS energy audit | Manufacturing site 3 | 20,000 kWh/year | LCCA | £30,000 |
| Measure 3 | | | | | | |

| Sign-off | |
|------------------------------|--|
| Director/senior manager (1): | |
| Director/senior manager (2): | |

| Lead assessor Details | |
|---|---------------|
| Lead assessor (name) for each assessment (as applicable): | Joe Bloggs |
| Lead assessor (organisation) for each assessment (as applicable): | ABC Solutions |

* LCCA = life-cycle cost analysis, SPP = simple payback period

A.7.3 Overcoming potential barriers to implementation

In addition to the need to secure financing for investment in energy efficiency opportunities, a range of potential barriers to the implementation of recommendations can exist within organisations.

These could include:

Split financial incentives – in larger organisations, the team responsible for paying utility bills may not be responsible for selecting and replacing plant or other equipment. It is helpful to ensure that investment decisions and equipment replacement or maintenance decisions consider the full cost to the organisation. One option that a number of organisations are increasingly adopting is ensuring that energy budgets are delegated appropriately.

Undervaluing energy efficiency opportunities – it may be helpful to present financial savings that can arise from energy efficiency in terms familiar to the board – such as equivalents in increased turnover. Your energy audits should also ensure that all the potential costs and benefits of recommendations are captured (for example, reduced tax liabilities, reduced waste, greater energy security and reduced exposure to future price shifts).

Lack of access to trusted information – ESOS is intended to overcome this barrier by ensuring that audits are undertaken or approved by a suitably qualified lead assessor. To get the best for your organisation, you'll need to ensure that the lead assessor has the right technical skills for your sector

A.7.4 Government support for implementing energy saving opportunities

Although the implementation of energy saving measures will be case- and organisation-specific, many sources of information and financial support are available to organisations looking to implement such measures.

Sources of financial support for implementing audit recommendations

This list outlines some sources of possible government financial support to help cover the costs of implementing ESOS energy audit recommendations.

Enhanced Capital Allowances (ECAs)

ECAs provide businesses with enhanced tax relief for investments in equipment that meet published energy saving criteria.

[ECA information](http://www.gov.uk/government/policies/reducing-demand-for-energy-from-industry-businesses-and-the-public-sector--2/supporting-pages/enhanced-capital-allowances-ecas) (www.gov.uk/government/policies/reducing-demand-for-energy-from-industry-businesses-and-the-public-sector--2/supporting-pages/enhanced-capital-allowances-ecas)

[Energy Technology List](https://etl.decc.gov.uk/etl/site.html) (https://etl.decc.gov.uk/etl/site.html)

Quality Assurance for Combined Heat and Power (CHPQA)

CHPQA certification allows combined heat and power (CHP) operators to claim Climate Change Levy exemption on fuel inputs to and power outputs from their CHP scheme(s).

[CHPQA website](http://chpqa.decc.gov.uk) (http://chpqa.decc.gov.uk)

Office for Low Emission Vehicles, Plug-in Car/Van Grant

You can get a grant towards the cost of each new electric (plug-in) car or van you buy provided it meets certain conditions.

[Plug-in car and van grants](http://www.gov.uk/plug-in-car-van-grants/overview) (www.gov.uk/plug-in-car-van-grants/overview)

Fleet Reviews

EST provides free transport audits, supported by the Department for Transport for certain company vehicle fleets.

[EST's Transport Advice](http://www.energysavingtrust.org.uk) (www.energysavingtrust.org.uk)

Electricity Demand Reduction pilot

The government is currently piloting an Electricity Demand Reduction scheme to provide financial incentives to encourage businesses to make electricity energy efficiencies.

[Electricity Demand Reduction web page](http://www.gov.uk/government/policies/reducing-demand-for-energy-from-industry-businesses-and-the-public-sector--2/supporting-pages/electricity-demand-reduction-project) (www.gov.uk/government/policies/reducing-demand-for-energy-from-industry-businesses-and-the-public-sector--2/supporting-pages/electricity-demand-reduction-project)

Renewable Heat Incentive

This government scheme, managed by Ofgem, provides financial support for the installation and use of renewable heating systems in business and homes.

[Renewable Heat Incentive web page](http://www.gov.uk/government/policies/increasing-the-use-of-low-carbon-technologies/supporting-pages/renewable-heat-incentive-rhi) (www.gov.uk/government/policies/increasing-the-use-of-low-carbon-technologies/supporting-pages/renewable-heat-incentive-rhi)

A.7.5 Energy performance contracting

Energy performance contracting is a way for organisations to:

- reduce the cost of investing in energy efficiency measures
- mitigate the risk that can arise from uncertainty about the benefits that will be realised

Energy performance contracts are typically delivered by energy service companies (ESCOs).

An ESCO typically conducts an energy audit for a client. They then identify and implement energy efficiency opportunities and guarantees that these will be self-funding through the energy savings generated. In the event that the savings are not realised, the ESCO generally makes up the difference. The ESCO will realise any energy savings for the duration of the contract, with the client receiving any benefits once the contract ends.

A.8 Recording energy usage in freight transport

For participants operating commercial vehicle fleets (for example, heavy goods vehicles and vans), fuel data should be captured and collated to establish the amount of energy consumed.

As a freight transportation organisation you may operate a fleet of vehicles and trailers ranging in size and consuming different input fuels. As the energy use profiles of these vehicles will vary significantly, it is valuable to have detailed information to allow you to categorise your fleet, including the vehicle numbers in each category.

It may also be useful to monitor the number of trailers in use and to categorise these as applicable. For example, the categories could be:

- single-decked trailers up to 4.3 m
- single-decked trailers over 4.3 m
- multi-decked trailers (all heights)

You may also wish to consider monitoring your fleet's fuel use using telematics systems. Fleet telematics systems use global positioning system (GPS) transmitters in each vehicle to collate information about a vehicle's position at any given time. The collated information is often then

presented to the user using software installed onto a computer (for example, at your head office). Telematics systems can provide real-time data on the fuel consumption and routing/scheduling of your fleet, helping to identify fuel saving opportunities linked to better routing/scheduling and/or improved driver fuel efficiency performance. Real-time, actual data may be more useful in identifying fuel saving opportunities.

Other considerations in relation to identifying and implementing energy saving opportunities in freight transport are;

- Vehicle operations and maintenance
 - structure of your distribution network
 - routing and scheduling planning
 - vehicle records and maintenance schedules
 - criteria for fleet renewal
- Data collation, flow and checking:
 - What system is in place for recording total fuel quantity purchased for the fleet?
 - How do you ensure that data from each depot is collected?
 - What checks are in place to ensure the accuracy of the data?

Businesses which have undertaken a Green Fleet review, or which are part of another transport focussed energy management scheme, such as the Freight Transport Association's Logistics Carbon Reduction Scheme (LCRS) will be able to use those activities to support ESOS compliance, where they are undertaken in a way which meets the minimum requirements of an ESOS energy audit.

A.9 Converting expensed mileage into energy usage

When calculating total energy consumption from transport activities, you may estimate energy consumption from other verifiable data (e.g. expenditure) where you do not have actual usage data (e.g. litres).

For instance, you could use the number of expensed miles multiplied by an average fuel consumption factor to estimate the usage.

Expensed mileage can be converted into energy use by applying standard conversion factors, such as those included in the UK Government conversion factors for Company Reporting <http://www.ukconversionfactorscarbonsmart.co.uk/>.

Below is an example of calculating energy use in kilowatt hours (kWh) from an expensed mileage figure, using some reasonable and permissible assumptions.

Company X needs to determine the energy use associated with employee transport in company cars.

Available data: The only data that Company X has is a total mileage figure of 4,500,000 miles.

Company X also knows that all company cars are diesel fuelled.

Step 1: Obtain conversion factors

Refer to a reputable source of conversion factors such as the latest UK Government conversion factors for Company Reporting:

Company X finds the following factors for its company cars:

Company X does not keep centralised records of the size or engine capacity of its company cars so it assumes an 'average car' to obtain an emission conversion factor.

Emission conversion factors for different types of cars, on the 'Passenger vehicles' sheet

show the conversion factor is 0.298469 kg CO₂e per mile for an average diesel car.

Emission conversion factors for diesel, on the 'Fuels' sheet show the conversion factor is 0.251355 kg CO₂e per kWh, on a gross CV basis.

Company X is determining its total energy consumption on a gross calorific value (gross CV) basis. N.B. The company could have chosen to measure total energy consumption using a different unit, including net calorific value, if it so wished.

Step 2: Calculate energy consumption in kWh

Company X converts the mileage into an emissions figure using an activity-based (mileage) emission conversion factor:

$4,500,000 \text{ miles} \times 0.298469 \text{ kg CO}_2\text{e per mile} = 1,343,110 \text{ kg CO}_2\text{e};$

Then converts the emissions into energy (in kWh) using a fuel-property emission conversion factor:

$1,343,110 \text{ kg CO}_2\text{e} / 0.251355 \text{ kg CO}_2\text{e per kWh} = 5,343,478 \text{ kWh}$

Company X has estimated its energy use from expensed miles using authoritative conversion factors where information on actual fuel consumption was not available.

A.10 Links between ESOS and other climate change policies

Your organisation or group might be part of other energy efficiency schemes, such as the CRC Energy Efficiency Scheme (CRC), which may mean that you can save time and effort by using some of the information gathered under these schemes for an ESOS Assessment.

Other UK climate change policies also require organisations to measure and manage energy consumption accurately. These include the CRC Energy Efficiency Scheme (CRC), Climate Change Agreements (CCA), the EU Emissions Trading System (EU ETS) and mandatory company reporting. However, the eligibility requirements and scope of energy and emission reporting vary across these mechanisms. ESOS is different in placing a greater emphasis on the identification of energy saving opportunities.

The requirements of ESOS have been designed to align, as far as is possible, with those of other schemes. For example, if you are a participant in other schemes, then you will already be gathering energy data and you are encouraged to draw on this to comply with ESOS. This will avoid the duplication of compliance efforts and reduce your administrative costs.

To assist with this, ESOS allows participants flexibility in when they set their reference period, the window in which they measure their energy use.

The following information describes how you can use data reporting under existing systems to support your ESOS compliance.

CRC Energy Efficiency Scheme

The CRC scheme seeks to improve energy efficiency in large non-energy intensive public and private sector bodies. The focus for CRC, like ESOS, is on the whole enterprise or group.

CRC requirements include the annual reporting (for the period 1 April to 31 March) of electricity and gas consumption across the entire participant organisation. ESOS participants will be allowed to align data collection to the CRC timetable. So, if you are in CRC, this means that you can use electricity and natural gas data collected to comply with the CRC scheme to support your ESOS Assessments (e.g. you could align your chosen reference period under ESOS with the CRC reporting year of April to March).

You need to ensure that you have in place processes to collect the additional data that you may need for ESOS Assessments that isn't included in CRC – including:

- combustion of other gaseous, liquid and solid fuels and wastes;
- fuel usage in transport; and
- imported heat.

CCA

CCAs are voluntary agreements that provide discounts on the Climate Change Levy (CCL) to a number of sectors. The scheme is primarily aimed at energy-intensive sectors, requiring participants to meet energy reduction targets and report their energy consumption against targets set for a reporting period.

If you have a CCA then you can use the CCA milestone data as a part of the ESOS Assessment. Furthermore, to meet your targets, you may have undertaken energy audits as part of your participation in the CCA scheme. The results and recommendations of such audits could feed into ESOS. It may also count as an ESOS compliant energy audit, provided it was conducted, verified or reviewed by a qualified lead assessor and meets the minimum standards set by ESOS.

The CCA scheme requires reporting on the combustion of any fuel and consumption of electricity within an eligible industrial process at a facility.

The CCA scheme operates on a facility basis. So, in complying with the requirements of ESOS, you will need to extend your data management processes to cover any additional on-site energy use and sites that are not part of the CCA target unit.⁴

EU ETS

The EU ETS requires the measurement and reporting of direct emissions from eligible installations on an annual basis with a calendar year monitoring, reporting and verification cycle. ESOS will allow participants to align their data measurement period with that of the EU ETS; therefore, data reported under EU ETS could be used. For ESOS Assessments you would need to consider data collection processes for other sites and activities not included in EU ETS and also for the inclusion of electricity.

Environmental reporting

The geographical scope of environmental reporting, including mandatory greenhouse gas (GHG) emission reporting, is much wider than ESOS and it requires energy to be accounted for internationally. However, mandatory GHG reporting is likely to include a lot of the energy data required for an ESOS Assessment, including energy usage in buildings, industrial processes and transport.

Industrial Emissions Directive /Environmental Permitting Regulations

The Industrial Emissions Directive (IED) requires all prescribed installations to apply best available techniques for energy efficiency and to be operated in an energy efficient manner. Permits issued under the Environmental Permitting Regulations (EPR) deliver these IED requirements and also include a requirement to provide information on energy consumed or generated by the activities falling within the permit.

Information collated as part of compliance with an EPR permit may, in part, be useful in the development of energy data for an ESOS reference period. Horizontal and sector-specific EPR guidance from UK regulators outlines how to comply with the energy efficiency requirements in the environmental permits. This guidance outlines the specific sources of energy consumption and generation required to be covered in the permit.

⁴ A CCA 'target unit' is a facility, or group of facilities, subject to a CCA scheme energy reduction target

Voluntary schemes

A number of ESOS participants will already participate in voluntary mechanisms such as the Carbon Trust Standard and the Carbon Disclosure Project. As such, they are likely to already have gathered a lot of the energy data required, and may have the advantage of data having already been audited.

Appendix B: How to fill in the notification form

Section B.1 shows the questions that appear in the notification system, with the possible answers that can be selected. Mandatory questions are marked with an asterix *.

Questions shown in italic text will only appear if certain responses to previous questions have been provided.

Please ensure you have all the information gathered before starting your notification.

Or alternatively fill in the basic organisational questions early and save it and then come back at a later date to complete the questions that can only be filled in once you are compliant.

That way it should not take long to complete your notification.

Clicking "save" in the notification prompts you to enter an email address and a unique link will be sent to you for you to access your saved notification.

Do not lose this link otherwise you will have to start your notification again.

You can access the notification by clicking the link here <https://www.gov.uk/energy-savings-opportunity-scheme-esos#submit-your-esos-notification-of-compliance>.

You do not need to log in to submit your notification. Anyone can submit the notification on behalf of a participant (therefore you could instruct a consultant or lead assessor to do this on your behalf) but remember that the responsible undertaking is liable for the compliance of the participant so they should be happy with accuracy of the information being submitted.

Please do not send a printed or PDF version of this appendix to us as your submission - it will not be accepted.

The deadline for submitting your online notification is 5 December 2015. We recommend submitting your notification before the deadline.

B.1 Notification questions

Q1 Registered name of the organisation *

Q2 Trading name or other name by which your UK organisation is commonly known *

Same as UK organisation name

Trading name is different [and you will be required to enter the name]

Q3 Is your UK organisation registered at Companies House? *

Yes [and you will be required to enter the 8 digit number e.g. 00123456 or SC123456]

No

Q4 Which of the following statements applies as to why your organisation is submitting this notification? *

Our organisation qualifies for ESOS and is therefore required to comply with the ESOS regulations

Our organisation doesn't qualify for ESOS but we want to show our commitment to saving energy

Q5 Sector that your organisation belongs to *

The possible answers that can be selected from a drop down box are:

A - Agriculture, forestry and fishing

B - Mining and quarrying

C - Manufacturing

D - Electricity, gas, steam and air conditioning supply

E - Water supply; sewerage, waste management and remediation activities

F - Construction

G - Wholesale and retail trade; repair of motor vehicles and motorcycles

H - Transportation and storage

I - Accommodation and food service activities

J - Information and communication

K - Financial and insurance activities

L - Real estate activities

M - Professional, scientific and technical activities

N - Administrative and support service activities

O - Public administration and defence; compulsory social security

P - Education

Q - Human health and social work activities

R - Arts, entertainment and recreation

S - Other service activities

No response

Q6 Is the ESOS notification on behalf of a franchise group? *

No, we are not a franchisor or franchisee

Yes, we are a franchisor/franchisee and we are participating separately from one another

Yes, we are a franchisor/franchisee and although we are not in the same corporate group we have decided to participate together

If Yes, provide the name of the franchise group

Q7 Is the ESOS notification on behalf of a trust for which the UK organisation making this notification is responsible? *

Yes

No

If Yes, name of the relevant trust

Q8 Registered office or principal place of activity (where no registered office exists) of the UK organisation making this notification *

Address including Town/City, County and Postcode

Q9 Location of registered office or principal place of activity *

England

Wales

Northern Ireland

Scotland

Off-shore (where an organisations energy use is wholly or mainly consumed by offshore activities e.g. drilling platforms)

Q10 Do you have an overseas global parent company? *

Yes, the organisation has a global parent company based outside of the UK (Q11 and Q12 will be displayed)

No, the organisation does not have a global parent company that is based outside of the UK (you will jump to Q13)

*Q11 Overseas global parent company **

Overseas Parent Name:

*Q12 Overseas trading name **

Same as the overseas global parent company organisation

Overseas trading name is different [If so you will be required to enter the name]

Q13 Details of the individual who is the primary contact regarding details submitted in this notification *

Name, Job title or position, Email address, Telephone number

Q14 Primary contact address *

Same address as the registered office or principal place of activity (where no registered office exists)

Different address [if so enter Address, Town/city, County, Postcode, Country]

Q15 Details of the individual who is the secondary contact regarding details submitted in this notification

Name, Job title or position, Email address, Telephone number

Q16 Secondary contact address

Same as the address of the primary contact

Same as the address of the registered office or principal place of activity (where no registered office exists)

Different address [if so enter Address, Town/city, County, Postcode, Country]

Q17 Contact details (for general information queries to your organisation) *

Same as the email and telephone number of the primary contact

Same as the email and telephone number of the secondary contact

Different email and telephone number [if so provide the email address and telephone number]

Q18 Number of UK organisations (i.e. legal entities) that this notification covers? *

Just one UK organisation

More than one UK organisation [If so then 'How many organisations does the notification cover (including the legal entity making the notification)?']

Q19 Have any UK organisations ceased to be part of your group since the qualification date, 31 December 2014? *

Yes (Q20 will be displayed) [If 'Yes' then list them. Enter one per line - UK organisation name followed by the Company Registration Number, if applicable, in brackets for example ABC Company (01234567)]

No (you will not answer Q20)

*Q20 Are you including in this notification any of the UK organisations that have ceased to be part of your group since the qualification date, 31 December 2014? **

Yes [If 'Yes' then list them. Enter one per line - UK organisation name followed by the Company Registration Number, if applicable, in brackets for example ABC Company (01234567)]

No

Q21 Are you the highest UK parent company in your group or does this notification include the highest UK parent for your group? *

Yes, this notification covers the highest UK parent company in the group

No, the highest UK parent company in the group have submitted a separate notification (you will jump to Q25)

Q22 Are there any UK organisations (i.e. legal entities) which are part of your group that have decided to make separate notifications for ESOS compliance purposes? *

Yes [If 'Yes' then list the UK organisations who are making separate notifications.

Enter one per line - UK organisation name followed by the Company Registration Number, if

applicable, in brackets. For example ABC Company (01234567)

No

Q23 How many highest UK parent companies in the group are covered by this notification?*

Just one highest UK parent company in the group (you will jump to Q25)

More than one highest UK parent company in the group (Q24 will be displayed)

Q24 Level to which the highest UK parent companies have agreed to participate together for the purpose of this ESOS notification *

All of the highest UK parent companies in the group have agreed in writing to participate together

Some, but not all, of the highest UK parent companies in the group have agreed in writing to participate together

None of the highest UK parent companies in the group have agreed to participate together

If some or all of the highest UK parent companies have agreed in writing to participate together then list the organisations who have agreed to participate together. This should include the name of the highest UK parent or responsible undertaking which is taking responsibility (if applicable) for making this notification.

Enter one per line - UK organisation name followed by the Company Registration Number, if applicable, in brackets for example ABC Company (01234567), DEF Company (12345678)

Q25 To what extent are the UK organisations/sites/energy supplies in this ESOS notification covered by ISO 50001? *

All of the UK organisations/sites/energy supplies in this ESOS notification are fully covered by ISO 50001 (you will jump to the Q36)

Some, but not all, of the UK organisations/sites/energy supplies in this ESOS notification are covered by ISO 50001

None of the UK organisations/sites/energy supplies in this ESOS notification are covered by ISO 50001

Q26 Details of the Lead Assessor who has signed off your ESOS assessment *

Lead Assessor

Email address

Q27 Professional body or approved register of which the lead assessor is a member *

Lead Assessor body

Membership number

Q28 Do you have any energy supply responsibility? *

Yes

No, we have no energy supply responsibility and our total energy consumption is therefore zero (you will jump to Q36)

Q29 Enter the percentage of your total energy consumption that is covered by each of the following ESOS compliance routes or included in the ESOS de minimis *

You must enter a percentage figure in the first 5 boxes. Enter 0% where you have not used that method of compliance. The total figure in the 6th box must add up to 100%.

| ISO 50001 | | % |
|--|--|---|
| Display Energy Certificate | | % |
| Green Deal Assessment | | % |
| Energy audits compliant with ESOS | | % |
| Not audited (de minimis) (≤10%) | | % |
| Total | | % |

Q30 Did you have to estimate any of the data to calculate your total energy consumption or energy spend? (i.e. you didn't have 12 months actual data for all supplies) *

Yes (Q31 will be displayed)

No (you will not answer Q31)

Q31 Confirmation that the following information is recorded in your ESOS evidence pack -

Details of the method(s) used and the extent to which, and the reasons why, verifiable data was not used *

I confirm that these are all recorded in our ESOS evidence pack

I confirm that these are not recorded in our ESOS evidence pack and I recognise that this is not in compliance with the obligations of ESOS

Q32 Did you use 12 months verifiable data for the purpose of all your ESOS energy audit(s)?*

Yes (you will not answer Q33)

No (Q33 will be displayed)

Not applicable - all significant energy consumption is covered by ISO 50001 certification, Display Energy Certificates or Green Deal Assessments (you will not answer Q33)

Q33 Confirmation that the following information is recorded in your ESOS evidence pack -

Details of the extent and the reasons why 12 months of verifiable data was not used *

I confirm that these are all recorded in our ESOS evidence pack

I confirm that these are not recorded in our ESOS evidence pack and I recognise that this is not in compliance with the obligations of ESOS

Q34 Did you use energy consumption profiling for the purpose of analysing your energy consumption for all your ESOS energy audit(s)? *

Yes (you will not answer Q35)

No (Q35 will be displayed)

Not applicable - all significant energy consumption is covered by ISO 50001 certification, Display Energy Certificates or Green Deal Assessments (you will not answer Q35)

Q35 Confirmation that the following information is recorded in your ESOS evidence pack -

*Details of the alternative method of analysis used and the extent to which, and the reasons why, the energy audit does not include an analysis based on energy consumption profiles **

I confirm that these are all recorded in our ESOS evidence pack

I confirm that these are not recorded in our ESOS evidence pack and I recognise that this is not in compliance with the obligations of ESOS

Q36 Confirm that a board director (or, in the absence of a board director, an individual with management control) -

has reviewed the recommendations of your organisation's ESOS assessment or alternative routes to compliance (e.g. ISO 50001)

is satisfied, to the best of their knowledge, that the organisation is within the scope of the scheme

is satisfied, to the best of their knowledge, that the organisation is compliant with the scheme

is satisfied, to the best of their knowledge, that the information provided in this notification is correct

Note that leaving any of the above boxes unticked means that you are non-compliant with the requirements of ESOS. We recommend that you keep a record of any evidence to support any omission in your ESOS evidence pack.

Q37 Contact details for the board director (or, in the absence of a board director, an individual with management control) who has confirmed the points above *

This must be a different individual to the person named as the primary contact for this notification.

Name of board director, Job title or position, Email address, Telephone number

Q38 Board director address *

Same as the address of the primary contact

Same as the address of the secondary contact

Same as the address of the registered office or principal place of activity (where no registered office exists)

Different address [if so enter Address, Town/city, County, Postcode, Country]

Q39 ESOS Assessment recommendations were reviewed by the board director above *

Date of review (DD/MM/YY)

Q40 Was your Lead Assessor internal or external to your organisational group? *

Internal (details of a second director will need to be provided)

External (you will jump to the 'Voluntary Questions' page)

No Lead Assessor because this ESOS notification is covered by ISO 50001 (you will jump to the 'Voluntary Questions' page)

Q41 *Confirm that a second director (or, in the absence of a second director, an individual with management control) -*

has reviewed the recommendations of your organisation's ESOS assessment or alternative routes to compliance (e.g. ISO 50001)

is satisfied, to the best of their knowledge, that the organisation is within the scope of the scheme

is satisfied, to the best of their knowledge, that the organisation is compliant with the scheme

is satisfied, to the best of their knowledge, that the information provided in this notification is correct

Note that leaving any of the above boxes unticked means that you are non-compliant with the requirements of ESOS. We recommend that you keep a record of any evidence to support any omission in your ESOS evidence pack.

Q42 *Contact details for a second board director (or, in the absence of a board director, an individual with management control) who has confirmed the points above **

Name of board director, Job title or position, Email address, Telephone number

Q43 *Second board director address **

Same as the address of the first board director

Same as the address of the primary contact

Same as the address of the secondary contact

Same as the address of the registered office or principal place of activity (where no registered office exists)

Different address [if so enter Address, Town/city, County, Postcode, Country]

Q44 *ESOS Assessment recommendations were reviewed by the second board director above **

Date of review (DD/MM/YY)

Voluntary Questions

Answers to these questions are voluntary.

The answers you provide will be included with the other information provided in your ESOS notification and will be published on www.gov.uk/energy-savings-opportunity-scheme-esos.

Q45 **Does your UK organisation have a quantitative energy efficiency target and/or benchmarks?**

Yes (Q46 will be displayed)

No (Q47 will be displayed)

No response

Q46 If your UK organisation does have a quantitative target and/or benchmarks can you disclose a key target or benchmark?

Q47 If your organisation does not have a quantitative target and/or benchmarks will you adopt any such measures in light of your ESOS assessment?

Yes

No

No response

Q48 Have the board of directors of your organisation discussed the results of your ESOS assessment?

Yes

No

No response

Q49 Have senior management within your organisation discussed the results of your ESOS assessment?

Yes

No

No response

Q50 Have you published any information relating to your ESOS energy audit report?

(e.g. key findings, or key actions taken in light of your ESOS assessment)

Yes

No

No response

Q51 Link to the web page where this information has been published

You are then asked to answer some questions about your experience on the system and then you will see the submit screen. Your primary and secondary contact will both be sent an email containing the information you have just entered and if you want one other person to be sent this information their email address can be entered on this final screen. Do not submit until you are happy with the information that has been entered.

B.2 How to fill in the notification on behalf of a trust

How to fill in the notification on behalf of a trust asset will depend on which scenario you fit into as described in section 1.7.4 of this guidance.

Scenario A:

If the dominant beneficiary is making the notification then:

- Do not put the trust's name in question 7. As the dominant beneficiary organisation you will fill in the notification of compliance in your name and should ensure that the trust assets energy

have been covered by your compliance. The trust assets will be treated as part of the company that is the dominant beneficiary. You do not need to give specific details of the trust assets in the notification. However please keep details in the evidence pack to verify that you have included the energy in your overall compliance.

If the dominant beneficiary appoints another undertaking to make the notification on behalf of the trust assets then the notification should be filled in as per Scenario B,C,D below.

Scenario B, C, D

A notification will be required for each trust that the AIFM/Operator/Trustee/appointed undertaking (as appropriate) is responsible for under this provision. The notification should be filled in with the details of the AIFM/Operator/Trustee/appointed undertaking in answering questions:

1, 2, 3, 8, 9, 10, 11, 12, 17, 36, 37, 38, 39, 40, 41, 42, 43, 44,

Answer the following questions in relation to the trust itself:

4, 5, 6, 7, 18,19, 20, 21, 22, 23, 24, 25, 28, 29, 30, 31, 32, 33, 34,35, 45, 46, 47,48, 50, 51

Answer the following questions in relation to the notification of compliance for the trust.

13, 14, 15, 16, 26, 27, S1, S2, S3, S4

Please note that the qualifying AIFM/Operator/Trustee/appointed undertaking will need to provide a separate notification for its own compliance with the scheme. If the AIFM/Operator/Trustee/appointed undertaking has responsibility for several qualifying trust assets and its own compliance they will have to submit separate notifications on the system.

Appendix C: Useful contacts

Helpdesk support

Email: ESOS@environment-agency.gov.uk

<https://www.gov.uk/energy-savings-opportunity-scheme-esos>

ESOS offshore related enquiries

Email: emt@decc.gsi.gov.uk

Scheme administrator

Environment Agency www.gov.uk/government/organisations/environment-agency

Regulators

England: Environment Agency www.gov.uk/government/organisations/environment-agency

Wales: Natural Resources Wales www.naturalresourceswales.gov.uk

Scotland: Scottish Environment Protection Agency www.sepa.org.uk

Northern Ireland: Northern Ireland Environment Agency www.doeni.gov.uk/niea

Offshore: Department of Energy and Climate Change www.gov.uk/oil-and-gas-uk-oil-portal

More information and advice

[British Standards Institute \(BSI\)](#) – for ISO 50001 case studies

[Carbon Trust](#) – for low carbon guides and carbon reduction advice

[Climate Change Agreement operations manual](#)

[Measuring and reporting Greenhouse Gas \(GHG\) emissions from freight transport operations](#)

[Energy Saving Trust](#)

[Transport guidance and advice](#)

[Freight Transport Association's Logistics Carbon Reduction Scheme](#)

[Resource Efficient Scotland](#)

[Shipping Industry energy efficiency advice](#)

Legislation behind ESOS

The government established ESOS to implement Article 8(4–6) of the [EU Energy Efficiency Directive 2012/27/EU](#) (http://ec.europa.eu/energy/efficiency/eed/eed_en.htm).

ESOS came into force in July 2014 under the [Energy Savings Opportunity Scheme Regulations 2014](#) (www.legislation.gov.uk/uksi/2014/1643/made) – referred to in this guidance as “the ESOS Regulations”.

<https://www.gov.uk/energy-savings-opportunity-scheme-esos>

esos@environment-agency.gov.uk

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