



Department
of Energy &
Climate Change

Energy Savings Opportunity Scheme (ESOS)

ESOS guidance notes for the offshore oil and gas
industry

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This document is also available from our website at <https://www.gov.uk/oil-and-gas-offshore-environmental-legislation>

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Executive Summary

What is ESOS?

The Energy Savings Opportunity Scheme (ESOS) is a mandatory energy assessment and energy saving identification scheme for large undertakings (and their corporate groups). The scheme applies to the offshore oil and gas industry operating on the United Kingdom Continental Shelf UKCS.

If you have any questions not addressed by this guidance or wish to provide feedback on this document, you can contact the Environmental Management Team on emt@decc.gsi.gov.uk

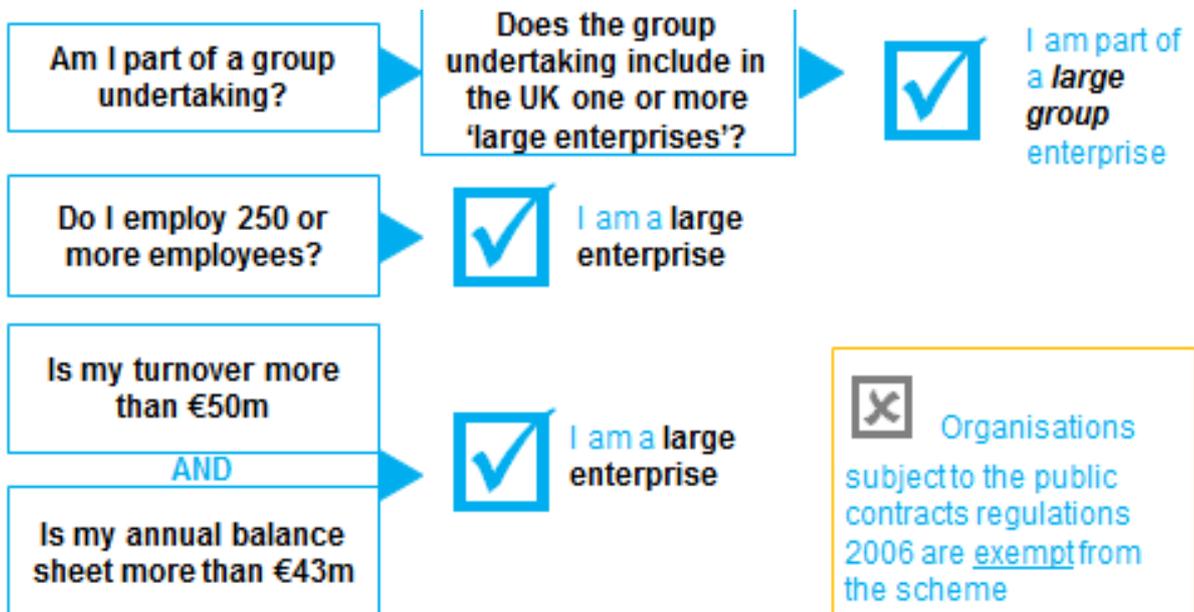
The Environmental Management Team (hereafter, the Department) will be publishing compliance guidance later in 2014 and this will supersede this Guidance note. This guidance will be specific for the offshore industry.

Am I in scope of ESOS?

You are likely to be in scope of ESOS if, on the qualification date (31 December 2014 for the first phase of ESOS), you are:

- An undertaking which has 250 or more employees¹.
- An undertaking which has fewer than 250 employees, but has:
 - an annual turnover exceeding €50m **and**
 - a balance sheet exceeding €43m.
- Part of a corporate group which includes an undertaking which meets criteria (1) or (2) above.

Full guidance on whether you are required to participate in ESOS can be found in [Section 3](#).



¹ Employees and other persons engaged in the business of the organisation such as owner-managers and partners.

What do I have to do to comply with ESOS?

A full overview of how the scheme operates is provided in [Section 2](#).

In simple terms, an ESOS Assessment for the offshore industry requires participants to do three things:

1. Measure your total energy consumption

Operators must measure the total energy consumption across offshore assets.

2. Conduct energy audits to identify cost-effective energy efficiency recommendations.

You must ensure that at least 90% of your total energy consumption is subject to an ESOS compliant energy audit, or a certified ISO 50001 Energy Management System during each phase of the scheme.

For the first phase of the scheme, operators can use energy auditing activity dating back to December 2011 (e.g. verified EU-ETS data) to support compliance, provided that it meets the minimum standards required of ESOS Energy Audits.

Unless your total energy consumption is covered by a certified ISO 50001 Energy Management System, you must ensure that your ESOS Assessment is conducted or reviewed by a qualified [Lead Assessor](#) (the lead assessor may be an in-house expert or an external consultant; section 5).

3. Notify compliance to the Environment Agency (as the Scheme administrator)

By 5 December 2015, each operator must notify the Environment Agency that you have complied with the scheme. Prior to submission, the Assessment is required to be reviewed by a Board-level Director or, where organisations do not have directors, a senior manager of equivalent standing, and approved by a Lead Assessor.

Participants are not required to implement energy efficiency recommendations identified by their ESOS Assessments. However, operators will only achieve the financial benefits that arise from avoiding energy waste if the cost effective recommendations identified are implemented.

How to use this guidance document

This guidance document is intended for ESOS participants from the offshore sector only. It provides an overview of how to comply with the scheme and further detail on key aspects of how the scheme operates. It is intended to provide useful reference material to help the oil and gas industry develop approaches to comply with ESOS. However, it is not intended to be a technical guide for energy auditors.

Section 2 – provides an [overview of ESOS](#), summarising each of the steps to compliance outlined above.

Section 3 – includes detailed guidance on [determining if you are within scope of ESOS](#). It is recommended that operators read this section, particularly if you are unsure if you are in scope of the scheme or if you are complying as part of a corporate group.

Section 4 – provides guidance on [how to conduct your ESOS Assessment](#), including:

- [Measuring your total energy consumption](#); and,
- [Identifying areas of significant energy consumption](#) that must be subject to audits.

Section 5 – explains the roles and responsibilities of [Lead Assessors](#) and provides guidance on how to select a suitable Lead Assessor to conduct or oversee your ESOS assessment.

Section 6 – describes [how you can comply with the scheme](#) either through gaining ISO 50001 certification or through [ESOS Energy Audits](#).

Section 7 – provides guidance on the requirements relating to getting Director (or equivalent) and Lead Assessor sign off for your ESOS Assessment, how to remain compliant by [notifying](#) the scheme administrator.

Section 8 – provides advice on [implementing audit recommendations](#).

Section 9 – provides information on [penalties, enforcement and appeals](#) where participants fail to comply with the requirements of ESOS.

Section 10 – provides information on potential [ways to comply with ESOS more easily if you are in scope of](#) the European Union Emissions Trading Scheme (EU-ETS).

1 Introduction

The Energy Savings Opportunity Scheme (ESOS) is a mandatory energy assessment and energy saving identification scheme for large undertakings (and their corporate groups). The scheme applies to the offshore oil and gas industry.

If you have any questions not addressed by this guidance or wish to provide feedback on this document, you can contact the Environmental Management Team on emt@decc.gsi.gov.uk

1.1 This document

This document provides guidance for offshore operators who are in scope of ESOS. It outlines the compliance obligations of participants in the scheme and provides advice on good practice for undertaking ESOS Assessments.

It is not intended to be a complete guide to energy auditors on how energy audits should be undertaken. ESOS Energy Audits should however meet the minimum requirements outlined in Section 6.2.1.

1.2 Why ESOS?

ESOS is being established by the Department of Energy and Climate Change (DECC) in response to the requirement for all Member States of the European Union to implement Article 8 of the Energy Efficiency Directive ('the Directive').²

In simple terms, an ESOS Assessment requires participants to do three things:

1. Measure your total energy consumption
2. Conduct energy audits to identify cost-effective energy efficiency recommendations
3. Submit the ESOS assessment to the Department (as the compliance body)

ESOS Energy Audits must be carried out or reviewed by a suitably qualified assessor; this will help give assurance that savings identified are real and achievable. If energy audits have already been conducted, for instance as part of an existing scheme, you may be able to use them to contribute to your ESOS compliance (see Section 6).

² Directive 2012/27/EU of The European Parliament and of The Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC.

2 Overview of ESOS

2.1 Scheme operation and timings

ESOS will operate in four-yearly compliance phases. Offshore operators must assess whether or not they are required to participate in ESOS on the qualification date of each phase. The qualification date for the first phase is the 31st December 2014. The last day of each compliance phase ('the compliance date') is the date by which the participant must have undertaken its ESOS Assessment.

For the first phase, this means that activity to support your ESOS Assessment must have been undertaken between the 6 December 2011 and the 5 December 2015 to be considered compliant. If you remain in scope of the scheme, you must then undertake ESOS Assessments within each subsequent phase. The timing of the phases is shown in Table 1.

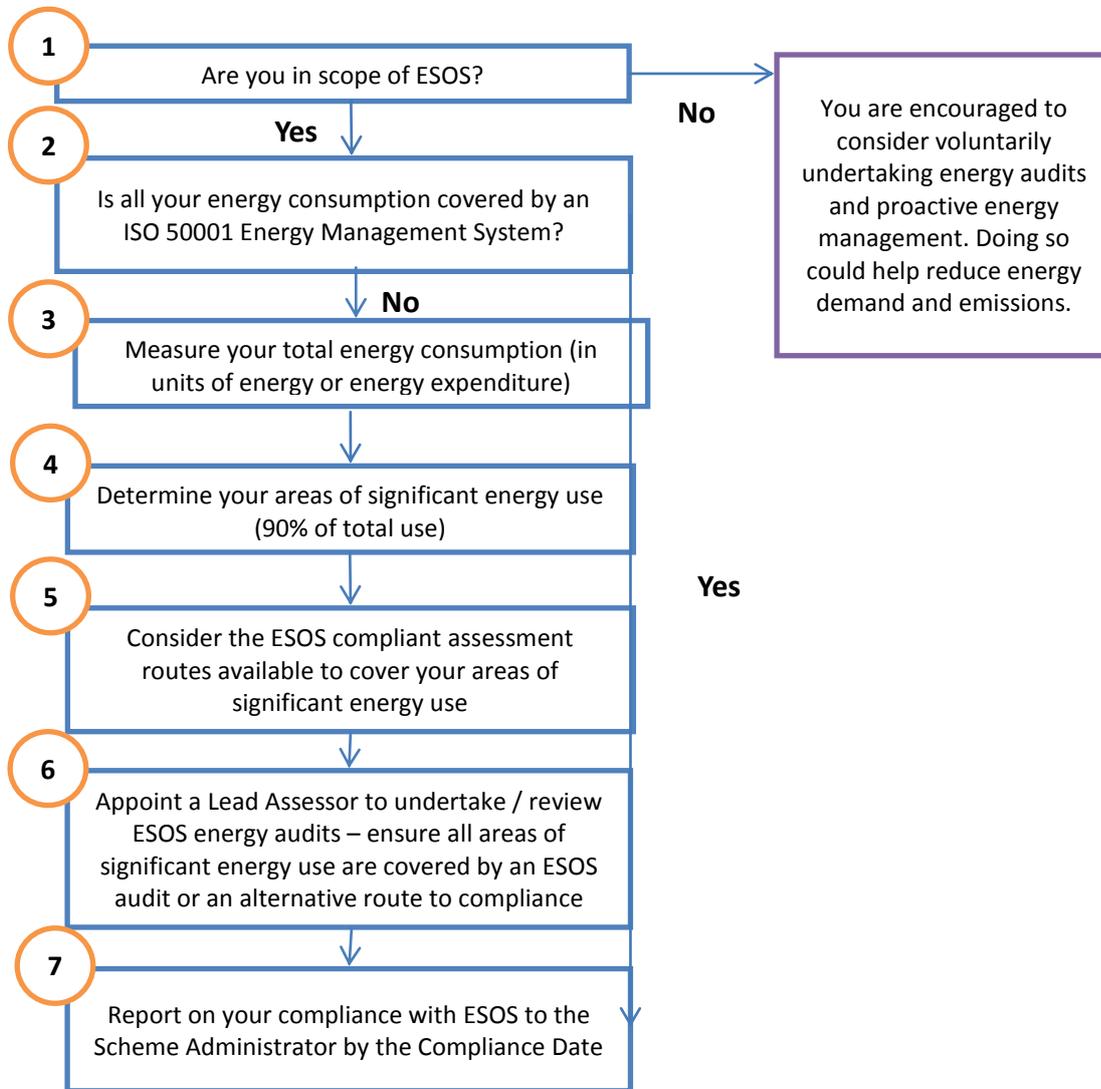
Table 1: ESOS phase timings

| Phase | Qualification date: | Four-year compliance phase: | Compliance date: |
|--------------|--------------------------------|---|-------------------------------|
| Phase 1 | 31 st December 2014 | 6 th December 2011 – 5 th December 2015 | 5 th December 2015 |
| Phase 2 | 31 st December 2018 | 6 th December 2015 – 5 th December 2019 | 5 th December 2019 |
| Phase 3 | 31 st December 2022 | 6 th December 2019 – 5 th December 2023 | 5 th December 2023 |

2.2 Steps to determine qualification and compliance

Figure 1 shows the key steps to determining whether your organisation qualifies for ESOS and what you need to do to comply with the scheme if you do.

Figure 1: Key steps to complying with ESOS



1. Determine if you are in scope of ESOS (Section 3)

ESOS applies to all undertakings that exceed qualification thresholds ('large undertakings'). It also applies to all members of a corporate group which include at least one large undertaking on the UKCS. Guidance on how to determine if operators are required to participate in ESOS is set out in Section 3.1.

If you qualify as an ESOS participant, you must complete an ESOS Assessment of your organisation (or group of organisations, where you are complying along with other members of your corporate group) by the compliance date. (See Section 3.3 for details of complying as a group).

If you are not in scope of ESOS, you are encouraged to still consider undertaking energy audits voluntarily. Energy audits form part of good energy management practice and may help to identify measures that can save energy.

2. Consider if all your energy consumption is covered by an ISO 50001 Energy Management System

If you have an ISO 50001 Energy Management System (certified by an approved certification body) covering all your energy use this shall be sufficient to constitute an ESOS Assessment. However, you will still need to notify the Department of your compliance route and submit the assessment (see Step 7).

To be compliant, the system must have been certified during the compliance period, and the certification must remain valid at the compliance date.

If you do not have an ISO 50001 certified Energy Management System covering all your energy use, you should continue with Step 3.

3. Measure your total energy consumption (Section 4.4)

Operators are required to measure the total energy consumption for a continuous 12-month period ('the reference period'). As a surrogate, energy consumption should be measured by fuel use and then converted to energy units (e.g. kWh).

To ensure operators use up-to-date information reflecting offshore assets at the time of qualification, your reference period for each phase must overlap with the qualification date for the phase (i.e. 31 December 2014, for the first phase of ESOS).

Further details on measuring your total energy consumption are set out in Section 4.4.

4. Determine areas of significant energy consumption (Section 4.5)

On completion of measuring total energy consumption, participants must then identify 'areas of significant energy consumption'. The areas of significant energy consumption must account for at least 90% of your total energy consumption across all the operator's offshore assets. The remaining 10% of total energy consumption is not required to be audited as this is deemed '*de-minimis*'. Selecting not to identify specific areas of significant energy consumption would mean that all assets would have to be audited (i.e. your total energy consumption).

All areas of significant energy consumption must be covered either by an ESOS Energy Audit or by an alternative route to compliance.

5. Consider the routes to compliance available to cover your areas of significant energy consumption (Section 6)

ESOS participants are required to conduct compliant energy audit assessments or energy management activity in relation to all areas of significant energy consumption by the compliance date. There are two distinct types of qualifying assessments and management activity available for offshore participants:

- ESOS compliant Energy Audits - These may include any energy audit work undertaken during the compliance period, provided that your Lead Assessor confirms this work meets the minimum standards required for ESOS energy audits.

- ISO 50001 energy management systems – assets that are covered by an ISO 50001 energy management system (certified by an approved certification body) are deemed compliant with ESOS, provided that certification remains valid on the compliance date.

To contribute to your compliance, ESOS Energy Audits, and other compliance activities, can be undertaken at any time within a compliance phase. This means that you can comply by conducting a number of staggered assessment activities at different times.. However the measurement of total energy is required to overlap the qualification date. Importantly, whichever route or combination of routes to compliance is chosen, operators will need to cover **all** areas of significant energy consumption in each phase.

Once you have considered any compliant activity already undertaken in relation to areas of significant energy consumption, operators should consider which compliance activities to undertake in relation to the remaining areas of significant energy consumption.

6. Audit areas of significant energy consumption (Section 6)

ESOS Energy Audits must be carried out by, or overseen/approved by, Lead Assessors (members of professional registers approved by the Environment Agency). These can be either in-house expert(s) or an external individual/organisation (see Section 5).

Other routes to compliance are subject to separate requirements to be considered valid for ESOS purposes – see Section 6 for more details. Lead Assessors can review audits carried out earlier in a compliance phase in order to confirm that these meet the minimum ESOS standards. Responsibility remains with operators to ensure that all offshore assets of significant energy consumption are audited.

7. Report your ESOS compliance (Section 7)

Operators are required to notify the Environment Agency that an ESOS assessment has been completed. The submission must be made on, or before, the compliance date of each phase. As noted above, the compliance date for the first phase is 5th December 2015.

2.3 ESOS Scheme Administrator

The Environment Agency will be the ESOS Scheme Administrator for the United Kingdom. As such, the Environment Agency will be responsible for receiving notifications of compliance from ESOS participants (onshore only), maintaining guidance on compliance and approving registers of Lead Assessors (see Section 5), as well as other duties.

The participant's compliance body is determined by the location of its registered office or its principal place of activity.

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

The Secretary of State, acting through the Department of Energy and Climate Change's Energy Development Unit, will be the compliance body for participants undertaking activities wholly or mainly offshore.

The compliance bodies will be responsible for monitoring the compliance of those in scope of the scheme and will be able to issue penalties for non-compliance (Section 9).

3 Qualification for ESOS

3.1 Do I qualify?

3.1.1 Am I an undertaking?

Only undertakings and groups of undertakings can qualify for ESOS.

An undertaking is defined as '*(a) a body corporate or partnership, or (b) an unincorporated association carrying on a trade or business, with or without a view to profit*'. As such, the scheme covers, but is not limited to, the following types of organisations in the UK:

- limited companies;
- public companies;
- partnerships.

Undertakings which meet the qualification criteria set out in Sections 3.1.2 or 3.1.3 will need to comply with ESOS.

3.1.2 Qualification as a large undertaking

Your organisation will be in scope of ESOS if it qualifies as a large undertaking. For the purposes of ESOS, an undertaking is a large undertaking if it meets either of the following criteria:

- It has 250 or more employees³ in the UK;
- It has fewer than 250 employees, but has;
 - an annual turnover exceeding €50m; **and**
 - a balance sheet exceeding €43m.

3.1.3 Qualification via a corporate group

In addition to the qualification route set out above, an undertaking will also qualify for ESOS if it is part of a corporate group containing at least one 'large undertaking' (as determined by the criteria outlined above in Section 3.1.2) within the UK. See Section 3.3 for more details on qualification through participation as a group.

3.1.4 Determining whether an undertaking meets the thresholds

In determining whether the undertaking meets the financial thresholds outlined above in Section 3.1.2, undertakings should use the most recent annual financial statements ending on or before the qualification date. Sterling figures must be converted into Euros using the exchange rate prevailing on the qualification date. You should use the Bank of England Pounds Sterling – Euros spot rate. See

<http://www.bankofengland.co.uk/boeapps/iadb/Rates.asp?Travel=NlxRSx&into=GBP>

³ Employees and other persons engaged in the business of the organisation such as owner-managers and partners.

However, to fully determine if an operator meets the qualification criteria, older financial statements should be considered. See Section 3.2 for more information on how growing organisations that were previously small can qualify as large (and similarly for information on how shrinking organisations may still qualify). Sterling figures in older financial statements must also be considered using the same conversion rate (i.e. that prevailing on the qualification date for the compliance period in question).

Example – Company A

Company A has a financial year running from 1st April to 31st March each year.

Company A only employs 150 people.

At the qualification date for the first phase of ESOS, 31st December 2014, Company A's most recent set of financial statements will be those for the year to 31st March 2014. These accounts show revenue of £42m and balance sheet assets, at the year-end, of £34m.

The exchange rate prevailing on the qualification date is €1.25 per GBP. The revenue and balance sheet assets of Company A should be converted to Euros using this rate, for comparison with the financial thresholds.

For ESOS purposes, Company A's revenue for the year is therefore €52.5m ($42 \times 1.25 = 52.5$) and its balance sheet assets are €42.5m ($34 \times 1.25 = 42.5$).

Company A therefore exceeds the revenue threshold of €50m but does not exceed the balance sheet threshold of €43m. Considering just this financial year, Company A would therefore be considered small. (However, to fully confirm it is in fact small Company A would also need to consider its financial statements for the year 2012/13 – see Section 3.2 for details).

In determining whether the employee threshold is being met, undertakings should add the total number of people they employed (including employees and other persons engaged in the business of the organisation) in each of the months of the relevant accounting period (i.e. the period which the financial statements used to consider the financial thresholds relate to) and divide that figure by the number of months in that period.

Example – Company B

Company B has a financial year running from 1st April to 31st March each year.

At the qualification date for the first phase of ESOS, 31st December 2014, Company B's most recent set of financial statements will be those for the year to 31st March 2014. Therefore, it should consider the number of employees during that period.

At 1st April 2013, Company B has 5 Directors and 235 employees. On the 10th July 2013 Company B hires 20 more employees. There are no changes in employee or Director numbers before the end of the year.

For three months in its financial year (April, May and June) Company B has a total of 240 staff (5 Directors plus 235 employees). For nine months of the year (July 2013 to March 2014) the company has a total 260 staff in the month (5 Directors and 255 employees).

For ESOS purposes, Company B's number of employees for the year is therefore 255, calculated as:

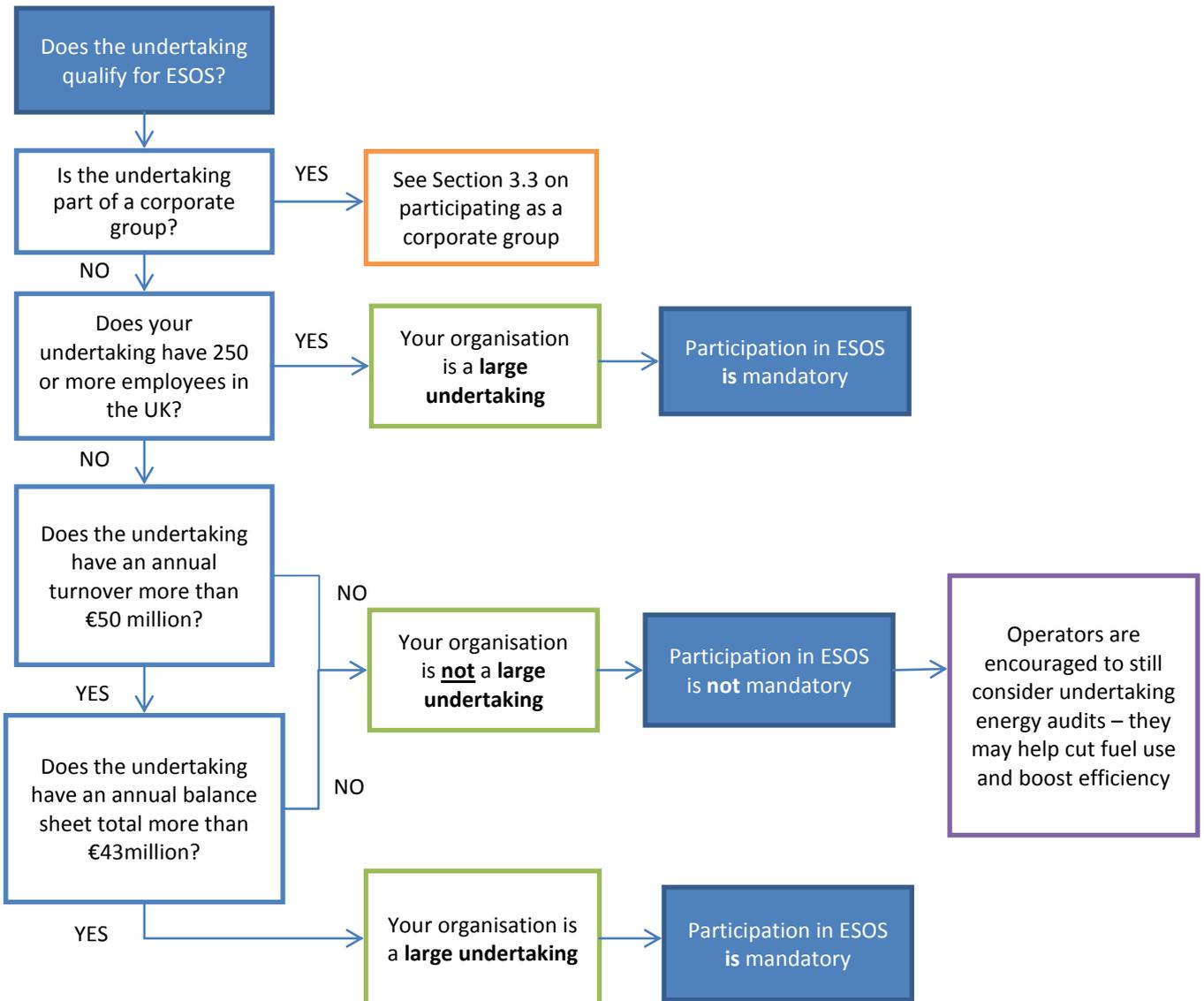
$$((240 \times 3) + (260 \times 9)) / 12 = 255$$

The company therefore exceeds the employee threshold at the qualification date.

As described in Section 3.1.3 above, if your organisation does not meet the criteria laid out in Section 3.1.2, you will still qualify for ESOS if you are part of a corporate group that includes one or more undertaking that meets the thresholds – see Section 3.3 for more details on qualification through participation as a group.

In determining if an operator is an ESOS participant, the decision tree in Figure 2 may be useful.

Figure 2: Are you a participant?



3.2 Change of status (two-year rule)

For an organisation to move from not being a large undertaking to being one it must meet either or both of criteria (1) and (2), outlined in Section 3.1.2, for two successive accounting periods. Similarly, to move from being a large undertaking to not being one, the undertaking must fail to meet both criteria for two successive accounting periods.

So if a change in the status of your organisation or group means that you cross either of the large enterprise qualifying thresholds (1) or (2), then the position must be sustained over two accounting periods to result in a recognised change of status.

3.3 Participating as a corporate group

3.3.1 Qualification through a corporate group

Where a corporate group contains at least one undertaking in the UK which:

- has 250 or more employees⁴; or
- has fewer than 250 employees, but has:
 - an annual turnover exceeding €50m; **and**
 - a balance sheet exceeding €43m;

then the entire UK operations of the corporate group will need to participate in ESOS for their offshore assets.

3.3.2 Highest parents

The default expectation is that corporate groups will participate in ESOS in their highest parent groups. A highest parent is a member of the group which has no parent, or only has parents which are overseas undertakings. The highest parent group would include this highest parent and any other undertakings in the group which are its subsidiaries.

The default expectation is that the highest parent will take lead responsibility for completing and submitting the ESOS Assessment on behalf of the other undertakings in the highest parent group. For ESOS purposes the highest parent is therefore termed the 'responsible undertaking'. Another undertaking within the highest parent group may act as the responsible undertaking, providing there is written agreement to this effect between all the undertakings in the highest parent group.

In some cases, the highest parent group will be the same as the corporate group. However, in cases where the corporate group contains overseas undertakings, the corporate group may be comprised of more than one highest parent group.

Undertakings within a highest parent group will have the option (providing they agree in writing with their highest parent) to disaggregate from one another for the purposes of compliance with ESOS, in which case they will notify as two or more separate participants (see Section 3.3.3 below).

⁴ Employees and other persons engaged in the business of the organisation such as owner-managers and partners.

3.3.3 Disaggregation of highest parent groups

Highest parent groups are able to disaggregate and undertakings within the groups will be able to participate in ESOS as smaller groupings or individually. To disaggregate from the highest parent group, an undertaking must agree in writing with the highest parent.

Disaggregation may be attractive if it helps to manage ESOS participation more effectively. For example, if parts of the group operate separate energy management processes or company finances. However, disaggregation does not exempt subsidiaries from participating in ESOS and participants in the offshore oil and gas sector must clearly notify the scheme administrator of any disaggregation when submitting their ESOS Assessments

Where highest parent groups choose to disaggregate, individual undertakings participating on their own will act as their own responsible undertaking, and undertakings participating as smaller groups must agree which will act as the responsible undertaking.

Where operators hold upstream and downstream assets these can be aggregated or disaggregated and it is the choice of the operator which to choose.

3.3.4 Aggregation of highest parent groups

Where there is more than one highest parent in a corporate group, the highest parent groups will be able to aggregate, if they so wish, so as to apply as one participant for all offshore assets. Aggregation between highest parents (and their undertakings) will require the mutual consent of the highest parents.

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

3.3.5 Changes to group undertakings (asset transfers/acquisitions)

If an undertaking, or a number of undertakings, leave a corporate group between the qualification date (31st December 2014 for the first ESOS phase) and the compliance date (5th December 2015 for the first ESOS phase) they will, as a default, comply with ESOS separately from their former group. However, they may, by mutual consent with their former highest parent, choose to aggregate with their former group for the purposes of compliance.

They may also choose to aggregate with their new group, for the purpose of compliance, again providing there is mutual consent.

4 Steps to complete an ESOS Assessment

4.1 Conducting an ESOS Assessment – planning stages

To determine what energy audit activity is required to be undertaken to comply with ESOS, operators need to:

- Consider any existing Energy Management Systems in place;
- Consider how to involve an ESOS Lead Assessor;
- Measure total energy consumption; and
- Identify areas of significant energy consumption.

The Sections below give more guidance on these processes.

4.2 Considering your Energy Management System

If operators have in place an Energy Management System that is certified by an approved certification body to ISO 50001, this will be considered sufficient to comply with ESOS, providing all of the following conditions are met:

- The Energy Management System has been certified to ISO 50001 during the compliance period;
- The certification remains valid at the compliance date; and
- The Energy Management System covers all of the assets held and activities carried out offshore by the organisation as at the qualification date.

If there is no Energy Management System, or it does not meet all three of the above criteria, then further activity to complete your ESOS Assessment will be required to remain compliant. The remainder of Section 4 and all of Section 6 outline the required activities.

4.3 Consider how to involve an ESOS Lead Assessor

Most participants will not have in place an Energy Management System meeting all the requirements outlined in Section 4.2. If operators fall into this category, the company will be required to measure their total energy consumption (Section 4.4), identify areas of significant energy consumption (Section 4.5) and ensure these are covered by one of the two routes to compliance (see Section 6).

Operators will need to have an ESOS Lead Assessor to undertake at least some parts of this process. For example, a Lead Assessor will have to sign-off the overall ESOS Assessment once complete (see Section 5.3 for more information on roles and responsibilities in ESOS) and operators must submit the details of this Lead Assessor to DECC's EMT when submitting the ESOS Assessment (Section 7). The Lead Assessor may help to oversee other parts of the ESOS Assessment process, such as the measurement of the total energy consumption and the identification of areas of significant energy consumption. The Lead Assessor will need to review these calculations in order to verify that the ESOS Assessment overall meets all the requirements of the scheme.

Operators may ask their Lead Assessor to lead the calculation of total energy consumption and the identification of areas of significant energy consumption, or, only to review how this has been determined. The level of engagement with the lead Assessor is a matter for agreement between the operator and their chosen Lead Assessor. Section 5 provides more detail on who can act as a Lead Assessor, and their role in the ESOS process.

4.4 Measuring total energy consumption

Participants must measure their total energy consumption as part of their ESOS Assessment as fuel used and then convert this to energy units (such as kWh). The energy units must be applied consistently to all energy uses across the assets for the purposes of measuring total energy consumption.

In measuring your total energy consumption, you should include all energy used on the respective offshore assets. Items that are temporary should only be included within the audit if these are on the installation throughout the reference period and are likely to be present for a longer duration. If the item being used belongs to a contractor and is not using any fuel that is sourced from the installation then this can be excluded from the audit.

In determining total energy consumption the following should be taken into account:

- The definition of energy consumption in the scheme; and
- The supply rules, including the rules on unconsumed supply.

4.4.1 Definition of energy consumption

Under ESOS, energy consumption includes: all forms of energy products, combustible fuels, renewables, electricity, or any other form of energy. This does not include waste heat, which therefore does not need to be measured for the purposes of audits.

4.4.2 Determining energy consumption

For most participants, determining what energy is in scope of ESOS will comprise fuels used on the asset, such as fuel gas, diesel and propane.

Below are a set of rules that set out what energy participants must consider as part of their energy consumption. In general terms, energy that is supplied to and consumed by a participant is in scope of ESOS and this includes fuel gas from the host installation's reservoir or satellite fields that are tied back to the installation.

4.4.2.1 Energy supplied

Energy supplied to a participant means energy that is provided to a participant further to an agreement with a supplier, such as supply of diesel, electricity (supplied from an installation to another), imported fuel gas from another installation/field.

4.4.2.2 Energy consumed

Energy consumed by a participant means:

- Energy that is consumed by the participant's assets; and
- Energy that is consumed as part of the activities of the participant, where activities means any work that the participant is engaged in.

4.4.2.3 Unconsumed supply

The intention of the supply rules are that they cover energy that participants are supplied with for consumption, i.e. opening and closing stock levels of diesel. As such, unconsumed supplies of energy should be excluded from the measuring of total energy consumption and subsequent auditing activities.

Unconsumed supplies include: any supplies of energy that are not consumed but instead sold/provided to a third party. These can be deducted from the unconsumed supplies, provided:

- the supply is measured (e.g. with metering), or
- can be calculated based on verifiable data, or
- can be reasonably estimated.

If supplying energy to a third party that consumes that energy, but you do not measure this supply and cannot calculate or reasonably estimate it, then you cannot deduct the supply to the third party as unconsumed supply and you will need to include it within your total energy consumption.

4.4.3 Types of energy use

ESOS does not prescribe a list of specific energy sources/fuels considered within the scope of an ESOS Assessment. The calculation of total energy consumption should include all qualifying supplies of energy, determined in line with the ESOS supply rules and definition of energy given in Article 2(1) of the Directive.

Therefore, total energy consumption may include energy associated with the use of electricity and the combustion of gaseous, liquid and/or the use of other direct supplies of energy.

If measuring total energy consumption in energy units these should be converted to a common unit for all the forms of energy.

Information on how to convert various forms of energy consumption into common units is provided below.

Determining total energy consumption

In determining total energy consumption and areas of significant energy consumption the following should be considered to facilitate the process:

- collection of and access to energy consumption data;
- aggregation of data – across different areas of energy consumption/different group companies; and
- conversion of energy consumption into standard units and metric (energy units).

The fuels listed in the *UK Government conversion factors for Company Reporting* cover the most common sources of energy and should be referred to as part of an energy use mapping exercise.⁵

In measuring total energy consumption, this will need to be converted into common units (either energy units (e.g. kWh)). The following in Table 2 on conversion factors may be helpful in this regard.

⁵ UK Government conversion factors for company reporting (<http://www.ukconversionfactorscarbonsmart.co.uk/>)

Table 2: Energy conversion factors

| | | GJ | kWh | therm | toe | kcal |
|--------|---------------------------|-------------|-----------|-------------|-------------|------------|
| Energy | Gigajoule, GJ | | 277.78 | 9.47817 | 0.02388 | 238,903 |
| | Kilowatt-hour, kWh | 0.0036 | | 0.03412 | 0.00009 | 860.05 |
| | Therm | 0.10551 | 29.307 | | 0.00252 | 25,206 |
| | Tonne oil equivalent, toe | 41.868 | 11,630 | 396.83 | | 10,002,389 |
| | Kilocalorie, kcal | 0.000004186 | 0.0011627 | 0.000039674 | 0.000000100 | |

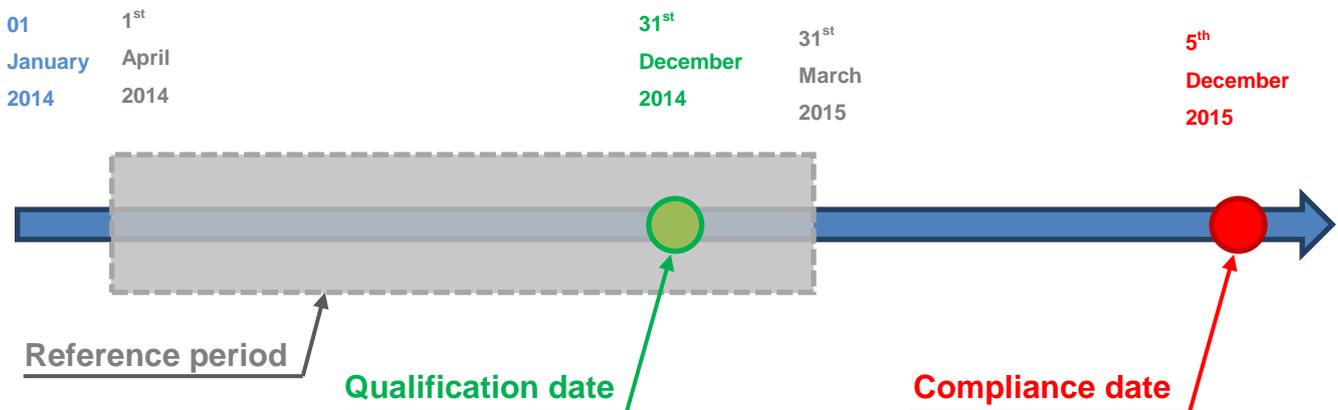
A list of fuels and their properties from the 2013 UK Government conversion factors for Company Reporting is provided at the following link www.ukconversionfactorscarbonsmart.co.uk/ Error! Reference source not found. This may be useful in converting different energy uses into a standard unit as part of calculating total energy consumption. Where fuel gas is being used, data on the Net calorific value (NCV) should be taken from EU-ETS data. Operators operating an installation that does not have an EU-ETS permit and the NCV is unknown the NCV should be taken from the National Inventory database.

4.4.4 Reference period

Operators must determine their total energy consumption over a consecutive 12-month period known as the reference period. The reference period **must overlap with the qualification date**. The end date of the reference period must also occur prior to the compliance date. This is to ensure that calculation of the total energy consumption is based on energy consuming assets and activities at the qualification date. Operators are free to select any reference period, provided it meets these requirements.

For example, Phase 1 of ESOS, the reference period must cover a consecutive 12-month period starting no earlier than the 1st January 2014 and ending before the 5th December 2015. An example is illustrated below (Figure 2) of a suitable reference period.

Figure 2: Phase 1 reference period (example).



Where an operator is unable to use data for a consecutive 12-month period, for example, due to an extended shutdown, then data should be used which is as close to twelve months as practically possible. Justification for this must be recorded within the ESOS Evidence Pack

(Section 6.5.1). Similarly where there are data gaps for a period during the reference period these should be reasonably estimated and justified (Section 4.4.6.1).

4.4.5 Organisational changes and determining your total energy consumption, Asset transfers and decommissioning

Where an asset is transferred to a different undertaking/company, or ceases an energy-consuming activity (i.e. decommissioned), *prior to* the compliance date, the energy use from this asset may be excluded from the determination of the total energy consumption. An asset that has entered cessation of production (CoP) prior to, or during the reference period can be excluded from the audit.

Assets or undertakings acquired, or commencement of activities, after the qualification date should be excluded from the total energy consumption, even if they are acquired before the compliance date. The new acquisition is required to be captured in the next ESOS phase.

You will need to retain records that demonstrate that you have undertaken an assessment of your total energy consumption, including the identification of areas of significant energy consumption, within your ESOS Evidence Pack (see Section 6.5.1).

4.4.5.1 Organisational Changes before the qualification date

Operators should not include energy use within the ESOS assessment calculation of total energy consumption for assets, activities or undertakings that are not owned on the qualification date.

4.4.5.2 Organisational Changes after the qualification date

Any organisation that qualifies for ESOS on the qualification date will need to comply with ESOS, including organisations that qualify via their group on the qualification date, but leave this group prior to the compliance date. Such an undertaking (or group thereof) can do this by either:

- Agreeing in writing with its previous highest parent that it will participate in ESOS along with this previous group.
- Agreeing in writing with its new highest parent that it will participate in ESOS as part of its new group.
- Participating separately from either its previous or new group and notifying the scheme administrator of its compliance independently.

Assets/activities that are sold/discontinued after the qualification date but before the compliance date do not need to be audited. The energy use of such assets/activities in the reference period does not need to be included in the participant's total energy consumption.

Assets/activities purchased/commenced after the qualification date but before the compliance date do not need to be audited. The energy use of such assets/activities in the reference period does not need to be included in the participant's total energy consumption.

4.4.6 Verifiable data

When calculating total energy consumption, 'verifiable data' (for energy use or energy spend) will be required to be used for the purposes of identifying areas of significant energy consumption.

Verifiable data means data that can be evidenced or otherwise proven and, in the case of summary data, can be traced back to the primary data source.⁶

Actual records of energy use/spend should be used where practicable. For example, diesel invoices are considered a source of verifiable data. Other examples of verifiable energy use data include:

Table 3: Examples of verifiable data sources

| Verifiable data source: | Energy use (examples only): |
|--|---|
| Meter reading | Electricity, fuel gas |
| Bunkering records and opening and closing stock tank records | Stored gas bottles e.g. propane, liquid fuels, diesel |

4.4.6.1 What if I don't have verifiable data?

Operators should be recording all fuel use offshore under EU-ETS and PPC permits. Where assets do not hold these permits, ESOS adopts a 'comply or explain' approach regarding the requirement to use verifiable data. It may be impracticable or disproportionately burdensome to obtain verifiable data – such as where no invoices have been received.

If verifiable data of energy use/spend is not obtainable operators should:

- use a reasonable estimate derived through calculation (where possible based on other verifiable data);
- retain records within the ESOS Evidence Pack (see Section 6.5.1):
 - outlining the methodology used to determine estimates; and
 - explaining why it has not been possible or practicable to obtain verifiable data.

Illustrative methods for estimating energy consumption

Where practicable, energy supply estimates should be based on verifiable data. There are a number of estimation techniques that can be used to fill data gaps:

- **Direct comparison** – This technique uses a comparable time period (i.e. the same day/week/month in another year) and uses the consumption in that period to fill the gap if levels of production and activity were at a similar level. This technique is useful in taking into account seasonal variations in energy consumption.
- **Pro-rata** – This technique uses a period of known data to derive an average consumption over a defined, shorter period of time (e.g. using a known monthly total to derive a daily average consumption). This average is then used to estimate the data for the unknown period by a process of extrapolation.

4.4.6.2 Data used in other schemes

ESOS participants may also fall in scope of other energy management/reporting schemes for some offshore assets, such as the EU Emissions Trading System (EU ETS). The energy data already collated as part of the compliance with the EU-ETS can be used, at least in part, for the purposes of determining total energy consumption as part of an ESOS Assessment.

⁶ Summary data means data taken from a primary data source and handled/manipulated in the production of a more useable summary for a given user.

Please note: The scope of energy required to be included in the assessment of your total energy consumption under ESOS is broader than the mandatory EU-ETS. Therefore, operators should not rely solely on data reported in accordance with the EU-ETS when determining the total energy consumption.

Table 4: Data used in the EU-ETS and mapping to ESOS scope requirements

| Scheme | Applicable to: | Energy/emissions coverage: | Additional ESOS coverage: | Additional ESOS energy uses: |
|--------|------------------------|---|------------------------------|---|
| EU ETS | Offshore installations | <ul style="list-style-type: none"> All 'direct' energy use No electricity included | Sites not included in EU ETS | <ul style="list-style-type: none"> Electricity use |

4.5 Identifying areas of significant energy consumption

Once you have determined your total energy consumption, you are required to audit assets and activities that amount to 90% of this (your 'areas of significant energy consumption').

This is intended to ensure that energy audits are proportionate, cost-effective and identify the most significant and cost-effective energy saving opportunities.

Operators can exclude up to 10% of the total energy consumption, as measured in the reference period, from the requirement to undertake an energy audit, by allocating it as *de minimis*. This is to reduce the overall administrative cost of auditing areas with little energy consumption.

Under ESOS, there are no additional constraints on which energy using activities may be allocated to the *de minimis*, As such you may apply the *de minimis* at:

1. A **group level** – to exclude the energy consumption of a group undertaking or number of undertakings.
2. An **organisational level** – to exclude the energy consumption of an asset and/or activity, or a defined list of assets and/or activities of the organisation.
3. A **fuel level** – to exclude the energy consumption associated with the use of a particular fuel or fuels.

The *de minimis* rule provides flexibility to exclude some energy using activities and to subsequently focus the ESOS audit(s) on areas of significant energy consumption.

5 Lead Assessors

5.1 Lead Assessors

Participants in ESOS must have a Lead Assessor to undertake various roles in relation to their ESOS Assessment. The exception to this is where a participant has an ISO 50001 certified Energy Management System meeting the criteria outlined in Section 4.2.

There are some activities the Lead Assessor will have to undertake. For example, to undertake, oversee or review the ESOS Energy Audits (Section 6.2), sign-off the overall ESOS Assessment once complete, to confirm it fully meets the ESOS requirements.

Section 5.3 provides more information on roles and responsibilities in ESOS and operators will need to submit the details of their selected Lead Assessor to DECC's EMT when submitting the ESOS assessment (Section 7).

Lead Assessors must belong to a register of energy professionals approved and managed by the Environment Agency.

Selecting an appropriate Lead Assessor:

When selecting an appropriate Lead Assessor from an approved register, operators should consider what other qualifications and/or experience that individual holds and how these might best benefit you in attaining the best results from your audit(s). It is therefore, advisable to consider prospective auditor's based on:

- sector-specific experience;
- familiarity with industry specific technologies and processes; and
- accreditation/certification to audit against prescribed standards (ISO standards).

5.2 Finding a Lead Assessor

Energy management and energy auditing professionals will be able to demonstrate competence as a Lead Assessor through registering with a professional body whose professional register has been approved by the Environment Agency. Details of approved registers will be published on the Environment Agency's website (in its capacity as the scheme administrator).

A professional body must apply to the Environment Agency, as scheme administrator, to have its register of energy professionals approved as one whose members meet the standards set by the British Standards Institution (BSI) Publicly Available Specification (PAS) 51215, '*Energy efficiency assessment – Competency of a lead energy assessor*'.⁷ The Environment Agency will commence the approval of professional registers in July 2014.

Professional bodies must have their registers re-approved by the scheme administrator for each phase. It is intended that the Environment Agency's re-approval process for the first ESOS professional registers will take place in 2018.

Registers approved by the scheme administrator are known as 'approved registers' and individuals who are members of an 'approved register' are considered 'Lead Assessors'.

Please note: individuals wishing to become ESOS Lead Assessors should not apply directly to the scheme administrator.

⁷ The PAS was finalised in May 2014 and is available through BSI's website at <http://shop.bsigroup.com>

5.3 Roles and responsibilities

5.3.1 Participants and Lead Assessors

The table below sets out the roles of both the participant and Lead Assessors in completing ESOS Assessments. However, it is important to note that overall legal responsibility for compliance remains with the participant. The table is only a guide as to what actions you should expect your chosen Lead Assessor to complete.

The table is based on the assumption that the Lead Assessor conducts the audits. However, the allocation of roles would differ for a participant that used a Lead Assessor to review energy audits that had been conducted by unqualified individuals. For example, in the case that an external Lead Assessor was contracted to review in-house work by unqualified people, it would be up to the participant to identify energy saving opportunities.

Table 6: Role of ESOS participants and Lead Assessors

| Requirement/action: | Work to be undertaken by | |
|--|--------------------------|---------------|
| | ESOS participant | Lead Assessor |
| Overall responsibility for compliance with ESOS | ✓ | |
| Appoint Lead Assessor | ✓ | |
| Highlight any audit work already undertaken | ✓ | |
| Agree audit methodology for new audits | ✓ | ✓ |
| Define scope of audits | ✓ | |
| Agree audit timetable | ✓ | ✓ |
| Agree sampling approach | ✓ | ✓ |
| Agree no. of site visits required | ✓ | ✓ |
| Make available data for audit | ✓ | |
| Identify energy saving opportunities | | ✓ |
| Calculate energy/cost savings of measures identified (LCCA or SPP) (these are defined below) | | ✓ |
| Determine energy use profiles | | ✓ |
| Present audit(s) recommendations | | ✓ |
| Review overall ESOS Assessment | | ✓ |
| Obtain director(s)/senior managers sign off of audit(s) findings and recommendations | ✓ | |
| Notify the Scheme Administrator of compliance by the compliance date | ✓ | |
| Maintain an ESOS Evidence Pack to substantiate the audit(s) and its findings and recommendations | ✓ | ✓ |

5.3.2 Participating as a group undertaking

For each highest parent group (Section 3.3.2), the responsibility for complying with the requirements of ESOS lies, as a default, with the highest parent. The highest parent may agree that another undertaking within the highest parent group takes on this responsibility for ensuring compliance with ESOS, as the nominated 'responsible undertaking'.

Where disaggregation occurs (see Section 3.3.3), the highest parent or nominated responsible undertaking will be responsible for the compliance of only some of the undertakings within the highest parent group. Those undertakings that have disaggregated will be responsible for their own compliance.

Where aggregation occurs (see Section 3.3.4), the highest parents must come to mutual agreement on which of them, or which nominated responsible undertaking from among the aggregating parties, will take lead responsibility for ensuring compliance.

6 ESOS routes to compliance

6.1 Overview

ESOS provides offshore participants with two possible routes to demonstrate compliance of their organisation or group.

These are:

- ESOS Energy Audits; or
- ISO 50001 certification.

Operators may choose to adopt a single compliance route to demonstrate compliance under ESOS. However, the selected route chosen must cover all areas of significant energy consumption.

If complying with ESOS through an existing certification (ISO 50001), you will need to check that the certification/assessment will still be valid at the compliance date and was issued in the current compliance phase. For the first phase of ESOS, a relevant certification and/or assessment must be valid on the 5th December 2015 and have been issued on or after 6th December 2011.

Unless operators are able to demonstrate compliance with ESOS, via a certified ISO 50001 energy management system that covers your whole organisation, or the group of organisations with whom you are participating, you will also need a Lead Assessor to review your compliance with ESOS.

6.2 ESOS Energy Audits

Energy audits are a valuable tool in understanding and improving the energy performance of your organisation. Undertaking energy audits will allow operators to:

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

Implementing such opportunities will provide long-term savings and improved efficiency can also boost productivity.

6.2.1 Audit requirements

ESOS sets minimum requirements for compliant Energy Audits, where Audits must:

- Use 12 consecutive months of energy data, from within a specific period (Section 6.2.1.1).
- Do not use data that was used to support ESOS compliance in a previous compliance period (Section 6.2.1.2).
- Produce cost-effective recommendations for the area being audited (Section 6.2.4), or confirm that there is no scope for cost-effective energy efficiency improvements.
- Be overseen, conducted or reviewed by an ESOS Lead Assessor (Section 6.2.1.3)

6.2.1.1 Use 12 months of energy consumption data from within a specific period

In summary, the data used for ESOS Energy Audits must:

- (1) Comprise of a period of 12 consecutive months data on energy use.
- (2) Begin no earlier than 12 months before the commencement of the compliance period of each phase.
- (3) Begin no earlier than 24 months before the commencement of the first ESOS Energy Audit that the participant undertakes in the compliance period.
- (4) Not extend beyond the compliance date (i.e. does not extend beyond 5th December 2015 for the first ESOS phase).

Energy cost data is not sufficient to inform ESOS Energy Audits – the use of units of cost in measuring energy consumption is only appropriate for the initial measurement of total energy consumption and identification of areas of significant energy use. This is only applicable for a limited range of fuels offshore, i.e. diesel.

6.2.1.2 New data for each compliance period

Energy consumption data used for the purposes of an audit conducted in one compliance period may not be used to support an audit undertaken in the subsequent compliance period.

6.2.1.3 Role of Lead Assessor in ESOS Energy Audit

ESOS Energy Audits must be undertaken or approved by a Lead Assessor, who may be an internal expert or an external individual or organisation. See Section 5 for more information on Lead Assessors in ESOS.

A Lead Assessor would be responsible for one or more of the following:

- directly conducting compliant ESOS Energy Audits; or
- overseeing and/or approving the conduct and quality of ESOS Energy Audits conducted by others.

In relation to the latter point, energy audits can be undertaken by an unqualified energy auditor (an 'auditor'), provided the audit is overseen or approved by a qualified Lead Assessor prior to the operator notifying the Environment Agency that it has complied

6.2.2 Planning for an ESOS Energy Audit

An ESOS Energy Audit must cover all areas of significant energy consumption.

In planning how to undertake the ESOS Energy Audits and compliance via other routes, you and/or your selected Lead Assessor should consider and make provisions for:

- identifying any work already undertaken in the compliance phase that may contribute towards compliance;
- agreeing on the audit methodology to be used, for example BS EN 16247-1 or ISO 50002.
- defining the scope of the audits to be undertaken (e.g. an audit of a defined organisation/group member or a defined number of offshore assets);
- ensuring relevant staff are available to inform an audit and work with the Lead Assessor;

- agreeing an audit timetable, ensuring all audits will be completed suitably in advance of the compliance date; and
- agreeing a sampling approach – it is expected that a site visit will be undertaken during the phase to adequately determine that an audit has been effective. This can be conducted by a qualified lead assessor or by an internal staff member.

Examples of approaches to select an audit methodology:

BS EN 16247-1 and ISO 50002 Energy Audits set out a good practice method for identifying energy savings opportunities. It is 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 comprises.

The *EN16247* series of standards includes more detailed standards setting out possible auditing approaches to industrial processes.

There are also more technical standards, such as *ISO 14414: pump system energy assessment* (see below). These may be suitable to deploy for particular aspects of a participant's energy audits.

Individual auditors or energy auditing companies may also have their own in-house methodologies designed to meet the requirements of ESOS.

Other potentially relevant standards:

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.

6.2.3 Audit methodology

The audit methodology should be agreed with the Lead Assessor, as well as any other auditors, before the audit(s) starts as part of maximising the effectiveness of, and standardising the audit. This methodology will also need to be recorded within the evidence pack.

6.2.4 Identifying energy saving opportunities

ESOS Energy Audits are required to include recommendations for cost-effective energy efficiency improvements, where opportunities for such improvements exist. Recommendations should directly or indirectly lead to an energy saving through improved energy management. Any recommendations must be for cost-effective measures, where these exist.

These might include:

- improvements to service and maintenance strategy to ensure efficient operation;
- capital investment projects; and

- behavioural change.

Where practicable, an ESOS Energy Audit should:

- use life-cycle cost analysis (LCCA) instead of simple payback periods (SPP) for cost/benefit analyses (see Section 6.2.4.1 for more details); and
- be informed by a minimum of 12 months of energy use data.

Energy saving opportunities and measures identified as part of an ESOS Energy Audit will need to be reported to the participant. These opportunities/measures will then need to be presented to a director(s) or senior manager(s) for sign-off (see Section 7.1). Directors will need to review a summary of all ESOS recommendations and audits; they will also need to satisfy themselves that, to the best of their knowledge, their organisation (and any organisations they are reporting on behalf of) have complied with the scheme.

6.2.4.1 Life-Cycle Cost Analyses (LCCAs) and Simple Payback Periods (SPPs)

For ESOS purposes, the cost savings of energy saving measures under an energy audit should be based on a life-cycle cost analysis (LCCA) where practicable, rather than a simple payback period (SPP) assessment.

However, it may not always be practicable to undertake a LCCA for an identified energy saving measure in every case and other approaches, such as simple payback calculations, can then be used instead.

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

- low asset life; and
- no, or low, associated capital and maintenance costs.

For more costly measures and measures that might be more complicated to implement, doing a Life-Cycle Cost Analysis (LCCA) may be necessary to make a sound decision. As the term implies, LCCA is a financial decision-making method that considers all costs and benefits over the lifetime of the project.

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

- a long asset life;
- a high upfront capital cost;
- an initial downtime period (i.e. a process has to be shutdown to implement the measure) that falls out-with the planned annual shutdown; or
- associated maintenance costs.

6.2.4.2 Energy consumption profiles

ESOS requires an Energy Audit to include the development of 'energy consumption profiles'. These provide the breakdown of how energy is used within a particular asset or activity and how that energy use varies over time.

If the auditor does not consider an energy consumption profile for an area of significant energy consumption, then a justification to support this decision should be retained within the ESOS Evidence Pack.

6.2.4.3 Recommendations

An ESOS Energy Audit should include recommendations that you, as the recipient of the energy audit, can act upon. Thus, the audit recommendations should be focussed on areas of significant energy consumption and limited to measures that are within operational control.

ESOS requires recommendations for cost-effective energy saving measures. Therefore any recommendations should make reference to the life-cycle cost analysis (LCCA) or simple payback period (SPP) analysis that has been undertaken (see Section 6.2.4.1).

6.2.5 Undertaking site visits as part of an ESOS Energy Audit

It is expected that site visits are conducted by your appointed auditor(s) as part of an ESOS Energy Audit. This is so that the audit findings and recommendations are practical, cost-effective and applicable to your organisation – and not simply theoretical.

The site visits conducted should be sufficient to give the Lead Assessor a confidence that the audit findings and recommendations for the participant will be complete, applicable and accurate.

The decision on how many site visits to undertake as part of an audit should be agreed between the Lead Assessor and the participant. It is expected that an auditor will carry out at least one site visit as part of an audit. **Conducting a site visit can be coupled with other offshore visits (e.g. EMS/EU-ETS) if possible, and the auditor is a competent auditor under ESOS as well as under other requirements if being coupled.**

6.2.5.1 Audit timetable

How operators develop energy auditing timetables within each compliance phase is at your discretion and you are not required to implement the same timetable for each compliance phase.

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

- significant group acquisitions/transfers/decommissioned assets;
- upgrading an asset;
- upgrading offshore IT equipment or controls; or
- implementing a new working procedure for staff.

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

6.3 ISO 50001 certification

Certification under international standard ISO 50001:2011 (energy management system, EnMS) is permitted as a compliance route under ESOS as an alternative to undertaking ESOS Audits.

ISO 50001:2011 provides a framework of requirements⁸ for organisations to:

⁸ Source: ISO (International Organization for Standardization) <http://www.iso.org/iso/home/standards/management-standards/iso50001.htm> Accessed February 2014.

- 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; and
- continually improve energy management.

A certified ISO 50001 energy management system can be applied across all of the assets and activities of an organisation/group or applied to a specific asset/activity (e.g. utilised to manage a high energy using asset/activity).

To be valid as a route to compliance under ESOS, your ISO 50001:2011 energy management system **must** be certified by a United Kingdom Accreditation Service (UKAS) accredited certification body, by a body accredited by another EU member states' national accreditation body, or by a body which is accredited by a member of the International Accreditation Forum.

Where an ISO 50001 certified system covers all of the organisation or group, at the time the certification was undertaken, this shall constitute compliance with ESOS provided the certification is still valid at the compliance date (5th December 2015 for the first ESOS phase). In this circumstance, there is no requirement for an organisation or group holding such a certification to have its ESOS compliance verified by a Lead Assessor.

ISO 50001 Guidance

If you are considering an ISO 50001 certified energy management system, guidance is available online. See the links below:

- 1) Getting Started - ISO 50001 Energy Management – Part 1
<http://youtu.be/MCPL3qk2qKI>
- 2) Important Terms - ISO 50001 Energy Management – Part 2
http://youtu.be/g_kQve_-D3g
- 3) Measuring Performance - ISO 50001 Energy Management – Part 3
<http://youtu.be/OPgyrYit3qM>
- 4) Top 10 Tips - ISO 50001 Energy Management – Part 4
<http://youtu.be/PDIp9AFvXyY>

Case studies are available on the BSI website at:

<http://shop.bsigroup.com/Browse-By-Subject/Energy-Management/BS-ISO-50001-case-studies/>

6.3.1 Acquisitions and ISO 50001

If you acquire new undertakings, assets in the compliance period and your ISO certification covers your entire organisation or group then the acquisition will not prompt a requirement for recertification for continuing compliance with ESOS, provided the newly acquired undertaking/asset is within the scope of the certification.

6.3.2 Partial coverage

Where an ISO 50001 certified system covers only part of your energy consumption, there will remain a requirement to measure the total energy consumption and for a Lead Assessor to oversee or approve that the system addresses all the areas of significant energy consumption identified in the reference period (i.e. at least 90% of your total energy consumption).

If the certification doesn't cover all the identified areas of significant energy consumption, additional assessment work – via another route to compliance, the ESOS Energy Audit – will be required for any areas of significant energy consumption not addressed by the certified management system.

If you are complying with the requirements of ESOS through more than one compliance route, this should be documented detailing areas of significant energy consumption and their coverage by one of the recognised compliance routes as part of the ESOS Evidence Pack (Section 6.5.1).

6.4 Other sources of activity which may be used to support ESOS compliance

6.4.1 ISO 14001

The ISO 14001:2004 (Environmental management systems, EMS) certification does not expressly require energy audits that would meet the minimum requirements of the Energy Efficiency Directive. As such, ISO 14001 in itself does not demonstrate compliance with 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 its environmental management system. 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) will 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 & targets and implement programmes to achieve these.
- Consider the qualification of in-house energy managers under the ISO 14001 provisions relating to resources & roles, and competence, training and awareness.
- Using EMS documentation to support ESOS data collection and maintain ESOS Evidence Pack in line with EMS documentation procedures.
- Using an ESOS Lead Assessor to conduct ISO 14001 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 use their existing ISO 14001 EMS as a basis for gaining ISO 50001 certification.

6.5 Additional compliance activities

6.5.1 ESOS Evidence Pack

Each participant in ESOS is required to maintain an ESOS Evidence Pack detailing certain aspects of their compliance with ESOS.

Ultimately, the responsibility for maintaining the Evidence Pack lies with the participant.

The ESOS Evidence Pack should include:

- Details of the undertakings making up your participation and identification of the responsible undertaking (Section 3.3).
- Details of the responsible Director(s) or equivalents that have taken the lead on signing-off your compliance with ESOS.
- Details of your selected Lead Assessor (Section 5).
- The calculation of total energy consumption.
- A list of identified areas of significant energy consumption.
- Details of the routes to compliance used to cover each area of significant energy consumption.
- Justification, where applicable, for using less than 12 months of data for the measurement of total energy consumption (Section 4.4.6).
- Justification, where applicable, for using less than 12 months of data to support an ESOS Energy Audit (Section 6.2.1.1).
- Details of the audit methodology used in the ESOS Energy Audits (Section 6.2.3).
- Justification, where applicable, for being unable to use verifiable data on energy use or energy expenditure to support the calculation of total energy use and the methodology of any estimation made.
- Justification, where applicable, where the auditor does not consider an energy consumption profile in their audit of an area of significant energy use (Section 6.2.4.2).

6.5.2 Making available previous audit results

From the second compliance period onwards, operators will need to provide their chosen Lead Assessor with the ESOS Evidence Pack, including audit results, for the ESOS Assessment undertaken as part of the first compliance phase. From the third phase onwards operators will need to provide the results and records of the previous two compliance phases.

This requirement does not apply to the first compliance phase or to new entrants undertaking their first ESOS Assessments.

Considering previous results

You may find that continuing to monitor the energy performance of certain aspects of your business, after taking energy efficiency measures, can inform your decision to roll-out the measures elsewhere in the organisation to achieve similar savings. This process of comparing sites or activities across time, or to other comparable sites/activities is referred to as benchmarking.

Benchmarking is crucial for assessing your organisation's energy performance. Benchmarks allow comparisons to be drawn over a period of time, between sites or facilities, or between your teams. The key is that they provide your organisation with the starting point for setting goals and evaluating future efforts and overall performance.

There are numerous methods for benchmarking as outlined in guidance provided under the Climate Change Agreement scheme.⁹ Determining which method is best for you will depend on which metric is most applicable to your core activity.

⁹ E.g. benchmarks described in [CCA guidance](#) [accessed August 2013], KPI described in [Defra Environmental Reporting Guidelines](#) [accessed August 2013]

7 Reporting ESOS Assessments

As an ESOS participant you will need provide a notification to the Environment Agency, that you have complied with the requirements of ESOS on or before the compliance date of each phase.

7.1 Signing off on your Assessments

Before operators can submit their notification they will need to have their ESOS Assessment signed off by a director or, if your organisation does not have a director, an equivalent senior manager (see definition in the box below).

A **director** is any person occupying the position of the director as per Section 250 of the Companies Act. If the participant does not have any directors, then a senior manager may provide this sign-off. A **senior manager** is a person exercising management control in an undertaking.

The requirement for sign-off and notification applies irrespective of the compliance route(s) chosen in complying with ESOS.

Making a senior representative take responsibility for reviewing whether an organisation has complied with ESOS will help to ensure that senior figures within the organisation or group are fully aware of the compliance requirements as well as highlighting the opportunities for improved energy efficiency.

If using an in-house Lead Assessor to conduct, oversee, or verify assessments, two directors (or senior managers) are required to sign-off that they have seen and considered the ESOS Assessment. This is to provide an additional safeguard as to the independence and quality of the report, given that it is being conducted in-house.

7.2 Confirming compliance with the Environment Agency

As an ESOS participant operators will need to submit a formal notification to the Environment Agency on or before the compliance date stating that you have met with the requirements of ESOS in that compliance period. This will be done via an online notification system, which is due to be operational in 2015, and details will be published on the ESOS website: www.gov.uk/esos

The notification of compliance to the Environment Agency will need to include some basic details about your compliance. These are required to allow the Environment Agency to follow up with participants and to allow the Scheme Regulators to check compliance and, if necessary, undertake enforcement activities.

7.2.1 Notification details

Information on the participant

As part of your notification you will need to include the following details:

- Organisation name/name of highest parent (for groups) (and trading name if different);
- The company registration number of the highest parent (if applicable);
- The registered office address (or place of principal activity if no registered office exists);

- The name and contact details of at least two persons, one of which should be the responsible officer.
- Where the participant is a group of organisations, the number of organisations making up the participant
- Details of the director(s) who has reviewed the recommendations of the ESOS Assessment on behalf of the participant, including:
 - name of Director(s)/senior manager(s);
 - full title(s);
 - contact details (telephone and email address); and
 - the date the directors(s)/senior manager(s) signed off the ESOS Assessment.

Information on any aggregation/disaggregation

Where highest parent groups have aggregated or disaggregated for the purposes of compliance, you will also need to provide the names of the organisations that have been disaggregated, and/or details of the other highest parent groups with which you have aggregated.

Information on the Lead Assessor

You will need to provide details on the Lead Assessor used to conduct, oversee, or approve the ESOS Assessment. This is to assist the scheme compliance bodies in ensuring that the participant has used a qualified Lead Assessor to conduct their ESOS Assessment.

You will need to provide the following information:

- the name of the Lead Assessor; and
- the approved professional body with which the Lead Assessor is registered.

Information on the ESOS Assessment

You will also need to provide simple details on the ESOS Assessment undertaken in the compliance period and its results.

The participant will be required to notify the scheme administrator of:

- The route(s) taken to comply with ESOS (i.e. any use of ISO 50001, Green Deal Assessments and Display Energy Certificates alongside standard ESOS audits);
- Confirmation that these routes collectively cover all areas of significant energy consumption
- Any instances where you were not able to use 12-months verifiable data for the purpose of measuring total energy consumption or to inform the ESOS Energy Audit.
- Any case where an energy audit does not include analysis based on energy consumption profiles.

7.2.2 Other mandatory communications with the Environmental Management Team

As an ESOS participant you are required to notify DECC's EMT (as the scheme compliance body) of a breach in compliance as soon as you become aware of it.

7.2.3 Voluntary reporting

Offshore operators may voluntarily submit their ESOS assessments to the Environmental Management Team; although this is not a mandatory requirement.

ESOS will only mandate the submission of basic information, as outlined in Section above which will support the compliance body, in ensuring compliance.

1. However, the information below requests ESOS participants to disclose additional information voluntarily as outlined below:
 - (a) Does your organisation have a quantitative energy efficiency target and/or benchmarks?
 - (b) If your organisation does have a quantitative target and/or benchmarks, can you disclose a key target / benchmark?
 - (c) If your organisation does not have a quantitative target and/or benchmarks, will you adopt any such measures in light of your ESOS audit?
2.
 - (a) Has the Board of Directors of your organisation discussed the results of your ESOS Assessment?
 - (b) Has senior management of your organisation discussed the results of your ESOS Assessment?
3.
 - (a) Have you published any information relating to your ESOS audit report? (e.g. key findings, or key actions taken in light of the ESOS Assessment)
 - (b) If you have published any information on-line, please provide a link to the web page where this information is available

The Scheme Administrator (Environment Agency) will publish a list of participants, together with any of the voluntary information provided. This is intended to increase the profile of action taken by scheme participants on energy efficiency and to publicise the leadership exhibited by those participants that choose to disclose voluntarily.

Why provide additional voluntary information when reporting?

The Government is aware that many organisations already voluntarily publish a greater level of detail regarding their targets, actions and performance on energy efficiency. As such, for organisations already or wishing to undertake a greater level of public disclosure, the results of an ESOS Assessment may help to supplement and improve the quality of the information given to interested stakeholders and may identify new energy saving opportunities for the organisation.

Such organisations may wish to consider voluntary disclosure of:

- a summary report of the ESOS Assessment findings and recommendations;

- a plan of actions you will take in response to the ESOS Assessment findings/recommendations; and
- selected ESOS Assessment information within their annual report(s).

8 Implementing audit recommendations

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.

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 for both onshore and offshore. There is significant potential to decrease energy consumption across all sectors, and yet opportunities to improve energy efficiency are often under-exploited.¹⁰

DECC estimates that ESOS could realise £1.6bn net present value of benefits to the UK, with the vast majority of these being directly felt by businesses in the form of reduced energy bills.¹¹ This benefit would be realised if participants in ESOS reduced their energy consumption by an average of 0.7%.

8.1 Government support for implementing energy saving opportunities

The implementation of energy saving measures will be case and organisation specific. However, there are many sources of information and financial support available to organisations looking to implement energy saving measures.

Sources of financial support for implementing audit recommendations

The following list outlines some sources of Government financial support to help cover the cost of implementing audit recommendations.

Enhanced Capital Allowances (ECAs)

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

ECA information: 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 under the ECA scheme: <https://etl.decc.gov.uk/etl/site.html>

8.1.1 Energy Performance Contracting

Energy Performance Contracting is a way for organisations to reduce the cost of investing in energy efficiency measures and mitigate the risk that can arise from uncertainty about benefits that will be realised. Energy Performance Contracts are typically delivered by Energy Service Companies (ESCOs)

¹⁰ [Energy Management Programmes for Industry](#)

¹¹ Central estimate from final policy Impact Assessment calculated as Net Present Value (2015-2030).

An ESCO typically conducts an energy audit for a client and then identifies and implements energy efficiency opportunities and guarantees that these will be self-funding through energy savings generated. In the event that the savings are not realised, the ESCO will generally make 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.

To build business confidence in the ESCO model for energy performance contracting, Government is currently developing a model Energy Performance Contract, guidance for using this contract, and guidance on energy performance contracting, which will be published in the summer of 2014.

9 Penalties, enforcement, appeals

9.1 Enforcement and penalties

The scheme compliance bodies will have the authority to apply civil penalties against an organisation/group that is required to participate in ESOS but is found to be non-compliant with its requirements.

- **For all non-compliances**, the compliance bodies will have the power to publish information on non-compliance on their website such that this information is available to the public. This will include:
 - the name of the ESOS participant;
 - details of the failure in respect of which a civil penalty has been imposed; and
 - the penalty amount.
- For **failure to notify the Scheme Administrator** by the required date and/or failure to provide basic details, there will be a fixed penalty and an additional penalty for each day of non-compliance. This is in order to encourage compliance as soon as possible. For failure to do so, the compliance bodies may impose some or all of the penalties outlined below:
 - a fixed penalty of up to £5,000; and/or
 - an additional £500 for each day starting on the day after the date of compliance until the notification is completed, subject to a maximum of 80 days; and/or
 - publication of details of non-compliance by the compliance bodies.
- For **failure to maintain adequate records to demonstrate compliance** with ESOS the penalty will be:
 - a fixed penalty of up to £5,000; and/or
 - the cost to the compliance body for undertaking sufficient auditing activity to confirm that an organisation has complied with ESOS; and/or
 - publication of details of non-compliance.
- For **failure to undertake an ESOS Assessment** there will be a discretionary penalty allowing the compliance body to require the participant to take a number of steps toward compliance and a fixed monetary penalty. Failure to comply with any aspect of an ESOS Assessment (not using sufficient data, not using a Lead Assessor etc.) would be considered failure to comply. Where non-compliance is explained under 'comply or explain' provisions then the compliance body will consider whether the justification given is reasonable before determining whether to impose a penalty. The penalty is:
 - a requirement to conduct an ESOS Assessment by a date specified by the compliance body; and/or
 - a penalty of up to £50,000; and/or
 - an additional £500 per day penalty for each day starting on the day after the compliance date that the organisation remains non-compliant, subject to a maximum of 80 days; and/or
 - publication of details of non-compliance.

- **Failure to comply with an enforcement notice** will incur a fixed penalty and an additional penalty for each day of non-compliance. This in order to encourage compliance as soon as possible. The penalties are:
 - a fixed penalty of up to £5,000; and/or
 - an additional £500 for each day starting on the day after the date of compliance until the notification is completed, subject to a maximum of 80 days; and/or
 - publication of details of non-compliance.
- For **making a statement which is false and misleading** there will be a monetary penalty that is flexible enough to take account of the nature of the misdemeanour and large enough that it can act as a deterrent to this offence. The penalty is:
 - a monetary penalty of up to £50,000; and
 - publication of details of non-compliance.

The compliance bodies will be able to pursue corrective action and will also have the power to reduce and waive penalties after issuing them to participants.

9.2 Appeals

Participants will be able to appeal enforcement actions undertaken by the compliance bodies. Participants have the right to appeal any determination, enforcement notice or penalty notice that is based on an error of fact; wrong in law; or unreasonable.

For enforcement activity conducted on participants registered in England and Wales, participants can appeal to the First-tier Tribunal. Participants registered in Scotland can appeal to the Scottish Ministers, and participants in Northern Ireland can appeal to the Planning Appeals Commission.

To find out more information on appeals, you can contact your relevant compliance body.

10 ESOS and other policies

Other UK climate change policies applicable for the offshore industry also require organisations to measure and manage energy consumption accurately via EU Emissions Trading System (EU-ETS) and mandatory company reporting. However, the eligibility requirements and scope of the EU-ETS is focussed on the emissions of carbon dioxide. ESOS is different in placing a greater emphasis on the identification of energy saving opportunities, but data gathering can be coupled with that of the EU-ETS to reduce the administrative burden.

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

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 the EU-ETS could be used. For ESOS Assessments, operators need to consider data collection processes for other sites and activities not included in the EU-ETS and also for the inclusion of electricity.

11 Further information and support sources

Further details about ESOS can be found at www.gov.uk/esos

A helpdesk to support companies to comply with ESOS is available by emailing: emt@decc.gsi.gov.uk

Scheme administrator and compliance bodies:

United Kingdom: Environment Agency (Scheme Administrator)

See pages: www.environment-agency.gov.uk

Offshore: Department of Energy and Climate Change

<https://www.gov.uk/oil-and-gas-offshore-environmental-legislation>

Other source of information

British Standards Institute (BSI)

Website: www.bsigroup.co.uk

ISO 50001 case studies: <http://shop.bsigroup.com/Browse-By-Subject/Energy-Management/BS-ISO-50001-case-studies>

12 Glossary

Aggregation – Where organisations choose to group together for the purposes of compliance.

Areas of significant energy consumption – Energy consuming activities/assets that consume at least 90% of the participant's total energy consumption in the **reference period**.

Approval body - An organisation which manages one or more **approved registers**.

Approved register - A register of individuals which has been approved by the Scheme Administrator as demonstrating that registered individuals are competent to act as **Lead Assessors**.

Compliance date - The deadline by which participants must submit the report to remain compliant with ESOS. This is: 5th December 2015 (phase 1), 5th December 2019 (phase 2), 5th December 2023 (phase 3), and every 4 years thereafter.

Compliance period - The period in which participants may conduct an ESOS Assessment. This is 6th December 2011 to 5th December 2015 (phase 1), 6th December 2015 to 5th December 2019 (phase 2), etc.

De minimis – The proportion of an organisation's total energy consumption (measured as energy units used or energy expenditure) for which audits are not required. This is to allow participants to focus on areas of significant energy use.

The Directive – The EU Energy Efficiency Directive 2012/27/EU.¹² Article 8 of this Directive relates to energy audits, while Article 8(4) is the major basis for the ESOS policy.

Disaggregation – Where organisations (a highest parent and its subsidiary organisations) choose to separate for the purposes of compliance.

ESOS – The Energy Savings Opportunity Scheme.

ESOS Assessment – Includes all activities required to ensure compliance including the measurement of total energy use; the calculation of the *de minimis* and identification of areas of significant energy consumption; the ESOS Audits undertaken; and any use of alternative routes to compliance.

ESOS Audit – An energy efficiency audit meeting the minimum requirements of the ESOS scheme.

Evidence Pack – An organisation's record of their ESOS Assessment, including justifications for any allowable deviations from the scheme requirements.

Financial year – The 12 month period for which an organisation prepares its financial statements and annual report.

Fixed monetary penalty - A fixed sum of money due by a specific date.

Highest parent – An organisation that does not have a parent organisation that is captured by the scheme.

Individual accounts – As defined by paragraph 396 of the Companies Act 2006. As per paragraph 396(1):

Companies Act individual accounts must comprise—
(a) a balance sheet as at the last day of the financial year, and
(b) a profit and loss account.

¹² <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:315:0001:0056:EN:PDF>

Large undertaking - An undertaking which:

- has 250 or more employees; or
- has fewer than 250 employees, but has an annual turnover exceeding £42.5m **and** a balance sheet exceeding £36.5m.

Lead Assessor – A person included on an approved register held by a professional body.

Life cycle cost analysis – A way to demonstrate an investment will be economical over its entire life by accounting for all the costs that could reasonably be incurred over the period, including in manufacture/installation and disposal. For instance, this would include maintenance and depreciation costs.

Public body – Any organisation that is required to comply with public contracting regulations in force in the UK, as either a contracting authority or as an organisation which receives a majority of its funding from public sources.

Qualification date – The date on which organisations must determine whether or not they qualify for the ESOS scheme in that phase. The qualification date shall be 31st December 2014 and every four years thereafter.

Reference period - The period of time for which undertakings must measure their total energy consumption in order to identify their 'areas of significant energy consumption' that they are required to assess.

The reference period must:

- a. Comprise a period of 12 consecutive months;
- b. Begin less than 12 months before the qualification date (in the first compliance period, this means the reference period can begin no earlier than 1st January 2014 and every 4 years thereafter); and
- c. End by the compliance date.

Simple Payback Period assessment - The period of time required for the financial savings from reduced energy usage to equal the amount of the investment in an energy saving measure.

SME undertaking - An undertaking which:

- has fewer than 250 employees; **and**
- has an annual turnover below £42.5m or a balance sheet below £36.5m (or both).

Total assets – The value included in the top half of an organisation's balance sheet, or equivalent.

Turnover – Money generated by an organisation's business activities.

Undertaking – As defined by paragraph 1161 of the Companies Act 2006:

In the Companies Acts "undertaking" means— (a) a body corporate or partnership, or (b) an unincorporated association carrying on a trade or business, with or without a view to profit.

UK organisation – An undertaking which exists in the UK and which may qualify for ESOS if it meets the qualification requirements.

Verifiable data - Data that can be proven and traced to a particular and objective source – e.g. a meter reading, invoices.

