

1. Why Display Energy Certificates are required

Display Energy Certificates (DECs) provide an energy rating of the building from A to G, where A is very efficient and G is the least efficient and are based on the actual amount of metered energy used by the building over a period of 12 months. The purpose of introducing (DECs) is to raise public awareness of energy use and to inform visitors to public buildings about the energy use of a building.

An affected organisation must display a DEC in a prominent place clearly visible to the public and have in its possession or control a valid advisory report. The advisory report contains recommendations for improving the energy performance of the building.

1.2 Buildings requiring a Display Energy Certificate

A DEC and advisory report are required for buildings with a total useful floor area over 1,000m² that are occupied in whole or part by public authorities and by institutions providing public services to a large number of persons and therefore frequently visited by those persons.

1.3 When Display Energy Certificates are required

By 1 October 2008 if you are an occupier of a building requiring a DEC, you will need to display a DEC showing an Operational Rating in a prominent place clearly visible to the public. By 1 October 2008 you will also need to have in your possession or control a valid advisory report. A DEC is valid for one year and must be updated annually. An Advisory report is valid for seven years.

1.4 Displaying the certificate

The display certificate must be 'placed in a prominent place clearly visible to the public'. The certificate must conform to the approved layout and be produced by an accredited energy assessor. To enable members of the public to view the document easily, it should be no smaller than A3 in size. In order to be clearly visible, the certificate should ideally be placed in the reception area (or entrance) or clearly visible from it.

A hard copy display must be provided as outlined above. Occupiers may wish additionally to:

- Provide a valid certificate via a website or other publicly accessible media
- Show the full technical table, available on request from the accredited energy assessor, that gives underlying details on the building and its energy performance
- Display supplementary information to explain the contents of the certificate, including any reasons explaining poorer/better performance than previous years.

1.5 Penalties for not having a DEC

A local authority can issue a penalty charge notice of £500 for failing to display a DEC at all times in a prominent place clearly visible to the public, and £1,000 for failing to possess or have in their control a valid advisory report. In addition to these penalties, it will still be necessary to commission the documents, otherwise further offences will be committed.

2. What is a Display Energy Certificate?

A Display Energy Certificate shows the energy performance of a building based on actual energy consumption as recorded annually over periods up to the last three years (the Operational Rating).

The Operational Rating (OR) is a numerical indicator of the actual annual carbon dioxide emissions from the building. The various types of energy consumption from occupying a building must be brought together on a common basis so that the performance of one building can be compared with that of another. The UK has decided that the common unit should be CO₂ emissions, since this is a key driver for energy policy.

This rating is shown on a scale from A to G, where A is the lowest CO₂ emissions (best) and G is the highest CO₂ emissions (worst). Also shown are the Operational Ratings for the previous two years; this provides information on whether the energy performance of the building is improving or not.

The OR is based on the amount of energy consumed during the occupation of the building over a period of 12 months from meter readings and is compared to a hypothetical building with performance equal to one typical of its type (the benchmark). Typical performance for that type of building would have an OR of 100. A building that resulted in zero CO₂ emissions would have an OR of zero, and a building that resulted in twice the typical CO₂ emissions would have an OR of 200. If the building is a net energy generator, it would still be given an Operational Rating of zero.

A DEC must be accompanied by an advisory report and the owner of the building must have a valid one available.

What an advisory report contains

The advisory report highlights recommendations to improve the energy performance of the building (i.e. its fabric and associated services such as heating, ventilation and lighting). It will include zero and low-cost operational and management improvements, possible upgrades to the building fabric or services, and opportunities for the installation of Low and Zero Carbon (LZC) technologies.

The advisory report categorises the list of recommendations, by payback period as follows:

- Short-term payback (up to three years), for example building energy management measures
- Medium-term payback (three to seven years), for example upgrading building services
- Long-term payback (more than seven years), for example Low and Zero Carbon (LZC) technologies.

Each category includes the energy assessor's selection of the most suitable improvement measures for the building, generally between five and 10 measures. The advice provided in the advisory report is intended to be for information only. Occupiers receiving an advisory report are advised to seek further detailed professional advice before reaching any decision on how to improve the energy performance of the building.

The validity of the report is seven years. This is considered a reasonable interval during which the building occupier would have had sufficient opportunity to act on the recommended measures in the advisory report, following which a review would be appropriate in the light of new technology, changes to energy prices etc.

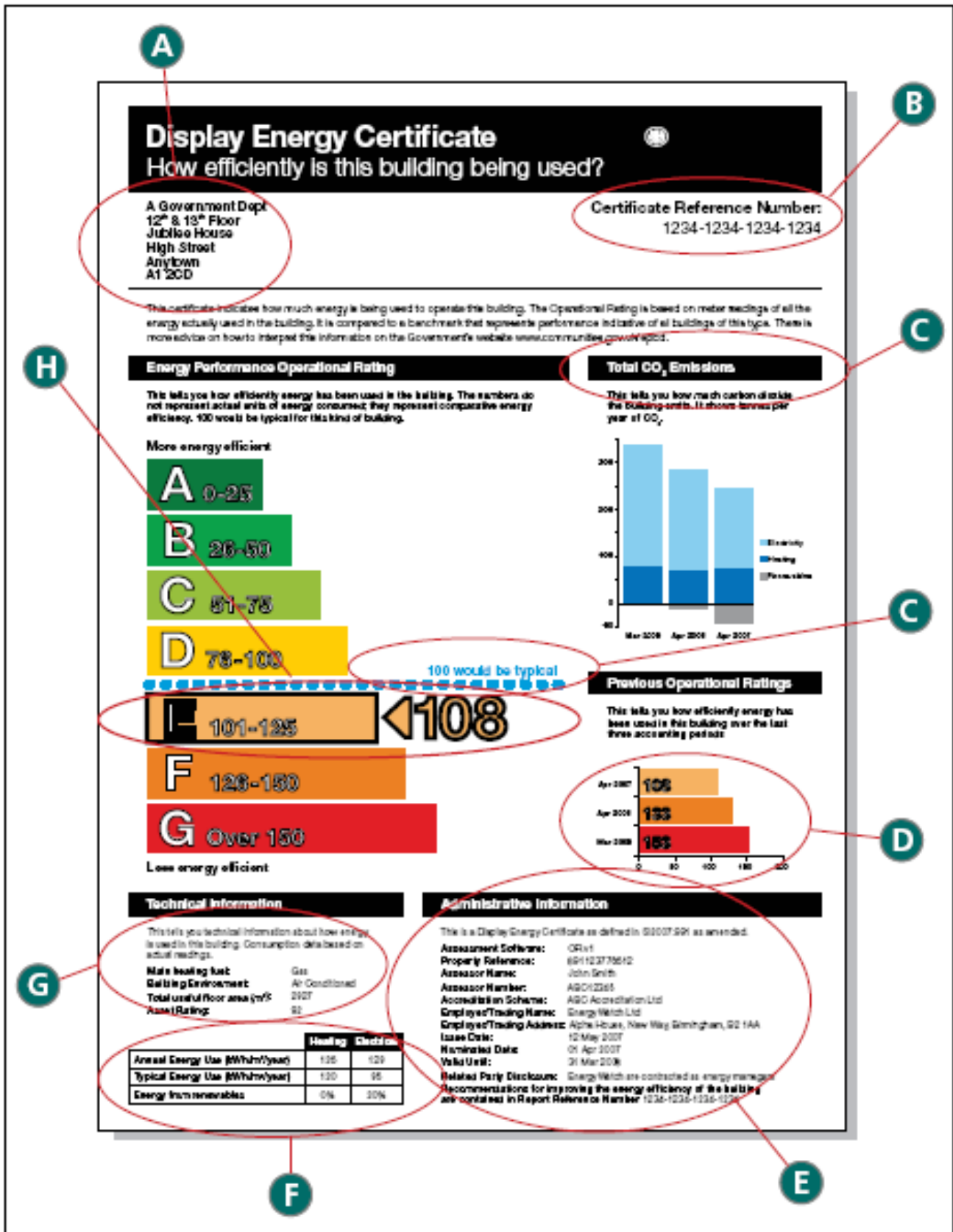


Figure 1: Sample Display Energy Certificate

A	This provides information about the building that the DEC applies to.
B	Every DEC has a unique number. This number can be used to locate and get a copy of the certificate from the national register and to verify the validity of a DEC.
C	The energy used by the building is converted into an amount of carbon dioxide (CO ₂). Different types of fuel emit different amounts of CO ₂ . This shows how the energy use has changed over the last three years. The smaller the bar, the better the performance. This building has improved its performance over the last three years. Below the zero line show CO ₂ savings from Low and Zero Carbon energy sources. The benchmark is the average energy performance for a building of this type. A number below the line indicates the building is below average energy performance. A number above the line indicates the building is above average performance.
D	This section of the DEC shows Operational Ratings from previous years. This building has improved its Operational Rating i.e. is using less energy and emitting less CO ₂ than in previous. In buildings where no historic energy consumption data are available, this information will not be complete until the third year of occupation after the introduction of DEC's for that type of building as it will be derived from previous DEC's. In buildings where historic energy consumption data are available, an accredited energy assessor can produce and lodge DEC for the previous two years, thus allowing previous year's information to be shown on the current DEC.
E	This shows key information about how the certificate was prepared. Assessment software: This shows which energy assessment method was used to produce the certificate. Property reference: This is a unique reference number which identifies the building. Assessor Name and Number Accreditation scheme: This identifies the assessor who produced the certificate with details of their accreditation scheme and their membership number. Issue and nominated date: This shows the date of issues of the certificate and the date from which the DEC is valid (i.e. the nominated date).
F	This provides technical information about energy use. Further details are available in a full technical table.
G	This shows the relevant elements of technical information used to produce the certificate. Main Heating Fuel: This indicates the main type of fuel used to heat the building. Building Environment: This indicates how the internal environment of the building is conditioned. Total useful floor area: This is the total area of all enclosed spaces measured to the internal face of the external walls (in accordance with the definition in the Building Regulations). Asset Rating: The asset rating of a building reflects the energy performance of that building in terms of the way it is built rather than the way it is used (standard use is assumed). It will appear here if the building has an Energy Performance Certificate (EPC). Asset ratings are on a scale of 0-150, where 0 is the most energy efficient building and 150 is the least energy efficient building.
H	This is the Operational Rating for this building. The rating shows the energy performance of the building as it is being used by the occupants. A building with performance equal to one typical of its type would therefore have an Operational Rating of 100. A building that resulted in zero CO ₂ emissions would have an OR of zero, and a building that resulted in twice the typical CO ₂ emissions would have an OR of 200. This rating indicates the building is being operated below average performance for a building of this type.

Table 1: Description of contents of Display Energy Certificate

3. Climate Change Fund

To help schools implement the recommendations of the advisory report and other energy reports, Richmond Council has set up a Climate Change Fund, which provides interest free loans for energy saving measures and renewable energy technologies. Any money you save from the project will be used to repay the loan. For more information and eligibility criteria please visit www.richmond.gov.uk/gogreen.

4. Obtaining a Display Energy Certificate

It is the responsibility of every *occupier* of a building affected to:

- Display a valid DEC in a prominent place clearly visible to the public *at all times; and*
- Have in their possession or control a valid advisory report which conveys recommendations to improve the building's energy performance.

This must be done for each of the buildings affected, although for the first year a site-based DEC can be produced (NB This is only a transitional measure).

4.1 Richmond Council

Richmond Council's Sustainability Manager, who is an Accredited Energy Assessor, will produce DEC's and advisory reports for all affected buildings occupied by Richmond Council and is offering to extend this service to LA (including VA) schools. However, this is on the condition that building occupiers make available to the Sustainability Manager the necessary information to complete a DEC and Advisory report by the set deadlines and agree to a process of recording meter readings on a regular basis. Alternatively DEC's and AR's can be obtained from accredited energy consultants at a typical cost of £600-£800 per building.

4.2 What the assessment involves

The occupier, in collaboration with the energy assessor, needs to gather the information about the building. The energy assessor has the option of producing recommendations from either a walk around survey or a desk based survey. The energy assessor may use data previously collected about a building. However produced, the energy assessor is responsible for ensuring any recommendations are both appropriate and representative of the building. In order to use the approved OR software to produce the DEC and advisory report, the accredited energy assessor will need to access standard reference information.

4.3 Validity of DEC's and Advisory Reports

Once a DEC has been produced for a building, it is valid for a period of 12 months beginning with the nominated date. The nominated date is a date no later than three months after the end of the period over which the operational rating is calculated. The date is nominated by the energy assessor who issued the certificate, most likely in agreement with the building occupier.

This three-month period allows the data, for the chosen 12-month period, to be collected and analysed, submitted to the accreditation body and for the display energy certificate to be lodged in the national register. Whilst no gap is allowed between successive accounting periods, an overlap, of up to three months, is allowed to enable the accounting period for the DEC to be aligned with other accounting periods. In order to align the DEC accounting period with the financial year (April – March) the nominated date for the 2008 and 2009 will be around 1st October and 1st July respectively. From 2010 onwards the nominated date will be around 1st April.

5. What contributes to the operational rating of a building?

An operational rating (OR) is a measure of the annual CO₂ emission per unit of area of the building caused by its consumption of energy, compared to the value that would be considered typical for that particular type of building.

Factors that contribute to the operational rating include:

- **Building category.** This determines which benchmark the building will be compared against. In certain circumstances, these benchmarks may be adjusted according to location, occupancy and allowed separable energy uses. Certain buildings have activities which span more than one of the building categories. In these cases it is possible to develop a composite benchmark which will be relevant to the building.
- **Location.** This enables the standard conditions in the benchmark to be adjusted for local weather conditions.
- **Energy consumption.** This is based on meter readings or suppliers' estimates only and takes into account the synchronicity of measurement periods of different fuels.
- **Building area.** This is the adjusted total useful floor area as defined in the Building Regulations (please see the glossary of terms for further information). Adjustments may be done to account for allowed separable energy uses, and inaccessible unconditioned spaces.
- **Separable energy uses.** Some buildings may include activities that are not typical of their type e.g. office block with a regional server room in the basement. Including these activities could reduce the validity of a comparison and certain activities can be excluded from the calculation. The benchmarks include a list of allowable separable energy uses for each type of building. Conditions apply for the activity to be excluded, they include for example:
 - The activity must be listed as an allowable separable energy use within the benchmark for the type of building
 - The activity must have its energy use separately metered.
- **Occupancy.** The number of occupied days and hours of occupancy. The OR method allows for extended occupancy (under certain circumstances) as well as standard occupancy. Adjustments to the standard occupancy assumptions in the benchmark can be made under certain conditions including:
 - Can demonstrate that the building is occupied for significantly longer periods than the standard hours quoted for the category; and
 - Has relevant supporting information available.

No adjustments are made for accessible unconditioned spaces in the calculation of the OR. The total useful floor area of any unconditioned spaces (for example attics and basements) should be reported on the full technical table.

If there is on-site generation of electricity from renewable energy, Low Zero Carbon (LZC) or Combined Heat and Power (CHP), this would be reflected in a reduced grid mains electricity demand (and with CHP, an increased fossil fuel demand). Similarly solar thermal heating would normally lead to a lower fossil fuel demand. Consequently, meter readings do not need to be adjusted.

It would be good practice to meter the outputs of all LZC sources in the building as use of LZC may otherwise mask fossil fuel consumption. All newly constructed buildings must have separate meters for LZC sources to comply with Building Regulations (ADL2A). Where the energy production from an LZC source is metered, then the energy produced by each may be acknowledged on the DEC and in the more comprehensive full technical table.

Appendix A – Building definition

For the purposes of the regulations, a **building** is defined as, ‘a roofed construction having walls, for which energy is used to condition the indoor climate, and a reference to a building includes a reference to a part of a building which has been designed or altered to be used separately’.

For a building to fall within the requirement for a DEC it must:

- Have a roof and walls; and
- Use energy to condition the indoor climate. This is the case where the building has any of the following fixed services: heating, mechanical ventilation or air conditioning.

A building can either be:

- The whole of a building; or
- Part of a building, where the part is designed or altered to be used separately.

This building must be occupied by either:

- A **Public authority**. A public authority includes central or local government departments and some non-departmental public bodies; or
- An **institution** providing a **public service** to a large number of persons. An institution providing a **public service** is one that provides services that are traditionally provided by local or national government, or are traditionally funded by the taxpayer. In determining whether an institution is providing a public service the following should be considered, whether:
 - The institution is autonomous or not
 - The service is one that has been provided by local or central government in the past
 - Local or central government has a duty to provide the service
 - Local or central government plan, or fund, the provision of the service.

If the institution is entirely autonomous, the service has never been provided by government, local or central government do not have a duty to provide the service and local or central government do not plan or fund the provision of the service, then the services are not likely to constitute public services. Where some, but not all of these factors apply, a case by case approach is necessary and legal advice may be needed. If the management of a public service is contracted out, the duty is still likely to apply.

The buildings must also be frequently visited. Many buildings occupied by public authorities and institutions exist in order to supply services to the public in one form or another and can therefore expect to be frequently visited by the relevant part of the public. If the building is provided for members of the public to visit in order to receive a public service or in conjunction with such services, then a DEC should be provided.

Appendix B: Gathering the information required to prepare a DEC

Introduction

The guidance here indicates what information you will need to provide in order to obtain a DEC and an advisory report once it has been ascertained the building(s) occupied qualify under the regulations. This can be found in Chapter 1 of the guide to display energy certificates and advisory reports for public buildings. In this section a building may refer to an individual building, or part of a building designed or altered to be used separately.

General requirements

To calculate the Operational Rating (OR), and produce the DEC, for your building the energy assessor will need to have access to the following information. If you are unable to provide this information, the assessor will need to obtain it from other sources. The basic forms of information needed are:

- Identification of your building and the activities for which it is used
- The internal area of your building
- The energy consumed by your building over the year for which it is to be assessed
- Details of the building's assets that affect energy consumption (eg insulation, building services, etc).

The energy assessor will also need to be given access to earlier EPCs, recommendation reports, DECs and accompanying advisory reports. The energy assessor will be able to access these documents via the Government's central register if the certificates' and reports' unique reference numbers are provided.

Identifying your building

When you have determined the extent of the building for which you need to display a DEC, the assessor will need the name that you wish to appear as the "name of the building occupier organisation" on the DEC, together with the building's address and postcode.

You will need to inform the assessor whether the indoor environment of the building is conditioned primarily using natural ventilation, mechanical ventilation, air conditioning, whether it operates in "mixed mode" (can operate with either air conditioning or natural ventilation), or is conditioned in any other way. You will need to discuss and agree with the assessor how to describe the main activity carried out in the building. The main activity will be used by the assessor to identify which category the building is in, against which your building's performance will be compared.

Your building may contain areas in which different categories of activity take place, and you or your energy assessor may choose to divide the building into areas to associate with each activity, so that each may make use of a different category in a multi-use comparison. If so, you will need to provide measurements of each part of the building that will be identified as a separate activity category.

Occupancy

Where you think that you occupy your building for longer periods than is typical for building of your type, then you should discuss this with the assessor as it may be possible for a correction to be made in the calculation of the Operational Rating (OR) to take this into account. You will need to provide the assessor with robust documentary evidence of the occupancy of the building. This can be based on attendance records, survey results or published opening hours for the building. Where different parts of the building have different occupancies the lowest

occupancy must be used, unless occupancy is assessed in each part and the occupancies combined using the percentages of overall floor areas – i.e. using an area-weighted average.

Area measurements

The assessor will need to know or measure the internal area of your building in square meters. You may have this recorded directly (in either square meters or square feet) in the building documentation. Alternatively you may need to provide the assessor with floorplans or drawings of the building that can be used to measure floor areas. If you have none of these then the assessor will need to prepare sketches of, and physically measure, the internal dimensions of your building.

If you occupy parts of a building, or a number of buildings on a site served by site metering or billing, the assessor will need the areas of each part of the building, or of each building on the site, that you occupy.

The calculation of your building's Operational Rating will use the Total Usable Floor Area (TUFA).

Alternative measures of floor area

If your building is an office, you may know the Net Lettable Area (NLA). The Assessor can use this directly in the OR calculation, but it will be converted to TUFA using a standard, conservative, conversion factor that may not be appropriate to your building. If you can obtain the TUFA directly you will obtain a more accurate result from the calculations.

If your building is used for retail purposes, you may know the Sales Floor Area (SFA). This can also be used directly in the OR calculation, but will be converted to TUFA using a conservative conversion factor. Providing the TUFA directly will produce a more accurate result.

Accessible unconditioned areas

If parts of your building are accessible but 'unconditioned', you will need to identify these areas to the assessor. An 'accessible unconditioned' area is defined as a covered area that is neither heated, cooled nor ventilated (for example attics and basements). The assessor will need to know the TUFA of any such areas.

Activity areas

Particular areas in your building may be used for activities that are different from the main activity specified. If you want to identify parts of the building that will be associated with different activities from the main activity type, then you will need to describe and provide measurements of the areas of each of the activity types in the building. If you do not have the measurements, then the assessor will need to prepare sketches of, and physically measure, the internal dimensions of these areas.

Separable energy uses

Particular areas in your building may be used for activities that are significantly more intensive in their use of energy than those usually found in your type of building. Including these in the assessment of your building would result in a misleading Operational Rating. The following activities may be allowable as 'separable' areas and excluded from the OR calculation:

- Regional server room
- Trading floor
- Bakery oven

- Sports flood lighting
- Furnace, heat treatment or forming process
- Blast chilling or freezing.

If these areas are included in a list of 'allowable separable energy areas' for your type of building, then they can be separated from the assessment under certain circumstances. If your building includes one of these energy uses, you will need to discuss with your assessor whether separating out the relevant energy and area from the assessment is allowed for your type of building. If so, the assessor will need the relevant TUFA. You must also have separately measured all of the energy consumed in that area over the assessment period.

You will need to provide the assessor with a 'Separable Energy Record' signed by your property manager in which you confirm you have:

- Permanently sub-metered energy use for this specific activity
- Meter readings and analysis for the rating period (equivalent to those needed for the main part of the building)
- Measured and recorded the associated floor area
- Assessed the separable activity for energy use and efficiency within the last two years, and that you have a documented review of the assessment, including proposals for improvement.

Energy measurements

Energy measurements are fundamental factors in the calculation of the OR, and the ideal situation would be that all the energy consumed in your building would be metered. Energy measurements will normally be found from:

- On-site energy meters (building or site-wide meters)
- The building landlord or representative
- The utility supplier
- The district heating/cooling provider
- For liquid and solid fuels monitoring systems must be implemented.

Energy consumption is ideally obtained directly from on-site incoming energy meters, or from energy supply company bills based on readings covering the relevant period. If you do not have responsibility for this yourself, then you may need to obtain this information from your landlord, or you may need to obtain estimates from your energy suppliers. It is not permitted for the assessor to use energy consumption estimates other than those provided by utilities suppliers.

Where the space occupied is part of a whole building (eg two floors in a 10-storey building) a completed Landlord's Energy Statement would be an appropriate method for the Landlord to collect and provide the necessary data. Further details can be found at www.bpf.org.uk or www.les-ter.org

You will need to identify for the assessor what each individual meter, or supplier estimate of energy consumption, is used for and the areas served by the metered or estimated energy.

The assessor will need to know the start date and end date of the periods over which energy measurements, or energy supplier estimates, have been made for each of the fuels or energies used in the building.

The primary need is that you are able to identify all, or nearly all, of the energy that your building has consumed over the 365 day period for which the building will be assessed – called the assessment period. Your assessor will be asked while carrying out the calculation of the OR whether at least 95 per cent of the energy used by the building can be accounted for. If the

assessor cannot make that assertion, then the building will be given a 'default' Operational Rating of 200. This indicates a CO₂ emissions rate of double the amount typical for the type of building selected, and is associated with a Grade G label (worst performer). Other comparative indicators will also be set at double the values typical for your building type.

Solid and liquid fuels

Your consumption of some liquid fuel may be metered. Where this is not the case, and where the energy is supplied in the form of solid fuel, you will need to provide the assessor with delivery records and, where possible, details of tank levels or stock holdings at the beginning and end of the assessment period.

District heating or cooling

Where you are using energy provided from a district heating or cooling scheme, and your supply is not metered at entry to your building, you will need to obtain a statement or estimate of the energy you have consumed over the relevant period from the supply company. You will also need to obtain a statement from the district energy supplier, of the carbon dioxide (CO₂) content per kWh of the energy supplied.

On-Site Renewables and LZO

On site renewables (OSR) or low and zero carbon (LZO) technologies include aerogenerators, photovoltaics and solar hot water heating that provide electricity or thermal energy, and other low carbon technologies such as biomass boilers, heat pumps and CHP. If you have made use of OSR and LZO technologies to provide electricity or heat for use in your building, the DEC may acknowledge how these have contributed towards reducing the carbon dioxide emissions of your building. However, to include the contribution of these technologies, you will need to have metered their energy output directly throughout the whole period of the assessment.

The nominated date

The DEC produced for your building will be valid for a period of 12 months beginning with the "nominated date". The nominated date is a date no later than three months after the end of the period over which the OR is calculated, the assessment period. The date is nominated by the energy assessor who issued the certificate, and the assessor will most likely need to agree this date with you. No gap is allowed between successive assessment periods, but an overlap, of up to three months, is allowed. These allowances are intended to allow the assessment period for the DEC to be aligned with other accounting periods (for example for large building portfolios) or with other existing administrative periods. You may need to discuss with the energy assessor whether moving the date of the next assessment would allow you to improve your access to, and the quality of, energy consumption information.

The advisory report

An advisory report should accompany the DEC. While DEC's are valid for one year, advisory reports are valid for up to seven years. The accredited energy assessor employed to produce a DEC will also be able to advise and produce an advisory report as required.

Occupiers in possession of an advisory report are advised to seek further detailed professional advice before reaching any decision on how to improve the energy performance of the building.

Existing information

If you have already obtained an EPC and Asset Rating for your building, the assessor will need to see a copy of these to obtain the Asset Rating of your building. The assessor will also need

to see the associated recommendation report. If these are not readily available the assessor can, with your permission, obtain these from the Government's register using the certificate's and report's unique reference numbers. In future years, where you have previously obtained and displayed a DEC, the assessor will need:

- The current (expiring) DEC Unique Reference Number (URN), or a copy of the actual certificate and accompanying advisory report
- Where applicable, the URN of the DEC preceding the current (expiring) DEC.

If this is the first time you are obtaining a DEC, then you will also be provided with an advisory report. However, if you have already obtained a DEC and advisory report, the assessor will need to know the whether you require a new advisory report. An advisory report is valid for seven years, but you may wish to obtain a new report before the validity of an existing one has expired, particularly where you may have acted on any of the recommendations contained in the current report to improve the building's energy efficiency.

You should also show the energy assessor the report and recommendations from any other form of energy survey that you might have commissioned for your building, such as those supported by the Carbon Trust, CIBSE, or any other organisations, or professional bodies.