A guide to financing energy efficiency in the public sector

November 2012
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Joint foreword

Energy efficiency can be the most cost-effective and quickest way to reduce carbon emissions and meet the challenge of increasing energy prices. It also delivers significant benefits in terms of helping to stimulate local growth and jobs as well as contributing to the country’s energy security. However the public sector needs to do much more to take advantage of these benefits.

A report prepared for DECC in 2011 estimated that the total energy spend for the English public sector was £2.54 billion per year, and resulted in emissions of 16.7 MtCO₂e per year. If all of the cost effective energy efficiency improvements were adopted this annual energy bill could be reduced by around 30%, saving 3.4 MtCO₂e. It is estimated that the cost of the energy efficiency measures to achieve this level of saving would be around £1.66 billion.

There are many barriers to the uptake of energy efficiency, including the availability of finance, but with strong leadership it is possible for public sector organisations to make a real difference, as many have already done. As an example of what can be achieved, central government reduced its carbon emissions by 13.8% over the 12 months from May 2010.

This guidance, prepared by Local Partnerships, is intended to help public sector organisations better understand the benefits of energy efficiency and help them overcome the barrier that the availability of finance can present.

Local Partnerships occupies a unique position as a policy delivery partner for central and local government and acts exclusively for and on behalf of the public sector freely sharing the intellectual property it develops, helping the sector deliver value and saving costs.

We hope you will find the guidance helpful.

Rt. Hon. Gregory Barker, MP
Minister of State for Energy and Climate Change

Councillor Edward Lord
Chairman of Local Partnerships
Financing energy efficiency in the public sector

1. Introduction

1.1 The purpose of this guide is to increase awareness of the benefits to public sector organisations of investing in energy efficiency, and provide guidance on options for funding energy efficiency improvements. The guide also provides examples of some highly successful energy efficiency projects carried out by public sector organisations, and the benefits they deliver.

1.2 Energy is a cost to most organisations that has grown as a proportion of overall expenditure in recent years. All energy consuming organisations need to manage energy consumption if they are to avoid the impact of price increases on the products or services they provide.

1.3 In this context the case for investing in energy efficiency has never been so strong, and of course the cheapest energy is the energy organisations don’t use.

1.4 There is considerable potential within most public sector organisations to make large energy cost and carbon emission savings through the installation of energy efficiency measures. The energy efficiency technologies that deliver these savings are readily available, tried and tested, and often repay their initial capital cost within just a few years. Such improvements can provide significant long-term cash savings for organisations and reduced exposure to future changes in energy costs.

1.5 As with other types of project, whilst finance is an important consideration, top level leadership remains the key to unlocking the resources to deliver projects and address barriers.

1.6 Energy prices have increased significantly in recent years. Since 2005, the average gas price has increased by over 40 per cent and the average electricity price by over 65 per cent for non-domestic consumers (see chart 1 below). DECC projects that by 2020 electricity prices in the services sector will increase by 22 per cent over and above inflation whilst gas prices will rise by 15 per cent (see chart 2 below).

1.7 A report¹ prepared for DECC in 2011 estimated that the cost effective potential for investment in carbon abatement (mainly through energy efficiency measures) in the entire UK public sector is £1.66 billion. Investment in energy efficiency can be highly cost effective (in some cases repaying the upfront capital in around 1-3 years through the energy saved), lowering running costs and reducing exposure to higher energy prices over time. Installing energy efficiency measures is also likely to have a beneficial impact on the local economy through supporting jobs in construction and throughout the supply chain.

¹ Wider Public Sector Emissions Reduction Potential Research, Camco, 18 July 2011.
2. Leading by example

2.1 As the UK moves to a low-carbon economy, the public sector needs to lead by example. The Prime Minister announced on 14 May 2010 that this would be the ‘greenest government ever’ and that, as part of this, central government would reduce its carbon dioxide emissions by 10% within 12 months. The government achieved this target, saving a total of 13.8%. This target spanned 3,000 central government office buildings and over 300,000 civil servants played their part.

2.2 Building on this, on 6 July 2011 the Prime Minister announced a 5-year commitment to reduce central government greenhouse gas...
emissions by 25% for 2014/15 on a 2009/2010 baseline. This is part of a range of commitments for greening Government’s operations and procurement known as Greening Government Commitments. The 25% commitment covers all greenhouse gases, not just carbon dioxide, and business related transport emissions.

2.3 There are an increasing number of examples of public sector organisations successfully reducing energy consumption, including:

• between October 2008 and March 2012 the Department of Energy & Climate Change cut energy use on its estate by 49%, achieving annual savings of around £156,000. This was at a total cost of around £500,000;

• over a five year period, the university hospital of South Manchester has reduced gas use by 47% and electricity by 6%, saving £390,000 per year with an average payback period of seven years;

• London Fire Brigade, Transport for London and the Metropolitan Police have retrofitted energy efficiency measures into 42 buildings to reduce energy consumption by 28%, saving over £1 million per annum;

• over a 12 month period, the Home Office has driven savings of £500,000 across its estate by entering into an energy management contract; and

• Oxford City Council upgraded its air conditioning systems to save 161 tCO2/year and repaid its £45,000 spend in 1.2 years through reduced energy costs.

3. Strategy and Business Planning

3.1 The budgetary rules governing capital expenditure vary across public sector organisations. However, most organisations will follow broadly similar principles in developing an investment/business case focussing on the following aspects:

• **Strategic Context** – How well does the project fit into an organisation’s strategic priorities?

• **Affordability** – Are financial resources available within existing sources of funding for the proposed project and what will be the net impact of the options under consideration, in terms of cost to the organisation versus benefits?

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**Case study – Kent County Council**

Kent County Council has invested in energy efficiency, renewable energy and water efficiency improvements across its estate and in schools by using its invest-to-save Energy and Water Investment Fund. Since 2006, £2 million has been invested by the fund, delivering lifetime energy costs savings of £5 million and lifetime carbon dioxide savings of 22,843 tonnes. The largest project to date has been the investment of £597,500 to replace 314 ICT servers with 80 energy efficient ones reducing electricity use by 85%, and saving £768,000 in electricity over the five year life of the servers. The council is currently completing the replacement of fluorescent tubes with LED tubes at their two County Hall offices and expect to reduce electricity consumption by 18%. This project will pay back in just over 3 years.
• **Public Value** – Is a consideration of the wider benefits compared with costs to UK society of the proposals. This is not the same as the net effect on the organisation and it considers the same range of options as the financial appraisal but from a wider social perspective.

• **Value for Money** – Is Public Value as defined above, divided by the financial impact and measures the social benefit of an option per pound of public cost.

3.2 Most public sector organisations will need to develop a business case to secure investment. The Treasury’s “5 Case Model” sets out the framework for developing public sector business cases. Guidance and information on training is available at: http://www.hm-treasury.gov.uk/data_greenbook_business.htm.

**Regulatory frameworks**

3.3 It is not possible or necessarily helpful to set out the budgetary rules for every public sector organisation in this document, but some examples of budgetary frameworks that exist are as follows:

• council capital spending is governed by the ‘Prudential Code’, which requires councils to assess the most effective way of delivering an outcome, and to take a long-term view of affordability, such that it is prudent, affordable and sustainable;

• central government departments are overseen by HM Treasury where capital spending is linked to the accounting definition of capital, which can include leased assets. Detailed guidance is contained in Managing Public Money; and

• housing associations are able to borrow based on their balance sheets and future rental income and are regulated by the Homes and Communities Agency (HCA) in England.

**Strategic context**

3.4 The strategic case for energy efficiency/cutting out waste may be linked to more than one organisational priority. It intuitively fits within an environmental agenda. However, key benefits such as energy bill savings and reputational gain from leading by example on emissions reduction will also form an important component within the business case for energy efficiency. It may also be possible to link energy efficiency to the local jobs and growth agenda, in that investment in energy efficiency can help to shift spending from fossil fuels to technology and local services.

3.5 The strategic context also draws links to other agendas, such as estate rationalisation where a refurbishment of buildings, information technology and transport could all lead to energy cost savings. Long-term planning by decision makers is important to ensure these opportunities are captured and built into financial planning.

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**Case study – Oxford City carbon strategy: ‘Getting our house in order’**

Oxford’s carbon strategy mapped a five-year carbon reduction path. This was integrated into Oxford’s asset management strategy and capital programme, whilst savings were linked to the annual revenue budgets. Carbon emissions were audited and a 25% reduction target agreed against a 2005-06 baseline of 10,000 t/CO₂.

The council met its target a year early, using £450,000 of Salix funding to kick start the work. Financial savings were used to finance later spending. Projects were prioritised by financial payback periods and early projects generated savings of over £125,000/year.

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2 Managing Public Money: http://www.hm-treasury.gov.uk/psr_mpm_index.htm

3 Salix Finance Ltd (grant funded by DECC) operates an interest-free loan scheme for energy efficiency improvements in public sector organisations.
Regulatory Environment

3.6 As well as meeting rising energy costs, it is likely that public sector organisations will face more stringent energy efficiency requirements. By planning ahead and acting now, public sector organisations are better placed to meet these emerging standards. Two examples of recent regulation are below.

3.7 The Carbon Reduction Commitment Energy Efficiency scheme (CRC) came into force in April 2010 and is designed to incentivise energy efficiency improvements in large non-energy intensive organisations in the public and private sectors. The scheme incentivises energy efficiency through a combination of drivers, including a cost driver that requires participants to purchase CRC allowances commensurate to their energy consumption. It is designed to drive changes in behaviour and infrastructure, generate corporate awareness of emissions and energy use, capture senior management attention and improve energy management.

3.8 The EU Emissions Trading System (EU ETS) was introduced in 2005 and targets emissions from electricity generation and the main energy-intensive industries. Other organisations may also be covered by the EU ETS, including universities and hospitals. The EU ETS is a Europe-wide cap and trade scheme that sets an overall cap on the total emissions allowed from all the installations covered by the System but allows trading and the carbon market to determine the carbon price and therefore where emissions can be reduced most cheaply.

Financial Affordability

3.9 An affordability assessment is an important consideration when making capital investment that should set out the long-term funding requirements over the life of a project or programme set against the sources of funding for the project (e.g. existing approved budgets, loans or asset sales) and should consider the impact of rising energy costs.

3.10 Energy efficiency projects represent an investment opportunity. The returns to an organisation improving its energy efficiency can be substantially higher than are achievable through holding cash on short-term deposit.

Value for money

3.11 Most public sector organisations will have well established scrutiny functions to evaluate the value for money of proposed capital investment projects or programmes. Value for money appraisals should include an options appraisal to consider the costs and benefits of the shortlisted options considered. In the context of energy efficiency, a comprehensive options appraisal should include the social cost benefits such as the cost of carbon, environmental benefits and potentially increased comfort of buildings; as well as benefits such as avoided future maintenance costs. The HM Treasury Green Book4 sets out methods and frameworks for central government to appraise and evaluate projects and policies; many of the concepts set out in the Green Book will be relevant for all public sector organisations. As a minimum, a value for money assessment should compare the costs of the proposal or project against ‘do nothing’ and ‘do minimum’ scenarios.

Assessing energy efficiency schemes

3.12 Most energy efficiency investments comprise an up-front investment resulting in reduced energy consumption and lower costs. All investments will also need to consider the impact of maintenance and operating costs. There are a number of different approaches to investment appraisal. For simple, low value projects ‘payback periods’ are the most common metric used; whereas for larger projects, Net Present Value (NPV) and Internal Rate of Return (IRR) calculations may be more appropriate.

4 http://www.hm-treasury.gov.uk/data_greenbook_index.htm
Each approach has its own strengths but all contain an element of uncertainty. These types of investment appraisal in energy efficiency are discussed below:

- **Payback Period** – the most frequently used method of assessing an energy efficiency investment is by a simple payback calculation that estimates the amount of time required to repay the upfront investment. Payback periods are typically relatively simple to understand.

- **Net Present Value (NPV)** – discounts future savings because these can be more uncertain in the distant future, and the value of money can be affected by inflation and interest rates. One issue will be to consider how the cost of energy differs from wider levels of inflation.

- **Internal rate of return (IRR)** – assesses the returns from projects that may require further investments in subsequent years. This can be useful where a piece of energy efficiency equipment requires periodic or ongoing maintenance.

3.13 In all cases, public sector organisations will need to discharge their obligations for financial prudence, risk management, due diligence, provision of an audit trail, transparency and compliance with all the relevant legislation and contract rules.

4. Public Sector Borrowing

4.1 Some public sector organisations, such as councils, foundation trusts and universities are able to borrow; whereas others, such as central government departments are set annual capital expenditure limits which are linked to the accounting definition of capital expenditure (i.e. leased assets will count against this expenditure limit). This section provides a high level summary of the budgetary context for some of the main groups of public sector organisations.

**Councils**

4.2 Borrowing by councils is governed by the Prudential Code for Capital Finance in Local Authorities, which requires councils to consider the most efficient way of delivering outcomes. Councils need to assess the risks of spending not generating expected savings, as any costs from non-delivery are borne by the other revenue budgets.

4.3 Councils also take a view on the level of Prudential borrowing they can afford to finance in the context of their long-term revenue budgets. This includes considering long-term interest rates and available budgets. In practice this means there is an upper limit on the amount that can be financed through this mechanism; uncertainties about long-term revenue budgets are likely to drive a managed approach to Prudential borrowing.

4.4 Prudential borrowing may not be appropriate if/when:

- projects are very substantial or complex and are being paid for by a specific funding scheme, e.g. Private Finance Initiatives;
- cheaper funding is available for a specific scheme, e.g. from Salix;
- projects are being financed by third parties, e.g. school building programmes; and
- benefits of the energy savings go to another party (for example with improvements to council houses) and so the benefits are not returned to the borrower.
Foundation Trusts

4.5 Foundation Trusts are authorised and regulated by Monitor and borrowing is limited through the Prudential Borrowing Code for NHS Foundation Trusts. The Prudential Borrowing Limit (PBL) is reviewed annually and is made up of long-term borrowing and short-term working capital borrowing. The long-term borrowing is two tiered with Tier 1 limited through minimum thresholds on four key ratios on the figures in the annual plan. A Tier 2 limit is available, in appropriate circumstances where the Tier 1 limit will be exceeded, to accommodate affordable major investments including PFI schemes.

Universities

4.6 British universities are able to set their own Treasury Management Policies, which includes the ability (and requirement) to ensure that there are adequate borrowing arrangements in place. British universities are monitored by the Higher Education Funding Council for England (HEFCE), which has a role to ensure that they are financially healthy.

Further Education Colleges

4.7 Further education colleges are able to borrow within the terms and conditions of the Financial Memorandum with the Skills Funding Agency. The conditions include standard requirements for effective risk management policies, audited financial statements and fulfilling the purpose of the funding.

5. Sources of Funding

Salix

5.1 The Salix scheme is grant funded by DECC and provides interest-free loans for energy efficiency projects in the public sector. Loans are provided for energy efficiency measures, subject to meeting certain lending criteria, which include maximum payback periods for projects and maximum costs per tonne of carbon saved. Further information about the Salix Finance loan scheme can be found at: www.salixfinance.co.uk

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Case Studies – Salix

Bristol City Council

Bristol City Council used Salix loan funding to upgrade street lighting from high pressure sodium lighting to ceramic metal halide lamps. The new technologies allowed lighting levels to be varied to suit the conditions to reduce energy consumption.

An investment of £1.1 million was made which generated annual savings of £503,000 paying back the upfront investment in 2.2 years.

University of Exeter – Kay House

The university developed a revolving green fund using Salix funding which has resulted in a £1.2 million investment programme saving £320,000 per annum and a payback period of less than four years.

Installed measures include cavity wall and roof insulation, condensing boilers, radiator controls, double glazing and a building management system.

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7 http://readingroom.skillsfundingagency.bis.gov.uk/sfa/financial_memorandum_part_1_30mar12.pdf
Public Works Loan Board (PWLB)

5.2 Some public sector organisations, such as councils, have statutory powers to borrow and can access low cost borrowing through the Public Works Loan Board (PWLB). Interest rates are typically lower than commercially available loans, so public sector organisations that have access to PWLB will probably find this a cost effective route.

5.3 Most long-term council borrowing currently comes from the PWLB as it offers competitive interest rates and flexible terms. Shorter-term loans may be provided by banks or increasingly via loans between Councils.

Green Investment Bank (GIB)

5.4 The Government has set up the UK Green Investment Bank (GIB) dedicated to greening the economy. Its mission will be to provide financial solutions to accelerate private sector investment in the green economy. Capitalised with £3 billion, the GIB will play a role in addressing market failures affecting green infrastructure projects in order to stimulate a step up in private investment. The Government obtained state aid approval for the GIB in late October 2012. At the time of writing, the role of the GIB in public sector energy efficiency is still in development. Further information about the GIB is available at: http://www.bis.gov.uk/greeninvestmentbank

European funding – JESSICA

5.5 The Joint European Support for Sustainable Investment in City Areas (JESSICA), is an initiative of the European Commission developed in co-operation with the European Investment Bank (EIB) and the Council of Europe Development Bank (CEDB). It supports sustainable urban development by supporting projects, including energy efficiency improvements. The investments can take the form of equity, loans and/or guarantees. Owing to the revolving nature of the instruments, returns from investments are reinvested in new urban development projects, thereby recycling.

Case Study: Nottingham City Council

Nottingham City Council has established programme funding for a portfolio of building retrofit projects using a combination of 50% borrowing from the PWLB alongside investment from the Council’s Energy Development Fund (EDF). The EDF was established in recognition that the council would have to make substantial investments to achieve the reduction trajectory set out in its Carbon Management Plan and is included in the council’s Medium Term Financial Plan.

The council intends to invest £1 million across a selected portfolio of up to nine operational properties where the current energy usage appears to offer the greatest opportunity for improvement, which it estimates will save over £200,000 per year in energy bills. Payback is 5 years.

The project will be procured using the RE:FIT framework contract (see section 6 below) which will enable the council to pass the risk of installation and delivery to an external private sector partner. This risk transfer arrangement serves to support the requirements of the Prudential Code; in that the investment is prudent, affordable and sustainable.

public funds and promoting the sustainability and impact of EU and national public money. Information about JESSICA can be obtained from: http://ec.europa.eu/regional_policy/thefunds/instruments/jessica_en.cfm

European funding – EEEF

5.6 The European Energy Efficiency Fund (EEEF) is a public-private partnership dedicated to mitigating climate change through energy efficiency measures and the use of renewable energy in the member states of the European Union. It focuses on financing energy efficiency, small-scale renewable energy, and clean urban transport projects targeting municipal, local and regional authorities and public and private entities acting on behalf of those authorities. Information on the EEEF can be found at: http://www.eeef.eu

European – Other

5.7 There are other funds available from the EU or EIB which may be relevant as a source of finance. Some may be between funding calls or require significant project size or be limited in scope etc. The link below gives information on alternatives to the funds detailed above: http://www.eib.org/products/

Public/Private Funding Combination

5.8 Public funding can come from other sources. Although Prudential borrowing offers attractive rates, as outlined above, it is not available to all public sector organisations. As a result, it is desirable to have a structure which allows the flexibility to fund through any other means available, including private finance. Provided sufficient scale is achieved in aggregation property portfolios, combining public and private funding sources can reduce the overall cost of finance.

Private Investment/Third Party Finance

5.9 Private investment can be structured using the Energy Services Company (ESCo) or Energy Performance Contracting (EPC) model covered elsewhere in this guide but can also be used in a public sector context, such as Public Private Partnership (PPP) projects. Historically this investment has been in large capital investments, such as roads, schools and hospitals where the public sector is seeking to mitigate the risks of construction and delivery of a project or programme. These contractual structures are

Case Study: Peterborough City Council

Peterborough City Council is currently procuring a framework for the delivery of energy efficiency works through an Energy Performance Contract. This framework will be open to any public sector organisation, and will have flexibility to be funded either through PWLB or through private, third party funding (which has been sourced). This approach creates a number of benefits to local authorities wishing to use the framework:

1) reduced procurement time and cost;
2) guaranteed energy consumption savings;
3) increased viability of ‘hard to treat’ buildings;
4) flexibility to use PWLB rates where available; and
5) flexibility to use third party funding where borrowing from PWLB is not available.

By using an EPC structure, Peterborough has made investment attractive through the guarantee of consumption reductions. The framework is open to other local authorities to use.
usually legally complex and are structured to include a combination of equity, subordinated debt and senior debt.

5.10 For some types of energy efficiency investment, it may be appropriate to use private investment, for example if the project is large or is associated with high levels of delivery risk. The evaluation of private investment normally requires a detailed assessment to take account of the risks and costs of using private finance. Further guidance is provided here: http://www.hm-treasury.gov.uk/d/vfm_assessmentguidance061006opt.pdf

5.11 There are a small number of funds which have been established to lend to public sector energy efficiency projects, including the London Energy Efficiency Fund (LEEP), Scottish Partnership for Regeneration in Urban Areas (SPRUCE) and the Carbon and Energy Fund (CEF). Some of these use a blend of European funding together with private finance.

5.12 Appraisal of privately financed projects tends to be more complex than for publicly financed projects. HM Treasury has developed value for money guidance for the appraisal of using private finance in a public sector context. Some of the key principles associated with using private finance are set out in this guidance including:

- making an assessment of whether the risk transfer benefits outweigh any additional costs of finance and other possible disadvantages (e.g. contract monitoring costs);
- is the accounting officer satisfied that the project is achievable in terms of market interest and acceptability of risk transfer arrangements to the private sector?
- is the overall value of the project likely to be sufficient to justify the transaction costs?
- consideration should be given to flexibility; and
- accounting treatment does not form part of the value for money assessment.

5.13 For the reasons set out above, it is usual for public sector organisations to obtain specialist advice from in-house or external advisers when using private finance. This often requires additional resources to manage the procurement, negotiation and implementation.

Other sources

5.14 There are a range of other sources of funding for public sector organisations. These could include capital receipts or the use of money from own capital funds or a local authority may have access to Housing Revenue Accounts and there are financial resources from DfE for the refurbishment of schools.

Case Study: Royal Free Hospital

The Royal Free Hospital has entered into a 15 year contract to design, install, operate and maintain a new energy system. A 4.6MW combined heat and power (CHP) unit has been installed that generates electricity and steam for direct use on the hospital site. Surplus heat from the unit will be piped to an energy centre owned by Camden Council in order to provide hot water and heating for 1,500 homes in the local community.

The project is privately funded through an ESCo that has been established as a joint venture between the public and private sector. The estimated financial savings are £13.7 million over the 15 year contract period, and carbon emissions are expected to be reduced by 18%.

9 http://www.hm-treasury.gov.uk/d/vfm_assessmentguidance061006opt.pdf
Green Deal

5.15 The Green Deal is the UK Government’s flagship policy to increase the energy efficiency of Great Britain’s buildings. It is a new financing mechanism and a framework of advice, assurance and accreditation for the energy efficiency supply chain for the public sector, businesses and homes. It allows the cost of installing energy efficiency measures to be financed through a charge attached to a property’s electricity meter, which is repaid over time and stays with the property when the occupier moves. The Green Deal has three parts: an energy assessment, a list of approved suppliers, and a new way of paying for improvements. DECC has taken an integrated approach to the design of Green Deal, so the operation of the scheme is broadly the same for public sector organisations, businesses (non domestic buildings), and households.

Accessing Green Deal finance

5.16 A public sector organisation’s ability to access Green Deal finance depends on the type of public sector organisation and whether they are able to borrow from third party sources. For example, local authorities are able to borrow from sources such as the PWLB (see 5.2 and 5.3) at low rates or in future from Green Deal providers. Potential providers are encouraged to contact DECC if they have questions about the parts of the public sector eligible for the Green Deal.

5.17 Even if a public sector organisation is able to borrow, they may decide that a Green Deal charge being attached to the electricity bill may only be appropriate where there are a variety of buildings with separate electricity bills being paid (for example, social housing). If a public sector organisation only has one or two large buildings they may instead find that borrowing from a source such as PWLB and repaying out of general cash flow is more appropriate way of funding the energy efficiency works.

ECO

5.18 As part of the Green Deal, an Energy Company Obligation (ECO) has been created to focus on those householders who cannot achieve significant energy savings without an additional or different measure of support. For example, vulnerable and low-income households and those living in harder to treat properties, such as solid walled properties. Where appropriate, the ECO will integrate with the Green Deal, allowing supplier subsidy and Green Deal Finance to come together into one seamless offer to the consumer. Public sector organisations can work in partnership with energy companies to help deliver their ECO obligations.

5.19 Further information on the Green Deal and the ECO can be found on the DECC website at www.decc.gov.uk/en/content/cms/tackling/green_deal/green_deal.aspx.

6. Contractual Considerations

6.1 When planning for energy efficiency across their estates, public sector organisations will need to consider the impact of the lease or other contractual terms upon which properties are occupied. It will therefore be important for organisations to maintain good working relationships with their landlords and tenants, whether in the public or private sector, to achieve the best energy efficiency outcomes.

6.2 The balance sheet treatment of any asset will be a consideration for the public sector organisation entering into any contractual relationship, with examples of energy efficiency investments being placed both on- and off-balance sheet. It is anticipated such consideration will be made within the following parameters:

• some public sector organisations control spending by setting limits on the capital expenditure;
• capital expenditure definitions usually follow the accounting definition;

• accounting definitions are usually based on the substance of a transaction rather than the legal form;

• this means that contracts for services or leased assets may need to be classified as assets, and consequently will count towards an organisation’s capital budget;

• a judgement will need to be made on a case by case basis; which will take account of the nature of assets or services being commissioned and the nature of the legal arrangements; and

• this judgement will require technical accounting expertise and, for large transactions will require sign off from the chief accounting officer or finance director.

Managing Risk

6.3 Energy efficiency investments can be managed and delivered in different ways, with larger investments justifying more robust risk management arrangements. These may require external advisers to the extent that skills do not exist in-house. However, it must be noted that all public sector organisations are required to comply with EU procurement regulations.

6.4 Examples of risk management arrangements include:

• Due diligence on solutions – the contractor agrees to provide evidence that the proposed energy efficiency investment will perform as expected.

• Fixed price installation – the contractor agrees to provide a cap on installation costs.

• Equipment warranties – the contractor provides an undertaking that the equipment will continue to operate effectively for a defined timeframe.

• Operating standards or performance incentives in facilities management contracts – the contractor undertakes that facilities will meet minimum energy efficiency standards with possible financial penalties or bonuses according to actual performance. Some outsourced facilities management contracts transfer the full risk of energy bills to the private sector contractor. Some contracts also include a mechanism to share savings.

• Standalone guaranteed energy savings contracts – the contractor offers a performance guarantee that an integrated package of solutions will lead to a minimum reduction in energy consumption. This is often referred to as an Energy Performance Contract (EPC).

6.5 The choice of risk management arrangements will depend on a range of factors:

• the extent to which the public sector organisation already has the technical expertise to define the technical solution;

• the size of the project (or package of projects) set against the likely transaction costs (procurement costs such as advisers etc.) of the commissioning body and the provider; and

• the appetite of the body to accept technical risk, set against the costs of risk transfer to the private sector.

Energy performance contracts

6.6 Energy Performance Contracts (EPCs) are used extensively in the US, and there are a number of examples of projects using EPCs in the UK. Typically, an Energy Services Company (ESCo) designs and installs measures in buildings to reduce energy consumption and the investment in infrastructure (either public or private) is funded by savings in energy costs.

6.7 The ESCo provides a guarantee that energy savings will be delivered in accordance with a pre-defined measurement and verification
protocol which is a pre-agreed methodology to demonstrate that savings have been made (for example, agreeing a baseline and correcting for factors which are outside of the control of the contractor such as external temperatures).

6.8 In the contract, the procuring body will specify the outputs required (i.e. energy savings required, payback period required, maximum capital spend, etc.), rather than the inputs (e.g. insulation measures or voltage optimisation). This allows the ESCo to innovate through designs in order to produce the best value for money solution for the client.

6.9 The EPC contractor will typically provide an integrated solution, either subcontracting with technology suppliers or performing all the work itself as required.

6.10 The scope of the contract may vary; most include design and installation, but contracts can be structured to include operation and maintenance of systems, and potentially, private financing of investment. Integration of EPC

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**Case Study: RE:FIT**

The Greater London Authority (GLA) has developed a new Energy Performance Contracting approach for public sector buildings that sees pre-approved private sector Energy Service Companies provide guaranteed energy savings. This programme is known as RE:FIT.

In London over 100 buildings have now successfully undergone retrofits and over 100 more are being progressed. Over 50 organisations, including Local Authorities, NHS Trusts, and Universities, have committed to using RE:FIT and the project pipeline contains in excess of 300 further properties.

The programme started 5 years ago and piloted the concept through retrofitting 42 public sector buildings across London, including those owned by early adopter organisations such as Transport for London, Metropolitan Police Service, and the London Fire and Emergency Planning Authority. These projects retrofitted energy savings measures to approximately 146,000 m² of building space, delivering over 7,000 tonnes reduction in carbon emissions and identified energy savings of £1 million per annum (an average 28% reduction in energy consumption).

RE:FIT enables a wide range of financing options and has a strong track record of delivering significant savings through the pre-agreed contract model with framework suppliers. The latest framework is open to all public sector organisations and builds on significant experience across a range of sectors to help quickly deliver robust and cost effective projects.

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**Case Study: Home Office facilities management contract**

The Home Office varied an existing facilities management contract (including energy management) to introduce a mechanism to share energy savings.

The contractor manages energy consumption at 350 Home Office managed buildings across London and the South East. Energy efficiency improvements are undertaken at the risk of the contractor and are paid for on a sliding scale according to how much they save the client.

In the two years this has generated savings in excess of £846,000.

The contractor is on track to save the department well over £1 million in reduced energy bills over the three-year agreement.
contracts with existing operation and maintenance regimes is an important aspect of managing integration risk.

6.11 For more complex technologies, such as combined heat and power (CHP), it may be appropriate for the EPC contractor to maintain the equipment.

Incentives in Facilities Management or Building Management Contracts

6.12 More generally public sector organisations are starting to build operating standards and/or performance incentives into facility management contracts (including PFI arrangements that sometimes include facilities management). These can provide incentives to operators of the energy consuming systems in buildings to look at ways of reducing energy consumption. Some examples of mechanisms include, payment linked to minimum performance standards, gain share for good performance, or requirements for plant and equipment to be maintained at a certain technical standard.

6.13 As with Energy Performance Contracts, some of the challenges include the complexity associated with disaggregating operator performance from that of user and also the interface between the responsibility for investment between the operator and the building owner. However, there are examples of this being delivered through facilities management and PFI contracts and it may also be appropriate to use the same Measurement and Verification protocols.

Measurement and Verification

6.14 The effectiveness of energy efficiency measures can be determined with a robust approach to measurement and verification of measures. The methodology will need to take account of external interference factors which distort performance, such as external air temperatures or building occupancy. There are two well established approaches to measurement and verification including the International Performance Measurement and Verification Protocol (IPMVP) and ISO 50001.

6.15 IPMVP provides an overview of current best practice techniques available for verifying results of energy efficiency, water efficiency, and renewable energy projects in commercial and industrial facilities. It may also be used by facility operators to assess and improve facility performance.

6.16 ISO 50001 is a new International Standard on best practice in energy management. It helps organisations to:

- understand their baseline energy usage;

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**Case Study: University Hospital of South Manchester NHS Foundation Trust (UHSM)**

UHSM is a major teaching hospital which is operated and maintained under a PFI contract. The Trust has reduced gas use by 47% and electricity by 6% over a five year period, saving £390,000 per year and an average payback period of seven years. The Trust has adopted a ‘spend to save’ approach to energy efficiency to save money for frontline services.

The Trust, led by the Director of Estates and Facilities, has worked alongside the PFI contractor to implement a savings programme which included conducting detailed energy audits, implementing energy efficiency measures such as double glazing, building management systems, biomass boilers and upgrades to the steam distribution system. The Trust also implemented an extensive behaviour change programme which secured the buy in of staff.

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10 A standard protocol for evaluation of monitoring and verification procedures is documented here: http://www.evo-world.org/
• create action plans, targets and energy performance indicators; and
• identify, prioritise, and record opportunities for improving energy performance.

6.17 Certification proves that an organisation’s energy management system meets the requirements of the standard. ISO 50001 is suitable for any organisation – irrespective of size, sector or geographical location.

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Further Reading
Carbon Trust: Buildings Energy Efficiency
http://www.carbontrust.com/resources.guides/energy-efficiency/buildings-energy-efficiency

DECC: Energy Price Statistics

DECC: Energy Price Projections

DECC: Wider Public Sector Emissions Reduction Potential Research

Energy Saving Trust: Local authority funding guide
http://www.energysavingtrust.org.uk/Publications2/Local-authorities-and-housing-associations/Funding-and-finance/Local-authority-funding-guide

Energy Saving Trust: Local authority large scale retrofit: A review of finance models

EPEC: Guidance on Energy Efficiency in Public Buildings

Government Procurement Service Frameworks
http://gps.cabinetoffice.gov.uk/i-am-buyer/categories/energy

World Bank: Financing Energy Efficiency