Department of Energy & Climate Change

Local Partnerships

A guide to financing energy efficiency in the public sector

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Financing energy efficiency in the public sector - introduction

This version of the guide to financing energy efficiency in the public sector includes some updated text and a refresh of some case studies. The purpose of this updated 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.

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.

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

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.

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.

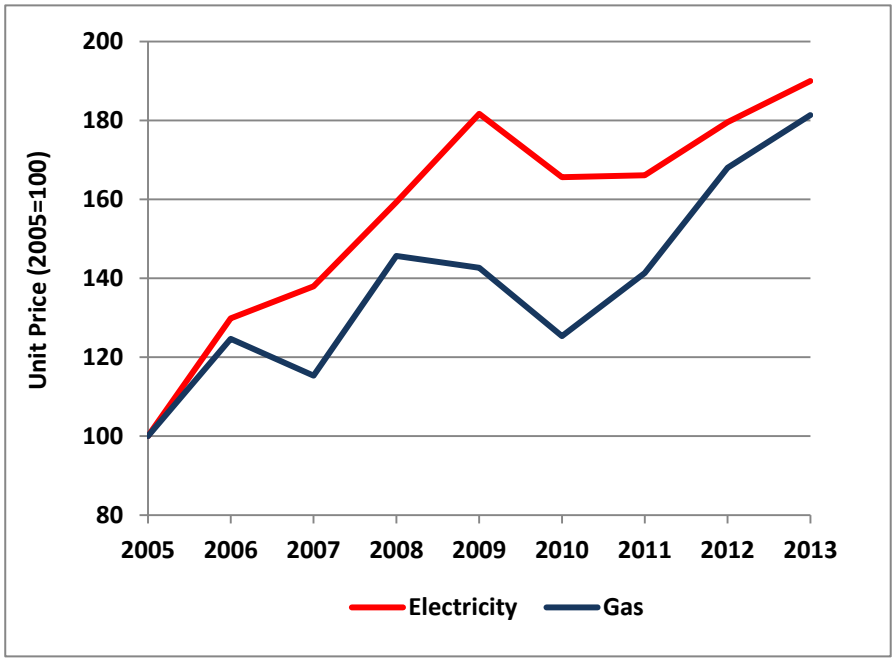
Energy prices have increased significantly in recent years. Since 2005, average gas and electricity prices have increased by over 80 per cent for non-domestic consumers (see chart 1 below). According to DECC's energy projections, by 2030 electricity prices in the services sector will increase by 66 per cent over and above inflation compared to 2013 prices, whilst gas prices will rise by 31 per cent (see chart 2 below) (again, compared to 2013 prices).

A report[1] 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 was £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.

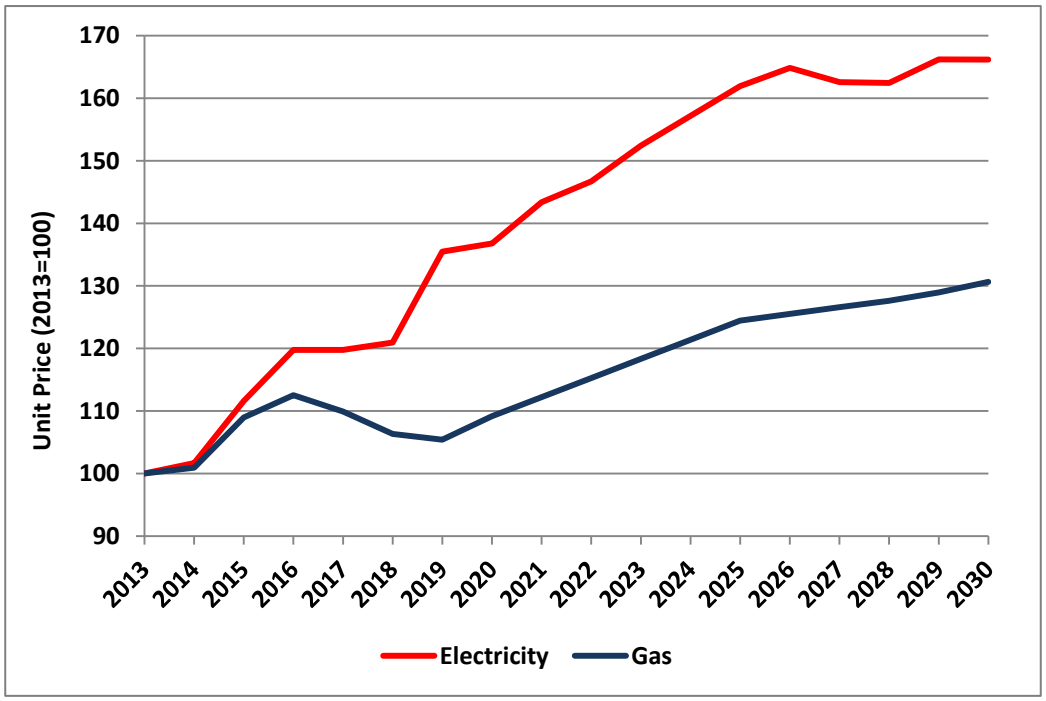
The Building Energy Efficiency Survey (BEES) aims to provide a current, disaggregated view of how energy is used in non-domestic buildings in England & Wales as well as an estimate of abatement potential. The research uses a mixture of telephone and online surveys, as well as site audits and building energy modelling. A pilot study on the food and mixed retail sector was published in June 2013. The main research is currently underway, initially focussing on buildings in the public sector, and the overall project aims to conclude in July 2015.

Chart 2 Average retail fuel prices for non-domestic consumers (nominal prices)



Source: DECC Quarterly Energy Prices, table 3.4.2

Chart 1 Projected retail fuel prices for services sector (real prices)



Source: DECC Energy and Emissions Projections, annex F, September 2014

Leading by example

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.

Building on this, on 6 July 2011 the Prime Minister announced a 5-year commitment to reduce central government greenhouse gas emissions by 25% by 2014/15 from a 2009/2010 baseline. This is one of the Greening Government Commitments, targets for central government departments to run their buildings and operations more sustainably. The 25% commitment covers the whole estate and business related transport emissions, and includes all greenhouse gases, not just carbon dioxide. In 2012-13 government as a whole reduced greenhouse gas emissions by 14% since the 2009-10 baseline year, a small increase from the 12% reduction achieved in 2011/12.

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

- between October 2008 and March 2013 the Department of Energy & Climate Change cut energy use on its estate by 42%. This was at a total cost of around £1.2m;
- 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;

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, £3 million has been invested by the fund, delivering lifetime energy costs savings of £7 million and lifetime carbon dioxide savings of 34,991 tonnes. During 2012 and 2013, £358,000 has been invested in upgrading selected streetlamp schemes to LED lamps, including several thousand illuminated signs and bollards. The council has also evaluated the performance of three large solar PV installations completed in 2012, and found electricity generation was 25% higher than expected. The focus is now on delivering LED lamp upgrades across its estate, including schools, with many projects achieving a pay back of just over 3 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 161tCO_2/year and repaid its £45,000 spend in 1.2 years through reduced energy costs.

Strategy and business planning

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?
- **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.

Most public sector organisations will need to develop a business case to secure investment. HM Treasury's "5 Case Model" sets out the framework for developing public sector business cases. Guidance and information on training is available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/220541/green_book_complete.pdf

Regulatory frameworks

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[2]; 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.

[2] https://www.gov.uk/government/publications/managing-public-money

Case Study – Carmarthenshire County Council

The council used over £1.3m of Salix loan funding to implement lighting refurbishments and insulation measures across their estate, including more than 90 schools, leisure centres and offices in the county.

The results are annual financial savings in excess of £217,400 and CO_2 savings of over 1,200 tonnes per year, with a project payback of 6.3 years.

Strategic context

The strategic case for energy efficiency/cutting 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.

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.

Regulatory Environment

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.

The CRC Energy Efficiency scheme (CRC) came into force in April 2010 and is designed to incentivise energy efficiency improvements in large, non-intensive, users of energy across the business and public sector. The scheme incentivises energy efficiency through a combination of drivers, including a cost driver that requires participants to purchase CRC allowances commensurate to the emissions from their energy consumption, a reporting requirement and data publication. 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. The CRC was recently simplified in advance of Phase 2, which began 1 April 2014, and is currently being evaluated.

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. Public sector organisations with potentially large energy requirements may also be covered by the EU ETS, including universities and military installations. An Opt-out scheme exists for small emitters and hospitals, which offers a simple, deregulatory alternative to the EU ETS for these installations whilst maintaining the incentives for emission reductions.

Financial Affordability

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.

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

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 Book[3] 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

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.

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.

[3] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/220541/green_book_complete.pdf

- 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.

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.

It may not be appropriate for a public sector organisation to fund an energy efficiency programme from their own resources if or 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.

Public Sector Borrowing

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

Borrowing by councils is governed by the Prudential Code for Capital Finance in Local Authorities[4], 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.

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.

Foundation trusts

Foundation Trusts are authorised and regulated by Monitor and borrowing is limited through the Prudential Borrowing Code for NHS Foundation Trusts[5].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

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

Further education colleges are able to borrow within the terms and conditions of the Financial Memorandum with the Skills Funding Agency[6].The conditions include standard requirements for effective risk management policies, audited financial statements and fulfilling the purpose of the funding.

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4 http://www.cipfa.org/Policy-and-Guidance/Publications/T/The-Prudential-Code-for-Capital-Finance-in-Local-Authorities-2011-Edition-Book

5 https://www.gov.uk/government/publications/nhs-foundation-trusts-prudental-borrowing-code

6 http://readingroom.skillsfundingagency.bis.gov.uk/sfa/financial_memorandum_part_1_30mar12.pdf

Sources of funding

Salix

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.

To support public sector take up of energy efficiency measures, DECC injected an additional £10 million into Salix Finance Ltd in 2012/13. The Department for Education also provided Salix with £8 million of ring-fenced funding for schools. And on 2 December 2013 the Government announced that it will spend an extra £90 million over the next three years to provide loans to improve the energy efficiency of hospitals, schools, and other public sector buildings.

Further information about the Salix Finance loan scheme can be found at: www.salixfinance.co.uk

Case Study – Salix

Bristol City Council

The 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.

Case Study – Salix

University of St Andrews

The university used funding from a Revolving Green Fund and match funding to deliver over £2.4m of energy efficiency projects, saving over £615,100 per annum and an average project payback of 4 years.

Installed measures include boiler replacements, motor controls, a CHP plant, insulation and lighting.

Public Works Loan Board (PWLB)

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.

Most long-term council borrowing currently comes from the PWLB as it offers competitive interest rates and flexible terms[7]. Shorter-term loans may be provided by banks or increasingly via loans between Councils.

Electricity Demand Reduction Pilot

The £20M Electricity Demand Reduction (EDR) pilot was launched in July 2014. Its objectives are to examine the viability of EDR in the Capacity Market and to learn lessons for Government and stakeholders on the delivery of EDR schemes. Under the pilot, organisations which deliver electricity savings at peak times by installing more efficient equipment will be able to bid for a financial incentive. More efficient motors, lighting and commercial refrigeration units are examples of the kinds of measures that could receive support. The first EDR auction will take place in January 2015, for those eligible organisations who applied by the 31 October 2014 deadline, and will be backed with up to £10m of funding. For more information, please visit www.gov.uk/electricity-demand-reduction-pilot

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 £1.25 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 £180,000 per year in energy bills. Payback is less than 7 years.

The project was procured using the RE:FIT framework contract (see section 6 below) with the key benefit of enabling 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.

[7] http://www.dmo.gov.uk/index.aspx?page=PWLB/PWLB_Interest_Rates

Green Investment Bank (GIB)

The introduction of the UK Green Investment Bank ("GIB") established a new finance route for energy efficiency, and over the last year the Bank has had a significant impact through its support for non-domestic energy efficiency initiatives. GIB's support has been more than just financing - it has published a number of market reports, including on LED streetlighting and NHS Energy Efficiency, designed to highlight the opportunities and to accelerate investment, and has participated-in and run a number of conferences designed to raise awareness in the sector.

Over the next few years the GIB will continue to support public and private investment in energy efficiency projects and stimulate take up. The GIB expects to commit several hundred million pounds to energy efficiency projects, as it works with public and private sector partners to accelerate energy efficiency investment. In the immediate future both GIB and its fund managers will focus on a broad range of technologies that reduce energy consumption and/or emissions:

- Building retrofits (e.g. lighting, insulation, and glazing)
- Onsite generation (e.g. CHP, renewable heat, heat pumps)
- Industrial process (e.g. motors, pumps, kilns)
- Infrastructure (e.g. streetlighting, heat networks, transport, smart meters).

This will include funding to Government and Local Authorities, through specialised products such as its Green Loan (a long term loan that can be shaped around savings from energy efficiency projects) and NHS energy efficiency projects, either as direct investments by the GIB or through its fund managers for smaller scale projects.

The GIB also provides funding to Energy Service Companies for their energy efficiency projects involving the above technologies.

Further information about the GIB is available at: http://www.greeninvestmentbank.com

European funding – JESSICA

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 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

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

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/

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%.

Public/Private Funding Combination

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

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 usually legally complex and are structured to include a combination of equity, subordinated debt and senior debt.

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: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/252858/vfm_assessmentguidance061006opt.pdf

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 (LEEF), 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.

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[8]. 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.

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

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 the Department for Education for the refurbishment of schools.

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[8] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/252858/vfm_assessmentguidance061006opt.pdf

Case Study: Peterborough City Council

In June 2013 Peterborough Council signed a new Energy Performance Contract (EPC) with Honeywell Building Solutions that will involve all council premises undergoing an energy review, after which a range of energy efficiency measures will be carried out.

The EPC is also open to other councils, schools or housing associations throughout the UK to use on their own premises without the expense of lengthy external OJEU procurement, while also guaranteeing energy performance improvements and allowing for third-party financing.

Like the Government's Green Deal, the EPC will mean councils and other organisations will not need to make an upfront investment for the works, instead they will pay for the works through the savings on their energy bill.

The aim will be to allow Peterborough to save money and energy and reduce its carbon footprint to the point that by the next CRC qualification period, Peterborough Council will no longer be liable for CRC payments. This strategy can also be adopted by other councils depending on their existing CRC obligations.

In Peterborough, a review will be completed at over 100 buildings, including schools, colleges, libraries and sports centres. It will also include the development of a district heating system

Contractual Considerations

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.

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.

Case Study: RE:FIT

RE:FIT is a national OJEU-compliant procurement framework, available to all public sector organisations in the UK. RE:FIT works lead to substantial energy savings and are always at least cost neutral, delivering tangible and immediate benefits. Together with Local Partnerships, the Government is jointly funding the initial England-wide rollout of RE:FIT to the public sector.

RE:FIT was pioneered by the Greater London Authority (GLA) to deliver energy efficiency improvements to the public sector estate, through a simplified procurement framework under which public sector organisations are able to procure energy conservation measures installed by Energy Service Companies (ESCos). This Energy Performance Contracting (EPC) model transfers the risk of performance to the ESCos as they must contractually guarantee the energy savings to be made over the agreed payback period.

The London RE:FIT programme has so far retrofitted over 400 of London's public sector buildings, generating estimated CO_2 savings of 30,100 tonnes per annum from investment of £62.9m. The GLA is aiming to retrofit 600 buildings and generate savings of 45,000 tonnes of CO_2 by 2015.

Managing Risk

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, all public sector organisations are required to comply with EU procurement regulations.

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).

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.

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.

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.

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).

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.

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

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 contracts with existing operation and maintenance regimes is an important aspect of managing integration risk.

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

In order to promote the energy services market DECC has published a ‘model’ EPC, and accompanying guidance notes, together with a guide to energy performance contracting best practices.

Incentives in Facilities Management or Building Management Contracts

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.

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

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[9] (IPMVP) and ISO 50001.

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.

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

- understand their baseline energy usage;
- create action plans, targets and energy performance indicators; and
- identify, prioritise, and record opportunities for improving energy performance.

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.

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.

[9] A standard protocol for evaluation of monitoring and verification procedures is documented here:

http://www.evo-world.org/

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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 – https://www.gov.uk/government/collections/energy-price-statistics

DECC: Energy Price Projections – https://www.gov.uk/government/collections/energy-and-emissions-projections#2011-projections

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 - http://www.energysavingtrust.org.uk/england/Publications2/Local-authorities-and-housing-associations/Funding-and-finance/Local-authority-large-scale-retrofit-A-review-of-finance-models

EPEC: Guidance on Energy Efficiency in Public Buildings - http://www.eib.org/epec/resources/epec_guidance_ee_public_buildings_en.pdf

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

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