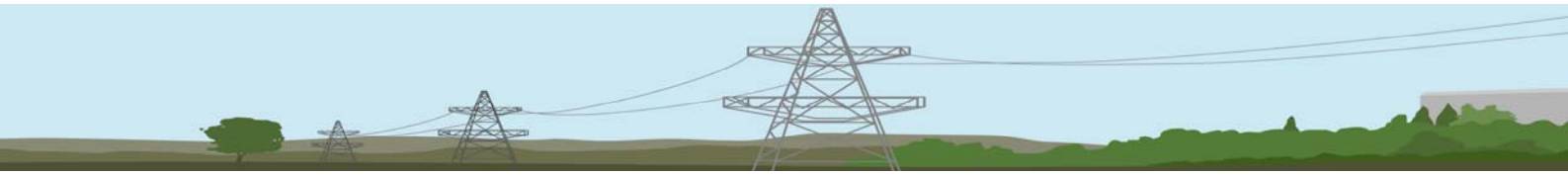

UKERC

UNLOCKING ENERGY SERVICES: MAIN FINDINGS OF A JOINT SDC/UKERC SEMINAR

Meeting Report, November 2005

Event sponsored and organised by:

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- provide a forum for collaborative projects addressing key issues
- develop new synergies between different strands of energy research
- build up the strengths of the research community

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The purpose of this note

This note summarises the output from the UKERC/SDC "Unlocking Energy Services" seminar held in November 2005. The presentations made at the seminar can be downloaded from the UKERC website[1]. The briefing note prepared prior to the seminar is attached at Annex A. An update note on the G8 and EU context for energy services is attached at Annex B. There is a significant market in the EU, and the EU Energy End-Use and Energy Services Directive was adopted in December 2005. Its objective is to enhance the cost-effective improvement of energy end-use efficiency in Member States.

HM Treasury hosted an Energy Services Summit in January 2006 to explore how Government and the business community can encourage the development of energy services markets in the UK. Following the seminar, an independent industry group will develop proposals on energy services and demand reduction which will feed into the Energy Review[2], and this note contributes to that process.

Summary of the findings

1.1 Current state of the market

1. The current UK energy market is dominated by a small number of large energy suppliers operating at low margins, with little incentive to offer innovation in services. For example, in the commercial sector contracts are tendered annually, and in the domestic sector, households can switch with 28 days notice, although suppliers are allowed to engage in longer term contracts under the 28 day rule pilot. Overall, this structure encourages a short term perspective, with **competition focused on price and a business model focused on volume of sales**.
2. **Energy Services Companies** (ESCos) could help to address barriers to energy efficiency and microgeneration, by providing information, finance, installation, and maintenance under a long-term contract. Energy Services contracts may deliver large savings in money and carbon, particularly in the business sector, and potentially in households depending on the service design. An Energy Services approach would require a longer term perspective to allow the recovery of investment costs in energy efficiency and microgeneration, and based on adding value to potentially reduced volume sales. There are also significant barriers to new entrants.
3. There are very many different commercial arrangements, which hinder consistent **understanding** of what an ESCo does.

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1 http://www.ukerc.ac.uk/content/view/134/57

2 http://www.hm-treasury.gov.uk/media/20F/1D/bud06_ch7_161.pdf para 7.30.

4. We have identified three distinct types of market, with different opportunities and barriers:
   - The **commercial and industrial sector** where the ESCo offering is most developed, and where there remains great potential. Barriers include the relatively cheap price of energy and short fixed contracts so companies have been unconcerned about energy compared to other financial pressures, and organisational structures and reporting lines can prevent complete outsourcing of energy services.
   - A **community model**, where an ESCo is set up to serve a range of customers in the same location (for example, but not exclusively, a Community Heating scheme). This could involve domestic buildings, or mixed use and could apply to either new developments or existing communities. This includes design, build, finance, operation (DBFO) maintenance and billing. To date most experience is with district systems but technology is not important – it is the operating model that is important. Solutions could include a range of microgeneration options. This is a viable and proven model.
   - A **household model**. This is related to existing housing, most likely based on an offering from a traditional energy supplier. This is regarded as the hardest market for ESCos to break into, especially in the short term. In the current regulatory environment there is no business case for change. Consumers have low interest in ESCo offerings and energy efficiency. However, household energy inefficiency costs £7-10billion per year which could be captured through ESCos, and studies indicate that householders respond well to specific information on their energy performance (e.g. when stimulated through smart metering and billing), and find microgeneration attractive.

1.2 Policy options

The SDC/UKERC seminar identified ways forward in the short and medium term for energy services in the UK.

1. The **commercial and industrial sector is a priority** for immediate savings; then the communities model. It may take some time to achieve significant ESCo activity in the household sector.
2. The **EU Energy End-Use and Energy Services Directive** was passed in December 2005 which sets targets for savings in a number of sectors. Implementation of the Directive may require more informative metering and billing, and the development of tradable emissions reduction certificates (white certificates), as discussed in Annex B (5.2).

3. Another approach would be to include much smaller sites within EU emissions trading, perhaps a system like the **mandatory consumption-based emissions trading scheme (UK CETS)** proposed by the Carbon Trust[3].
4. The **public sector** could take the lead in securing Energy Service contracts. In particular, energy is left out of most PFI contracts (e.g. for hospitals and schools). PFI could be reformed to use ESCos to deliver savings over the whole life of the project. Government could (for its own sites as well as commercial sites) help to develop a consistent Energy Services package, or certification of services, as well as access to low cost finance.
5. In the **commercial sector** a number of policy actions could make large savings in costs and carbon very quickly through market development, this type of ESCo is largely for existing non-domestic buildings. The Energy Performance in Buildings Directive may stimulate further activity on ESCos in this sector.
6. For **communities**, policy could deliver further significant cost and carbon savings, such as a planning requirement for at least 10% of energy to be generated on-site in new developments (this could also apply to new commercial buildings), enabling the use of private wire networks, and capacity-building within communities.
7. For **households**, changes to the current regulatory environment are needed to make ESCos work in future for both consumers and suppliers. Developments could include an expanded EEC, perhaps with more incentives to enhance its effectiveness and speed up delivery. In the short term, promoting information to consumers in the form of audits, smart metering and informative billing will raise awareness. Microgeneration, or Personal Carbon Trading (often called Personal Carbon Allowances or Tradable Quotas) may provide new opportunities for energy service offerings in the medium term.

[3] The Carbon Trust (2005) The UK Climate Change Programme: potential evolution for business and the public sector. The Carbon Trust ref. CTC518

Unlocking Energy Services

1.3 What are energy services?

At the seminar considerable emphasis was placed on the need for a consistent definition of energy services that is widely understood not just among practitioners but consumers, potential purchasers, and policy-makers too.

> From the householder perspective, an **energy service offering will mean** the provision of heat, light and power for the home, paid for through a financing arrangement linked to the ongoing reduction of fuel bills. The installation of smart meters, energy efficiency measures, or microgeneration, would be needed to create ongoing reductions in fuel consumption.

1.4 Markets for energy services

The UKERC and SDC held a seminar in London in November 2005, led by presentations[4] from:

Sara Eppel Sustainable Development Commission	Introduction
Philip Sellwood Energy Saving Trust	Current status of energy services in the UK
Jon Kimber Head of EEC Delivery, British Gas	Energy supplier offerings in the Energy Efficiency Commitment– experience and case studies in the UK
Don Lack Atkins Energy	Lessons from the non-domestic sector
Fiona Gillard Crag Ross Dawson	Engagement with consumers
Mike Sewell Dalkia	The commercial perspective
Simon Roberts Centre for Sustainable Energy	The domestic perspective

In addition four breakout groups considered the barriers and opportunities for three broad models of energy services

- a facilities management model for non domestic buildings
- a community model
- a domestic energy supplier model (2 groups)

4 http://www.ukerc.ac.uk/content/view/134/57

1.5 Opportunities and barriers

Each of these models is currently faced with a number of opportunities and barriers (indeed with barriers come opportunities), many of which are specific to the model. Smart meters, informative billing, microgeneration, energy efficiency and ESCos could combine to create much greater behaviour change and reductions in energy use than any of those measures alone could achieve.

Barriers

Barriers specific to the **commercial model**	Barriers specific to the **community model**	Barriers specific to the **domestic energy supplier model**
▪ **Energy as a fixed or variable cost** - many clients mistakenly see energy as an uncontrollable overhead rather than a risk or opportunity. ▪ **Cheap energy and short fixed contracts** mean companies have not been concerned about energy. Recent price rises and contracts up for renewal mean this might change. ▪ **Organisational structure** – a company's grouping into departments, reporting lines and budgets often make the complete outsourcing of energy services very difficult ▪ There are **other financial priorities**; lack of budget for energy investment; no life-cycle costing ▪ Much **office space is rented,** so that typically the costs lie with	▪ **Developers want to get in and get out** and have no commitment to a site. An ESCo may have to be a separate organisation from the developer. ▪ The **upfront cost** of lower carbon solutions can be high compared to standard heating systems, even if carbon emissions and life cycle costs are lower. ▪ **There is little evidence that people prefer homes that have lower environmental impact or low energy cost**. New housing developers cannot recover the cost of an upfront investment ▪ Lower carbon solutions are not always needed to get through **planning and**	▪ **Consumers** show little recognition of the concept of energy services and there are difficult issues with consumer trust, largely because the motivation for the approach is not understood[5]. Energy efficiency is not a priority for consumers; actions can not be 'shown off' to peers; not much interest in fuel bills due to low energy prices and bills often show credit; most people don't get round to actions; perceived disruption to the home and hassle; upfront cost; concern with borrowing with a 2-5 year tie-in; suspicion of energy suppliers and fear of commitment ▪ Confidence in relevant trades to carry out works to **quality standards** – some

5 http://www.dti.gov.uk/energy/environment/energy_efficiency/eswg_mr_finalreport.pdf

landlords and the bills lie with tenants. The market potential is there but there is no motivation for lessors or lessees to make changes. ▪ **ESCo offerings can be very different and thus hard to compare** - and may not be easily matched to customers needs. ▪ Lack of **services integration** e.g. if the incumbent M&E contractor does not offer energy management services, unless the energy service provider can work effectively with or replace the maintenance contractor then savings in practice may be difficult. ▪ There is a lack of knowledge of **grants/subsidies** available	**building regulations** hurdles. ▪ There is very **little experience with this kind of model** except in social housing. Housing developers are risk- and cost- averse. ▪ **Some technologies have a bad reputation** (e.g. some old community heating schemes) because they have in the past been badly maintained. This colours perceptions of new schemes. ▪ **People prefer individual rather than communal solutions**. ▪ **Bill collection is expensive for small numbers of consumers** (large energy suppliers can spread these costs over millions of households).	form of accreditation is required ▪ No effective commercial model has been developed – the current **business case for ESCos** is not attractive. Need to start from consumer perspective - but customers have very low awareness about what an ESCo means ▪ **Transaction costs** can be high compared to the savings. The cost savings won't go far if they have to be shared between audit, investment, ESCo profit and householder. Need to either increase cost savings (e.g. microgeneration) or enhance the value of savings by making them tradable – **white certificates** ▪ The **Energy Services offering needs commercial development**. The Design Council recently did some work on what an ESCo or HOUSE Co might look like[6] ▪ **Barriers to new market entrants** are high, e.g. costs of securing and maintaining a supply license; exposure to

6 http://www.designcouncil.org.uk/futurecurrents/downloads/FutureCurrents-RedesigningEnergyPolicy-18-10.pdf

		risk in wholesale markets without upstream assets (reduced ability to hedge); high entry costs such as marketing ▪ **Meters** are currently installed by suppliers, who have no incentive to upgrade to more expensive smart meters due to the risk the customer will switch supplier, leaving a 'stranded asset'. Longer term contracts, or change in meter ownership model may help. ▪ **Definition of Energy Services under the EEC** are restrictive, and not necessarily encouraging suppliers to deliver energy services in the sense discussed at the seminar. There was agreement that there was little supplier interest in energy services whether or not customers are free to switch suppliers with 28 days notice (the **28-day rule**). There are many other barriers in addition to 28-day rule, as outlined here ▪ ESCos require good relationships with **delivery agents** i.e. insulation installers

		where there is limited consolidation in the market and high risk for brand ▪ Home owners are resistant to losing **control**. They want to pick and choose the measures implemented.

Opportunities

Opportunities specific to the **commercial model**	Opportunities specific to the **community model**	Opportunities specific to the **domestic energy supplier model**
▪ **Public procurement** is currently limited. It should play a much greater role. This would help to develop a more consistent definition of Energy Services. ▪ **The public sector can borrow money at lower rates than the private sector.** It could lever third party finance. ▪ Incentives much greater for those companies included in **EUETS** ▪ For companies that outsource more and more a better **facilities management package** could reduce risk and hassle ▪ A heightened **CSR**	▪ **There is a need for leadership.** The London Mayor is understood to be exploring setting up an ESCo for London, and English Partnerships and the Housing Corporation could actively support ESCos in the developments they are involved in. ▪ **Housing developers could contract out** all energy infrastructure on a site to an ESCo to design build operate maintain and bill. The ESCo can design and manage the assets to achieve least life cycle costs ▪ **In new build developments, the cost of energy efficiency and microgeneration is**	▪ **£7-10 billion is wasted** in non-energy efficient UK homes per year. ESCos could capture this. ▪ Although they raise the transaction costs, there is considerable consumer interest in **home energy audits** – people are keen to know how energy efficient they are. ▪ People prefer a **specific energy audit**– carried out in their own home – and they expect substantial measures and associated energy savings (e.g. a condensing boiler rather than a few light bulbs) ▪ **Microgeneration** might be a new opportunity partly because of the cost of the asset and the income stream, but also

agenda could provide a positive opportunity for companies to report annually on energy efficiency/carbon savings	**the marginal cost over and above what would be installed anyway** (e.g. gas boilers, gas network). If scaffolding is present to install a roof, the marginal cost of installing PV and solar thermal at the same time is lower than in retrofit situations. Economies of scale can be made to install devices in a thousand homes in one go. Systems (e.g. metering and generation systems) can be integrated from the start. ▪ In new build developments, an electrical network has to be installed to each home, which is usually given to the DNO to manage because it is seen as a liability. If this is designed and installed by an ESCo it can be retained and used to sell surplus electricity by **private wire**. This attracts 8p pkWh rather than 2p, and completely changes the economics of electricity generation ▪ An ESCo could be a facilitator of **wider community services** within a community including car clubs, IT, or other community goals. **Involvement** is	because many technologies reduce peak demand (i.e. expensive energy) and because it is attractive to the consumer. Microgen can then lead on to greater interest in energy efficiency – Hub Report for the Sustainable Consumption Roundtable. ▪ **There is a need for the suppliers to develop new products to differentiate their offerings**; the current churn levels of customers between suppliers is unsustainable. Whilst there is currently much emphasis in the market-place on switching energy suppliers, encouraging **loyalty** is cost-effective business for suppliers because it costs 5 times as much to acquire a new customer as to retain an existing one. But easier ways of obtaining loyalty e.g. Nectar Points ▪ need research to quantify the **rebound effect** of consumption.

	key with local stewardship and a local dividend ▪ Many programmes (e.g. Renewables Obligation and EEC) are invisible to people. Yet **behaviour change** is essential to achieve a 60% reduction in emissions. ESCos are big enough to start behaviour change, as a communication route for - and to get buy-in - to deep carbon cuts	

There are a number of generic barriers…:

- The dominant **business model** in liberalised gas and electricity markets has an emphasis on kWh price competition and sales volume
- **Barriers to new entrants**: costs of securing and retaining a household supply license; exposure to risk in energy wholesale markets without upstream assets; high entry costs through the need for substantial marketing. Partnerships with energy suppliers are therefore the most likely models for involving other commercial players in the market.
- Suppliers feel it is difficult to be innovative in the current **regulatory environment**.
- Customers (whether households or businesses) will not want to buy into a medium or long term **commitment** as they might move
- The energy services industry needs to be protected against 'cowboys' and adequate **consumer protection frameworks** need to be in place. Affiliation with the Energy Services Trade Association (ESTA) could be encouraged if a mechanism could be put in place to enable the removal of affiliation from poor-performers. Accreditation by another party (e.g. EST or OFGEM) is an option.

…And a number of generic opportunities:

- The potential for sale of electricity via **private wire** to facilitate a package of measures
- A **microgeneration commitment** could help to enhance the value of ESCos and improve the business case for them

- **Energy price rises** are an opportunity: commercial sector will be more inclined to take interest; domestic consumers concerned about energy prices could be attracted by price freeze tariffs.
- ESCos might naturally develop an advantage if and when energy prices rise, with higher demand in relation to supply, or through mechanisms that put a **price on carbon**, e.g. emissions trading or Personal Carbon Trading (often called Personal Carbon Allowances or Tradable Quotas).

1.6 Policy Recommendations

A facilities management model	A community model	A domestic energy supplier model
▪ **Planning requirement** - at least 10% of energy used in new non-domestic buildings to be generated on-site, through the planning regime ▪ More rigorous use of Green Book Guidance on **whole life costing** of public sector investment ▪ reform **PFI** to ensure projects use ESCos to deliver savings - for example by writing standard contract clauses ▪ **Rented premises** - provide incentives for lessees to invest in energy efficiency measures. ▪ Develop **common definitions** to aid transparency of tender and awarding	▪ We don't have to start from scratch. The **organisational model** developed to implement community heating is more developed than many realise. ▪ ***Surestart*** could be a good model for a national framework for development of local services [7]. ▪ Development of **business models** or templates would be useful, e.g. Woking and Thameswey, Merton and planning guidance ▪ How to **develop the capacity of individuals and champions** ▪ Encourage **Local Authorities** to use powers they already have to partner in such schemes	▪ The **consumer appetite** for energy services is low, and the deals that suppliers offer largely do not meet consumer wishes. In this market condition it would be more effective to concentrate on improving consumer information about their energy use, and ways of reducing it. ▪ In the short term: ▪ Better information and access to information is required through **smart metering and billing**. If Bills were on the web, with frequent updates from meters, customers could input their own surveys and do on-line option appraisals. Finance and contacts with installers could be

7 http://www.surestart.gov.uk/aboutsurestart/ . Sure Start is a Government programme which aims to achieve better outcomes for children, parents and communities. It promotes services such as childcare, health and emotional development for young children, and support for parents. It works by helping services development in disadvantaged areas alongside targeted financial help for parents to afford childcare, and ensuring local service provision is underpinned nationally by a common set of principles.

procedures; to reduce transaction costs; to minimise risk; and to improve access to capital ▪ **Government could play a key role** as a 'keystone load', taking heat and power and cooling. People trust Government, - if Government were to do it in our towns and cities, other existing businesses would follow, as well as in-fill new build. There might be a key role for PFI.	▪ Require recipients of funding from the **Housing Corporation** to develop plans for ESCos ▪ **Planning requirement** - at least 10% of energy used in housing developments to be generated on-site, though the planning regime ▪ There is a need for a **different type of license** (other than a standard Electricity Supply License) for energy services or bundled services. Review license exempt supply regime to make it easier for small schemes to sell power ▪ Require **DNO's** to reach agreement with community schemes over ownership of **private wires** to enable private wire supply to households	offered on-line. ▪ **Information on energy use** is hard to come by. Some claimed it was easier to get info on the selling price of a house (e.g. via www.ourproperty.co.uk) than to get information on the energy used by it. ▪ Implement a **microgeneration obligation** on domestic suppliers ▪ Allow ESCos to claim **Enhanced Capital Allowances** on investments in households ▪ Creation of further incentives for **new market entrants** ▪ Opening up the EEC scheme into a **white certificates** scheme would enable new market entrants to participate. ▪ In the long term: ▪ **Trading system** for the energy suppliers – EEC, white certificates. ▪ **Personal Carbon Allowances** which can be traded would provide the stimulus for consumer demand for an energy supply that creates energy and carbon savings

Annex A: Briefing Note for the SDC/UKERC seminar

Unlocking Energy Services

1 The purpose of this note

The joint Treasury and Defra Energy Efficiency Innovation Review identified a market failure in the UK in the provision of energy services to domestic, business and public sector customers. The Treasury will host a summit in the coming months to explore how Government and the business community can support development of energy services markets in the UK[8].

This briefing note reviews progress to date and challenges for the future. It will be revised after the UKERC /SDC seminar on November 1st based on the presentations of the speakers, and the discussions from the breakout groups, and submitted to Treasury as an input to the summit.

Questions to consider at the seminar may include:

- What can market research tell us about what consumers want?
- Is better information (including labelling, metering and billing) a pre-condition to energy services?
- What is the effect of suspension of the 28-day rule, one year into a pilot?
- Might revenue from microgeneration provide a new stimulus to this market?
- Is there a case to be made to Treasury for further economic instruments?
- What would change the nature of energy supply?
- Is there an opportunity for a different business model? And in particular is there a role for local or community based solutions?
- Is there a need to create opportunities for new market entrants?

The need for an energy services approach

There is a range of reasons why the potential for energy efficiency is not achieved. These include:

- Lack of understanding of the saving opportunity
- Lack of time to address energy, since energy forms a small portion of overall expenditure
- Lack of capital, or a high cost associated with borrowing capital
- A lack of capacity to install measures

8 http://www.hm-treasury.gov.uk./media/AA7/59/bud05_chap07_171.pdf

There is a range of reasons why the potential for microgeneration[9] may not be achieved including all the above reasons plus:

- Issues associated with installation such as connection, metering, notification to network operators
- Difficulties in securing top-up and back up sources of electricity and heat (when demand is greater than output) and sale of surplus electricity to other customers (when output is greater than demand)

Where ESCos were once seen as a way of addressing these issues for energy efficiency, they are also important for generation of low carbon heat and electricity, and at all scales from 100 MW on an industrial site, to 1KW in the home. Energy services packages may overcome many of the barriers described above through some combination of design, build, finance, operation and maintenance of installations.

If government is committed to a 60% cut in carbon emissions, the theoretical potential for energy savings and for microgeneration will need to be achieved and indeed expanded. Energy services may be critical in delivering across a range of sectors and timescales, for example:

- Around three quarters of CHP in buildings or recently installed on industrial sites is thought to have been installed on an energy services basis. Thus 4000 of the additional 5000 MW of CHP needed to achieve the 2010 target could be delivered via energy services.
- Longer term, the *40% House* report[10] suggested that in order to achieve the scale of change needed in housing, more than half of households might be supplied on an energy services basis by 2050.

Indeed, ensuring demand management options are assessed on a level playing field with new forms of supply, and ensuring that embedded generation is assessed on a level playing field with central generation is arguably nothing more than the completion of a properly and fully liberalised energy market. This is as true at the European scale as at the national level, and the European Commission has a longstanding interest in promotion of energy services.

9 Microgeneration is taken to include a portfolio of plant that deliver heat and or power and or cooling with no or low carbon content compared to conventional supplies. They may serve an individual site or serve a community

10 Boardman et al (2005) The 40% House, see http://www.eci.ox.ac.uk/lowercf/40house.html

What is energy services?

Customers' service needs vary widely. Thus service provision will need to be tailored to satisfy particular market niches such as: billing and metering; joint utility supply (e.g. electricity, gas, heat, water, telecommunications); energy analyses of buildings and industrial processes; energy, lighting and building management (including security); installing, financing and operating CHP schemes on customers' premises; 'green' electricity provision, possibly at premium prices; appliance maintenance and leasing contracts; individual building renovation and insulation; and possibly involvement in large-scale urban development and renovation. In these markets, the EI could face competition from many other suppliers, including multi-utility companies and independent energy service companies.

From Chesshire et al (2000) [11]

Energy service contracts allow the client to reduce operating costs, transfer risk and concentrate attention on core activities. Energy service contracting is a form of outsourcing. It will only be chosen where the expected reduction in the *production cost* of supplying energy services can more than offset the *transactions cost* of negotiating and managing the relationship with the energy service provider.

Adapted from Sorrell (2005) [12]

The International context

The European Commission sponsored a comparison of energy services and preparation for full liberalisation across 7 countries including the UK[13] and has continued to finance research on ESCos[14], most recently, conducting a market review of companies offering energy services across Europe (Bertoldi and Rezessy 2005)[15]. Bertoldi and Rezessy viewed the UK as a leader in Europe in the development of the ESCo market. However, in recent years, with the implementation of NETA and falling electricity prices, together with rising gas prices, many indigenous ESCo companies have withdrawn from the market. Those companies that remain are predominantly French, Danish or Swedish in origin. The Energy End-Use and Energy Services Directive was agreed in December 2005 and will be adopted in Spring 2006. Its objective is to enhance the cost-effective improvement of energy end-use efficiency in Member States.

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11 Chesshire et al (2000) http://www.eurelectric.org/Download/Download.aspx?DocumentFileID=5982

12 http://www.eceee.org/library_links/proceedings/2005/abstract/1005sorrell.lasso

13 See Chesshire et al 2000

14 http://energyefficiency.jrc.cec.eu.int/ESCO/ESCO.htm

15 http://energyefficiency.jrc.cec.eu.int/pdf/ESCO%20report%20final%20revised%20v2.pdf , and http://energyefficiency.jrc.cec.eu.int/html/list_ESCO.htm

Beyond the EU, the ESCo concept is one that has seen wider application in the US and Asia[16]

UK Market opportunities for ESCos

There are, we believe, three broad models of energy services as shown below.

	A facilities management model	A community model	A domestic energy supplier model
Description	▪ Energy services as a way of retaining large industrial customers on a long term supply contract ▪ Energy services as part of a facilities management approach to commercial and public sector buildings ▪ Potential – a proportion of 1.7 million industrial commercial and public sector sites in the UK.	▪ Energy services companies managing design, build, finance and operation of community Heating schemes, often as a partnership between a private sector company and a Local Authority, or a new-build housing developer. Potential market 5m existing homes[17] ▪ Large new build housing developments could follow a community ESCO model where the developer involves an ESCO partner with exclusive responsibility for a defined area (at least for a period of say 10 yrs), even if the solution adopted is solar	▪ Energy services offerings to existing households by utilities companies ▪ Whilst EEC measures are typical of what could be delivered under an energy services deal, measures are not installed as part of a complete package of measures plus energy supply. ▪ Microgeneration adds significantly to the range of options that could be included in an ESCo offering (potential market more than half of homes by 2050)

16 The 1st Asia ESCO Conference 2005, Bangkok, Thailand, www.asiaESCOconference.org , and the U.S., the National Association of ESCOs (NAESCO) Conference was 18-20 May 2005, www.naESCO.org.

17 http://www.est.org.uk/uploads/documents/housingbuildings/UK%20CH%20potential%20report_CTFinal.doc

		thermal and microCHP not community heating. Potential market 10M new homes by 2050	
Examples	▪ CIBSE have had Guidance on Contract Energy Management since 1991[18] ▪ Around 1200 CHP schemes in buildings, totalling almost 350 MW of capacity, of which 80% are estimated to be offered on an energy services basis[19]	▪ Woking BC partnership company Thameswey Energy[20], Southampton Geothermal Heating[21] Aberdeen Heat and power, and a range of schemes delivered under the Community Energy programme[22] ▪ Large new build housing development is Greenwich Millennium Village which has both community heating and solar PV.	▪ Some EEC programmes have sought partners (e.g. Housing associations or local authorities to help deliver measures

It is important to recognise the full range of opportunities. There is more experience with larger customers, but there is also significant opportunity to extend the market to smaller customers. This hasn't been achieved to date for many reasons, for example:

- It has been difficult to persuade customers of the benefits

18 CIBSE Applications Manual Contract Energy Management AM6:1991

19 http://www.dti.gov.uk/energy/inform/dukes/dukes2005/06main.pdf table 6C.

20 http://www.woking.gov.uk/html/queensaward/W-17.pdf#search='thameswey%20energy'

21 www.utilicom.co.uk

22 See http://www.est.org.uk/housingbuildings/communityenergy/

- The transaction costs of setting up ESCos for small customers are large (or are perceived to be large) in comparison to the potential benefits
- The barriers to new market entry in energy supply are high

However, it is important to remember that competition in supply began in the UK with a small number of large players and thresholds were gradually lowered to include all customers including households. The development of the energy services market could follow a similar pattern.

Policy options to develop the ESCo market

Following the Energy Services Working Group, Ofgem implemented a pilot suspension of the 28 day rule from May 2004, and there has been further research on consumer perceptions[23]. There is however a range of options for further development of the ESCo market. Some of these are specific to a sector, and some of these may be generic.

	A facilities management model	**A community model**	**A domestic energy supplier model**
	▪ Set a target for public sector buildings for heat to be taken from CHP ▪ Require at least 10% of energy used in new non-domestic buildings to be generated on site, though the planning regime ▪ More rigorous use of Green Book Guidance on whole life costing of public sector investment ▪ Ensuring PFI projects deliver ESCos	▪ Encourage Local Authorities to use powers they already have to partner in such schemes ▪ Require DNO's to reach agreement with community schemes over ownership of private wires to enable private wire supply to households ▪ Require Almos the Housing Corporation to develop plans for ESCos ▪ Review of license exempt supply regime to make it easier for small schemes to sell	▪ Requirement to have informative metering, billing and feedback ▪ Implement a microgeneration obligation on domestic suppliers ▪ Allow ESCos to claim Enhanced Capital Allowances on investments in households ▪ Creation of further incentives for new market entrants

23 http://www.dti.gov.uk/energy/environment/energy_efficiency/eswg.shtml

		power ▪ Require at least 10% of energy used in housing developments to be generated on site, though the planning regime	

More generic issues for discussion include:

- **wider and more effective energy labelling** of appliances, office and commercial equipment and buildings is almost a pre-condition to an effective ESCos market, to ensure decision-makers have information on a wide range of options for reducing energy and emissions
- **Development of standard contracts and standard packages of measures** would enable cost reduction by energy service providers, and provide more surety for customers (whether households or local authorities) that they were doing the right thing.
- DTi's proposed **low carbon buildings programme** could examine the benefits of delivering support via ESCos
- **Smart metering and billing** offer household and business consumers better information about, and control over, their energy use, leading to both financial savings and lower CO_2 emissions. The simplest form of smart metering is a display meter, which allows consumers to monitor consumption in money terms rather than kWh. In 2001, the Smart Metering Working Group found that smart meters alone could deliver reductions in domestic fuel bills. Informative billing could mean getting a bill once a month, based on monthly readings (rather than estimates once a quarter and a requirement to read meters only once every two years). Bills could include a comparison of this months consumption against this month last year, and comparison of this household against similar equivalent households, with suggestions for action. Informative billing can save 5-10% of energy consumption. Smart meters and informative bills should be an integral part of any energy services offering, to domestic and commercial customers.
- A **micro-generation commitment**: to dramatically increase microgeneration installations, helping to bring down costs whilst encouraging the development of energy services. This would be a step on from the existing Energy Efficiency Commitment, boosting energy services through the installation of microgeneration. An

option is a closed loop option, whereby energy suppliers are obliged to fund the costs of installed microgeneration technologies through energy service contracts with their customers, leading to simultaneous installation of energy efficiency measures and action on smart metering.

- Extending **emission trading** further into the business sector (SMEs etc) and into the domestic sector, for example through the introduction of per capita annual personal allowances for carbon (sometimes called Domestic Tradable Quotas), as an extension of current emissions trading schemes. This should be considered a serious policy option for the period post-2010. A comprehensive 'cap and trade' scheme for carbon covering the whole economy would help to stimulate the markets for energy efficiency and for microgeneration technologies, as individuals would for the first time be encouraged to reduce their carbon impact directly. However, for the cost of adoption to be kept to a minimum, investment is required now to ensure that the cost of carbon reduction technologies continues to fall, and that supply chains and a skills base are established to help meet demand.
- There is a question as to whether the current supply market is effectively closed to **new market entrants**. It would be very difficult for large retailers (e.g. TESCO) or large oil and gas business (e.g. BP) to enter the UK supplier market simply because the current supply business model needs a large customer base to operate. This is also a barrier to the development of energy services companies. The regulator has addressed similar issues in relation to competition in the generation market and took the controversial step of forcing divestment to create new market players. In Denmark, there are very many market players, often on a municipal basis or a community model.
- There is an issue for **small companies trying to sell to customers**. the license-exempt supply regime confers little or no benefit to small operators. Licensed suppliers are supposed to offer services to exempt suppliers as a condition of their license but the extent to which they do is limited. Defra is understood to be looking at this issue at present.

Annex B: The Status of Energy Services in G8 countries and the EU

1.1 The Status of Energy Services in G8 countries and the EU

A Seminar in November 2005 hosted by the UK on behalf of G8 reached conclusions similar to UK seminar, namely that there is an active market, with Germany and Austria in the lead. Across Europe, there is a huge potential for further savings to be delivered through ESCos[24].

The European market for ESCos

- Most ESCos have been founded either by large companies or as subsidiaries of large companies (equipment manufacturers, facility management companies, kit manufacturers or energy utilities).
- Objectives vary from selling energy, retaining a large energy customer, or financing sale of their kit.
- Almost all ESCo projects in Europe have been based on the shared savings concept. Chauffage (supply of energy) contracts are also commonly used. The guaranteed savings concept has been used rarely. There is some "build, own, operate, transfer" of ownership to the site (BOOT).
- ESCos have so far provided financing themselves (mainly in France, Italy and Germany); only recently have more ESCos started using third party finance (e.g. banks). More third party finance is needed, otherwise investment is limited by company capital availability
- The majority of ESCo projects in Europe have been undertaken in the public sector.
- The recent energy industry restructuring has stimulated projects in CHP for large commercial centres, hospitals, and industrial facilities; it has also triggered public lighting projects, where municipalities tendered lighting operation, including the supply of electricity. The majority of ESCos' projects in EU MS have focused on co-generation; public lighting; HVAC and EMS.
- Germany and Austria are the premier markets. In Germany in 2003, there were around 500 ESCos, with a turnover circa 3bn Euro, serving around 120,000 sites, estimated to be around 9% of the potential. Investment is led by public buildings as a way of outsourcing. Berlin alone has 1,500 buildings served by an ESCo. The total guaranteed savings in Berlin is € 9,5 million p.a. (25,4%), with a total CO_2-reduction (1993-2003) in excess of 145,000 tonnes.

24 http://host5.oliveserver.co.uk/df/ee/assets/breakout/session_1_breakout_groups_1_&_2_detailed_report.pdf

This required a total Investment of €40.3 million[25]. Austria has 35 companies with 4-6% of service sector buildings.
- France is a mature market dominated by a few large companies.
- Hungary has 29 companies, and 66% of customers are municipalities.
- In Denmark there are few ESCos, though there are a lot of municipal energy companies running CHP on district heating and a great number of Government energy efficiency programmes (in other words ESCos are only one way of achieving investment).
- In Holland Energy management is common but there is almost no energy performance contracting.

From Bertoldi and Rezessy 2005 and Bertoldi 2005b[26].

Bertoldi and Rezessy viewed the UK as a leader in Europe in the development of the ESCo market. However, in recent years, with the implementation of new electricity trading arrangements in 2002 and falling electricity prices, together with rising gas prices, many indigenous ESCo companies have withdrawn from the market. Those companies that remain are predominantly French, Danish or Swedish in origin.

One route for dissemination of learning is through the European OPET network[27]. OPET develops
- Country profiles
- Best practice and case studies
- benchmarks of EPC projects
- Tools & guidelines
- Financing and contract approaches
- and Monitoring of EPC projects and contracts

Eurocontract is a network of experts and offers information and access to well developed projects, tools and instruments for Energy Performance Contracting[28].

25 http://host5.oliveserver.co.uk/df/ee/assets/presentations/ralf_goldman.pdf and www.berliner-e-agentur.de

26 From Bertoldi and Rezessy 2005 and http://host5.oliveserver.co.uk/df/ee/assets/presentations/paolo_bertoldi.pdf

27 http://www.opet-building-epc-lcca.net/cms/_wcms_editor/front_content.php?idcat=13

28 www.eurocontract.net

1.2 The Energy End-Use and Energy Services Directive

The Energy End-Use and Energy Services Directive, which was under development in the Commission for a number of years, was agreed in the closing days of the UK presidency[29], and will be adopted in Spring 2006. The Directive sets a target for energy end-use savings of 1% per year, cumulative, for 9 years, (from 2008 until 2017). The Directive covers households; agriculture; commercial and public sectors; as well as (with some exceptions) transport and industry. All types of energy will be taken into account, from electricity and natural gas to district heating and cooling, heating fuel, transport fuels, coal, and biomass. The practical implications of the Directive are that it requires much more intelligent metering and billing, and one way of implementing it may be through white certificates, allowing trading of energy savings across a number of sectors. Both these measures would encourage development of energy services.

29 http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/05/1575&format=HTML&aged=0&language=EN&guiLanguage=en, and MEMO/05/476