

## Introduction |

This case study sets out how a relatively small Borough Council in the home counties has established a wide array of renewable energy projects by setting-up an Energy and Environmental Service Company (EESCO). This approach has brought about financial savings for the council, residents and businesses alike and has led to considerable reductions in energy consumption and carbon dioxide emissions.

## Local Authority role |

Woking Borough Council has implemented a series of sustainable and renewable energy projects, including the UK's first small-scale combined heat and power (CHP) heating and heat fired absorption cooling system, the first local authority private wire (direct supply to some Council owned housing and town centre businesses) residential CHP and renewable energy systems, the first local sustainable community energy system, the first commercially operating fuel cell CHP system and the first public/private joint venture Energy Services Company.

The council set up an Energy and Environmental Service Company (EESCO) - Thamesway Ltd - to capitalise on its intellectual property in small scale community CHP to enable large scale district CHP to be implemented, primarily with private finance.

The purpose of Thamesway is to enter into public/private joint ventures to deliver its energy and environmental strategies and targets on:  
heating, cooling, lighting, tackling fuel poverty, waste, water and green transport.

## Context |

Due to the uncertainty of the legal issues surrounding public/private partnerships the Council received £25,000 from EST to explore whether it was legally possible for local authorities to participate in energy service companies. Following leading counsel's opinion and discussions with the DETR and the DTI, the Council formed Thamesway Ltd, its wholly owned EESCO, structured to comply with the legal advice. Thamesway Ltd has set up an unregulated public/private joint venture Energy Services Company called Thamesway Energy Ltd.

Thamesway, as a local authority company, is still subject to central government capital controls but the public/private joint venture allows Thamesway Energy to escape capital controls that would be imposed on a purely local government company. This means they can implement large scale projects, primarily with private finance.

In 2002, the Council's original Energy Efficiency Policy was embedded within the Climate Change Strategy for Woking, not just for Council buildings and transport but for the Borough as a whole, shifting the focus from energy savings in kWh's to savings in tonnes of CO<sub>2</sub> emissions as well as adapting to Climate Change.



Photo 1.

Renewable powered  
street lighting in Woking

## Process/partners |

Thameswey Energy Ltd originally brought together the local authority with a Danish energy and environmental foundation Hedeselskabet Miljo og Energi A/S via another Danish company; ESCO International A/S. Since then the Hedeselskabet management has gone into management with another Danish company called Schouw, forming a partnership called Xergi. Thameswey Energy Ltd.'s projects are financed with shareholding capital and loan finance. Thameswey Limited is a wholly owned Woking Borough Council energy and environmental services company. It, in turn, has 90% ownership of Thameswey Energy Limited. The remaining 10% is owned by Xergi.

However, the intellectual property remains with the council and Thameswey Energy has been incorporated with a minority shareholders agreement in addition to the normal memorandum of association, articles of association and shareholders agreements

Thameswey designs, finances, builds and operates local community energy systems for both new and existing developments. Thameswey already owns and operates a number of local community energy systems on private wire district or distributed energy networks in Woking. These include the Woking Town Centre and Woking Park district energy systems as well as a number of residential local community energy systems around the Borough.

## Technologies covered |

Woking Borough Council has installed a wide range of sustainable energy measures including CHP, a fuel cell, photovoltaics, thermal storage and heat-fired absorption cooling technologies.



**Photo 2.**

One of Woking's CHP plants

**Photo 3.**

Local leisure centre using fuel cell technology



## Success criteria/outputs |

The key target from this is to achieve an 80% reduction in Woking's CO<sub>2</sub> equivalent emissions by 2050, in line with the Royal Commission on Environmental Pollution's targets.

**Woking Borough achieved the following energy and emissions savings over the 15 years from 1991 to 2006 within its own buildings:**

● Energy Consumption Savings (2006)	52%
● CO <sub>2</sub> emission reductions (2006)	82%
● Sustainable Energy Self Generation (2005)	82%
● Renewable Energy Self Generation (2005)	11%

Thamesway Energy's schemes include the town centre private wire CHP/absorption cooling district energy system. Using private wires enables electricity to be sold directly to the customer and avoids transmission and distribution losses through the national grid/distribution networks. The project comprises 1.46 MWe of CHP, 1.4 MW of heat-fired absorption cooling and 163m<sup>3</sup> of thermal storage distributed over six building complexes in Woking town centre. Buildings are interconnected with heat and chilled mains and high voltage/low voltage private wire networks. Due to the mixed technology community energy approach, the scheme satisfies its own electrical demands and exports surplus power over the public wires to sheltered housing residents and other local authority buildings. This is achieved via an enabling agreement for exempt supplier operation, which also receives the benefit of exemption from the Climate Change Levy. In the event of a National Grid or local distribution network power cut, the system continues to operate in 'island' mode via a black start generator.

## Associated costs and savings |

Savings of nearly £4.9 million have been achieved by the Council, with further savings for householders and businesses in the Borough.

### **Implications for Developers working with Thamesway:**

The ESCO should be able to finance most of the sustainable energy development with financial contributions from the developer/sub developers and/or owners/occupiers. This will offset expenditure on conventional "brown" energy, infrastructure, connection, boilers and other primary energy plant. Although it is possible, for the ESCO to finance the sustainable energy measures with the avoided cost contributions from the developer, it would be prudent for the developer to budget for any capital shortfall between the ESCO's investment and the actual cost of the measures. A detailed feasibility study should determine these costs and investments.

### **Implications for the Owner/Occupier:**

For non-residential customers, the energy services contract with the ESCO is individual and bespoke similar to the deregulated energy market. However other issues are taken into account such as avoided cost of primary energy plant, operation, maintenance and other avoided costs.

## Project/spin-offs |

Thameswey Energy designs, finances, builds and operates sustainable energy services both within and outside the Borough of Woking and is working on one such project in Milton Keynes. It has taken on the running of the existing Woking Borough Council energy efficiency schemes and plans to develop and expand them on behalf of the council.

## Change to working patterns/partnerships |

Locally supplied combined heat and power (CHP) can provide efficiencies of up to 90%, in comparison with the central power stations/national grid system which can be as little as 22% efficient at the point of use due to thermal energy wasted at power stations and losses in the grid.

Woking has avoided penalty costs by utilising private wire networks and a local trading system. However the existing regulatory regime limits the size of the local sustainable energy system and also the number of domestic customers that can be supplied with low cost green energy. This in turn limits the number of fuel poor households which could be provided with affordable energy. Locally embedded generation could supply all of the country's energy needs, and Woking argues that what is needed is a progressive move towards this goal as part of a more sustainable energy supply. A key easy step for government would be to increase the supply limits for local exempt suppliers to supply more customers, particularly domestic customers, with local sustainable and renewable energy.

## Contact, sources of advice |

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### Environmental information:

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- Printed using digital print technology which eliminates the use of aluminium plates
- Printed on Era Silk FSC 75% recycled paper. REGENSW March 2007