

Summary of main findings from Wiltshire Renewable Energy Study

Renewable Energy Potential in Wiltshire

1. Wiltshire Council commissioned Camco to undertake a study on the technical and practical potential (i.e. realistic potential once a number of constraints have been considered) for renewable energy technology across Wiltshire. The technologies considered include:
 - Large Scale Wind;
 - Biomass;
 - Hydropower;
 - Solar Arrays; and
 - Micro-renewables.

The potential for each is considered in turn below following which consideration is given to the difference between small and large scale wind potential and a summary of other key findings of the study provided.

Large scale wind

2. The technical potential for large scale wind power (taken to be 2.5 MW turbines) in Wiltshire is for over 1800 MW which could contribute as much as 281% of the current electricity consumption of the county.
3. Two scenarios have been developed which demonstrate that delivering between 160 and 480 MW, this is between 15 and 29% of the current electricity demand in Wiltshire, could be practical.

Biomass

4. The potential for energy from biomass has been assessed. This is considered to include crop residues, animal manures, energy crops, residues from forestry operations, sawmill co-products, municipal solid waste, commercial and industrial waste wood and commercial and industrial food waste.
5. The practical potential for renewable energy derived from biomass is calculated to be capable of providing 11.7% of the projected energy demand for Wiltshire for 2020.

Hydropower

6. The technical potential for hydropower in Wiltshire is assessed to be 5.8 MW which could contribute 2% of the current electricity demand for the county.
7. Two scenarios developed show that between 1.2 and 2.9 MW, between 0.3 and 0.7% of the current electricity demand, could be practical to deliver.

Solar arrays

8. The potential for renewable energy derived from solar PV arrays in Wiltshire is large, and is really only limited by the area of land covered by panels. To meet 5% of the projected electricity demand for Wiltshire by 2025, 3.6 km² of land would need to be covered by panels. This equates to approximately 0.11% of the land area of Wiltshire and would have a capacity of around 143 MW.

Micro-renewables

9. The technical potential for micro-renewables in Wiltshire is large, see below. However, it is useful to consider the number of installations that would be required to meet these figures.
 - Solar PV = 165 MW (1 million m² of PV panels)
 - Solar Thermal = 127 MW (60,000 installations)
 - Heat Pumps = 1348 MW
 - Small Wind (6 kW turbine) = 308 MW (51,000 installations)
10. However, the technical potential does not take account of a large number of technical, economic and supply chain constraints that could significantly limit uptake. An uptake scenario has been developed, as for other technologies, and this concludes that 1.2% of future energy demand (0.4% of future electricity demand) could be realistically derived from micro-renewables installed on existing buildings in Wiltshire.
11. The potential for micro-renewables in Wiltshire is significant. However, two factors are important: firstly, a large number of installations are needed; and secondly, the total contribution to the overall Wiltshire renewable energy target from micro-renewables is likely to be small.
12. It should be stressed that Micro-renewables can also be used to generate income, through financial incentives and to help reduce fuel poverty.

Large scale vs. small scale wind power

13. There is a significant difference in terms of electricity output based on the height and capacity of a turbine and small scale turbines have a far lower output than large turbines.
14. To deliver the two uptake scenarios outlined above for large scale wind (2.5 MW turbines), 64 turbines would be needed to deliver 160 MW output or 192 turbines for 480 MW of electricity.
15. To produce the technical potential identified for small scale wind (6 kW turbines) of 308 MW output, 51,000 turbines would be needed.
16. No assumptions are made about the level of future wind power in Wiltshire that may be considered appropriate. These figures are simply presented for illustrative purposes.

Summary of Other Key Findings

17. The study has also developed energy opportunity maps for each of the Wiltshire Towns. These illustrate any identified opportunities for renewable energy technologies and include heat mapping of existing buildings. An understanding of heat and energy demand is useful to help inform the establishment of district heat or energy networks.
18. A wider range of recommendations are made to inform the Wiltshire Core Strategy, including the following recommendations for areas of possible future policy:
 - (i) Indicate the types of low carbon energy systems that could be incorporated into new development and encourage developers to install communal systems, where this is viable.

- (ii) Encourage housing developers to work with renewable energy developers e.g. wind and biomass, and with expert Energy Service Companies (ESCOs) to design, finance and build energy supply systems within their developments.
- (iii) Ensure that master plans for key growth sites contain comprehensive zero carbon methodologies addressing buildings and low carbon infrastructure, putting the onus on developers to prove why zero carbon standards are not possible if this is the claim.
- (iv) Develop policies to maximise the delivery of decentralised, renewable and low carbon technologies within new development where this is viable.
- (v) Capture all low carbon energy installations in the Council's Annual Monitoring Report to monitor effectiveness of policy implementation.
- (vi) In line with the emerging but undefined national mechanism for 'off-site' allowable solutions, develop rules to ensure that 'off site' renewables are additional to any commercial renewable energy developments that would occur anyway.
- (vii) Use the renewable energy study and subsequent work to highlight to developers the key renewable energy sources in the area and how these relate to key development sites.