

**MEETING : ENVIRONMENT STRATEGIC PANEL**  
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## **EA TECHNOLOGY STUDY: SUITABILITY OF RENEWABLE ENERGY TECHNOLOGIES FOR THE ESTABLISHMENT OF A NEW RENEWABLE ENERGY POLICY FOR CHESHIRE**

### **INTRODUCTION**

1 The purpose of this report is to primarily outline the content of a Study into the 'Suitability of Renewable Energy Technologies for the establishment of a new renewable energy policy for Cheshire'. The Study was produced in April 2004 by EA Technology, an independent technology Services Company with extensive experience of technical consultancy related to electricity distribution networks and analysis of technical information.

2 Policy GEN3 within the Cheshire 2016: Draft Structure Plan Alteration aims to encourage at least 10% on site generation of energy demand from renewable sources. This is consistent with Planning Policy Statement 22 and Regional Planning Guidance (RPG). Cheshire County Council commissioned the preparation of the EA Technology Study in order to provide background information and justification for the new Structure Plan Policy for Renewable Energy Generation. It considers the renewable energy technologies which can (economically and practically) be included in major built development in Cheshire, and the sizes and types of development for which these technologies are most appropriate.

3 The intended audience of the report is the planning community in Cheshire at both the County and District level. The report can also be used proactively by developers to encourage greater uptake of renewables.

### **SUMMARY OF STUDY**

4 The Study divides the period of consideration of available renewable energy technologies into three equal parts: 2004, up to 2010 and up to 2016 in line with the Structure Plan. The renewable energy technologies are considered under five main sections: biomass, geothermal, solar/PV, water and wind. Two technologies which may be considered as renewable energy were considered under two further main sections: energy from waste and Combined Heat and Power (CHP). Within each of the technology sections, and within each of their sub-sections, there are tables showing expert opinion on the approximate year of availability (2004, 2010 or 2016), the economic viability and, where applicable, the approximate size and type of development.

5 The tables detailed in Appendix 1 of this report summarise whether the technologies are available and applicable in 2004, if not, whether this is likely by 2010 or by 2016 for different types of development. The tables also contain estimates of

economic viability for the different types of technology. Passive solar design is considered economically viable in 2004 in all new development, along with small scale hydro if the site is appropriate. Wind power and Mini-Combined Heat and Power technology is also considered economically viable in 2004 dependent upon the type of development.

5 The conclusions drawn from the Study contain justification for the requirement for a minimum percentage of predicted energy requirements to be generated from on-site renewable sources within the Cheshire 2016 Structure Plan:

- In 2004, the current cost of renewables remains a potential barrier with the potential to achieve around 5% on site generation. This figure could increase to 10% if a specific policy is required. The rapid change in the energy market and renewables sector may change the circumstances to enable greater growth in this current figure.
- By 2010, if excluding CHP but including some incentives, then 5% is definitely a realistic figure to target and to expect to achieve. If including micro-CHP, then for domestic properties 10% is entirely realistic.
- By 2016, 10% is definitely achievable and therefore a feasible target.

## **STRATEGIC APPROACH TO RENEWABLE ENERGY PROVISION IN CHESHIRE**

6 Current UK Energy Policy, as set out in the 2003 Energy White Paper contains challenging targets towards more sustainable energy systems. A mechanism for implementing targets for renewables in line with RPG and the impending North West Sustainable Energy Strategy will need to be considered at the sub regional level. It is therefore proposed that a future work programme should carry out work on how various renewable technologies can meet the targets, and produce Supplementary Planning Guidance as necessary.

## **CONCLUSION**

7 The Study confirms that 10% on-site generation of energy demand from renewable sources as contained within the Cheshire 2016: Draft Structure Plan Alteration, is a realistic target. In addition to the environmental benefits for Cheshire, a more proactive renewable energy policy may encourage local growth and attract new industry to the area. The development of further work on sub regional provision would provide an effective mechanism for achieving national and regional renewable energy targets in a Cheshire context.

**RECOMMENDED: That the Executive Member for the Environment be advised to:**

- (1) note the implications of the EA Technology Report (April 2004) Suitability of Renewable Energy Technologies for the Establishment of a New Renewable Energy Policy for Cheshire; and**
- (2) endorse a more detailed work programme assessing the delivery of sustainable energy in Cheshire, with Supplementary Planning Guidance as necessary.**

## **REASON FOR RECOMMENDATIONS:**

To meet legislative requirements for the County Council to produce and regularly review its Structure Plan and to ensure that the plan continues to provide a robust, effective and relevant strategic planning framework and guidance for the County and to ensure that any future development frameworks can be supported.

Local Member	All
Background Documents	EA Technology Report (April 2004) Suitability of Renewable Energy Technologies for the Establishment of a New Renewable Energy Policy for Cheshire
Available for Inspection at	Backford Hall, Backford, Chester

## 1 Summary tables for renewable energy technologies

The summary tables cover:

- whether the technologies are available and applicable in 2004 or, if not, whether this is likely by 2010 or by 2016)
  - the symbol “-” represents “not available in the time frame” or “not applicable”
- estimates of economic viability for different types of development are included, where:
  - E = economically viable by the stated date
  - e = marginal economic viability by given date
  - neither E nor e signifies “not economically viable within the time frame”
- initial division into six types of development (three columns for each table), and, where applicable, appropriate size or type of development within each table cell

**TABLE 12a: Expert opinion on renewable energy availability and economic viability for different types of development by 2004, 2010, 2016 (a) domestic, commercial, light industry**

	<b>C3 Houses</b>	<b>A1-A3 Shops, etc, petrol stations B1a Offices C1 Hotels C2 Schools, hospitals D1 Public halls, etc D2 Sports halls, etc</b>	<b>B1b Laboratories, etc B1c Light industry B8 Warehouses, etc</b>
<b>Biomass</b>	2004 (wood for fuel) e	2004-2016 dependant upon supply chain developments in biomass fuel 2016 e	2004-2016 dependant upon supply chain developments in biomass fuel 2010 e
<b>Geothermal</b>	2004 (and increasing gradually) (eg well-insulated properties with low heat demand) e (or E if no gas supply) (E in 2016)	2004 (and increasing gradually) (for hotels, swim-pools, 24-hour loads) e (or E if no gas supply) (E in 2016)	-
<b>Solar/PV</b>			
<b>- Photovoltaics (PV)</b>	2004 (and increasing) <sup>1</sup> (e for terraced houses with building-integrated PV on south-facing roofs )	2004 (and increasing) <sup>1</sup> (eg high profile offices and sports stadiums)	2004 (and increasing) <sup>1</sup> (e in 2010 for large-scale new-build)
<b>- Solar water heating</b>	2004 (and increasing) e (eg to replace electric water heating)	2004 (and increasing) e (for hotels, swim-pools, 24-hour loads)	2004 e
<b>- Passive solar design</b>	2004 E	2004 E	2004 E
<b>Water</b>			
<b>- Small-scale hydro</b>	2004 E (site-dependent)	2004 E (if site appropriate)	2004 E (if site appropriate)
<b>- Tidal/wave</b>	-	-	-
<b>Wind</b>	2004 (and increasing) e	2004 (and increasing) e	2004 (and increasing) e
<b>Waste, eg anaerobic digestion, landfill gas</b>	2016 e	2004 e (eg shops, hotels, schools) <sup>2</sup>	2004 E <sup>2</sup>
<b>CHP (mini/micro)</b>			
<b>- Mini-CHP (typically &lt;250kWe)</b>	-	2004 (multi-residential, shops, hotels, hospitals, swim-pools <i>not offices, schools, public halls</i> ) E (24-hour applications) or e (12-hour application)	2004 e (E in 2010)
<b>- Micro-CHP (typically ~1kWe)</b>	2010* (and increasing to 2016) E/e <sup>3</sup>	2010 for shops (and increasing to 2016) E (for 24-hour applications) or e (12-hour applications)	-

<sup>1</sup> PV is not generally economically viable, but innovators will install PV anyway (and given that Cheshire is the wealthiest county per capita in the UK, this will greatly increase the number of innovators in the county above the national average).

<sup>2</sup> eg where the plant can sell both heat and electricity (eg industrial process heat, district heating, glasshouses)

<sup>3</sup> currently at market trial stage (trials of Stirling engine micro-CHP units in houses have been carried out in Chester area by EA Technology)

**TABLE 12b: Expert opinion on renewable energy availability and economic viability for different types of development by 2004, 2010, 2016 (b) general industry, agricultural, waste**

	<b>B2 Industry, general</b> <b>- Chemical</b> <b>- Minerals</b>	<b>- Agricultural</b> <b>- Horticultural</b>	<b>- Waste sites</b>
<b>Biomass</b>	2010 e (eg energy-intensive 24-hour type, or where the fuel is a by-product of the process)	2004 (increasing 2010, increasing again 2016) E (eg glasshouses)	-
<b>Geothermal</b>	-	2004 e/E (frost-free glasshouses)	-
<b>Solar/PV</b>			
<b>- Photovoltaics (PV)</b>	2004 (and increasing) <sup>1</sup> (e in 2010 for large-scale new-build)	2004 <sup>1</sup> (e in 2010 for large-scale new-build)	-
<b>- Solar water heating</b>	2004 e	2004 e	-
<b>- Passive solar design</b>	2004 E	2004 E (eg glasshouses)	2004 (eg for heating ground to increase digestion) E
<b>Water</b>			
<b>- Small-scale hydro</b>	2004 E/e (depending on application)	2004 E/e (depending on application)	-
<b>- Tidal/wave</b>	-	-	-
<b>Wind</b>	2004 (and increasing) E	2004 (and increasing) E	2004 (and increasing) E
<b>Waste, eg anaerobic digestion, landfill gas</b>	2004 E/e (eg waste food, tyres, plastics) <sup>2</sup>	2004 E/e <sup>2</sup>	2004 E <sup>2</sup>
<b>CHP (mini/micro)</b>			
<b>- Mini-CHP (typically &lt;250kWe)</b>	2004 E (24-hour applications) or e (when not 24-hours)	2004 (and increasing) E (24-hour applications) or e (when not 24-hours)	2004 (eg running on biogas for district heating) e
<b>- Micro-CHP (typically ~1kWe)</b>	-	-	-

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<sup>2</sup> eg where the plant can sell both heat and electricity (eg industrial process heat, district heating, glasshouses)