



Renewable Power Generation

EcoEnergy provides consultancy services to companies and land/property owners wishing to generate sustainable, renewable energy. The aim of this service is to ascertain the viability of producing renewable power at sites throughout the UK.

Through feasibility studies and by assessing different renewable technologies, EcoEnergy will conclude if a property or site will be suitable to install renewable energy systems and will advise on appropriate renewable energy generation products for each suitable site.

EcoEnergy will advise and liaise on each stage of the energy plans including pre, initial and final feasibility studies, and gathering supporting information for the planning application stage.

EcoEnergy Consultancy focus on areas, issues and categories such as:-

- Site assessment
- Renewable energy technology assessment
- Feasibility studies
- Photomontage images
- Financial planning
- Environmental Impact Assessment eg ecology, noise, landscape, etc
- Planning applications & related issues
- Project management of installations, maintenance, decommissions
- Facilities management of renewables

Overall, EcoEnergy will ensure a smooth process and project manage the full process from start to finish.



Overview



In order that the benefits of renewable energy generation can be assessed, EcoEnergy completes an in-depth investigation and pre-construction process so to ascertain the feasibility of proposed sustainable energy developments.

EcoEnergy will advise and liaise on each stage of the proposed energy plans including pre & initial feasibility and final design feasibility studies, and gathering supporting information for the planning application stage. Each process is designed to minimise the costs involved collating the supporting information.

Overall, EcoEnergy will project manage the full process from start to finish.

Pre-feasibility

A pre-feasibility study determines whether there is any possibility of development. Areas of investigation include, but are not exclusive to, proximity to housing, airports, areas of natural interest, power consumption patterns, electricity connection capacity etc. If the study results in no insurmountable barriers being met, a feasibility study can commence.

Feasibility study

The aim of the feasibility study is detail several aspects of the pre-construction process it also creates a forward looking checklist for the project as a whole. The pre-construction process includes such tasks as:

- Wind resource estimation
- Profiling of power consumption to calculate the economics of the project



Feasibility study (continued)

- Determination of optimum size and location for the renewable energy resources
- Examination of the effects to local stakeholders such as air traffic agencies, local business and domestic community
- A pre-planning consultation with the local planning authority eg the environmental impact assessment and community consultation discussions
- Examination of likely effects to local ecology
- Examination of electrical connection, access to the site and geology
- Estimation of project costs
- Definition of project milestones
- Presentation of all pertinent aspects including costs, risks and benefits.

Detailed Design & Planning

EcoEnergy will have the responsibility to undertake the process for the detailed design of the turbine installation & the planning application submission. The detailed design process (in brief) includes the following tasks, where applicable:

- Undertake a geotechnical survey to enable structural calculations for the foundation design
- Produce drawings of the access roads, foundations and cable runs to the point of connection
- Apply for permission to grid connect and incorporate their requirements for circuit protection into the electrical systems design
- Consider a number of other requirements such as security, lightning protection, maintenance access, etc...

A planning application is produced which, if necessary, may include:

- The management of the production of an environmental impact assessment (if required) and
- A community consultation process
- Visual impact analysis
- Ecological & Environmental impact assessments
- Cumulative effects etc...



Construction

A successful application signals the start of the construction phase of the project.

EcoEnergy will plan the phased task of installing and connecting any renewable energy resource. Typical timescales are dependant on the technologies used.

Maintenance

Any renewable energy generation technology requires regular maintenance to ensure safe operation and service life is achieved. EcoEnergy will ensure full maintenance contracts are negotiated and in place for the lifetime of the projects.



Renewable & Sustainable Energy

Financially viable sustainable and renewable energy sources, among others, include:-

- Onshore Wind
- Biomass
- Geothermal
- Solar

Onshore Wind

Onshore wind power involves harnessing the energy of moving air (wind), on appropriate locations throughout the UK mainland.

Wind turbines are available in a range of sizes, from small battery charging units with rotor diameters of less than a metre to very large turbines with rotor diameters greater than 70 metres rated at several megawatts.

Wind generation produces no carbon emissions and every unit of energy generated by wind doesn't need to be generated by carbon-producing sources.

Generating electricity using wind power has the potential to reduce the amount of electricity from fossil fuel power stations, thus reducing emissions of harmful gases such as carbon dioxide (CO₂), sulphur dioxide (SO₂) and nitrogen oxides (NO_x).

Biomass

The term 'biomass' means any plant-derived organic matter available on a renewable basis, including:



Biomass (continued)

- Dedicated energy crops and trees;
- Agricultural food and feed crops;
- Agricultural crop wastes and residues;
- Wood wastes and residues;
- Aquatic plants; and
- Animal wastes.

Converting biomass for electrical generation is often called 'bio-energy', although different organisations and countries interchange the terms biomass and bio-energy.

Today, biomass usually involves large-scale uses and aims to substitute for conventional fossil fuel energy sources. It includes forest wood and agricultural residues, urban wastes and biogas and energy crops.

Geothermal

The technology behind geothermal involves capturing the thermal energy stored in the earth's interior for use either directly for heating or indirectly in electricity production.

The constant up-flow of heat from the earth's red-hot core makes for a rich source of geothermal energy. In certain geological areas, especially at margins of continental plates, the heat is shallow enough for us to access and use for our energy needs.

Products like ground source heat pumps use a buried ground loop which transfers heat from the ground into a building to provide space heating and, in some cases, to pre-heat domestic hot water. As well as ground source heat pumps, air source and water source heat pumps are also available.



Solar

Solar energy involves capturing and harnessing the sun's energy. This can be done in two ways: directly, using the heat and light it carries with it; or by converting its heat and light into other forms of energy, such as electricity.

Solar PV (photovoltaic) uses energy from the sun to create electricity to run appliances and lighting.

PV requires only daylight, not direct sunlight to generate electricity and so can still generate some power on a cloudy day.

Solar water heating systems use heat from the sun to work alongside your conventional water heater. The technology is well developed with a large choice of equipment to suit many applications.



Potential issues that may be examined

A selection of major issues that could be investigated include:

- Safety Aspects:

possible (but rare) danger to human or animal life / the possibility of attracting lightning strikes. Comply with series of international, European and British Standards

- Electro-magnetic Interference:

any interference with broadcast communications, communication systems and signals

- Aircraft, Airports & Technical Sites:

implications for the major airports, technical sites (civil and military), flight paths of aircraft and airport radar and associated communications systems

- Military Low Flying

- Television Reception

- Proximity to Roads and Railways

- Shadow Flicker:

assessment of shadows: under certain combinations of geographical position, time of day and time of year, the sun may pass behind the rotor and cast a shadow over neighbouring properties

- Noise

- Power Lines



Potential issues that may be examined (continued)

- Landscape:

proximity to areas valued for their international or national landscape and nature conservation interest / Areas of Great Landscape Value and Regional Parks

- Visual Impact:

the visual effect will be dependent on the distance over which a renewable energy resource may be viewed

- Birds / Habitats:

analysis of habitats of particular wildlife species, the nature of bird flight and any relevant seasonal patterns

- Cumulative Effects:

the assessment of the full result of all issues & their impact.