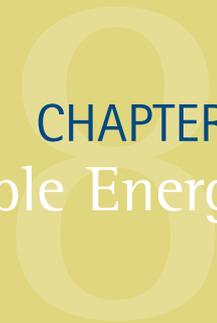




CHAPTER 8

Energy Efficiency, and Renewable Energy



8 ENERGY EFFICIENCY AND RENEWABLE ENERGY

8.1 Background

The development of renewable energy sources is a priority at National and European level for both environmental and energy policy reasons. The National Development Plan set out policies for the provision of electricity from renewable and indigenous sources. These policies are in line with official European and United Nations targets for reducing dependency on fossil fuels and emissions of greenhouse gases. The Green Paper on Sustainable Energy set a target to deliver 500 Megawatts of additional electricity generating capacity from renewable sources between 2000 - 2005.

Kildare's energy supply is provided from a number of sources including the Liffey and Poulaphouca hydroelectric station and a natural gas pipeline from Cork to Dublin which passes through the east of the county. Due to increased energy requirements, this electricity supply must be augmented as required.

This section addresses the following types of renewable energy:

- (A) Wind Energy
- (B) Hydro-Energy
- (C) Solar Energy
- (D) Bioenergy

8.2 Goal

To support increased energy supply, energy efficiency and the development of renewable energy sources at optimum locations.

8.3 Objectives

- (1) To ensure energy supply and distribution in the county is expanded and upgraded as necessary to support an efficient and vibrant economy.
- (2) To support national policy for the provision of new and innovative sources of renewable energy and recognise that the development of such technology is a key component of environmental policy.
- (3) To ensure that the location of renewable energy structures should minimise and/or mitigate any adverse visual impacts on the built or natural environment.
- (4) To improve the energy efficiency of the existing building stock, and to promote energy conservation in the design and development of all new buildings in the county.

8.4 Sources of Renewable Energy

It is important to recognise the range of new and developing technologies that can contribute to minimising greenhouse gas emissions and to securing a proportion of our energy needs from indigenous and renewable sources. Renewable energy comes from natural, inexhaustible sources such as the sun (solar), wind, falling water (hydro), oceans, plants (biomass and biofuels) and the earth (geothermal and heat pumps). Renewable energy can also be derived from a range of waste products such as sewage, municipal and agricultural waste.

8.4.1 General Policy statement

It is the policy of the Council:

- EN 1 To support infrastructural renewal and development of electricity networks in the county, subject to amenity requirements.
- EN 2 To support national and international initiatives for limiting emissions of greenhouse gases through energy efficiency and the development of renewable energy sources which makes use of the natural resources of the county in an environmentally acceptable manner, where it is consistent with the proper planning and sustainable development of the area.
- EN 3 To adopt and maintain energy conservation measures within the Council's own developments and to encourage developers to adopt measures to enhance energy conservation through building design.
- EN 4 To ensure that development, particularly high tension power lines will be restricted, and that new high tension lines will not be permitted adjoining existing dwellings, except where no other alternative can be shown to exist.
- EN 5 To locate services, including electricity, telephone and TV cabling underground, where possible, and that existing overhead cables and associated equipment should progressively be located underground with future capacity considered and appropriate ducting put in place.

8.5 (A) Wind Energy

Given the wind energy resources and national targets in Ireland, it is likely to lead to a proliferation of wind farms throughout the country. Having regard to the landscape character areas of the county and to the potential for visual impacts, it is recommended that the Lowland and bogland areas to the north-west of the county have the greatest landscape potential to absorb this type of development.

General Principles

8.5.1 Design and Siting of Wind Farms

The Council will seek to ensure that development of wind farms is sited, so as not to cause a negative impact on the special character and appearance of designated conservation areas, protected structures or sites of archaeological importance.

The visual impact of wind turbines is among the most important considerations to be taken into account. Wind farms are tall and their prominence is emphasised by the movement of the rotors. The form and characteristics of the landscape influence the visual impact of wind farms as illustrated in Figures 8.1 – 8.3.

Fig 8.1 Wind farm development on lowland areas such as boglands



When located in lowland areas, wind farm developments are likely to have a localised visual effect, contained by surrounding undulating topography and partially screened by vegetation. Consequently, the zone of visual influence is limited.

Fig. 8.2 Wind farm development on ridgelines



Due to the prominent location and visibility of skylines from lower elevations, wind farms located on ridgelines are likely to affect the visual integrity of wider areas of the county's landscapes. The zone of visual influence in this case will be significantly larger than when located on hill slopes.

Fig 8.3 Wind farm development on hill slopes



When located on hill slopes, wind farms will present a visual impact on the local landscape. The visibility will be partially screened by occurring topography and vegetation. Consequently, the zone of visual influence is reduced and the impacts on the overall landscape minimised.

Given the nature of wind farms, there are areas that can be identified as unsuitable for wind development, on the basis that they conflict with existing land uses and planning policies, and are therefore excluded from consideration. These areas and the exclusion zones are outlined in Table 8.1 below. The location of wind farm development must also have regard to the Landscape Character Areas of the county identified in chapter 18 and the Scenic Views and Prospects identified in chapter 19 of this plan.

Table 8.1 Exclusion Zones

Exclusion Area	Exclusion Distance (m)
Towns, Villages	1500
National Primary	Subject to a Recommendation from the NRA
National Secondary	Subject to a Recommendation from the NRA
High Voltage Cables	100
Airport Protection Zone	6000
Lakes > 6 Ha	2000
Environmentally/Visually/Vulnerable Areas	No Development

Table 18.6 in Volume 2 illustrates the likely perceptions of landscape impacts of wind farms in different landscape character areas.

Each application will be assessed on its own merits, however it is important that certain design guidelines are adhered to:

- Topographical enclosures and extensive areas of degraded or previously developed lands should be identified for wind farm development to help minimise visual impacts and to harmonise wind turbines with the landscape. Where elevated sites are required, then the location should be selected to minimise the zone of visual influence by avoiding summits and ridgelines and by using side slope locations only.
- The layout and design of the wind farm should directly relate to the key landscape characteristics, for example using a regular grid on regular surfaces such as cutaway bogs and more irregular lines on flowing topography such as foothills.
- The turbines and the landscape need to form a coherent unit and avoid visual confusion, all turbines should be of the same size and proportions, same colour and number of blades and same rotational speed. The spacing of the turbines should be regular so as to give a consistent and repetitive image.
- The use of a small amount of larger diameter turbines is recommended rather than a larger number of smaller turbines.
- In general, matt finishes and neutral colours for turbines and structures are encouraged to minimise their conspicuous nature.

8.5.2 Noise

Noise is the other principal environmental impact associated with wind farms. There are two sources of noise from wind turbines: the mechanical noise from the turbine and the aerodynamic noise from the blades. The former can be considerably reduced by appropriate engineering practice. The aerodynamic noise depends on the rotor speed, which in turn depends on the wind speed.

Measures should be taken to ensure a good acoustical design of turbines, in order to guarantee that there are no significant increases in ambient noise levels in the nearby surroundings, which could affect private properties and wildlife, as well as the tranquillity of the landscape.

8.5.3 Ancillary Developments

Once installed, wind turbines occupy only 1% of the surface area, the access roads to the Wind Farm sites are the principal land disturbance. Where new access roads are required, measures should be taken to ensure minimum disturbance of the proposed site. Cables connecting the wind farm to the national grid should be located underground, where appropriate. Proposals for the restoration of the site after removal of the turbines should be

included with a planning application. Adequate financial security will be required by planning condition to ensure restoration.

8.5.4 Policy Statement

It is the policy of the Council:

- WE 1 To encourage the development of wind energy, in accordance with government policy, having regard to the Landscape Character Areas of the county. It is recommended that the lowland and bogland areas to the northwest of the county have the greatest landscape potential to absorb this type of development, especially where there are already existing electricity powerlines that can be utilised.
- WE 2 To minimise the negative visual and acoustical impact of wind turbines on the environment by ensuring development in appropriate locations which has the potential to absorb this type of development. The restoration of the site after the removal of the turbines is essential and a financial bond may be required.
- WE 3 To have regard to designated conservation areas (SACs, NHAs, SPAs etc), Sites of Archaeological Importance and Protected Structures and to ensure the avoidance or minimisation of any potential adverse impacts of wind farms on the aforementioned. The impact on migratory birds will be assessed in consultation with Birdwatch Ireland and the Development Applications Unit of the DoEHLG.
- WE 4 To ensure that ancillary development such as the construction of new access roads create a minimum disturbance to the proposed site and where possible, cables connecting the wind farm to the national grid should be located underground.
- WE 5 That where developers wish to install wind measurement masts and carry out wind resource analyses, this shall be facilitated through the granting of temporary planning permissions for this purpose.
- WE 6 To require that an application for wind farms shall be accompanied by an Environmental Impact Assessment (EIA) where it meets the thresholds specified in Schedule 5 part 3(i) of the Planning and Development Regulations 2001.
- WE 7 That individual turbines for individual supply (ie. not to feed into the network) will be encouraged at appropriate locations.

8.6 (B) Hydro-Energy

The Council will not permit the use of the canal system, which is designated for tourist and amenity use, for hydro energy, but will encourage the use of rivers, where suitable, within the county for this purpose. However all proposals for hydro-energy must have regard to the free passage of fish.

It is important for hydro schemes to incorporate proposals for landscaping of dam walls and ancillary developments and measures to minimise noise emissions, in order to reduce the overall impact of hydro schemes.

8.6.1 Policy Statement

It is the policy of the Council;

HE 1 That any application for the installation of a hydro electric plant shall require an Environmental Impact Assessment (EIA) where it meets the thresholds specified in Schedule 5 part 3(h) of the Planning and Development Regulations 2001.

HE 2 That proposals for hydro energy installations shall have regard to the free passage of fish and other water based amenity activities. The Council shall have regard to the recommendations of the Eastern Region Fisheries Board and Hydroschemes/ Fish Passages Department of Communications, Marine & Natural Resources in assessing proposals.

HE 3 To ensure that, in sensitive landscapes, powerlines connecting the hydro unit to the national grid will be required to be laid underground.

8.7.0 (C) Solar Energy

The Council will support the development of solar energy in the built environment as solar energy has the capacity to make a significant contribution to energy production.

Applications for planning permission should incorporate passive solar design principles when designing individual buildings or estates, such as:

- maximising solar gains in building through good orientation, layout, and glazing;
- avoiding heat losses through ensuring a high level of insulation and air-tightness of buildings; and
- ensuring a high degree of comfort by using controlled ventilation and daylighting.

8.7.1 Policy Statement

It is the policy of the Council;

- SE 1 To encourage applicants for planning permission to take into consideration passive solar design principles when designing an individual building or estate.
- SE 2 To support and encourage the installation of solar collectors and panels for the production of heat or electricity in residential and commercial buildings, in line with relevant design criteria.

8.8.0 (D) Bioenergy

Bioenergy is energy derived from biomass. Biomass is all organic material and can be either the direct product of photosynthesis, (for example plant matter such as leaves or stems, etc.) or the indirect product of photosynthesis (for example animal mass resulting from the consumption of plant material). Types of biomass that are used to provide bioenergy include; residues from forestry and related industries, recycled wood, agricultural residues, agri-food effluents, manures, the organic fraction of municipal solid waste, separated household waste and sewage sludge, and purpose grown energy crops (e.g. short rotation forestry & miscanthus grass). Biomass can be burned to produce heat that is used to create steam to turn turbines and produce electricity. Therefore, energy from biomass can produce electricity and/or heat. Liquid biofuels can also be derived from biomass crops such as oilseed rape.

There is huge potential for the development of biomass in Ireland. Although this industry is currently modest in scale, Ireland's growth rate, technological advances, and the deregulation of the electricity industry together with stricter controls on waste management will result in an increase in applications for biomass installations.

8.8.1 Policy Statement

It is the policy of the Council;

- BE 1 To facilitate the development of projects that convert biomass to energy.
- BE 2 To locate biomass installations in areas that do not affect residential or visual amenity and which are served by public roads with sufficient capacity to absorb increased traffic flows.