



Llywodraeth Cynulliad Cymru
Welsh Assembly Government

Lifting the Planning Barriers to Domestic Energy Micro-generation

Proposed Changes to Permitted Development Rights

July 2007

Acknowledgements:

Communities and Local Government

Entec Ltd

Photographs - Entec, Chelsfield Solar, Awel Amel Tawe

CONTENTS

Glossary

Section 1

Introduction

Background to the proposals 10

Section 2

Planning and Micro-generation 13

Section 3

Micro-generation – specific technologies and recommendations

– Solar 19

– Heat Pumps 23

– Wind Turbines 25

– Biomass 28

– Combined Heat and Power 29

– Hydro 30

Annex 1

Summary of Proposed Permitted Development Rights 31

Annex 2

Detailed Noise and Vibration Proposals 32

Annex 3

Draft Amendment to the GPDO 33

Annex 4

Partial Regulatory Impact Assessment 40

Annex 5

Summary of Questions 52

Glossary

The first mention of a word in the main text with "quotation marks" means that it is found in the Glossary.

The following explanations of terms used do not constitute legal definitions.

Ancient Monument - land or structure scheduled as being of national archaeological or historic importance. Scheduled Ancient Monument consent must be obtained for any proposed works.

Area of Outstanding Natural Beauty (AONB) - an area nationally designated with the intention of conserving and enhancing its natural beauty.

Array - a collection or arrangement of solar or photovoltaic panels placed together to give desired directional characteristics.

Article 1(5) land - land within specific designated areas of special protection identified in Part 1 of Schedule 1 of the General Permitted Development Order 1995 such as National Parks, Areas of Outstanding Natural Beauty

Article 3(1) GPDO 1995- section of the General Permitted Development Order 1995 which grants general planning permission for the classes of development listed in the order but subject to Regulations 60 and 63 of the Conservation (Natural Habitats, & c.) Regulations 1994 which impose a condition that where a development is likely to have a significant effect on a European site and is not directly connected with the management of the site the development shall not be begun until written notification of approval has been received from the local planning authority.

Article 4 GPDO 1995- section of the General Permitted Development Order 1995 which, in exceptional circumstances, allows Local Planning Authorities to withdraw specified permitted development rights for particular areas.

Aquifer - a porous deposit of rock such as sandstone, containing water that can be used to supply wells.

Biomass - any fuel source material that derives from recent animal or vegetable sources (ie does not include fossil fuels), although in domestic applications it most commonly refers to wood. It is considered close to carbon-neutral because the amount of carbon emitted when it is burnt is the same as that which is absorbed during growth. It is effectively recycling the carbon and preventing consumption of carbon stored in fossil fuels.

Biomass system - The most frequent application is direct heating. Typically in domestic applications biomass heating is installed in the form of a single room heater or for multiple rooms as a boiler which feeds into a central heating system. Fuel sources include wood from forests, urban tree pruning, farmed coppices in the form of traditional logs, chips or pellets,

Carbon neutral - activity which has no impact on the amount of green house gas in the atmosphere.

Climate Change - the recognised phenomenon whereby the climate of the Earth is changing due to rising average temperatures.

Combined heat and power (CHP) - devices that simultaneously generate both heat and power. Recovering the heat from a power generating process leads to high overall efficiencies and, in a domestic situation, using micro-CHP means no electrical losses over transmission lines.

Conservation Area - a built area defined and designated by a Local Planning Authority where the character and appearance is to be conserved.

Cumulative impact- the combined impact of a number of developments on a locality.

Curtilage - an enclosed external area of land adjacent to a dwelling house eg a garden or yard.

- dB, dBA-** a measure of sound at the time of emission
- dB L Aeq-** a measure of sound over a specific period of time.
- DEFRA** - Department of Environment Food and Rural Affairs England.
- Designated Areas** - areas that due to their special landscape, archaeological, biological, scientific or built quality are nationally designated and might be potentially sensitive to development e.g. National Parks, etc.
- DCLG** Department of Communities and Local Government England
- Domestic property** - single dwelling house or flat.
- ETSU** - Energy Technology Support Unit, now part of AEA Technology, a consultancy providing energy related advice and services to government, public and private sectors.
- European Sites-** sites identified as being of European importance for the protection and conservation of species and habitats.
- Garden** - an enclosed area of land adjacent to a dwelling house used for purposes incidental to the use of the property as a dwelling
- GPDO** (General Permitted Development Order 1995) - secondary legislation in the form of a statutory Instrument which sets out various types of development that are permitted and as such do not need planning permission.
- General Permitted Development Order 1995 (GPDO)-** as above
- Global Warming** – the recognised phenomenon leading to the rise in average temperatures across the Earth (often used inter-changeably with “Climate Change”).
- Greenhouse Effect** – the trapping of reflected solar radiation in the Earth’s atmosphere leading to a rise in global temperature.
- Greenhouse Gases** – the gases that are responsible for trapping the solar radiation - the greenhouse effect. The most significant impact comes from carbon dioxide and methane.
- Habitable room** - a room in a dwelling house or flat other than a bathroom, shower room, water closet or kitchen.
- Heat exchanger (pump)-** device that extracts heat from outside a building and releases that heat at a higher temperature inside the building.
- Heat pump (exchanger)-** device that extracts heat from outside a building and releases that heat at a higher temperature inside the building. The three main types are ground source heat pumps (GSHPs) which can be horizontal or borehole systems, water source heat pumps (WSHPs) and air source heat pumps (ASHPs),.
- Highway-** road, footpath etc where public have right of way as defined in Highways Act 1980
- Hydro (hydroelectricity)** - electricity generated by converting the potential energy stored in water to turn a turbine that then produces electricity.
- Impact approach** - considering the need for planning regulations in terms of the potential impact of the development on neighbours or the wider area.
- Kilowatt (kW)** – 1,000 watts.
- Kilowatt hour (kWh)** – 1 kW output over one hour (this is the “unit” of electricity on the standard electricity bill).
- kW (e)** – a measure of electrical power.
- kW(th)** – a measure of thermal power.
- Listed Building (LB)** - a nationally designated building of special architectural or historic interest. Works affecting the character of a listed building require listed building consent (lbc) from the local planning authority
- Local Biodiversity Action Plan (BAP)** - a means of engaging communities and private sector organisations in the conservation and enhancement of biodiversity at the local level
- Local Development Order (LDO)-** An order made by a Local Planning Authority granting additional permitted development rights
- Micro-generation-** the production of heat and/or electricity on a small-scale from a low carbon source.
- Ministerial Interim Planning Policy Statement (MIPPS)** - an update or revision to part of Planning Policy Wales pending a comprehensive review

- National Park** - an area designated nationally with the intention of conserving and enhancing its natural beauty, wildlife and cultural heritage and promoting opportunities for public understanding and enjoyment of its special qualities
- Non renewables**- fossil fuels that can only be used once and as such are a finite resource
- Operations likely to damage** a protected site - operations appearing to the appropriate Nature Conservation Body likely to damage the flora fauna or features for which a site has been designated.
- Permitted development**- a building operation or a change of use of land or buildings that constitutes development for planning purposes but does not require planning permission because it is 'permitted' by the General Permitted Development Order.
- Permitted development/rights** - general exemptions from the need to obtain planning permission for certain minor works.
- Photovoltaic (PV)**- systems which convert solar radiation into electrical energy.
- Planning permission/application** - an application for permission to carry out works or a change of use when required by the Town and Country Planning Acts
- Planning Policy Wales (PPW)** - a document setting out the Welsh Assembly Government's national planning policies
- PPV mms** - a measure of vibration
- Principal elevation**- frontage of most importance
- Priority Habitat/Species** - habitat or species of European significance defined in Article 1 of the Habitats Directive 92/43/EEC OJ No L206 22.7.92
- Projection**- the amount by or degree to which the surface of a solar panel juts out from or is above the plane of a roof or face of a wall.
- Registered Park or Garden** - Historic parks and gardens included in the register of Landscapes, Parks and Gardens of Special Historic Interest in Wales, Part 1, prepared by CCW, CADW, ICMOS UK.
- Regulatory Impact Assessment (RIA)** - an appraisal of the implications and impacts of changing legislation.
- Renewable energy** - term used to cover those energy flows that occur naturally and repeatedly in the environment. It includes all energy derived from the sun (solar), wind, tidal, wave, hydro and biomass and geothermal sources.
- Ridge line** - the top of a roof where two sloping sides meet.
- Rotor** - a device with blades radiating from a central hub.
- Site of archaeological interest** - areas where there are likely to be archaeological remains.
- Site of Special Scientific Interest (SSSI)** - an area identified for its biological or geological scientific interest under the Wildlife and Countryside Act 1981.
- Sensitive Areas** - areas that due to their special landscape, archaeological, biological, scientific or built quality might be potentially sensitive to development e.g. designated areas such as National Parks, etc.
- Solar micro-generation** - systems using solar radiation as the source. Solar panel systems can be roof or building mounted or free standing and will be one of two types – a solar water heating system or a photovoltaic system that converts the solar energy into electricity. Several panels are sometimes referred to as an array.
- Solar water heating** - systems which convert solar radiation into hot water.
- Solar photovoltaic (PV)** - systems which convert solar radiation into electrical energy.
- Special architectural or historic interest**- the parameters for designating a building as 'listed' for the purposes of the Planning (Listed Buildings and Conservation Areas) Act 1990.
- Special interest features (S28 of Wildlife and Countryside Act 1981)** - Special interest features are flora, fauna, geological or physiological features for which the land is of special interest.
- Sustainable development** - development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
- Technical Advice Note (TAN)** - national technical advice supplementing planning policies.

Typical (dwelling)- a building comprising a single dwelling as opposed to a building comprising flats.

Wind turbines - device for turning wind energy into electricity. Turbines can be mounted on buildings or on free-standing masts.

World Heritage Site - a United Nations designation relating to land of particular historical or cultural importance on an international level.

Zero carbon/carbon neutral development - development which in terms of construction and use has no impact on the amount of green house gas in the atmosphere. This can be achieved by a combination of insulation and on-site micro-generation from renewable sources.

Section 1

Introduction

1. Welsh Ministers propose to assist individuals in Wales who wish to change how they supply their dwellings with energy by lifting unnecessary planning controls which could discourage householders from establishing their own renewable energy supplies (micro-generation). This consultation paper sets out proposals to amend “permitted development” regulations for domestic properties so that planning permission is not required for micro-generation unless the proposals are of a scale or type that would have a proven impact beyond the host property. It is based on research commissioned by the England and Wales administrations¹. The changes will be delivered through amendments to the Town and Country Planning (General Permitted Development) Order 1995 (GPDO) “for householder development”. The consultation proposals in this document apply to Wales only.
2. For the most part, “solar and photovoltaic” energy generation does not require planning permission. This was clarified in a letter sent to all Local Planning Authorities in 2003 and the booklet Planning - A Guide for Householders 2006². It is also true of “heat exchangers” and “biomass” boilers. Apart from making the current position in respect of these technologies much clearer the proposed changes to the GDPO are therefore likely to have the greatest effect on the installation of small wind turbines.
3. However domestic micro-generation technology is constantly evolving and while the consultation proposals have been drawn up in the light of the best evidence available for current technologies, the position will need to be kept under review and further changes may be necessary in future. Further consideration is also being given to micro-generation in respect of non-domestic premises and this will be subject of separate consultation informed by research, which is on-going at present. Wider changes to permitted development rights in respect of other types of householder and commercial development (e.g. small extensions etc.) may also be proposed as part of future consultations.
4. There is considerable scope to increase the use of micro-generation to contribute greatly to meeting our future energy needs in a sustainable way. A study undertaken by the Energy Saving Trust for the Department for Trade and Industry’s Micro-generation Strategy suggested that 30-40% of the United Kingdom’s electricity demands could be met through the use of these technologies by 2050. These proposals on appropriate relaxation with additional clarification of the permitted development rights of householders in relation to micro-generation, should encourage greater domestic take-up. However homeowners should always consider how to save energy, for example by improving insulation or turning down their thermostats, before seeking to generate their own energy. More useful advice is available from the Energy Saving Trust³.
5. The Government of Wales Act 2006, places a duty on Welsh Ministers to promote sustainable development in the exercise of its functions. The Assembly Government’s Environment Strategy for Wales, 2006, summarises the impacts of climate change and sets

¹ Domestic Installation of Micro-generation Equipment: Final report from a Review of the related Permitted Development Regulations: 2007: Department for Communities and Local Government:: London

² Planning - A Guide for Householders: 2006: Welsh Assembly Government.

³ <http://www.est.org.uk>

out a clear commitment to reducing greenhouse gas emissions, maintaining existing carbon stores and ensuring effective adaptation. The Environment Strategy's Action Plan provides a framework for changing the natural and built environment in Wales, with the aim of a healthier environment for the future, which is clean, healthy, biologically diverse and valued. One of the main priorities is to minimise greenhouse gas emissions and adapt to impacts of climate change. Energy supply is the largest greenhouse gas emission sector. As part of the Environment Strategy Action Plan, the Welsh Assembly Government is committed to investigating whether changes to permitted development will help the take-up of micro-generation devices.

6. The Welsh Assembly Government's energy strategy is being updated to take into account the challenges arising from climate change. The strategy will be based on the need for our energy supplies to be safe, affordable, secure, create minimal environmental impact and use indigenous fuel sources where possible. Our policies will emphasise the desirability of using renewable energy sources where practicable on both a small and large scale. Also, they will stress that energy must not be wasted; it should be used as efficiently as possible and with energy generation providing as much local and regional benefit as possible, with the entire public sector estate in Wales leading the way. A new Wales Energy Route Map based on these principles will be issued for consultation in the autumn. At the local level, micro-generation is especially important and the Assembly Government is determined to see as much local electricity and heat generation as is economically feasible at both the individual building and community levels. A Micro-generation Action Plan was published in March 2007 and identifies a range of activities which will facilitate the deployment of 20,000 micro-heat systems and 10,000 micro-electricity systems by 2012 and put us on a path to at least 200,000 micro-electricity, 100,000 micro-heat and 50 significant community energy projects by 2020.
7. Planning's wider role in shaping places with lower carbon emissions and resilient to climate change is set out in Planning Policy Wales (PPW) 2002. The Ministerial Interim Planning Policy Statement (MIPPS) Planning for Renewable Energy 2005 and Technical Advice Note (TAN) 8: Planning for Renewable Energy deal with larger scale renewable energy generation and the planning system. TAN 12 Design covers the planning aspects of designing and building in a sustainable manner.
8. The Welsh Assembly Government consultation document Planning for Climate Change, December 2006, sought views on the intention to take forward proposals to further refine planning policy in response to climate change. Climate change is identified and confirmed as one of the basic principles underpinning the Assembly Government approach to planning. The consultation reiterated the intention to review the permitted development provisions in respect of domestic micro-generation.
9. As part of the evidence base for considering changes to permitted development for micro-generation, the Welsh Assembly Government together with the Department of Communities and Local Government in England ("DCLG") jointly commissioned research from Entec Ltd. This reviewed the existing "General Permitted Development Order" (GDPO) in relation to micro-generation equipment and included recommendations on how the Order could be amended to allow installation without compromising the amenity of neighbours or the local area. The research forms the background to the present proposals.
10. On the 13 February 2007 the First Minister, Rhodri Morgan outlined a programme of action to tackle and deal with climate change and the Minister for Environment Planning and Countryside, Carwyn Jones indicated that the aspiration to achieve zero carbon lev-

els for all new buildings by 2011.

11. In March 2007 a Cabinet Statement indicated that subject to the agreement of the incoming government it would be the intention to bring forward detailed proposals to amend the permitted development provisions in respect of domestic micro-generation.

Background to the proposals

12. The work undertaken so far in relation to permitted micro-generation development by householders is based on the notion of an impact approach.
13. The Assembly Government Ministers have made clear that three important principles must underpin this approach:
 - clear and robust arrangements should be in place so that the interests of neighbours and the wider community and environment are sufficiently protected;
 - changes to current arrangements should be based on evidence and fully tested; and
 - there should be full consultation on detailed proposals.
14. The Assembly Government in conjunction with DCLG contracted Entec Ltd to review the provisions of the GPDO in relation to the installation of micro-generation technology. Entec were asked to make detailed recommendations as to how the GPDO could be amended in a way which is consistent with the protection of residential amenity whilst facilitating the installation of micro-generation equipment by householders.
15. While the Assembly Government wants to encourage the widest possible take-up of micro-generation equipment by removing unnecessary regulatory barriers, it is concerned to ensure that the right levels of control are retained to protect the reasonable interests of neighbours, the environment and the wider community. Therefore Entec's recommendations also sought to address the impacts on amenity of domestic micro-generation technologies, including those of visual appearance, and the implications of any potential nuisances such as noise and vibration.
16. Consideration was also given to how any domestic micro-generation permitted development limits should be varied for developments in locations with nationally recognised designations including National Parks, areas of outstanding natural beauty and conservation areas.

Summary of the Consultation Paper

17. Section 2 addresses some of the more general issues that need to be borne in mind when considering whether planning permission should be required for householder micro-generation development. The issues covered generally apply across the range of technologies, for example, how to ensure that domestic micro-generation minimises visual impact.
18. Section 3 deals with each of the domestic micro-generation technologies in turn. It highlights issues for each and spells out the Assembly Government's proposals in terms of the scope of permitted development and the reasons for them. Annex 1 is a table summarising the proposals for domestic permitted development rights contained in the

consultation paper.

19. Annex 2 contains the detailed noise and vibration criteria for wind turbines and air source heat pumps.
20. Annex 3 is a draft of the amendment to the GPDO necessary to deliver the proposed recommendations. Comments on the draft Order would be welcome.
21. Annex 4 contains a partial regulatory impact assessment (RIA). This assessment seeks to address potential impacts resulting from the proposals and is required as part of the process leading to the introduction of new regulation. The assessment will necessarily develop to reflect changes resulting from the outcome of this consultation, but again any comments on the partial RIA would be welcome.
22. Annex 5 provides a summary of the specific questions contained in the consultation paper. To ease analysis of consultation responses, consultees are encouraged to use this as a template for their response to the consultation. A Word version of this Annex is available alongside the consultation paper on the Welsh Assembly Government's web site: <http://new.wales.gov.uk/topics/planning/planningconsultation/?lang=en> or <http://new.wales.gov.uk/topics/planning/planningconsultation/?lang=cy>

Responding to the Consultation

23. Sections of the text have been drawn from the Entec report.⁴ Sections 2 and 3 form the main element of this consultation and we would particularly welcome responses to the specific questions posed as well as any more general comments that you might have. Comments on the contents of this paper should be sent to:

Plans Management and Performance Branch
 Planning Division
 Welsh Assembly Government
 Cathays Park
 Cardiff CF10 3NQ

Or by email to: planning.division@wales.gsi.gov.uk

24. The period of public consultation will last for 14 weeks and responses should be submitted to arrive by 14th November 2007.
25. A summary of responses to this consultation will be published on the Assembly's website. Paper copies will be available on request.
26. Information provided in response to this consultation, including personal information, may be published or disclosed in accordance with the access to information regimes (these are primarily the Freedom of Information Act 2000 (FOIA), the Data Protection Act 1998 (DPA) and the Environmental Information Regulations 2004).
27. If you want the information that you provide to be treated as confidential, please be

⁴ The report is available at <http://new.wales.gov.uk/topics/planning/planningconsultation/?lang=en> or <http://new.wales.gov.uk/topics/planning/planningconsultation/?lang=cy>

aware that, under the FOIA, there is a statutory Code of Practice with which public authorities must comply and which deals, amongst other things, with obligations of confidence. In view of this it would be helpful if you could explain to us why you regard the information you have provided as confidential. If we receive a request for disclosure of the information we will take full account of your explanation, but we cannot give an assurance that confidentiality can be maintained in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not, of itself, be regarded as binding on the Assembly Government.

28. The department will process your personal data in accordance with the DPA and in the majority of circumstances this will mean that your personal data will not be disclosed to third parties.

Section 2

Planning and Micro-generation

29. This section discusses a number of issues that are a useful starting point when examining the Assembly Government's proposed approach to the regulation of micro-generation through the planning system.
30. The consultation paper seeks views on both the general issues covered in this section and how these have then been translated into the individual recommendations contained in Section 3.

An Impact Approach

31. The Welsh Assembly Government considers that the planning system should only regulate development that has impact beyond the host property. An "impact" approach adopts the premise that planning permission should only be required when there is a potential impact on others.
32. It does not, however, suggest that anything that anyone could possibly object to should require an application for planning permission. It is accepted that judgement about impact will never be viewed as being entirely objective by everyone. It is also inevitable that permitted development rights, because they apply generally, carry a risk of allowing inappropriate development where circumstances are unusual and/or unanticipated. A balance needs to be struck between this risk and the benefits of removing unnecessary controls in encouraging desirable development. More specifically, the Assembly Government needs to weigh up impact on local areas against the further take-up of micro-generation which would help reduce our national dependency on non-renewable forms of energy.

Question 1 – Do you agree with the principle of an impact approach for permitted development relating to domestic micro-generation?

Protection for Designated Areas

33. An approach based on impact necessarily recognises that the exemption of development from needing planning permission should consider not only what the development is, but where it is. Existing legislation already protects certain designated areas, namely National Parks, areas of outstanding natural beauty (AONBs) and conservation areas, by having different permitted development rights for households in these areas. [referred to as "article 1(5) land"]
34. Entec stated that, given the nature of these designated areas and the underlying reasons for their particular status within the planning system, the impact primarily at issue here for domestic micro-generation is visual intrusion. They recommended a general restriction to apply for development fronting and visible from any highway in these areas. This is similar to the type of control established for existing householder permitted development rights when covering, for example, the installation of antennas. However the precise wording of any exclusion from normal permitted development rights needs to be clear and sufficient to protect amenity. The Assembly Government would welcome comments regarding the terms 'the principal elevation' and 'visible from a highway' and whether it should be necessary for both criteria to apply for there to be special exemption. The restrictions that the Assembly Government proposes in Section

3 below relate to those technologies where their installation impacts on visibility and the general streetscene, that is, solar, air source heat pumps, wind turbines and flues for combined heat and power (CHP) and biomass.

35. In addition, the White Paper, Heritage Protection for the 21st Century, issued jointly by the Welsh Assembly Government and the Department for Culture, Media and Sport, proposes a number of measures for strengthening the protection of World Heritage Sites including that restrictions on permitted development should apply to these sites on the same basis as other protected areas, such as conservation areas
36. However, the Assembly Government, especially given the desire to promote the take-up of householder micro-generation to help respond to climate change pressures, proposes a generally more permissive approach. This would impose additional restrictions only in relation to conservation areas and World Heritage Sites and not to AONBs and National Parks. Along with other objectives the latter have a commitment to fostering take-up of these technologies. Nevertheless the Assembly Government would particularly welcome the views of consultees on this issue.

Question 2 – Do you agree with a restriction on domestic micro-generation development in conservation areas and in World Heritage Sites?

Question 3 – Should the restriction apply in the same way to the other types of designated area such as National Parks, AONBs or registered historic parks or gardens?

Question 4 -- Are the terms 'on or in front of the principal elevation' and 'visible from a highway' clear and sufficient to protect amenity?

Listed Buildings

37. A listed building is one “of special architectural or historic interest”. Works affecting the character of a listed building require listed building consent (lbc) from the local planning authority. This is in addition to any other planning consent that might be required.
38. Given this protection, the Assembly Government believes that the existing safeguards are adequate to protect listed buildings from insensitive development. It is not proposed, therefore, to make special provision in the new legislation for listed buildings.
39. However the requirement to obtain Listed Building Consent does not extend to free-standing structures such as stand alone wind turbines or solar arrays where they do not alter the building itself or old structures within the curtilage. While in practice the number of cases will be very limited further consideration may need to be given to protecting the setting of listed buildings in this respect.

Question 5– Do you agree that no special exemptions are necessary for listed buildings? If not, what specific protections do you think are necessary?

Noise

40. As Section 3 explains, the noise that domestic micro-generation technologies might produce is an impact that needs to be addressed in relation to wind turbines (especially those mounted on buildings) and air source heat pumps. As noted earlier, it is not the job of the planning regime to control what people do to their property where there is no impact beyond the host property. However, it is appropriate to control development that

unreasonably impacts on others. The Assembly Government proposes to place limits on the levels of noise generated by wind turbines and air source heat pumps so that the installation is unlikely to cause annoyance or sleep disturbance to a neighbour of average sensitivity. For ease of drafting, the following paragraphs on noise refer mainly to turbines, but are generally equally applicable to air source heat pumps.

41. The Entec report recognised that seeking to control the impact of noise is not straightforward and made an initial recommendation to control noise levels in neighbouring properties using separation distances. On the basis of further research, the Welsh Assembly Government is now proposing to tackle this issue by stating the noise levels at which it is unlikely the installation would cause annoyance or sleep disturbance to an average person, rather than setting a distance-based limit that would not address the problem fully.
42. It is not straightforward to protect both the internal and external environment of neighbouring properties from inappropriate levels of noise and so it has not been possible to produce a single limit. The approach proposed is based on three criteria to determine what should be permitted. References to decibel levels are to those averaged over a five-minute period ($\text{dB L}_{\text{Aeq}, 5 \text{ min}}$) – for simplicity “dB” will be used as shorthand for this in this paper. The proposed limits are informed by the World Health Organisation (WHO) guideline that suggests that a noise level of no more than 35dB avoids the potential for sleep disturbance for a person of average sensitivity. For each criterion, an allowance of 5dB has been subtracted from the WHO guideline level to account for the possibility of multiple turbines in the vicinity. For the purposes of these proposals a “habitable room” is a room in a dwelling house or flat other than a bathroom, shower room, WC or kitchen.
43. The first criterion is aimed at structure borne noise, that is, noise transmitted through the structure of a building and re-radiated into a habitable room. The criterion is to be applied within a habitable room with windows closed.
44. A second criterion is required to ensure that any noise transmitted through the air would not unacceptably affect noise levels where the windows are open in the habitable room. This criterion is to be applied 1m from the external façade at the window to a habitable room of any neighbouring residential property.
45. A third criterion covers the external amenity of private outdoor space. It is accepted that the installation of a stand-alone turbine would remove the likelihood of noise that travels through a building, but could increase the risk of unacceptable noise in gardens and outdoor spaces. It is considered reasonable to require 50% of the space to be protected from such noise.
46. Use of the second and third criteria in tandem will encourage siting of the turbine further away from neighbouring dwellings, reducing the potential for unreasonable noise levels.
47. Current planning guidance for wind farms requires both developers and planners to evaluate the level of noise from wind turbines on local residents and those working in the vicinity. Noise predictions from a proposed turbine are always considered in relation to the existing background noise levels. Technical Advice Note TAN 8 Planning for Renewable Energy refers to the report 'The Assessment and Rating of Noise from Wind Farms' (ETSU-R-97) which describes a framework for the measurement of windfarm noise. It makes a series of recommendations regarding indicative noise levels and can be regarded as relevant guidance on good practice for domestic situations.

48. Establishing actual noise (and vibration) levels is a technical exercise and the implications for enforcement action in the case of complaints need to be considered carefully. Views on this aspect of the noise/vibration proposals would be welcome.
49. As we are consulting on removing domestic wind turbines from the requirement to apply for planning permission, additional criteria are necessary to ensure that the installation of a domestic wind turbine would be unlikely to cause annoyance or sleep disturbance to a person of average sensitivity. Details of the proposed criteria can be found in Annex 2.

Question 6 – Do you agree that when considering the impact of domestic micogeneration the likely impact of noise should be dealt with by specific noise restrictions based on decibel levels at/in neighbouring dwellings in the way proposed in Annex 2?

Question 7 – If not, what alternative approach would best address this issue?

Controls on Visual Impacts

50. It is difficult to control through restrictions in legislation the potential visual impact of permitted development rights. Rights are of general application, but the circumstances will vary widely. Thus a restriction which deals with worst case scenarios is likely to be unduly rigorous in most situations. However, it may be reasonable to require the householder to take some responsibility for appropriate use of the rights. In order to address the issue, the Assembly Government proposes to mirror the approach taken in relation to domestic antennae (such as satellite dishes) and qualify permitted development rights so as to require that they are exercised in order to minimise their visual impact. As another way of securing longer-term control over visual impact we propose to specify in legislation that equipment no longer needed for micro-generation should be removed as soon as reasonably practicable.
51. It is also difficult to control the cumulative visual impact of the installation on one property of multiple systems within permitted development limits. In practice this is unlikely to occur very often but the Assembly Government would appreciate any comments, and potential solutions, in respect of such implications.
52. Additionally, although the approach taken seeks to control the impact on others, the Assembly Government recognises that there might be exceptional circumstances where it is legitimate for a local planning authority to consider using their powers under “article 4 of the GPDO”. This allows local planning authorities to remove permitted development rights in a particular area.

Question 8– Do you support a general restriction on permitted development so as to require that visual impact is minimised in exercising the rights?

Question 9 – Do you agree that local planning authorities should be able to restrict such permitted development rights for micro-generation in places where it can be shown that the benefit from the technology is outweighed by its impact?

Sites of Biodiversity and Geological Conservation Value

53. Entec recognised the need to consider how domestic micro-generation might impact on sites that are protected because of their biodiversity and/or geological value.

54. For European designated sites or habitats for flora and fauna, such as Special Area of Conservation (SACs) or Ramsar Sites, “article 3(1)” of the GPDO states that permitted development is subject to the provisions contained in regulations 60 to 63 of the Conservation (Natural Habitats, &c.) Regulations 1994. These regulations ensure that development that is exempt from planning permission, but is likely to have a significant effect on a European site, cannot go ahead unless certain requirements are met. The local planning authority has to determine, after consultation with the Countryside Council for Wales (CCW), that the development would not affect adversely the integrity of the site. The regulations also provide that the opinion of CCW may be sought as to whether development is likely to have a significant effect and that their opinion will be conclusive. Even if the work can proceed as permitted development once this process has been completed, provisions relating to Sites of Special Scientific Interest (SSSIs) will also apply. Here, where proposed permitted development works involved are listed on the SSSI notification as “operations likely to damage the special interest features”, then section 28E of the Wildlife and Countryside Act 1981, as amended, requires consent from CCW before work can proceed.
55. In addition to these statutory designations, individual sites may have been identified as Biodiversity Action Plan (BAP) Priority Habitats or as Local Wildlife or Geological Sites. In such cases it is open to local authorities, to seek to further protect these sites by withdrawing permitted development rights in places where they are concerned that the sites would be harmed using the powers described in para 52 above.
56. Given the above safeguards, it is considered that the existing legislative framework is satisfactory to ensure that these protected areas and species are not damaged by inappropriate permitted development, although it is recognised that knowledge of the impact of emerging technologies on particular species may develop over time.

Question 10 – Do you have any evidence of potential damage to protected species or other wildlife that may be caused by these forms of micro-generation? Do you agree that the existing protection is adequate? If not, what additional safeguards do you consider necessary?

Scheduled Ancient Monuments and Sites of Archaeological Importance

57. The relationship between planning and the needs of archaeology is set out in Planning Policy Wales (PPW) and related guidance in Circular 60/96, Planning and the Historic Environment, which advises that archaeological remains are a finite, and non-renewable resource which should not needlessly or thoughtlessly be destroyed. Micro-generation installations, in particular ground source heat pumps, could potentially have an adverse effect on underlying archaeology due to the excavation involved while wind turbines and solar power systems could also potentially affect the setting of upstanding remains. Works within the boundaries of a scheduled ancient monument would require scheduled monument consent from the Welsh Assembly Government. In other areas where archaeological remains are likely to survive the Assembly Government considers that guidance and early dialogue with the local planning authority where development could potentially impact on such an area. Guidance would also remind local planning authorities that where they are concerned that permitted development rights would be exercised in a way harmful to a known archaeological site they should consider using their powers as described in para 52 above to withdraw those rights.

Question 11 – Is guidance sufficient to address the potential impact on sites of archaeological importance?

Guidance

58. The Assembly Government intends to provide advice for householders on permitted development rights for micro-generation. It will update current guidance on permitted development generally, provide a simple introduction for householders as to what is permitted in respect of micro-generation and more general advice about how they should go about exercising their rights. We would welcome suggestions as to what you feel this guidance should cover in addition to an explanation of the scope of domestic permitted development rights for micro-generation.

Question 12 – In addition to providing advice as to the scope of the changes to the legislation for domestic micro-generation, what could householder guidance also usefully cover?

Section 3

Micro-generation – specific technologies and recommendations

Solar – Background

59. Solar micro-generation technology is by far the most common form of micro-generation equipment currently in use and falls into two types – a “solar water heating” system or a “solar photovoltaic” system. As the names suggest, the former uses energy from the sun to heat water and the latter system converts the same energy into electricity.



Solar thermal flat plate collectors (source Awel Aman Tawe-WAG)

60. Currently decisions regarding whether the installation of solar equipment requires planning permission cause disagreement and are not always consistent. Entec’s research suggested that currently 90% of solar water heating systems are considered permitted development, as are 50% of solar photovoltaic installations. Although evidence suggests that where planning permission is required refusals are rare, the Assembly Government believes it is important for local planning authorities, householders and the micro-generation industry that confusion and uncertainty, as well as the hurdle of unnecessary permissions, is removed.
61. Entec estimated that a suitably sized solar water heating system will typically provide 50% of a household’s hot water needs over the year. Similarly, the typical domestic solar photovoltaic installation will deliver savings of about a third of an average household’s annual electricity bill. Given that solar micro-generation is a relatively mature technology, there is significant scope for solar technology to play a much greater role in meeting our energy needs.

Solar – Issues and Recommendations

62. Solar water heating and photovoltaic systems share many characteristics that could have a potential planning impact and therefore the approach proposed does not differentiate between them.
63. The overriding consideration when framing proposals is visual and landscape/townscape impact, which is affected by:
 - projection above the dwelling roof;
 - positioning and coverage on the dwelling roof/walls; and
 - cumulative impact of more than one system.
64. For stand-alone equipment distance to neighbouring properties and overshadowing need to be considered as well as safety in the event of the unit toppling over.
65. Drawing on evidence and views from local planning authorities and other stakeholders, Entec concluded that there is little evidence of likely demonstrable visual harm being caused by solar equipment, other than perhaps on “principal elevations” in protected areas. They suggest therefore that domestic installation of solar micro-generation equipment, should only be subject to a limited degree of control. They propose that height of the system or “projection” above the roof plane or from the wall, coverage of the roof/wall and, in the case of stand alone only, distance to the boundary with neighbouring properties and height should be aspects that determine whether planning permission is needed.
66. The Assembly Government proposes that the installation of solar technology on dwellings or stand alone should not be permitted in conservation areas or a World Heritage Site where it would be on the principal elevation (or if stand alone it would face onto a highway) and be visible from a “highway.”
67. Entec recommended that solar technologies should be permitted subject to them projecting no more than 150mm from the existing dwelling roof plane or standing-off no more than 150mm from a dwelling wall. In addition, in order to ensure that the visual impact is minimised, no part of the product should be higher than the highest part of the roof (which will generally be the “ridge line”). While there would be some visual impact by allowing this degree of flexibility, it would be acceptable and would be sufficient to permit the installation of most modern solar products. This has been accepted by the Assembly Government but it is also recognised that restrictions will need to pay adequate regard to the wide variety and form of buildings, both dwellinghouses and buildings containing flats. We would therefore welcome views as to whether the proposed criteria are adequate and whether they should apply universally.



Photovoltaic PV panel (left) and flat plate solar hot water (thermal) panel (right) (source Chelsfield Solar- Entec)

68. In terms of restrictions for the coverage of a dwelling's surface, Entec proposed that development should be limited so that coverage would not exceed 60% of a roof or wall. The Assembly Government considers that it could be argued that there is little connection between the extent of the coverage of panels on a dwelling and their visual impact. We therefore propose that there should be no such limit. However, we would appreciate the views of consultees on this issue. We also would particularly welcome views as to whether permitted development rights should apply equally to the coverage of panels on both roofs and walls and whether there should be special restrictions for a building containing a flat. It is proposed that there should be no permitted development rights for panels on the walls of flats although this could equally extend to terraced or semi-detached houses. Additionally in the case of flats roof mounting limitations could allow for siting on flat or parapet style roofs.
69. For solar stand-alone technologies Entec concluded that the additional impact considerations were the dimensions of the unit and its positioning in relation to boundaries. In relation to the overall height of the structure, Entec drew upon existing limits for householder development to arrive at an acceptable height. This means that permitted development would apply to units up to a height of 4metres within the "curtilage" or land around a dwelling. However, Entec did recommend that given the nature of these proposals and, for example, the potential to cause shading on neighbouring properties, that development of this type should be no nearer than 3 or 4 metres from a neighbour's boundary.



Solar thermal evacuated tube collectors sited off roof to face south (source WAG)

70. Another consideration is that it will often be the front of the property that can make the best use of the sun's energy. Entec considered this in terms of the existing permitted development rights for householder development fronting a highway that requires it to be set back at least 20m from that highway. On balance, however, they viewed the 20 metres distance as being overly restrictive and suggested that 10metres from the highway would be sufficient.
71. The Assembly Government, however, is keen to seek views on a different approach that would be more permissive in terms of development close to a highway, but less permissive in terms of distance to other boundaries (to reflect concerns about the potential for a unit to topple over). A single separation distance of 5metres to a boundary (with either a highway or a neighbouring property) is proposed on the basis of a maximum overall height of a solar stand alone unit of no more than 4 metres.
72. The potential impact of the size of the stand alone panels is also a factor. Entec's assessment is that an acceptable approach would be to limit the surface area of the panels to 9 square metres. The Assembly Government has considered this further and feels that while this proposal seems broadly correct, the restriction may need to be amended slightly so that the size of the "array" or panel should be no more than 3 metres wide or 3 metres deep.
73. **In summary therefore the Assembly Government proposes that solar micro-generation is permitted subject to the constraints set out in the table below:**

Solar on Roof/Wall	Limitation
Coverage	100% roof and wall -dwellinghouse 100% roof only flats
Height above roof/from wall	150mm and not higher than the highest part of the roof for dwelling houses not higher than the highest part of the roof for flats
Restriction in conservation areas and World Heritage Sites	Development facing on to and visible from a highway
Solar Stand Alone	Limitation
Height of unit	4m
Distance to the boundary of a highway or a neighbour's property	5m
Size of array	Surface area of 9m ² - an alternative would be no more than 3m deep or wide.
Restriction in conservation areas and World Heritage Sites	Development facing on to and visible from a highway

Question 13 – Do you agree with the proposals for solar micro-generation? If not, what alternatives would you suggest?

Question 14 – Do you agree that there should be no restriction in terms of how much of any roofs and walls can be covered by solar panels? If not, what would be an acceptable percentage?

Question 15 – Generally, should the same level of permissiveness apply to solar panels on a wall as on a roof?

Question 16 – Do you agree with a minimum separation distance of 5m to the boundary of a highway or neighbouring property for a stand-alone solar unit?

Heat Pumps – Background

74. Heat pumps extract heat from outside a building and release that heat at a higher temperature inside the building. The three main types are ground source heat pumps (GSHPs), water source heat pumps (WSHPs) and air source heat pumps (ASHPs).
75. A GSHP takes advantage of the earth's constant temperature using a ground loop, which can comprise either a trench or a vertical borehole system. Trenches can be laid in the ground between 1 to 2 metres depth. For vertical systems, the depth of the borehole will be specific to the site and the pump.
76. A WSHP can either be a closed loop or an open loop. The closed loop is basically a pipe containing an anti-freeze mixture and similar to a GSHP. A WSHP can be either submerged in a river or a lake or be installed in the form of a vertical bore into groundwater. In the UK, the relatively stable temperature of groundwater of between 4-10°C means these pumps may well be more efficient. An open loop is effectively a bore that draws the water directly from an "aquifer" before the water is discharged into a separate well or returned to surface water.
77. An ASHP draws heat from the [ambient] air. If placed outside of a building, the cheaper costs of installation might be offset somewhat by the variability in air temperature.

Heat Pumps – Issues and Recommendations

78. Where heat pumps involve the excavation of trenches or bores, it is important to consider whether archaeological remains exist on the site and if they are affected. It was suggested during the course of Entec's work that GSHP proposals should be carefully considered in designated Archaeologically Sensitive Areas and that householders should consult their local planning authority to establish if their property falls within one. The idea of more formal notification and a period of say 21 days for the local planning authority to respond was also mooted. However, the Assembly Government proposes that guidance is sufficient to address concerns and no specific provision is therefore required in the GPDO. The Government also considers that no specific provision is required to deal with the potential impact of deep trenching on SSSIs or trees. However, views on specific impacts of GSHP's would be welcomed.
79. In respect of GSHPs or WSHPs that rely on vertical drilling, in many cases a licence is necessary from the Environment Agency to drill to prevent harm to groundwater or contamination. In the case of an open loop WSHP licences will always be required. People looking to install a heat pump of either type should therefore speak to the Environment Agency as early in the process as possible. The Assembly Government believes that the existing requirements are adequate and do not need to be addressed through the planning regime.



Ground source heat pump GSHP- ground loop in trench system (source DTI website- Entec)

80. In respect of ASHPs, visual impact has to be considered. ASHPs are most commonly mounted at ground level but can also be on a wall, a balcony or on a flat roof. Evidence suggests the mounting is generally sited in as discrete a location as possible, considering also noise implications and air flow into the pump. Ducting may also be necessary to ensure the unit has a reasonable air flow. Whilst clearly not attractive in their own right, Entec suggested that, generally, providing guidance is given as to careful location, these should be acceptable on visual grounds. However, more attention might be required for situating an ASHP in a designated area. The Assembly Government, therefore, seeks views as to whether restrictions on installation should be limited to development in conservation areas and World Heritage Sites where it is on the principal elevation and visible from a highway.



Air source heat pumps ASHP -various mountings. (source Entec)

81. Entec considered that although the pumps are relatively quiet, similar to stand alone air-conditioning units, the fan and compressor on an ASHP in particular can make some noise and if possible should be situated away from windows and adjacent buildings in order to minimise distraction. The Assembly Government therefore proposes placing limitations on noise and these are set out in Section 3 and at Annex 2.

82. **The Assembly Government proposes that the only controls necessary though legislation for heat pumps is for ASHPs. These are:**

Air Source Heat Pumps	Limitation
Noise	Restricted as outlined at Annex 2

Question 17 – Do you agree with the proposals for heat pumps If not, what protection measures do you think are needed?

Question 18 – Do you agree that the likely impact of noise from ASHPs should be dealt with by specific noise restrictions in the same way as proposed for domestic wind turbines?

Wind Turbines – Background

83. Entec's report suggests that wind turbines are probably the third biggest form of domestic micro-generation in terms of potential, are currently far less common than solar and can be made at almost any size. As turbine technology advances their contribution is likely to expand significantly if, as appears likely, they are promoted more commercially and become more of a mainstream product.
84. The power produced by a turbine depends on the 'swept area' of the "rotor". This means that a 'horizontal axis' turbine with a rotor diameter of 2 metres would produce roughly four times the power of a turbine with a 1 metre diameter rotor.
85. Faster winds contain more energy than slower winds. Winds also vary between heights above the ground; the higher above the ground, the faster the winds. This means that, traditionally, wind turbines are usually placed on tall towers. However, more recently turbines are being introduced to the market that are designed to be sited on dwellings. Entec's work therefore considered both the installation of stand-alone and building-mounted turbines. The work suggested that a 1 kilowatt wind turbine with a rotor blade diameter of 1.75 metres could produce around 15-20% of a household's annual electricity needs and in a more windy, rural location this could be significantly more.

Wind Turbines – Issues and Recommendations

86. Domestic wind turbines have a greater number of characteristics that have a potential planning impact than other micro-generation technologies. Entec highlighted four key areas for consideration when thinking about the planning impact of micro wind turbines: size and scale; safety; nuisance and the impact on bats.
87. One issue that needs more consideration is the potential impact of domestic wind turbines on radar. It will be taken forward in parallel with this consultation and involves further work with the micro-generation industry, Defence Estates, the National Air Traffic Services and the Civil Aviation Authority. Aircraft safety will obviously be of paramount importance and therefore the following proposals will also be subject to the findings of this further work, as well as the more general responses to this consultation paper, when considering what should finally be permitted for domestic turbines.
88. Entec considered that the visual impact of wind turbines on the local landscape could be considered small if they were relatively small in size. In relation to stand-alone turbines, the height of the pole on which the turbine is mounted is a key consideration. Evidence collected by Entec showed that while visual impact was often the key issue, where the pole was 10m or less, planning permission tended to be granted. Entec, therefore, recommended that permitted development rights are set at that level. This, they suggested, allows for many of the products that generate sufficient power for the needs of a household while not affecting unduly visual amenity.
89. With regard to turbines mounted on buildings, Entec sought to address what would be a comparable impact to the permitted development rights proposed for stand-alone turbines. They suggested that 3 metres above the ridge line of a property is comparable to a stand-alone height of 10 metres. 3 metres is adequate in many circumstances, but would enable the turbine to be 'read' as part of the property thus reducing visual impact.

In terms of the blade diameter, the Assembly Government accepts Entec's recommendation that a diameter of up to 2 metres would be a suitable compromise between energy production and potential impact.



Gable mounted wind turbine (source Entec)

90. Entec also recommended that to avoid greater visual impact, only one turbine should be placed on a “typical” dwelling without requiring planning permission. They did, however, suggest that larger blocks of flats (not smaller house conversions) could accommodate up to four turbines without an undue adverse impact. The Assembly Government accepts the basic reasoning behind the proposal, but proposes that the approach taken should mirror that taken on permitted development for antennas. This would not differentiate between single dwelling houses and flats (whether converted or not), but provide different permitted development rights depending on the building height. Therefore on a residential building below 15 metres only one turbine would be permitted and on a residential building of 15 metres or more four turbines would be permitted.
91. Turbines are likely to be mounted as high on the main building as permitted in order to benefit from higher wind speeds and maximise efficiency. However there may be instances where siting on an outbuilding has advantages and this could be accommodated within the limits proposed for the number of permitted building-mounted turbines.
92. For turbines that are pole-mounted the risk of topple also has to be factored-in. Given that any restriction might also be complemented by a separation distance of 10 metres to the nearest habitable room to deal also with issues of noise, Entec suggested that a stand-alone turbine should be located no nearer than 5 metres to a highway and 2 metres to a neighbour's boundary.
93. However, having considered this issue further, the Assembly Government is minded to take an approach similar to that for solar stand-alone and place just one limit that relates to the separation distance to the boundary of a highway or a neighbour's property. Given that topple has to be considered and that the maximum height of a turbine could be 11 metres (given a turbine with a blade diameter of 2 metres could be mounted on a 10 metre pole), it is proposed that this separation distance should be set at 12 metres.
94. The remaining issues related to annoyance and sleep disturbance are the most complex. Wind turbines can cause noise but as stated in Section 2, defining readily acceptable, clear, simple and achievable noise limits is not easy. In particular, turbines mounted on buildings pose particular difficulties given that they are likely to be in closer

proximity to neighbouring properties. The Assembly Government is proposing that limitations on noise are put in place to ensure that the potential impacts are controlled both internally and externally for neighbouring dwellings.

95. In the case of terraced or semi-detached houses or flats, a further issue is vibration being transmitted through a building's structure and posing potential safety and annoyance issues in neighbouring dwellings. As Entec recognised, building-mounted turbines will transmit some vibration to the building to which it is attached. Issues of structural stability would be covered under the Building Regulations. However, in relation to annoyance, work has been undertaken to determine what level of vibration is unlikely to cause annoyance. The Assembly Government proposes a level deemed acceptable for vibration at the threshold of perception. Current research suggests that perception of vibration is linked directly to the onset of annoyance. Further detail on this criterion is provided in Annex 2, paragraph 4.
96. Although, as section 2 recognises, there is the potential for development generally to impact on protected sites and species, Entec highlighted possible concerns in particular in relation to bats and turbines. They did, however, acknowledge that evidence did not exist to assist in determining the possible level of risk. Bats and their roosts are afforded legal protection under the Conservation (Natural Habitats, &c.) Regulations 1994 and the Wildlife and Countryside Act 1981 (as amended), which has been enhanced through the Countryside and Rights of Way Act 2000. This legislation has led to the development of a range of procedures to minimise potential effects on bats through development, if their presence is known or suspected. The Assembly Government currently has no evidence on the risks for bats associated with domestic micro-generation which justifies a conclusion other than that the existing legislation should afford sufficient protection. However, it accepts that there is a degree of uncertainty on this subject and would welcome views.
97. **The Assembly Government is proposing that wind micro-generation is permitted subject to:**

Wind on Building	Limitation
Height (including blade) above highest part of roof	3m
Blade Diameter	2m
Noise	As outlined at Annex 2
Vibration	As outlined at Annex 2
Number of turbines	One on a building 15m or less in height. Four on buildings above 15m.
Restriction in conservation areas and World Heritage Sites	No permitted development
Wind Stand Alone	
Height (including blade)	11m
Blade Diameter	2m
Noise	As outlined at Annex 2
Vibration	As outlined at Annex 2
Restriction in conservation areas and World Heritage Sites	Development in front of the principal elevation and visible from a highway

Question 19 – Do you agree with the proposals for wind turbines? If not, what alternatives or additions would you suggest?

Question 20 – Do you agree that the likely impact of noise from turbines should be dealt with by specific noise restrictions in the way proposed?

Biomass – Background

98. The term biomass in domestic applications most commonly refers to wood. The most frequent application is direct heating. Fuel sources are now readily available including wood from forests, urban tree pruning, farmed coppices, or farm and factory waste, and fuel can now be commercially sourced in the form of wood chips or pellets. Traditional logs can also be used.
99. Although biomass emits carbon dioxide when burnt, it is considered close to “carbon-neutral” because the amount of carbon emitted when it is burnt is the same as that which is absorbed during growth. It is effectively recycling the carbon and preventing consumption of carbon stored in fossil fuels.



Biomass pellet stove with back boiler (source Energy Saving Trust, Fact Sheet CE190). Hoval biomassboiler (source Entec)

100. Typically in domestic situations biomass heating is installed in the form of a single room heater or for multiple rooms as a boiler, which feeds into a central heating system. Biomass stoves, whether heating a single room or with a ‘back boiler’ provision, can almost always be accommodated within a property and so do not need further permitted development rights.
101. Biomass boilers can be fed automatically from fuel hoppers. Pellets and chips are appropriate for these systems, however, pellets are perhaps better suited to small domestic applications as the uniform size and density provides a consistent heat output. This typically requires a daily addition of bagged fuel to the hopper. A silo is usually needed for larger biomass combined heat and power because of the quantities of fuel needed to operate these systems and typically these boilers require more space.

Issues and Recommendations

102. As much of the work related to the installation of biomass into a dwelling is internal, planning will generally not be an issue for the boiler or stove on its own. However, two issues did arise during Entec’s work connected to the technology.
103. First, many biomass schemes may require construction of a small extension, lean-to or an outhouse because they need a reasonable amount of storage space for the fuel, and

appropriate access for service vehicles. The amount of space needed will depend on the type of fuel, fuel demand, handling system and the reliability of delivery. Pellet fuel should be handled as little as possible and all wood should be stored in a dry location. A hopper is a common method of wood storage, which can be located just outside the building, or alternatively an underground lined pit can mean less visual intrusion.

- 104. Entec suggested, there was a case for providing a further allowance in the legislation in addition to the volume allowances already provided for extensions to a building or for stand-alone buildings in the curtilage of a property. The recommendation was for an additional 10 cubic metres, with further restrictions, for example, in terms of height and with a specific provision to ensure it must be used for the storage of biomass fuel.
- 105. However, while the Assembly Government wants to promote micro-generation, it believes that it is not appropriate to propose additional permitted developments rights for extensions and outbuildings in the way recommended. Any such addition will need to be considered in relation to other householder permitted development rights, when they are reviewed.
- 106. The second issue is refers to the external flue for the release of combustion gases. In line with the Entec recommendation, the Government proposes that a flue of up to 1m above the ridge line is permitted.

Biomass	Limitation
Flues	No more than 1m above the ridge line of the highest part of the roof.
Restriction in conservation areas and World Heritage Sites	Development on the prinipal elevation and visible from a highway

Question 21 – Do you agree with the proposals for biomass?

Combined Heat and Power – Background

107. A combined heat and power (CHP) device simultaneously generates both heat and power and, when the device is an internal combustion engine, it is a mature technology widely used in industry. Recovering the heat from a power generating process leads to high overall efficiencies and, in a domestic situation, using micro-CHP means no electrical losses over transmission lines. Typically a micro-CHP unit will be operated on the heating demand rather than the electricity demand of a household, and can provide space and water heating in residential or commercial buildings, similar to a conventional boiler.



Combined heat and power CHP Ecopower internal combustion unit (left) and Whispertech external combustion unit (right) (source Entec)

108. Biomass CHP units are available but are more difficult to scale from community size units down to individual household size and on a domestic scale it is generally more effective to use biomass for direct heating to maximise the efficiency and minimise the cost. Micro-CHP is now a relatively straightforward replacement for the domestic boiler and because of the small size can be ‘dropped-in’ to most homes. Micro CHP is typically heat-led and thus the sizing of a unit is driven by a dwelling’s annual heat demand.

Issues and Recommendations

109. Entec recognised there were few planning considerations in relation to domestic CHP. The report did recognise that if CHP were to be used to supply the needs of a number of flats, the CHP unit would inevitably need to be quite large and that it was likely that additional space would be needed to accommodate the unit (perhaps the size of a garage). The report therefore recommended that a permitted development allowance be provided to allow a structure to house the CHP unit without the need for planning permission. Again, given the wider review being undertaken in relation to permitted development, the Assembly Government believes that this should not be proposed at this stage.

110. The issue of flues is also relevant and the Assembly Government proposes a provision so as to allow the necessary installation of flues up to 1metre above the ridge line.

CHP	Limitation
Flues	No more than 1m above the ridge line of the highest part of the roof.
Restriction in conservation areas and World Heritage Sites	Development on a principal elevation and visible from a highway

Question 22 – Do you agree with the proposals for CHP?

Hydro – Background

111. Hydroelectricity generation operates by converting the potential energy stored in water to turn a turbine that then produces electricity.

Issues and Recommendation

112. These schemes are rare in a domestic context and very few would be sited within the curtilage of a dwellinghouse. Where there is the need to provide a building to house a turbine, householders might be able to utilise existing permitted development rights. The evidence collected by Entec suggests that there is little scope to provide additional permitted development rights for this technology that would either encourage and/or ease its take-up. While Entec suggest that above ground pipes might be made permitted development if less than 50 centimetres in height, on balance, the Assembly Government is not persuaded that such a change would achieve anything in practice.

Question 23 – Do you agree there should be no additional permitted development rights for hydro?

Annex 1

Summary of Proposed Permitted Development Rights.

Technology	Normal Buildings not in Conservation Areas or World Heritage Sites	Buildings in Conservation Areas and World Heritage Sites
Solar on building	Permitted for the roof & walls unless it protrudes more than 150 mm above roof/wall plan. Flats -not allowed on walls or above highest part of roof excluding chimney.	Permitted as normal, except on principal elevation facing onto or is visible from a highway.
Solar stand alone	Permitted if less than 4 metres height. At least 5 metres to any boundary. Maximum panel dimensions 3m x 3m.	Permitted as normal except in front of a principal elevation or visible from a highway. .
Ground Source Heat Pumps	Permitted.	Permitted.
Air Source Heat Pumps	Permitted if – internal noise <30dB, external noise <40dB, “garden” noise <40dB.	Permitted as normal
Water Source Heat Pumps	Permitted.	Permitted.
Wind Turbines on building	1 permitted if <3m above ridge (including the blade) and diameter of blades <2m. Also internal noise <30dB, external noise <40dB, “garden” noise <40dB. Up to 4 turbines on buildings >15m (as with antennas). Vibration <0.5mm/s.	Not Permitted.
Wind Turbines (Stand Alone)	1 permitted if <11m (including the blade) high and diameter of blades <2m. At least 12m from a boundary. Also internal noise <30dB, external noise <40dB, “garden” noise <40dB. Vibration <0.5mm/s.	Permitted as normal except in front of principal elevation and visible from a highway.
Bio Mass	Permitted – Limit of Flue height 1m above ridge. No special provision for storage/plant buildings	Flues permitted as normal except on principal elevation and visible from a highway.
Combined Heat and Power	Permitted – Limit of Flue height 1m above ridge. No special provision for buildings to accommodate plant	Flues permitted as normal except on principal elevation and visible from a highway.
Hydro	No change.	No change.

Footnotes:

- All equipment is to be sited in a way which, so far as is practical, will minimise the effect on the external appearance of the building and the amenity of the area.
- Other provisions apply to Listed Buildings, property within an SSSI or archaeological area, buildings where there are protected species e.g. bats and works where ground water could be affected.
- Additionally the Local Authority may have made local Article 4 Direction or a Local Development Order, which amend national regulations.

Annex 2

Detailed Noise and Vibration Proposals

1. The design and installation of a domestic micro-generation wind turbine (MWT) should cause the internal noise level, due to noise from the MWT alone, in any mode of operation not to exceed a level of 30dB $L_{Aeq, 5min}$ when measured 1m from any acoustically reflecting surface within a habitable room with windows closed of any dwelling within the same structure upon which the MWT is mounted;
2. The design and installation of a MWT should cause an external noise level, due to noise from the MWT alone, in any mode of operation not to exceed 40dB $L_{Aeq, 5min}$, measured 1m from the façade at the window to a habitable room of any neighbouring residential property;
3. The design and installation of a MWT should cause the external noise level due to noise from the MWT alone, in any mode of operation not to exceed 40dB $L_{Aeq, 5min}$, measured under free-field conditions, over an area of not less than 50% of a private outdoor space not solely associated with the host dwelling; and
4. The design and installation of a MWT should cause the vibration level from the MWT alone, in any mode of operation, not to exceed a level of 0.5mms^{-1} (PPV), in the vertical (z-axis) direction, when measured on the floor towards the centre of any habitable room of any dwelling within the same structure upon which the MWT is mounted.

Annex 3 Draft SI

W E L S H

S T A T U T O R Y I N S T R U M E N T S

2007 No. (W.)**TOWN AND COUNTRY PLANNING, WALES****The Town and Country Planning (General Permitted Development)
(Amendment No. 2) (Wales) Order 2007****EXPLANATORY NOTE***(This note is not part of the Order)*

This Order amends Part 2 of Schedule 2 to the Town and Country Planning (Permitted Development Order 1995 (“the 1995 order”). Part 2 confers permitted development rights in respect of certain development. Where such rights apply, no specific application for planning permission is needed.

Article 2(3) inserts new Part 40 of Schedule 2 into the 1995 Order. It provides permitted development rights for the installation of specified types of microgeneration equipment on or within the curtilage of dwellinghouses or flats subject to certain criteria. Article 2(2) makes a consequential change.

A regulatory impact assessment has been prepared in relation to this Order. Copies are available by post from the Welsh Assembly Government at Cathays Park, Cardiff CF10 3NQ.

2007 No. (W.)**TOWN AND COUNTRY PLANNING, WALES****The Town and Country Planning (General Permitted Development)
(Amendment No. 2) (Wales) Order 2007**

<i>Made</i>	2007
<i>Laid before the National Assembly for Wales</i>	2007
<i>Coming into force</i>	2007

The Welsh Ministers, in exercise of the powers conferred by sections 59, 60, 61, 74 and 333(7) of the Town and Country Planning Act 1990⁽⁵⁾, make the following Order:

Citation, commencement and application

1.—(1) The title of this Order is the Town and Country Planning (General Permitted Development) (Wales) (Amendment No. 2) Order 2007 and it comes into force on 2007.

- This Order applies in relation to Wales.

Amendment of the Town and Country Planning (General Permitted Development) Order 1995

2.—(1) The Town and Country Planning (General Permitted Development) Order 1995⁽⁶⁾ is amended in accordance with paragraphs (2) and (3).

- In article 1(2) (interpretation) in paragraph (a) of the definition of “building”, for “25 and 33” substitute “25, 33 and 40”.
- In Schedule 2 after Part 39 (temporary protection of poultry and other captive birds) add—

⁵ 1990 c.8; to which there are amendments not relevant to this Order. The functions of the Secretary of State under sections 59, 71, 74, 78 and 33(7) were, so far as exercisable in relation to Wales, transferred to the National Assembly for Wales by article 2 of and Schedule 1 to the National Assembly for Wales (Transfer of Functions) Order 1999, S.I. 1999/672: see the entry in Schedule 1 for the Town and Country Planning Act 1990 (c.8) as substituted by Article 4 of, and Schedule 3 to, the National Assembly for Wales (Transfer of Functions) Order 2000 (S.I. 2000/253). The functions were transferred to the Welsh Ministers by paragraph 30 of Schedule 11 to the Government of Wales Act 2006 (c..32), the functions being relevant Assembly functions as defined in paragraph 30(2).

⁶ S.I. 1995/418. Relevant amendments were made by S.I. 2007/952 (W.83)

PART 40

Installation of domestic microgeneration equipment

Class A

Permitted development

- A.** The installation, alteration or replacement of solar PV or solar hot water equipment on—
- (a) a dwellinghouse, or a building containing a flat; or
 - (b) a building situated within the curtilage of a dwellinghouse, or a building containing a flat.

Development not permitted

A.1. Development is not permitted by Class A, in the case of solar PV or solar hot water equipment installed on an existing wall or roof of a dwellinghouse, if the solar PV or solar hot water equipment would protrude more than 150mm beyond the external surface of the wall or roof line.

- A.2.** Development is not permitted by Class A, in the case of a building containing a flat if—
- (a) the solar PV or solar hot water equipment would be installed on any part of the external walls of the building; or
 - (b) in the case of solar PV or solar hot water equipment installed on the roof of the building, it would result in the highest part of the solar PV or solar hot water equipment being higher than the highest part of the roof (excluding any chimney).

A.3. Development is not permitted by Class A, in the case of land within a conservation area or which is a World Heritage Site, if the solar PV or solar hot water equipment would be installed on a wall or roof slope—

- (a) forming the principal elevation of the dwellinghouse or of the building containing the flat; and
- (b) which faces onto or is visible from a highway.

Conditions

- A.4.** Development is permitted by Class A subject to the following conditions—
- (a) solar PV or solar hot water equipment installed on a building shall, so far as practicable, be sited so as to minimise its effect on the external appearance of the building;
 - (b) solar PV or solar hot water equipment shall, so far as practicable, be sited so as to minimise its effect on the amenity of the area; and
 - (c) solar PV or solar hot water equipment no longer needed for domestic microgeneration shall be removed as soon as reasonably practicable.

Class B

Permitted development

B. The installation, alteration or replacement of stand alone solar within the curtilage of a dwellinghouse or within the curtilage of a building containing a flat.

Development not permitted

B.1. Development is not permitted by Class B if it would result in the presence within the curtilage of more than one stand alone solar.

- B.2.** Development is not permitted by Class B if any part of the stand alone solar—
- (a) would be installed on a building;
 - (b) would exceed 4 metres in height; or
 - (c) would be situated within 5 metres of the boundary of the curtilage.

B.3. Development is not permitted by Class B if the surface area of the solar panels forming part of the stand alone solar would exceed 9 square metres.

B.4. Development is not permitted by Class B, in the case of land within a conservation area or which is a World Heritage Site, if the stand alone solar would face onto or be visible from a highway.

Conditions

B.5. Development is permitted by Class B subject to the following conditions—

- (a) stand alone solar shall, so far as practicable, be sited so as to minimise its effect on the amenity of the area;
- (b) stand alone solar, so far as practicable, be sited so as to minimise its effect on the external appearance of the dwelling house or building containing a flat; and
- (c) stand alone solar which is no longer needed for domestic microgeneration shall be removed as soon as reasonably practicable.

Class C

Permitted development

C. The installation, alteration or replacement of a ground source heat pump within the curtilage of a dwelling-house or a building containing a flat.

Class D

Permitted development

D. The installation, alteration or replacement of an air source heat pump on, or within the curtilage of, a dwellinghouse or building containing a flat.

Development not permitted

D.1. Development is not permitted by Class D if—

- (a) in the case of an air source heat pump installed on a dwellinghouse or building containing a flat, the external noise level due to noise from the air source heat pump alone, in any mode of operation, would exceed $40\text{dB } L_{\text{AEQ}, 5 \text{ mins}}$ when measured one metre from the facade at the window of a habitable room of any dwellinghouse or flat;
- (b) in the case of an air source heat pump installed on a building containing a flat, the internal noise level due to noise from the pump alone, in any mode of operation, would exceed $30\text{dBa } L_{\text{AEQ}, 5 \text{ mins}}$ when measured one metre from any acoustically reflecting surface within a habitable room, with the windows closed, of any dwellinghouse or flat ; or
- (c) in the case of an air source heat pump situated within the curtilage of a dwellinghouse or building containing a flat, the external noise level due to noise from the pump alone, in any mode of operation, would exceed $40\text{dBa } L_{\text{AEQ}, 5 \text{ mins}}$ when measured under free-field conditions over an area of not less than 50 per cent of a private outdoor space of any dwellinghouse or flat.

Conditions

D.2 Development is permitted by Class D subject to the following conditions—

- (a) an air source heat pump installed on a dwellinghouse or building containing a flat shall, so far as practicable, be sited so as to minimise its effect on the external appearance of the building;
- (b) an air source heat pump shall, so far as practicable, be sited so as to minimise its effect on the amenity of the area; and
- (c) an air source heat pump which is no longer needed for domestic microgeneration shall be removed as soon as reasonably practicable.

Class E

Permitted development

E. The installation, alteration or replacement of a water source heat pump within the curtilage of a dwelling-house or building containing a flat.

Class F

Permitted development

F. The installation, alteration or replacement of a wind turbine on a dwellinghouse or on a building containing a flat.

Development not permitted

F.1. Development is not permitted by Class F if—

- (a) it would result in the presence on the dwellinghouse or the building containing the flat of—
 - (i) more than one wind turbine in relation to a building of 15 metres in height or less; or
 - (ii) more than four wind turbines in relation to a building exceeding 15 metres in height;
- (b) the internal noise level due to noise from the wind turbine alone, in any mode of operation, would exceed 30dBa $L_{AEQ, 5 \text{ mins}}$ when measured one metre from any acoustically reflecting surface within a habitable room, with the windows closed, of any dwellinghouse or flat ;
- (c) the external noise level due to noise from the turbine alone, in any mode of operation, would exceed 40dB $L_{AEQ, 5 \text{ mins}}$ when measured one metre from the facade at the window of a habitable room of any dwellinghouse or flat;
- (d) the external noise level due to noise from the turbine alone, in any mode of operation, would exceed 40dBa $L_{AEQ, 5 \text{ mins}}$ when measured under free-field conditions over an area of not less than 50 per cent of a private outdoor space of any dwellinghouse or flat;
- (e) the vibration level from the wind turbine alone, in any mode of operation, would exceed 0.5mm/s (PPV) in the vertical (z-axis) direction when measured on the floor towards the centre of any habitable room of any dwellinghouse or flat;
- (f) the length of any blade of the wind turbine would exceed one metre when measured from its tip to the axis of the turbine;
- (g) in the case of an installation on a roof, the highest part of the wind turbine (including any blade) would protrude more than three metres above the highest part of the roof (excluding the chimney);
- (h) the development would be in a conservation area or at a World Heritage Site.

Conditions

F.2. Development is permitted by Class F subject to the following conditions—

- (a) a wind turbine shall, so far as practicable, be sited so as to minimise its effect on the external appearance of the building;
- (b) a wind turbine shall, so far as practicable, be sited so as to minimise its effect on the amenity of the area; and
- (c) a wind turbine which is no longer needed for domestic microgeneration shall be removed as soon as reasonably practicable.

Class G

Permitted development

G. The installation of a stand alone wind turbine within the curtilage of a dwellinghouse or a building containing a flat.

Development not permitted

G.1. Development is not permitted by Class G if—

- (a) it would result in the presence within the curtilage of more than one stand alone wind turbine;
- (b) the stand alone wind turbine would be installed on a building;
- (c) the highest part of the stand alone wind turbine (including any blade) would exceed 11 metres in height;
- (d) the length of any blade of the stand alone wind turbine would exceed one metre when measured from its tip to the axis of the turbine;

- (e) the internal noise level due to noise from the stand alone wind turbine alone, in any mode of operation, would exceed 30 dB $L_{AEQ, 5 \text{ mins}}$ when measured one metre from any acoustically reflecting surface within a habitable room, with windows closed, of any dwellinghouse or flat;
- (f) the external noise level due to noise from the stand alone wind turbine alone, in any mode of operation, would exceed 40dB $L_{AEQ, 5 \text{ mins}}$ when measured one metre from the facade at the window of a habitable room of any dwellinghouse or flat;
- (g) the external noise level due to noise from the stand alone wind turbine alone, in any mode of operation, would exceed 40dBa $L_{AEQ, 5 \text{ mins}}$ when measured under free-field conditions over an area of not less than 50 per cent of a private outdoor space of any dwellinghouse or flat;
- (h) the vibration level from the wind turbine alone, in any mode of operation, would exceed 0.5mm/s (PPV) when measured in the vertical (z-axis) when measured on the floor towards the centre of any nearest habitable room of any dwellinghouse or flat;
- (i) any part of the wind turbine would be within 12 metres of the boundary of the curtilage.

G.2. Development is not permitted by Class G, in the case land within a conservation area or which is a World Heritage Site, if the stand alone wind turbine would be—

- (a) installed in front of the principal elevation of the dwellinghouse or building containing the flat; and
- (b) visible from a highway.

Conditions

G.3 Development is permitted by Class G subject to the following conditions—

- (a) a stand alone wind turbine shall, so far as practicable, be sited so as to minimise its effect on the amenity of the area; and
- (b) a stand alone wind turbine which is no longer needed for domestic microgeneration shall be removed as soon as reasonably practicable.

Class H

Permitted development

H. The installation, alteration or replacement of a flue, forming part of a biomass heating system, on a dwellinghouse or building containing a flat.

Development not permitted

H.1 Development is not permitted by Class H if—

- (a) the height of the flue would protrude in excess of one metre above the highest part of the roof;
- (b) in the case of land within a conservation area or which is a World Heritage Site, the flue would be installed on the principal elevation of the dwellinghouse, or building containing a flat, and would be visible from a highway.

Class I

Permitted development

I. The installation, alteration or replacement of a flue, forming part of a combined heat and power system, on a dwellinghouse or building containing a flat.

Development not permitted.

I.1 Development is not permitted by Class I if—

- (a) the height of the flue would protrude in excess of one metre above the highest part of the roof;
- (b) in the case of land within a conservation area or which is a World Heritage Site, the flue would be installed on the principal elevation of the dwellinghouse, or building containing a flat, and would be visible from a highway.

Interpretation of Part 40

J.1. For the purposes of Part 40—

“habitable room” means a room in a dwelling house or flat other than a bathroom, shower room, water closet or kitchen;

“microgeneration” has the same meaning as in section 82(6) of the Energy Act 2004⁽⁷⁾ and “domestic microgeneration” means the production of electricity or heat for domestic consumption using microgeneration equipment;

“solar PV” means solar photovoltaics;

“stand alone solar” means solar PV or solar hot water equipment which is not installed on a building; and

“stand alone wind turbine” means a wind turbine which is not installed on a building.

J.2. In class D, F and G, a reference to “any dwellinghouse or flat” does not include a reference to—

- (a) the dwellinghouse on which, or within the curtilage of which, the microgeneration equipment is installed; or
- (b) in the case of microgeneration equipment installed on, or within the curtilage of, a building containing a flat, the flat for which the equipment is provided.”.

Jane Davidson

Minister for Sustainability and Housing

One of the Welsh Ministers

2007

⁽⁷⁾ 2004 c.20

Annex 4

Partial Regulatory Impact Assessment

TITLE OF THE PROPOSAL

1. This is a Partial Regulatory Impact Assessment of the likely impacts of proposals to amend the Town and Country Planning (General Permitted Development) Order 1995 (the GPDO) to give permitted development rights to categories of micro-generation equipment.
2. The partial RIA has been prepared to inform the public consultation about the implications of amending the regulations. After the consultation closes the assessment will be refined by taking account of the comments received and a full Regulatory Impact Assessment will be prepared that will accompany any subsequent legislation.

PURPOSE AND INTENDED EFFECT

Objective

3. The Assembly Government's objective is to promote the take-up of domestic micro-generation by classifying categories of micro-generation equipment as permitted development under the GPDO. Equipment falling into the category of permitted development may be installed without first requiring a planning application.
4. The intended effects of the proposals include:
 - the reduction in cost to the householder of obtaining planning consent (the perceived barrier to take-up);
 - potential energy savings to householder (and commensurate reduction in demand from traditional non-renewable sources);
 - wider direct and indirect effects including a reduction on the burden to local planning authorities;
 - stimulation of the market demand for renewable technologies;
 - increased uptake of renewable sources of power relative to non-renewable sources leading to knock on effects on carbon savings; and
 - contribution towards national (and local) targets for renewable energy.

Background

5. Micro-generation is the small-scale production of heat and/or electricity from low carbon

sources Some micro-generation technologies produce energy using renewable resources such as solar, wind or biomass (e.g. wood) and some, like combined heat and power (CHP), may use fossil fuels but are much more efficient than conventional systems.

6. The current uptake of domestic micro-generation is estimated to be very low with just 82,000 installations across the UK by the end of 2004⁸. In recent times, the average number of planning applications received per authority, has been around:
 - 0-3 per year for wind technologies;
 - 2-4 per year for PV and solar thermal panels; and
 - Negligible records of other forms of micro-generation such as heat pumps and hydro.
7. Micro-generation offers a practical response to some deep-seated problems that face the nation regarding climate change, national energy security and energy poverty. The Assembly Government policies support the encouragement of micro-generation as a realistic alternative or supplementary energy generation source for the householder, the community and for small businesses.
8. However, the Government consider that the application of the regime governing planning permission for micro-generation equipment acts as a barrier to the wider take-up of newly emerging technologies. There is a lack of clarity about whether specific planning permission is required for some technologies and as a result individual local authorities interpret the regulations differently. In addition, the often complex, costly, time consuming and uncertain process of seeking planning permission for micro-generation equipment is also perceived to be a barrier to take-up.

RATIONALE FOR GOVERNMENT INTERVENTION

9. The current cost of applying for planning permission for domestic scale micro-generation equipment is £159. This may seem at first to be more a nuisance cost than a genuine economic cost compared to the cost of the micro-generation technology equipment itself. However, it becomes more significant once the additional costs of producing scaled drawings, the time and effort in filling in the application form and the potential 8 week waiting period cost before a decision is made. This can be a real economic and time deterrent to the uptake of micro-generation technologies.

⁸ EST, Potential for Micro-generation Study and Analysis Final Report. Nov 2005

⁹ Figures taken from the wider GPDO and micro-generation study commissioned by the Welsh Assembly Government and Department for Communities and Local Government to look at proposals for amendments to the guidance; this included a survey of 22 local authorities and national park authorities. It should be noted that there is a possibility that some households have installed micro-generation technologies such as solar panels without planning permission and therefore not recorded in this survey.

10. The Town and Country Planning (General Permitted Development) Order 1995 grants rights (known as permitted development rights) to carry out specified forms of development without the need to make an application for planning permission. Inclusion of appropriate categories of micro-generation technologies within the GPDO can directly eliminate these costs.
11. This will also have significant benefits if the demand and uptake for micro-generation technologies lead to reductions in price through economies of scale and in improvements to the effectiveness of these technologies. It will encourage companies to research and develop more energy effective equipment and mass production will drive prices to levels that are more affordable for more householders which will in turn stimulate further demand.
12. On the other hand, by doing nothing, the national energy generating capacity and cost effectiveness of micro-generation equipment will suffer.
13. More generally, these proposals represent a deregulatory initiative and are in line with the objective of reducing the regulatory burden on households and industry and to improve the overall efficiency of the planning system.

CONSULTATION

Within government

14. In preparing the proposals for consultation we have consulted widely within the Assembly Government and with colleagues in England.

Public consultation

15. There has been no previous full public consultation exercise on this proposal although workshops were undertaken as part of the research project on an England and Wales basis.

OPTIONS

Development of the options

16. A Regulatory Impact Assessment requires that a number of options are evaluated together with a 'do nothing' scenario. In this instance, three options have been identified based on possible actions, which could reasonably be undertaken to achieve the objectives set by the Environment Strategy.
17. The options vary in the extent to which different technologies would require specific planning consent and each option is examined for its impact.
18. The option testing process does not take into account external events that might affect the take up of micro-generation technologies (such as an increase in the relative price of non-renewable fuels) or different methods of intervention to address the overall objectives set out in UK Government policy (such as financial incentives for households, although we note that grants to help install technologies are already available).

Option 1 – 'Do nothing'

19. Under the present regulations all domestic wind turbines require express planning consent while, in the absence of clear statutory provision for them, Local Planning

Authorities have been free to decide for themselves whether or not to require an application for other technologies. The 'Do nothing' option assumes that this situation remains, but that unless indicated otherwise, planning authorities insist upon a planning applications for all categories of equipment covered by these proposals.

Option 2 – Permit all micro-generation technology

20. Option 2 would provide 'full exemption' for all technologies defined as 'micro-generation' in Section 82 of the Energy Act 2004 – that is all electricity generating equipment with a capacity of less than 50 kilowatts and all heat production technologies with a capacity of less than 45 kilowatts thermal would be treated as permitted.

Option 3 – Permit where impact is acceptable

21. The GPDO would generally permit domestic households to install micro-generation without applying for planning permission subject to limits in respect of size, positioning, noise etc to control impacts on neighbours and the wider community. To reflect different levels of impact, tighter controls would exist in conservation areas.

SECTORS AND GROUPS AFFECTED

22. The sectors most likely to be affected by the proposals are:

- Micro-generation equipment manufacturers (e.g. experience greater demand as barriers to uptake are removed);
- Micro-generation equipment retailers (e.g. experience greater demand as barriers to uptake are removed);
- Direct supply chain (e.g. experience greater demand as barriers to uptake are removed); and
- Households wishing to purchase micro-generation technologies (e.g. reduced costs and increased utility as barriers to uptake are removed).

23. There may also be secondary effects to:

- Planning services/staff at local authorities (e.g. need to obtain training to better understand implications of proposals);
- Local authority department(s) that deal with enforcements relating to nuisance (e.g. if greater number of complaints are received from neighbouring households);
- Non-renewable energy suppliers – power generation, oil/gas companies as well as other indirect supply chain effects (e.g. experience reduced demand as barriers to uptake are removed); and
- Neighbours and surrounding occupiers. (eg potential impact from noise or vibration or loss of visual amenity).
- As required by the Race Relations (Amendment) Act 2000 we have also examined whether any of the options would affect any groups or communities (e.g. black and ethnic minority [BME] groups) differentially. We believe that they would not.

COSTS AND BENEFITS

Benefits

24. There are four main categories of quantified benefit, which will be examined in turn:

- Savings from reduced cost of planning applications
- Fuel cost savings
- Reduced carbon emissions
- Energy security

Average savings per householder from reduced cost of planning applications

25. Making a planning application incurs the following costs:

- Direct cost: the planning fee
- Indirect costs: transaction costs such as professional fees, production of scaled drawings etc.

26. If the requirement to seek planning permission were removed these costs would no longer be incurred. The saving per application would be as follows:

- Planning fee is £159
- Transaction cost is £725¹⁰

27. This produces a saving of c£880 per installation.

Aggregate savings for householder from reduced cost of planning applications

28. Average estimated savings for individual householders can be used to compute aggregate savings to households in England and Wales. The Energy Savings Trust has published detailed forecasts of the overall up-take up of the new technologies in 2005. For the categories of development for which consent is now required EST's estimates are as follows:

Year	Wind	Solar Hot Water	PV	Hydro	GS heat pumps	Total Installed Units
2009	1,025	51,071	2,402	334	2,250	57,082
2015	48,599	51,071	30,751	519	100,838	231,778
2020	620,830	54,974	95,112	1,773	537,900	1,310,589
2040	944,917	59,017	160,542	9,910	1,000,000	2,174,386

29. These forecasts of the cumulative totals for each technology may now be considered rather low. They are based on the assumption that there would be no support or interventions to promote micro-generation whereas intervention has already commenced. Also the forecasts take no account of the publicity that has surrounded some significant announcements with regard to climate change and on energy policy or of the high profile mass marketing by major domestic retailers of the new technologies. There is strong anecdotal evidence that increased public awareness is leading to more rapid take-up than EST had initially anticipated.

30. On the other hand EST's forecasts do not distinguish between installations on existing buildings for which an application is required, and those on new buildings which it may be assumed will be included as part of the planning application that grants consent for the development as a whole. For the purpose of this exercise EST's estimates need to be adjusted to provide that just 90% of installations will be on existing homes.

31. Table 2 provides adjusted forecasts of the growth in the number of installed units of micro-generation equipment:

Year	Wind	Solar Hot Water	PV	Hydro	GS heat pumps	Total Installed Units
2009	923	45,964	2,162	301	2,025	51,375

¹⁰ Based on the PwC Administrative Burdens Measurement Project. The transaction cost of a minor application was calculated as £1450. It was assumed that a householder consent would cost half of this, or £725.

2015	43,739	45,964	27,676	467	90,754	208,600
2020	558,747	49,477	85,601	1,596	484,110	1,179,531
2040	850,425	53,115	144,488	8,919	900,000	1,956,947

32. However many micro-generation installations are already allowed as permitted development. The following table, based on research by Entec, shows the share of applications for each technology that do not require planning permission.

Table 3: Share of applications allowed as permitted development.					
Wind	Solar Hot Water	PV	Hydro	GS heat pumps	
0%	90%	50%	0%	100%	

33. The take-up forecasts in table 2 can then be adjusted once more to produce the number of installations requiring planning permission.

Table 4: Number of micro-generation installations requiring planning permission						
Year	Wind	Solar Hot Water	PV	Hydro	GS heat pumps	Total Installed Units
2009	923	4,596	1,081	301	0	6,901
2015	43,739	4,596	13,838	467	0	62,640
2020	558,747	4,948	42,801	1,596	0	608,091
2040	850,425	5,312	72,244	8,919	0	936,900

34. By applying the saving per installation of £880 to the number of cases that would otherwise have required planning permission in table 4, cumulative savings for option 2 can be calculated as follows:

Table 5: Cumulative aggregate Savings to 2015 against 'Do nothing' Option (£m)						
	Wind	Solar Hot Water	PV	Hydro	GS heat pumps	Total saving against 'Do Nothing' Option
Option 2	38	4	12	0	0	54
Option 3	<38	<4	<12	0	0	<54

35. Option 2 produces savings of £54m up to 2015 across England and Wales. Because we do not know the number of applications in conservation areas it is difficult to estimate the savings under Option 3. Those installations of micro-generation technologies that occur within conservation areas will likely still require planning permission less householders would make savings under Option 3. Therefore the aggregate savings from reduced planning applications will be lower under Option 3. Savings in Wales will be a proportion of the total but we do not have the relevant breakdown.

Reduced fuel bills for householders

36. To the extent that the reduced costs of installation encourage greater take-up of micro-generation technology there may be a benefit from the reduction in fuel bills for some households. If households get some or all of their energy requirements from micro-generation technologies then their fuel bills would be reduced. However these savings are only relevant for those households that install micro-generation technologies as a consequence of removing the requirement to obtain planning permission.

37. Since option 2 produces the highest savings it is likely to boost take-up the most. Therefore the savings from reduced fuel bills are likely to be highest.

Carbon savings

38. Micro-generation provides a more environmentally sustainable form of energy production than non-renewable sources. A greater use of this technology would lead to lower emissions of carbon dioxide. However just as with reduced fuel bills, these savings are only relevant for those households that install micro-generation technologies as a consequence of removing the requirement to obtain planning permission.
39. Since option 2 produces the highest savings it is likely to boost take-up the most. Therefore the savings from reduced fuel bills are likely to be highest.

Energy security

40. Micro-generation can contribute positively towards renewable energy targets, increasing the overall stock of UK energy supply and adding to long term energy security.
41. Option 2 represents least constraints to development resulting in higher uptake and therefore the greatest effect.

Costs

42. The costs of removing the requirement to seek planning permission for the installation of micro-generation technologies are more difficult to place a monetary value on. This is because many of the costs concern non-marketed goods such as: landscape, noise pollution and the environment. Because these goods are not bought and sold in conventional markets it is very difficult to put a money value on them.

Costs to conventional energy providers

43. If more households get some or all of their energy requirements from micro-generation technologies there will be a reduced demand for energy from other sources. This imposes costs on more conventional energy providers in terms of lost business.

Landscape and amenity

44. Specific planning permission provides an effective control on the location and by implication visual impact and amenity of the development domestic of micro-generation. Removal of planning control may result in some micro-generation being developed at inappropriate locations, such as conservation areas (option 2).
45. Option 3 protects conservation areas so helps to mitigate this potential impact.

Increased need for enforcement and regulations

46. Express planning permission provides an effective control on the location and by implication enforcement of the development of domestic micro-generation
47. Removal of planning control results in micro-generation installed with little consideration for the impact on neighbours and the wider community in terms e.g. of noise and visual nuisance. This may lead to complaints from neighbours or surrounding occupiers as well as enforcement (improvement) notices served by environmental health departments of local authorities. These effects would result in an increase in costs to the local authority dealing with the enquiry/procedures and may off set some potential monetary cost savings associated with options 2 & 3.

Summary of costs and benefits

48. Table 8 below summarises the results of the cost-benefit analysis.(England and Wales)

Table 8: Summary costs and benefits		
Option	Benefits	Costs
Option 1 Do Nothing	<ul style="list-style-type: none"> No change. 	<ul style="list-style-type: none"> No change.
Option 2 Permit all micro-generation	<ul style="list-style-type: none"> £54m householder saving from not having to obtain planning permission Reduced fuel bills Reduced carbon emissions Increased energy security. 	<ul style="list-style-type: none"> Possible visual amenity costs, particularly in conservation areas. Possible noise pollution costs Costs to conventional energy providers.
Option 3 Permit all micro-generation except in conservation areas.	<ul style="list-style-type: none"> Less than £54m householder saving from not having to obtain planning permission Reduced fuel bills. Reduced carbon emissions Increased energy security. 	<ul style="list-style-type: none"> Possible visual amenity costs Possible noise pollution costs. Costs to conventional energy providers.

49. As required by the Race Relations (Amendment) Act 2000 we have also examined whether any of the options would affect any groups or communities (e.g. black and ethnic minority [BME] groups) differentially. We have concluded that they would not.

Small firms impact test

50. The Micropower Council, which represents the industry and which is still characterised by smaller firms, were closely involved in steering the research output that informed the preferred approach. While they are keen for action to be taken to facilitate the take-up of micro-generation, they are also keen to ensure that suitable restraints are put in place so as to prevent development that could impact adversely on others and therefore undermine the acceptable use of these technologies.
51. There are clearly a number of different types of small firms that may be affected (in terms of demand for goods and services) as a result of an increase in uptake of micro-generation technologies at domestic locations, these include:
52. In Option 1 which maintains the current planning requirement there are a number of small firms that may be involved such as:
- Surveyors/consultants who may provide advice to local planning authorities and households;
 - Architects/drafting firms to prepare scale drawings for planning permission.
53. In Option 2 and, to a lesser extent, Option 3 there may be a reduction in demand for the small firms described above and a potential increase in demand for micro-generation units – having a knock-on effect on the supply chain, such as manufacturers, suppliers (including firms such as biofuel feedstock producers) and installers.
54. Given that the illustrative measures considered in this report are not finalised and that any measure that is taken forward would be subject to a full RIA, the small business assessment should be considered preliminary.
55. The Small Business Service were consulted as part of this process and acknowledge our approach and findings.

Competition assessment

56. The possible competition impacts of the options within this review have been assessed. The approach adopted is as set out by the UK Government's Cabinet Office¹¹, referring in turn to more detailed Guidelines for competition assessment set out by the Office of Fair Trading¹².

¹¹ http://www.cabinetoffice.gov.uk/regulation/ria/ria_guidance/index.asp.

¹² <http://www.offt.gov.uk/NR/rdonlyres/A7138977-6FE2-45DE-BE32-3AB6E767664A/0/off355.pdf>

57. The assessment has been undertaken through applying the 'competition filter' set out in the OFT's Guidelines and a more detailed investigation into key specific issues where any competition effects may be likely to arise. However, it has not been practicable to undertake a full, detailed competition assessment across all affected markets. Therefore, the likely competition impacts have been assessed in mainly qualitative terms based on an understanding of the affected markets, the current market structure and nature of competition and the likely positive and negative impacts of the possible policy measures. The analysis has been driven by the availability and detail of the data and information.
58. Given that the illustrative measures considered in this report are not finalised and that any measure that is taken forward would be subject to a full RIA, the competition assessment should be considered preliminary.
59. Consideration has been given both to effects upon competition in the UK (relating to potential reductions in market distortions) and to effects upon UK competitiveness. For the latter, the analysis relates to the potential for economies of scale in production for UK firms as compared to those in other EU firms and also in non-EU firms. In both cases, the results of improvements in the economies of scale in production may result in more activity (and knock-on job creation) in the UK. In the subsequent sections, consideration is given in turn to competition issues and the question of potential impacts on competitiveness.

Competition effects

60. An assessment of the potential competition effects of the options has been undertaken. The main conclusions that can be drawn at this stage:
- Household electricity and gas are supplied mainly by large energy supply companies. The options discussed in this RIA section are likely to have relatively negligible effects on their operations. If uptake of domestic micro-generation were to rapidly increase, however, this may potentially result in increasing activity in this sector from such companies (indeed, a number of major energy supply companies are already active in the micro-generation industry). Furthermore, increased uptake of micro-generation may provide price competition with the more conventional fossil fuels.
 - Fewer restrictions to planning regulation are likely to make micro-generation products more competitive. Option 2 is likely to be more beneficial to smaller companies, whereas options 1 and 3 are likely to preserve the current market structure.
 - Fewer restrictions may stimulate greater demand for their products. This in turn may allow these companies to benefit from economies of scale in their production techniques with greater mechanisation and worker productivity. The result may be a reduction in costs to micro-generation products which in turn may stimulate further demand. This will be especially relevant for micro-generation technologies under 12.5kW (or those that are 'small' and ready for the domestic market).

- However given large(er) scale micro-generation technologies will still require planning permission under all options (except Option 2), there may be the possibility of added costs to such larger technologies. This may occur as manufacturers concentrate on those technologies below the energy thresholds to exploit the developing market. Larger micro-generation technologies may therefore come at a premium and may become less competitive in the market. It is difficult to estimate whether this will occur due to uncertainties at this stage.
- ‘Larger’ micro-generation technologies above the energy threshold are also likely to be less popular at the margin. A consumer may opt for a stand alone biomass heater below 12.5kW than say a 20kW pellet boiler due to the time, nuisance and cost savings from not having to get planning permission. This may create some distortion in the micro-generation market. It is worth noting this will not occur under Option 2.
- It is possible that more short term research and development and efforts will be focused on smaller scale micro-generation technologies rather than creating efficient and affordable large scale micro-generation technologies. This may hinder the achievement of renewable energy targets (again this will not occur under Option 2), depending on the level of uptake of smaller scale micro-generation technologies.
- Fewer planning restrictions may reduce barriers to market entry for new businesses. Smaller micro-generation manufacturers may face a more favourable environment compared to the current situation. However existing firms who are already more efficient in their production methods may be able to create barriers to entry through competitive pricing (thereby reducing the profitability of entry).

61. In relation to effects on competitiveness with countries outside the UK, the following conclusions have been drawn:

- UK based companies are likely to benefit from fewer restrictions. All other factors being equal, increased demand may help these companies reduce their production costs through economies of scale. A reduction in their price might make them more competitive in the international market, with potential knock on effects of increasing demand and further reductions in price. This may also mean more available funds for innovation and R&D.

Enforcement, sanctions and monitoring

62. It is anticipated that the current regime of enforcement, sanctions and monitoring of planning applications will be maintained and not need significant alteration in light of the proposals. Proposals will need to provide specific guidance to local authorities outlining what can be considered under the GPDO.
63. The assessment has considered some of the potential effects of different options on the amount of enforcement that might be required (e.g. disputes which could lead to more work for local authority Environmental Health Officers), although the level of impact is hard to quantify at this stage. As proposals are adopted there may be an initial need to increase the level of inspections and monitoring to ensure that they are workable. Depending on the way the new technologies develop, local authorities may also need to develop a capacity to monitor noise levels and vibration to ensure that conditions relating to these potential nuisances are complied with.

Annex 5

Summary of Questions

QUESTION	YES	NO	COMMENTS
Question 1 – Do you agree with the principle of an impact approach for permitted development relating to domestic micro-generation?			
Question 2 – Do you agree with a restriction on domestic micro-generation development in conservation areas and in World Heritage Sites?			
Question 3 – Should the restriction apply in the same way to the other types of designated area such as National Parks, AONBs or registered parks and gardens?			
Question 4 Are the terms 'on or in front of the principal elevation' and 'visible from a highway clear' and sufficient to protect amenity?			
Question 5 – Do you agree that no special exemptions are necessary for listed buildings? If not, what specific protections do you think are necessary?			
Question 6 – Do you agree that the impact of noise should be dealt with by specific noise restrictions based on decibel levels at/in neighbouring dwellings in the way proposed in Annex 2?			
Question 7 – If not, what alternative approach would best address this issue?			
Question 8 – Do you support a general restriction on permitted development so as to require that visual impact is minimised in exercising the rights?			
Question 9 – Do you agree that local planning authorities should be able to restrict permitted development rights for micro-generation in places where the benefit from the technology is outweighed by its impact?			
Question 10 – Do you have any evidence of damage to protected species or other wildlife that may be caused by these forms of micro-generation? Do you agree that the existing protection is adequate?			
Question 11 – Is guidance sufficient to address the potential impact on archaeologically sensitive areas?			

QUESTION	YES	NO	COMMENTS
Question 12 – In addition to providing advice as to the scope of the changes to the GPDO, what could guidance also usefully cover?			
Question 13 –Do you agree with the proposals for solar micro-generation? If not, what alternatives would you suggest?			
Question 14 – Do you agree that there should be no restriction in terms of the coverage of roofs and walls by solar panels? If not, what would be an acceptable percentage?			
Question 15 – Generally, should the same level of permissiveness apply to solar panels on a wall as on a roof?			
Question 16 – Do you agree with a minimum separation distance of 5m to the boundary of a highway or neighbouring property for a stand-alone solar unit?			
Question 17 – Do you agree with the proposals for heat pumps? If not, what protection measures do you think are needed?			
Question 18 – Do you agree that the likely impact of noise from ASHPs should be dealt with by specific noise restrictions in the same way as proposed for domestic wind turbines?			
Question 19 –Do you agree with the proposals for wind turbines? If not, what alternatives or additions would you suggest?			
Question 20 – Do you agree that the likely impact of noise from turbines should be dealt with by specific noise restrictions in the way proposed?			
Question 21 – Do you agree with the proposals for biomass?			
Question 22 – Do you agree with the proposals for CHP?			
Question 23 – Do you agree there should be no additional permitted development rights for hydro?			