Residential buffer zones for wind turbines

The evidence

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1 Introduction

A private members' bill attempting to set minimum distances from residential premises has been put before the Lords on a number of occasions.[1] It has not progressed beyond initial reading stages. However, it has been widely publicised. Some local authorities in the UK have proposed policies with similar criteria.

For example, Milton Keynes has introduced a separation distance policy as a Supplementary Planning Document – attracting warnings of legal action. In the south west, Wiltshire included a separation distance policy in its draft Core Strategy.

In this document, Regen SW sets out the evidence on the impact of wind turbines and the implications for separation distances or 'buffer zones'. It concludes that policies that set standardised residential separation distances are in conflict with Government policy and do not provide the best approach for addressing the impacts of wind turbines . The imposition of standardised separation distances will artificially sterilise land that may be suitable for wind energy development.

2 Separation distances in the UK

National policy on renewable energy strongly supports the need for further deployment of onshore wind in the UK. Whilst there is a private members' bill on separation distances circulating at present, this is not government policy and has not been evidenced. Charles Hendry, the Energy Minister (until September 2012), is quoted in a February 2011 debate on onshore wind energy as stating:

> "I do not think it is right to go down the route of having specific distances between onshore wind farms and residences."[2]

In Scotland, the policy on separation distances is often misinterpreted as being a strict separation distance for all wind turbines. In fact, the Scottish Planning Policy states:

> "A separation distance of up to 2km between areas of search and the edge of cities, towns and villages is recommended to guide developments to the most appropriate sites and to reduce visual impact, but decisions on individual developments should take into account specific local circumstances and geography. Development plans should recognise that the existence of these constraints on wind farm development does not impose a blanket restriction on development, and should be clear on the extent of constraints and the factors that should be satisfactorily addressed to enable development to take place."[3]

[1] Wind Turbines (Minimum Distance from Residential Premises) Bill [HL] 2012-13 http://services.parliament.uk/bills/2012-13/windturbinesminimumdistancefromresidentialpremises.html

[2] Christopher Barclay, House of Commons Library (2012) *Wind Farms – Distance from housing* www.parliament.uk/briefing-papers/SN05221.pdf

[3] Scottish Executive, Scottish Planning Policy, 2010, paragraph 190 http://scotland.gov.uk/Publications/2010/02/03132605/8

Wales has a similarly flexible policy in relation to the siting of wind projects in Technical Advice Note 8 (TAN 8) which states:

> "500m is currently considered a typical separation distance between a wind turbine and residential property to avoid unacceptable noise impacts, however when applied in a rigid manner it can lead to conservative results and so some flexibility is advised."[4]

3 National policy and the need for onshore wind

The contribution of onshore wind to the attainment of legally binding commitments to secure the generation of energy from renewable sources by 2020 cannot be understated.

3.1 National drivers

The UK has a legally binding obligation to secure the generation of 15% of all energy (including electricity, fuel and heating) from renewable sources by 2020. The exact consequences of failing to meet this obligation are not yet known, but we can be certain that there will be a cost.

In July 2011, the Department of Energy and Climate Change (DECC) published a Renewable Energy Roadmap for the UK to 2020, which set out how the government expects the national target to be achieved. Renewable energy accounted for 54 TWh (3.3%) of the UK's total energy consumption in 2010, having increased steadily since 2005 and by 15% between 2008 and 2009. However, the UK will need to see more than a four-fold increase in its renewable energy consumption by 2020 if 15% of energy needs are to be met from renewable sources.[5]

3.2 Role of onshore wind

A number of models have been worked through to identify the ways in which the UK will achieve its legally binding obligations. Although other technologies, including biomass conversion, are being developed, onshore wind is by some margin the single most cost effective renewable source available for deployment within the UK by 2020. The DECC Roadmap sets out a significant role for onshore wind to play (24 – 32 TWh of generation in 2020, compared to 7 TWh in 2011), with recognition given to the fact that this is a mature technology that can be deployed now. The Overarching National Policy Statement for Energy (2011) (NPS EN-1) also makes this point stating that:

> "Onshore wind is the most well-established and currently the most economically viable source of renewable electricity available for future large-scale deployment in the UK. Together with offshore

[4] Welsh Government (2005) *Technical Advice Note 8 (TAN 8)* http://wales.gov.uk/topics/planning/policy/tans/tan8/?lang=en

[5] DECC (2011) *Renewable Energy Roadmap for the UK to 2020* Downloadable from http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/renewable-energy/2167-uk-renewable-energy-roadmap.pdf

wind, it could do the most to account for 30% of electricity generation by 2020. The British Isles have 40% of Europe's wind."[6]

3.3 Role of local authorities

Whilst the legally binding obligation is for the whole of the UK, the government has made it clear that local areas have an essential role to play in achieving the target. The National Planning Policy Framework (NPPF), which sets out guidance for local authorities on developing planning policy, states:

> "To help increase the use and supply of renewable and low carbon energy, local planning authorities should recognise the responsibility on all communities to contribute to energy generation from renewable or low carbon sources."[7]

3.4 Local policy and development control considerations

National planning guidance points clearly to the need to assess the impacts of wind turbine applications on a case-by-case basis. The NPPF[8] states that local authorities:

> "should have a positive strategy to promote energy from renewable and low carbon sources; and should design their policies to maximise renewable and low carbon energy development while ensuring that adverse impacts are addressed satisfactorily, including cumulative landscape and visual impacts".

In addition, the NPPF states:

> "When determining planning applications, local planning authorities should:
>
> - Not require applicants for energy development to demonstrate the overall need for renewable or low carbon energy and also recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions;
> - And approve the application if its impacts are (or can be made) acceptable."

It is our view that standardised residential separation distances, which would rule out a significant proportion of wind turbine applications without assessing the site specific impacts, do not conform to the NPPF.

[6] DECC (2011) *Overarching National Policy Statement for Energy* Downloadable from http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/consents-planning/nps2011/1938-overarching-nps-for-energy-en1.pdf
[7] CLG (2012) *National Planning Policy Framework* http://www.communities.gov.uk/planningandbuilding/planningsystem/planningpolicy/planningpolicyframework/
[8] CLG (2012) National Planning Policy Framework http://www.communities.gov.uk/planningandbuilding/planningsystem/planningpolicy/planningpolicyframework/

4 Noise

4.1 Summary

Levels of noise from wind turbines are a key consideration in determining planning applications. There needs to be adequate assessment at the pre-application stage of the impact of wind turbines to ensure neighbouring houses and other land uses are not unacceptably affected. There are strict guidelines on noise emissions from wind turbines, which require noise to be assessed on a case-by-case basis against background noise levels. The noise effects of each wind energy development will also be determined by the local circumstances, such as terrain and wind direction, and other site specific factors. Existing standards for noise already allow adequate protection of amenity for dwellings and render standardised separation distances unnecessary.

4.2 Further evidence

4.2.1 Comparison of noise levels

To set this issue in context, as with any mechanical structure, wind turbines do make some noise. However, wind turbines are not noisy in comparison to other sources of noise, such as roads, as indicated in table 1.

Comparison of indicative noise levels

	Indicative noise level in dB(A)
Threshold of pain	140
Jet aircraft at 150m	105
Pneumatic drill at 150m	95
Truck at 30mph at 100m	65
Busy general office	60
Car at 40mph at 100m	55
Wind farm at 350m	35-45
Rural night-time background	20-40
Quiet bedroom	20

(Source: The PPS22 Companion Guide[9])

4.2.2 Assessing noise impacts

National guidelines on assessing noise impacts are set out in ETSU-R-97. [10] While the national Planning Policy Statements are no longer valid, the companion guide to PPS22 *Planning for Renewable Energy* remains current, which states that "the report, 'The Assessment and Rating of Noise from Wind Farms'

[9] CLG (2004) *Planning for Renewable Energy: A Companion Guide to PPS22*
http://www.communities.gov.uk/publications/planningandbuilding/planningrenewable
[10] ETSU for the DTI (1996) *The Assessment and Rating of Noise from Wind Farms*
http://webarchive.nationalarchives.gov.uk/+/http://www.berr.gov.uk/files/file20433.pdf

(ETSU-R-97) should be used by planning authorities when assessing and rating noise from wind energy developments".

These national guidelines set out an approach to assessing and rating the noise emissions of a wind energy development. Rather than setting standard separation distances from homes or other noise sensitive receptors, ETSU-R-97 requires that noise emissions to be assessed on a case by case basis, a method that compares the noise produced against background noise levels. In contrast to fixed separation distances, this approach allows for adequate protection of amenity for residential buildings and other noise sensitive receptors, but does not eliminate potential sites unnecessarily.

A 2011 report from Hayes McKenzie for the Department of Energy and Climate Change reassessed the appropriateness of the ETSU 1997 guidelines. Charles Hendry speaking about the report stated:

> "[It] found that current Government guidance is appropriate for assessing noise impacts and recommended that good practice advice should be produced to confirm and where necessary clarify the way the guidance should be implemented in practice. The Institute of Acoustics is taking forward work to develop such advice."[11]

Common Concerns about Wind Power (2011) from the Centre for Sustainable Energy summarises the key requirements of ETSU-R-97:

> "Day- and night-time levels should be set at 5 dB(A) above background ambient noise, with a fixed limit of 43 dB(A) for night-time use; an upper limit of 45 dB(A) is acceptable for a dwelling which derives a direct economic benefit. Guidelines also takes into account areas that might experience low levels of background noise and that absolute noise limits need to be set relative to this if necessary."

In the south west, Cornwall Council has taken a robust approach to noise from wind turbines that builds on the ETSU-R-97guidelines and balances the need to protect residential amenity and to not limit wind turbine deployment unnecessarily, as outlined in the box below.

[11] Quoted in Christopher Barclay, House of Commons Library (2012) Wind Farms – Distance from housing www.parliament.uk/briefing-papers/SN05221.pdf

Cornwall Council's approach to assessing noise
Cornwall Council has issued guidance on planning for wind turbines of all scales that specifies the level of noise assessment required for single or multiple turbines dependent on their size. The guidance can be downloaded from: http://www.cornwall.gov.uk/Default.aspx?page=25182
Whilst at present this is guidance only, the plan is to turn it into an SPD once Cornwall's Core Strategy is adopted.
For turbines over 60m in height, Cornwall Council requires developers to submit:

- a plan showing distance of proposed wind turbine from any noise sensitive property
- details of any property occupied by persons with a financial involvement in the proposed development
- acoustic data for specific make/model of wind turbine(s) proposed and twelve figure grid reference for turbine locations.
- a table detailing the separation distance between proposed wind turbine(s) and any noise sensitive receptors
- a background noise survey
- and auditable predictions of noise levels.

Smaller turbines require a reduced amount of documents and assessments depending on the size bracket.
In terms of predicting wind turbine noise, Cornwall Council requires that developers "use an appropriate noise prediction framework, such as that provided in ISO9613 and to consider the additional guidance on wind farm noise assessment that is contained within the Institute of Acoustics (IOA) March/April 2009 bulletin, "*Prediction and assessment of wind turbine noise - Agreement about relevant factors for noise assessment from wind energy projects*"."
The key objective of Cornwall Council is to ensure that noise levels for turbines are limited to:-

- 35dBLAeq for small turbines,
- 35dBLA90 for large single turbines
- ETSU levels with a minimum fixed daytime limit of 35dBLA90 for wind farms

In approving wind applications, Cornwall Council tends to include a planning condition on noise that states that if justified complaints about noise levels are received then a further noise assessment will be required and if it is found that levels are exceeded, the turbine must cease operation.

4.2.3 Amplitude modulation

Amplitude Modulation (AM) refers to varying noise levels, which occurs all around us in our daily lives. AM is not a phenomenon specifically associated with wind turbines, but in the context of wind turbine noise it can be attributed to the 'swishing' of the blades. The ETSU-R-97 noise limits take this into account as it is a component of the noise characteristics of wind turbines.

Concerns have been raised about excess amplitude modulation (EAM) which can make the swishing noticeable at residential dwellings under certain circumstances. These include:

- Close separation distance between turbines sited in a line, especially where such a line points towards residential properties
- Unusual topography, such as turbines situated on an escarpment or sheltered by the landscape
- On flat land, in stable air conditions
- With turbines on towers shorter than would normally be specified for a given rotor diameter.

These circumstances can be avoided through consideration at the early stages of site identification and planning. Standardised separation distances would not ensure that these circumstances are avoided.

The evidence shows that instances of AM causing problems are rare. A 2007 Salford University survey found that of all the operating UK wind farms at the time of the study there were four cases where AM appeared to be a factor. According to a note from Renewable UK (formerly BWEA): "To put this in context: the London Borough of Westminster registered around 300,000 noise complaints from residents in 2008. The total number of noise complaints to local councils across the country runs into millions. The Salford study on wind farms and noise in 2007 found only four complaints from about 2,000 turbines in the country, three of which were resolved by the time the report was published."

4.2.4 Infrasound

Noise in the infrasound range (low frequency) is only considered an issue if it is at a very high level. The UK has drawn on international research, which has shown that there is no evidence to suggest that infrasound has any impact on people living near turbines.

A 2012 report for the Massachusetts Department of Environmental Protection and Massachusetts Department of Public Health[12] reviewed available scientific studies and found no evidence that wind turbines emit infrasound at a level that can be heard or felt. The report states:

> "Infrasound refers to vibrations with frequencies below 20 Hz. Infrasound at amplitudes over 100–110 dB can be heard and felt. Research has shown that vibrations below these amplitudes are not felt. The highest infrasound levels that have been measured near turbines and reported in the literature near turbines are under 90 dB at 5 Hz and lower at higher frequencies for locations as close as 100 m."

Furthermore, the report found that there was no evidence that infrasound from wind turbines directly impacts the inner ear as has been claimed. The report states:

[12] Report of Independent Expert Panel prepared for Massachusetts Department of Environmental Protection and Massachusetts Department of Public Health (January 2012) Wind Turbine Health Impact Study. Downloadable from http://www.mass.gov/dep/energy/wind/turbine_impact_study.pdf

> "Claims that infrasound from wind turbines directly impacts the vestibular system have not been demonstrated scientifically. Available evidence shows that the infrasound levels near wind turbines cannot impact the vestibular system."

Similarly, research by G Leventhall in the peer-reviewed journal Canadian Acoustics examined whether or not wind turbines produce infrasound at levels that can impact humans. Specifically it refuted the allegations about infrasound, and stated that such allegations were "irrelevant and possibly harmful, should they lead to unnecessary fears."[13]

4.2.5 Noise complaints

The Centre for Sustainable Energy's Common Concerns about Wind Power (2011) reviewed the evidence on noise and found that literature on "the small but significant number of residents who are continually disturbed by perceived noise from wind farms almost invariably reveals that the propagated sound is not any higher than normal community background levels". [14] There seems to be a correlation between those annoyed by wind turbine noise and those who already view the wind turbine development as an intrusion in their area. CSE conclude:

> "It is evident that residents who feel installations are forced upon their local setting will judge any subsequent noise accordingly, and it is cogent that clearly realised benefits for residents (direct financial benefit and a better understanding of how wind power contributes to a low-carbon economy) significantly mitigate this negative bias."

This finding is backed up by a report for Massachusetts' Department of Environmental Protection and Department of Public Health which states:

> "Effective public participation in and direct benefits from wind energy projects (such as receiving electricity from the neighbouring wind turbines) have been shown to result in less annoyance in general and better public acceptance overall."[15]

These findings point towards the need for better engagement of communities in the pre-planning and planning processes. Wind farms can also be made more acceptable if the local community can benefit directly from it. However, it is important to note that community benefits cannot be considered in the planning process and that local authorities have a duty to safeguard the impartiality of the planning system.

[13] Leventhall G (2006) *Infrasound from Wind Turbines – Fact, Fiction or Deception?* in Vol. 34 No.2 www.wind.appstate.edu/reports/06-06Leventhall-Infras-WT-CanAcoustics2.pdf

[14] Centre for Sustainable Energy (2011) *Common Concerns about Wind Power* http://www.cse.org.uk/downloads/file/common_concerns_about_wind_power.pdf

[15] Report of Independent Expert Panel prepared for Massachusetts Department of Environmental Protection and Massachusetts Department of Public Health (January 2012) Wind Turbine Health Impact Study. Downloadable from http://www.mass.gov/dep/energy/wind/turbine_impact_study.pdf

5 Health and safety

5.1 Summary

Standardised separation distances in excess of a 'safe separation distance' are not required to protect the general public. The PPS22 Companion Guide states that:

> "The minimum desirable distance between wind turbines and occupied buildings calculated on the basis of expected noise levels and visual impact will often be greater than that necessary to meet safety requirements. Fall over distance (i.e. the height of the turbine to the tip of the blade) plus 10% is often used as a safe separation distance."

5.2 Further evidence

5.2.1 Deaths caused by wind turbines

Incidences of deaths caused by wind turbines are low. The Centre for Sustainable Energy's report, *Common Concerns about Wind Energy*, compares deaths in the wind industry to deaths in other power generating industries, on the basis of deaths per GW year of energy produced.

Generation industry	Deaths/GWey
Nuclear	0.048
Wind	0.054
Natural gas	0.197
Coal	6.921
Liquified petroleum gas	15.058

Deaths from installations in general relate to industrial accidents, rather than involving members of the public. Of the 76 deaths related to wind turbines since the industry began in 1975, only 8 members of the public have been killed. The recorded deaths include:

- a parachutist in Denmark
- a crop duster pilot in the US who struck a guy wire on a meteorological mast
- two traffic accidents in the UK and Ireland involving turbine transporters
- a man on a college campus tour who became unconscious while climbing a wind turbine tower
- a child in Canada who was killed whilst playing around a residential turbine that was under repair
- one person killed during a high school prank
- one man was killed when his snowmobile collided with a fence around a wind turbine construction site. [16]

[16] Gipe, P. Contemporary mortality (death) rates in wind energy [on-line database]. 2010. Paul Gipe; c.2010 [cited 2010 Dec 15]. Available from http://www.wind-works.org/articles/BreathLife.html

While these deaths and those of the industry workers should not be ignored in the search to make wind turbine construction and operation as safe as possible, the evidence shows that turbines do not present a high risk to the public at large. Health and safety should, however, remain a priority particularly during the construction of a site.

5.2.2 Blade and ice throw

Safety fears relating to wind turbines often focus on the potential for 'blade throw' and 'ice throw'. Blade throw occurs when a wind turbine loses a blade which is then thrown a distance away from the turbine as a result of its momentum. There is no reliable evidence about the potential distances that blades can be thrown. However, a recent study by MMI Engineering for the UK Heath and Safety Executive estimated that at a distance of two times the turbine's height from the tower base, the risk that a thrown blade would directly strike someone causing a fatality is 1 in 100 million and the risk of an indirect impact is 1 in 10 million.[17]

Ice throw is not a major issue in the UK's milder climate, though winters in recent years have seen periods of low temperatures. Furthermore, most modern wind turbines have heated blades that are controlled by a computer so ice formation is unlikely to occur. If ice does form, ice throw can be avoided through appropriate start up procedures for turbines following periods of inactivity during very cold temperatures. In most cases, ice falls within a distance from the turbine equal to the tower height, and in any case, very seldom does the distance exceed twice the total height of the turbine (tower height plus blade length).

5.2.3 Wind turbine syndrome

Wind Turbine Syndrome (WTS) is an alleged condition proposed by paediatrician Dr Nina Pierpoint.[18] She cites a range of physical sensations (e.g. tinnitus, headache etc.) and effects (sleeplessness, anxiety etc.) based on a series of interviews comprising of a study group of 10 self-selected families.

This is a self-published study, and Dr Pierpoint is a known anti-wind campaigner in North America. According to RenewableUK, "Perhaps more importantly none of her research has been published in a single peer reviewed medical journal."

The UK's NHS website responding to the report, states the following: [19]

> "This study provides no conclusive evidence that wind turbines have an effect on health or are causing the set of symptoms described here as 'wind turbine syndrome'. The study design was weak, the study was small and there was no comparison group.
>
> Asking this particular group about their symptoms prior to their exposure to wind turbines was not a sufficient control measure. Many of the participants were reportedly already convinced that

[17] http://www.renewable-uk.com/events/health-safety-conference/pdf/2012-Presentations/A1_Chris_Robinson.pdf
[18] http://www.windturbinesyndrome.com/wind-turbine-syndrome/
[19] http://www.nhs.uk/news/2009/08August/Pages/Arewindfarmsahealthrisk.aspx

wind turbines were to blame for their symptoms and were actively trying to move out of their homes or had already moved.

It is also impossible to know how frequent these symptoms are in people who live near wind turbines compared to those who don't. There is also no information on how the group was selected in the first place and some uncertainty as to which countries these people come from."

Similarly a report for Massachusetts' Department of Environmental Protection and Department of Public Health found that there is insufficient evidence that the noise from wind turbines is *directly* (i.e. independent from an effect on annoyance or sleep) causing health problems or disease. It found "there is no evidence for a set of health effects, from exposure to wind turbines that could be characterized as a 'Wind Turbine Syndrome'."

The report found that the greatest impact on people living nearby was annoyance and that "this response appears to be a function of some combination of the sound itself, the sight of the turbine, and attitude towards the wind turbine project."

6 Shadow flicker

6.1 Summary

Shadow flicker occurs when the sun shining through a wind turbine's rotating blades creates a rotating shadow on the ground, which causes a flickering effect if the shadow passes across a window of a building. It is predictable, only occurs for a small proportion of time, and the predicted effect is capable of full mitigation through a programme in which wind turbines capable of giving rise to shadow flicker are shut down in the conditions in which it could occur.

6.2 Further evidence

In 2011, the government commissioned an independent study from Parsons Brinckerhoff, *Update of UK Shadow Flicker Evidence Base*.[20] The press release from DECC summarised the findings of the study:

- There have not been extensive issues of shadow flicker in the UK
- The frequency of the flickering caused by the wind turbine rotation is such that it should not cause a significant risk to health
- In the few cases where problems have arisen, they have been resolved effectively using mitigation measures, in particular turbine shut down systems.[21]

[20] Parsons Brinckerhoff for Department of Energy and Climate Change (2011) *Update of UK Shadow Flicker Evidence Base* http://www.decc.gov.uk/assets/decc/what%20we%20do/uk%20energy%20supply/energy%20mix/renewable%20energy/ored/1416-update-uk-shadow-flicker-evidence-base.pdf

[21] DECC Press Release (16 March 2011) *Wind turbine shadow flicker study published* :Quoted in Christopher Barclay, House of Commons Library (2012) *Wind Farms – Distance from housing* www.parliament.uk/briefing-papers/SN05221.pdf

6.2.1 Likelihood of occurrence

In the UK, only dwellings sitting within 130° either side of north relative to the turbines can be affected by shadow flicker. CSE's report estimates that given the UK's position, sunlight intensity and weather conditions, shadow flicker is only likely to occur for a theoretical maximum of 15% of the time in winter and 30% in summer.

PPS22 Companion Guide states that:

> "The likelihood of shadow flicker occurring and the duration of such an effect depends upon:
>
> - The direction of the residence relative to the turbine(s)
> - The distance from the turbine(s)
> - The turbine hub-height and rotor diameter
> - The time of year
> - The proportion of day-light hours in which the turbines operate
> - The frequency of bright sunshine and cloudless skies (particularly at low elevations above the horizon)
> - The prevailing wind direction."

In addition, CSE's *Common Concerns about Windpower* report suggests that a screen of trees could be planted between the turbine and the affected property to prevent the shadow landing on the window.

The potential for shadow flicker must be considered as part of the pre-planning environmental impact assessment. For example, Cornwall Council requires a shadow flicker assessment to be submitted with a planning application where the nearest sensitive receptor (e.g. home or other building) is within a 10 rotor diameter distance of the proposed wind turbine(s).

6.2.2 Health and epilepsy

The adverse effects of shadow flicker from large commercial-scale wind turbines is one of nuisance, and there are no associated adverse health effects. The PPS22 Companion Guide presents the evidence in relation to shadow flicker and epilepsy:

> "Around 0.5 % of the population is epileptic and of these around 5 % are photo-sensitive.
>
> Of photo-sensitive epileptics less than 5 % are sensitive to lowest frequencies of 2.5-3 Hz, the remainder are sensitive only to higher frequencies. The flicker caused by wind turbines is equal to the blade passing frequency. A fast-moving three-bladed machine will give rise to the highest levels of flicker frequency. These levels are well below 2 Hz. The new generation of wind turbines is known to operate at levels below 1 Hz."

As a result, it is highly unlikely that shadow flicker from a wind turbine could affect a nearby resident's epilepsy. This is backed up by the report for Massachusetts' Department of Environmental Protection

and Department of Public Health which found that: "Scientific evidence suggests that shadow flicker does not pose a risk for eliciting seizures as a result of photic stimulation."[22]

7 Public acceptance

7.1 Summary

Building 100 metre or higher wind turbines in the countryside does, and probably always will, stir emotions and vociferous opposition from some people. However, in many cases these people are in a minority. Putting in place standardised separation distances to suit the minority will not necessarily benefit the wider community. Instead applications should be assessed on a case-by-case basis and views of the local community and the role of a local benefit scheme explored.

7.2 Further evidence

Independent surveys repeatedly show that the majority of people are in favour of, or largely indifferent to, wind power. However, these people rarely get represented in the press. DECC's *Public Attitudes Tracker* (September 2012) found that 66% of those surveyed were in support of onshore wind development, with only 12% opposed and 4% strongly opposed.[23]

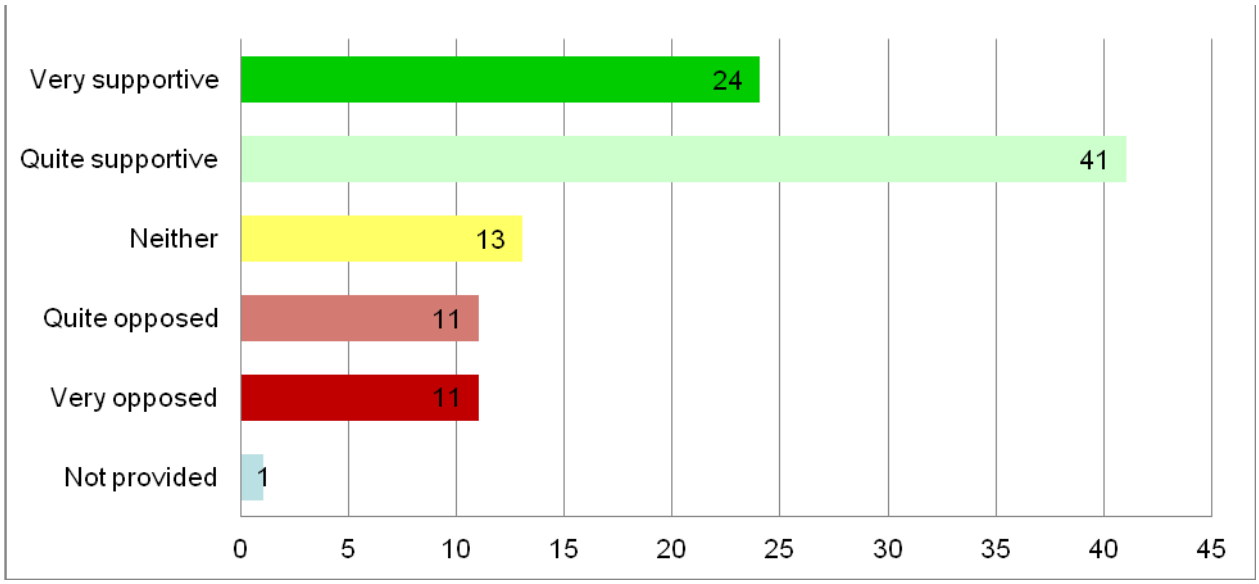
In the south west, some local authorities have undertaken opinion surveys to obtain the views of local people prior to a controversial application being considered. For example, a 2011 Viewpoint survey in South Gloucestershire[24] asked participants of a citizens' panel how they would feel about a cluster of large wind turbines being built in their area. The results are displayed below, with almost two thirds (65%) of panel members supportive and just over a fifth (21%) opposed to the idea.

[22] Report of Independent Expert Panel prepared for Massachusetts Department of Environmental Protection and Massachusetts Department of Public Health (January 2012) *Wind Turbine Health Impact Study* Downloadable from http://www.mass.gov/dep/energy/wind/turbine_impact_study.pdf

[23] DECC (September 2012) *DECC Public Attitudes Tracker – Wave 2: Summary of Key Findings.* Downloadable from http://www.decc.gov.uk/assets/decc/11/stats/6410-decc-public-att-track-surv-wave2-summary.pdf

[24] http://www.southglos.gov.uk/NR/rdonlyres/7BF43CA3-C61C-466F-8D34-589BC2F612BE/0/CEX110146.pdf

Response to a proposal for a group of 2-4 large wind turbines in South Gloucestershire



8 Conclusions

Policies that set standardised residential separation distances are fundamentally in conflict with Government policy. Onshore wind has an important role to play in the attainment of legally binding obligations to secure the generation of energy from renewable sources by 2020. The imposition of standard separation distances would sterilise land that may be entirely suitable for wind energy development and therefore be detrimental to meeting our obligations.

Furthermore, the National Planning Policy Framework requires local planning authorities to have a positive strategy to promote renewable energy generation and to assess applications on a case-by-case basis. Guidelines in place to assess noise from wind turbines, health and safety issues and shadow flicker allow the local circumstances – such as terrain, wind direction and other site specific factors – to be taken into account. Existing guidance provides adequate protection of amenity for the local community and renders separation distances unnecessary.