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Renewable Energy Foundation Response to:

***DECC Consultation on the National Policy Statement EN-3
Renewable Energy Infrastructure***

22 February 2010

About The Renewable Energy Foundation

The Renewable Energy Foundation is a registered research and education charity encouraging the development of renewable energy and energy conservation whilst emphasizing that such development must be governed by the fundamental principles of sustainability. REF is supported by private donation and has no political affiliation or corporate membership. In pursuit of its principal goals, REF highlights the need for an overall energy policy that is balanced, ecologically sensitive, and effective.

Introduction

1. In this response, we have concentrated on the draft NPS EN-3 statement for Renewable Energy Infrastructure. In our opinion, there are a number of errors, inconsistencies and incomplete guidance which causes us to conclude that EN-3 is not fit for the purpose it is intended, and should not be formally approved.
2. The detailed points of criticism are covered below, starting with a number of general points that apply to all the renewable technologies covered in EN-3.

Issues Common to All Sections in EN-3

3. **Environmental Data.** The collection of data is mentioned regularly throughout the NPS, but it must in addition be recalled that environmental data must be collected in order to comply with the EIA Directive 85/337/EEC, for the reason that such data is required to identify and assess the main effects which a project is likely to have on the environment. It is nowhere made clear in the NPS that all data so collected must be made available to the general public in electronic format so that an independent assessment of the environmental effects can be carried out. It is not sufficient for a developer to summarise the results of their assessment in an ES in such a way that their results and conclusions cannot be verified.
4. **Technical Uncertainties** Where there are examples of technical or scientific uncertainties, the wording of the NPS ought to note these uncertainties and allow for changes in understanding as experience is accumulated. For example, 2.6.87, we read '*the effects of heat on sensitive species from cable infrastructure during operation are unlikely to be a reason for the IPC to have to refuse to grant consent*'. This should be replaced with '*Unless evidence is forthcoming which contradicts current understanding, the effects of heat ... etc*'. This would be consistent with the extra monitoring of effects recommended in section 2.6.51, where it is acknowledged that it is possible that the accuracy of predictions can be improved and understanding of impacts increased.

5. **Commercial Aspects** e.g. see 2.5.17, and 2.5.23. If an application has no realistic likelihood of being built, it is unreasonable to permit a developer to pursue the application. If all commercial aspects are not relevant to planning decisions – as the NPS implies – then the local residents may be involved in substantial costs, time and planning blight for nothing. There is evidence that developers prefer to have a number of planning permissions in hand, some of which may never be implemented or even have any likelihood of implementation. For example, there are some 7,600 MW of wind farms with permission, some dating back ten years, but which have not been built. This contrasts with the 4,000 MW that have been built. An example of an old permission is South Beach, Norfolk where planning permission for four turbines was granted in 2000 on appeal and the application renewed in March 2005. Our understanding is that the land for which permission has been granted is not under the control of the developer. Consequently, a great deal of public and private money and time has been wasted on an application that shows every sign of being incapable of implementation.
6. **Lack of precision in planning applications/flexibility in planning details.** At a number of places in the NPS, it is stated that the IPC could be in the position of deciding applications that are not fully specified (e.g. see 2.5.28, 2.6.42 and 2.7.20, etc). In order to comply with the European Directive on Environmental Assessment (85/337/EEC), assessment of a planning proposal needs to take fully into account the effects of the application on the environment. Whilst it is understood the NPS proposes that the maximum adverse case is assessed, in practice we believe this will be difficult unless the uncertainties in the final plan are relatively minor. There is the risk that decisions on applications which are not well specified will fail to comply with the European Directive. A second point is that where a decision is made on the basis of one particular scenario, it is important that any permission is conditioned such that the implemented permission and its environmental effects cannot exceed those assessed.

7. **Green Belts** e.g. see 2.5.32, 2.6.57, 2.7.33. The NPS repeatedly states that the wider environmental benefits associated with renewable energy may be considered justification for building electricity generators on green belts. We disagree with this position. There is a wide range of renewable energy solutions of varying scale that would suit brown-field sites. We believe these should take priority over building on green belts, which are a highly valued national asset.
8. **Delegation to Others** e.g. the Environment Agency, e.g. 2.5.41, 42, 2.5.71. The NPS states that the IPC need not consider some issues (e.g. chimney stack height optimisation) because the EA is tasked with that part of the decision making process. Is the intention that submissions to the IPC on issues delegated to the EA would not be allowed? We believe that it would be incorrect, and possibly unlawful, for such issues to be excluded from the IPC's considerations.

Biomass and Waste Combustion

9. **2.5.9 / 2.5.10** We fail to see why the eligibility for ROCs and the source or sustainability of biomass fuel are irrelevancies in determining planning permission. Planning applications for renewable energy developments often rely on the 'renewable' aspect of the application as justification for departures from standard planning practises for ordinary developments. Consequently, it seems reasonable and in the public interest to expect that evidence that the development is indeed 'renewable' should be presented as part of the planning application.
10. **Carbon Capture Readiness for Biomass** plants of 300 MW or more (2.5.27). It is our understanding that there are extra plant health and safety risks associated with CCS, and that these may indicate the need for an increased separation distance between CCR combustion plants and settlements. The health and safety issues with CCS and any concomitant requirements for safety exclusion zones around

plant should be covered in the NPS, and dealt with at the earliest possible stage, rather than left to emerge as an unpleasant surprise for investors and neighbours.

11. 2.5.39 & 40. The statement that 'the IPC should not regard the proposed waste plant as being detrimental for health' when certain requirements are met, seems to suggest that the IPC are being advised to, a priori, ignore or prevent submissions of future scientific evidence incompatible with this guidance. We suspect that this is not the intention of the authors of the NPS, and believe that this section should be rephrased to acknowledge the possibility that future research may uncover currently unanticipated facts.

Offshore Wind

12. **2.6.5** We believe that the re-definition of what is required in an Environmental Statement and the definition of 'effects', 'impacts' and 'benefits' does not accord with the EIA Directive and is likely to cause confusion. The statement at 2.6.5 suggests that only 'likely significant impacts' need be assessed in the ES, which is not our understanding of the EIA Directive. We believe that the latter directs that projects requiring an EIA are those which are likely to have significant environmental effects. Having decided that a project is an EIA project, the Directive does not limit the assessment only to the 'significant' environmental effects but expects a full assessment of the environmental effects. Without carrying out and presenting a full assessment, it would not be possible to fulfil the requirement to demonstrate that some effects are significant and some are not.
13. **Wind resource** (2.6.30) In our opinion the collection and publication of wind speed data must be a mandatory accompaniment to all wind farm applications, both onshore and offshore. Irrespective of the economics to the developer, there are ramifications, both for the cost to the public and for the ability of the electricity system to cope with the increased wind generation, which are key to making an appropriately balanced planning decision. In the case of offshore

applications, the wind speed data is necessary to enable prediction of the daily and seasonal delivery of electricity.

14. The quantity of 'renewable' electricity generated is a material consideration for the IPC. One example of this is that the IPC is required to take a 'pragmatic approach' to varying shipping routes (paragraph 2.6.170) and weigh up the negative impact on the economy, not to mention the potential increase in CO₂ emissions, of any increased transit time of shipping, against the 'benefits of the wind farm application'. Without site-specific wind speed data, there can be no possibility of quantifying the benefit side of this equation. With the wind speed data, quantifying the benefits becomes straightforward.
15. Furthermore, it is now generally understood and indeed, acknowledged by Ofgem and National Grid, that the proposed expansion of wind energy in the UK electricity mix will result in wind farms being required to 'spill' excess electricity produced at times of low demand such as during the night, which will result in an increased cost burden on the consumer. This will erode the CO₂ emissions savings of any particular wind farm. Without the wind speed data it will be impossible to quantify the amount of energy generated, the amount 'spilled' and the public cost of doing so. These are vital elements of information necessary to carry out a proper 'weighing in the balance' of the merits and demerits of any application. Omission of this data would contradict the statement at, for example, 2.6.56 that requires an understanding of the social and economic benefits of a proposal.
- 16. Post permission monitoring (2.6.52)** The statement that monitoring should be presented in formal reports and made publicly available needs to be revised to require that for any monitoring which generates large datasets the datasets must be made electronically available. Experience has taught us that data published in text form cannot be scrutinised using computer techniques and consequently often does not achieve its intended purpose. In order to avoid semantic debate about the meaning of "large" it seems best to

require that all data from monitoring is made available in electronic form.

- 17. 2.6.66** This paragraph, which mentions use of post-construction ecological monitoring data from pre-existing wind farms, should be amended to ensure that such data is made publicly available and publicly accessible in electronic format.
- 18. 2.6.109** We consider the statement that 'shutting down turbines within migration routes during estimated peak migration periods is unlikely to offer suitable mitigation' is insufficiently clear. We assume that what is intended is that permission to site turbines on migration routes will be refused because of the lack of suitable mitigation. This needs to be spelled out in the document, for the avoidance of doubt.
- 19. Other Offshore infrastructure.** (2.6.187 ff.) Given the importance of carbon capture and sequestration, we consider that all offshore applications should be specifically required to assess their potential impact on future CCS requirements for offshore infrastructure. The current wording of the NPS only requires assessment of the impact on licensed activities and existing infrastructure. Guidance should be provided at this stage in order that potential infrastructure for facilitating CCS is not compromised in any way.
- 20. Scale** (2.6.219) We do not accept the premise inherent in EN-3 that the scale of turbines cannot be changed where their visual or other impact is significant. One of the key principles of PPS22 (viii) requires demonstration that 'environmental and social impacts have been minimised through careful consideration of location, **scale**, design and other measures' (Emphasis added). Increasing turbine height will, generally, increase electricity generation. However, a decision will be necessary as to what height is appropriate in any specific situation. It is unreasonable to allow developers freedom to erect turbines of any height regardless of the location.
- 21. Noise for Offshore wind farms.** This issue is not covered in EN-3, suggesting that the authors believed there to be no significant problem. If so, this is an error, and at least an omission. What is

possibly not appreciated is that sound propagation over sea is very much more significant than over land, and the wind speeds are higher than the masking wind speeds on shore.. The recently completed off shore wind farm at Gunfleet Sands is audible at properties on shore at Bradwell-on-Sea. Over sea noise propagation to onshore receptors should be covered in EN-3.

Onshore Wind

22. **2.7.5** See the comments on 2.6.5 above for offshore wind that apply equally to this paragraph of EN-3.

23. Anemometry Data (2.7.8) The comments above on wind resource apply equally to the statement at 2.7.8 that it is a matter for the developer whether anemometry data is necessary. The NPS would be in error if this statement remained in the final version. Anemometry data is essential to a proper assessment of the environmental effects of a wind farm application. This is because wind speeds at or near hub height are required in order to determine the noise impact of a development. It is the wind speeds experienced by the turbine blades that determine the rotational speed of the turbine which, in turn, determines the noise output of the turbine. Anemometry data needs to be made publicly available in electronic format so that any noise assessment can be independently verified. In fact, following various court actions, anemometry data is now routinely published and has informed Inspector's decisions at a number of inquiries.

24. In addition to the noise issue, wind speed data is necessary to determine the electricity output by time of day and season. Without this, it would not be possible to carry out any of the necessary balancing of benefits against disbenefits of an application.

25. 'Appropriate distances' (2.7.9) There is no indication in EN-3 or existing Government documentation to quantify the 'appropriate distance' between residential properties and turbines in order to protect residential amenity. This has resulted in situations such as that at Whittlesey where a 125m turbine has been sited

approximately 100m from dwellings, with the result that major noise problems have arisen and ice throw from the blades to the dwellings has been a serious health and safety concern.

26. Inter-turbine spacing. (2.7.10) No evidence is adduced in this section to validate the claims that 4 to 6 rotor diameters separation distance between turbines is sufficient. Furthermore, the inter-turbine spacing is not a matter for the applicant alone, because too small a separation distance results in air turbulence generated by an upwind turbine causing downwind turbines to struggle to 'find' the optimum wind direction. This results in an increased noise output, as well as decreased electricity output. Furthermore, the inter-turbine spacing is one of the issues that a turbine manufacturer will consider in determining their site specific noise warranty. The consequence of the IPC not considering inter-turbine spacing will be that poorly designed wind farms will be permitted, with inevitable noise problems. The issue of inter-turbine spacing is routinely considered at public inquiries so, in the interest of consistency, ought to be a matter for the IPC.

27. Electricity Grid Connection. (2.7.11) The text in EN-3 is inconsistent with respect to grid connections. There is a clearly stated requirement for any application to the IPC for a biomass or waste combustion plant, or offshore wind farm, to include information on how it is to be connected to the electricity grid and any environmental issues associated with that connection. However, this requirement is absent from the onshore wind section. We consider this omission to be an error that needs remedying.

28. Access (2.7.13) This section needs to be expanded to include the requirement that the applicant demonstrate how access is possible without trespass over or damage to private property, or unacceptable safety impacts on public highways and rights of way.

29. Project lifetimes (2.7.16) We would dispute the implication that a 25 year wind farm can be considered a temporary structure. Indeed, EN-3 itself acknowledges (at 2.7.27) is likely to be re-powered for

possibly another 25 year span. Any structure which is expected to exist for 1 or 2 generations is not temporary by any commonsense definition. Furthermore, no evidence has been presented for any successful decommissioning of a wind farm.

- 30. 2.7.18** Non-operating turbines should be removed within 6 months. The current phrasing of EN-3 does not cover the situation where turbines fall into disuse and we assume that the intention is not to permit them to stand idle for 25 years, which could easily be inferred from this section.
- 31. 'Brown field site priority'** (2.7.34) This section is predicated on the erroneous assumption that onshore wind farms will only be built where the wind resource is sufficient. REF's own research has demonstrated that this is not the case. For example, load factors for on-shore wind farms vary from under 10% to greater than 40%, with a tendency, in fact, for wind farms to be built in lower wind speed sites. It can safely be assumed that the returns available compared with the costs of building a wind farm on a sub-optimal site are sufficiently attractive to make even the sites with the poorest wind regime economically attractive, though the resulting asset is unsatisfactory from the perspective of the subsidising consumer. Consequently, in our view, the IPC should adopt the approach of giving priority to brown-field sites.
- 32. Peat.** (2.7.35 ff) We are of the firm opinion that building wind farms on peat is unlikely to be acceptable in any circumstances. Furthermore, in view of the fact that EN-3 does not, as currently written, require any quantification of the CO₂ emissions saved by the proposed wind farm in operation, then it would not be possible to compare these emissions savings with the loss of CO₂ arising from digging up peat for tracks and foundations. This is ecologically unacceptable, and the NPS should be amended.
- 33. Bats** (2.7.46) We are aware that there is sufficient data from other countries to confirm the risk of bat collisions with turbine blades, and

we consequently believe that siting turbines in or close to areas where bats are known to roost or forage should not be permitted.

- 34. 2.7.49** Given the points made about project lifetimes above, we would dispute that wind farms should be considered time-limited in their impact on the historic environment. Given that the enjoyment of the historic environment would be impaired for one or more generations, it is unreasonable not to consider this a significant disbenefit.
- 35. Evidence on other wind farms close to dwellings.** (2.7.58) We are uncomfortable with this section of the NPS because we feel that it disadvantages neighbours of a potential wind farm site. It is our experience that it is difficult, and may be impossible, to establish a comprehensive set of existing wind farm turbine-to-nearest-dwelling distances from information available in the public domain. It is our experience that developers have selected examples of sites with dwellings in close proximity to turbines which subsequent investigations have revealed to be unbuilt, or where the neighbouring dwellings have a financial interest in the turbines or where the neighbours were unaware of the possibility of complaining about their situation.
36. In the public interest DECC should commission a study to collect unbiased and comprehensive information on the number and proximity of dwellings to all wind farms. Until that information is available we consider the current NPS guidance is of little practical help and is probably harmful to the interests of neighbours.
37. **Scale.** (2.7.59) The same points as made at paragraph 20 above apply in relation to scale here. Scale will always be a significant factor for on-shore wind applications and developments of unlimited height cannot be justified on the grounds that the returns for the developer are improved. Site specific consideration is essential.
- 38. Noise** (2.7.60ff) There are a number of serious errors in the treatment of noise in EN-3 which renders the section on noise valueless. What is clearly not understood by the authors is that (i)

the ETSU-R-97 guidance is no longer supported by most acousticians and (ii) in any case, it never purported to cover all of the main noise issues, so there have always been necessary additional parts to wind farm noise assessments that are not covered by any Government guidance.

39. ETSU-R-97 is no longer followed, because at the time it was written, it was not understood that wind speeds at hub height cannot be predicted from the 10m wind speeds that are the basis on which an ETSU-compliant assessment is carried out. Furthermore, it was not understood that the relationship between hub height wind speeds and 10m height wind speeds varies with time of day, meteorological conditions and season. The scientific evidence which was first published by van den Berg in 2003 is now accepted by the wind farm acoustics community and has been extensively described in most recent wind farm decisions by planning Inspectors. For EN-3 to neglect to address this issue is irrational, and will ensure on-going noise disputes.
40. Secondly, ETSU-R-97 does not include any guidance on turbine noise prediction. Consequently, paragraph 2.7.65 – ‘The IPC should use ETSU-R-97 to satisfy itself that the noise from the operation of the turbines is within acceptable levels’ is irrational and meaningless. There is no guidance in ETSU-R-97 about determining operational noise. Similarly, paragraph 2.7.66 remarks that ‘Where the correct methodology has been followed and the wind farm has been shown to comply with ETSU-R-97, ... etc’, but this is empty of meaning since there is no ‘correct’ methodology, as ETSU-R-97 is silent on the key issue of noise predictions. This has been the subject of exhaustive debate at public inquiries. Different acousticians adopt different methodologies for predicting the operational noise of turbines and derive quite different noise levels from these methodologies. While there continues to be a lack of scientifically informed and rational Government guidance on this issue, confusion, cost and delays are inevitable, which is unsatisfactory for all concerned.

41. EN-3 is also in error at paragraph 2.7.63, i.e. in the statement ‘... the report [ETSU-R-97] sets limits to safeguard the amenity of all dwellings.’ ETSU-R-97 does not do this, and does not purport to do so: specifically the levels were chosen to provide a ‘reasonable degree of protection to a wind farm neighbour’ without being ‘unduly restrictive on developments’. Furthermore, the reasoning behind the recommended noise levels is rendered invalid by the failure to understand that hub height wind speeds do not bear a simple relationship to lower level wind speeds. This error meant that it was wrongly assumed that wind near ground level would cause environmental noise that would mask the turbine noise.
42. There is the suggestion at 2.7.67 that conditions can be imposed to mitigate noise problems. We are aware that the Government has discussed standard noise conditions, that a number of public inquiries have covered the issue at length, and that reports have been commissioned by the DTI (e.g. Salford) and yet it has still not been demonstrated that noise conditions are sufficiently robust to mitigate wind farm noise problems, which are rarely ever resolved.
43. **Shadow Flicker.** (2.7.73) The claim that ‘flicker effects have been proven to occur only within ten rotor diameters of a turbine’ cannot be substantiated. In correspondence with DECC, we requested the source from which this statement was derived and were informed that it was a paper by A.D. Clarke 1991 for Open University entitled “A Case of Shadow Flicker/Flashing: Assessment and Solution”. However, this paper does not prove the ten rotor diameter claim. In fact its recommendation is ‘that turbines should be sited at least ten diameters distance from habitations, **and more if sited to the East/Southeast or West/Southwest**, and the shadow path identified’ (emphasis added). The evidence indicates that the EN-3 recommendation that only dwellings within 10 rotor diameters need to be considered likely to suffer shadow flicker is not correct and needs to be amended.