

KENT COUNTY COUNCIL

SELECT COMMITTEE - RENEWABLE ENERGY

MINUTES of a meeting of the Select Committee - Renewable Energy held in the Wantsum Room, Sessions House, County Hall, Maidstone on Monday, 22 February 2010.

PRESENT: Mr K A Ferrin, MBE (Chairman), Mr D A Hirst, Mr R E King, Mr T Prater, Mr C P Smith and Mrs P A V Stockell

ALSO PRESENT: Mr D L Brazier

IN ATTENDANCE: Mrs S Frampton (Research Officer) and Mrs C A Singh (Democratic Services Officer)

UNRESTRICTED ITEMS

3. Minutes of the Meeting held on 26 January 2010

(Item 1)

RESOLVED that the minutes of the meeting held on 26 January 2010 are correctly recorded and that they be signed by the Chairman.

4. Joint presentation by Carolyn McKenzie, Greener Kent Manager and Neil Hilkene, Sustainability Manager

(Item 2)

1. Neil and Carolyn gave an overview of the renewable energy topic with Neil providing the initial presentation and background, and Carolyn outlining the current situation regarding the work of KCC in this field. A copy of the presentation slides will be sent to Members and these notes should be seen as an adjunct to the slides. Questions were asked throughout.

2. Neil began the PowerPoint presentation, which is attached to these notes. Energy efficiency is key in the process so that the 'house is in order' first.

3. Regarding the first slide Mr Ferrin commented that he found the slide slightly misleading as it was referring to the energy mix in terms of electricity generation and not the whole energy mix including oil. Neil acknowledged this and has subsequently removed it from the slide. In respect of the definition of renewable energy Neil explained that renewable energy cannot always be considered zero carbon as sometimes fossil fuels are needed to utilise them and there are also transportation issues.

4. A slide was shown indicating the key drivers for renewable energy development and it was explained that we need the equivalent of 30 new power stations over the next 20 years. At the same time there is a growth in the use of appliances and hence energy demand, and all in an increasingly regulated

environment. There are national, regional and local impacts and at the same time, new economic opportunities.

5. The Renewable Energy Strategy outlines the financial support and increased investment needed as well as the increased role for the public sector. The Renewables Obligation requires suppliers to source an increasing percentage of electricity from renewables. For every MW hour of renewable energy generated there is a tradable ROC (Renewable Obligation Certificate) which has value.

6. Regarding zero carbon buildings, by 2016 all new homes built will need to have zero net energy consumption; by 2018 all new public buildings and by 2019 all non-domestic buildings. The only way to hit these targets will be to incorporate renewable energy.

7. A slide was shown on targets for renewable energy and it was explained that the Europe- wide target was for 20% of energy to come from renewables by 2020 – the target specific to the UK is for 15%. Mr Brazier asked whether the 12% indicated for heat was included in the 35% shown and it was explained that this was in addition to the 35%.

8. Mr Ferrin said that he thought the figure for heat generation was quite low and did this include open fires, to which Neil responded that it could. The breakdown reflects where progress can most be made towards the UK target in the time available.

9. Mr King clarified the point that logs are considered to be a renewable resource, while coal (as is a fossil fuel) is not.

10. Neil indicated that the SE Plan targets came with a health warning as they were based on data from 1999/2000 and Mr Ferrin queried the definition of regional and sub regional in the slides. Neil confirmed that regional refers to the South East region as defined by SEERA and the sub region in this case is Kent.

11. Mr Prater asked whether Kent included offshore wind farms. For the purpose of the SE Plan data, this was based on onshore generation which is confusing as we are now talking about total energy consumption to which offshore clearly makes a contribution – the Kentish Flats operational wind farm feeds electricity into the National Grid in Kent. The national approach to meeting the UK renewables target relies heavily on wind, on and offshore. The SE Plan targets are ‘past their sell-by date’ as they predated the European expectation of 20% renewable energy and the government was at the time working on targets related to electricity only generated for renewables.

12. Mr Ferrin said that a (conventional) the generation capacity of a power station would typically be around 500 MW and Neil confirmed this to be correct.

13. A slide was shown illustrating a baseline for Kent based on all fuels and there was some debate about how the figures for various categories had been derived. It could be seen that Swale, Medway and Gravesham used the most power because of industry but it was surprising that the fourth greatest user was Sevenoaks. Mr Ferrin pointed out that the steelworks in Swale could explain Swale’s high figure but requested definitions for the various categories. Neil indicated that the data was

based on DECC data and was new information, not previously available, giving us the chance to interact with it.

14. There were further queries from Mr King and Mr Ferrin regarding the transport and domestic figures and both agreed that drilling down too far into the level of detail was inconclusive and that we should probably only rely on the total Kent figure which for Kent was 44,167GWh. The figure of 201MWe includes Kentish Flats and Little Cheyne Court Wind Farm. When considering wind-generated energy we have to consider machine efficiency, actual time that it is generating and transmission losses.

15. Currently it is calculated that 1.1% of Kent energy is generated from renewables. The 15% target for renewables when applied to consumption in Kent equates to the electricity and heat requirements of around 290,000 Kent homes which is slightly less than half.

16. Mr King queried whether if solar electricity was generated by a householder did this cut the generation figure or was it counted as capacity, thus reducing demand and it was agreed that the latter was the case.

17. Mr Hirst said he saw a problem with the cost in energy terms of providing renewable technologies. He made reference to a building project he embarked on using the specified materials to reach the required level of insulation and this was mainly foam imported in lorries from Germany; using this to illustrate the point that it took fossil fuel to put the measures in place. In addition it would take 15/20 years to 'pay back' and he held similar views about solar energy due to the energy costs involved in manufacturing glass.

18. Mr Ferrin agreed that the carbon cost of moving goods around, using diesel, should be considered.

19. Neil indicated that the embodied energy of manufacture and transportation were issues being considered as part of achieving more sustainable construction. The current thinking was that local sourcing of goods was preferable.

20. Mr Hirst added that the foam he spoke of could not be sourced in this country and came from Germany, was oil based, and had to be transported therefore he questioned its role in reducing the carbon footprint.

21. Continuing with the presentation, Neil said that energy consumption has gone down because of the recession. However, there are 143,000 new homes and 123,000 new jobs planned for Kent which will lead to increased energy demand. The following slides related to particular technologies beginning with wind energy.

22. Wind technology is one of the most mature. The turbine close to Richborough, which originated in the 1980's, was 0.6MW and turbines are currently up to 3MW; much more sophisticated and capable of good generation potential.

23. Mr Ferrin referred to a piece of evidence indicating that roof-mounted turbines were a waste of time and Neil agreed with this. With regard to small free standing turbines these work best where they are in exposed locations with a strong wind resource. This is quite rare in the SE but it has not stopped people wanting to put them up.

24. The Thames Estuary is at the forefront of offshore wind developments. The Kentish Flats is complete and the other four projects are under construction. Each development is bigger than the last with Thanet having 100 turbines and London Array 271. The substation for the latter is at Graveney and the offshore works will commence later this year.

25. Mr Ferrin questioned why turbines were placed on the east coast when the west coast is windier. This was because of the shallower water on the east coast and it is more difficult and expensive to put turbines in deep water.

26. In response to a question about the approval process Neil advised that the Crown Estates have been responsible for issuing licenses for development. The new Infrastructure planning Commission is responsible for approving offshore farms of 100MW plus and onshore farms of 50MW plus.

27. Wind farms under Rounds 1 and 2 are bringing forward 8GW of development. Licences granted under Round 3 in January this year will bring forward a further 32GW of development. Offshore wind has a crucial role in meeting UK renewable energy targets.

28. Mr Smith asked what number would be required to replace the average power station and Neil answered that while direct comparison was not possible, claims by London Array were that the 271 turbines would supply enough power to meet the annual electricity needs of 240,000 homes.

29. Mr Ferrin asked about the criteria for this claim and whether it allowed for down-time and intermittency and Neil explained that figures had already been adjusted to take into account the operating efficiency of the machinery and the available time during the year.

30. Mr Brazier commented on his tour of a Dartford Power Station which was a crude process involving the injection of oil which flared to create heat and run a turbine. It was pointed out that power stations themselves were not always the most efficient method of generating electricity because so much of the heat associated with the generation process was wasted.

31. Mr Ferrin and Mrs Stockell indicated the need to be able to make a comparison between coal and wind power (in terms of cost etc) and Neil pointed out that it is not comparing like for like as there are other issues involved and, for example, the impact of government subsidies for renewable energy and the Renewables Obligation which is a key driver.

32. Mr Ferrin asked whether suppliers generating renewable energy get paid more and Neil confirmed that this was the case. The Renewables Obligation is weighted to new technologies to create a more level playing field for renewables and support their development.

33. Mrs Stockell asked whether other authorities were looking at the role of renewables (not necessarily via a select committee) and this is the case.

34. Mr Ferrin said he wanted to be able to compare the types of energy supply, capital cost, what you get paid and the cost of producing it e.g. for a 500MW power station what is the cost to build and run it.

35. There was discussion about 'clean coal' and the cost of carbon capture and storage. Neil referred to a press statement by the Chief Executive of EDF where he had said that it would take £1 billion to make carbon capture work. In any event this technology is not available now but is being trialled.

36. Mr Hirst spoke about the situation in Europe where local renewable energy installations were more in evidence and whether we are 'missing a trick'. Neil responded that there are several successful community schemes in the UK such as a co-operative venture in Oxfordshire and several schemes in Scotland.

37. Again, on comparisons between renewable and fossil fuel technologies, Mr Brazier said that BWEA (British Wind Energy Association) had indicated that manufacturing turbines was very carbon intensive. Neil said this needed to be put into context alongside the carbon associated with the construction of other energy solutions.

38. Neil commented that the Kentish Flats generation was very close to what the developers had predicted and that the teething troubles with gear boxes and this was basically due to onshore turbines being located at sea. However, it should be noted that offshore is a new area and this was all part of the learning curve for what is a new industry. Mr Prater said that indeed for Dungeness (Nuclear) power station there had been recent problems and the plant had been shut down for 3-4 months.

39. Mr Ferrin commented on the problem of corrosion for turbines located in the sea and the harshness of the environment in which they had to operate.

40. Neil spoke about the potential economic benefits to the county particularly with regard to operations and maintenance (worth £110m/year) and the jobs which could result. There would be 100 plus jobs associated with the servicing of wind farms from the Port of Ramsgate. There could also be significant local and UK supply chain opportunities for Kent. The government are doing a lot of work to support development of a UK supply chain less reliant on Europe.

41. Mr Ferrin asked about the life of a turbine and Neil said that it was about 20-25 years after which a turbine would be repowered with new kit. Furthermore the licences for round 2 wind farms last for 50 years and during this time the technology will improve. There were also continued developments in the field of turbines including floating solutions anchored to the seabed by cables and with the potential to operate in deeper waters.

42. Mrs Stockell asked whether it was possible to balance the employment statistics for the two forms (assumed nuclear vs wind) and it was noted that this was not a like for like comparison. For example, Dungeness requires many more staff to run and maintain it than a wind farm.

43. Mr King said we could compare the cost of building and the cost of running (wind and nuclear) but with nuclear there are the potential very long term costs of dealing with radiation. Although wind is not a solution to the whole (energy) problem

we must take account of whole-life cost. This could perhaps be found out from wind farm development companies, though it was acknowledged that this kind of cost information might be difficult to obtain.

44. Regarding the intermittency of wind energy generation it was noted that the energy generated from the sites nationally goes into the Grid and 'the wind is always blowing somewhere'. However, there is an issue with storage and research is on going to find solutions.

45. Mr King commented about pumped storage capacity where there is a height differential; power being pumped upwards when it is plentiful and down through a turbine when the electricity is required. It was acknowledge that this solution was not viable in Kent.

46. Neil commented that the development costs associated with offshore wind are three times more expensive than onshore.

47. Planning permission exists for 4 wind turbines at Sheerness Docks and 6 on the Isle of Grain at a former BP oil refinery site.

48. There was then discussion about the low number of suitable sites in Kent for onshore wind and of the potential environmental issues. On discussing bird strikes, RSPB have done a considerable amount of work and it was pointed out by Mr Prater that cats cause much more bird mortality than turbines. The planning regime is also now more sophisticated, there is wide consultation and nature conservation issues are dealt with more sensitively.

49. The number of applications for small to medium sized turbines of around 6-12m height seems to be increasing, for example where property owners have a large plot of land and wish to place a turbine on it for their own use. There is gathering interest in such schemes especially with the introduction of the new feed in tariffs.

50. Mr Ferrin asked about the current status and progress of planning applications and whether they were attracting opposition. Mrs Stockell commented that she believed the visual impact was a major issue for Kent particularly since turbines would tend to be placed on high ground. There was, coupled with this, also a belief that a small turbine would scarcely produce enough electricity to boil a kettle. It was acknowledged that the most suitable sites tend to be on higher ground on in exposed coastal locations.

51. There was discussion about the public enquiry which took place in relation to Little Cheyne Court and in referring to the map shown in the presentation, it can be seen that Kent is a very constrained county. It was requested that an A3 copy of the map be provided to Members so that the key can be clearly seen, and in addition a copy with less detail highlighting the sites which do have potential for wind farm development was requested. In response to the general feeling of fear for the landscape Members were told that a situation whereby there were wind turbines 'all over the downs' was unlikely to arise. In addition, Mr Prater said it was wrong to assume the public object to turbines and Mr Hirst confirmed that there had been no opposition from the public regarding a site at Herne Bay, and residents were in fact very keen. Mr Hirst commented that pylons were more unsightly than turbines.

52. The Little Cheyne Court turbines are 70m high with blades 45m long. There are smaller scale solutions such as the 'Quiet Revolution' turbines which can operate in urban areas and on high buildings. Mr Ferrin noted that he had seen these when driving along the M25.

53. In response to a question Neil updated Members on the community fund at Little Cheyne whereby the community will benefit from the wind farm development with £70,000 per annum funding for local organisations (non-council), who can apply for money for projects. A similar scheme is in operation in Scotland and Members were told about a project in Spain which has provided significant community facilities.

54. The next technology discussed was biomass and Mr Ferrin said the committee needed to know what the potential was for this in Kent, mentioning also a proposed waste wood plant at Kemsley.

55. Mr Hirst felt strongly that there was potential for a return to coppicing in Kent which had the largest area of coppice woodland in the country, dating from Saxon times. Currently there is not much of a market, though in the past it was a busy industry and wood used to go to a paper mill in Sittingbourne. The industry employed a lot of people and it was a tragedy that much woodland is not being felled and is becoming derelict. It is important to safeguard this traditional environment and encourage new planting. Mr Hirst hoped that the select committee could look at this area and there was general agreement to this.

56. Neil indicated that there was a shortage of good research. Mr Brazier reported that he was shortly going on a study tour to Austria courtesy of the Forestry Commission and would be talking to people about biomass and would report back to the Members of the Select Committee on a rapporteur basis.

57. Mrs Stockell said that when Maidstone Borough Council had moved offices, their new building was carbon neutral with a biomass boiler and she recommended that the committee saw this example. Mr Brazier further noted the Kent History Centre was using bio oil. Mrs Stockell said that energy crops were less desirable as they were land-intensive and Mr Smith added that though oil seed rape was a good crop for biofuel, there were few places to convert this to fuel and it currently had to be shipped to Germany and then transported back which seemed ridiculous. Historically there were strong lobbies against growing biofuel crops instead of food due to food supply fears and Mr Ferrin confirmed that the economics were not good for this on a commercial scale.

58. Returning to the question of coppiced woodland Mr King said that woodland was not being coppiced properly and when this happened there was substantial regrowth with the potential for use as a renewable energy source; in fact it was sitting waiting to be used.

59. Neil confirmed that local (biomass) solutions were felt to be best and most viable when linked to local demand for heat. A woodland map was shown which had been part of the work for the South East Plan showing potential for the Kent region of 6-19 MWe installed capacity (including wood from a 40km radius which may be just outside of Kent).

60. Mr Hirst said that historically the trees in Kent are mostly Chestnut which is a hard wood renewable in a 15 year cycle with the added bonus that as a wood fuel it is second only to ash. The potential for new short rotation coppice in Kent was acknowledged with the caution that it was necessary to retain a view about the potential scale, using the example that if 10% of Kent were given over to coppiced woodland, managed properly, this would give around 16-turbines-worth of energy. It was clear therefore that it was a small part of the solution.

61. It was important however to preserve Kent as we know it; renewables are not the only solution but can contribute something towards the total (energy mix).

62. Mr King said that every school in Kent should have a biomass boiler fed by wood from local coppiced woodland. While woodfuel was once fairly unattractive the developments in the technology meant that more people would now consider it.

63. The discussion moved on to solar energy for which there is a good potential in Kent both in terms of solar PV (photovoltaic cells) and solar thermal. Members expressed concern about the problem of hard water in Kent which could affect solar systems in the same way they affected other household items like washing machines and boilers.

64. A house would typically need roof space of 6.5 – 16m² to meet its electricity requirement. Neil commented that few house would have this sort of roof space available. Solar PV costs vary with different types of cell available with some being more efficient than others.

65. The introduction of a new FIT (feed in tariff) would encourage take up of electricity-generating technologies and the government were hoping for more interest in PV. In England 4,000 homes have PV while in Germany the figure is 800,000 though it has no geographical advantage for solar. The German government made it attractive by giving good returns on the electricity generated. The UK government is introducing feed in tariffs from April 2010, giving a monetary return to people who install technologies.

66. Regarding the connections needed to the grid this is dealt with by the installation of an export meter. There are currently discussions about a smart grid which is more interactive and which would allows small generators to use their homes as mini power stations.

67. Mr Brazier expressed concern about the 'kerb-side' appeal of properties and the potential fall in value due to the presence of solar panels though there are technical answers to this such as the development of PV tiles. New solar is quite flexible with more solutions, there being three types: monocrystalline, polycrystalline and amorphous film which is flexible and suitable for curved surfaces. In Manchester, the Co-operative Bank office complex has been rebuilt with the side of the office building covered in solar panels. A slide showed a diagram of the workings of a solar thermal and solar PVI.

68. Ground and air source heat pumps were then discussed and it was pointed out that electricity was needed to operate the pump and compressor. Pipe work might for example last 20+ years but a pump would typically need replacing in 10-12 years. These are probably best placed horizontally and can need a large land area. Care is

required to avoid creating a 'permafrost' situation where heat is taken out of the ground and not replenished.

69. Air source heat pumps are located outside of a building and can be noisy.

70. Regarding wave, tidal and other marine derived energy, the focus has been on the west coast and Scotland. The types of technology being investigated include submerged turbines, the sea snake and floating buoys. SEEDA had looked at the South East and a map was shown indicating that for various reasons including shipping and environmental constraints, the vast majority of the Kent coast was considered to have low potential. The main exception is the coastal area at Deal, due to its position as a tidal 'pinch point'. However Members felt that there was potential for tidal and this should not be ruled out for Kent. There is potential particularly around rivers, the Thames Estuary, and in conjunction with any future lower Thames tidal barrier and river crossing.

71. The costs and savings aspects of renewables were discussed and it was noted that the payback time for solar PV was dramatically reduced with the introduction of feed in tariffs (FITs). For example a good south facing roof could have a system with payback in 13 years but which would last for 25 years.

72. Mr Ferrin expressed some concern about payback periods and his experience of how long things last.

73. Mr Hirst cautioned that the issue of energy security should not be ignored. One other factor that should be taken account of was the fact that 85% of gas was under Russian control. He would not wish to have a property where there was only one alternative for fuel and this must be a factor in the committees considerations.

74. Regarding planning and development there is a national guidance on renewable energy in planning policy statements and in particular PPS22. Kent Design Guide has technical appendices covering renewable energy and from the masterplanning perspective detailed energy studies have been carried out linked to future developments in Ashford, Kent Thameside and Queenborough. The studies and the recommendations provide useful assessment of renewable energy options. If we are to achieve the higher standards set out in Design Codes such as the Guide for Sustainable Homes we will definitely need to utilise renewable energy solutions.

75. There will be changes to building regulations from April 2010 and further revisions from 2013 all moving towards zero carbon. Energy Performance Certificates show the energy profile of properties and Mr Hirst indicated that these were required if a property was marketed through an estate agent, as they were for commercial buildings. EPCs are mandatory on the sale of a house, however Mr Hirst felt that these were a politically driven tool for valuation of houses and not of interest to sellers or buyers. A lot of information is gathered through this process and the HIP costs around £300.

76. Regarding KCC's role and sphere of influence there is a clear need to address the future demand for new skills and training to support the growth and take up of new technologies – this is an area where the county council could play a significant role. There is a supporting strategy to the Regeneration Framework in development around harnessing the benefits of the emerging low carbon sectors.

77. In summarising, Mr Ferrin said that the case for renewables was not all about money. Other important considerations were energy security and related opportunities which we needed to understand.

78. Carolyn McKenzie, Head of Sustainability and Climate Change then took over the presentation to speak about particular Kent projects. She leads on these issues in the KCC estate and for the Kent community regarding the Environmental Excellence targets in Kent Agreement 2. There are three angles: the KCC estate where we can save money, the legal requirements and meeting national indicators. There are three that are relevant in KA2. The third relates to community leadership and the creation of job and training opportunities.

79. Regarding the KCC estate, renewables are primarily in schools but also Oakwood House is aiming to be the greenest conference centre in Kent. There are 5 biomass boilers: 3 in schools, 1 at Ashford depot and 1 at Shorne Country Park. There is also an Interreg project on the multi-functional use of woodland for leisure/biodiversity and economic purposes and Mr Brazier's trip to Austria will back this up, helping to develop what we do as a county.

80. Valley Park School had oil rather than gas as its main fuel source. This is the case for about half of Kent schools making biomass a potentially attractive option. £30,000 savings per year can result but initial capital costs have been high. The first such boiler installed was approximately three times more expensive than a comparable gas boiler costing around £350k. The payback time is around 8-10 years and so after the first 8 years the school could have £30,000 per year in its pocket. There is more work needed to evaluate this.

81. The government is not insisting on renewable energy solutions. However, for PFI schools there are clearly demonstrable cost savings so they are encouraged to incorporate renewables in buildings.

82. Mr Hirst also commented that the technology in biomass was moving on very fast and it was up to 20% more efficient than 5 years ago.

83. From April 2011 the RHI (Renewable Heat Incentive) will add extra value and give a better return on investment in wood boilers by guaranteeing an income for heat generated. However, the technology is complex and schools will need some hand-holding. (Andy Morgan can give further details) In terms of electricity FITs replace ROCs for small generators from April 2010 and installations made in the 6-9 months prior to this can elect to opt in or stick with the ROCs scheme.

84. Eastchurch Primary is a good exemplar where they have embraced renewable technologies. They have obtained funding through the Low Carbon Buildings Programme and having won the Ashden Award were able to obtain further funding for a turbine. Renewables have also been a good tool for work with the community on lessons learned.

85. The Energy and Water Loan Fund applies to projects with a 7 year payback. In the future there is also likely to be a whole building approach with pay as you save offsets to enable longer paybacks to be accepted. It is also necessary to be a 'smart

client' especially in the case of biomass boilers. There have been issues with installation and maintenance.

86. Aside from the push factors mentioned above there is also the 'pull incentive' with KCC as a sustainable procurer.

87. In response to a question about penalties arising from the Carbon Reduction Commitment , depending on energy 'league tables' and the performance of other organisations, KCC stands to lose or gain around £300,000 at the moment. Issues relating to monitoring and reporting are of key importance as there are potentially fines in the millions of pounds if we should get it wrong.

88. Mr Prater asked for confirmation as to whether the 7 year finance period was set by government and this is not the case but is Kent's decision. There is a relationship to government funding which is match funding but in the main we could move to extend it.

89. There are economies of scale to be gained if more systems were bought together or for example if we worked with other authorities on this. However, the problem is finding the money in the first instance. It was also acknowledged that it was important for buildings to be made more energy efficient first.

90. Biomass boilers are becoming less expensive and there are also different ways of financing things which do not involve a big capital outlay.

91. Carolyn informed Members that SEEDA were investigating a scheme started in London around the buying of energy but the economics were not yet known.

92. In response to a query from Mr Prater about where Kent residents would go for advice about renewables, this would be from the Energy Saving Trust and the contract for ESTAC in Kent and East Sussex was held by CEN who ran what was formerly the Kent Energy Centre.

93. The meeting was brought to a close and a request was made that future meetings should have an earlier start, preferably 10.00 am.