Emilia Hanna
Biofuelwatch

31 August 2011

Dear Robin McGinn

Re: 20 Megawatt Biomass fuelled Energy Plant on Land to the South of Manchester Ship Canal and West of Barton Bridge, Davyhulme (Ref. 76153/FULL/2010)

On behalf of Biofuelwatch, I am writing to object to the proposed Biomass Plant at Danyhulme.

Our main grounds of objection, detailed below, relate to air quality impacts, impacts on greenhouse gas emissions and sustainability, health and safety concerns, lack of provisions for safe ash disposal and low thermal efficiency.

1. Air Quality Impacts:

The proposed site is adjacent to the M60 corridor AQMA, which automatically raises concerns about the impact that the plant will have on air quality and about Trafford Council's ability to comply with their statutory duty to reduce NO2 concentrations in the area. Peel Energy's Air Quality Assessment appears to have significant flaws which are cause for concern, several of which have been noted by the Environmental Health Officer. Those include the following:

- We have been unable to find information about the specific mitigation technology for NOx which Peel Energy intends to use. As far as air pollution abatement is concerned, the Air QualityQ Assessment only refers to bag filters and to activated carbon for the mitigation of arsenic, cadmium and nickel. No specific NOx mitigation is referred to. As pointed out by the Pollution and Licensing section, NOx mitigation tends to increase ammonia emissions and this has not been addressed in the Air Quality Assessment, at least not in a transparent manner. On the other hand, we would be surprised about the relatively limited projected stack NOx emissions if there was to be no abatement at all.

- According to the Pace Energy and Climate Center in the US, "*NOx emissions [from biomass combustion] vary significantly among combustion facilities depending on their design and controls. Some biomass power plants show a relatively high NOx emission rate per kilowatt hour generated if compared to other combustion technologies. This high NOx rate, an effect of the high nitrogen content of many biomass fuels, is one of the top air quality concerns associated with biomass.*"[1] This sheds further doubt as to whether Peel Energy have used the worst case scenario for their particular proposal, particularly in the absence of detailed information about any NOx abatement.

- The predicted PM 2.5 predicted stack emission figures in Table 12.4 is 4 tonnes per year (calculated for 8000 hours of operation per year). Peel Energy state that very little UK information is available about PM 2.5 emissions from biomass power stations, however such information has been collected by the US Environmental Protection Agency for many years. We have compared Peel Energy's estimate with

[1] Pace Energy and Climate Center, 'Electricity from Biomass', available at tinyurl.com/4ywsqg8

figures provided by the US EPA[2] for a 50 MW wood power station in Vermont (McNeil Power Station) which uses abatement system (electrostatic precipitators) generally judged to be of similar effectiveness to the bag filters proposed by Peel Energy. PM2.5 emissions from the McNeil Power Station are 26.38 tonnes a year. The equivalent figure for 20 rather than 50 MW would be 10.55 tonnes annually, a figure far more than twice that indicated by Peel Energy. This is a serious discrepancy which we believe should be investigated.

- Peel Energy state that they will use baghouse filters to filter out high particulate emissions. According to evidence provided on behalf of Veolia at a Public Inquiry in 2003, baghouse filter collection efficiency was 95-99% for PM10s, 65-70% for PM2.5s, and 5-20% for smaller particles, even when the filters were at their most effective.[3] This is another indication that the PM2.5 emissions figure predicted in the AQ Assessment could be a significant underestimate, since it is based on an assumption that around PM2.5 accounts for around 33% of PM10 – one which, according to the information given on behalf of Veolia may not be valid for the use of baghouse filters. We also note that European Commission Guidelines state: "*Wear of the filter bags results in a gradual but measurable reduction in performance. There may also be a risk of damage or catastrophic failure of several bags if corrosion occurs, when abrasive material is filtered or when there is the danger of fire*."4 Such an accident happened at a waste incinerator in Dundee in 2001, when baghouse filters burst, releasing particulate matter into the atmosphere which was 'off-scale.'5

- It is not clear on what mix of 'waste wood' the modelling has been based and thus whether the worst case scenario has been considered, particularly with regards to heavy metal, dioxin, arsenic and mercury emissions. Waste wood may or may not be chemically treated and contain a range of toxins yet the Air Quality Assessment does not say how high a proportion of wood treated with toxic chemicals has been considered for the model.

- The Cumulative Impacts considered in the Air Quality Assessment are those from the two planned Carrington gas power stations, a sludge treatment plant in Urmston(ruled insignificant), and additional traffic from the Port Salford and Salford Community Stadium developments. As already pointed out by the Pollution and Licensing Section, combined impacts from biogas generators at Davyhulme Wastewater Treatment Works and the Nexen Coal Bed Methane Plant have been ignored. We also note that no potential increases in NO2 emissions from the planned expansion of the nearby Manchester City Airport have been considered, even though the Manchester Airport Master Plan looks at a doubling of air passengers by 2030.

- The Air Quality Assessment claims that, 'the combined impact of these two power stations [Carrington I and Carrington II] in the Trafford AQMA and the Salford AQMA

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[2] www.planethazard.com/phmapenv.aspx?mode=topten&area=state&state=VT – note that figures on the websites are for pounds per year, which we have converted to tonnes per year.

[3] Howard C.V. The health impacts of incineration, with particular reference to the toxicological effects of ultrafine particulate aerosols, organo-chlorines and other emissions. Proof of Evidence submitted to East Sussex and Brighton and Hove Local Plan Public Inquiry, 2003; see contra, Institute of Clean Air Companies, Particulate Controls, 'Fabric Filters', available at http://www.icac.com/i4a/pages/Index.cfm?pageID=3398

[4] European Commission Report, 'Integrated Pollution Prevention and Control Reference Document on Best Available Techniques for Large Combustion Plants' (July 2006), available at http://ftp.jrc.es/pub/eippcb/doc/lcp_bref_0706.pdf, p 59

[5] Quoted in UK Without Incineration Network Website, available at http://ukwin.org.uk/knowledge-bank/incineration/health-issues-connected-with-incinerators/filters-particulates-and-deaths-from-emissions-to-air/

was stated to be 0.13 µg/m^3 µg/m3 and 0.14 µg/m^3 respectively, when the effect of atmospheric chemistry is taken into account.' However, Salford Council's 2009 Air Quality and Screening Assessment states for Carrington II: 'An air quality assessment on the combined effect of the two proposals identified the following maximum ground level concentrations of nitrogen dioxide as follows: Nitrogen dioxide is predicted to increase by 3.25µg/m^3.' This is a far higher figure than that cited in the Air Quality Assessment put forward by Peel Energy. Although we have not been able to find detailed air quality projections for Carrington I and II the difference between those figures would seem important to investigate.

2. Greenhouse gas emissions and sustainability:

Peel Energy state that wood would account for 90% of the biomass burnt and that, of this 70-75% would come from 'non-recyclable waste wood that would otherwise end up in landfill' and 15-25% from other biomass 'such as managed forestry residues, energy crops and agricultural residues' as well as, possibly, 'a small amount of solid recovered fuel.' They refer to studies which suggest that 500,000 tonnes of waste wood a year is available in the north-west of England and that the 'intention' is to source most of the fuel from the region. However, such sourcing intentions are not legally binding and if the application was approved in its current form then Peel Energy would be able to heavily rely on imported virgin wood, with a far worse impact on greenhouse gas emissions and sustainability than the burning of local waste wood. Even if a Section 106 condition could stipulate reliance on local waste wood in order to prevent negative impacts on climate and sustainability (for which, to our knowledge, no precedent exists), this would not be desirable due to the greater emissions of several pollutants associated with treated waste wood. An example of a company changing their 'sourcing intentions' after obtaining planning permission is MGT Power, whose biomass power station application at Teesside Port was approved by DECC in 2010. It was approved based on an application in which MGT Power claimed that all or most of the wood would come from North America where there was no 'net deforestation' (even though significant recent losses of forest cover in North America have been well documented).[6] Shortly after winning planning consent they signed a Memorandum of Understanding with Suzano Papel e Celulose for most of the wood to come from Brazilian eucalyptus plantations.[7.] Elsewhere (in an application in Ayrshire), Peel Energy has announced plans to import large quantities of wood for biomass.

Given the rapidly rising UK demand for biomass – with power station capacity for burning around 60 million tonnes already planned by industry[8], we do not find a general reference to 500,000 tonnes of waste wood being 'available' very convincing. In the north-west of England alone, Peel Energy is proposing another 20MW biomass power station at Ince Marshes, which they claim will also rely around 70% on waste wood, RES are proposing a 100-150MW biomass power station at the Port of Liverpool, UPM's Shotton biomass plant has 20MWe capacity and Fiddlers Ferry Power Station produces around 26 MWe a year from biomass. A 2009 report written by Poyry and Oxford Economics and published by WRAP concludes: 'The analysis suggests the demand for wood waste is likely to outstrip the

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[6] See www.mgtpower.com/files/Tees%20Renewable%20Energy%20Plant%20Sustainability%20Q&A.pdf , with MGT Power's sourcing claims corresponding to those in the original application.

[7] RISI Woods Biomass Markets, 'Suzano's Brazilian pellet mills to supply UK biomass power plant' August 11 2010, available at http://www.woodbiomass.com/news/timber/news/Suzanos-Brazilian-pellet-mills-UK-biomass-power-MGT.html

[8] International Institute for Environment and Development, 'Biomass energy: Another driver of land acquisitions?' August 2011, available at http://pubs.iied.org/17098IIED.html ' Biofuelwatch Biomass map, available at www.biofuelwatch.org.uk/biomass_map/

quantities arising over the next few years.'[9] The report confirms that total waste wood in the north-west of England is around 543,000 tonnes a year,[10] however this is not wood that would go into landfill. Instead, 58% of UK wood waste is used for wood panel boards,[11] around 25% for agricultural and horticultural purposes, with the remainder increasingly used in biomass power-stations and for co-firing. Peel Energy's Greenhouse Gas Assessment is therefore incorrect when it states: 't is likely that if the fuel were not combusted, it would be disposed of in a landfill where a proportion of the fuel would biodegrade into carbon dioxide and methane.' It appears far more likely that the majority of any waste wood burnt by Peel Energy (if they were to indeed rely largely on waste wood) would otherwise be used by existing industries which, most likely, will be forced to buy more virgin wood, leading to more logging wood imports since the UK is already heavily dependent on wood imports even without considering bioenergy. The negative climate impacts of such increased logging have been ignored entirely by Peel Energy. Furthermore, as the WRAP report shows, Peel Energy have not put forward a convincing sourcing policy at all.

There are other serious problems with the Greenhouse Gas Assessment:

'Greenhouse gas savings' are calculated by a comparison with the carbon intensity of fossil fuels 'displaced'. There is no evidence that the power station would displace coal and gas burning – at least in theory it could simply lead to additional energy supply. Common practice would be to use the carbon intensity of the National Grid as a baseline (though we believe that the likely future, lower carbon intensity to which the Government is committed should be used). The current carbon intensity is not 604 kg/MWh, which is Peel Energy's 'baseline figure' but around 537 kg/MWh, with the Committee on Climate Change proposing that it should be 200 kg/MWh by 2020, i.e. within the operating time of the proposed power station.

Even more worryingly, the Greenhouse Gas Assessment is based on the assumption that all the biomass, including waste and virgin wood, will be entirely 'carbon neutral', except for emissions associated with local transport, though, as discussed above, it is very doubtful that all or most of the biomass can be guaranteed to be sourced and transported locally. The Renewables Obligation (Amendment) Order 2011 sets out a methodology for calculating greenhouse gas emissions linked to biomass and which must be used for reporting such emissions for the purpose of obtaining Renewable Obligation Certificates. Mandatory 'sustainability and greenhouse gas standards' for all biomass eligible for ROCs have been announced from 2013. We have serious concerns about the methodology in that it ignores direct and indirect land use change and the well-proven carbon debt of wood. However, it does not permit developers to simply ignore all emissions associated with biomass other than those from transport. The Greenhouse Gas assessment supplied by Peel Energy is very clearly non-compliant with requirements under the Renewables Obligation.

3. Health and Safety concerns:

As part of its environmental statement, Peel Energy is obliged to provide all of the information as required by Part II of Schedule IV of the Town and Country Planning

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[9] Waste and Resources Action Programme, 'Wood Waste Market in the UK', August 2009, www.wrap.org.uk/downloads/Wood_waste_market_in_the_UK.40f38343.7547.pdf

[10] Waste and Resources Action Programme, 'Wood Waste Market in the UK', August 2009, www.wrap.org.uk/downloads/Wood_waste_market_in_the_UK.40f38343.7547.pdf, p 2

[11] Waste and Resources Action Programme, 'Wood Waste Market in the UK', August 2009, www.wrap.org.uk/downloads/Wood_waste_market_in_the_UK.40f38343.7547.pdf, p 25

(Environmental Impact Assessment) (England and Wales) Regulations 1999.[12] The information required covers, *inter alia,* 'data required to identify and assess the main effects which the development is likely to have on the environment.'[13]

However, Peel Energy's Environmental Statement does not appear to cover an in-depth risk assessment of the project. In particular, Peel Energy does not appear to have provided information about the health and safety risks associated with spontaneous combustion.

It is widely recognized that storing large quantities of biomass poses a serious threat of oxidative self-heating. Meijer and Gast of KEMA Power Generation and Sustainables, cited by the International Energy Agency, note, 'Given adequate conservation of the heat in the storage pile, (e.g. insufficient loss of heat) the temperature of the stored material will increase and possibly give rise to spontaneous combustion of the stored material.' [14] They therefore recommend that biomass be stored as dry as possible (a moisture content of below 20%), that a storage pile must contain homogenous materials, which may be difficult give the nature of the different sourcing of the wood in this plant, and that the temperature must be regularly monitored and controlled.

Other companies proposing biomass plants, such as Forth Energy, devote entire chapters on fire prevention.[15] However, the only information that Peel Energy has provided about the storage of the fuel is that 'buildings would be about 25 metres high and would ensure that all biomass at the site is in an enclosed area.'[16] They do not mention how they will ensure that the wood is kept dry, stored homogenously, and how its temperature will be monitored.

4. Concerns over ash disposal:

Peel Energy anticipates that the plant will produce around 100,000 tones of ash per year. [17] It states that it will aim to recycle the ash 'as far as possible' for use in the construction and fertilizer industries. However, ash from biomass power stations, including ones using only clean wood but especially ones burning treated wood is likely be toxic waste and no credible proposals for disposing of toxic waste have been made. The European Commission has advised, following a Norwegian study, that heavy metal concentrations in virgin wood from trees well away from traffic can be high enough for the ash to qualify as toxic waste.[18] Wood ash from treated waste wood combustion will contain far more toxins still. The lack of any published plans for the safe disposal of toxic ash is very concerning.

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[12] Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999, s 2(1)(b)

[13] Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999, Sched 2, Part II(3)

[14] International Energy Agency, Bioenergy Agreement, Task 32, Triennium 2007-2009, Biomass Combustion and Cofiring, Annex V, 'Spontaneous Combustion of Biomass: Experimental Study into Guidelines to Avoid and Control this Phenomenon', available at http://www.ieabcc.nl/meetings/32_11_meeting_Berlin_full_report.pdf

[15] See, for example, Forth Energy, 'Fire Prevention Method Statement', Grangemouth Renewable Energy Plant, available at http://www.forthenergy.co.uk/pdf/biomass-project-update-grangemouth/06%20S36%20Application%20for%20consent%20-%20Supplementary%20information/03%20-%20Fire%20Prevention%20Method%20Statement%20-%20Grangemouth.pdf;

[16] BREP Environmental Statement – Non Technical Summary, page 3

[17] Paragraph 4.15, page 18

[18] Environmental Expert, 'EU call for regulation of wood ash fertilisers' 22 April 2008, available at http://www.environmental-expert.com/news/eu-call-for-regulation-of-wood-ash-fertilisers-30819

5. Likely low thermal efficiency and questions surrounding the credibility of Combined Heat and Power claims

Electricity-only biomass power stations are considered to be one of the least efficient ways of generating energy, - DECC considers that Biomass Electricity Plants currently are only 25% efficient, with 75% of the energy potential of the fuel wasted.[19] In their 2009 report, 'Biomass: Carbon Sink or Carbon Sinner?', the Environment Agency reiterated this conclusion, states that generating only electricity from biomass is a wasteful use of a limited resource.[20]

Under EU law, Member States are to promote technologies in industrial applications which can achieve an efficiency of 70%.[21]

One of the ways in which to increase the efficiency of plants is if they supply thermal energy as well as electricity. Peel Energy asserts that they will provide a maximum of 5MW of thermal energy as well as electricity per year.[22] This is a very low rate of heat recovery compared to what can be achieved with efficient cogeneration. It would come nowhere near meeting the EU's 70% efficiency 'standard'.

Moreover, we are concerned that Peel Energy has not detailed who their customers for heat will be, and how the heat would be supplied. The Non-Technical Summary states: 'Renewable heat could also be supplied in the form of hot water or steam to housing and industry in the area.' - suggesting a theoretical possibility rather than any commitment to supply heat.

We therefore submit that for the above reasons, the Plant should not be granted planning permission. Thank you for your consideration

Yours sincerely,

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[19] DECC, 'Heat and Energy Saving Strategy: a consultation: Chapter 7: Combined Heat and Power and Surplus Heat', paragraph 7.2

[20] Environment Agency Report, ''Biomass: Carbon Sink or Carbon Sinner?' (2009), available at http://www.environment-agency.gov.uk/static/documents/Biomass__carbon_sink_or_carbon_sinner_summary_report.pdf, see esp pages 8-9

[21] Directive 2009/28/EC, 'Renewable Energy Directive', Article 13(6), available at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0016:0062:en:PDF

[22] Peel Energy, Barton Renewable Energy Plant, 'Planning Statement', page iii.