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Installing Biomass Heating Systems
Advice Note for Development Control Planners

Regional Leaders Forum

Introduction

This advice note concerns the installation of biomass space heating into new buildings and retrofitting into existing buildings. It is not intended to cover biomass for industrial process heat, large scale energy plants or Combined Heat and Power (CHP) systems. This Advice Note outlines the key practical considerations as well as the policy and legislative framework.

While this is aimed principally at development control planners it outlines the need to consult other colleagues particularly those in Building Control and Environmental Health. This forms a suite of three linked documents. The other two are aimed at developers and householders.

4NW is committed to seeing an increase in renewable energy generation (including biomass) as outlined in the Regional Spatial Strategy.

What is biomass?
Biomass is any material derived from living things. However in the context of biomass heating it refers to solid material derived from plants, most commonly trees. Occasional other material such as agricultural or food processing by-products are used.

Why biomass?
It is a renewable energy source. It is also a fuel so unlike other renewables, it can be transported, stored and used on demand. This makes it very important in the renewable energy mix and ideally suited to heating requirements.

Key considerations
New biomass installations are becoming increasingly common in the North West. However there are several key considerations you need to take on board when discussing with a developer or assessing and consulting on a planning application.

These include:
1 National and regional planning policy considerations
2 Air quality issues
3 Building regulations
4 Delivery, storage and reception of fuel
5 Fuel supply and quality

Short of time? There is a rapid checklist for Development Control Planners at the back of this document.

Planning Policy Statement 22: Renewable Energy

Planning policy considerations

The national and regional planning context is becoming increasingly supportive of the use of renewable fuels, such as biomass to generate energy and reduce carbon emissions. Recognition is also growing of the economic (as well as environmental) benefits of developing a biomass industry in the North West.

National

PPS1 Delivering Sustainable Development - sets out the key principles to be applied to ensure that Development Plans and decisions on planning applications contribute to delivery of Sustainable Development. The key principles include Regional Planning Bodies and Local Planning Authorities addressing the causes and potentially impacts of climate change through policies which reduce energy use, reduce emissions and promote development of renewable energy resources.

PPS1 Supplement Planning and Climate Change[1] - sets out how planning (in providing for the new homes, jobs and infrastructure needed by communities) should help shape places with lower carbon emissions and increased resiliance to the climate change now accepted as inevitable.

PPS22 Renewable Energy[2] - sets out the Government's planning policies and key principles for renewable energy, which Regional Planning Bodies and Local Planning Authorities should follow in their approach to planning for renewable energy, particularly promoting and developing the development of renewable energy resources.

Regional

North West of England Plan - Regional Spatial Strategy to 2021[3] - provides a framework for the physical development of the region over the next fifteen to twenty years, incorporating the Regional Transport Strategy. The relevant policies for biomass energy systems are EM15 (A Framework For Sustainable Energy in the North West) and EM17 (Renewable Energy), EM18 (De-centralised Energy Supply).

[1] Planning Policy Statement 1 (PPS1) Planning and Climate Change, Communities and Local Government, 2007, www.communities.gov.uk
[2] Planning Policy Statement 22 (PPS22) Renewable Energy, Communities and Local Government, 2004, www.communities.gov.uk
[3] North West of England Plan www.gonw.gov.uk, 2008

Planning policy considerations

North West Sustainable Energy Strategy[8]
- reinforces sustainable energy policies in the Regional Spatial Strategy and offers practical advice and information on taking these issues forward, particularly through the spatial planning system. It also provides an important strategic context for the North West Climate Change Action Plan.

North West Climate Change Action Plan[9]
- aims to stimulate and measure the progress of England's Northwest towards a low-carbon economy, preparing it for the challenges of a changing climate and expected future energy demands, whilst protecting and enhancing quality of life and preserving the Northwest's rich environment. It resolves to support research and development into regional renewable fuel resources, including biomass. Particular emphasis is put on on-site renewable heat and energy generation, and the development of the market and regional supply chain for biomass and biofuels. The relevant actions for biomass energy systems are 4, 7, 25 and 27.

Regional Forestry Framework for England's North West[10]
- aims to help to shape the woodland and forestry sector in our region for the next twenty years. It aims to increase the use and management of biomass in the North West. The relevant actions for biomass energy systems are 33, 34,35,36,37 &38. This fact sheet fulfils action 36 by providing regional information to planners and developers on the opportunities for biomass energy systems and use in relation to PPS22.

Northwest England Biomass Woodfuel Strategy[11]
- aims to build confidence in woodfuel to allow further developments in the market. It has been developed as part of the Regional Forestry Framework for England's North West.

[8] North West Sustainable Energy Strategy, North West Regional Assembly, 2006, www.nwra.gov.uk
[9] Rising to the Challenge, A Climate Change Action Plan for England's Northwest 2007-09, Northwest Regional Development Agency, 2006, www.climatechangenorthwest.co.uk
[10] The Agenda for Growth, Making it Happen, 2006-2009 Action Plan, Northwest Regional Forestry Framework, Forestry Commission, 2006, www.iwood.org.uk
[11] Northwest England Biomass Woodfuel Strategy, Northwest Regional Forestry Framework, 2006, www.gonw.gov.uk

Air quality issues

Smoke Control Areas

The Clean Air Act 1993[12], together with Regulations and Orders made under the Act, provides some of the current legislative controls. Under the Clean Air Act local authorities may declare the whole or part of the authority to be a Smoke Control Area[13] (SCA).

Your Environmental Health Officer (EHO) dealing with air quality can tell you whether the proposed development falls within a SCA. If it does then the developer should use an appliance from the official Exempt List[14]. These have gone through rigorous emissions testing to meet UK legislation. In addition, within the past few years several modern European boilers have come onto the market which have passed similar testing in their own country. Because the UK biomass boiler market is still small, manufacturers have been reluctant to pay for UK testing.

However some local authorities have considered the use of a non exempt appliance if the developer provides detailed emissions data based on official accreditation in its country of origin.

Your EHO colleagues may also be interested in maintaining Air Quality Management Areas[15]. Burning wood will emit little sulphur dioxide emissions, roughly the same nitrogen oxide emission, but more particulate matter, than fossil fuels. Further information on emissions from burning biomass can be found at The Biomass Energy Centre.[16]

Waste incineration and pollution prevention

Depending on the type of fuel used[17], and if the boiler is over 400kW, the Pollution Prevention and Control Regulations 2000[18] have to be taken into account. A key factor is whether the fuel to be used is considered a waste and if so, is it waste wood exempt from the Waste Incineration Directive (WID)? Some guidance has been issued by the Environment Agency[19]. In summary, waste is any wood that is not a forestry material, tree surgery residual, or a by-product of processing clean virgin timber (clean sawdust and offcuts).

Units between approximately 400kW and 3MW can burn waste wood such as MDF, chipboard and clean pallet waste etc. but you should consult your EHO colleagues on what conditions need to be applied. If the unit is over 3MW then the Environment Agency must be consulted.

Under no circumstance can waste wood be burned if it contains halogenated organic compounds (mainly chlorine based plastics) or heavy metals that formed part of a treatment or coating. The likely source of this material would be construction and demolition waste. In general, unless it is a waste wood system for a workshop or warehouse, or it is one of several boilers in a heating system, an accumulator tank should be in place.

[12] www.opsi.gov.uk/acts/acts1993/Ukpga_19930011_en_1.htm
[13] www.airquality.co.uk/archive/smoke_control/locations.php
[14] www.uksmokecontrolareas.co.uk/appliances.php?country=e
[15] www.airquality.co.uk/archive/laqm/laqm.php
[16] www.biomassenergycentre.org.uk/portal/page?_pageid=77,103200&_dad=portal&_schema=PORTAL
[17] See the fuels section for further details.
[18] www.opsi.gov.uk/si/si2000/20001973.htm#sch1
[19] www.environment-agency.gov.uk/commondata/acrobat/wood_2077240.pdf

Building regulations

Building Regulations also apply. For installations under 50kW, Part J, Combustion Appliances and Fuel Storage Systems[20] must be adhered to. It will also provide useful pointers for larger installations. Irrespective of size it is advisable to note in the conditions that Part J should be followed where applicable with regards the installation.

Just as approved gas installers are accredited by CORGI, there is a solid fuel registration body called HETAS[21]. This body is rapidly up-skilling companies and individuals for modern biomass boilers but the installer should have also attended a boiler manufacturers training course.

Flues and chimneys
With modern biomass boilers there is unlikely to be any significant additional impact with regards height and visual impact of the flue.

Biomass boilers
In the vast majority of cases you cannot merely substitute a gas boiler for a biomass boiler. This is most marked where you have a modern Building Management System (BMS). Although most modern biomass boilers allow modulation to around 30% of maximum output, they are not suited to continuous low level output and are best run at close to full load.

To get the best out of a system it is now accepted that biomass boilers are run in conjunction with an insulated accumulator tank or thermal store. You should check whether any proposed system has one and make enquiries if it does not. In general, unless it is the type of waste wood system usually found in a joinery workshop warehouse, or it is one of several boilers in a heating system, an accumulator tank should be in place.

[20] www.planningportal.gov.uk/england/professionals/en/4000000000503.html
[21] www.hetas.co.uk/

Delivery, storage and reception of fuel

This is one area that is often overlooked, or considered too late in the planning process. However the space and infrastructure available for delivery, storage and reception is very important. If the development envelope is too small it could restrict the fuel storage area, increasing the frequency of deliveries needed, or it may restrict the size of delivery vehicles which can access the storage areas.

Vehicle movements
There will be additional vehicle movements with regards fuel deliveries over that of a mains gas boiler. You will have to determine whether this constitutes a significant impact. This may occasionally be the case if the boiler is very large and/or the fuel storage is small.

The developer will be able to calculate boiler size and estimated annual energy usage, and a ready reckoner for yearly fuel volumes has been provided in the sister document. From this they should be able to provide you with an idea of additional yearly vehicle movements.

Key information that should be submitted with the planning application includes what type and size of delivery vehicle the fuel supplier has and whether it can access and unload at the site safely. There are many novel solutions to get round most space constraints such as blowing pellets or recycled chips into a silo, using underground storage bunkers or other bespoke delivery and storage systems.

Fuel supply and quality

The North West has arguably the best fuel supply chain in England. A North West specific directory[22] of fuel types and suppliers details this.

Options include:

Pelletised wood
Pellets are readily available in the region. They are dense (requiring less storage space), consistent and can be blown down a pipe to above ground storage easily. Applications for boilers fuelled by pellets are likely to be under 50kW in size or where storage space is constrained or delivery difficult.

Woodchips
Chips are cheaper than pellets, but they are bulkier and less consistent. Woodchip is likely to come from two sources, forestry/tree surgery material or recycled waste wood. Forestry materials tend to be wetter and denser and have less calorific value by weight. Recycled wood is generally dryer and therefore lighter for the same volume. If recycled waste wood is used as a fuel it must be exempt under the Waste Incineration Directive (WID).

Logs
Modern boilers are available which use logs for single batch firing. This heats up an insulated accumulator tank from where the heat is drawn over a 24hr period.

Planning conditions for fuel supply
Occasionally conditions are placed on a developer as to what type of fuel should be used or where it will be sourced from. Examples that have been applied include:

1 Fuel produced in the UK or even a more local source.
2 Fuel from an accredited sustainable managed source[23].
3 Fuel from forestry, arboriculture or agriculture.

Careful consideration must be given if imposing conditions as they can be problematic. For example, conditions 2 and 3 above will be difficult to meet if the local supply chain for this fuel is not significantly developed enough.

These conditions could be adapted however. A set period (years) could be given in which the appliance should have switched to using a specified type of fuel.

[22] www.merseyforest.org.uk/files/NW biomass fuel supply.pdf
[23] www.fsc.org

Check list for development control planners

Question	If yes	Action/Condition
Is it in a Smoke Control Area?	Is the proposed boiler on the exempt list?	Exempt list boiler.
Is it in an Air Quality Management Area?	Is your Environmental Health Officer (EHO) concerned about NOx and PM10s?	Talk to EHO about conditions or refusal.
Is the boiler over 400kW and using a WID exempt waste wood?	Pollution Prevention Control Regulations 2000 will come into play.	Talk to EHO about conditions.
Is the application lacking information on who will install the system?	Ask applicant for further details.	Condition for this to be undertaken by HETAS accredited installer with equipment manufacturer training.
Is the system lacking an accumulator tank?	Ask applicant why. Consult with Building Control or the authority's Energy Manager for advice.	Possible condition on accumulator tank if it is the only boiler and/or linked to modern BMS.
Is there any information on vehicle movements?	Ask for estimated delivery frequency based on annual fuel usage.	Possible condition on delivery timings or maximum number.
Does delivery access look tight?	Ask who is supplying fuel and what delivery vehicles will be used.	If access still looks tight then ask applicant to submit an alteration.
Do you want to impose a condition on fuel source?	Is it reasonable to ask for this immediately or at a later date?	Set appropriate condition.

Useful information

Advice

Impartial advice on biomass systems may be obtained from the region's woodland initiatives. They have a long history of promoting biomass and some technical expertise:

Cumbria
Cumbria Woodlands
01539 822140
www.cumbriawoodlands.co.uk

Lancashire
Lancashire Woodlands Project
01772 533917
www.lancashire.gov.uk

Merseyside and Cheshire East
The Mersey Forest
01925 816217
www.merseyforest.org.uk

Greater Manchester (Bolton, Bury, Manchester, Salford, Trafford and Wigan)
Red Rose Forest
0161 872 1660
www.redroseforest.co.uk

Greater Manchester (Rochdale, Oldham, Tameside and Stockport)
Pennine Edge Forest
01706 924234
www.rochdale.gov.uk

Other Links to Useful Information

North West Fuel Supply Directory
www.merseyforest.org.uk/files/NW biomass fuel supply.pdf

Biomass Energy Centre
www.biomassenergycentre.org.uk

Woodfuel Heating in the North of England: A Practical Guide
www.creativeconcern.com/iwood/pdf/WoodfuelHeating.pdf

North West Regional Spatial Strategy
www.nwrpb.org.uk/whatwedo/issues/environment/?page_id=223

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This guidance note was written by
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4NW is the Regional Leaders Forum for
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