REA & WHA response to Defra's consultation on 'Cleaner domestic burning of solid fuels and wood'

The Renewable Energy Association (REA) and Wood Heat Association (WHA) are pleased to submit this response to the above consultation. The REA represents a wide variety of organisations, including generators, project developers, fuel and power suppliers, investors, equipment producers and service providers. Members range in size from major multinationals to sole traders. There are over 550 corporate members of the REA, making it the largest renewable energy trade association in the UK. The WHA is the UK trade association for the modern wood heating and related biomass heating industry including wood fuel suppliers, biomass boiler and stove installers and distributors, and anyone involved in the supply chain.

General Comments

The REA and WHA welcome and support the Government's aim to improve air quality. In the Annex to this consultation, we attach a Briefing Sheet which provides further context for considering Air Quality and Biomass Heating. We would encourage DEFRA to consider these points and would welcome the opportunity to come in and discuss these issues directly with the Air Quality team to provide a fuller context to these proposals.

In regards to this consultation, while we recognise that there are positive intentions behind the proposals, we raise concern that they simply replicate requirements already stipulated within the Smoke Control Act and implemented through Smoke Control Areas. A new cut-off point for the sale of wet wood and requirements on labelling does little to address the fact that the existing rules are poorly enforced and that the public remains relatively unaware of what they can or cannot do. We, therefore, believe DEFRA's attention would be better focused on addressing the broader problem of ensuring the regulations are actually complied with and that the rules are well understood by suppliers and consumers.

Data taken from the RHIEC suggests that the major contributors to undesirable emissions, such as PM 2.5 and NO_x are those which are illegal to operate in the first place (see REA & WHA response to DEFRA Clean Air Strategy here). Local authorities have already highlighted, by the classification of smoke control zones, areas where potential emissions could lead to issues. In such areas, wood-burning appliances are required to be DEFRA "Exempt". The testing procedure requires the appliance to have detailed instructions on its use, the type of fuel approved, and it must meet specified maximum limits for emissions. As such, the proposals within this consultation are broadly already in place but do not ensure a greater level of compliance.

The importance of education and enforcement are highlighted by previous analysis done by DECC in 2016 on their Domestic Wood Use Survey[i]. The Survey highlights that 31% Wood fuel was sourced from the informal 'grey' wood market. The source of Air Quality issues, therefore, can be assumed to come from this poorly policed 'grey' market, which is unlikely to become more compliant with the additional regulations given the little consequence of breaking existing rules.

Answers to Consultation Questions

4. Would you like your response to be confidential?
No

5. What is your location?
Representing the whole of UK, but based in London.

Section 2 - Wood

6. We are considering a cut-off point for the sale of wet wood to householders. In line with feedback from the Call for Evidence, we are proposing that this is set at 2m^3, but we are inviting your views on this point. Please indicate what limit you think a cut-off point should be set at.
Up to 2m^3

7. Do you think that suppliers and retailers should be given a transition period to use up existing stocks of wet wood or allow time for it to air-dry?
A transition period of 1 year

With a transition period of 1 year, fuel suppliers will have sufficient time to either air dry their fuel or arrange for systems to force dry it.

8. Do you think that smaller suppliers and retailers should be given a longer transition period?
No.

9. We are proposing that suppliers selling wet wood in volumes larger than the agreed cut-off point should be required to provide clear instructions to their consumers about how long the wood should be "seasoned" before it is burnt. Do you agree or disagree with this proposal?
Agree.

10. Do you agree or disagree that wood fuel suppliers should be required to be members of a certification scheme that provides assurance (via testing and auditing) that the wood is of a moisture content of 20% or less?

Agree. WHA members support the idea of targeting a maximum moisture content of 20%. It is, however, also noted that accurately measuring the moisture content of wood is not a simple exercise. There are already several EN/ISO standards in existence which cover quality management, sampling methodologies and moisture content determination (e.g. ISO17225). All of these require both specific measurement equipment and expertise to carry out testing. Therefore, were the government to mandate a moisture content of 20%, there would need to be a clear plan of how this is measured and against which existing protocol/standard quality is assessed.

In addition, concerns have been raised around suppliers being forced into a particular mandatory external quality assurance system. Claims made by suppliers related to the moisture content of their products are already regulated under labelling laws, which necessitates a quality management system being in place. Thus, a mandatory external quality assurance system should be unnecessary and emphasis should be placed on trading standards enforcement.

11. Do you agree or disagree that retailers selling wood should be legally required to store the wood in such a way that it will not become wet?
Yes.

12. In order to comply with the proposal to require all businesses selling wood in volumes under 2m³ to ensure that it is dried to below 20% moisture, what adjustments, if any, would your business need to make? Please select one of the following.

Changes to business activities will be specific to each individual company processes so, as a trade association, we are unable to comment directly on this question. However, we do highlight concerns that mandating of moisture content could increase fossil-fuelled kiln drying activities that could increase carbon emissions.

13. Would you like to provide any further comments or evidence on our proposals or the questions in this section?

The proposals set out in this consultation target established vendors of solid fuels and wood for domestic burning in the UK. However, a significant proportion of the industry is comprised of businesses which supplement their primary income (e.g. tree surgery), with firewood sales. It is unclear how the Government would move to regulate the quality of wood sold in this way and enforce certain fuel requirements (such as moisture content thresholds) in an otherwise unregulated supply chain.

Section 3 - Coal

14. Do you agree or disagree that government should phase out the use of traditional house coal for domestic combustion?
Agree

15. If you agree, what would be the most appropriate end date for phasing out the use of traditional house coal for domestic combustion?
2020.

The Renewable Heat Incentive ends in March 2021. By phasing out the use of traditional house coal be 2020, consumers will be able to take advantage of the RHI to install a low-carbon, low-emission heat system before the scheme ends.

16. In phasing out the use of traditional house coal as a domestic fuel, what do you consider is a reasonable transition period to allow industry and householders to use up existing stocks?
A transition period of 1 year

17. In phasing out the use of traditional house coal as a domestic fuel, the government is minded to apply this to all businesses because of the health and environmental benefits of this approach. We acknowledge this may be harder for some businesses than others. Do you agree or disagree that this approach should apply to all businesses?
Agree.

18. If you disagree, which of the following should apply? Please select all the options you believe should apply
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19. In phasing out traditional house coal as a domestic fuel, the government is minded to apply the phase-out nationwide across England. Do you agree or disagree?
Agree.

20. Would you like to provide any further comments or evidence on our proposals or the questions in this section?
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Section 4 - Manufactured solid fuels

21. Do you agree or disagree that government should introduce a standard for all manufactured solid fuels which confirms they are below 2% sulphur and meet a smoke emission limit of 5g /hr?
Agree.

22. In introducing a sulphur and smoke emission standard, do you consider that there should be a transition period for suppliers and retailers?
No transition period.

23. Do you agree or disagree that, over time, the 2% sulphur limit should be further reduced to 1% sulphur?
Agree - 1%

If you agree, over what time period should the further reduction be introduced?
1 year

24. Do you agree or disagree that the government should introduce a clear labelling requirement to demonstrate that fuels meet the standard?
Agree

25. In order to comply with the proposal to phase out traditional house coal and apply sulphur and smoke emissions standards to all solid fuels, what adjustment, if any, would your business need to make? Please select one of the following.

- Would need to reformate our products
- Wouldn't need to adjust
- Couldn't adjust
- Other (please specify)

26. Would you like to provide any further comments or evidence on our proposals or the questions in this section?

It is noted that, although this consultation includes solid fuels, it omits a consideration of wood briquettes. Briquettes are generally manufactured from compressed waste wood and contain a very low moisture content of below 10%, therefore making them an excellent low-carbon alternative to wood logs. Legislation should be formulated in order to ensure that the quality of briquettes is in accordance with the requirements outlined by ISO17225, particularly that they are free from heavy metals and contaminants.

Section 5 - Carbon Reductions

27. Do you agree or disagree that government should, over the longer term, introduce a requirement that all manufactured solid fuels have a minimum biomass content?

Agree: 50%

28. For businesses: If the government mandated a biomass content how long would it take you to adjust?

29. Would you like to provide any further comments or evidence on our proposals or the questions in this section?

To meet the long-term requirements of decarbonising the energy system and the UK economy, it has been established by the Climate Change Committee that heating needs to be completely decarbonised by 2050. The Government has decided to start with the off-gas-grid area in the 2020s, which they recently consulted on in their call for evidence on the future of heat in buildings. It is worrisome that this consultation does not work towards moving households completely off high-carbon fuels. When regulating the use of solid fuels such as coal, Defra should work toward getting every household off coal, smokeless coal, and other manufactured solid fuels based on fossil fuels. It is an obvious benefit of being able to achieve two Government aims at once by moving the UK completely away from high-carbon fuels for heating within a number of years.

Section 6 – Exemptions

30. We are interested in your views on how the government should support those in fuel poverty with this transition away from high-carbon fossil fuels

31. Would you like to provide any further comments or evidence in this section?

Section 7 - Implementation

32. What do you think would be an appropriate level of fixed penalty related to the sale of domestic burning products?
Other: £5000

33. Do you think that local authorities should be required to use any funds received through fixed penalties related to the sale of domestic burning products for a specific purpose?
No

34. Do you agree or disagree that this will deliver our objective of establishing a clear and straightforward enforcement policy, minimising burdens for Local Authorities?
No

We do not believe a simple fine of £300 or £500 would be sufficient to offset the added responsibility and requirements for the local authorities. It would also not be a sufficient deterrent, as it is relatively little compared to the retailers' annual turnover. We believe a fine of £5000 would be sufficient to both deter retailers and ensure that it covers the local authorities' added expense.

35. The government will provide advice and guidance to retailers selling domestic burning products. What format should this take?
Leaflets
Point of sale displays
Information provided with the product

Section 8 - Information

36. What information do you think would be helpful to enable householders to reduce their impact from domestic burning?
It would be very helpful to include information on how to operate your heating system, including fuel types, how to increase efficiency, and also include a direct impact on their personal health of using inappropriate fuels.

37. What do you think would be the most effective way of communicating information to householders? (tick all that apply)
- ✓ Through retailers
- ✓ Appliance manufacturers

- ✓ Fuel suppliers
- ✓ Chimney sweeps
- Press
- ✓ Charities
- Social media
- Doctors surgeries
- Mailshots
- ✓ Advice with council tax
- All of the above
- Other (please specify)

38. For householders: Where do you buy your fuel?

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Section 9 -Additional suggestions

Do you have any additional comments/views that you wish to provide on the content of this consultation?

Annexe:

Air quality and Biomass Heating

- **The vast majority of urban particulate emissions originate from transport, with "other fuels", which includes wood heating, making up only 3-4% of PM/NO_x emissions**
- **Research shows that urban wood burning mainly originates from open fires and older stoves**
- **Biomass boilers are strictly regulated, and most boilers emit less than half of the legal limit of particulates**

Introduction

In the UK, more energy is used to provide heating and hot water in our buildings and industries than for any other purpose. As a result, a third of the UK's carbon emissions originate from heating. Heat in the UK is currently supplied predominantly by fossil fuels - with less than 6.5% [2015] from renewable sources.

At the same time, urban centres are facing severe air quality issues with air pollution limits frequently breached[1]. National and local policies aim to reduce emissions in urban areas, where the concentration of emissions are highest. Overall, the majority of air quality emissions originate from road transport, however, some have also been identified as originating from wood burning. As figures 1 and 2 below from the Greater London Authority show, around 4% of PM_{10} emissions and 3% of NO_x emissions originate from commercial and domestic other fuels, which include emissions from wood burning. However, the GLA data does not go further into details of the "other fuel" category. This white paper further looks at the evidence on how biomass boilers are regulated, urban wood-burning emissions, and origin of the emissions.

Figure 1: Origin of NO_x emissions in Greater London (2013, GLA LAEI2013 update)

[1] Carrington, D. (2017, Jan., 6), London breaches annual air pollution limit for 2017 in just five days, *The Guardian,* Retrieved from https://www.theguardian.com/environment/2017/jan/06/london-breaches-toxic-air-pollution-limit-for-2017-in-just-five-days

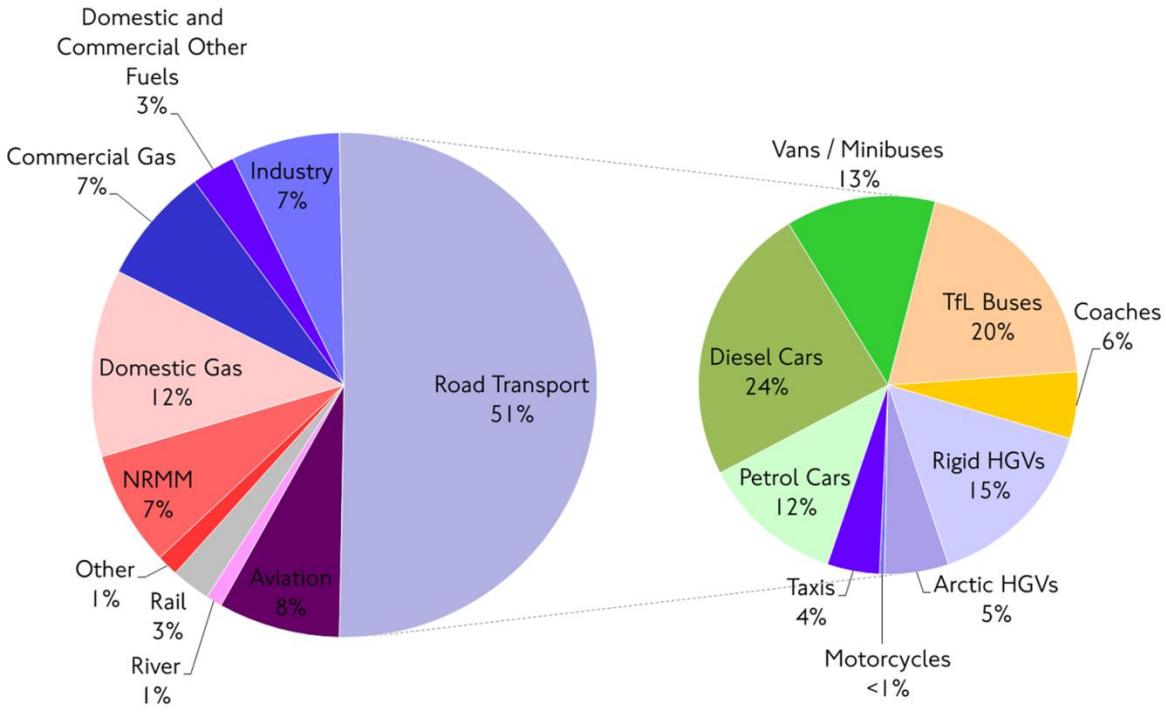
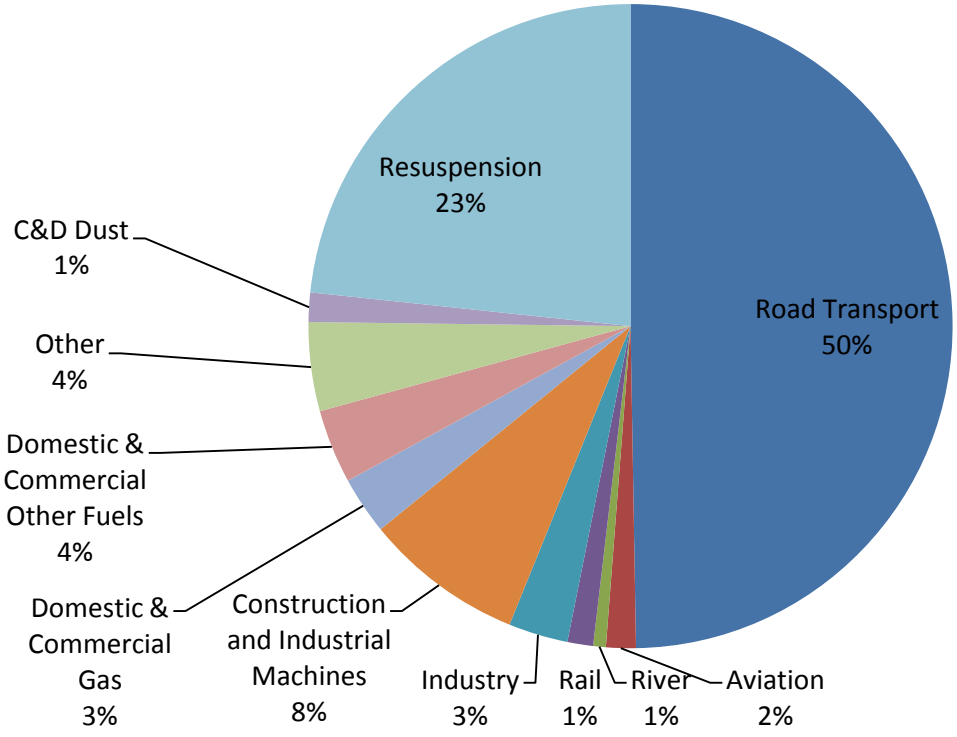


Figure 2: Origin of PM_{10} emissions in Greater London (2013, GLA LAEI2013 update)



Urban Wood Burning Emissions

The research and measurement programme of Fuller et al. (2014)[2] suggest that emissions related to wood burning mainly arise from "a decorative or secondary heating source", from garden waste burning and from patio wood burners. This would indicate that the relatively minor emissions from urban wood burning are not from the types of biomass boilers as supported under the RHI, but instead from open fires and older domestic stoves.

Open fireplaces and older stoves differ from biomass boilers in a number of ways. Biomass boilers produce hot water for central heating systems and water heating and even process heat at commercial scale. They vary in size from 5kWth for low energy houses up to 5,000kWth or more for large building complexes or industrial process heat and are many times more fuel efficient than open fires. Pellet boilers operate with automatic feeding systems that bring in fuel from a storage room and can replace oil heating systems. Open fires and wood burning stoves which are the sole source of heating are unusual in urban areas, but more common in rural areas, where wood or other solid fuels are sometimes used provide direct space heating and central heating and hot water in homes.

The Government's Domestic Wood Survey[3] shows that 68% (2014) of wood burning appliances in London were open fires. Together with the results from Fuller et al (2014), this would suggest that the main issue of emissions from wood burning in urban centres is related to open fires and, in part, older stoves. Poor enforcement of Clean Air Act requirements, which are primarily intended to regulate pollution from domestic solid fuel, is undoubtedly a major contributing factor to urban air pollution in towns and cities.

The new EU Ecodesign Directive includes new emission standards for new wood stoves, and UK regulations were planned to be implemented prior to 2022. Many Ecodesign compliant stoves are available on the market now as "Ecodesign Ready" which is supported by Defra. Newer wood stoves are therefore expected to have significantly lower measured emissions.

Biomass boiler emission regulations

Biomass heating systems burn fuel such as wood pellets, chips or logs to provide central heating and hot water in homes, hospitals, schools, the public sector, industrial sites, not-for-profit organisations, small and large businesses, and care homes. They can also generate high-temperature heat for industrial processes.

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[2] Fuller, Gary W. (2014), Anja H. Tremper, Timothy D. Baker, Karl Espen Yttri, David Butterfield, Contribution of wood burning to PM10 in London, *Atmospheric Environment 87 (2014) 87-94*, Retrieved from https://doi.org/10.1016/j.atmosenv.2013.12.037

[3] DECC (2016), Summary results of the domestic wood use survey, *Renewables statistics*, 31 March 2016, Retrieved from https://www.gov.uk/government/publications/summary-results-of-the-domestic-wood-use-survey

Since September 2013, any biomass boilers installed and commissioned under the Renewable Heat Incentive (RHI) scheme have been required to meet strict air quality levels. The air quality requirements set limits on the emissions a product can produce. Products must operate within these limits to be eligible for the Domestic and Non-domestic RHI scheme. Under the scheme, PM emissions must not exceed 30 grams per gigajoule net heat output, and NO_x emissions must not exceed 150 grams per gigajoule net heat output. No biomass boiler installed since September 2013 should receive any government support without meeting the requirements.

The analysis below assesses the RHI Emission Certificates for biomass boilers installed under the Renewable Heat Incentive in Great Britain.

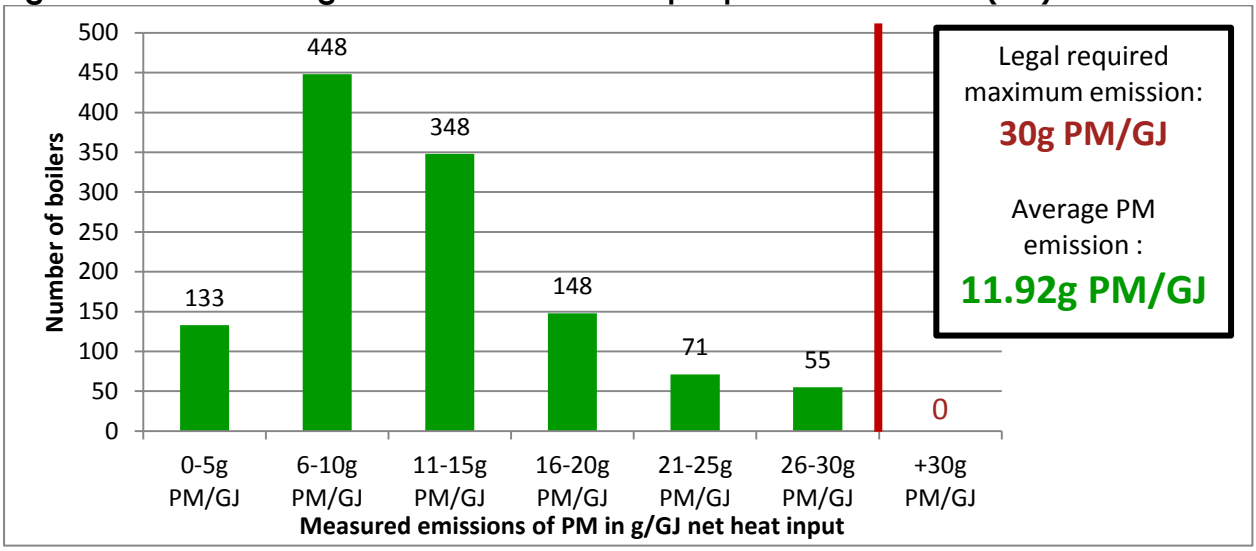
Methodology

Through a Freedom of Information Request sent to the Department for Business, Energy and Industrial Strategy, the Wood Heat Association has accessed data on the biomass boiler emission test scores. The data reflects the 1,205 biomass boilers that have RHI Emissions Certificates, with information on measured emissions of PM and NOx in g/GJ net heat input. As several boilers had different measured emissions depending on the type of fuel (usually wood chip and wood pellets), the average value was selected, since there was no further description to describe which value was most appropriate.

Analysis of biomass boiler emissions

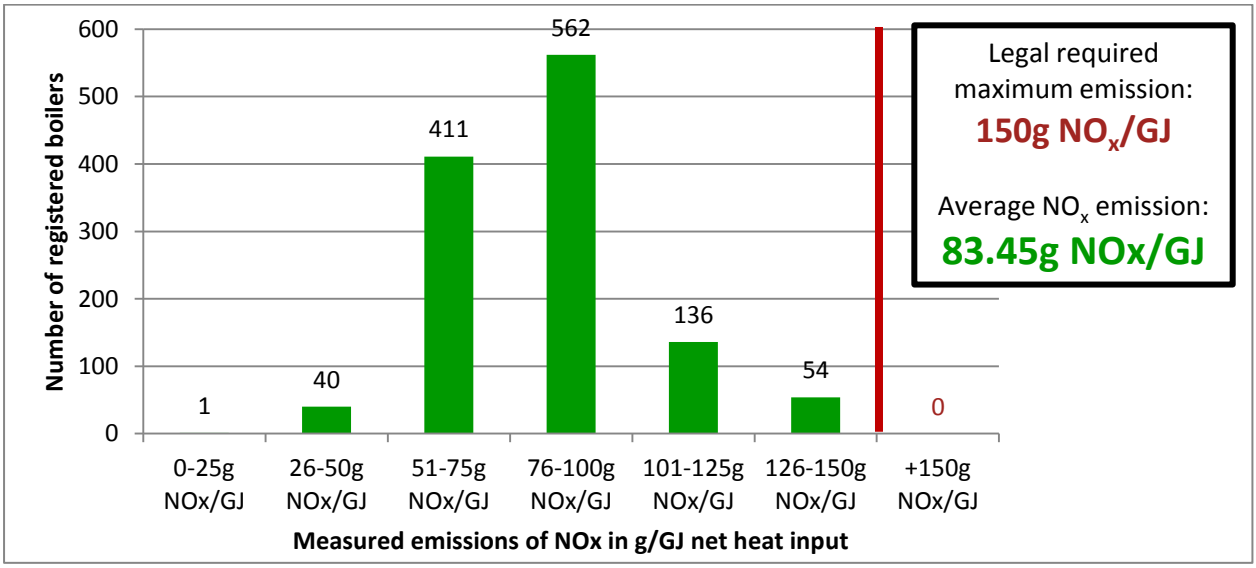
The analysis of the emissions test results confirms that the measured emissions for all boilers are within the required maximum. The average grams of PM emissions per gigajoule net heat output are 11.92g PM/GJ, well below the limit of 30g PM/GJ. As demonstrated by figure 3, the vast majority of boilers have particulate matter emissions that are considerably below the legal limit. Figure 3 shows how many tested boilers have measured PM emissions within different emission ranges, which shows that 77.1%, or 929 boilers, have tested measured PM emissions at less than half the legal limit, and 48.2%, or 581 boilers, emitted less than a third of the legal threshold.

Figure 3: Number of registered biomass boilers per particulate matter (PM) emissions



The average grams of NO_x emissions per gigajoule are 83.45g NO_x/GJ, also notably below the legal limit of 150g NO_x/GJ. Figure 4 demonstrates that the vast majority of biomass boilers had measured emissions in the range of 51-100g NO_x/GJ. Specifically, 37.5% had measured NO_x emissions at less than half of the legal limit, and 84% emitted less than two-thirds of the legal maximum (i.e. 100g NO_x/GJ or less).

Figure 4: Number of registered biomass boilers per nitrogen oxides (NO_x) emissions



Conclusion

PM_{10} and NO_x emission analysis for London shows that the majority of emissions originate from road transport and other forms of transport. In urban centres like London, only 3-4% of air quality emissions stem from "other fuels", and it is unclear how much of the "other fuels" related emissions can be attributed to wood heating. Measurement programmes show that the emissions related to wood burning mainly originate from garden waste burning, patio wood burners, and "decorative or

secondary heating source[s]"; and government data show that most of the decorative/secondary heating sources in London are open fires.

Unlike open fires and old (non-Ecodesign) stoves, the majority of RHI-registered biomass boilers are strictly regulated by Ofgem in terms of their PM and NO_x emissions, and analysis of official emissions certificates shows that the vast majority of RHI supported biomass boilers emit less than half of the legal limit, and most significantly less if operated in line with manufacturers' instructions.

This, and the fact that most biomass boilers are installed off the gas grid makes it unlikely that biomass boilers contribute significantly to urban air quality issues, as the main causes are transported, and the few emissions originating from wood heating stem from open fires. Whilst biomass boilers do contribute to air quality problems, their contribution is, evidently, negligible

For further information, please contact Mark Sommerfeld, Policy Manager at the Wood Heat Association at msommerfeld@r-e-a.net or 020 7925 3570.

[i] DECC (2016) Special Feature – Domestic Wood use Survey, Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/517572/Summary_results_of_the_domestic_wood_use_survey_.pdf