

## **Biomass Boilers: Applicant Guidance**

This guidance can help you understand the supporting information that will make a high-quality application for funding biomass boilers.

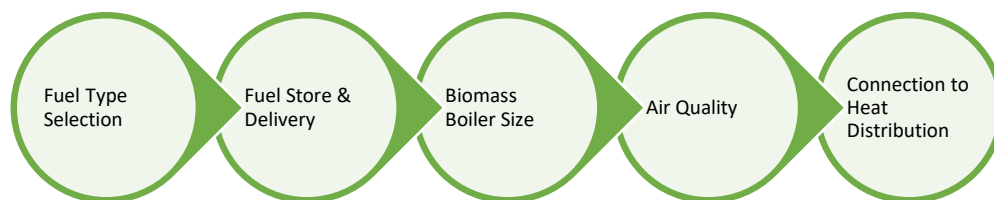
The Public Sector Decarbonisation Scheme (PSDS) allows applications for funding of biomass boilers. However, applicants must explain why biomass is more suitable than other low carbon alternatives, for example, where there is not appropriate infrastructure in place to support a heat pump.

Applicants must also demonstrate how they intend to mitigate any potential impacts on air quality, particularly on people in the local area. Applications are not encouraged for biomass boilers in heavily built-up areas unless there is a strong clear justification for the use of biomass boilers in place of another heat source.

Biomass boilers are more complex than conventional gas boilers, meeting space heating and/or hot water requirements, but instead of using fossil fuels to produce the heat, the boilers combust sustainably sourced wood or biomass. The figure below shows the key topics which should be considered in the initial design stages, or feasibility study, and included with the application.

Figure 1

### **Information you will need to provide with your application**



Applicants should provide information relating to the above topics. Firstly, you should provide a thorough feasibility study to illustrate why biomass is the most suitable low-carbon heating option, for example, where there is not appropriate electrical infrastructure in place to support a heat pump.

Applicants should provide background information on what system the biomass boiler is replacing and what existing infrastructure is going to be used with the biomass boiler. A 'whole building' approach should be utilized to reduce the heat demand of the site, ensuring an appropriately sized boiler is installed.

Please provide the below:

Checklist	
1. Description of works	<input type="checkbox"/>
2. Schematics and drawings of existing and proposed system	<input type="checkbox"/>
3. Water flow and return temperatures for existing and proposed system	<input type="checkbox"/>
4. Water flow rate for existing and proposed system.	<input type="checkbox"/>

### **Biomass Fuel Type**

- You will need to describe which fuel type will be used and how this is compatible with the intended biomass boiler. Specifically relating to moisture content, size, and type (i.e., Pellet, chips, logs or other).
- Applicants who receive funding for biomass boilers should obtain their biomass fuel from sustainable sources. The Biomass Suppliers List, which can be found [here](#), lists suppliers who have demonstrated that their wood fuel meets the sustainability criteria of the Renewable Heat Incentive scheme. You should explore the different fuel sources and develop a procurement plan.

### **Fuel Store and Delivery**

- Salix will need evidence to show that you have fully understood the fuel delivery and storage needs of the site to meet your heat demands:
  - How much fuel will you need to meet the heat demand of the site?
  - How much fuel can be stored on site, how will you achieve this and monitor stock levels?
  - How frequently will you need fuel be delivered on site?
  - What vehicle will deliver the fuel to your site?
  - If there are site access restrictions, how will can this be overcome?
- Please explain how the fuel will be delivered into the boiler:
  - Will fuel delivery be automated or done manually?
  - Will the process be run continuously or batch fed?

### **Biomass Boiler Size**

- The heating medium should be compatible with the heating system. This should be outlined in your submission and schematics.
- Biomass boilers can take longer to heat up and cool down compared to conventional gas-fired boilers. Furthermore, biomass boilers cannot reduce their output as flexibly and quickly. The minimum operating output is typically 30%. If the system is regularly running at low outputs this can lead to inefficiency issues and safety concerns. Therefore, the correct sizing of the boiler is very important when reviewing an application. Has this been considered for your site? Are common mitigating techniques for when oversizing used in your design, such as:
  - Thermal Stores or buffer vessels.
  - Multiple smaller boilers

- An undersized boiler for most of the load with other heating technologies used to top up any further demand.
- The peak heat loss of the building needs to be calculated. This can then be used to size the new heating system appropriately. The peak heat load of the property needs to be calculated by measuring all the fabric and ventilation/infiltration heat losses for the coldest day of the year based on geographic location. As per CIBSE guides.
  - Estimate of air change rates can be used for ventilation rate estimate.
  - The calculation should account for the areas of the walls, floors, roof, windows and doors and their U values.
  - The peak kW rating of the heat pump needs to match the peak kW heat loss of the building.
  - The kW rating of the heat pump depends on the flow temperature it needs to provide and the lowest winter external air temperature. Ensure you are considering the air and flow temperatures on the manufacturers specification when sizing your heat pump.
- Will the boiler supply domestic Hot Water (DHW)?
  - If so, please specify how you propose to meet your DHW demand. This needs to be considered when sizing your boiler. If you are planning to use another method to provide your DHW then please provide details of this installation and the same level of supporting information as for you proposed heating system

### **Emissions Abatement**

- Biomass combustion can release Particulate Matter (PM) and Nitrogen Oxides (NOx) emissions. When installing a biomass boiler, the area where it is being installed must be checked if it is an Air Quality Management Area (AQMA). Furthermore, permissions must be given by the local authority environmental health team. This information should be evidenced.
- Applicants will explain how they intend to mitigate any potential impacts on air quality particularly on other people in the local area. Applications should support their application with planning approvals.

### **Heating Distribution**

- A survey of existing heat emitters needs to be completed for any systems proposing lower flow temperatures than the existing system.
- A survey of existing pipework needs to be completed for any systems proposing higher flow rate than the existing system.

### **Maintenance**

- Applicants are expected to demonstrate how they intend to maintain their boilers to ensure the performance over the lifetime of the plant. Note the Microgeneration Certification Scheme has recently published a new [Standard](#) for the maintenance of biomass boilers.

### **Biomass Applications Checklist**

1. Complete 'whole building' approach analysis.	<input type="checkbox"/>
2. Provide heating system sizing calculation based on building peak heat loss.	<input type="checkbox"/>
3. Select biomass boiler by preferred fuel type and set the boiler size appropriately. Ensure this is compatible with current heating distribution system.	<input type="checkbox"/>
4. Articulate site access restrictions and select sustainable biomass source.	<input type="checkbox"/>
5. Secure planning and air quality approvals for your area, consider emission abatement options.	<input type="checkbox"/>
6. Organise boiler maintenance plan.	<input type="checkbox"/>
7. Collate this information into a feasibility study.	<input type="checkbox"/>