



Department for
Energy Security
& Net Zero

National Policy Statement for Renewable Energy Infrastructure (EN-3)

March 2023

- 3.7.5 Biomass is material of recent biological origin derived from plant or animal matter. The biomass used for heat and power usually falls into one or more of three main categories:
- biomass derived from forest residues as co-products of conventional forestry management. This includes forest products generated during thinning, felling and coppicing of sustainably managed forests, parklands and trees from other green spaces. It also includes sawmill residues (often processed to produce wood pellets), other wood processing residues and parts of trees unsuitable for the timber industry;
 - biomass from agricultural crops and residues. This includes crops grown primarily for use in energy generation ('energy crops'), such as short rotation coppice (SRC), or Miscanthus which can be grown on land unsuitable for food crops. Biomass can also be sourced from agricultural residues such as straw, husks and kernels; and
 - biomass from biodegradable waste and other similar materials including sewage sludge, animal manure, waste wood from construction, the biodegradable fraction of mixed municipal waste, and food waste that would otherwise be disposed of in landfill.

Applicant Assessment

Factors Influencing site selection and design

Waste treatment capacity

- 3.7.6 As the primary function of EfW plants is to treat waste, applicants must demonstrate that proposed EfW plants are in line with Defra's policy position on the role of energy from waste in treating waste from municipal or commercial and industrial sources.¹³
- 3.7.7 The proposed plant must not compete with greater waste prevention, re-use, or recycling, or result in over-capacity of EfW waste treatment at a national or local level.

Transport infrastructure

- 3.7.8 Biomass or EfW generating stations are likely to generate considerable transport movements. For example, a biomass or EfW plant that uses 500,000 tonnes of fuel per annum might require up to approximately 220 heavy goods vehicle (HGV) movements per day (Monday – Friday) to import the fuel. There will also be residues which will need to be regularly transported off site.

¹³ 2021 Waste Management Plan for England p.45:
<https://www.gov.uk/government/publications/waste-management-plan-for-england-2021>

- buildings necessary for fuel reception, storage, sorting and pre-treatment facilities; and
 - ancillary plant such as an electricity substation, civil engineering workshops and offices.
- 3.7.25 Details should be provided on any development proposals that may also incorporate additional features such as waste transfer facilities.
- 3.7.26 Where EfW proposals for mixed waste incineration include material of animal origin, applicants may require ancillary development in order to comply with the requirements of the Animal By-Products (Enforcement) (England) Regulations 2013 and in Wales the Animal By-Products (Enforcement) (Wales) Regulations 2014.

Commercial aspects of waste combustion plants

- 3.7.27 Waste combustion plants are unlike other electricity generating power stations in that they have two roles: the principal purpose being treatment of waste; and secondly the recovery of energy. The commercial rationale for waste combustion plants will include both the gate fee received per tonne of waste handled and income received from energy recovery.
- 3.7.28 Like any combustion generating station, operators secure fuel through contracts. Local authorities issue municipal waste contracts which are often long term (up to 25 years). Contracts to manage private sector wastes are, generally, shorter. Applicants may decide to focus on either public or private sector waste treatment contracts, or a combination of the two.
- 3.7.29 Applicants must ensure EfW plants are fit for the future, do not compete with greater waste prevention, re-use, or recycling and do not result in an over-capacity of EfW waste treatment provision at a local or national level.

Network connection

- 3.7.30 Biomass and EfW electricity generating stations connect into a transmission network. The technical feasibility of exporting electricity from a biomass or waste combustion plant is dependent on the capacity of the grid network to accept the likely electricity output together with the voltage and distance of the connection.
- 3.7.31 Applicants will usually have assured themselves that a viable connection exists before submitting the development proposal to the Secretary of State and where they have not done so, they take that commercial risk. In accordance with Section 4.10 in EN-1, any application to the Secretary of State must include information on how the generating station is to be connected and whether any environmental issues are likely to arise from that connection. Further

- 3.7.49 The two residues from waste combustion generating stations cannot be mixed; they must be disposed of separately, under different regimes.
- 3.7.50 Biomass combustion generating stations will also produce both combustion and flue gas treatment residues which must not be mixed. Residues arising from biomass combustion generating stations are usually between 1% and 12% (in terms of weight) of the fuel capacity of the plant.
- 3.7.51 The regulation of waste disposal for waste combustion and flue gas residues from biomass combustion is intended to reduce the amount of waste that is sent to landfill. Waste combustion APCr is classified as a hazardous waste material and needs to be managed as such.¹⁷
- 3.7.52 Waste management is covered in the Environmental Permit for operation of waste or biomass generating stations (see Section 5.15 of EN-1).
- 3.7.53 Applicants should include the production and disposal of residues as part of the ES. Any proposals for recovery of ash and mitigation measures should be described.
- 3.7.54 Applicants should set out the consideration they have given to the existence of accessible capacity in waste management sites for dealing with residues for the planned life of the power station.
- 3.7.55 Applicants must ensure proposals do not result in an over-capacity of EfW waste treatment provision at a local or national level.

Water quality and resources

- 3.7.56 The design of water-cooling systems for EfW and biomass generating stations will have additional impacts on water quality, abstraction and discharge. This can affect marine ecosystems where cooling systems use seawater. These may include:
- discharging water at a higher temperature than the receiving water, affecting the biodiversity of aquatic flora and fauna;
 - the use of resources may reduce the flow of watercourses, affecting the rate at which sediment is deposited, conditions for aquatic flora and potentially affecting migratory fish species (e.g. salmon);
 - the fish impingement and/or entrainment, i.e. being taken into the cooling system during abstraction; and

¹⁷ See Regulation 19(1) Hazardous Waste Regulations 2005 for permitting on the mix of hazardous and non-hazardous waste, article 18 Waste Framework Directive for regulation and on residue treatment facilities and requiring separate handling and treatment to improve resource efficiency, as well as Article 11 Industrial Emissions Directive for all Chapter II Installations and Article 44 for regulation on separation.