

Small scale Energy from waste

Proposal for Topic report

This work will build on a previous report the Task produced in 2004.

The first stage of the work will include a review of small scale EfW systems in operation (case studies). These may update the 2004 report or examine alternative plants.

The second stage of the work will involve updating a model at AEA to examine what crucial factors influence the commercial operation of a small scale EfW plant.

The data we need to collect as part of the small scale EfW case studies are:

Waste/feedstock

1. The location of plant, community it serves, size of community, annual arisings of waste and how this waste is managed. The nature of the waste going to energy from waste (i.e. is it untreated mixed waste or residue from recycling and its general composition). Nature of plant's relationship to heat user(s) (e.g. plant connected to pre-existing district heat network (DHN), DHN installed at the same time as plant, heat supplied to single industrial customer etc.)
2. Size of plant in terms of mass flow (tonnes/annum)
3. The CV of the material being handled. Responder will need to advise whether this is on a Net CV (Lower Heating Value) or Gross CV (Higher Heating Value) basis. Ideal would be for responder to provide both.
4. For mixed waste streams, the proportion of the energy content that is deemed to be biogenic in origin (may be relevant for a ROC-style subsidy which apply only to renewable heat/power).

Finance/costs

1. The Capital investment, if possible based on mass capacity. The date of this data is important.
2. Operating costs – again, if possible on a mass basis. The date of this data is important.
3. The gate fee – or a range if not possible to have exact figures.
4. How the plant was financed? Through gate fees, underwritten by local community, bank/venture capitalists etc.. Hurdle rates i.e. discount rate required by financier. Lifetime over which project economic case would be assessed.
5. Subsidies or incentives received. A reference to these would be useful, together with an overview of how the subsidy works (e.g. is it a capital grant, feed in tariff, subsidy per MWh)
6. Why was a small scale plant developed (e.g. because of remote location, public perception favoured small scale plant etc.)
7. Costs associated with development of district heating network and whether or not these are included in the capital cost of development or paid for by local authority/alternative user etc.
8. What value (or range of values) does the EfW receive for electricity generated?

Energy use

1. How is the energy used at present? Configuration of plant if possible. Load factor/utilisation rate
2. Type of waste combustion plant – i.e. grate design or whether or not it is advanced conversion.
3. Conditions at which heat is supplied (e.g. water, steam etc.). If steam, at what temperature and pressure.
4. Total amount of heat supplied by plant per annum (in MWh, tonnes of steam etc.).

5. Plant heat and power efficiency at the heat export level described. Efficiencies should be gross (i.e. not accounting for parasitic loads). Responder will need to advise whether this is on a Net CV (Lower Heating Value) or Gross CV (Higher Heating Value) basis.