

Manchester Biomass District Heating

Precedents



Dockside Green Victoria, BC

Residential & commercial heating system that enables carbon neutral energy.

Annual Thermal Capacity:
21,687 MWh/yr

Avoided CO² Emissions:
3,460 tonnes/yr

Wood Waste fuel



District Heating Nyköping, Sweden

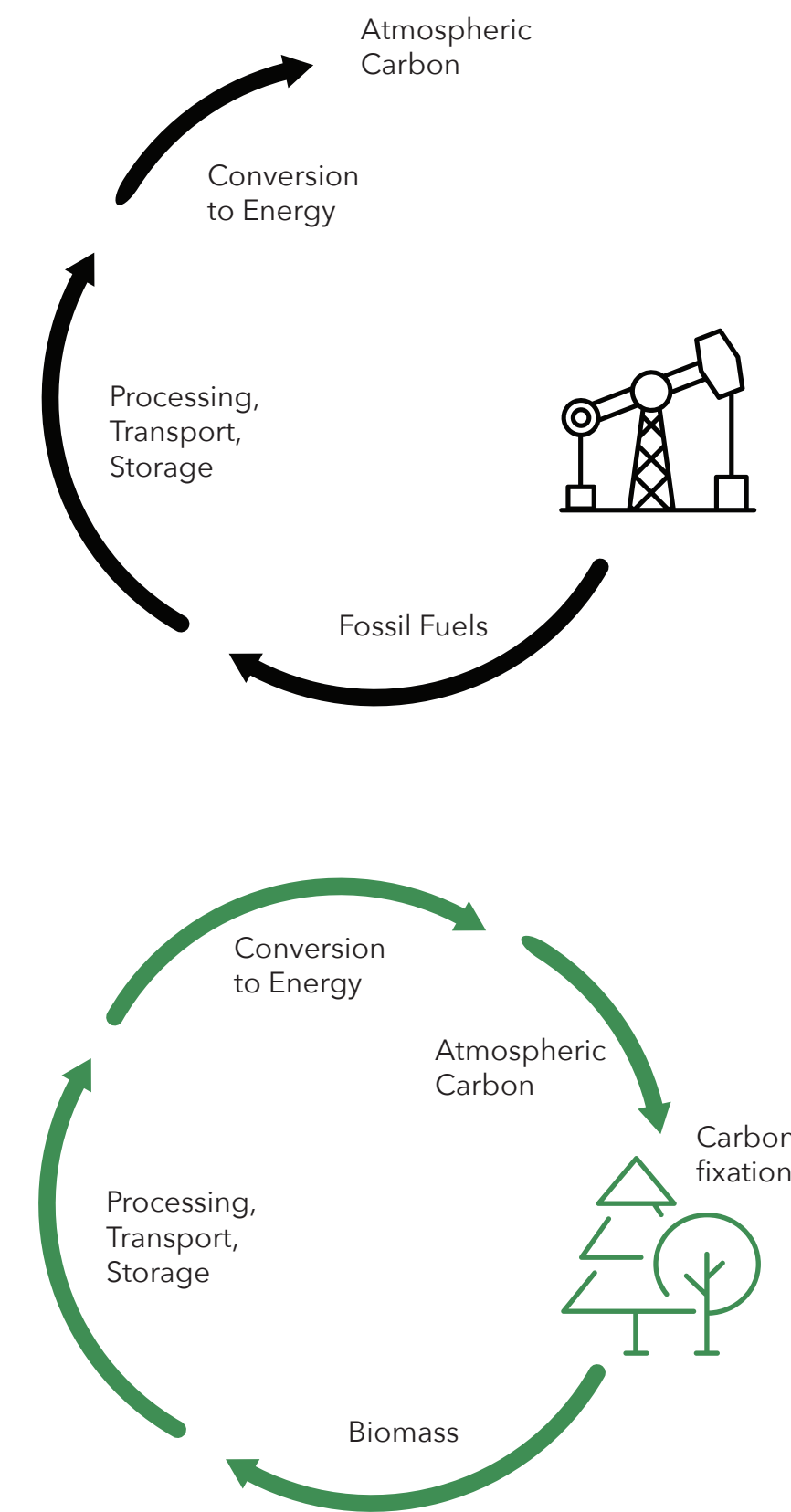
Biomass-fueled combined heat and power plant installation supplying thermal energy.

34.8 MW power
58.6 MW thermal energy

Can use Wood Waste, Peat, Coal, or Oil

District Heating Demand:
300 GWh/yr
Peak Demand: 115MW

Bioenergy & Fossil Fuel Carbon Flows

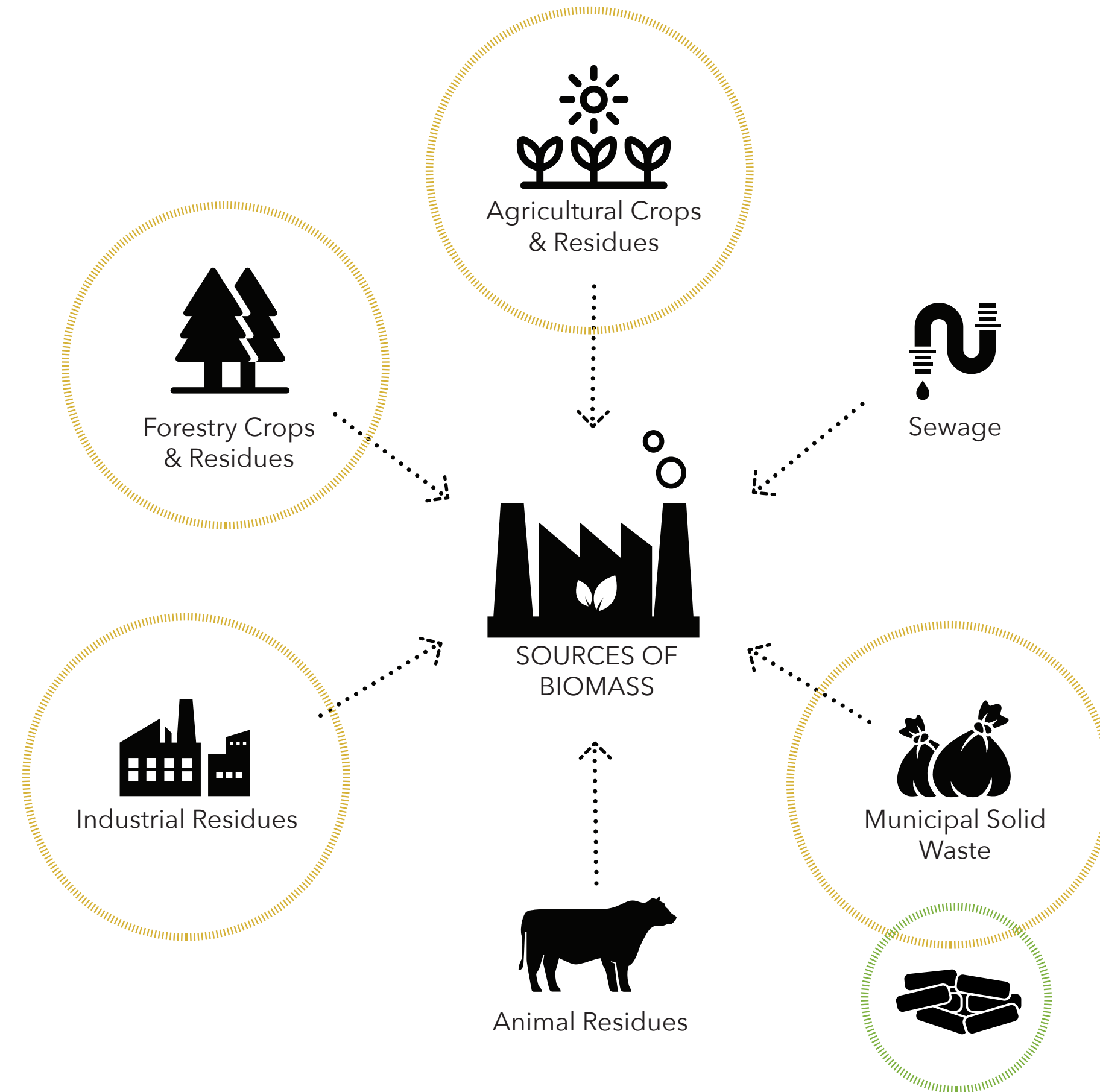


Biomass fuels are considered carbon-neutral if the CO² released when the biomass is combusted is equal to the CO² that is sequestered during the plant's growth. Through Biomass, there is also the potential of creating a circular economy where energy is recycled in a loop and waste becomes a resource in itself. Approximately 2/3 of household waste is categorized as biomass. As a result, it is possible to recover 2/3 as CO²-neutral energy and reduce our dependence on fossil fuels.

Stakeholders

The future development potential of Biomass Energy & Heating Systems are dependent on different stakeholders. In order to improve a sustainable biofuel supply infrastructure system, stakeholders must work together.

Fuel Type Flexibility



A central heating plant can have boilers that burn different fuels which gives the option to use whichever fuel is the most economical or efficient at any given time. This flexibility gives Manchester the option of incorporating multi-source local biofuels into its district heating system.

78,073.20 GJ

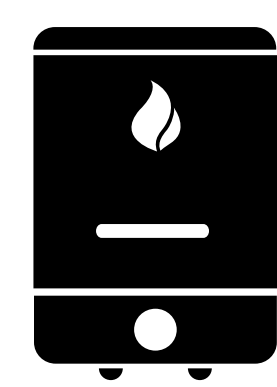
ANNUAL THERMAL OUTPUT PER FACILITY

228,219.6 GJ

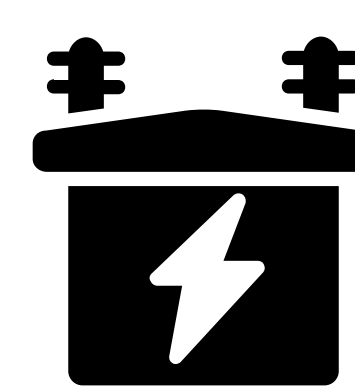
TOTAL THERMAL OUTPUT



BIOMASS OWNERS & PRODUCERS



BIOENERGY TECHNOLOGY PRODUCERS



ENERGY PRODUCERS & DISTRIBUTORS



FINANCING INSTITUTIONS & GOVERNMENT

DRY WOOD
Energy content: 18,600 MJ/ton

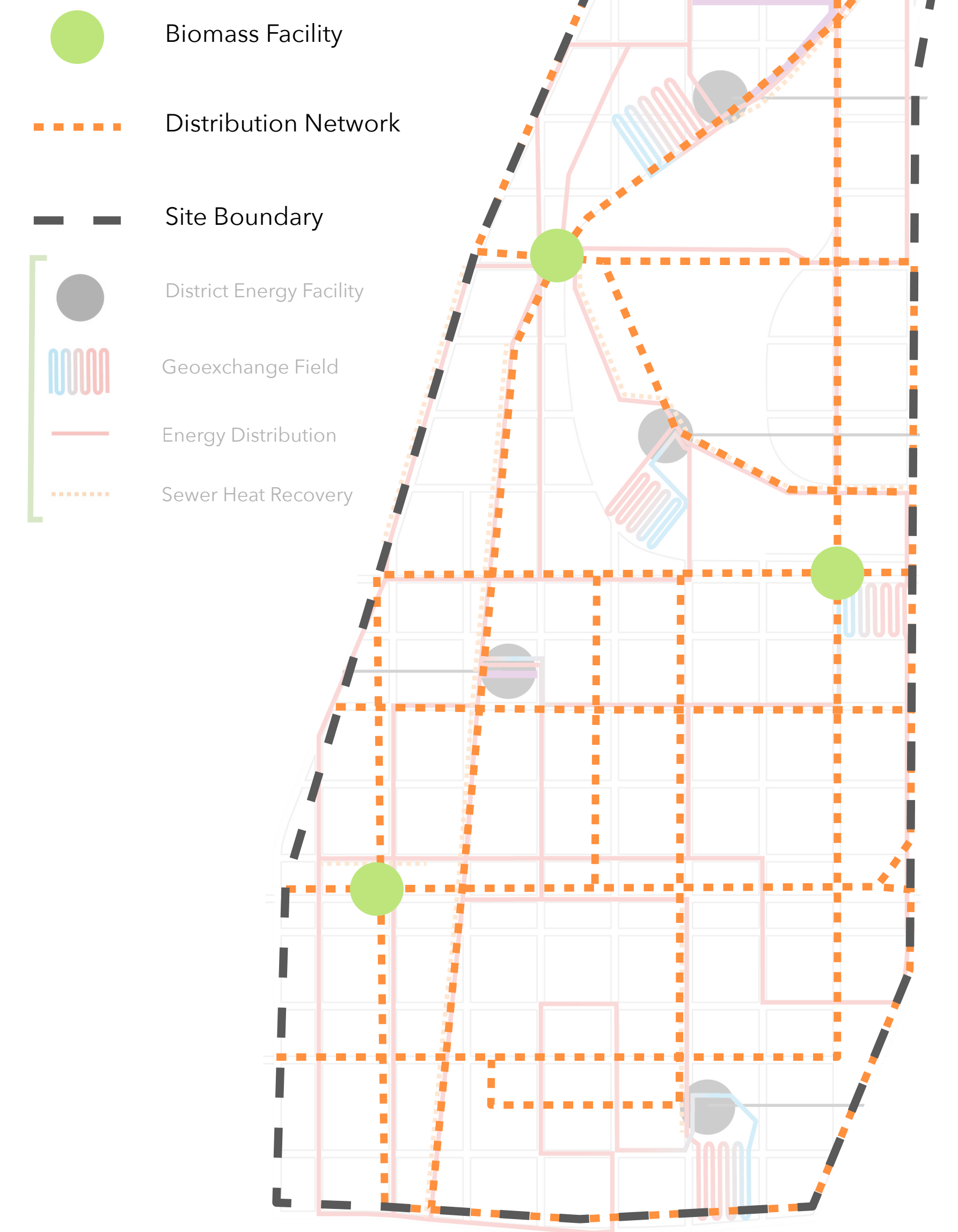
When used as a co-firing in a power plant, it can generate 1650 kWh/ton on average.

ENERGY CROPS
Production conditions: 173 TWh/year

STRAW
Production conditions: 11 TWh/year

SYNERGIES
Use of Biomass pellets composed of carbon derived mainly from paper products found in the solid waste. These pellets are equivalent to wood pellets in energy value.

Biomass District Heating



6.83%

TOTAL HEAT ENERGY FOR MANCHESTER

47.84%

TOTAL HEAT ENERGY FOR MANCHESTER AT PASSIVE HOUSE STANDARD

* Based on Manchester's total heat demand of: **3,338,000 GJ** and **477,000 GJ** at Passive House Standard

