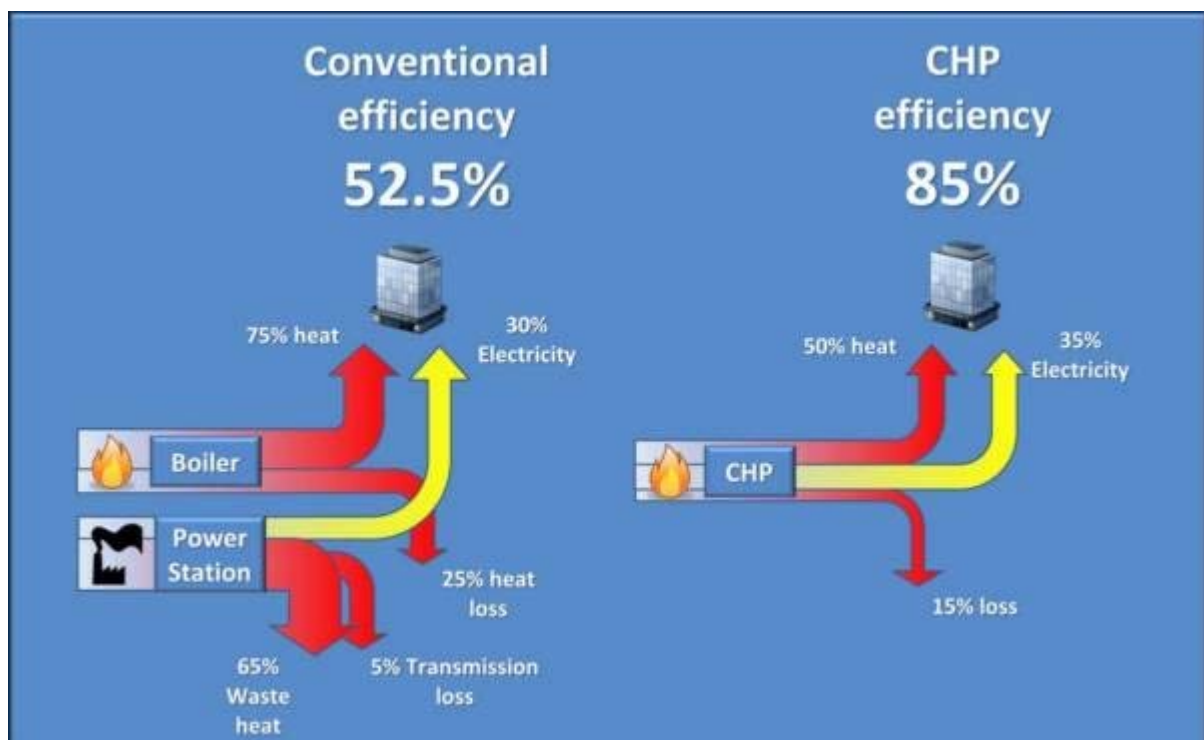


## The University's Power Stations

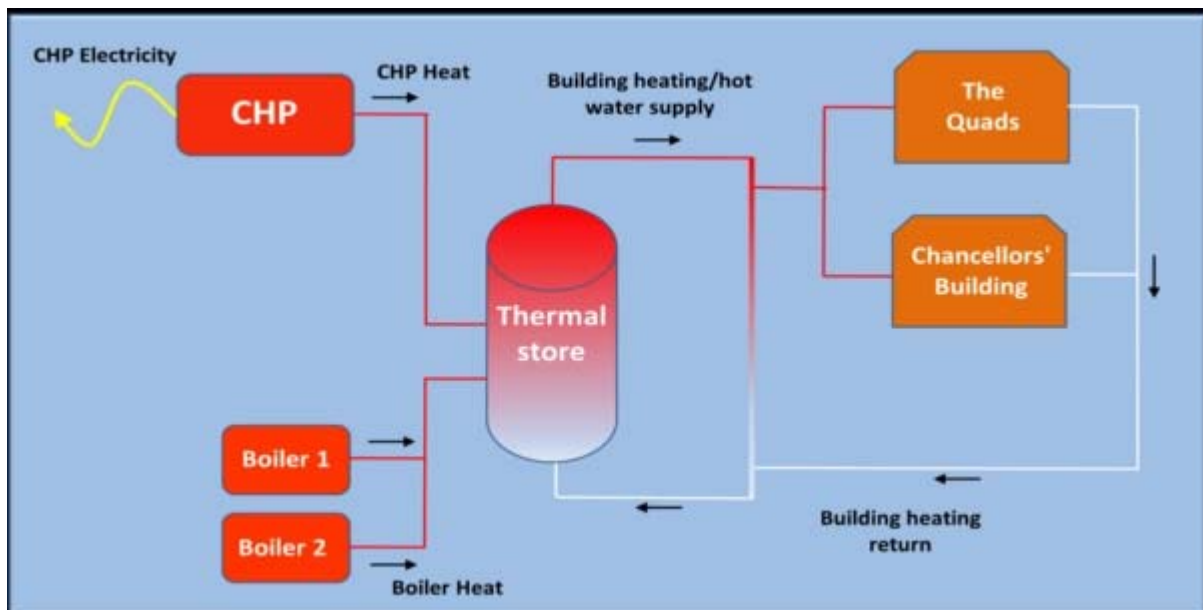
- The University generates its own energy in a number of ways - one of these is through **CHP (Combined Heat and Power)**
- There are **2 CHP engines**, one for Chancellors' Building and The Quads residences, and another in the Sports Training Village.
- The **generate 2 million units of electricity a year**, enough to power **600** houses.
- The University also has several sets of **solar panels** (photovoltaic and solar thermal)

### How it works - Combined Heat & Power (CHP)



- A normal power station is only 35% efficient- they have waste heat that can't be used. The National Grid also has electricity transportation losses.
- CHP generates electricity on site - we can also use the waste heat locally as well as the electricity.
- CHP has much lower losses and has an overall efficiency of approximately 80-90% resulting in less fuel consumption, less cost and less carbon emissions.

## How it works - District Heating system 2 (DH2)



The Chancellors' Building, The Quads student residences and The Lime Tree refectory are all fed by the University's new District Heating system (DH2)

- DH2 = the **boilers** in the Chancellors' Building and a 250kW **CHP engine** in the main boiler house as well as a 30,000 litre **thermal store** outside (called DH2 as we also have a large District Heating system feeding all the main central campus buildings around the Parade)
- The DH2 systems are linked to the buildings by **over a kilometre of pre-insulated 200mm pipework**
- The **Thermal store acts as a buffer** to allow the CHP to run independently of when there is a demand for heat. **Complex control systems** ensures the CHP runs as a priority rather than boilers, and also runs during 'Red' peak period (5-7pm) when electricity costs are highest
- The CHP runs for on average 5000 hours a year and **provides approximately 72% of the heating and hot water for the Chancellors' Building, The Quads and The Lime Tree**. The boilers are still needed to provide peak heat loads (eg. Monday morning in winter)

### Benefits

- The CHP generates 250kW electricity and 295kW of heat
- It produces **1,250,000 units of electricity** a year, **5% of Campus use**
- It **saves 350 tonnes CO<sub>2</sub> annually and £75k in fuel costs**

The University already has **another CHP in the Sports Training Village** it has operated since 1997 and generates 750,000 units of energy a year, enough to power 225 houses. The waste heat keeps the swimming pool and building warm which saves 90 tonnes CO<sub>2</sub> a year.

The University also has **200 solar panels** on the roof of the Chancellors' Building providing a 46kW peak system (twice size of East Building system) which generates 40,000 units of electricity, and annually saves another 20 tonnes CO<sub>2</sub> annually.