

Transmitting Electricity

- National Grid - transmits electricity along a network of cables to homes and factories etc.
- Power(W) = Voltage(V) x current(A)
- Eg 200 000W = 100 000V x ?

$$\frac{200\ 000}{100\ 000} = 2A$$

- ICT is used to monitor the National Grid using information about TV schedules (kettles switched on during cup final advert break) and weather (cold weather means more electricity needed)
- Transformers - step up increases the voltage/step down decreases the voltage
- Step up at power station increases voltage - decreases the current to reduce energy loss
- Step down at homes and factories - safer to use

Paying for Electricity

- Energy transfer(J) = power(W) x time(s)
- Units used(kWh) = Power (kW) x time (h)
- Cost = units used x cost per unit

Example

1. Bedside lamp - 40W bulb used for 1 minute (60 seconds) transfers $40 \times 60 = 2\ 400J$ of energy
2. Electric heater - 3 000W (3kW) used for 4 hours uses $3kW \times 4h = 12$ units
3. Each unit costs 10p then the heater has cost $12 \times 10p = 120p$