

Nature's Power

Renewable Energy in Action



Cranking it up

Aim of activity*

To let participants feel what it is like to generate power and understand that we consume vastly more power than we could produce

Equipment needed

- Hand-cranked generator kit: hand-crank generator, watt reader, light
- Chart of household appliances with watt rating

Instructions

All the participants try generating some power with the 'Hand-cranked generator'. Introduce younger groups to the Watt as a unit of measurement. The meter on the unit shows (roughly) what power is being produced. Participants should then be familiar with the term, 'Watt' and have the sense that 10 watts takes a bit of work to generate.

Ask *"Where did the energy come from?"* The answer is food. Then open a discussion with the question *"If we had this generator at home which of our everyday household appliances could we power?"* Each suggestion can be compared with the chart and say how many 'Hand-cranked generators' it would take to run that appliance. So for example, the smallest toaster consumes 800 watts and so would take 80 generators (and 80 participants) flat out for 3mins to make 2 slices of toast! By the end it should be clear that there are very few household appliances we could run with human power. If we used a bicycle to run a suitable generator we could probably manage 10 times the output of the hand-cranked generator but it should be obvious that we consume vastly more power than we could produce.

** equipment and activity designed and created by Solar co-op.*

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Appliance

Rating (Watts)

Immersion heater	3,000
Electric fire	2,000 – 3,000
Oil-filled radiator	1,500 – 2,500
Fridge	40 – 120
Fridge-freezer	200 – 400
Freezer	150
Electric shower	7,000 – 10,500
Electric mower	500 – 1,500
Dishwasher	1,050 – 1,500
Electric drill	900 – 1,000
Washing machine	1,200 – 3,000
Hairdryer	1,000
Tumble dryer	2,000 – 4,000
Heating blanket	130 – 200
Iron	1,000 – 1,800
Plasma TV	280 – 450
Vacuum cleaner	500 – 1,200
LCD TV	125 – 200
Video, DVD or CD	20 – 60
Deep fryer	1,200
TV box	30 – 40
Toaster	800 – 1,500
Games console	45 - 190
Kettle	2,200 – 3,000
Laptop	20 – 50
Microwave	600 – 1,500
Desktop computer	80 – 150
Oven	2,000 – 2,200
Tablet (charge)	10
Grill / hob	1,000 – 2,000
Broadband router	7 – 10
Smart phone (charge)	2.5 – 5
Extractor fan	1 - 36