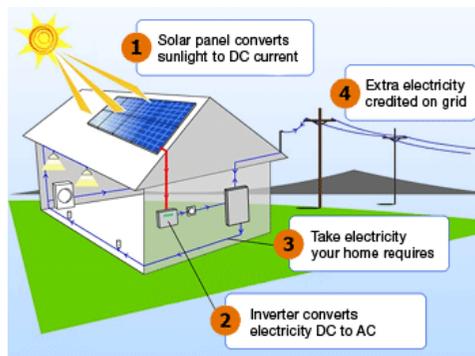## ACTIVITY 1
UNDERSTANDING WHAT YOU READ

Read the content for this topic then answer the following questions to see how much you understand about what you read.

1. Complete this statement: The generation and use of electrical energy has an impact on the _____.

2. Coal-fired power stations work on (non-renewable / renewable) fuels?

3. What does PV stand for?

4. What are the three parts that make up a solar system?

5. What converts Direct Current into Alternating Current?

6. **T of F**: No solar energy is collected at night time.

7. Where does the excess electricity generated go?

8. What are the solar cells in a solar panel made of?

9. What is needed to produce the electric current in solar cells?

10. What does the Greek word 'phos' mean?

ACTIVITY 2
DESIGN AN ADVERTISEMENT

Doble Outdoors Australia has invented a solar camping device.
The Tent Pole Power: a portable camping light and USB device charger powered by solar panel sits on a tent pole and can be rotated to three different angles.
The light has several settings and long-lasting batteries, with up to 250 hours of light supplied without recharging.
The product is lightweight and safe, with PET plastic coating and no glass in either the panels or other components.

Design an advertisement for the newspaper to help the company promote its product.

ACTIVITY 3
Radiant Heat

When radiant energy from the sun hits objects, some of the energy is reflected and some is absorbed and converted into heat. Some objects absorb more radiant energy than others.

Explore the conversion of radiant energy into heat in this experiment.

STEP 1: Cut two circles of white and black paper 5cm in diameter. Place the circles in the bottom of four plastic containers and cover with 40ml of cold water. Record the temperature of the water.

STEP 2: Cover one black and one white container with clear plastic wrap held in place with a rubber band.

STEP 3: Place the containers in a place where the sun is directly over the containers. Record the temperature of the water after five and ten minutes.

STEP 4: Calculate and record the changes in temperature.

RECORD THE DATA

	WHITE NO COVER	BLACK NO COVER	WHITE WITH COVER	BLACK WITH COVER
Original Temperature-C				
Temperature-C After 5 min				
Temperature-C After 10 min				
Change in Temp - 5 min				
Change in Temp - 10 min				

CONCLUSION: Look at the data. What have you learnt about collecting and storing solar energy?

ACTIVITY 4
WORDS AT WORK

In Wordy News this week we defined the word RENEWABLE which was used in the following way:

Focus on renewable energy

The word RENEWABLE is a related form of the word RENEW.

Other forms of the word are: renews, renewing, renewed, renewal.

Choose which form of the word RENEW fits into each sentence.

We need to _____ our home insurance policy before the end of the month.

When _____ your passport you must remember to take two photographs of yourself.

His refusal to comply with the King's wishes led to a _____ of the war between the two countries.

Shell Oil recently pledged to spend up to $1 billion on_____ energy sources over the next five years.

After good rain, the landscape _____ itself to its former glory.

Having eaten, she felt _____ energy to continue on the long hard journey.

Sunlight is a _____ resource because it can be used to generate electricity without using it up.

ACTIVITY 5
CHECK IT OUT

Disney film Tomorrowland explores the concept of 'the city of tomorrow'. What will the future look like?
If you had the chance to build a Tomorrowland, what would it look like?
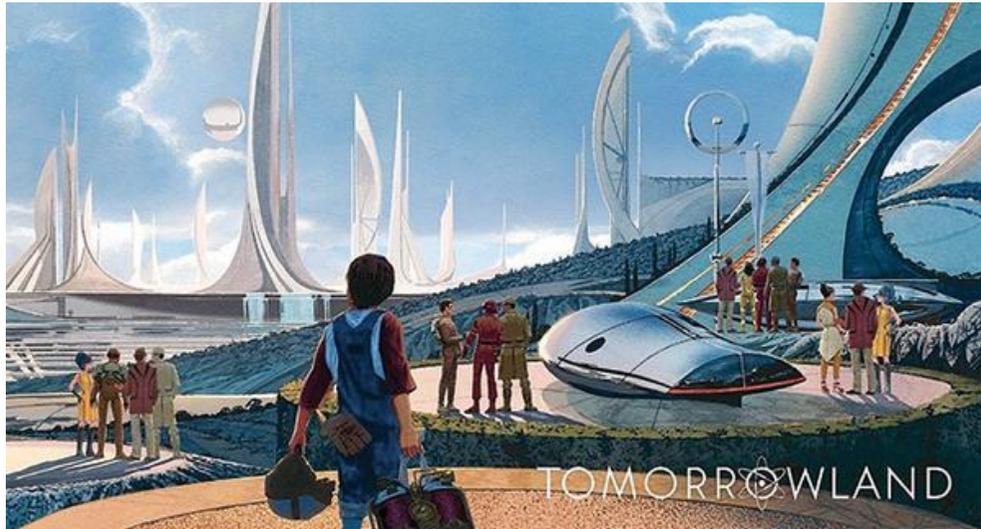
Make a list or draw your ideas.

Technology

Housing

Transport

Entertainment

Clothing

TOMORROWLAND

ACTIVITY 6
NEWS IN THE SPOTLIGHT

You do the maths
Calculate the rate of return of a solar system based on the figures given.

A) Rate of Return per solar panel when feeding electricity into the house:

250W x 3.8hrs/day x 365days = _____ kWh/year

Therefore, _____ kWh/year x 28c/kWh = $____

B) Rate of Return per solar panel when feeding electricity back to the grid:

250W x 3.8hrs/day x 365days = _____kWh/year

Therefore, _____ kWh/year x 8c/kWh = $_____

Assume with solar that a customer pays at least 27c/kWh for peak electricity usage
And 'excess solar' is fed back to the grid at 8c/kWh
Also assume 3.8hrs/day of good sunlight hours (i.e. 1000W/m2), on average throughout the year.

Which has the greatest rate of return?
Make calculations if there were 5, 10, 15 solar panels.