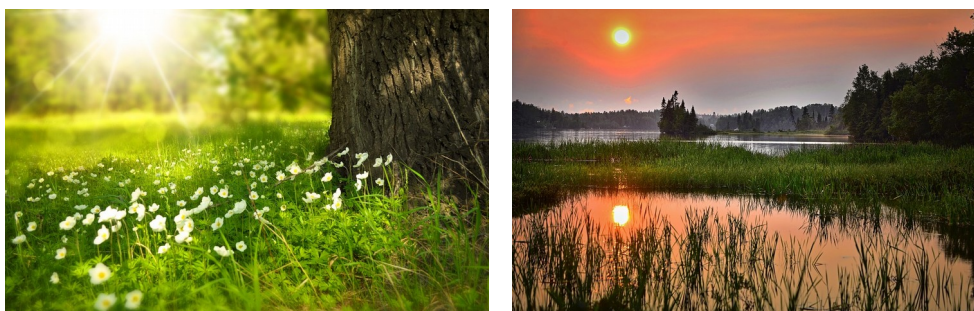


UNIT 4 PHOTOVOLTAIC ENERGY – Part 1



Read the text below. There are some words explained for you.

Interesting Facts About The Sun

- In a single day, the Sun provides about 300 BTUs¹ of heat per square foot² of the Earth's surface.
- The amount of solar energy that strikes the Earth in one hour is more than enough to provide all of the Earth's energy needs for a complete year.
- Approximately 50% of the sun's energy is absorbed³ by the Earth's surface⁴, while another 30% is reflected⁵ back from the Earth's surface.
- Depending on where you are in the world, and the angle⁶ of the terrain⁷, about 1,000 watts of solar energy reaches the Earth's surface per hour per square meter.

¹ 1 BTU (British Thermal Unit) – a traditional unit of work equal to about 1055 joules

² 1 foot – 30.48 centimetres

³ to absorb – to take in

⁴ surface – the top layer of something

⁵ to reflect – the light shines back off something

⁶ angle – the direction from which something comes (It is measured in degrees.)

⁷ terrain – an area of land with a particular surface

General Solar Energy Facts

- Solar energy is healthier for the environment than traditional fossil related forms of energy.
- Solar energy has many positive uses, such as the production of electricity through photovoltaic¹ cells, and the direct heating of water for a variety² of other applications³.
- Solar energy can also be used to heat swimming pools, to power⁴ cars, for attic⁵ fans⁶, calculators and other small appliances⁷. It produces lighting for indoors and outdoors. You can even cook food with solar energy.
- Solar energy is becoming more and more popular. The worldwide demand⁸ for solar energy is currently much greater than the amount we have been able to supply⁹.

<http://www.solarenergy-facts.org/>

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- 1 photovoltaic (PV) cell – equipment that changes light into electricity
2 a variety of sg – a number of different things
3 application – use
4 to power – to give power to a machine or vehicle
5 attic – the room directly under the roof of a house
6 fan – machine that turns the air to make it less hot
7 appliance – machine in a home, e.g. coffee maker
8 demand – all the things people want to buy
9 supply – all the things that are available to buy or use

These are the most important words in the text. Check them in your dictionary if you don't know them in your language.

to strike
to provide
square metre
surface
to absorb
to reflect back
angle
terrain
to convert sg into sg
to power sg
appliance
to supply

Read the text again, and then complete the sentences with the correct words.

The amount of solar energy that strikes the Earth in one ... is more than enough to provide all of the Earth's energy needs for a complete year.

- a) hour yes
b) year

Solar energy is less ... than fossil fuels.

- a) disadvantaged
b) harmful yes

The amount of solar energy that reaches the Earth's surface per hour per square metre depends on where you are in the world and the ... of the terrain.

- a) angle yes
b) degree

PV ... convert light into electricity.

- a) cells yes
b) cell

Solar energy can be used to heat water and provide electricity for your

- a) applications
b) appliances yes

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Read this text about the advantages of having PV panels in your home.

Benefits of Solar Panel Electric Power Systems for Homes

If you like the thought of contributing to the efforts of making the earth a better place to live, or if you like money, you'll love solar energy. There are a myriad of great reasons to install a photovoltaic solar power generation system in your home or commercial building. Here are a few:

- A solar energy system adds to your property value.
- Home based solar power is a quiet, nearly maintenance free, continuous source of electricity.
- Solar electric systems reduce pollution and CO2 emissions by generating electrical power using radiant sunlight that can replace electricity that comes from coal-fired electrical plants.
- Many states including California, Massachusetts, New Jersey, Maryland, Texas and Arizona offer \$0 down installation plans that immediately lower your electric bill and cost nothing to install or maintain.

<http://solarenergy.com/>

Match the words with their meanings. The text can help you.

to contribute to	to help achieve a goal
effort	hard work that you do in order to achieve a goal
property	house or land
maintenance free	no money is needed to keep it in good, working condition
\$0 down installation plan	when you buy a solar system on credit and no money has to be paid before installation

Check the meanings of these words if necessary. Then, complete the sentences with the most suitable words from the box. There is one extra word.

value
PV

nearly
contribute

generate
valuable

1. If you want to ... to environmental protection, you should install PV panels in your home. (contribute)
2. Solar energy systems add to the ... of a property, which means they will become more expensive. (value)
3. Solar electric systems are absolutely quiet and ... no money has to be spent on maintenance. (nearly)
4. Solar energy systems use radiant sunlight to ... electricity. (generate)
5. If you choose a \$0 down installation plan, it means you don't have to pay any money before ... panels are installed. (PV)
- 6.

Read the following news story about the plans of an investment project in the United States. Try to understand as much as possible without a dictionary. If necessary, read it two or three times.

Cypress Creek Renewables Plans \$12 Million Solar Project In Saluda County, South Carolina

Area Development News Desk
January 12, 2016

Cypress Creek Renewables, a company that specializes in the ownership and development of long-term solar energy projects, has taken first steps toward investing \$12 million in solar energy projects in Saluda County, South Carolina.

The projects, a nine-megawatt facility located off of S.C. Highway 121 in Saluda and a four-megawatt facility located off of Columbia Highway in Saluda, are expected to be fully operational by the end of 2016. One megawatt of solar energy is enough to provide inexpensive, secure, clean energy to approximately 200 South Carolina homes.

“Local solar projects help to grow the economy by providing clean, renewable energy for homes and businesses. Working in partnership with our utility partners, local leaders, and the state of South Carolina, gives us the opportunity to help build an energy-independent future,” said Cypress Creek Renewables CEO Matthew McGovern.

“It’s very exciting to be part of projects like these that are helping to reshape South Carolina’s energy future. This would not be possible without the support of the local community and all of our development partners,” said Southern Current, LLC Principal/Chief Development Officer Paul Fleury.

<http://www.areadevelopment.com/newsitems/1-12-2016/cypress-creek-renewables-saluda-county-south-carolina346532.shtml>

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Choose the best answer on the basis of the text.

1. Cypress Creek Renewables has ... solar projects in South Carolina.
 - a) invested a lot of money in
 - b) decided to put \$12 million into yes
 - c) spent \$12 million on

2. The two planned solar parks will ... later this year.
 - a) start operation yes
 - b) close down
 - c) be partly operational

3. The homes and businesses of ... will get clean, renewable energy.
 - a) the county yes
 - b) the country
 - c) Cypress Creek

4. Cypress Creek Renewables works in partnership with ..., local leaders, and the State of South Carolina.
 - a) useful partners
 - b) utilized companies
 - c) companies that sell electricity, gas to the public yes

5. Projects like these help ... the state's energy industry.
 - a) shape
 - b) modification
 - c) transform yes

Forum topic:

Some scientists think that installing a lot of solar panels in the Sahara desert could provide clean energy for the whole world. Nobody would need any fossil fuels. What is your opinion? Give reasons.

(If you want, you can read about this here: <http://www.bbc.com/news/science-environment-34987467>)