Inquiry-Based 5E Model
Climate Literacy Lesson

GONZAGA UNIVERSITY | Center for Climate, Society, and the Environment

Center for Climate, Society, and the Environment

Super Sun: Intro to Solar Power and Energy Conversion

Grade Level: 3rd – 5th
Duration: 45 minutes

Lesson Overview:

This lesson will introduce solar power, how it works and energy storage to students through hands on materials. It will also foster an understanding of renewable energy and how we can use renewable energy to power our cities.

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Disciplinary Area:
Weather and Climate

Key Concepts:
- Renewable energy
- Solar Power
- Weather and Climate
- Climate Change

Key Lesson Information

Lesson Development Acknowledgement

This lesson was developed in collaboration with the Gonzaga Science in Action! program. The Science in Action! Program helped test the kits included in these lessons and helped guide Gonzaga undergraduates in developing the accompanying lessons. We thank Gonzaga SIA! for their collaboration and support!

NGGS Performance Standards Addressed

NGSS Standard 3ESS 2.1 and 2.2	
NGSS Disciplinary Core Idea	Expectations for Lesson
Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season and obtain and combine information to describe climates in different regions of the world	Students can use graphs representing different types of weather to identify different climates.

NGSS Standard 3-5ETS 1.2	
NGSS Disciplinary Core Idea	Expectations for Lesson
Define a simple design problem that can be solved through the development of an object, tool, process, or system and includes several criteria for success and constraints on materials, time, or cost.	Students can use information and ideas presented to solve a problem.

Materials List

This lesson requires the materials listed below and are available in the pre-assembled kits at your school.

Material	Units needed
Energy Conversion Set	6
AA rechargeable batteries	12
1500 lumens Flashlight	6
Sunglasses	24 pairs
Vornado Fan	3
Multimeter	6

Big Question: Why do we want to use solar power and where is the best place to put it?

Key Terms:

- **Renewable:** Something we will never run out of and can use as much as we want of, like wind, or sunshine.
- **Non-renewable:** Something we will run out of. There is only a certain amount of this thing and once it is all used up, we can't get it back-- like fossil fuels.
- **Solar Power:** Sunshine shines on panels and excites things (particles? Electrons? Do they know what electrons are?) which create electricity. That energy is sent through the electricity grid and can power our homes! It is renewable!
- **Electricity Grid:** the system we use to provide electricity to people and places. (the power lines are part of it)
- **Climate change:** Changes over a long period of time in the temperature and weather patterns around the earth
- **Solar Energy/Power:** Light from the sun that is then turned into energy that can be used to heat, light and power our homes and businesses.
-

5E model part 1: Engage (5 minutes)

Introduction and Background

To begin this lesson, we will assess and gain a basic understanding of what the students know through a short survey in the first few slides of the PowerPoint.

Next have the students in groups of 3-4 talk about their answers to the question and have them brainstorm ideas together. Then bring the class back together and talk about their answers. Discuss and correct any misconceptions students may have.

What is Solar Energy

This part of the lesson will introduce solar energy in both a renewable sense.

Activity: Have table and class discussion on solar panels and how they work.
Concepts Learned: what solar energy is and how it is used to create electricity.

Have students watch this video on solar power (1:27 min, 0:51-3:19 min) video:

SciToons Solar Energy

Questions to assess understanding: What is renewable vs non-renewable? Which of the two is solar energy? What is an example of a non-renewable resource?

Renewable: Something we will never run out of and can use as much as we want of, like wind, or sunshine.
Non-renewable: Something we will run out of. There is only a certain amount of this thing and once it is all used up, we can't get it back-- like fossil fuels.

Student Role: Discuss solar power with their classmates and raise questions about how it works.

Teacher Role: Lead a class discussion on solar energy and how it works and answer any questions the students have.

5E model part 2: Explore (20 minutes)

How Can We Use Solar Power?

Now that we know what solar energy is and how it works, we will explore how we can use solar energy to power our homes and businesses. We will use a kit that includes a solar panel to create our own solar energy!

Activity: Solar Power Exploration

Use the energy conversion kit but remove the wind turbine and hand crank before handing it to students. For this activity have groups of 3. Talk about how you can store electricity when you don't use all of it.

Talk about safety needed when they are using the flashlights

Essential Concepts:

- How solar energy can be stored to use when there is no sun.

Activity Set Up:

Take out the energy conversion kit and give each group of 3 one kit. The students will be using the solar panel by shining the flashlight on it to create energy which they can power the fan, light, and sound.

To plug the solar panel into the different items, use the red and black cables. Red cords will be matched up with the red holes on the different pieces and black cords will be matched up with the black holes on the different pieces.

When using the rechargeable batteries make sure they are charged partially before starting the experiment.

Activity Overview

There are three parts to this activity. In the first part students will use the solar panel to generate solar energy to power the light, mini fan and noise marker. In the second part students will use a multimeter to measure the voltage of the batteries. In the third part students will use the multimeter to measure the voltage change in the solar panel in different weather conditions.

Activity Procedure

1. Go through these steps as a class and then have them experiment on their own.

   Steps:
   a. Take the solar panel piece and the mini fan piece
   b. Use one of the black cords in the bad and plug one end into the black hole on the solar panel and the other end into the black hole on the mini fan
   c. Repeat with the red cord from the bag: Take a red cord and plug one end into the red hole on the solar panel and the other end into the red hole on the mini fan
   d. Shine the flash light on the solar panel and watch the mini fan spin

   Have students experiment powering the light and noise maker box using this same technique

2. Now we will incorporate the battery piece as a way to store solar energy because the sun isn't always shining

   Tell students we have already charged the batteries, but in real life we can charge them by connecting the batteries to a solar panel and charge them using solar energy

   Today we will be measuring how much energy is produced during different weather conditions, but before we can experiment with the batteries we need to learn about the scientific tool we will use to take these measurements: the multimeter.

The multimeter is a tool that scientists use to measure electricity. Today we will be using it to measure the voltage in our batteries. Voltage is the pressure that pushes electricity through a system. This means the more volts the more electricity will flow into a device or machine.

About the multimeter: We are using the DCV or V (with a straight line by it and 3 hyphens) labeled section of the multimeter to measure the voltage in the battery

- The DCV or V section measures the direct current voltage of the battery
- The numbers in the DCV or V section correspond to the maximum number of volts the multimeter will measure to
    - Ex: if you set it to 20 V the multimeter will only measure the voltage up to 20 volts

Multimeter Setup:

- Set the dial to 20 in the DCV or V section of the multimeter
    - We want to set it to 20 for this lesson because 20 is the closest number that is higher than the number of volts we will measure in the AA batteries. We want to use a number that is higher because if we use a number that is lower the multimeter won't be able to calculate the correct voltage. We want to use the closest number because that will give us the most accurate voltage reading.

How to use the Multimeter with the kit:

a. Stick the metal end of the red multimeter cord into the red hole of the battery set so it is touching the metal inside the battery set hole
b. Stick the metal end of the black multimeter cord into the black hole of the battery set so it is touching the metal inside the battery set hole
    - Remember to keep the multimeter metal tips touching the metal part of the battery hole so the number of volts displayed stays constant
c. The number that appears on the screen is the number of volts in the batteries

- Have students practice using the multimeter by measuring the number of volts in the batteries and recording the numbers on their Data Collection Sheet.

3. Students connect the multimeter to the solar panel and test the volts when shining the flashlight on the solar panel
    a. Use the same method of testing the voltage in the batteries to test the voltage of the solar panel when shining the flashlight on it
    b. Compare the number of volts produced when students move the flashlight farther and farther from the solar panel (this demonstrates changes in energy production on a cloudy day [far away from panel] and on a sunny day [closer to the panel])
    c. Have students try and find the positioning and tilt of the solar panel and flashlight to produce the highest number of volts. Record all numbers on data sheet.

Questions:

- Discuss how this is them using and storing solar energy.
- What is happening? How is the battery powering the light or sound?

Student Role: Experiment with the energy conversion kit and discuss solar energy and how it is stored

Teachers Role: Classroom management, make sure students are participating and engaged with the experiment.

5E model part 3: Explain (10 minutes)

Time to check in and recap!

Pull up model of how solar panels work on the board or use a picture (see connected PowerPoint). http://santansolar.com/wp-content/uploads/2019/06/solar-chart.png

Now that we have created our own solar energy, students will discuss how solar panels create electricity. Solar panels are made up of the element silicon. The silicon in the solar panels absorbs the sun's energy when sunlight hits it. The silicon atoms get hot and excited and shed their electrons. These electrons travel down a wire and through an inverter which turns the energy into electricity we can use in our homes.

Solar Energy/Power: Light from the sun that is then turned into energy that can be used to heat, light and power our homes and businesses.

Important Concept Check in: Vocabulary/ Big Question

Big Question: Why do we want to use solar power and where is the best place to put it?

Key Terms:

- **Renewable:** Something we will never run out of and can use as much as we want of, like wind, or sunshine.
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- **Solar Power:** Sunshine shines on panels and excites things (particles? Electrons? Do they know what electrons are?) which create electricity. That energy is sent through the electricity grid and can power our homes! It is renewable!
- **Electricity Grid:** the system we use to provide electricity to people and places. (the power lines are part of it)
- **Climate change:** Changes over a long period of time in the temperature and weather patterns around the earth
- **Solar Energy/Power:** Light from the sun that is then turned into energy that can be used to heat, light and power our homes and businesses.

5E model part 4: Elaborate

Follow Up Activity

Activity: Solar Power in Spokane

Discuss if solar energy is a good renewable energy source to use in Spokane.

Essential Concepts:

- Every energy source has positive and negative

Activity Set Up:

Give students the weather information worksheet and review how efficient solar power would be in Spokane. Have students discuss in small groups.

Class Discussion on Climate Change

Question to foster class discussion: Why do you think people want to start using solar power?

Humans have been using non-renewable energy sources to power our homes and businesses. When we use these non-renewable resources, we release CO2 or carbon dioxide into the air. We need CO2 to keep our globe nice and warm, but too much of it can change our climate and make it too hot. Think of sitting in a car on a hot summer day with the windows rolled up. Because we are releasing CO2 into the air by burning non-renewable resources to create energy, we are starting to create this change and make our planet warmer.

Brainstorm ways the students can limit their impact on the environment:

- Ex: turning off lights when not in the room, taking the bus, don't leave water running while brushing teeth, recycling, use reusable containers

Climate change: Changes over a long period of time in the temperature and weather patterns around the earth.

Solar Power in Spokane

Now that we have discussed some of the reasons we want to start using renewable sources of energy, let's look and see if solar energy is a good renewable energy source to use in Spokane.

Activity

As a class examine the two graphs on the power point that depict precipitation and sunshine hours in Spokane and Abu Dhabi, UAE.

a. Compare the sunshine hours in Abu Dhabi, UAE and Spokane.

b. Compare the number of days of precipitation between the two.

- When the class reads these graphs have them only look at the average for the year.

Questions based on graphs:

- What do you notice?
- Which place has more sunshine? Precipitation?
- Which is the better place to put solar panels?
- How does the climate in an area influence how much energy a solar panel can create?

Because there are places around the world where solar power might be less effective, we need scientists like you to help us to decide which renewable energy sources work best in certain places. We also need you to make renewable energy sources more efficient and less expensive so more people can use them.

5E model part 5: Evaluate

Informal assessment of teacher's choice.

By the end of this Lesson

Concepts Learned:

- Distinguish the difference between solar energy and energy from fossil fuels.
- Examine how a solar panel works
- Define a renewable resource
- Create the connection between renewable energy and climate change

Connection/Evidence Gathered:

- Solar power can be used as energy to power things in our life
- Solar power can be stored in a battery and used later
- Solar power may work better in some places that are sunny compared to places that are cloudy or rainy
- Discussion on if solar power would work well in Spokane, WA

Additional resources:

If there is extra time, see the following activities:

Four Corners:
Review of concepts we learned and a way students can share their opinions on solar energy.

Activity:
Have students stand up and explain that one side of the room is yes, and the other is no. Ask them a series of questions and have them step to one side of the room if they agree and the other if they disagree. After students have picked ask students why they picked that side.

Questions:

- Is solar power something we could and should use in Spokane?
- Should we use other renewable energy sources like wind or water in Spokane?
- Is using renewable energy important?
- Do you like learning about solar energy?

How solar panels work: The Nitty Gritty:
Show students this video on how solar panels work (1:20 min, start at min 0:34 watch until the end): https://www.youtube.com/watch?v=eqDVW-vbFJY

A. What did you notice?
B. Bring up the electricity grid
    i. What do you think the electricity grid is? Write the electricity grid on the board.
    ii. **Electricity Grid:** the system we use to provide electricity to people and places. (the power lines are part of it)
C. What are some things that make a good place to have solar panels?
    a. Place that is sunny for most of the day long time, for most of the year, lots of space
D. Allow students to ask questions

Weather Worksheet: Where Can We Use It:

Let's explore different places around the world where solar energy can be utilized.

Activity:
Have students in groups of 3 rank three different places to build solar panels on the climate at these places.

Essential Concepts:
- Climate can affect the success of solar energy in that area.

Activity Procedure:

A. Remind students about what makes a good place to put a solar panel
    a. Sun for long time, sun most of the year, lots of space
B. Give students weather information from
    a. Abu Dhabi, UAE and Reykjavík, Iceland and Bejing, China.
        - pictures in folder under this lesson
C. Have students talk in groups and rank the different locations on the best to worst places where solar panels would be the most effective.

Next lead class discussion on how climate can influence how well solar panels will work in certain areas.

A. How did you rank the different cities? Why did you rank them that way? How did climate influence the way you ranked your cities? Would a sunny place create more energy or a rainy place?
B. Do you notice any patterns between the places that are best for solar and its climate?

What Students Do: Have students rank and discuss the different locations and the best place to put solar panels out of the three.

Teacher Role: Facilitate discussion among the students in their groups and work to redirect them if they are confused or are headed toward the wrong answer.

Data Collection Sheet

Record your group data here! Under each box, write down what number you read on the multimeter for each item.

1 **Battery**

2 **Solar panel with the flashlight far away from the panel**

3 **Solar panel with the flashlight close to the panel**

Super Sun: Solar Power/Energy

Solar Power Survey

What is a renewable resource?

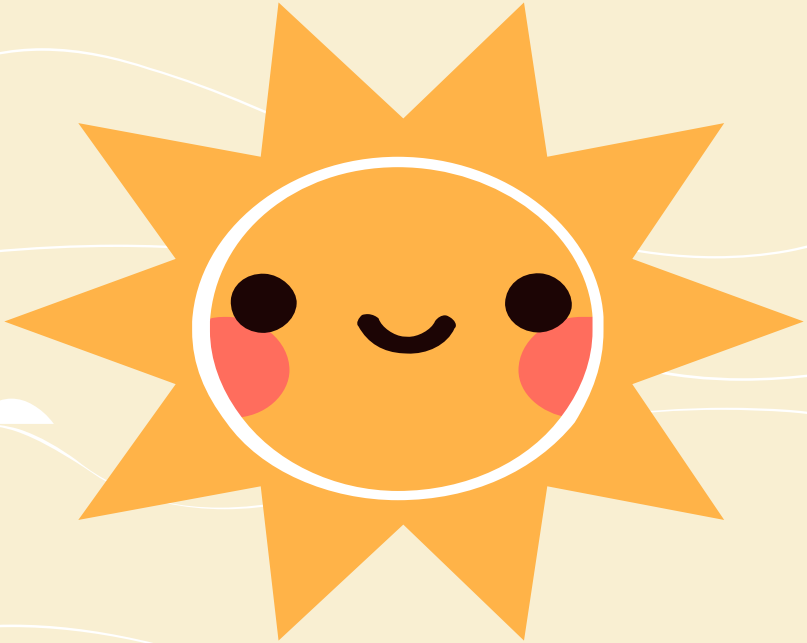
A. Something that will never run out
B. Something that will run out
C. Something that can't be found on Earth
D. I don't know

How does solar power work?

A. A solar panel uses light from the sun to create energy
B. Wind is used to spin a turbine to create energy
C. Fossil fuels are burned to create energy
D. I don't know

How is solar power different from fossil fuels?

A. It is renewable
B. It will run out
C. It can create power during the day and night
D. I don't know



Time to Explore!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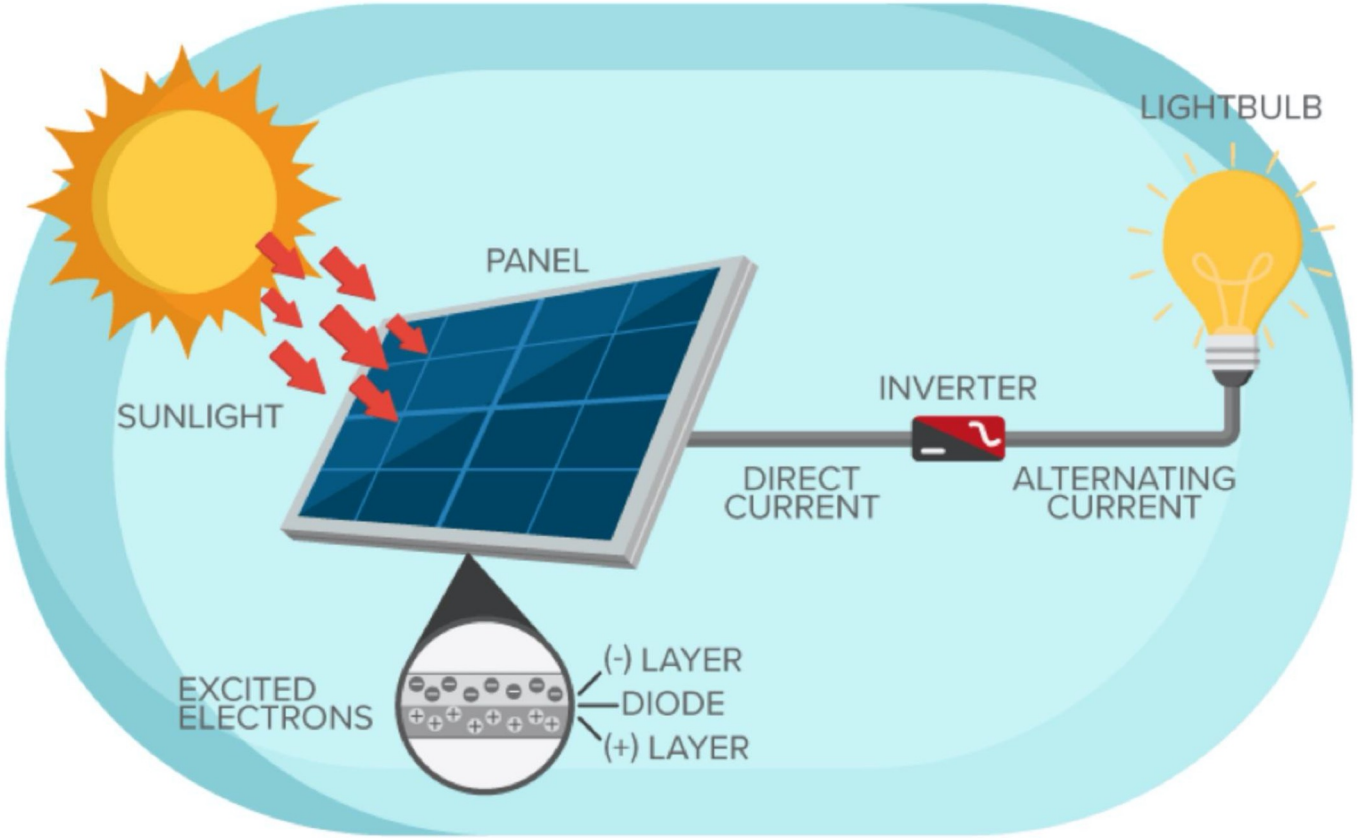
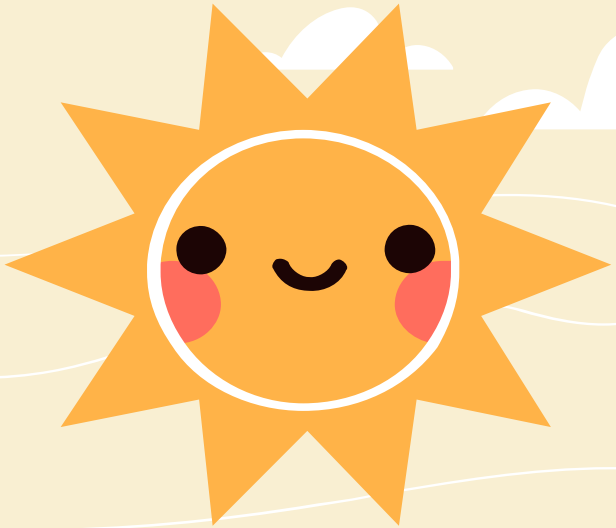
HOW SOLAR PANELS WORK



Why Do People Want to Use Solar Power?



Let's Look at Solar in Spokane

Spokane, Washington

Abu Dhabi, UAE

Abu Dhabi - Sunshine hours		
Month	Average	Total
January	8	245
February	8.5	235
March	8	250
April	9.5	280
May	11	340
June	11	335
July	10	315
August	10	310
September	10	300
October	10	305
November	9.5	285
December	8.5	260
Year	9.5	3465

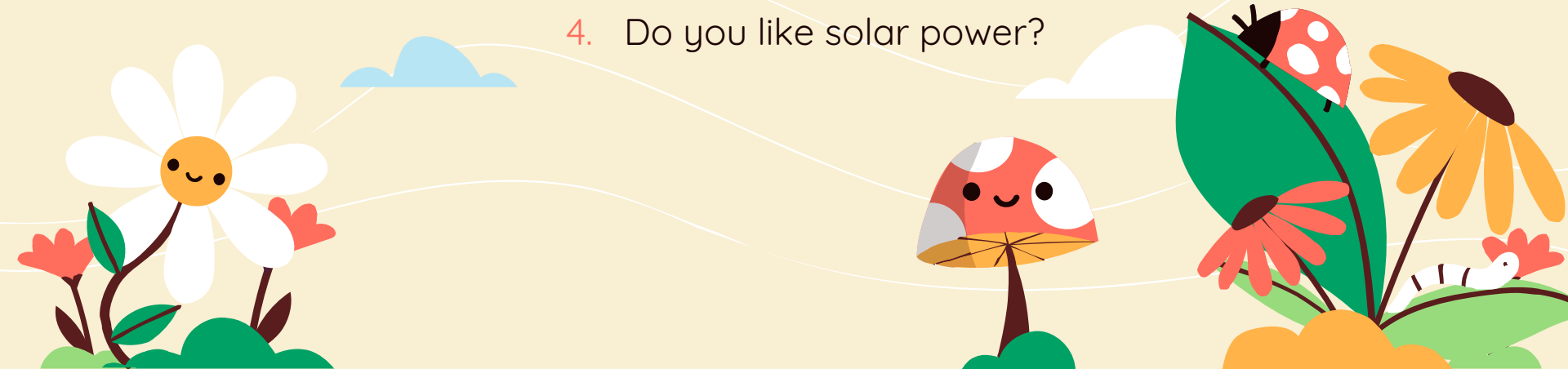
Spokane - Sunshine hours		
Month	Average	Total
January	2.5	80
February	4	120
March	6.5	200
April	8	240
May	9.5	295
June	11	325
July	12.5	380
August	11	340
September	9	270
October	6	190
November	2.5	75
December	2	60
Year	7.1	2575

Abu Dhabi - Average precipitation			
Month	Millimeters	Inches	Days
January	4	0.2	1
February	42	1.7	4
March	25	1	4
April	7	0.3	1
May	0	0	0
June	0	0	0
July	0	0	0
August	0	0	0
September	0	0	0
October	0	0	0
November	2	0.1	0
December	9	0.4	2
Year	90	3.5	12

Spokane - Average precipitation			
Month	Millimeters	Inches	Days
January	45	1.8	13
February	35	1.4	10
March	40	1.6	12
April	35	1.4	10
May	40	1.6	10
June	30	1.2	8
July	15	0.6	5
August	15	0.6	4
September	15	0.6	5
October	30	1.2	8
November	60	2.4	14
December	60	2.4	13
Year	420	16.5	112

Four Corners

1. Is solar power something we could and should use in Spokane?
2. Should we use other renewable energy sources like wind or water?
3. Is using renewable energy important?
4. Do you like solar power?



Solar Power Around the World

Reykjavík, Iceland

Abu Dhabi, UAE

Beijing, China

Now Let's Add Spokane

Reykjavík, Iceland

Abu Dhabi, UAE

Beijing, China

Spokane, Washington


Green
Mountain
Energy
RENEWABLE 101
SOLAR
ENERGY

Super Sun Survey!

Name:_____ **Grade**:_____

What is a renewable resource? (Circle the letter of your answer)

A. Something that will never run out

B. Something that will run out

C. Something that can't be found on Earth

D. I don't know

How does solar power work? (Circle the letter of your answer)

A. A solar panel uses light from the sun to create energy

B. Heat from the sun is used to spin a turbine to create energy

C. Light from the sun shines on a home and powers the home

D. I don't know

How is solar power different from fossil fuels? (Circle the letter of your answer)

A. It is renewable

B. It will run out

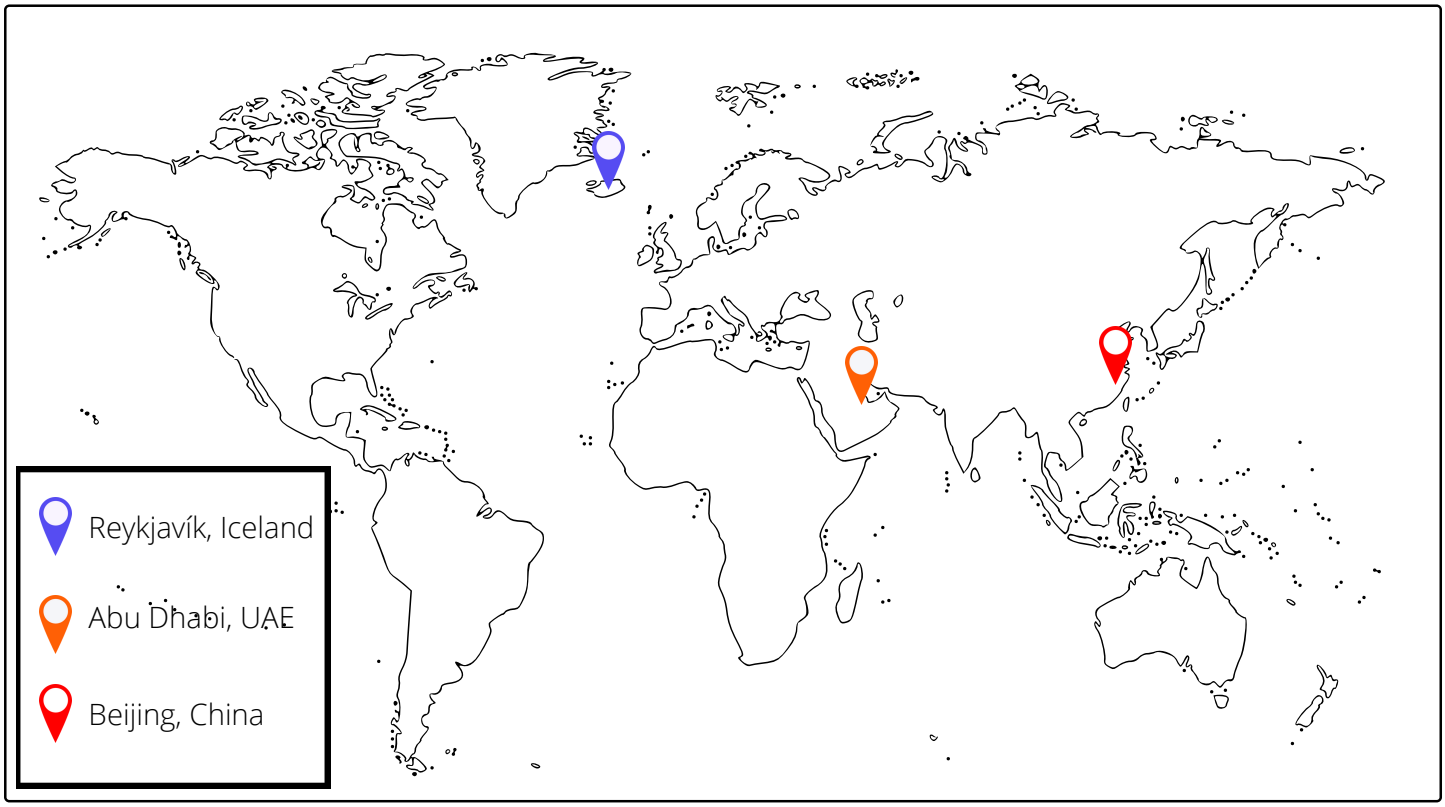
C. It can create power during the day and night

D. I don't know

Name _____ Date _____ Section _____ Teacher _____

Solar Panel Placement & Weather

Where we choose to build solar panels is very important to how well they work and how much energy they can produce. Looking at the weather of a place is an important way to help decide if a company should put panels there or not.



Deciding Where to Build

Rank the three cities from the best location to put a solar panel (#1) and the worst location (#3)

RANKING	REASON

Average Precipitation for each city (and Spokane)

Reykjavik - Average precipitation			
Month	Millimeters	Inches	Days
January	75	3	13
February	70	2.8	13
March	80	3.1	14
April	60	2.4	12
May	45	1.8	10
June	50	2	11
July	50	2	10
August	60	2.4	12
September	65	2.6	12
October	85	3.3	15
November	75	3	13
December	80	3.1	14
Year	800	31.5	148

Beijing - Average precipitation			
Month	Millimeters	Inches	Days
January	3	0.1	2
February	5	0.2	2
March	10	0.4	3
April	25	1	5
May	40	1.6	6
June	75	3	10
July	170	6.7	13
August	120	4.7	11
September	55	2.2	8
October	25	1	5
November	13	0.5	3
December	2	0.1	2
Year	545	21.5	69

Abu Dhabi - Average precipitation			
Month	Millimeters	Inches	Days
January	4	0.2	1
February	42	1.7	4
March	25	1	4
April	7	0.3	1
May	0	0	0
June	0	0	0
July	0	0	0
August	0	0	0
September	0	0	0
October	0	0	0
November	2	0.1	0
December	9	0.4	2
Year	90	3.5	12

Spokane - Average precipitation			
Month	Millimeters	Inches	Days
January	45	1.8	13
February	35	1.4	10
March	40	1.6	12
April	35	1.4	10
May	40	1.6	10
June	30	1.2	8
July	15	0.6	5
August	15	0.6	4
September	15	0.6	5
October	30	1.2	8
November	60	2.4	14
December	60	2.4	13
Year	420	16.5	112

Average Temperature for each city (and Spokane)

Reykjavik - Average temperatures						
Month	Min (°C)	Max (°C)	Mean (°C)	Min (°F)	Max (°F)	Mean (°F)
January	-2	2	0	28	36	32
February	-2	3	0.5	28	37	32.9
March	-2	3	0.5	28	37	32.9
April	1	6	3.5	34	43	38.3
May	4	10	7	39	50	44.6
June	7	12	9.5	45	54	49.1
July	9	14	11.5	48	57	52.7
August	9	14	11.5	48	57	52.7
September	6	11	8.5	43	52	47.3
October	2	7	4.5	36	45	40.1
November	0	4	2	32	39	35.6
December	-2	3	0.5	28	37	32.9
Year	2.5	7.4	4.95	36.5	45.4	41

Beijing - Average temperatures (1991-2020)						
Month	Min (°C)	Max (°C)	Mean (°C)	Min (°F)	Max (°F)	Mean (°F)
January	-9	2	-3.3	16	36	26.1
February	-6	6	0.1	21	43	32.2
March	0	13	6.7	32	56	44
April	8	21	14.3	46	70	57.8
May	14	27	20.4	56	81	68.8
June	19	31	24.9	66	88	76.8
July	22	32	26.9	72	89	80.4
August	21	31	25.8	69	88	78.5
September	15	27	20.8	59	80	69.4
October	7	19	13.2	45	67	55.8
November	-1	10	4.5	30	50	40.1
December	-7	4	-1.6	19	39	29.1
Year	6.9	18.7	12.75	44.4	65.6	55

Abu Dhabi - Average temperatures						
Month	Min (°C)	Max (°C)	Mean (°C)	Min (°F)	Max (°F)	Mean (°F)
January	12	24	17.8	53	75	64
February	13	25	18.9	56	76	66
March	16	29	22.2	60	83	72
April	19	33	26.2	66	92	79.2
May	23	38	30.6	73	101	87.1
June	25	40	32.2	77	103	90
July	28	42	34.8	82	108	94.6
August	29	42	35.1	84	107	95.2
September	26	40	32.8	78	104	91.1
October	22	36	28.8	71	96	83.8
November	18	31	24	64	87	75.3
December	14	26	19.9	57	78	67.8
Year	20.3	33.7	26.95	68.5	92.7	80.5

Spokane - Average temperatures						
Month	Min (°C)	Max (°C)	Mean (°C)	Min (°F)	Max (°F)	Mean (°F)
January	-4	1	-1.5	25	34	29.3
February	-3	4	0.5	27	39	32.9
March	0	9	4.5	32	48	40.1
April	3	14	8.5	37	57	47.3
May	7	19	13	45	66	55.4
June	10	23	16.5	50	73	61.7
July	14	29	21.5	57	84	70.7
August	13	28	20.5	55	82	68.9
September	9	23	16	48	73	60.8
October	3	14	8.5	37	57	47.3
November	-1	5	2	30	41	35.6
December	-5	0	-2.5	23	32	27.5
Year	3.9	14.1	9	39	57.5	48

Average Hours of Sunshine for each city (and Spokane)

Reykjavik - Sunshine hours		
Month	Average	Total
January	0.5	20
February	2	55
March	3.5	110
April	5.5	165
May	6.5	200
June	6	175
July	5.5	175
August	5	155
September	4	120
October	3	90
November	1.5	40
December	0.5	10
Year	3.6	1315

Beijing - Sunshine hours		
Month	Average	Total
January	6	185
February	6.5	190
March	7.5	230
April	8	245
May	8.5	270
June	7.5	225
July	6.5	195
August	6.5	210
September	7	210
October	6.5	205
November	6	175
December	5.5	170
Year	6.9	2500

Abu Dhabi - Sunshine hours		
Month	Average	Total
January	8	245
February	8.5	235
March	8	250
April	9.5	280
May	11	340
June	11	335
July	10	315
August	10	310
September	10	300
October	10	305
November	9.5	285
December	8.5	260
Year	9.5	3465

Spokane - Sunshine hours		
Month	Average	Total
January	2.5	80
February	4	120
March	6.5	200
April	8	240
May	9.5	295
June	11	325
July	12.5	380
August	11	340
September	9	270
October	6	190
November	2.5	75
December	2	60
Year	7.1	2575

Abu Dhabi - Average precipitation			
Month	**Millimeters**	**Inches**	**Days**
January	4	0.2	1
February	42	1.7	4
March	25	1	4
April	7	0.3	1
May	0	0	0
June	0	0	0
July	0	0	0
August	0	0	0
September	0	0	0
October	0	0	0
November	2	0.1	0
December	9	0.4	2
Year	90	3.5	12

Abu Dhabi - Sunshine hours		
Month	**Average**	**Total**
January	8	245
February	8.5	235
March	8	250
April	9.5	280
May	11	340
June	11	335
July	10	315
August	10	310
September	10	300
October	10	305
November	9.5	285
December	8.5	260
Year	9.5	3465

Reykjavik - Average precipitation			
Month	**Millimeters**	**Inches**	**Days**
January	75	3	13
February	70	2.8	13
March	80	3.1	14
April	60	2.4	12
May	45	1.8	10
June	50	2	11
July	50	2	10
August	60	2.4	12
September	65	2.6	12
October	85	3.3	15
November	75	3	13
December	80	3.1	14
Year	800	31.5	148

Reykjavik - Sunshine hours		
Month	**Average**	**Total**
January	0.5	20
February	2	55
March	3.5	110
April	5.5	165
May	6.5	200
June	6	175
July	5.5	175
August	5	155
September	4	120
October	3	90
November	1.5	40
December	0.5	10
Year	3.6	1315

Spokane - Average precipitation			
Month	**Millimeters**	**Inches**	**Days**
January	45	1.8	13
February	35	1.4	10
March	40	1.6	12
April	35	1.4	10
May	40	1.6	10
June	30	1.2	8
July	15	0.6	5
August	15	0.6	4
September	15	0.6	5
October	30	1.2	8
November	60	2.4	14
December	60	2.4	13
Year	420	16.5	112

Spokane - Sunshine hours		
Month	**Average**	**Total**
January	2.5	80
February	4	120
March	6.5	200
April	8	240
May	9.5	295
June	11	325
July	12.5	380
August	11	340
September	9	270
October	6	190
November	2.5	75
December	2	60
Year	7.1	2575

Spokane - Average temperatures						
Month	**Min (°C)**	**Max (°C)**	**Mean (°C)**	**Min (°F)**	**Max (°F)**	**Mean (°F)**
January	-4	1	-1.5	25	34	29.3
February	-3	4	0.5	27	39	32.9
March	0	9	4.5	32	48	40.1
April	3	14	8.5	37	57	47.3
May	7	19	13	45	66	55.4
June	10	23	16.5	50	73	61.7
July	14	29	21.5	57	84	70.7
August	13	28	20.5	55	82	68.9
September	9	23	16	48	73	60.8
October	3	14	8.5	37	57	47.3
November	-1	5	2	30	41	35.6
December	-5	0	-2.5	23	32	27.5
Year	3.9	14.1	9	39	57.5	48