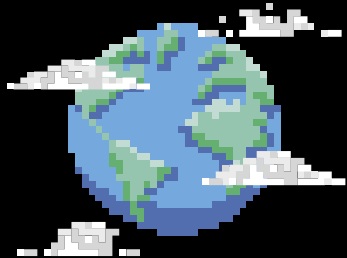


PART  
ONE

**Skillscraft minigame**

# RENEWABLE ENERGY



**(BGE 2nd, 3rd and 4th level)**

## LEARNING INTENTION AND SUCCESS CRITERIA

### Learning intentions

Use the world of Minecraft to explore renewable energy. Consider what technology is used to help us develop sustainable solutions in response to climate challenges.

### Success looks like

- ✓ I can give examples of careers in renewable energy
- ✓ I can identify meta-skills used in these careers
- ✓ I can list the different parts needed to build a wind turbine
- ✓ I can be creative with technology to build a music festival in Minecraft that uses renewable energy sources

## CURRICULUM OBJECTIVES

**Technologies:** TCH 2-02b, TCH 2-06a, TCH 3-07a, TCH 4-05a

**Sciences:** SCN 2-04b, SCN 3-04b, SCN 4-04a

**Literacy:** LIT 2-02a, LIT 3-02a, LIT 4-02a

**Maths:** MTH 2-12a, MTH 3-12a, MTH 4-12a

## META-SKILLS

- **Self-Management:** [Integrity](#)
- **Social Intelligence:** [Collaborating](#)
- **Innovation:** [Creativity](#)



## USEFUL RENEWABLE ENERGY LINKS



[Scottish Renewables](#)

[Scottish Government – Renewable and low carbon energy](#)

[Scotland.Org – Renewable Energy Keep Scotland Beautiful](#)

[Scottish Power – Educational Resources](#)

[Scotland's Environment – Education Resources BGE \(early to 4th level\)](#)

[Scotland's Environment – Education Resources Senior Phase](#)

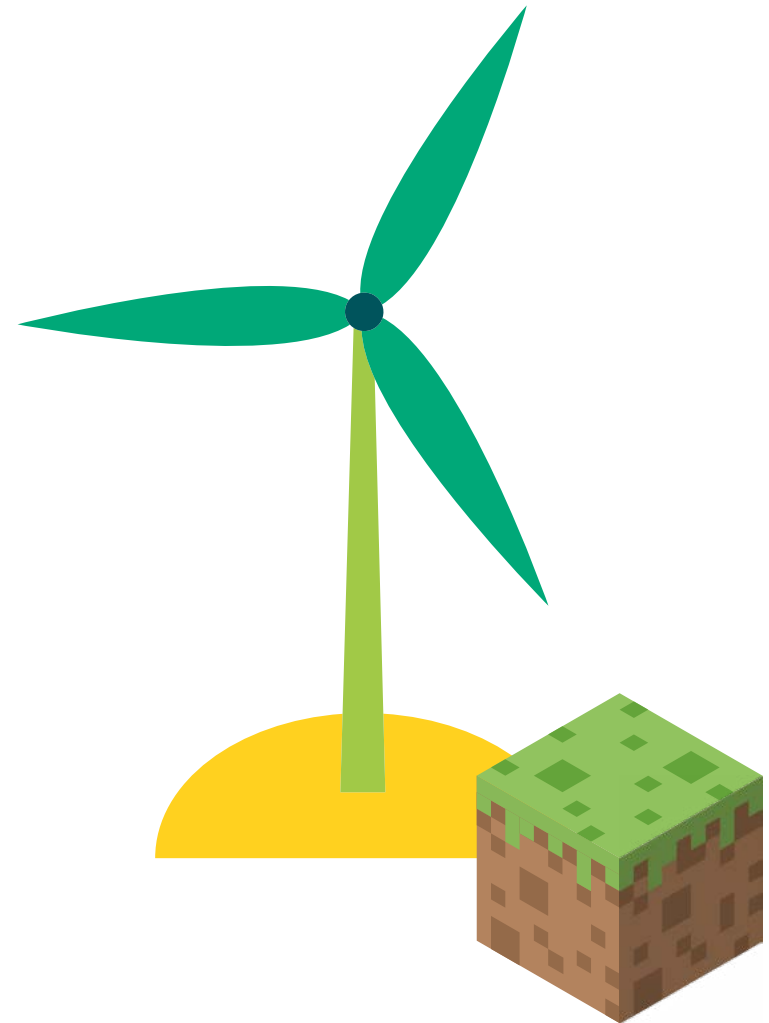
[Scotland's Environment – Education Resources useful links](#)

[Energy Skills Partnership STEM overview](#)

[Energy Skill Partnership Wind Marine Resources](#)

## VOCABULARY

- [Renewable Energy](#)
- [Wind Turbine](#)
- [Nacelle](#)
- [Site Supervisor](#)
- [Wind Turbine Technician](#)
- [Energy Engineer](#)
- [Electrical Engineer](#)



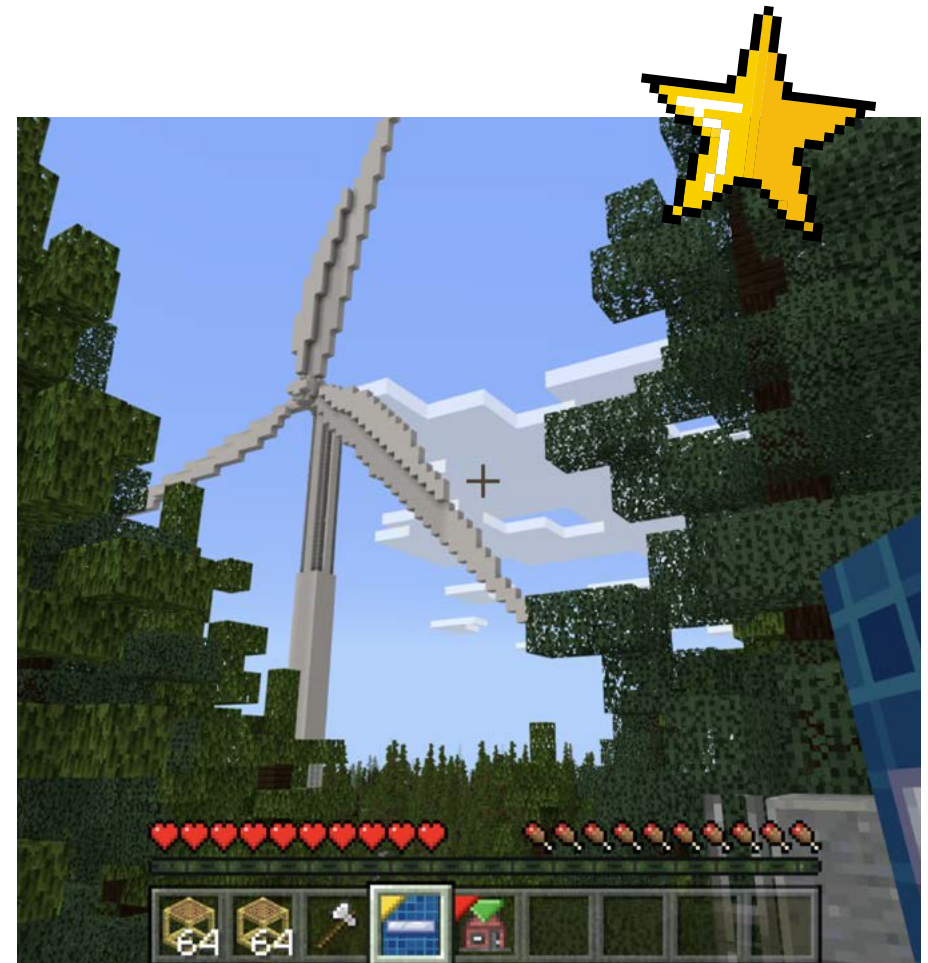
## LET'S GET STARTED

(this can be think-pair-share or rapid response in groups)



### GET THINKING

- What is renewable energy?
- What are some examples of renewable energy? Can you name three?
- What makes something renewable? Why do we use this term for certain energy sources?
- What renewable energy do we currently use most to create electrical energy? Is it beneficial? Why?
- What renewable energy machinery do we see most of in Scotland? Can these be made using Minecraft blocks?



## DISCOVER



- Pupils can work in teams of two or individually
- Go into the world to see if you can navigate your way to the Renewable Energy area and [NPC](#), without using the portals in the main building.
- Once you find the NPC, click on the URL link to find job role specific information to complete the below
- Each team member will create a social media post from the perspective of one of the following:
  - [Site Supervisor](#)
  - [Wind Turbine Technician](#)
  - [Energy Engineer](#)
  - [Electrical Engineer](#)

The post needs to describe routines or responsibilities particular to that job role. It should also include the components in the vocabulary if relevant.

It can mimic the social media platform of their choice.

**2-3 sentences max.**

Each team member must select a different job role.

It's ok if pupils don't complete. They will be able to add more information to the posts later, after gaining more information in the **Design** activity below.



## DESIGN

### Renewable Energy: Wind Turbine Repair



- Pupils can stay in the same groups as the Discover task for this activity.
- One device is encouraged to allow for maximum collaboration. Pupils can swap roles at any time.

#### TEACHER TIP:

- Beginners should choose difficulty Level 1
- Minecraft experts should choose difficulty Level 2
- BOTH above options are given when you approach the NPC guide



## WIND TURBINE MAINTENANCE AND REPAIR CHALLENGE

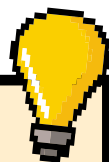
Your team will use the following steps to construct a new wind turbine, while learning about the main parts:

1. Player talks to the Wind Turbine Engineer by the wind turbine construction site. Engineer gives player one of five building schematics (foundation). Player must talk to two other NPCs to collect the remaining four building schematics.
2. Player talks to an Energy Engineer to receive the Tower and Rotor schematics.
3. Player talks to an Electrical Engineer to receive the Nacelle and Generator schematics.
4. Player must place correct components in the correct order to build the wind turbine correctly. The player has five building schematics to choose from, consisting of:
  - Wind Turbine Foundation
  - Tower
  - Rotor, Hub & Blades
  - Nacelle
  - Generator

5. There will be key placement blocks around the site. Players must click on these blocks with the correct schematic to build the part. When interacting with each placement block, players will also learn about the function of that element.
6. When players have placed all the correct elements in the correct locations, the wind turbine will activate – powering the lights in the control room. Players will be congratulated on completing the task, and teleported to the build plot for the renewable energy build challenge.

### TEACHER TIP:

Suggest pupils write down what they learn from each NPC they meet.



## DEVELOP

20-25  
mins

**Check in plenary questions. The first list (1) is to be asked after the turbine challenge is introduced and the teams have discussed how they will complete the assignment.**

### 1 BEFORE TURBINE CHALLENGE

- Do you understand what you need to do?
- Who will use the device first to attempt the challenge?
- Who will keep track of:
  - The building schematic
  - The key turbine components (parts)
  - Job role information

### 2 DURING CHALLENGE

- How far have you gotten?
- Is it a good time to switch roles and let your partner use the device?



### 3 NEAR COMPLETION TIME

■ Has anyone completed the turbine challenge? What new information do we know about the job roles?

- [Site Supervisor](#)
- [Wind Turbine Technician](#)
- [Energy Engineer](#)
- [Electrical Engineer](#)

### LEVEL 2:

In the higher difficulty level, players encounter a more complex turbine model. The nacelle (turbine housing) will contain several additional components:

- Gear box
- Rotor brake
- Yaw system

Teams that have completed MUST go back and complete their social media posts from their Discovery activity started previously using new information gathered from the minigame (above).

### IF PLAYERS ARE STRUGGLING

■ If players are unable to complete the minigame, you can skip to the build area using the following:

- First, ensure cheats are enabled (press Escape to access settings, then scroll down to the 'Activate Cheats' button and select it).
- Once you've started a minigame, press 'T' to open the command box. Then type in one of the following commands and press enter:  
**/function scripts/levels/energy/skip**

#### TEACHER TIP:

Those who finish early may move on to part two – build challenge. You may also wish to run part two as an additional lesson itself.

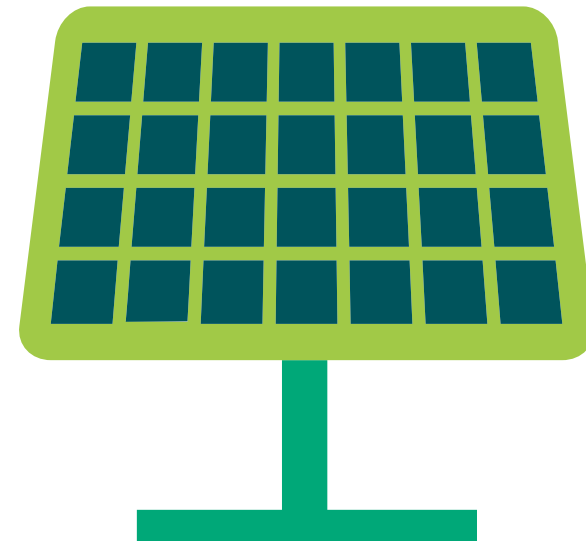




## DISCUSS

### BE PREPARED TO ANSWER THE FOLLOWING QUESTIONS AS A TEAM AT THE END OF YOUR BUILD:

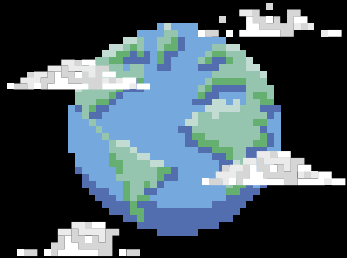
1. Did your team complete the challenge?
2. How did you perform together as a team?
3. What [meta-skills](#) did you develop during the lesson and the challenge?
4. Do we have additional information about the key job roles?
  - [Site Supervisor \(non mywow\)](#)
  - [Wind Turbine Technician](#)
  - [Energy Engineer](#)
  - [Electrical Engineer](#)
5. What new information can we add to our social media posts in the **Discover** section above? (Allow time for teams to share their posts).



PART  
TWO

**Skillscraft build challenge**

# RENEWABLE ENERGY



**(BGE 2nd, 3rd and 4th level)**

# DELIVER

## BRIEF

### Power a music festival using renewable energy.

- Once pupils complete the turbine challenge, have the teams build a renewable music festival that **MUST** relate to the information they have learned in the minigame.
  - Think about what you've learned so far, and how wind power can be used.
  - You may want to explore other renewable energy sources and how these can also be used.
  - Build your own working demonstrations of these in Skillscraft and connect them to the festival main stage!

**A detailed guide on what makes a successful build is included on the next page.**

You may wish to assign roles to each individual, i.e. designer, project manager, builder.

### Questions for teams during build challenge

#### 1. During challenge

- How far have you gotten?
- Have you finished the design?

#### 2. Near completion time

- Is your build following the rubric?
- Does your music festival:
  - Match what your team designed?
  - Include the materials suggested by your team?

## BUILD CHALLENGE RUBRIC

| FEATURES TO INCLUDE                         | GOOD   | EXCELLENT   | MINECRAFT MASTERS   |
|---|--|---|---|
| <b>NPC GUIDES</b>                           | <ul style="list-style-type: none"> <li>■ NPC guides for 1/4 listed job roles</li> <li>■ Each NPC explains their job role using:                             <ul style="list-style-type: none"> <li>○ 1 x URL button for more information</li> </ul> </li> </ul>                          | <ul style="list-style-type: none"> <li>■ NPC guides for 2/4 listed job roles</li> <li>■ Each NPC explains their job role using:                             <ul style="list-style-type: none"> <li>○ 1 x URL button for more information</li> <li>○ 1 x command button to teleport user to a feature of the music festival</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>■ NPC guides for 3/4 listed job roles</li> <li>■ Each NPC explains their job role using:                             <ul style="list-style-type: none"> <li>○ 2 x URL button for more information</li> <li>○ 1 x command button to teleport user to a feature of the music festival</li> </ul> </li> </ul> |
| <b>DESIGN<br/>{AS GRID PAPER}</b>           | <ul style="list-style-type: none"> <li>■ Includes:                             <ul style="list-style-type: none"> <li>○ Key for materials used</li> <li>○ Music festival main stage</li> <li>○ Location of NPCs</li> </ul> </li> </ul>   | <ul style="list-style-type: none"> <li>■ Includes:                             <ul style="list-style-type: none"> <li>○ Key for materials used</li> <li>○ Music festival main stage</li> <li>○ Campsite</li> <li>○ Location of NPCs</li> </ul> </li> </ul>  | <ul style="list-style-type: none"> <li>■ Includes:                             <ul style="list-style-type: none"> <li>○ Key for materials used</li> <li>○ Music festival main stage</li> <li>○ Campsite</li> <li>○ Food and drink area</li> <li>○ Location of NPCs</li> </ul> </li> </ul>   |
| <b>BUILD</b>                                | <ul style="list-style-type: none"> <li>■ Must include                             <ul style="list-style-type: none"> <li>○ Music festival main stage</li> <li>○ 1 x NPCs</li> </ul> </li> </ul>  | <ul style="list-style-type: none"> <li>■ Must include                             <ul style="list-style-type: none"> <li>○ Music festival main stage</li> <li>○ Campsite</li> <li>○ 2 x NPCs</li> </ul> </li> </ul>   | <ul style="list-style-type: none"> <li>■ Must include                             <ul style="list-style-type: none"> <li>○ Music festival main stage</li> <li>○ Campsite</li> <li>○ Food and drink area</li> <li>○ 3 x NPCs</li> </ul> </li> </ul>  |
| <b><u>BOOK &amp; QUILL</u></b>              | <ul style="list-style-type: none"> <li>■ Documents the building of the music festival main stage</li> <li>■ Must include each teammates contribution to the build</li> <li>■ Minimum of 2 pages</li> <li>■ Minimum of 2 photos</li> </ul>  | <ul style="list-style-type: none"> <li>■ Documents the building of the music festival and campsite</li> <li>■ Must include each teammates contribution to the build</li> <li>■ Minimum of 3 pages</li> <li>■ Minimum of 3 photos</li> </ul>   | <ul style="list-style-type: none"> <li>■ Documents the building of the music festival main stage, campsite and food and drink area</li> <li>■ Must include each teammates contribution to the build</li> <li>■ Minimum of 4 pages</li> <li>■ Minimum of 4 photos</li> </ul>   |
| <b>MINECRAFT SUPERSTAR<br/>BONUS POINTS</b> | <ul style="list-style-type: none"> <li>■ Use of                             <ul style="list-style-type: none"> <li>○ <a href="#">Redstone</a></li> <li>○ <a href="#">Pistons</a></li> <li>○ <a href="#">Coding</a></li> <li>○ <a href="#">Floating structures</a></li> </ul> </li> </ul> |   |   |