Exploring the Energy Grid
Grades K-2

Exploration 1
1. Turn the handle on the machines at the end of the table.

2. When the light is GREEN:
   - Draw the needle!
   - Write the number!

Discussion 1
1. What happens when you turn the crank?

2. How does it change as you go faster or slower?

3. What is this machine doing?
Exploration 2

1. Turn **ON** the **Smart Grid Switch**

2. Connect the **Step-Up Substation** to the grey **Transmission Tower 1** with two short wires.

   Connect the terminals: **RED to RED, BLACK to BLACK**

   \(\Rightarrow\) Turn the three cranks to see what happens

3. Use the **long wires** to connect all three grey **Transmission Towers**.

   \(\Rightarrow\) Turn the three cranks to see what happens
4. Connect **Transmission Tower** 3 to the **Step-Down Substation**.

⇒ Turn the three cranks to see what happens

5. Connect every building **Apartments**, **Houses**, **Farm**, and **City Tower**, to the **brown low-voltage poles** with two wires.

**RED to RED**, **BLACK to BLACK**

⇒ Turn the three cranks to see what happens

**Discussion 2**

1. What do the green lights mean?

2. What do the red lights mean?

3. What happened to the city when you got all the wires hooked up?
Apply it!

1. Has the electricity ever gone off at your home?
2. How long was it off?
3. Sometimes electricity goes off because a wire breaks.

4. Your teacher is going to disconnect one of the wires.

5. While cranking rapidly on the generators, look at the control panel. Can you find the disconnected wire?

6. How does the Smart Grid help customers?