Energy Sources

Explains the difference between a renewable energy source and a non-renewable energy source.

Watch this video and write down your thoughts and questions: A guide to the energy of the Earth - Joshua M. Sneideman - YouTube

Notes on the video/questions you have:

Thermal Power Plants: Fossil Fuels (coal, oil/oil, natural gas)

More than 30% of NB's electricity comes from fossil fuels: 21% from coal, 10% from natural gas and 2% from petroleum products.

N.B uses two thermal power stations. They have: (i.e. a FAST search now and note the names of the plants/where they are locatedin NB andthe type of energy they use)

1.	2.

We will watch this video: Thermal (nbpower.com) (EN) / Thermal power plant (nbpower.com) (FR)

Take notes as you listen to be able to answer these questions afterwards:

1. Where does the coal used by the Belledune thermal power plant come from?

2. The first step in burning coal is that it needs to be crushed into fine dust. After it is crushed (pulverized), the coal is transported to the boiler...what happens here?

3. Write the steps after the steam is at high pressure.

4. What is the effectiveness of Belledune (gives the percentage)?

5. What is a peaking station? What is their role in electricity generation in NB?

6. What are they doing to reduce their carbon dioxide emissions?

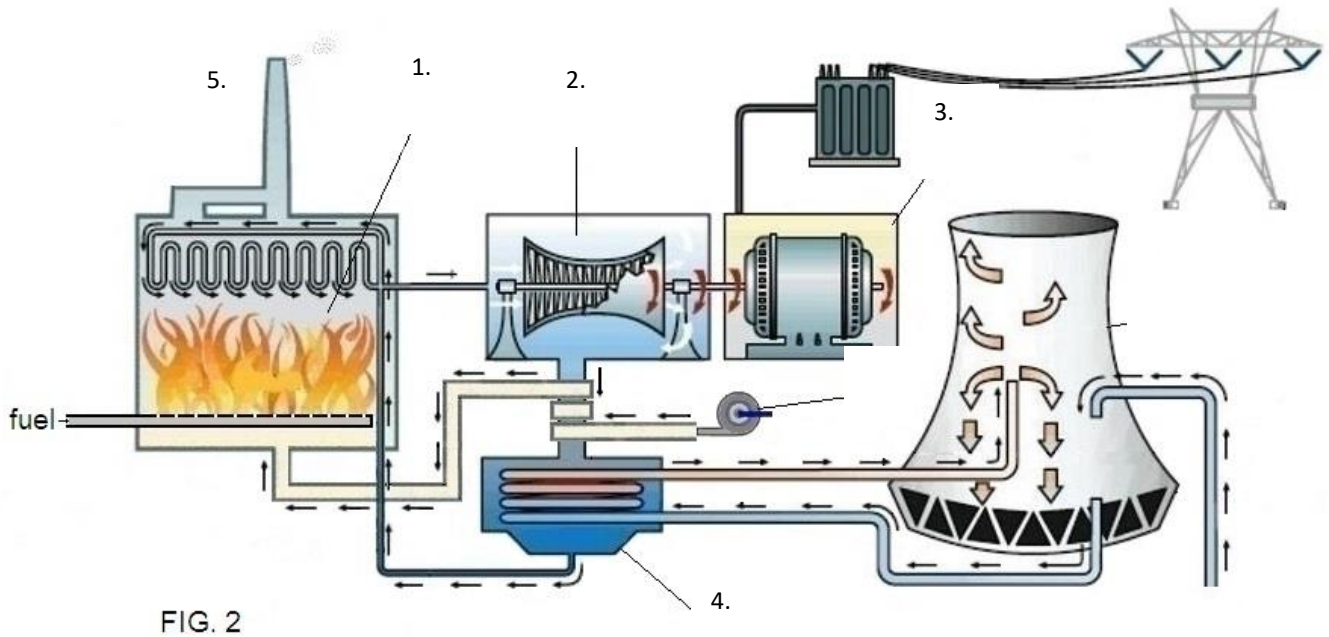


FIG. 2

Diagram taken from: [Georgia's Plant Scherer coal-fired power production method. | U.S. Geological Survey (usgs.gov)]

Label the parts in the diagram and explain what they do.

Identification	Explanation
1.	
2.	
3.	
4.	
5.	

Hydroelectric Power Plants

~20% of electricity in NB is generated by hydroelectric plants. The most important of these, Mactaquac. NB exports almost all of its electricity to Prince Edward Island and Maine.

You will watch this video: Mactaquac Dam - YouTube (EN)/ Mactaquac Dam - YouTube (FR)

Take notes as you listen to be able to answer these questions afterwards:

1. How many hydroelectric plants are there in NB.?
2. Where is the Mactaquac Dam located?
3. What percentage of electricity comes from Mactaquac?
4. What are the two types of power plants? Which one is Mactaquac?
5. The amount of kinetic energy is determined by two things – what?
6. The video says Mactaquac's electricity generation is flexible – why? Gives the details.
7. Why is hydropower one of the best choices for renewable energy?

8. What are the environmental disadvantages?
9. What is the future of the Mactaquac Dam?

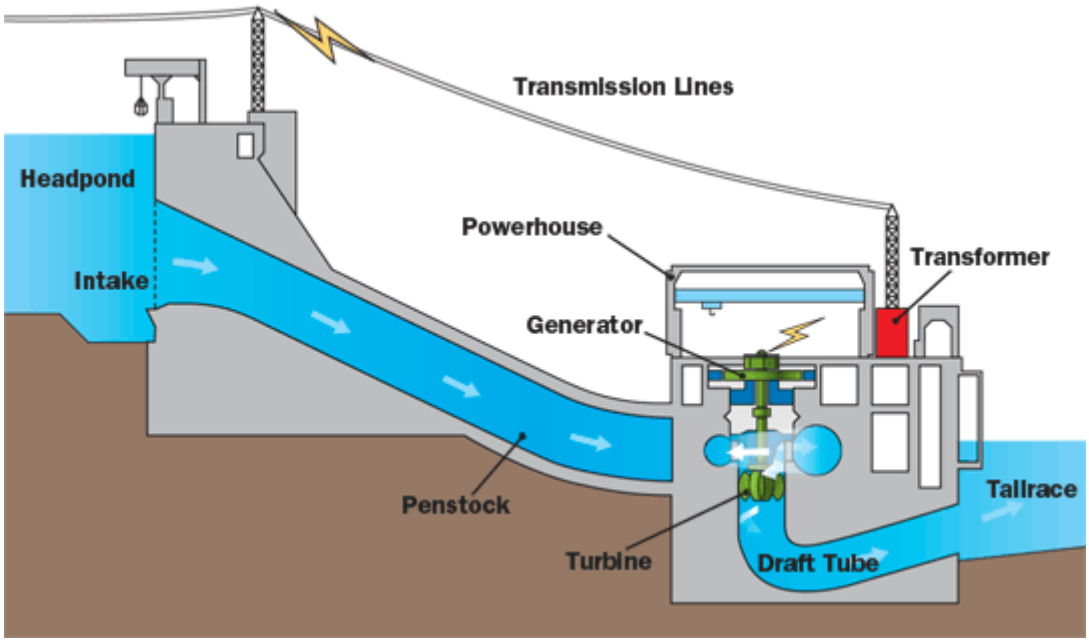


Diagram taken from: Hydro (nbpower.com)

Using the words in the diagram and the different energy banks, explains how a hydroelectric power plant produces electricity.

Solar Energy

Shediac's Community Solar Farm (nbpower.com)

1 –

2 –

3 -

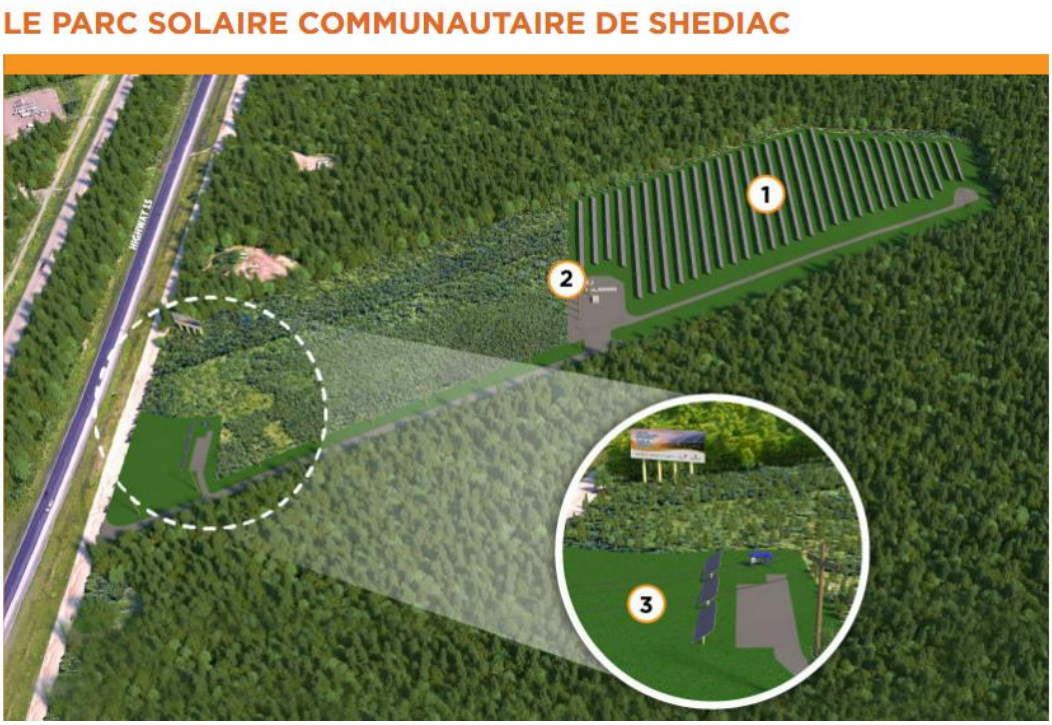


Photo taken from : Shediac's Community Solar Farm (nbpower.com)

How much energy can be created in the Shediac solar park? _____MW.

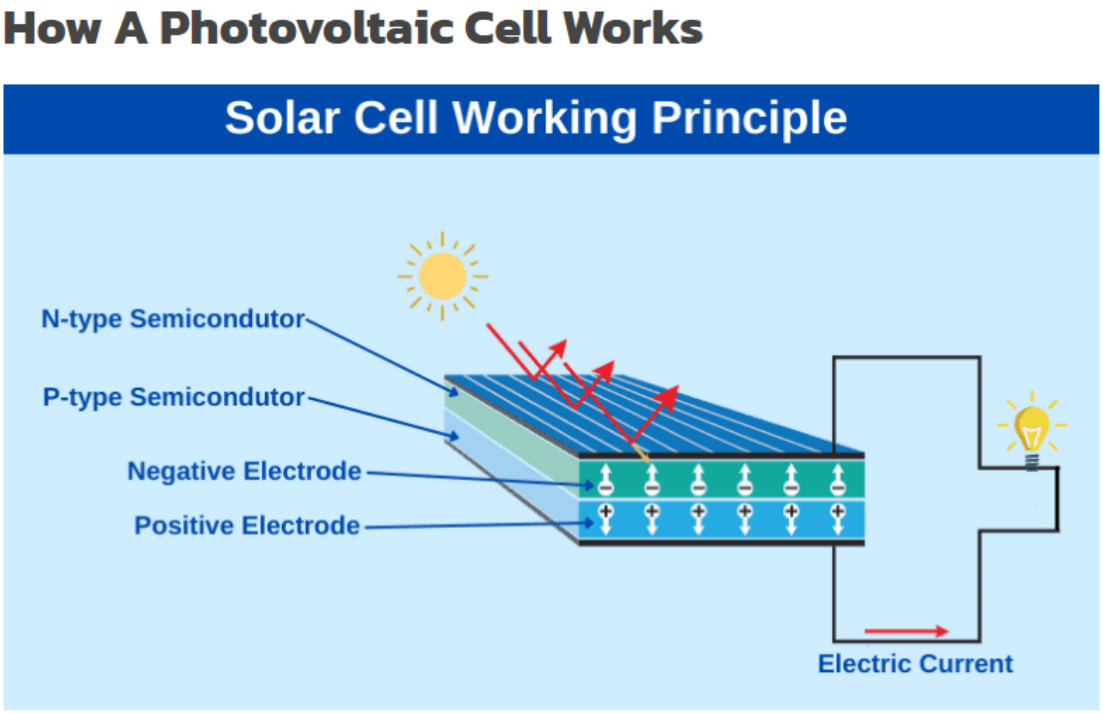
This could power about _____ houses during _____.

What does Net Zero mean?

What is a smart neighborhood?

Gives examples of smart neighbourhoods in our area.

Watch the following video to answer questions. https://youtu.be/xKxrkht7CpY



What is the most common material used in solar panels?

How efficient are the best types of solar panels? _____

Why don't we use more solar energy to create our electricity on Earth?

Wind power

Uses the following site to respond: Wind Power (nbpower.com)

1. What percentage of NB's energy is renewable? _____
2. Wind energy produces _____MW on the grid, which can power about __

We have a wind farm near here 😊 You can find answers to the following questions in the next kent Hill Wind Farm video - YouTube

1. The first time a moulin was used to generate electricity was in _____.
2. NB Power buys power from which wind farm in NB?

3. What makes a wind turbine efficient?

4. What is the most important factor to consider in determining the location of a wind farm?
   _____
5. Does the length of the fins have an influence on the amount of energy created? If so, what is the relationship?

6. What are the advantages of windenergy?

7. What are the disadvantages?

8. Kent Hill Park operates at what percentage of capacity? _____

Here's another video that might help you understand electricity generation.

How do wind turbines work? - Rebecca J. Barthelmie and Sara | TED-Ed

Nuclear energy

N.B. is the only province, other than Ontario, that produces nuclear energy. Our nuclear generating station is located at Point Lepreau, near Saint John. It provides about 40% of the province's electricity.

You will find answers to the following questions in the next video: Point Lepreau Nuclear Power Plant - YouTube (EN) / Point Lepreau Nuclear Station - YouTube (EN)

1. Name the fuel needed for nuclear energy.
2. Point Lepreau operates at what percentage of capacity? _____
3. Point Lepreau produces _____MW
4. How does it work? Describe the nuclear fission process.
5. After you have heat, what happens to produce electricity?
6. 1 kg of uranium can be compared to how much energy is released from coal?
7. The reactor is where the fission process occurs. How many fuel rods are there at the heart of the reactor?
8. A fuel bundle can power a house for _____ years
9. Lepreau uses___ kg of fuel per year. Compare that with Belledune.
10. What is the importance of heavy water?
11. Lepreau, like Belledune, provides the base load (instead of a peak power plant). Give two reasons why nuclear power plants are ideal for this.
12. Explain how spent fuel rods are stored.
13. Describe the safety measures required in nuclear power plants.