SCIENCE Name: _____

Date: _____

How it Works: Electricity Generation in Ontario

Part A: Electricity in Ontario (p. 1)

1. Where does Ontario get its electricity from? Complete the following chart based on the pie graph.

Energy Source	Percentage

2. Which energy source does Ontario get most of its electricity from? _____
3. Where in Ontario are most of the generating stations located and why?

4. How many generating stations are there of each type?

Part B: Generating Power (p. 2)

5. Most power plants transform kinetic energy (energy of _____) into electricity (flow of _____).
6. Name and describe the two main components of a generator, and explain how they work to produce electricity.

7. What are turbines and what do they do?

Part C: Understanding Power Demand / Baseload Vs. Peak Demand (p. 3 and 4)

8. Why does electricity need to be consumed as it is generated?

9. How many kilowatt hours of electricity does an average house consume per month? _____
10. a) What is baseload demand and what is the value for Ontario?

    b) What type of generating station is used to meet the baseload demand and why?

11. a) What is peak demand and how much higher is it than baseload demand?

    b) What type of generating station is used to meet peak demand and why?

12. Why does it make sense that time-of-use pricing charges more money per kilowatt hour during times of peak demand?

Part D: Power Plants

1. *Nuclear Power (p. 5 – 7)* ***2.*** *Hydroelectric Power (p. 8)* ***3.*** *Fossil-fuelled power (p. 9-10)*
4. *Biomass Energy (p. 11)* ***5.*** *Wind Power (p. 12)*

13. Define a renewable and non-renewable energy resource. (HINT: use your textbook to look this up)

14. Define the term sustainability, and explain its importance in terms of the production of electrical energy. (HINT: use your textbook to look this up)

15. Read about the following sources and complete the table below:

Source of Electricity Renewable or not?	How is the electricity produced?	Advantages	Disadvantages
Nuclear Power Is it renewable? _____			
Hydroelectric Power Is it renewable? _____			
Fossil-fuelled Power Is it renewable? _____			
Biomass Energy Is it renewable? _____			
Wind Power Is it renewable? _____			

Part E: Understanding CO_2 Emissions (p. 13)

16. Carbon dioxide is an example of a greenhouse gas, which means that it traps the Sun's heat and prevents it from reflecting back into space. What environmental problem do you think greenhouse gases contribute to?

17. Complete the following chart:

Source of Electricity	**Grams of CO_2 produced per kilowatt hour of electricity generated**
Nuclear	
Natural Gas	
Coal-Fired	
Hydroelectric	
Wind	
Solar	

19. Based on the chart, which source of electricity has the highest CO_2 life cycle emission?

20. Solar panels don't give off any CO_2 once they are installed and working. Why are the life cycle CO_2 emissions for solar panels so high?