

**iLab: Our Choice - Renewable Resources Part Two****Chapter Five – Soaking Up Geothermal Energy****Chapter Six – Growing Fuel**

iPad use: You are a brilliant student. You know how to do all sorts of crazy stuff on an iPad like change the wallpaper, check your twitter account and download Angry Birds. Please resist doing those things, because today we are doing a lab specifically with the app called “Our Choice.” When you get your iPad, please go directly to the app. Thank you for your cooperation.

When you open the app “Our Choice,” you will be greeted by Al Gore (who wrote the book this app is based on). If you are instead greeted by a spinning Earth, press the counter-clockwise arrow in the lower left corner. Touch anywhere on the screen (you can even poke Al in the eye!) and press “skip welcome.” This will take you to a tutorial which is very helpful. Upon completing the tutorial, touch the screen again to “skip titles”. This brings you to spinning Earth, where we will begin.

Advance to Chapter Five – Soaking Up Geothermal Energy, and expand the first page to full screen. As you read the chapter, answer the following questions.

*Subheading: An Underestimated Resource*

1. According to the U.N. World Energy Assessment Report, how much energy could geothermal resources provide?

*Subheading: The Origin of Geothermal Hot Spots*

2. How might some of the world’s hot spots be explained?

*Subheading: The Earth’s Hot Spots*

3. What are the two kinds of areas where geothermal resources may be found? Give an example of each.

*Subheading: New Technologies-Enhanced Geothermal Systems*

*Movie: How Enhanced Geothermal Systems Work*

4. How do enhanced geothermal systems work?

*Subheading: Challenges and Concerns*

5. List two major challenges to further development of geothermal resources.

*Subheading: Inside the Earth*

6. Name the four major layers of the Earth.

*Movie: Geothermal Energy in Iceland*

7. Why is Iceland such a good place for geothermal energy?
8. How do farmers in Iceland harness geothermal energy?

*Subheading: New Advances*

9. What is meant by “coproduction”?

*Subheading: Geothermal Heat Pumps*

10. How do geothermal heat pumps work?

Advance to Chapter Six – Growing Fuel, and expand the first page to full screen. As you read the chapter, answer the following questions.

*Subheading: Biomass Energy*

11. Give an example of biomass energy source from feedstocks, food crops, and energy crops.

*Subheading: Ethanol-Fuel from Plants*

*Movie: How Biomass Becomes Biofuel*

12. What is the similarity between the creation processes of first generation and second generation biofuels?

*Photo: Dumai, Indonesia*

13. Why was Greenpeace protesting the use of palm oil?

*Graphic: Fuel Yields for Biofuel Crops*

14. What biofuel crops yield the most fuel?

*Subheading: Sugarcane vs. Corn*

*Movie: Brazil's Biofuel Lead*

15. What has been the driving force behind ethanol in Brazil?

*Subheading: Arguments Against Corn*

16. What is "E85"?

17. What are two large factors that have been responsible for the shift in expert opinion toward a negative conclusion on ethanol?

*Subheading: Second-Generation Technology*

*Movie: Harvesting Biomass in Ireland*

18. Ireland's goal is to have, by 2025, what percentage of their total energy use come from renewables?

*Subheading: A New Industrial Revolution*

19. How did Ray Anderson, Interface Flooring founder, change his company to become more environmentally friendly?

*Subheading: Garbage Power*

20. How are landfills a source of energy?

*Subheading: Third-Generation Technology*

*Movie: Breaking Down (Cell) Walls*

21. What is cellulose? What is the goal of third generation technology in regards to cellulose?

*Subheading: Thermal Energy and Electricity from the Grid*

22. What is being shown in this picture?

*Subheading: Public Policy on Biomass*

23. Name two countries that have taken the lead in establishing sustainability standards for biomass.