Name/Date/Period

iLab: Our Choice - Renewable Resources Part One

Chapter Three – Electricity from the Sun

Chapter Four – Harvesting the Wind

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 Three – Electricity from the Sun, and expand the first page to full screen. As you read the chapter, answer the following questions.

Subheading: Making Power from Sunlight

1. What are the two main ways that electricity can be produced from sunlight?

Movie: How Concentrated Solar Thermal Power Works

2. How do CST plants work?

Subheading: Photovoltaic Power

Movie: How Photovoltaic Power Works

3. How do PV cells work?

Photo: Saville, Spain

4. What type of solar system is shown in the picture from Saville, Spain?

Movie: Photovoltaics in the Real World

5. What are the benefits of tying in to a local grid?

Subheading: Space-Based Solar Power

Movie: Space-Based Solar Power

6. What problems can be solved by a space-based system? What problems might arise from the system?

Subheading: Photovoltaic Innovations

7. What is the trade-off between first generation silicon cells and the newer thin-film cells?

Subheading: The Intermittency Problem

8. What is "the intermittency problem"?

Subheading: Designing for the Sun-Passive Solar Homes

Graphic: Passive Solar Homes

9. Describe the difference in performance of a passive solar home in the winter versus the summer.

Subheading: The Future of Solar Power

Movie: The Road Not Taken

10. Describe the irony of Jimmy Carter's speech.

Graphic: Solar Resources in the United States

11. Name a city you would recommend for a solar power plant. Do the same for wind and geothermal.

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Advance to Chapter Four – Harvesting the Sun, and expand the first page to full screen. As you read the chapter, answer the following questions.

Subheading: What is Wind?
Subheading: The Fastest-Growing Form of Renewable Energy
Graphic: Global Wind Energy Production

12. Name the three countries with the greatest installed capacity for wind power.
13. Name the three countries with the greatest wind power per capita.
14. Describe the trend in wind power use over the next five years.

Movie: How a Wind Turbine Works

15. Why is blade shape important in a wind turbine?

Subheading: Modern Windmills and Wind Farms

16. What is the size of a typical modern, commercial windmill?

Subheading: Offshore Windmills
Movie: Wind Farming-Looking for Land

17. How are farmers good partners in a wind power initiative?

Subheading: Leaders in Wind
Subheading: Limitations

18. What are the limitations of wind power?

Subheading: Thinking Small
Movie: Building Wind Turbines in Minnesota

19. Explain the economic outcomes of the project.

Movie: The Boy Who Harnessed the Wind

20. Describe the effects William Kamkwamba has had on his community.