This video is taken from another list of videos from the Annenberg Media library.

You will need to upload this assignment to Blackboard, but also bring a hard copy to class. I'll grade the hard copy and return it. However, I will need an e-copy uploaded for my records. There is no need to put pictures in the uploaded version. If pictures are required, you can simply hand-draw them on the hard copy.

0:00 – 13:00
The first 13 minutes of this video may not be of great use. Feel free to skip this section or to watch it without having to answer questions. However, you may want to watch the interview with Greg. His views of energy from the physical sciences are limiting his view of energy in the life sciences.

@ 13:00 Dr. Les Kaufman
1. When someone roasts a marshmallow, what happens to the energy in the bonds of the marshmallow (which are primarily composed of sugar)?

@ 15:00
2. In your own words, what are some similarities in defining a community and defining a system?

3. Where does a food chain always begin?

@ 19:20
4. The majority of the earth’s energy arrives in the form of ____________.

5. CO₂ is a building block for plants. How much of our atmosphere is composed of CO₂?

@ 26:00 Harvard Botanist
6. Quote: “The energy that the plants get from the sun that they convert into chemical energy in the form of sugar, they store in their roots and their rhizomes. But that chemical energy…once it is converted from sunlight…is the same energy as it moves throughout the food web.

6a. What is the sole source of energy for the plants in a community/ecosystem?

6b. Think about what happens to the plant matter over time in the ecosystem? Why can one say that matter is recycled again and again in an ecosystem? Explain

6c. If matter can be recycled over and over again in an ecosystem, can we say the same about energy? Must energy be continually replenished? Explain.
7. Why do they feed predators first in the aquatic environment (aquarium)?

8. Where does energy go when an organism dies?

9. Although energy “does not completely disappear,” why can’t energy in a community/ecosystem be recycled over and over and over again to be used by organisms within the system?

10. “Bacteria break down all dead things -- plants and animals.” A lot of the tree is still there. It was living, but now it’s dead. However, its energy is still available. In the context of this tree—both while it’s alive and dead—where did that energy come from?

11a. Ultimately, where does the heat loss from living/respiration go? Explain

11b. Is the earth and open or a closed system? Explain

11c. Think of a food chain with that consists of **Grass → Insect → Frog → Snake**
Who is has the most energy available to them in this sequence? The least? Explain.

11d. Who has more energy available to them…the insect or the frog? Explain.

12. How do the decomposers in the compost site also produce heat (just like plant and animals)? Explain

Ultimately, why is energy flow in an ecosystem/community inefficient? How can energy be continually provided in such an inefficient system?