

# Energy & Ecology

Objectives		
1. Critique the benefits, costs and environmental impact of various alternative sources of energy for North Carolina (solar, wind, biofuels, nuclear fusion, fuel cells, wave power, geothermal).		
2. Evaluate which sources of alternative energy may work best in different parts of the state and why.		
3. Extension: Examine for region, country, continent, hemisphere, and world.		
4. Explain how acid rain is formed and how human activities can alter the pH of rain.		
5. Infer other human activities that impact the quality of atmospheric composition. (e.g. aerosols, chlorofluorocarbons, burning, industrial byproducts, over farming, etc.)		
6. Exemplify methods to mitigate human impacts on the atmosphere.		
7. Compare the methods for obtaining energy resources: harvesting (peat and wood), mining (coal and plutonium), drilling (oil and natural gas), and the effect of these activities on the environment.		
8. Explain how biotic and abiotic factors determine biome classification (temperature, rainfall, altitude, type of plant, latitude, type of animals).		
9. Compare impacts of biotic and abiotic factors on biodiversity.		
10. Match landforms and soils (and their change over time) to biomes		
11. Define the biosphere as all life on Earth.		
12. Explain biodiversity as including genetic variation within populations and variation of populations within ecosystems that makeup the biosphere.		
13. Infer the relationship between environmental conditions and plants and animals that makeup live within various biomes that comprise the biosphere.		
14. Explain the global impact of loss of biodiversity.		
15. Explain effects of human population growth, habitat alteration, introduction of invasive species, pollution and overharvesting on various plant and animal species in NC.		
16. Explain effects of invasive nonnative species (plant or animal) on an NC ecosystem.		
17. Summarize ways to mitigate human impact on the biosphere.		
18. Critique the advantages and disadvantages of traditional agriculture/aquaculture techniques and compare with sustainable agriculture/aquaculture techniques. Include the economics and environmental impacts in this comparison.		
19. Judge potential impact of sustainable techniques on environmental quality (include magnitude, duration, frequency).		
20. Explain carrying capacity.		

21. Infer limiting factors to human population growth.		
22. Summarize the impacts of a growing population on the natural resources in North Carolina		
23. Explain how ecological footprints exist at the personal level and extend to larger scales.		
24. Evaluate personal choices in terms of impacts on availability of natural resources and environmental quality; relate this to ecological footprints on various scales.		
25. Evaluate the impact of implementing change that adheres to the “reduce, reuse, recycle” philosophy (e.g. through case studies, data collection/analysis, model development, etc.).		
Note: Link to EEn.2.8.1 regarding alternative energy technologies.		