

2009 Massachusetts Envirothon Current Issue Problem

Renewable Energy: Getting It Right, Ecologically and Economically

Background

In the past year, Americans have begun the move to a “clean energy” economy. The term “clean energy” generally refers both to energy from renewable sources and to energy from conservation and efficiency.

The switch to clean energy tackles two critical issues at once: our dependence on oil, which is becoming more scarce and expensive, and our production of greenhouse gases from burning fossil fuels, which contribute to climate destabilization.

Many individuals are taking action in their daily lives and households, and this begins to make a difference. But fully “Repowering” the American economy to address these critical issues will require action on a much larger scale, by all of us acting together.

State governments, notably California and Massachusetts, are leading the way in this larger scale effort. Now the federal government has joined the effort, as well, with the American Recovery and Reinvestment Act of 2009 (the “stimulus package”) providing billions of dollars for energy-related projects.

In Massachusetts, the Green Communities Act of 2008 set goals and provided incentives to move the Commonwealth toward a clean energy economy. For a summary, see http://www.mass.gov/legis/house/ht04365_summary.pdf

A rapid transition to a clean energy economy is more and more viewed as a necessity. However, the laws of ecology tell us that every action has many, often unpredictable, consequences. You can’t do just one thing. Repowering will bring multiple changes in the ecology and economy of communities, close to home and far away. In some cases there will be difficult choices to be made. You may have to consider some of these in your community as you work on this problem.

Mass Envirothon has prepared several resources to help you with your Current Issue research and presentation (see <http://www.maenvirothon.org/currentissue.htm>). In particular see the strategies for community investigation beginning on page 5 of the <current issue information> handout. If you have questions about your research or your presentation, contact Will Snyder (wsnyder@umext.umass.edu or 413/545-3876).

The Problem

Your team has been appointed to develop a plan for your community to meet the goals of the Massachusetts Green Communities Act of 2008.

Specifically, your charge is to propose a way for your community to meet these two goals of the Green Communities Act:

- Meet at least 20 per cent of your community’s electric load by the year 2020 through new, renewable generation. (This goal can be met either by shrinking demand or by adding new renewable capacity, or both.)
- Reduce total energy consumption in your community by at least 10 per cent by 2017 through a combination of demand reduction, conservation, and energy efficiency.

You have been asked to develop a plan that not only meets these target goals, but also “gets it right” for your community, and other communities, ecologically and economically.

If your plan includes new energy, it must be generated from a clean energy source within your community.

For purposes of this problem, you can define your community as you see fit: It can be the state as a whole, your region (as you define it), your town, your school. Of course, communities are interconnected. Your proposal should note how your plan will affect other communities, and should take responsibility for a fair share of ecological and economic consequences.

Questions Your Presentation Should Answer

- **What is the geographic extent of your community, for purposes of this problem?** Introduce the judges to your community as you have defined it and tell why you chose this focus.
- **How much of what kinds of energy does your community use?** You should be able to provide an accurate estimate of your community's per capita energy use, including electricity and fuels for household heating and transportation.
- **What are the energy resources available to your community?** This includes possible sources of renewable energy (e.g. moving water, wind, solar-ready rooftops, biomass), and possible sources of energy from energy efficiency (e.g. potential improvements from weatherization and smart growth).
- **Who are the people and organizations in your community that you have found who can make this happen?** What knowledge, skills, networks, experience, ideas, commitment, and can-do spirit do they have to offer?
- **What clean energy technologies do you propose?** How do they work? Are there downsides to these technologies? Where will you site them in your community?
- **What will be the impact of your plan on natural resources and ecosystems, near and far?** Are these changes fair to all communities involved? Use the ecological knowledge that you have gained from your Envirothon preparation about water, forest, soil, and wildlife resources and their ecological relationships.
- **How will your plan change daily life for people living and working in your community?** Will your plan change the number and kinds of jobs? Will it change the ways people live, work, play, and get around? Are these changes fair? Will they be good for future generations?
- **What will your plan cost?** Provide a convincing cost estimate for the judges using real numbers. Are there incentives and subsidies (e.g. from utilities, the state, the federal government) that will make the plan more feasible and fair?
- **Can you do more in this in the next ten years?** Does your plan set the stage for further reductions in the future? Scientists tell us that addressing climate change will require reducing our fossil fuel use by 80% or more by 2050.
- **What are the first steps that should be taken?** Who should be involved? How should they be involved?

Some Tips for Your Presentation

How it works:

- You will make your presentation to a panel of five to eight judges. Their job is to listen, ask good questions, assess your work, and give you feedback on your research, your proposal, and your presentation.
- You will have 15 minutes for your presentation, followed by a 10 minute period when the judges can ask you questions.
- Five of the judges will give you a number score, and these will be averaged to give you a score for the competition.
- All the judges are asked to give you helpful comments. Copies of the score and review sheets will be sent to your coach.
- Your coach and team alternate will be able to observe the presentation.
- You will be presenting in a tent, outdoors. The day of the Envirothon is often surprisingly windy and cold. Dress accordingly!

Practice your presentation! Practice makes it easier for you to be poised and at ease in your presentation, including being able to make good eye contact and speak naturally with the judges.

Show the judges how you know what you know, and how you came to your conclusions. Tell them about where you visited, who you talked to. Use real numbers when you talk about energy use, and show how you arrived at your estimates.

Use visual aids, especially maps, to introduce the judges to your community and to your proposal. Mount your visual aids on sturdy boards in case of wind.