



IMAGINING TOMORROW: ALTERNATE ENERGY FUTURES

CleanTech Awards

CLEAN TECHNOLOGY AND CLIMATE SCIENCE FAIR AWARDS: 2010 GUIDELINES

Our knowledge about clean energy technologies and our understanding of the implications for adopting them are increasing every day – too quickly for textbooks and standard classroom materials to keep up. Because of this [The Foresight Project](#) instituted the CleanTech Awards program to recognize and encourage independent student projects on the critical issues of clean energy and climate science. These awards are made in partnership with the Massachusetts State Science and Engineering Fairs (MSSEF).

In 2010, we will be presenting two awards at the high school and middle-school regional science fairs. There will be a *CleanTech* award for the best qualifying project on any aspect of clean energy or energy efficiency, and, new this year, a climate science award, *Beyond Rocket Science: Climate Science*, for the best qualifying project on any aspect of climate science, weather, or non-linear systems.

For more than sixty years, the MSSEF has been and remains an opportunity and a showcase for inquiry-based learning in all areas of science. We are pleased to be able to join with them to present these awards.

High School: The Regional Fair Awards will each consist of a cash award of \$75, a Certificate of Recognition, and a “Visionary in Residence” T-shirt. The State Fair Awards will each be a cash award of \$100, plus a certificate and a t-shirt.

Middle-School: The Regional Fair Awards will each consist of a Certificate of Recognition, and a “Visionary in Residence” T-shirt. The State Fair Awards will each be a cash award of \$75, plus a certificate and a t-shirt.

All award winners are eligible to have their project description posted on-line.

TO QUALIFY:

1. Awards are given in partnership with the MSSEF judging organization. At both the regional and state fairs, the award recipients will be chosen from the winners as selected by the MSSEF organization. Please see the organization’s website <http://www.scifair.com>, for any information about rules and entry procedures, as well as for the dates of the fairs in your area. Note that there are two paths to the State Fair: to be a winner at a regional fair, or to be a delegate directly from your school.
2. The student project must be related to clean energy issues, technologies, or solutions or to any aspect of climate science. See the examples below; other examples, including winning projects from previous years, are available at the website: www.ma.cleantechawards.org.
3. The project itself can be in any of the MSSEF categories, from astronomy, biology, and behavioral science, through electronics, engineering, to math and physics.



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Examples of CleanTech Projects:

Note that if you are studying one aspect of a system, you should be aware of the over-all energy consumption of the system that you are studying.

Conversion of Renewable Energy Sources into Usable Power: Explore an energy conversion technology. These could include (but are not limited to) conversion of solar radiation into electrical energy, hot water, space heat (as in passive solar design) or lighting; the use of wind power and the factors that result in an appropriate design; hydropower and related technologies; or projects that look at factors related to the use of biomass for fuel.

Improved Efficiency of Energy Use: Explore how to accomplish a specific task with less energy. This could include (but is not limited to) studies of technological systems or comparisons between technological and biological energy transformations.

Reduced Energy Use through Behavioral Changes: Investigate human behavior that results in a reduction of energy use: driving habits, thermostat settings, recycling at home or at a business. What do people do or believe, and why – take a survey, analyze statistics, compare results.

EXAMPLES OF CLIMATE SCIENCE PROJECTS, *BEYOND ROCKET SCIENCE: CLIMATE SCIENCE!*:

Weather: What is the Jet Stream? What separates clouds from the surrounding air? Although we talk about climate change, climate is a word that describes an overall average over a period of time that is relatively stable. How can we tell if the weather patterns are changing if the weather itself is always changing? What are the implications of changing the composition of our atmosphere, and of the change in temperature gradients that result?

Earth Science: How many layers are there in our atmosphere? What separates them? What are their different characteristics? What is the water cycle? What determines the direction and rates of water flowing through the system? What happens to air in our atmosphere – where does it go? What is a “sink”? Can you do a time-line for earth since its formation? How do temperatures and atmospheric conditions change on this time-line? What about plant and animal life on the planet?

System Dynamics: Climate is a combination of many feedback loops that result in specific weather conditions in individual locations. How do such non-linear, dynamic, feed-back systems work?

Use your imagination and enjoy your journey of discovery!

Any questions?: office.foresightproject@gmail.com.

The Massachusetts CleanTech Awards and *IMAGINING TOMORROW: ALTERNATE ENERGY FUTURES™* are programs from The Foresight Project, Inc., www.foresightproject.org.