

## Community Project Proposal

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Country: United States

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| <b>Community Project Title</b>     | <b>Carbon Usage and Offsets on Putnam City Campuses and Area Businesses</b>  |
| <b>Community Project Synopsis</b>  | <p><b>Communities Affected:</b> Schools, and area businesses</p> <p><b>Proposed Date of Project:</b></p> <p><b>Synopsis:</b> Teams of Students will conduct an assessment of school campuses and area businesses to determine their carbon output based on electrical usage. They will then measure and evaluate trees and other carbon offsets available to the area in an effort to make our community more aware of their impact on climate change. Each school or business will be presented with a formal report that includes the aforementioned data and then makes recommendations for ways that improvements can be made: ie.. locations of electrical vampires, areas where more trees could be planted and their benefit, and general information related to climate change.</p> <p><b>Benefits of Project:</b> Each participating school or business will benefit from the assessment by being informed of cost saving electrical usage changes, and knowledge of how carbon offsets can be made to lessen the impact of climate change.</p> |
| <b>Community Project Outline</b>   | <p><b>Partner 1:</b><br/>Putnam City Independent School District<br/><b>Contact Info:</b><br/><b>Role in Project:</b> Helping procure data and make<br/>Make contact with schools</p> <p><b>Partner 2:</b><br/>Warr Acres Chamber of Commerce<br/><b>Contact Info:</b><br/><b>Role in Project:</b> Helping to identify potential<br/>businesses</p>  |
| <b>Community Project Reporting</b> | <p>Evaluative Benchmarks will be measured as each student team prepares and presents their formal assessments of their chosen site. Students will then remain in contact with the representative for the site to monitor the outcomes of the recommended changes. Electrical bills showing usage will be used to quantify results and a later inspection of site will indicate whether or not additional trees have been added to the landscape.</p>   |

## Internet Resources:

<http://www.treeregister.org/measuringtrees.shtml>

(Provided graphics and protocol for measuring trees)

[http://www.globe.gov/fsl/worddocs/TreeCircumference\\_FieldGuide.doc](http://www.globe.gov/fsl/worddocs/TreeCircumference_FieldGuide.doc)

(Outlines procedure for measuring and recording data collected)

<http://www.coloradotrees.org/benefits.htm>

(Provides tables and background on the benefits of Urban Trees)

<http://www.americanforests.org/resources/ccc/>

(Calculates trees needed to offset electrical CO<sub>2</sub> emissions)

<http://www.energyquest.ca.gov/vampires/dswmedia/index.html>

(Provides information related to energy vampires)

<http://www.homeenergy.org/archive/hem.dis.anl.gov/eehem/93/930711.html>

(Has a table of energy vampires)

## Selective National Science Benchmarks Addressed

- Scientists can bring information, insights, and analytical skills to bear on matters of public concern. Acting in their areas of expertise, scientists can help people understand the likely causes of events and estimate their possible effects. 1C/H6ab
- Because science is a human activity, what is valued in society influences what is valued in science. 1C/H10\*\* (SFAA)
- The dissemination of scientific information is crucial to its progress. Some scientists present their findings and theories in papers that are delivered at meetings or published in scientific journals. Those papers enable scientists to inform others about their work, to expose their ideas to criticism by other scientists, and, of course, to stay abreast of scientific developments around the world. 1C/H12\*\* (SFAA)
- Greenhouse gases in the atmosphere, such as carbon dioxide and water vapor, are transparent to much of the incoming sunlight but not to the infrared light from the warmed surface of the earth. When greenhouse gases increase, more thermal energy is trapped in the atmosphere, and the temperature of the earth increases the light energy radiated into space until it again equals the light energy absorbed from the sun. 4B/H4\*\* (SFAA)
- The earth's climates have changed in the past, are currently changing, and are expected to change in the future, primarily due to changes in the amount of light reaching places on the earth and the composition of the atmosphere. The burning of fossil fuels in the last century has increased the amount of greenhouse gases in the atmosphere, which has contributed to Earth's warming. 4B/H6\*\* (SFAA)
- Although the earth has a great capacity to absorb and recycle materials naturally, ecosystems have only a finite capacity to withstand change without experiencing major ecological alterations that may also have adverse effects on human activities. 4B/H9\*\* (SFAA)
- Understanding how things work and designing solutions to problems of almost any kind can be facilitated by systems analysis. In defining a system, it is important to specify its

boundaries and subsystems, indicate its relation to other systems, and identify what its input and output are expected to be. 11A/H2

- If a system in equilibrium is disturbed, it may return to a very similar state of equilibrium, or it may undergo a radical change until the system achieves a new state of equilibrium with very different conditions, or it may fail to achieve any type of equilibrium. 11C/H1\*
- Graphs and equations are useful (and often equivalent) ways for depicting and analyzing patterns of change. 11C/H4
- Cyclic change is commonly found when there are feedback effects in a system—as, for example, when a change in any direction gives rise to forces or influences that oppose the change. 11C/H5\*
- The present arises from the conditions of the past and, in turn, affects what is possible in the future. 11C/H6\*
- Trends that follow a pattern that can be described mathematically can be used to estimate how long a process has been going on. 11C/H8\*\* (SFAA)
- Computers have greatly improved the power and use of mathematical models by performing computations that are very long, very complicated, or repetitive. Therefore, computers can reveal the consequences of applying complex rules or of changing the rules. The graphic capabilities of computers make them useful in the design and simulated testing of devices and structures and in the simulation of complicated processes. 11B/H2\*
- Benefits and costs of proposed choices include consequences that are long-term as well as short-term, and indirect as well as direct. The more remote the consequences of a personal or social decision, the harder it usually is to take them into account in considering alternatives. But benefits and costs may be difficult to estimate. 7D/H1
- The decisions of one generation both provide and limit the range of the possibilities open to the next generation. 7C/H2
- When selecting fuels, it is important to consider the relative advantages and disadvantages of each fuel. 8C/H2\*
- Sunlight is the ultimate source of most of the energy we use. The energy in fossil fuels such as oil and coal comes from energy that plants captured from the sun long ago. 8C/H8\*\* (BSL)