

## Paper 1: Evaluating Environmental Actions

In 2008, UCSD adopted a detailed Climate Action Plan aimed at reducing greenhouse gas emissions from the campus. The plan's goals include reducing emissions to 2000 levels by 2013, to 1990 levels by 2020, with an ultimate goal of becoming climate neutral by 2025. In the current budget situation, energy-efficient projects do not always get top priority. Among the proposed actions are a broad range of measures (see pp. 3-10 to 3-11):

- “*Implement various energy efficiency projects and retrofits to buildings.* Numerous energy efficiency retrofits are already planned and funded, and will be implemented from 2009 until 2012. These projects include diverse actions, such as updating heating, ventilation, and air conditioning equipment in buildings, to lighting retrofits, to building commissioning. Other projects include replacement of pre-2001 refrigerators with Energy Star models, replacement of lab freezers with more efficient models, and installation of occupancy sensors and sensors on vending machines. In total, \$174.2 million worth of projects have been identified that will save a total of over 127 million kwh per year, and over 1.9 million therms of natural gas each year.” p. 3-10
- “*Install renewable energy.* UC San Diego has already installed 1 MW of solar panels on various rooftops on campus, including placing solar panels in the form of shading trees on two parking structures. An additional 1 MW is planned for installation in 2009. UC San Diego will also be installing one 2.8 MW fuel cell powered by renewable waste methane from the local wastewater treatment facility. Other renewable energy options are under consideration, such as purchasing off-peak power from local wind turbines, and a UC system-wide solar array or wind farm, which would be constructed using resources from all the UC campuses. Another option is using recovered methane from the local landfill to fuel the campus cogeneration plant. Unfortunately, initial assessment has revealed that this option may not be cost-effective at this time. Finally, another technology under consideration is using cold seawater from an offshore deep sea trench to provide cooling for campus buildings. This project is under study, and has the potential to save up to 4MW of energy and \$4 million/year, plus it could reduce cooling tower freshwater usage by 100 million gallons/year.” p. 3-10 to 3-11.

Suppose that you have a \$5 million budget to invest in helping UCSD achieve its Climate Action Plan goals. What measure might you target as a top priority? Choose *one* aspect of these options to explore in greater detail (or you may consult the Climate Action Plan to consider other options). For example, if you wanted to consider efficiency, you could focus strictly on replacement of older refrigerators. Please focus on a single issue, and do not try to compare multiple options. In a well researched paper, using careful citations, explain the financial and environmental costs and benefits of the environmental strategy that you have chosen, evaluate how many people it will serve, and consider the extent to which the action will make the campus more environmental. How much can you achieve with a \$5 million investment? Evaluate whether and how you think the environmental action should be implemented.

### Guidelines for the Paper:

Your paper should be 750-1000 words (3-4 double-spaced pages). A one-grade penalty will be assessed for papers that are not within the word-count guidelines. Your bibliography will not be considered as part of your word count.

We are looking for evidence-based approaches to environmental problems. This means that you should take a close look at published information (such as peer-reviewed scientific papers and government documents), before deciding on a position. You should be able to back up your position with a preponderance of evidence—you can't just cherry-pick the facts to suit a personal preference.

Your paper should take the following form:

- Introduction
  - A brief description of the element of the Climate Action Plan that you are studying.
  - A clear (one-sentence) statement of your position.
- Background
  - Necessary background information.
  - Unbiased discussion of any controversies, including motivations behind opposing views.
- Analysis
  - Evidence-based evaluation of environmental action.
- Conclusion
  - Restatement of your thesis.
  - Synthesis of your arguments.

You should use at least four reputable, independent references, and they should be included in a bibliography and cited within the text. We will allow any standard method of scholarly citation. If you are unsure what to do, then use the Chicago/Turabian Documentation method, which is nicely discussed in a web site produced by the University of Wisconsin writing center. See the web page for this paper for links.

### **Schedule and Due Dates:**

- March 30: Assign paper and provide schedule.
- April 4/5: Preliminary paper plan due in discussion section. This should include (a) Topic sentence, (b) brief summary of issues associated with chosen environmental strategy, (c) 2 sources. (175 words maximum for the topic sentence and statement of position. During discussion section we will provide guidance on researching the paper and making sure that what you turn in matches our expectations. Feedback on your preliminary paper plans will be returned to you in discussion section April 11/12, but continue to work on your papers. If you are unsure about your approach, contact your TA for comment.
- April 20: Paper due to Turnitin.com by 9:30 am. Please bring a hard copy to class. (In this case we do want hard copies, since it is difficult for us to provide thoughtful grading on electronic documents.) No late papers will be accepted. If you have extenuating circumstances that would justify an extension, please negotiate this with your TA in advance of the deadline.