

## National Socio-Environmental Synthesis Center Case Study

### Green Civil War in the California Desert: The Ocotillo Express Wind Energy project

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**Summary:** In this assignment students develop an understanding of real world challenges and controversies over siting renewable energy projects. The case is about a controversial wind farm in California's Colorado Desert that would deliver electricity to metropolitan San Diego. Some stakeholders involved in the process see this as an ideal site to decarbonize electricity. Others have come to understand the wind energy farm as a severe ecological impact on a site rich in biodiversity and wildlife. Students will recreate this wind farm controversy to understand the natural resources at stake and multiple stakeholder perspectives. In addition to the in-class activities and assignments, students write about proposed solutions to the challenges associated with siting renewable energy projects.

**What course(s) might this case be appropriate for?** This assignment is intended for an Environmental Studies course called Sustainable Energy Strategies. It would be appropriate for any courses dealing with environmental controversies, energy policy, or environmental issues arising from energy systems. Course titles that would find this assignment or a modified version useful might include (1) Energy & the Environment, (2) Energy Policy, (3) Environmental Impact Assessment, (4) Environmental Sociology, (5) Environmental Law. Other degrees that might find this assignment useful include Geography, Sociology, Anthropology, Energy Studies, and Sustainability Science & Engineering.

**What level is this case appropriate for?** This case is appropriate for upper-division undergraduates, but can be modified to accommodate introductory Environmental Studies students.

**Socio-Environmental Synthesis Learning Goals** – (1) Understand the structure and behavior of socio-environmental systems through an understanding of relevant attributes of renewable energy. (2) Consider the importance of scale and context in addressing socio-environmental problems by understanding the multiple actors, levels of government, and contentious environmental issues. (3) Understand the value of different knowledge sources and ways of knowing by evaluating and critiquing stakeholder perspectives and the credibility of other information from the case study. (4) Find, analyze, and synthesize existing data, ideas (e.g. frameworks or models), or methods by a deep exploration of the social gap in renewable energy by analyzing public comments on the controversial project.

#### Learning Objectives

- Advance energy literacy by improving student understanding where energy comes from.
- Develop skills to communicate about energy issues in meaningful ways.
- Describe and evaluate stakeholder views offer critiques are various positions in an environmental debate.
- Improve understandings of socio-environmental consequences of wind power.
- Assess the credibility of information about wind farms and their impact on socio-environmental systems at and across multiple temporal and spatial scales.
- Draw concept maps to understand the interaction between the different actors and ideas presented in this case study.
- Learn about the public comment process during the environmental impact statements required under the National Environmental Protection Act/California Environmental Quality Act.
- Read and analyze public comments as existing data to understand how stakeholders value and construct place and how subjectivity informs public acceptance of wind projects.
- Reflect on opportunities to improve public participation.
- Evaluate mitigation options to lessen the impact of the wind farm on wildlife and biodiversity.

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**Introduction** - This case study demonstrates a tension between environmental groups that want action on climate change and environmental groups interested in desert biodiversity conservation. The Ocotillo Express Wind Project is a 244-turbine wind farm on public lands in the Imperial Valley in Southern California's Colorado Desert. More broadly, the students explore a problem faced by renewable energy projects called the social gap in renewable energy. Polls show that most people support renewable energy, but only a small portion of renewable energy projects are built because of the local conflicts they engender. Students will engage in concept mapping, synthesize literature on socio-environmental challenges with wind farms, describe the core controversies in the case, and evaluate public comments on the project based on in-class stakeholder role-playing activities.

**Classroom Management** – The handouts describe the preparation and class activities. Students prepare by reading background materials and preparing a concept map of the wind controversy. The classroom meeting #1 is used to lecture on wind and discuss with students the research articles they read. Preparation for classroom meeting #2 requires reading background material on a pre-assigned stakeholder. A short summary of each stakeholder's views will be prepared by each student. During classroom meeting #2 students will discuss these stakeholder views in small groups. The entire class will reconvene to conduct a mock public meeting with opening remarks from the BLM and project developer. Preparation for each of the two classes is 2-3 hours per class and each class period is about 1 hour, 15 minutes. The final written work product requires another one to two hours.

### **PREPARATION for class meeting #1 (2 to 3 hours of homework)**

Students prepare for class by reading the following articles that describe the socio-environmental impacts of wind power and some of the explanations for social acceptance or resistance toward wind power. Students are asked to note the following: (a) negative and positive impacts from wind power, (b) explanations for the "social gap" in wind energy, (c) whether NIMBY is a good explanation for social acceptance of renewable energy.

MacKay, D. 2009. Sustainable Energy without the hot air. Cambridge University Press. Read: Wind p 32–34; Wind II 263–267. <http://www.withouthotair.com/>

Tabassum-Abbasi, Premalatha, M., Abbasi, T., Abbasi, S., 2014. Wind energy: Increasing deployment, rising environmental concerns. *Renewable and Sustainable Energy Reviews* 31, 270-288. <http://dx.doi.org/10.1016/j.rser.2013.11.019>

Bell, D., Gray, T., Haggett, C., 2005. The "social gap" in wind farm siting decisions: explanations and policy responses. *Environmental Politics* 14 (4), 460–477. <http://dx.doi.org/10.1080/09644010500175833>

Van der Horst, D., 2007. NIMBY or not? Exploring the relevance of location and the politics of voiced opinions in renewable energy siting controversies. *Energy Policy* 35 (5), 2705–2714. <http://dx.doi.org/10.1016/j.enpol.2006.12.012>

### **CLASS MEETING 1: Lecture and discussion (1 hour, 15 minutes)**

A 45-minute lecture introduces students to fundamental concepts for understanding issues related to wind power. Lecture content can be developed from a number of energy-themed textbooks including Mackay (2009) *Sustainable Energy Without the Hot Air* and Wolfson (2012) *Energy, Environment, & Climate*. Lecture topics included in this lecture include: sources of the energy in wind power, power potential from wind, Betz' law, current extent of global wind power installations, geographies of wind,

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technical challenges for more widespread wind power integration, and socio-environmental dimensions of siting wind power.

30 minutes of course time focuses the discussion on the course readings, which focus on the latter two topics in the list above.

### **PREPARATION for class meeting 2 (2 hours homework)**

In preparation for the class meeting 2 students are asked to read background information, draw concept maps, and prepare a 200-300 word introduction to the project or public comments depending on their stakeholder. Detailed instructions for students and the list of stakeholders are in the handout.

### **CLASS MEETING 2: In-class group activity (1 hour, 15 minutes)**

**Background** - Course instructors can very quickly familiarize themselves with the key concepts raised in the controversy by reviewing the assigned readings. The premise for this study is the exploration of the paradox. The Tabassum-Abbasi et al. paper details the environmental impacts of wind power, while the Bell et al. and Vander Horst papers offer explanations for the social gap in renewable energy.

**Suggested Modifications** – There are numerous other cases around the globe where similar materials can be developed. This case study focuses on a wind power plant in California, but case study materials could be developed for many other areas. Students might benefit most by having a more proximate project to study if they are not in California.

### **References –**

Bell, D., Gray, T., Haggett, C., 2005. The "social gap" in wind farm siting decisions: explanations and policy responses. *Environmental Politics* 14 (4), 460-477.

MacKay, D. 2009. *Sustainable Energy without the hot air*. Cambridge University Press. Read: Wind p 32–34; Wind II 263–267. <http://www.withouthotair.com/>

Premalatha, M., Abbasi, T., Abbasi, S., 2014. Wind energy: Increasing deployment, rising environmental concerns. *Renewable and Sustainable Energy Reviews* 31, 270-288.

Van der Horst, D., 2007. NIMBY or not? Exploring the relevance of location and the politics of voiced opinions in renewable energy siting controversies. *Energy Policy* 35 (5), 2705-2714.

**Assessment** – One of the key goals is to assess whether students gain a deeper appreciation for the challenges with siting renewable energy. To assess student learning, it may be helpful to understand the baseline information they come to class with. Ask them what the socio-environmental challenges with siting wind and to offer explanations for negative view on wind farms. These survey questions can be compared to their reflective essay.

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