



## **State & Community Energy Research Project:**

### **Reference e<sup>2</sup> energy episodes “Harvesting the Wind” and “State of Resolve”.**

1) Read the background essay and discussion questions for e<sup>2</sup> energy episodes “Harvesting the Wind” and “State of Resolve”. Watch the episodes and discuss the post-viewing questions.

2) Do you think the community wind model used in Minnesota could work in other states? How about in your state? What about other forms of renewable energy? Do you know if there is a policy in your state regarding greenhouse gas emissions like California?

3) Research the issues and availability of energy resources (both renewable and non-renewable) in your state or community. Investigate if there are policies in place.

- What types of energy are available?
- What types are being used? Why?
- What types are not being used? Why?

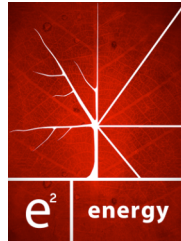
4) Create a proposal for the way energy resources could be used in your state. Do one or both of the following:

4a) Write a persuasive essay or a letter to a local government official advocating your position on a positive energy choice. For example, consider if the federal government should or should not institute similar policies nationwide to those passed in California in 2006. Be specific, include the research you’ve done (e.g. newspapers, magazines, journals) and explain why you think it will be beneficial to your community.

4b) Create a presentation based on the research you’ve done and invite a local government official to come to the school to hear the presentation.

Some questions to consider when writing your essay/letter or creating a presentation:

- Could the policies such as those in California be applied to your state as is? Why or why not?
- How could they be revised or broadened to include all states? Is this necessary?
- Could local wind farms be an option in the communities in your state? Why or why not?



5) Share your work with your community and peers. Submit your work to the school newspaper, local paper, and blogs. If you decide to create a presentation, invite additional peers and teachers. Videotape your presentation and post it on [www.teachertube.com](http://www.teachertube.com) and/or [www.schooltube.com](http://www.schooltube.com)!

Online Resources/Links:

Windustry's Wind Farmers Network – <http://www.windustry.org/community>

National Renewable Energy Laboratory - [http://www.nrel.gov/learning/re\\_wind.html](http://www.nrel.gov/learning/re_wind.html)

Dan Juhl and Woodstock Wind Farm – <http://www.danmar.us/windfarm.html>



## **e<sup>2</sup> energy “Harvesting the Wind”**

### Background Essay

Wind is the fastest growing renewable energy resource in the world. Denmark, which gets 20% of its electricity from wind, is leading the world right now, but Germany may soon surpass Denmark in that regard. So where does the United States stand when it comes to wind energy? Right now the United States gets less than half of 1% of its energy from wind, but at the same time there is enough wind in the United States to provide 1½ times the energy demand of the country. Shouldn't more communities be utilizing this clean, renewable energy resource?

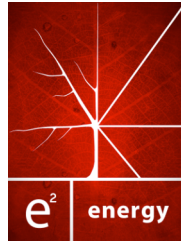
In the Southwest corner of Minnesota, the Buffalo Ridge region, there is a productive and progressive wind industry that is not only providing clean energy, but also economic development and prosperity to the local community. Often times communities are resistant to the implementation of wind farms on their local land because of the aesthetic effects on the natural environment. In Minnesota this hasn't been the case, because it's the community itself that is building and benefiting from the wind farms. In many cases, an outsider will enter a community with his/her own contractors, build a wind farm and leave taking most of the financial benefits with him/her. How can this model be changed to ensure that the local community not only supports the building of wind farms but also reaps most of the benefits?

Dan Juhl, President of the Woodstock Wind Farm, will describe the process by which he leased land to create a wind farm in the Buffalo Ridge region of Minnesota. When the landowners noticed the profits that he was gaining with his wind turbines, they enlisted his help and expertise to build their own. They installed two wind turbines and became the first farmer-owned commercial wind farm in the state. They certainly weren't the last. Now other farmers have joined forces to bear the financial burden of installation together and within a year recovered their initial investment. The community wind industry has grown so much in Minnesota in the last ten years that Suzlon – India's #1 blade manufacturer – has opened its first U.S. blade manufacturing facility in Pipestone, Minnesota in the heart of Buffalo Ridge. The facility employs over 300 people right now, a number that will surely continue to grow as the current demand for blades in Minnesota is greater than Suzlon can produce.

For more information about community wind, visit [www.windustry.org/community](http://www.windustry.org/community)

For more information about Dan Juhl and Woodstock Wind Farm, visit [www.danmar.us/windfarm.html](http://www.danmar.us/windfarm.html)

For more information about Suzlon, visit [www.suzlon.com](http://www.suzlon.com)



## e<sup>2</sup> energy “Harvesting the Wind”

### PRE-VIEWING QUESTIONS

1. What were some of the economic effects on rural areas after the Industrial Revolution?
  2. What are the benefits of building a business (such as a wind farm) locally versus from outside the community?
  3. What percentage of the power in the United States do you think comes from wind energy?
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### POST-VIEWING QUESTIONS

1. What is a community wind farm? How is it different than any other wind farm?
2. Dan Juhl says that community wind is a “trifecta,” what are the three reasons that he thinks this is true? Do you agree? Why or why not?
3. In what ways has the blade manufacturing facility benefited the community of Pipestone?
4. If we used all of the wind energy available what percentage of our energy needs could it power?



## **e<sup>2</sup> energy “State of Resolve”**

### Background Essay

California has been at the forefront of national and global environmental policy for years, through Democratic and Republican administrations and during boom and bust economies. Whether it's because they are outdoorsy people, born-activists, or the first U.S. victims of a smog problem, the fact remains that Californians are innovators and have consistently led the country in environmental matters. As early as 1947, well before the federal government's Clean Air Act of 1963, California Governor Earl Warren signed into law the Air Pollution Control Act, calling for the establishment of an Air Pollution Control District in every county of the state to protect local citizens from the harmful effects of air pollution.

Given this history of environmental leadership, the policies passed in California in 2006 should come as no surprise, but their range, practicality and aggressiveness are remarkable even for this progressive state. This episode will examine the two landmark bills passed in 2006 that are designed to regulate the state's greenhouse gas emissions: Assembly Bill 32, California's Global Warming Solutions Act and Senate Bill 1368, a companion bill to Assembly Bill 32, as well as revisit some of the legislation that led to them.

The essence of these two bills is that California has mandated a 25% reduction of greenhouse gas emissions by 2020 and the state will also not import energy that fails to meet these same emissions standards. The first bill (AB 32) is vast in its reach and authorizes the California Air Resources Board to begin the process of measuring the amount of CO<sub>2</sub> and other greenhouse gases coming from emitters (power plants, industries, even vehicles) and to ultimately enforce limits with financial penalties. The law also authorizes market-based emissions trading, where and when it is appropriate, to achieve the maximum gains at the lowest cost. Essentially the “cap and trade” emissions trading model allows the emitters with the lowest emissions to hold that reduction as credit and sell it to an emitter that is still above the limit, making it more profitable to reduce emissions even beyond the mandated limits.

Governor Schwarzenegger released the following statement regarding the deal struck between the Administration and the legislature on AB 32: “We can now move forward with developing a market-based system that makes California a world leader in the effort to reduce carbon emissions. The success of our system will be an example for other states and nations to follow as the fight against climate change continues. AB 32 strengthens our economy, cleans our environment and once again, establishes California as the leader in environmental protection.”



Now the question on environmental activists' minds is, "will the federal government follow California's lead?"

To find out more about the Federal Clean Air Act visit [www.epa.gov/air/caa/](http://www.epa.gov/air/caa/)

To find out more about the CA Air Resources Board visit [www.arb.ca.gov](http://www.arb.ca.gov)



## **e<sup>2</sup> energy “State of Resolve”**

### **PRE-VIEWING QUESTIONS**

1. What is a government subsidy? Can you give some examples of government subsidies? How do these subsidies affect the industry involved?
  2. Why are there state policies and federal policies? Do they always have the same goals? Why or why not?
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### **POST-VIEWING QUESTIONS**

1. What is the timeline for the implementation of AB 32, California's Global Warming Solutions Act to achieve the goal of a 25% reduction in greenhouse gas emissions by 2020?
2. What important requirement does the companion bill, SB 1368, mandate for the energy that California imports from out of state? In what ways will this mandate encourage innovation?
3. What reasons do federal authorities cite for choosing not to implement these policies nationwide? Do you agree with these reasons? Why or why not?