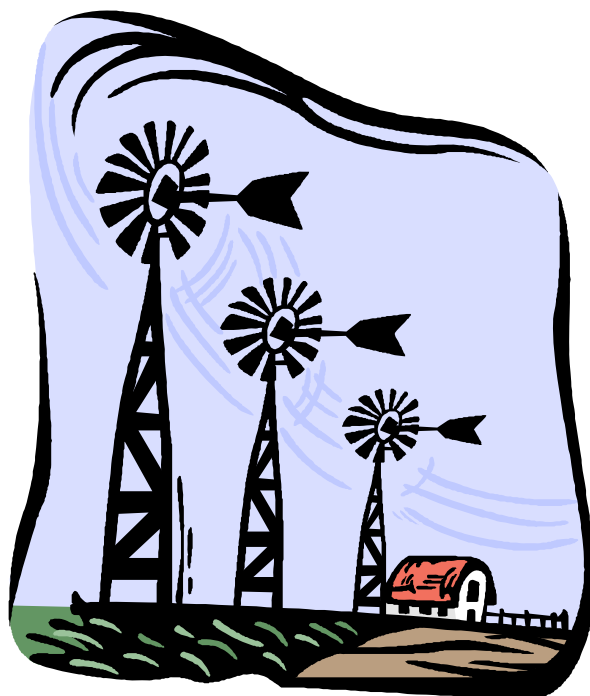


Topic 1

Wind Energy History



Topic 1: Wind Energy History

Introduction

Wind has been blowing across the lands since the beginning of time. Globally, winds influence weather patterns, shape landforms, and help create electricity for the growing world population. It is believed that as far back as 3100 B.C., Egyptians were using the wind to propel their boats up the Nile River. They used small water craft that contained sails made of linen or papyrus. In 200 B.C., China was using basic windmills to pump water. At the same time, people in Persia and the Middle East were using a vertical windmill to grind grain.

Later, in the 11th century, people in the Middle East were using windmills for food production. This idea of using the wind for food production was taken with travelers to Europe. In the Netherlands, the Dutch used windmills that had been improved upon and drained lakes and marshes with them. When windmills came to North America, they were used for pumping water for farm and ranch operations. Eventually, they were used for electricity production.



In the United States, the first windmill was erected in Jamestown in 1621. Many of the windmills in those days were used for operating sawmills. Windmills were first firmly established in the eastern United States. However, as the settlers moved west, so did windmill technology. Much of western Oklahoma would not have been settled without the use of windmills. The windmills were used for electricity and water pumping on the rural open plains.

During the Industrial Era, windmills were slowly phased out in Europe and in the United States. New, more efficient technology, such as the steam engine, was created and used. Rural electrification in the 1930s brought cheap electricity to the rural areas of the United States which also assisted the demise of windmills. While the original windmills were being phased out, new technology allowed for the creation of wind turbines—larger machines capable of producing more electricity. The larger machines could be found as early as 1890 in Denmark. The first utility scale turbine in the United States began operation in 1940 in Vermont. This turbine was cable of producing 1.25 megawatts of electricity. Today, 1.25 megawatts of power is equivalent to powering approximately 300 homes annually. As of April 2007, the United States has 11,699 megawatts of installed wind power. This is equivalent to producing enough energy for over 3.5 million homes.

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Teacher Discussion Questions

- 1.) How do the students think wind energy was used 10 years ago? 100 years ago? 1,000 years ago?
 - a. *Use examples from the introduction, such as the Egyptians and sailing or the Middle East and grinding grain.*
- 2.) Discuss with the students the different ways that technologies are shared between cultures and countries.
 - a. *Travelers took with them the ideas and technology of windmills. For example, colonists brought with them the technology and the tools of their homelands to the United States.*



- 3.) Why were windmills phased out during the Industrial Era in the 19th and 20th centuries?
 - a. *More efficient technology, such as the steam engine, replaced the mills. Coal was abundant and cheap, which allowed the steam engine to become the dominant source of power.*
- 4.) What is making wind turbines so popular today?
 - a. *Discuss that wind turbines of today are more efficient, cost competitive, and a partial solution to the energy and climate crisis.*