

Renewable Energy

Renewable energy is generated from natural resources such as sunlight, wind, water, biomass, and geothermal heat, all of which can be naturally replenished. In order to reduce environmental and economic impacts associated with the burning of fossil fuels, renewable energy can be used to power homes and businesses. Wind power and solar energy are the most popular forms of renewable energy that are being used to power sports facilities.

Wind Power

Wind power is the fastest growing energy source in the world. It has the potential to supply at least 20 percent of U.S. electricity demand at an economical price. The wind in North Dakota alone could produce a third of America's electricity. In 1990, in California, wind power offset emissions of more than 2.5 billion pounds of carbon dioxide, and 15 million pounds of other pollutants that would have been produced. The wind turbines that are in operation today generate the same amount of energy as burning 9 million tons of coal, or 28 million barrels of oil each year.

Wind systems can be both small and large. Small wind systems power homes, farms, or small businesses and allow users to generate their own clean, safe, and reliable energy for on-site use. Benefits of small wind systems include energy independence, relief from high and volatile prices of other forms of electricity, reliable electricity, reduced pressure on the local electric grid, reduced peak power demands, and reduced pollutants from traditional forms of energy.

The biggest obstacles for small wind systems are cost, zoning codes and permitting, and education. Many towns have not yet included small wind systems into zoning codes to allow for their use. This is mostly due to a lack of familiarity with the technology. By making the permitting process affordable and streamlined, installation may become more popular, which will benefit consumers and the environment. Ways to make wind systems more attractive are to implement state incentive programs that include rebates, buy-down programs, grants, tax incentives and exemptions, and net metering policies. There are a lot of states that already offer incentives associated with wind systems, including California, Vermont and Montana.

<http://www.solarenergy.org/resources/energyfacts.html>

<http://www.awea.org/smallwind/pdf/InThePublicInterest.pdf>

An example of a successful small wind system can be seen at an elementary school in Spirit Lake, Iowa. An installed turbine provides more electricity than is necessary to the school. Excess electricity is fed into the local utility system and has allowed the school to earn \$25,000 in its first five years of operation. If the wind is not particularly strong on a given day, the school can still use electricity from the utility company.

Some of the sports facilities implementing wind power include Lincoln Financial Field and the NovaCare Complex, Gillette Stadium, and University of Colorado's Folsom Stadium. Lincoln

Financial Field and the NovaCare Complex training facility purchase wind energy and run on 100 percent clean energy all year. Employees also receive reimbursement if they switch to wind energy. This participation results in the elimination of 283 tons of greenhouse gases per year. Gillette Stadium has a four-year deal to buy renewable energy credits from distant windmills to match game day electricity needs. Folsom Stadium at University of Colorado is currently working to install six wind turbines on the stadium to generate clean, renewable energy.

<http://www.greenpowergovs.org/wind/Spirit%20Lake%20case%20study.html>

http://www.boston.com/business/articles/2007/11/12/patriots_set_to_put_green_power_into_play/

http://ecenter.colorado.edu/greening_cu

<http://www.philadelphiaeagles.com/gogreen/news.asp>

For more information on wind power, please visit the following websites:

American Wind Energy Association: <http://www.awea.org/>

If Not Wind....Then What?: <http://www.ifnotwind.org/>

Windustry: <http://www.windustry.org/>

Solar Energy

Solar energy uses the sun's rays to generate heat or electricity. Photovoltaic cells are used to capture the sun's light energy and then convert it into an electrical current that can be used immediately or stored for later use. These panels can be mounted in a variety of sizes and applications and have been used on the roof or awning of a building. This offsets electricity costs and decreases dependence on the electric grid. Photovoltaic cells typically last at least 25 to 30 years.

The solar market is larger than the wind market due to unequal policy treatment at state and federal levels. Photovoltaic cells are more widely accepted and used due to manufacturing volume, which has reduced costs. Federal and state incentive programs have driven increased manufacturing and popularity. However, solar energy still encounters market barriers. These include a shortage of information about solar technology and little consumer awareness, insufficient product standards, inconsistent net metering, inadequate codes and complex and expensive permitting processes, inconsistent and insufficient state and local financial incentives, and lack of flexible financing mechanisms.

<http://www.findsolar.com/Content/PhotovoltaicElectrical.aspx>

<http://www.solarenergy.com/solarfacts.php>

http://www1.eere.energy.gov/solar/market_transformation_program.html

Teams that have successfully installed and use solar panels to generate power include the Boston Red Sox, Philadelphia Phillies and Eagles, Cleveland Indians, San Francisco Giants, and Colorado Rockies.

The 2008 Beijing Olympics National Indoor Stadium used a total of 1124 solar panels to provide enough power to meet the lighting demands of the stadium. These panels are expected to last 25 years and generate the energy equivalent to the release of 2,352 tons of carbon dioxide.

Some other initiatives to promote renewable energy used specifically by the Philadelphia Phillies are "Red Goes Green Cards" for Phillies employees. All full-time Phillies employees, including players and coaches, will receive a one-year credit to secure clean, renewable energy for their home consumption. To further promote renewable energy, these cards will also be given to 100 fans.

http://mlb.mlb.com/news/article.jsp?ymd=20080421&content_id=2567055&vkey=news_mlb&fext=.jsp&c_id=mlb

http://philadelphia.phillies.mlb.com/news/press_releases/press_release.jsp?ymd=20080430&content_id=2614303&vkey=pr_phi&fext=.jsp&c_id=phi

http://cleveland.indians.mlb.com/news/press_releases/press_release.jsp?ymd=20080311&content_id=2418650&vkey=pr_cle&fext=.jsp&c_id=cle

<http://www.philadelphiaeagles.com/gogreen/news.asp>

<http://www.renewableenergyworld.com/rea/news/story?id=47929>

<http://www.unpluggedliving.com/2008-beijing-olympics-national-stadium-contains-1124-solar-panels/>

http://philadelphia.phillies.mlb.com/news/press_releases/press_release.jsp?ymd=20080430&content_id=2614303&vkey=pr_phi&fext=.jsp&c_id=phi

For more information on renewable energy, please visit the following websites:

Database of State Incentives for Renewables and Efficiency:

<http://www.dsireusa.org/>

United States Department of Energy: Energy Efficiency and Renewable Energy:

<http://www.eere.energy.gov/>