

Environmental Benefits of Wind Power

We use more electricity than ever before. As electricity use grows, so does the need for more power plants. Today, most electricity is generated by burning fossil fuels. Tomorrow, resources may include more renewable energy, especially wind. More renewable generation will improve the environment.

Reduced carbon dioxide (CO₂) emissions

Some scientists believe that global warming is caused by the “greenhouse effect.” Greenhouse gases, like CO₂, are produced naturally in our environment through volcanic activity and organic-matter decomposition. CO₂ is also produced when fossil fuels like coal and natural gas are burned to generate electricity.

Using wind to generate electricity reduces CO₂ emissions. The MGE wind farm prevents the annual production of 18,880 tons of CO₂.

Trees and plants naturally absorb CO₂. It would take a 3,776-acre forest to remove as much CO₂ as our wind farm prevents.

Reduced sulfur dioxide (SO₂) emissions

SO₂ is a byproduct of burning fossil fuels. In the atmosphere it can react with other chemicals to form acidic compounds. Scientists believe that “acid rain” threatens our lakes and forests by raising the level of acidity.

Using wind-generated electricity reduces SO₂ emissions. Our wind farm cuts these emissions by 119 tons each year.

Reduced use of nonrenewable energy

Wind energy does not deplete natural resources. Wind is renewed every day as the earth heats and cools.

We save about one pound of coal for every kilowatt-hour generated by wind. The MGE wind farm saves about 13,110 tons of coal each year. This represents roughly 131 railroad cars annually—a train 1.22 miles long.

Purchasing one block of wind power each month for a year eliminates burning about 2,052 pounds of coal.

The energy needed to build wind turbines is quickly recovered

The energy generated by wind turbines balances with the energy used to make them in a matter of months. Much of the energy used to manufacture turbines is contained in the rotor and nacelle. One-third of the total energy is consumed in making the concrete foundation and tower.

Wind power uses less land

About 5% of a wind farm site contains the turbines, equipment and access roads. Existing land uses, such as farming and grazing, can continue unaffected.

The MGE wind farm is located on 603 acres of agricultural land. Thirty acres are leased for access roads and the turbines, their foundations and their transformers. A total of 74 acres are unavailable for farming or grazing.

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your community energy company



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Conventional electricity generation requires larger “footprints” to obtain the fuel (mining, pipelines, transportation) and to generate electricity (power plants).

Wind power environmental benefits compared to automobile use

Walking, biking, car pooling or using mass transit rather than driving saves 20 pounds of CO₂ for every gallon of gasoline saved. One block of wind power, about 25% of an average customer's use can:

- cut CO₂ emissions by 249 pounds each month.
- offset the CO₂ output from burning 12 gallons of gasoline.
- annually offset the CO₂ produced by driving your car 2,930 miles.

Wind power environmental benefits compared to recycling

One block of wind power cuts CO₂ emissions by 2,988 pounds each year. Recycling all of an average household's newsprint, cardboard, glass and metal for a year cuts CO₂ emissions by 850 pounds each year. One block of wind power achieves 3.5 times the reduction achieved by recycling.

Purchasing one block of wind energy for a year avoids the same amount of CO₂ emissions each of the following:

- Recycling 4,500 glass jars
- Recycling 6,900 aluminum cans
- Recycling 1,150 pounds of steel

Wind power environmental benefits compared to energy efficiency

The following chart shows other energy conservation actions you can take and their estimated annual CO₂ savings.

Conservation Action	Pounds of CO₂ saved
Replace an old refrigerator with a high efficiency one.....	2,400
Replace an old car with an efficient new one (for every 10 mpg better gas mileage)	2,000
Insulate walls and ceiling.....	1,600
Purchase one block of wind power	1,344
Wrap a water heater in an insulating blanket.....	800
Turn down water heater thermostat 10 degrees	400
Turn down a furnace thermostat 2 degrees.....	400
Replace one frequently used bulb with a compact fluorescent.....	400
Install a low-flow shower head.....	240