

A smart solution: fuel from Midwest farms, not Mideast oil fields

The Midwest region of the United States has long been the source of agonizing weather events—floods, droughts, and crop failures; and of the eternal hope of the country, serving up grain and grit everyday. Global warming is already impacting the Midwest, bringing longer, more intense droughts in some areas while others get more precipitation than they can handle. But the Midwest offers hope for solving global warming through wind power, cellulosic ethanol and other home-grown solutions.

How the rain falls (or doesn't) on the Plains

Through the 20th century, the Midwest experienced its share of climate variability, from serious droughts to flooding rains. Global warming will further contribute to these climate patterns, with average temperatures in the region projected to **rise 5 to 10 degrees Fahrenheit** by the end of the century. Meanwhile, precipitation will likely increase 10 to 30 percent across the region, but it will arrive in more intense storms, like those leading to the **severe flooding** in August 2007. As any farmer can tell you, increased temperature and prolonged drought leads to substantial increases in evaporation, causing loss of soil moisture. When the intense rains finally do come, the soil cannot absorb all the water. Flash floods, along with massive soil and fertilizer runoff, occur, providing little salve for a parched farm. What does this mean for Midwesterners and those dependent on the region for food and transportation? Heat waves like the one in 1995 that led to over 700 deaths in Chicago are predicted to intensify and increase in frequency by **25 percent**. In southern Indiana and Illinois, corn yields are **likely to decline**, with 10 to 20 percent decreases projected in some locations. Droughts and floods will become more frequent, resulting in substantial yield reductions of 30 percent in bad years. National freight transportation

systems, for which the Midwest plays a critical role, have proved susceptible to extreme climate fluctuations. A large fraction of the country's bulk commodities flow through Chicago—the nation's rail hub—while the Mississippi River serves a similar function for the country's river-going barges. While many factors contribute to flooding, more extreme precipitation events can cause destructive floods like the [1993 Midwest flood](#) that affected millions of Americans. As flood waters poured over and through levees, inundating floodplains where key rail lines passed, surface transport was shut down for 6 weeks. River barge traffic suffered a similar fate leading to total costs from shipping and manufacturing delays upward of \$2 billion.

Midwest solutions

With so much at stake, it's heartening to know that the Heartland can be one of the world's major suppliers of solutions to our global warming problem. With plentiful vegetation in the form of crops, crop waste, and native grasses, the Midwest can be both the breadbasket and the fuel pump to the world by converting plant matter into low-emissions cellulosic ethanol. This same abundance of crops and other plant material can also be used to [generate electricity](#).

And the winds that make those crops and grasses sway can also drive wind turbines to power our nation with clean, renewable energy. The bucolic landscape of the Midwest is full of energy and can provide homegrown fuel for our economy for decades to come.

Power from plants

[Ethanol](#) —a fuel made by converting plants into liquid fuel—is showing great promise to both cut America's dependence on foreign oil and reduce harmful global warming pollution. Best known as a corn-derived fuel, new processes to extract ethanol from a variety of plant materials will enable the production of fuel that doesn't cut into our food supply. Cellulosic ethanol is one of these next-generation biofuels that holds the promise of reducing global warming pollution by [90 percent or more](#), as compared to regular gasoline. The Midwest has vast potential to create these new plant-based fuels. Much care is needed to ensure that land is managed sustainably so we don't create one problem—destroying our croplands—while solving others. Energy legislation now in discussion here in

Washington would increase the total renewable fuels in our nation's gas tanks to 36 billion gallons within the next two decades. That means the Midwest can be the driving force behind new homegrown renewable fuels, with the potential to reap huge economic and environmental benefits for America and the world.

Wind(turbine)-swept plains

The plants that grow in America's heartland are not the only clean energy resources in the region. The wind that blows across America's middle can drive advanced wind turbines and power vast amounts of the United States' power needs. Even though Chicago, the Midwest's largest city, is called the Windy City, the winds whipping around the city and across the vast plains of America have largely gone untapped. With the largest area of continuous available wind, the Midwest has the capacity to produce **635,790 MW** of clean, renewable energy from wind—the equivalent of about half of the total electrical capacity in the United States today. **Kansas, North Dakota, and South Dakota** all have the potential to contribute over 100,000 MW of wind energy.

*Original article with references available at
<http://globalwarming.house.gov/impactzones/midwest>*