

Charting a New Path for Iowa's Electricity Generation and Use



Iowa's energy future is at a crossroads

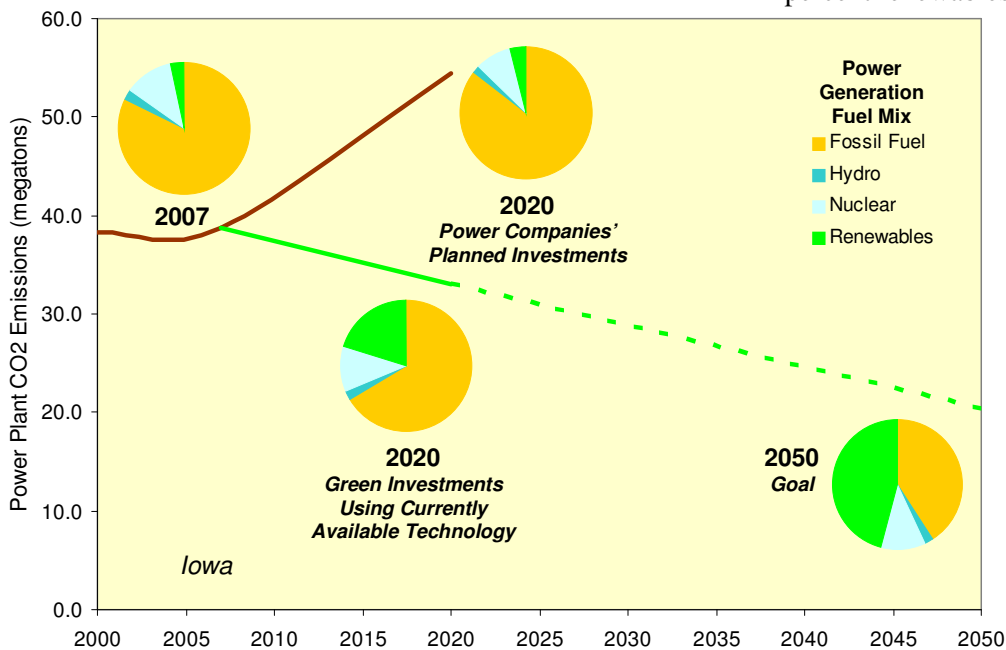
One path leads to increased dependency on fossil fuels—threatening our economy and fueling global warming. The other leads to a new, smarter energy future for Iowa. Investing in clean energy alternatives—like solar and wind power—can create and protect jobs in Iowa, save families and businesses money, and make America more energy independent. Clean energy is also the most effective solution to the threat of global warming. We can start making progress right away using proven technology, and then draw on American innovation to take us the rest of the way with new technologies.

How does Iowa generate electricity today?

In 2007, electric power generated in Iowa primarily came from coal (78.9 percent), and nuclear (12.0 percent). Most utilities intend to continue relying heavily on fossil fuels in the coming decade. Iowa power companies plan to increase the energy generation from coal by 43.6 percent. Only about 3.3 percent of electricity generated in Iowa is expected to come from renewable sources like wind, solar, geothermal, and biomass under current plans.

Iowa has a choice to invest in a cleaner energy future

Iowa can achieve a new energy future by making better investments as utilities replace increasingly aged infrastructure and expand capacity. An important first step is for Iowa to generate at least 0 percent of electricity from renewable sources by 2020, a goal readily achievable with today's technology. Continuing to convert 15 percent of the state's energy portfolio to renewable energy sources each decade could yield an energy profile of at least 65 percent renewables by 2050.



Iowa can also benefit from improved energy efficiency. Technologies are available that could reduce demand nationally by 20 to 30 percent over the next decade. Innovations in energy efficiency should allow us to keep demand constant after 2020, even as the population grows.

Today, Iowa is ranked 12th in the nation for energy efficiency, largely because the state's utilities are already spending \$29 million annually to improve energy efficiency.

About the chart: 2000, 2007 and 2020 Power Companies' Planned Investments from CARMA 1.0 (www.CARMA.org). The 2020 Green Investments projection assumes that, using currently available technology, Iowa makes (1) improvements in efficiency to reduce overall demand by 25 percent and (2) shifts away from fossil fuels so that 0 percent of power generation is from renewable energy sources. The 2050 Goal assumes (1) hydro and nuclear are unchanged, (2) continued efficiency improvements keep total demand flat, and (3) renewable energy replaces at least 65 percent of power generation formerly done through fossil fuel burning. Note that the projection of future CO₂ emissions from fossil fuels assumes no investment in carbon capture and storage.

Making a Difference in Iowa

Iowa is the third largest producer of wind power in the U.S. and produces more wind energy per capita than any other state. The state currently produces 1,294 megawatts through existing wind farms, with another 549 MW in the works. Today, more than 8 percent of Iowa's electricity comes from renewable resources.

Iowa's commitment to renewable energy has attracted a number of wind-related manufacturing plants. Clipper Windpower, a company engaged in wind energy technology, wind turbine manufacturing and wind project development, chose Cedar Rapids for its 330,000 square foot manufacturing and assembly facility, where it employs approximately 150 people. In 2007, Siemens Power Generation opened a manufacturing plant in Fort Madison that will produce 600 wind turbine blades annually and employ up to 260 people. Hendricks Industries plans to build a manufacturing plant in the state as well, expecting to employ 400 people to build wind turbine towers.

Sources:

<http://www.awea.org/projects/projects.aspx?s=Iowa>

<http://www.clipperwind.com/aboutus.html>

<http://www.powergeneration.siemens.com/search?PageFrom=1&searchString=iowa>

<http://www.investindk.com/visNyhed.asp?artikelID=18378>



Making a dent in global warming pollution

Simply by shifting to renewable energy sources and improving energy efficiency over the next decade or so, Iowa can reduce its future carbon dioxide (CO₂) emissions from electricity generation by 39 percent compared to the business-as-usual path that utilities are following now.

Given that 45 percent of Iowa's CO₂ emissions come from electricity generation, diversifying and updating our power sources is critical for cutting the state's total global warming pollution.

Increasing Iowa's energy and economic security

Investing in renewable energy sources will reduce Iowa's dependence on fossil fuels and at the same time create new green collar jobs. A new energy future in Iowa could include:

Expanded solar power. Iowa has enough solar resources to produce 4,500 to 5,000 Whr per square meter using photovoltaic systems and 3,500 to 4,500 Whr per square meter using concentrating solar power systems. This means that devoting just 1 square mile in Iowa to

solar power can provide enough electricity for about 1,100 households each year.

Expanded wind power. Iowa is currently ranked 3rd for wind power, with 1,375 MW of existing electricity generation capacity and 1587 MW under construction. The American Wind Energy Association ranks Iowa 10th in terms of its future wind potential, with 62,900 MW of potential capacity.

Biomass power. Iowa has 32.8 million dry tons of biomass available each year that could be used to generate about 6,600 MW of electricity.

New Jobs. A nationwide investment in green infrastructure of \$100 billion over the next two years could yield 1,412 jobs in solar power and 1,204 jobs in wind power for Iowa. That's 2,207 more jobs than an equivalent investment in conventional power would create.

How does Iowa use electricity?

Iowa's energy is used to power:

- homes (31 percent),
- businesses (27 percent), and
- industry (42 percent).

Per capita residential electricity use is 4,489 kilowatt hours per year, near the national average.

References and Additional Reading:

American Council for an Energy-Efficiency Economy, www.aceee.org.

American Wind Energy Association, www.awea.org.

Bioenergy Feedstock Information Network, bioenergy.ornl.gov

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Database of State Incentives for Renewables and Efficiency, www.dsireusa.org.

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Energy Information Administration, State Energy Data System, www.eia.doe.gov/emeu/states/_seds_updates.html.

Environmental Protection Agency, Energy CO₂ emissions by state, www.epa.gov/climatechange/emissions/state_energyco2inv.html.

Geothermal Energy Association, www.geo-energy.org.

McKinsey Global Institute, 2007: *Wasted Energy: How the U.S. Can Reach its Energy Productivity Potential*.

Political Economy Research Institute, www.peri.umass.edu.

Renewable Energy Policy Project, www.repp.org.

For more information, visit www.nwf.org/globalwarming.