

# Charting a New Path for South Dakota's Electricity Generation and



## South Dakota'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 South Dakota. Investing in clean energy alternatives—like solar and wind power—can create and protect jobs in South Dakota, 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.

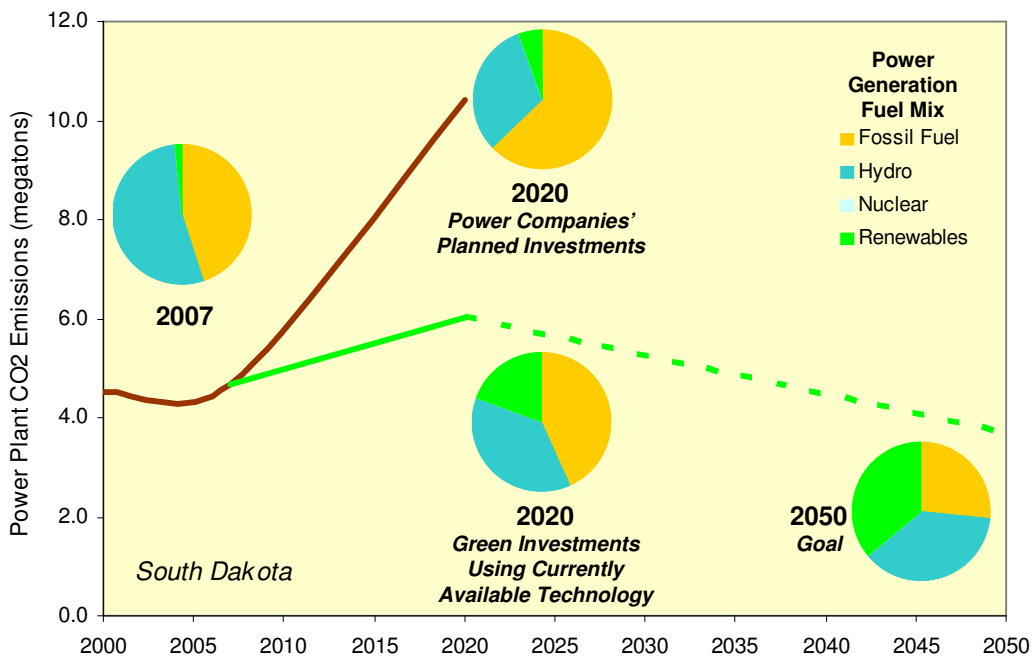
### How does South Dakota generate electricity today?

In 2007, electric power generated in South Dakota primarily came from coal (39.7 percent), gas (3.6 percent), and hydro (53.5 percent). Most utilities intend to continue relying heavily on fossil fuels in the coming decade. South Dakota power companies plan to increase the energy generation from coal by 151.4 percent. Only about 1.6 percent of electricity generated in South Dakota is expected to come from renewable sources like wind, solar, geothermal, and biomass under current plans.

### South Dakota has a choice to invest in a cleaner energy future

South Dakota 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 South Dakota to generate at least 20 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.

South Dakota 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.



**About the chart:** 2000, 2007 and 2020 Power Companies' Planned Investments from CARMA 1.0 ([www.CARMA.org](http://www.CARMA.org)). The 2020 Green Investments projection assumes that, using currently available technology, South Dakota makes (1) improvements in efficiency to reduce overall demand by 25 percent and (2) shifts away from fossil fuels so that 20 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 CO<sub>2</sub> emissions from fossil fuels assumes no investment in carbon capture and storage.

## Making a Difference in South Dakota

South Dakota has some of the best wind power potential in the country. The state ranks 4th for potential wind energy in the United States, but is currently ranked 17th in wind energy output. There are seven sites producing 98 megawatts of wind power today, with one more under construction that should produce 90 MWs and power 22,500 homes when completed. In order for South Dakota to harness more wind power and become a wind energy leader in the U.S., it needs to overcome a few technical obstacles. First and foremost, investments are needed for a more robust electricity transmission infrastructure capable of carrying large amounts of power.

### Sources:

<http://www.awea.org/projects/projects.aspx?s=South+Dakota>

[http://www.nationalwind.us/south\\_dakota\\_wind\\_facts](http://www.nationalwind.us/south_dakota_wind_facts)



## Making a dent in global warming pollution

Simply by shifting to renewable energy sources and improving energy efficiency over the next decade or so, South Dakota can reduce its future carbon dioxide (CO<sub>2</sub>) emissions from electricity generation by 42 percent compared to the business-as-usual path that utilities are following now.

Given that 28 percent of South Dakota's CO<sub>2</sub> emissions come from electricity generation, diversifying and updating our power sources is critical for cutting the state's total global warming pollution.

## Increasing South Dakota's energy and economic security

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

**Expanded solar power.** South Dakota has enough solar resources to produce 4,500 to 5,500 Whr per square meter using photovoltaic systems and 4,000 to 5,000 Whr

per square meter using concentrating solar power systems. This means that devoting just 1 square mile in South Dakota to solar power can provide enough electricity for about 1,200 households each year.

**Expanded wind power.** South Dakota is currently ranked 20th for wind power, with 98 MW of existing electricity generation capacity and 141 MW under construction. The American Wind Energy Association ranks South Dakota 4th in terms of its future wind potential, with 117,200 MW of potential capacity.

**Biomass power.** South Dakota has 16.0 million dry tons of biomass available each year that could be used to generate about 3,200 MW of electricity.

## How does South Dakota use electricity?

South Dakota's energy is used to power:

- homes (40 percent),
- businesses (40 percent), and
- industry (19 percent).

Per capita residential electricity use is 5,138 kilowatt hours per year, 14 percent greater than the national average.

### References and Additional Reading:

American Council for an Energy-Efficiency Economy, [www.aceee.org](http://www.aceee.org).

American Wind Energy Association, [www.awea.org](http://www.awea.org).

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CARMA (Carbon Monitoring for Action), [www.CARMA.org](http://www.CARMA.org).

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Energy Information Administration, State Energy Data System, [www.eia.doe.gov/emeu/states/\\_seds\\_updates.html](http://www.eia.doe.gov/emeu/states/_seds_updates.html).

Environmental Protection Agency, Energy CO<sub>2</sub> emissions by state, [www.epa.gov/climatechange/emissions/state\\_energyco2inv.html](http://www.epa.gov/climatechange/emissions/state_energyco2inv.html).

Geothermal Energy Association, [www.geo-energy.org](http://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](http://www.peri.umass.edu).

Renewable Energy Policy Project, [www.repp.org](http://www.repp.org).

*For more information, visit [www.nwf.org/globalwarming](http://www.nwf.org/globalwarming).*