

# Charting a New Path for Montana's Electricity Generation and Use



## Montana's energy future is at a crossroads

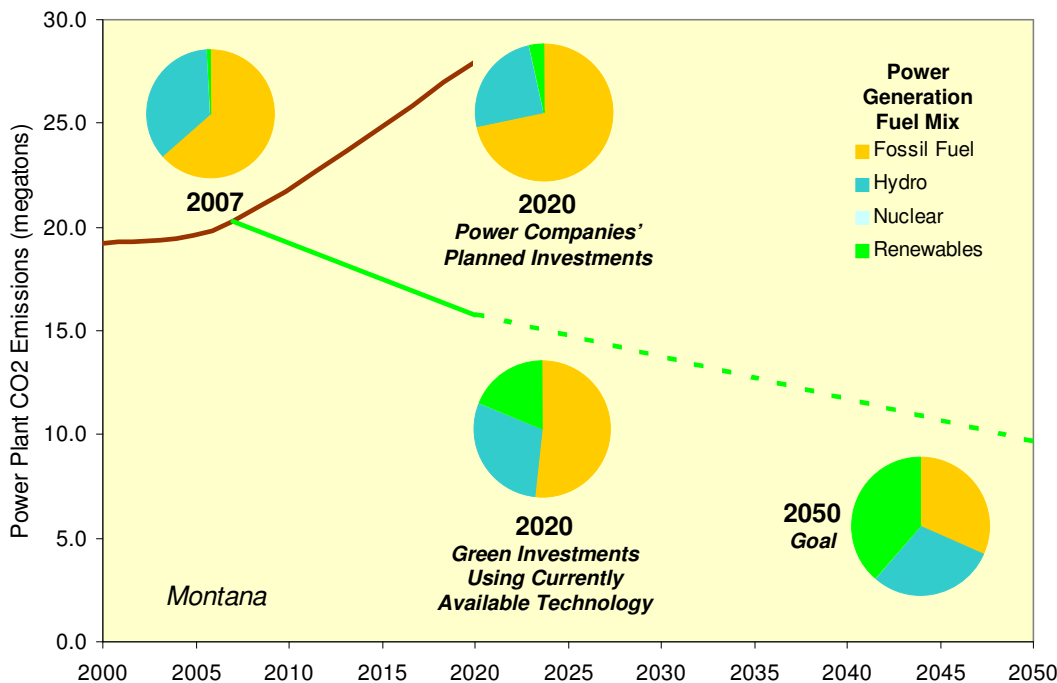
One path leads to increased dependency on fossil fuels—threatening our economy and fueling global warming. The other leads to a new, smarter energy future for Montana. Investing in clean energy alternatives—like solar and wind power—can create and protect jobs in Montana, save families and businesses 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 Montana generate electricity today?

In 2007, electric power generated in Montana primarily came from coal (61.1 percent), and hydro (35.7 percent). Most utilities intend to continue relying heavily on fossil fuels in the coming decade. Montana power companies plan to increase the energy generation from coal by 34.3 percent. Only about 0.8 percent of electricity generated in Montana is expected to come from renewable sources like wind, solar, geothermal, and biomass under current plans.

### Montana has a choice to invest in a cleaner energy future

Montana 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 Montana 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.



Montana 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, Montana is ranked 14th in the nation for energy efficiency, largely because the state's utilities are already spending \$8 million annually to improve energy efficiency.

**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, Montana 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 Montana

Montana is poised to become a major center for wind energy development within a few years. The state currently has a few small-scale wind sites with fewer than 15 wind turbines and one large-scale site with about 90 turbines. The largest site, the Judith Gap Wind Farm, was completed in 2006 and produces enough power for tens of thousands of homes. More is on the way, as Montana is ranked fifth for potential U.S. wind energy. To help solve the state's transmission capacity problems, new transmission lines that would allow larger wind farms to be built are under development. There are also close to 50 new wind projects in various planning stages.

### Sources:

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[http://www.treehugger.com/files/2008/03/montanas\\_new\\_fa.php](http://www.treehugger.com/files/2008/03/montanas_new_fa.php)



## Making a dent in global warming pollution

Simply by shifting to renewable energy sources and improving energy efficiency over the next decade or so, Montana can reduce its future carbon dioxide (CO<sub>2</sub>) emissions from electricity generation by 44 percent compared to the business-as-usual path that utilities are following now.

Given that 54 percent of Montana'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 Montana's energy and economic security

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

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

solar power can provide enough electricity for about 1,200 households each year.

**Expanded wind power.** Montana is currently ranked 17th for wind power, with 165 MW of existing electricity generation capacity. The American Wind Energy Association ranks Montana 5th in terms of its future wind potential, with 116,000 MW of potential capacity.

**Biomass power.** Montana has 6.8 million dry tons of biomass available each year that could be used to generate about 1,400 MW of electricity.

**New Jobs.** A nationwide investment in green infrastructure of \$100 billion over the next two years could yield 456 jobs in solar power and 433 jobs in wind power for Montana. That's 752 more jobs than an equivalent investment in conventional power would create.

### How does Montana use electricity?

Montana's energy is used to power:

- homes (32 percent),
- businesses (34 percent), and
- industry (34 percent).

Per capita residential electricity use is 4,641 kilowatt hours per year, near 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).

Bioenergy Feedstock Information Network, [bioenergy.ornl.gov](http://bioenergy.ornl.gov)

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

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Department of Energy, Energy Efficiency and Renewable Energy, [apps1.eere.energy.gov/states/alternatives/electricity.cfm](http://apps1.eere.energy.gov/states/alternatives/electricity.cfm).

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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).*