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

Nebraska'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 Nebraska. Investing in clean energy alternatives—like solar and wind power—can create and protect jobs in Nebraska, 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 Nebraska generate electricity today?

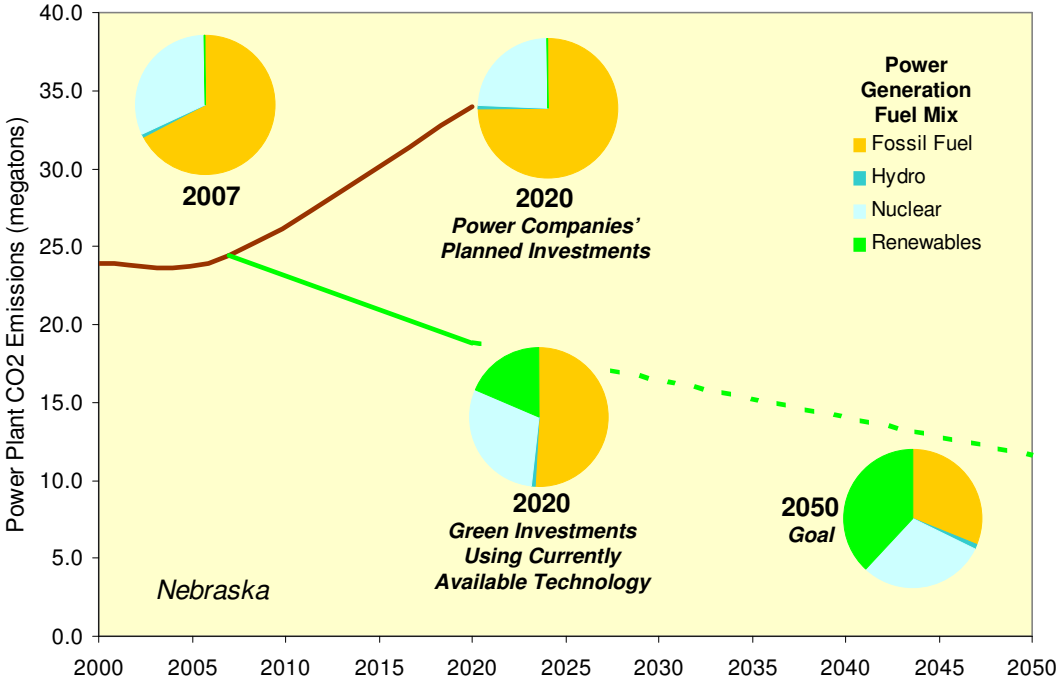
In 2007, electric power generated in Nebraska primarily came from coal (64.2 percent), and nuclear (31.5 percent). Most utilities intend to continue relying heavily on fossil fuels in the coming decade. Nebraska power companies plan to increase the energy generation from coal by 46.6 percent. Only about 0.3 percent of electricity generated in Nebraska is expected to come from renewable sources like wind, solar, geothermal, and biomass under current plans.

Nebraska has a choice to invest in a cleaner energy future

Nebraska 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 Nebraska 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.

Nebraska 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, Nebraska is ranked 24th in the nation for energy efficiency, largely because the state's utilities are already spending $4 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, Nebraska 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_2 emissions from fossil fuels assumes no investment in carbon capture and storage.

Making a Difference in Nebraska

Nebraska's central location makes it an ideal candidate for wind power. Current wind production in the state is sparse, with the majority coming from the Ainsworth Wind Energy Facility. This wind farm is the largest in the state, producing nearly 60 megawatts of power. Nebraska will soon be more than doubling its wind production capacity when the Elkhorn Ridge Farm goes online. The power from this farm will go to the Nebraska Public Power District, the state's largest electric utility. The NPPD hopes to add 800 MWs of wind power to its portfolio through similar projects in the next 10 years.

Sources:
http://www.awea.org/projects/projects.aspx?s=Nebraska
http://www.wind-watch.org/news/category/locations/americas/us/nebraska/

Making a dent in global warming pollution

Simply by shifting to renewable energy sources and improving energy efficiency over the next decade or so, Nebraska can reduce its future carbon dioxide (CO_2) emissions from electricity generation by 45 percent compared to the business-as-usual path that utilities are following now.

Given that 48 percent of Nebraska's CO_2 emissions come from electricity generation, diversifying and updating our power sources is critical for cutting the state's total global warming pollution.

Increasing Nebraska's energy and economic security

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

Expanded solar power. Nebraska has enough solar resources to produce 4,500 to 5,500 Whr per square meter using photovoltaic systems and 4,000 to 5,500 Whr per square meter using concentrating solar power systems. This means that devoting just 1 square mile in Nebraska to solar power can provide enough electricity for about 1,300 households each year.

Expanded wind power. Nebraska is currently ranked 22nd for wind power, with 73 MW of existing electricity generation capacity and 81 MW under construction. The American Wind Energy Association ranks Nebraska 6th in terms of its future wind potential, with 99,100 MW of potential capacity.

Biomass power. Nebraska has 21.8 million dry tons of biomass available each year that could be used to generate about 4,400 MW of electricity.

New Jobs. A nationwide investment in green infrastructure of $100 billion over the next two years could yield 867 jobs in solar power and 819 jobs in wind power for Nebraska. That's 1,571 more jobs than an equivalent invesmtent in conventional power would create.

How does Nebraska use electricity?

Nebraska's energy is used to power:

- homes (34 percent),
- businesses (33 percent), and
- industry (33 percent).

Per capita residential electricity use is 5,269 kilowatt hours per year, 16 percent greater than 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
CARMA (Carbon Monitoring for Action), www.CARMA.org.
Database of State Incentives for Renewables and Efficiency, www.dsireusa.org.
Department of Energy, Energy Efficiency and Renewable Energy. apps1.eere.energy.gov/states/alternatives/electricity.cfm.
Energy Information Administration, State Energy Data System, www.eia.doe.gov/emeu/states/_seds_updates.html.
Environmental Protection Agency, Energy CO_2 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.