

Our energy, our future



Clean air, conservation and coal-fired electricity: a balancing act

As Americans, we all want a reliable supply of electricity for our homes . . . in our offices and shops . . . and our factories and farms.

And we want a clean environment.

Moreover, in today's challenging times, we need energy costs to remain affordable. All across the nation, electric cooperatives are committed to the idea that America can have the affordable, reliable electricity we need . . . with the clean environment we want.

How should we generate our electricity in the future?

Concerns about air pollution, global warming and high energy prices have prompted unprecedented discussion about something most people have taken for granted most of their life—electricity generated at coal-based power plants.

Coal-fired generation represents about 93 percent of the electricity used in North Dakota and about half of all the electricity that is used in the United States. Worldwide, coal provides about 26 percent of the total world energy consumption. Coal-fired electricity plants have long remained the lowest-cost option, but recently, they have become Public Enemy No. 1 for many environmentalists because they emit greenhouse gases.

Despite our heavy reliance on coal and the growing demand for more and more electricity, in 2007, construction of fifty-nine coal-fired power plants was cancelled. And, across the nation, according to information posted on the Internet, plans for an additional 80 electric generating plants have been quietly shelved.

The numbers are stark.

According to a May 2000 Wall Street Journal article entitled, "American is running short of electricity," the U.S. had generating plants capable of cranking out 780,000 megawatts of electricity. But it took a minimum of 700,000 megawatts to power the nation, according to estimates by the Department of Energy.

That leaves little surplus, and the numbers haven't changed. While some plants have come on line since 2000, America's thirst for electric energy has increased at an even larger rate. Today, many are advocating for wind, solar and nuclear power as the solution – but, unfortunately, the choice is not simple.

How reliable would you like your power to be?

Most people expect their lights to come on at night and their refrigerators to run all day long, but the sun shines only during the day and the wind doesn't blow all the time.

While work is underway to develop affordable ways to store large-scale generation (North Dakota cooperatives are currently participating in a wind to hydrogen project) – technology still does not enable electricity to be stored cost-effectively. It has to be produced continuously and in sufficient quantities so it is there when needed.

As a practical matter, that means wind and solar are not positioned to provide 100 percent of our electricity needs. Base load power still needs to come from sources that can be produced continuously – like coal, or nuclear.

How much are you willing to pay?

Higher electricity prices could cause serious problems for household budgets, farmers, small businesses and many larger industries. While technological improvements have made other resources more affordable, costs are not yet

Second in a series of articles that addresses the future of energy.

comparable to what we are used to paying.

The cost of solar today (without federal subsidies) is about four times as much as traditional sources. Since the average North Dakota household spends about \$2,200 per year on electricity, that means if half of your electricity came from solar, it would cost you as much as \$3,300 per year more.

Wind power is much more affordable, but because it has only intermittent availability, it must be backed up with gas-fired generating plants. Thus, the true cost for wind energy includes both the wind development along with the cost of the back-up generation.

Further complicating the use of gas-fired generation is the concern that, as utilities across the country turn more to natural gas as a replacement for coal, the price will continue to escalate. Already, price trends are strongly indicating this result.

Can we conserve our way to success?

Some people say we can meet future demand through efficiency and conservation; and co-ops have had great success in those areas. We are quickly integrating new renewable energy sources, deploying demand side management tools, increasing system efficiency, and promoting conservation and efficiency at the consumer level.

And while this is a good thing, we should not fool ourselves into thinking that this is all we need to do to solve our energy dilemma.

Today, just over 11 percent of co-op power comes from renewable sources. The percentage is growing daily, but renewables are a long way from becoming a major reliable source.

Conservation and efficiency measures can undoubtedly lower use in some areas in order to provide capacity for growth in other areas, but conservation is only part of the solution.

Is there a perfect source of electricity?

Our nation's growing electricity needs will soon go well beyond what renewables, conservation and efficiency can provide. Over the next 20 years, electric utilities must increase generating capacity by 30 percent just to keep up with projected demand. The excess capacity we have enjoyed for years has been used up.

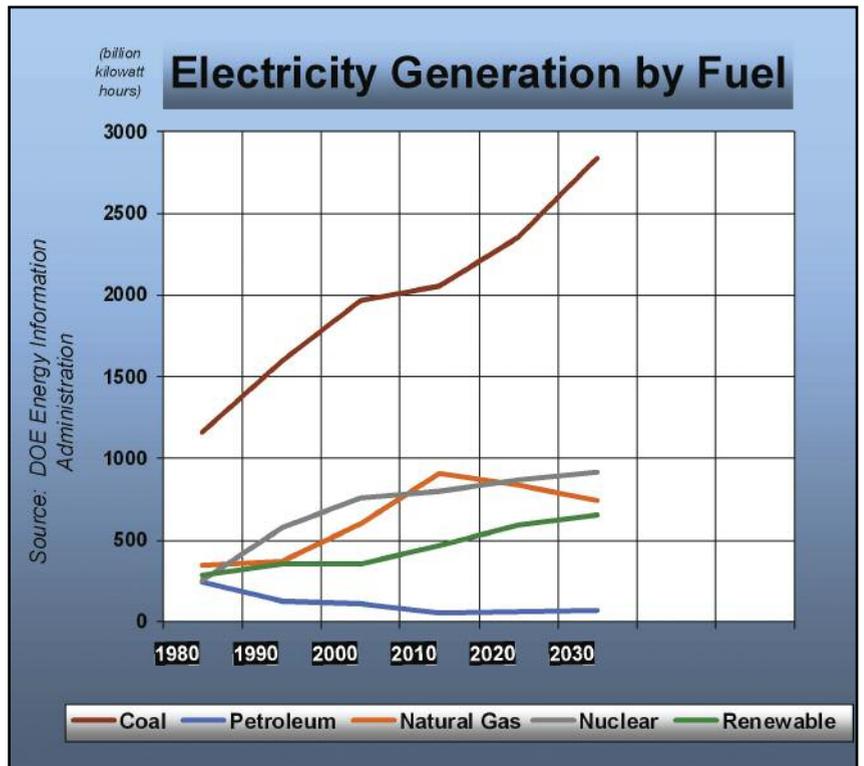
Although research is going on here and elsewhere to increase the efficiency of wind and solar power, even the most optimistic projections indicate that coal will have to remain the largest source of electricity for at least several decades.

So rather than fighting it, we must work to make it cleaner.

While coal is critical to Basin Electric's generation mix, the generating co-op is making efforts to diversify its power supply to include wind, gas and waste heat.

Ron Harper, Basin Electric CEO and general manager said, "We are planning the nation's first cooperatively-owned wind farm, and are pursuing conservation/efficiency programs. These efforts help limit the amount of carbon released into the air."

"We are also working hard to develop carbon capture and sequestration technologies for coal," he said. "Basin Electric has been a leader in carbon dioxide sequestration and we're



planning to test pioneering carbon capture technologies at our Antelope Valley Station. These efforts will take time and a huge financial commitment."

In recent testimony Harper stated, "Our mission has always been to serve our members with reliable, clean and affordable energy. That mission stands firm today. It is possible to deal with climate change and have a healthy economy."

He stated, "This is about all of us working together to come to a well-planned, responsible solution to this energy challenge. With reasonable timetables and investments in technology, we can solve this problem without unreasonable costs to Americans."

