



## From the Manager... Climate Change Part 3

This article is the third in a four part series on climate change. We have previously discussed the science and politics of the issue and have talked about how Lyon-Coffey acquires its power and what the fuel sources are for that power. This month, we will look at the principle fuels that are used to generate electricity and how they compare, especially with regard to the greenhouse gas issue.

As was discussed earlier, carbon dioxide, or CO<sub>2</sub>, is the assumed villain when it comes to climate change. Many contend that it is the release of this gas into the atmosphere that is causing the temperature rise that we have seen in the last 25 years or so. If that is the case, we need to know where this CO<sub>2</sub> is coming from.

CO<sub>2</sub> is a product of combustion. Anytime a carbon-based fuel like natural gas, coal, gasoline, diesel, propane, or wood is burned, CO<sub>2</sub> is produced. Approximately 40 percent of the CO<sub>2</sub> emissions in the U.S. are from the generation of electricity, with another 25 percent coming from motor vehicles. Now this is where it begins to get interesting for the electric utility industry.

Currently about one-half of the electricity generated in the U.S. is from coal. Nuclear energy and natural gas each account for about 19 percent with hydroelectric power coming in at about 6 percent. So 94 percent of our electricity comes from these four fuels. How does each stack up as far as CO<sub>2</sub> emissions?

Since neither hydropower or nuclear involves burning a fossil fuel, there are no CO<sub>2</sub> emissions from either. So the vast majority of CO<sub>2</sub> created by the electric utility industry is from the use of coal and natural gas. Of the two, coal emits about 1.6 times as much CO<sub>2</sub> as natural gas for every unit of energy output.

So the answer is easy, right? All we have to do is generate more electricity from water and nuclear and less from coal and natural gas. The fact is, there are very few additional sites available for the construction of hydropower facilities and the output from those facilities tends to be small when compared to coal and natural gas projects. Nuclear is certainly an option but the cost to construct a nuclear plant is astronomical because of safety concerns. Also,

the disposal of spent fuel continues to have unresolved environmental concerns.

Add to that the amount of time that it takes to permit and build the project and you end up with a risky endeavor. While it may look like a good deal today, what will be the political and economic situation when the plant is finally built, 8-10 years down the road? Laws and technology can change dramatically from the time the first shovel of dirt is turned to the generation of the first kilowatt of electricity.

Coal just happens to be our most abundant and one of our least expensive fuel sources. It is estimated that at present levels of use, we have about 250 years of coal inventory in this country. The U.S. has been described by some as the Saudi Arabia of coal. Wouldn't you know it; the fuel that we have the most of is also the one that produces the most CO<sub>2</sub>.

Our supply of U.S. natural gas is still substantial but is declining and is located in places that



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# Doebele and Hinterweger Win Youth Tour Contest

Brandon Doebele and Crystal Hinterweger are the winners of the Lyon-Coffey Youth Tour Contest held on March 21.

Six spectacular high school juniors competed for two all-expense-paid trips to Washington, D.C., June 12-19.

The fine young people that make the effort to come and compete in this contest make judging difficult. The much-appreciated judges this year were Shana Holsteen and

Carrie Kimberlin, both from Kansas Electric Cooperatives, Inc., Topeka, and Mary Lou Ponder and Kristi Vogts, both employees of the USDA Service Center.

Brandon, a junior at Burlington High School, is the son of Mark and Cindy Doebele of New Strawn. He enjoys many extracurricular activities and sports including football, basketball, track and golf.

Crystal, also a junior at Burlington High School, is the daughter of Jan and Jim Hinterweger of Lebo.



Competing in the Youth Tour Contest March 21 were (from left): Brandon Doebele, James Iseman, Paul Reeves, Crystal Hinterweger, Jessica Watts, and Reagan Rockers.

In her spare time, her activities include participating in band, vocal music, drama, cross country and dance.

Paul Reeves was chosen as alternate. He is also a junior at Burlington High School and is the son of Tim and Kristy Reeves of LeRoy. Paul enjoys journalism and mass communication and has been active in forensics, drama, school newspaper, 4-H, FFA, SADD and TABS.

## From the Manager... Continued

are increasingly more difficult to capture.

And this is where it begins to get difficult for the electric utility industry. Almost 70 percent of the electricity in this country is currently generated from coal and natural gas. Significant reductions of CO<sub>2</sub> cannot be made without either 1) finding some way to reduce the amount of CO<sub>2</sub> released when coal and natural gas is burned, or 2) burning significantly less coal and natural gas.

The technology that exists today to reduce carbon dioxide

emissions is mostly experimental and can only partially reduce those emissions. There is nothing commercially available to eliminate CO<sub>2</sub>. To develop technology that will eliminate or drastically reduce CO<sub>2</sub> emissions from coal and natural gas, such as carbon sequestration, will be very expensive and is probably years if not decades away. If this approach is taken, the price of electricity will go up, more than likely way up.

The U.S. Environmental Protection Agency recently said that the Lieberman-Warner bill

(S.2191), which would implement a cap-and-trade mechanism to curb greenhouse gas emissions, could increase power prices by 44 percent. The study went on to say that if carbon capture technologies do not become available the costs would nearly double.

What about the second option, burning less coal and natural gas? Couldn't we accomplish that by using more alternative fuel sources like wind, solar and bio-fuels (like corn-based ethanol)? I'll talk about that in the last installment of this series next month.