

## **Ferguson: Energy Matters**

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### **Arctic Screams, Who's Listening?**

NASA released the results of last summer's Arctic observations this week, and I was shocked by the enormity of the changes recorded. The findings were summed up by an Associated Press headline, the "Arctic is screaming." I know that one year's data could amount only to a statistical anomaly. Nevertheless, the rapidly increasing trends in the Arctic are impossible to ignore.

Meanwhile, California is still discussing strategies to limit such dramatic changes, but worrying about the costs.

The summer of 2007 shattered a host of records, as reported by the *AP*.

- The Greenland ice sheet melted faster this year, 12 percent more than the previous record in 2005 and four times as much as 15 years ago.
- Alaskan permafrost is warming rapidly.
- Surface temperatures over the Arctic Ocean were the highest ever recorded.
- The area covered by ice in the Arctic Ocean at the end of the summer was 23 percent below the previous low and the ice is getting thinner as well. Total volume of ice was only *half* the 2004 amount.
- Not long ago, scientists estimated that it would be more than 30 years before the Arctic Ocean would be ice-free at summer's end. That estimate has shrunk to a mere 5 years if the current trend continues.

There is widespread consensus that our propensity to burn fossil fuels is a major—although not the only—cause of the changes in the Arctic and elsewhere. California has promised to dump less carbon dioxide into the atmosphere by burning less coal, gas, and oil.

But how much are we willing to spend in the process?

California depends on coal for about 20 percent of its electricity. Natural gas accounts for another 40 percent. To slow the rate of climate change, we must use less coal- and gas-fired power. But, we must keep the lights on.

The good news is that we can do both. The bad news is that when we do, electric bills are likely to increase, especially if we eschew electricity from cheap coal.

The California Public Utilities Commission already is wringing its hands about the potential cost of changes in the electricity system to limit the use of fossil fuels. A consulting company known as E3 has been hired to develop a 'calculator' that can estimate the cost of such changes. I recently paid a visit to the folks at E3 to learn about the inner workings of their program.

Future electricity scenarios are fed into the calculator, and the program estimates how much electricity would cost compared to a 'business as usual' scenario.

The results provided by the calculator depend heavily on the future price of natural gas, and the calculator allows you to choose different values.

If natural gas prices continue to increase for the next 13 years as they have in the last 13, by the year 2020 the price would be about \$14/MMBTU in today's dollars. At that price, California would save money by replacing gas-fired power with solar, wind and geothermal energy.

If instead you assume—as the CPUC does now—that the price of natural gas will decline to about \$6/MMBTU and stay there, you get a very different result. Replacing gas with renewable energy suddenly looks to be much more expensive.

What to do about global warming will be decided primarily by the extent to which California is willing to gamble that natural gas prices will not increase in the future as they have in the past.

The California Air Resources Board is scheduled to make a decision on the future of the state's electricity system by the end of 2008. Next year looks to be a noisy and contentious year in the energy business.

While we mere mortals argue about how much to spend and how much to gamble, Mother Nature can be counted on to continue rearranging Earth's climate. The Arctic is screaming but who is

listening besides a few scientists? While the Arctic melts, we're busy counting our money.

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*Opinions expressed by DrF are not necessarily those of any organization with which he is affiliated.*