Climate needs new support for nuclear power

By Carolyn Heising *11:57 p.m. CDT July 26, 2014*

Almost 30 years after James Hansen, NASA's chief atmospheric scientist, warned Congress that the burning of fossil fuels leads to global warming, the evidence still points to one conclusion: Increasing the use of zero-carbon nuclear power must be part of the solution.

Hansen, along with other prominent climatologists, sees great value in using nuclear power to reduce carbon emissions.

Nuclear power, in one or more advanced designs, holds promise for the generation of abundant, clean and affordable electricity for the United States and the world. But although 70 nuclear plants are under construction overseas, just four new plants are being built in the United States.

Switching from coal to nuclear power in the production of base-load electricity that's available 24/7 should be high on our agenda.

Iowa needs to adopt policies and rules that would enhance the competitiveness of nuclear power, the one energy source that can make a real difference in carbon mitigation.

According to the U.S. Energy Information Administration, Iowa's Duane Arnold nuclear plant near Palo provides 9.2 percent of the state's electricity, while coal accounts for 67.5 percent and renewable energy sources, 30 percent.

But in recent years, the Duane Arnold plant has generated electricity more than 90 percent of the time, compared to 70 percent for a coal or combined-cycle natural gas plant or 33 percent for wind turbines.

Yet outdated thinking is holding nuclear power back. Iowa's renewable electricity standard — which was enacted in 1983 and requires investor-owned utilities to buy at least 105 megawatts of renewable energy annually — omits emission-free nuclear power.

Yes, the nuclear waste problem is still unresolved. But that's no reason to abandon nuclear power, as some anti-nuclear groups advocate. Nuclear power has valuable attributes, including the fact that nationally it accounts for 63 percent of all carbon-free sources of electricity and is the only reliable base-load source of clean energy.

But two safe and efficient nuclear plants in Wisconsin and Vermont are slated to be shut down by the end of this year, and other reactors, including several in Illinois, could also be forced to close prematurely.

If nuclear power is allowed to slip away, we will be in terrible trouble in the battle against global warming.

We are now at a crossroads. The U.S. Environmental Protection Agency is preparing to issue guidelines for cutting carbon emissions from power plants by an average of 30 percent below 2005 levels while leaving it to each state to develop its own implementation plan. In practice, states will be able to choose their best mix of generation to meet the federal guidelines using a variety of energy sources, along with improvements in energy efficiency.

Wind alone will not suffice. Because it is unpredictable and often fails to blow when electricity is most needed, wind is not reliable enough to assure base-load supplies that must be prepared to deliver power on demand to everybody who wants it. By contrast, nuclear power is available regardless of weather conditions.

But not only does Iowa require the use of wind, it encourages the development of renewable energy sources through a 1-cent per kilowatt-hour tax credit. Also, wind turbines and other facilities receive property tax breaks, and generation equipment is exempt from sales tax.

Nuclear power is the safest and least expensive type of alternative electricity generation. One lesson we should have learned years ago is that other countries with nuclear power programs will have us over a barrel in the global energy market because of their ability to demonstrate reactors with advanced designs.

Consider China's latest venture in pursuing innovative nuclear technologies.

China's nuclear development company has signed an agreement with Microsoft founder Bill Gates to develop and demonstrate an advanced nuclear design called a "traveling wave reactor," which can run several decades without refueling and possibly even burn spent fuel.

Concerned that the United States was falling behind in innovating new nuclear systems, Gates established TerraPower, a firm on the outskirts of Seattle, to analyze the concept of a traveling wave reactor and establish its feasibility. When told that the Nuclear Regulatory Commission didn't have the time or manpower to consider the design, Gates took his plan to China. Although the traveling wave reactor wouldn't be operational until the 2020s at least, the concept has caught the world's attention.

Other startup U.S. nuclear companies in Oregon and New Mexico are developing innovative reactor designs, particularly small modular reactors that can be built in factories at less cost than large conventional nuclear plants and transported for assembly at nuclear plant sites.

These small reactors, when linked in a cluster, have the potential to produce large quantities of electricity around the clock, safely and reliably, when needed. That's something wind and solar energy can't do, because no technology exists for large-scale energy storage.

Wishful thinking about renewable energy sources should not be allowed to dominate our thinking to the extent that we fail to develop advanced nuclear plants that can make a decisive contribution.

For the long haul, we need to modify the renewable electricity standard to make way for nuclear power.

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