



Expectations, *As We Move Toward a Low Carbon Future* **Great and Small**

Phil Sharp

Two years ago, advocates for major cuts in greenhouse gases expected the United States would soon adopt a system of cap and trade and the international community would reach a comprehensive post-Kyoto agreement. Copenhagen and Congress—more accurately, the Senate—have dashed those expectations.

Yet, much in our energy markets and government policy continues to move us toward a lower-carbon future. Political changes in Washington may signal that a carbon-pricing architecture will not soon be constructed, but other options may receive consideration. Energy and climate issues are unlikely to fall off the public agenda.

gettyimages



Expectations: The Science

Over the last year, the debate about climate science was recharged with the “revelations” of emails among a few scientists and the mistakes found in the Intergovernmental Panel on Climate Change (IPCC) *Fourth Assessment Report*, published in 2007.

Some skeptics believed the validity of the science had been dealt a serious blow. But those notions have also been dashed. The revelations triggered serious reviews within the scientific community that confirmed the basic proposition that human activities are significantly contributing to the warming of the planet by changing the chemistry of Earth’s atmosphere and oceans, posing significant risks for mankind and all natural systems.

Studies completed since the 2007 IPCC assessment have reinforced these scientific claims. See one of the more readable accounts in *Advancing the Science of Climate Change* from the National Academy of Sciences (www.americasclimatechoices.org).

To assure the rigor of the fifth IPCC assessment, an international panel of natural and social scientists was created to review the IPCC plans and processes and issue a report. Maureen Cropper, an RFF senior fellow and member of the National Academy of Sciences, served on that panel. While the RFF staff does not include climate or natural scientists, we seek to follow best practices of social science inquiry.

Expectations: Technology

The past decade witnessed a near explosion of technologies that are changing or are expected to change the ways we produce, transport, and use energy. Developed over earlier decades, these technologies range across nearly all fuels and uses of energy: from solar film production to shale gas extraction and modular nuclear reactors; from high-efficiency lighting to digital

management of the grid and plug-in hybrid electric cars.

These advances were primarily driven by rising prices, supplemented by government policy, and by expectations among investors that the United States would join other nations in restricting carbon emissions.

A radical rise in natural gas prices occurred early in the decade, followed by price shocks in global oil—which drove changes in investor, consumer, and government behavior.

Congress and the president—in 2005, 2007, and 2009—adopted a plethora of mandates, tax incentives, loan guarantees, and funding programs to push the development of alternative fuels and the use of more efficient technologies. A number of state governments did as well.

A trifecta of factors—lower energy prices, especially for natural gas; the possible loss of taxes and other subsidies as Congress tries to rein in the massive federal deficit; and ongoing uncertainty regarding carbon policy—will affect whether these technological advancements continue at their previous pace.

Expectations: The Near Term

The conventional wisdom on market prices is that oil will remain fairly stable until more rapid growth returns to the world economy and that natural gas prices are likely to remain reasonably low, assuming water regulations do not significantly limit shale gas production. But past predictions about commodity prices have been notoriously wrong.

In terms of government policy, it is safe to say Congress is highly unlikely to adopt an economywide carbon-pricing policy any time soon. But existing and proposed energy and climate policies are likely to receive consideration on a piecemeal basis.

There may be a serious sorting out of the policies on the books: some undoubtedly

are of questionable value or are unnecessarily costly in terms of the budget. Ethanol subsidies, among others, are likely to get reconsideration.

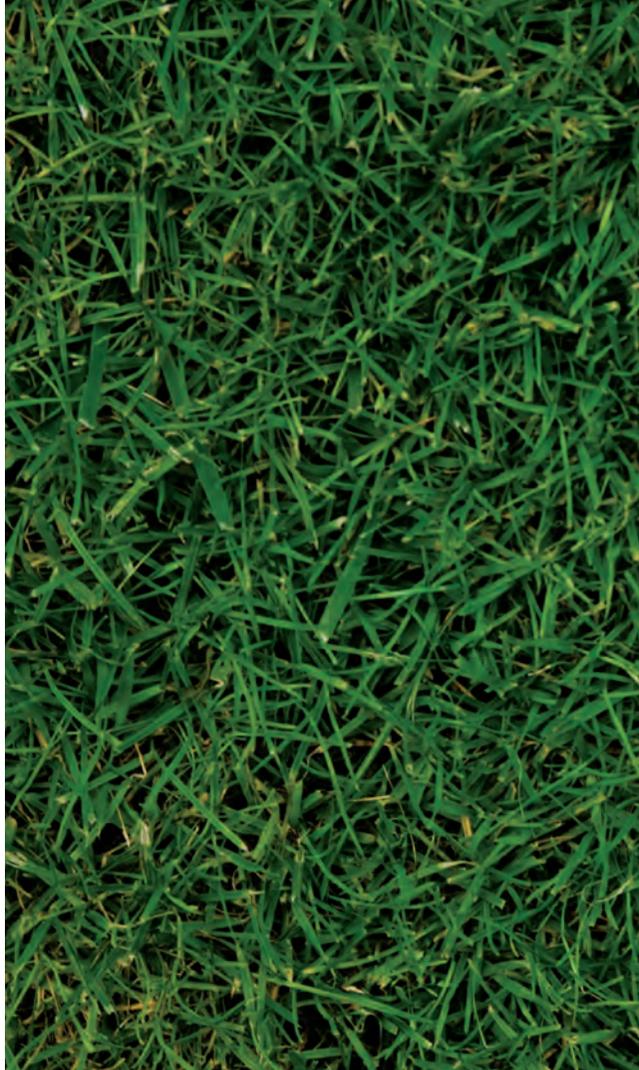
There may be adoption of various new mandates, such as clean energy standards and added incentives such as expanded nuclear loan guarantees, to push so-called clean energy technologies, especially out of concern for competition with developments in China and elsewhere. But all these developments remain speculative at this time.

Carbon skirmishes can be expected in Congress, the administration, the courts, and state regulatory proceedings. Siting energy facilities that have a carbon impact will likely face challenges from citizen groups.

Expectations: EPA

In the new Congress, disputes about whether and to what extent EPA ought to restrict greenhouse gas emissions are almost guaranteed. As a result of the 2007 Supreme Court decision *Massachusetts v. EPA*, the agency has begun the complex process of adopting restraints on emitters using the current authorities of the Clean Air Act. The energy and climate legislation, now moribund, would have forestalled use of these authorities, relying instead on a carbon-pricing strategy by means of a cap-and-trade policy.

For many economists and policy analysts, regulating carbon emissions under the act is not the most cost-effective route. The act generally operates by the periodic setting and resetting of standards—that is, the periodic ratcheting up of requirements—which invariably entails periods of delay, uncertainty, and legal wrangling. Consequently, for many economists and policy analysts, the regulatory path is not as likely to find the cheapest means as a well-crafted pricing strategy to provide continuous incentives. But the political choice to resist



a pricing option may leave regulation as the only viable option.

In the Congress about to end, various factions are pushing to either repeal EPA's authority or delay its implementation, and the congressional elections have undoubtedly added strength to these efforts. Given the president's commitment to climate action and his veto authority, it is not clear what the outcome will be.

RFF scholars have been looking at the various regulatory options available under the law to EPA with an eye toward the least-costly path possible. As a general principle, that is most likely achieved when the agency seeks to maximize the flexibility for emitters within the confines of its authority, giving them an incentive to find least costly solutions. In addition, we are planning



discussions with various stakeholders about legislative changes that might make the act a more cost-effective instrument.

Expectations: The Longer Term

Climate and energy issues are likely to remain compelling in the decade ahead. The fundamentals of world population and rapid economic development in China, India, Brazil, and elsewhere will mean major growth in the demand for energy and in greenhouse gas emissions unless green technology becomes a major part of the energy equation. Demand growth will put major pressures on energy resources and energy markets. Global warming will put pressures on nations to grapple with adaptation, emissions cuts, and possibly geo-engineering strategies.

Expectations: RFF Ahead

As noted throughout this issue of *Resources*, RFF is deeply involved in a host of energy and climate issues. In setting our priorities for the next three to five years, we are determined to build our capacity to provide policy-makers high-quality analysis on a number of fronts. They need to be able to make informed choices about policy options in term of their costs, effectiveness, and impact on U.S. competitiveness, as well as their implications for technological innovation.

We will be ready to help assess various policy options. We will build, for example, on our major new report, *Toward a New National Environmental Policy: Assessing the Options*, produced in conjunction with the National Energy Policy Institute at the University of Tulsa (www.rff.org/assessingtheoptions). This report provides a first of its kind, apples-to-apples comparison of some 35 policy options in terms of their cost-effectiveness in reducing carbon emissions and oil dependence.

RFF is also working to capitalize on the research revolution enabled by Earth-observing satellites—remote sensing—which should provide new tools for the private and public management of many global resources. Our Forest Carbon Index is an early example of how data mapping might contribute to building a forest carbon market; and our scholars are participating in an emerging proposal at the Sloan Foundation that would substantially improve knowledge about global forests. In the years ahead, space technology may play a prominent role in the implementation and verification of compliance of various provisions of international climate agreements.

In ways great and small, RFF is committed to helping build a wiser, effective process for energy and environmental policymaking in the United States. ●