

## Electric Power Industry Leader Endows Chair in Risk Analysis



CHAUNCEY STARR

**C**hauncey Starr, founder of the Electric Power Research Institute (EPRI) and a pioneer in the field of risk analysis, has donated \$2 million to RFF to fund a chair in risk analysis that will bear his name.

RFF President Paul Portney said, “Chauncey’s generosity will make it possible for researchers at RFF to explore a field that is becoming increasingly vital in setting policy in such areas as environmental health risk assessment, climate change, food safety, and energy systems. Equally pleasing to me is that the chair will bear the name of a man whose research led to the creation of a field in which I and several of my RFF colleagues have labored.”

“The establishment of a chair in risk analysis at RFF represents a significant milestone for me,” Starr said, in an interview with *Resources*. “In the broadest sense, my personal goal meshes with RFF’s mission. I have a strong interest in seeing the results of research make a difference in the public policy process through government service, participation on expert advisory panels, delivery of congressional testimony, and so on. RFF is one of the few institutions capable of having a lasting influence on government policymakers about the importance of risk analysis.”

His gift will establish the third endowed senior fellow position at RFF.

The Starr chair will be used to recruit a senior scholar with a record of high-caliber research, whose work significantly advances the way society understands and manages a variety of risks to human health and the environment.

Risk analysis is broadly defined to include risk assessment, risk characterization, risk communication, and policy related to risk. It is conducted in a number of fields, including toxicology, epidemiology, engineering, economics, law, and psychology.

### How Safe is Safe Enough?

An important figure in the electric power industry since World War II, Starr spent 20 years at Rockwell International, building the Atomic International division. Starr first came to know RFF around the time of its founding, through his relationships with its early leaders—Sam Schurr, Hans Landsberg, and Joel Darmstadter—where he found common ground around national energy issues.

The use of nuclear power for civilian energy purposes, and its competitive role in the national energy future, became a major focus for Starr. “As an engineer and physicist, I started out looking at this question from a technical perspective but I quickly realized that mineral resource and energy economics, RFF’s early strength, were a critical part of the equation.”

As his research progressed, Starr

broadened his inquiry to consider the environmental and safety aspects of nuclear power. In the late 1960s, when Starr was the dean of the School of Engineering at the University of California—Los Angeles, he explored the quantitative aspects of these issues with his graduate students. “The question we addressed was ‘how safe was safe enough’ when adding technical devices to achieve inherent systems safety,” he said. “The application to nuclear power was obvious because there is no theoretical limit to adding containment to hold leaking radiation, but there are obvious practical and economic constraints.” Together they carried out an analysis of what level of risk society has voluntarily accepted in existing systems, using the mountain of accident data collected by many entities.

Starr’s ties to EPRI date back to the great blackout of 1965. The entire Northeast was left without power, prompting a congressional investigation into how the power industry could have prevented this. The Senate committee found that very little research had been done on advanced safety systems. The power industry responded to the committee’s charge by establishing EPRI and asking Starr, then in his 60s, to serve as president.

Now, at 92, Starr serves as president emeritus and still comes into the office regularly, where he is working on a new book. ■

## DOE Under Sec'y. Card on the Tension Between Cutting Greenhouse Gas Emissions and Relying on Natural Gas

Possible reduction of greenhouse gases now constitutes the greatest long-term uncertainty in energy markets, then-U.S. Under Secretary of Energy Robert G. Card said. He spoke at the inaugural Hans Landsberg Memorial Lecture, held at RFF in January.



Greenhouse gases, especially carbon dioxide generated by burning fossil fuels, contribute to global warming.

High demand for natural gas will keep prices up in the present range, Card predicted. That will result in a significant rise in imports of liquefied natural gas brought in by ship, some of it from the Middle East. Like transportation, the heating and electricity-generating sectors of the energy economy will be dependent on imports, he said.

Politically motivated embargoes on gas, like the Arab countries' embargo of oil to the United States in the early 1970s, seem unlikely, Card observed, because of the suppliers' need for revenue.

"But if you look at the reliability of the suppliers, it's not altogether comforting," he added. Some of the future imports will presumably come from the Persian Gulf region, especially Qatar, where the reserves are vast.

The Bush administration believes that the emphasis in the 1990s on using natural gas in all sectors of the economy as a cleaner-burning fuel was unhealthy, Card said, and encouraging a diversity of fuels is wiser policy. But that means greater reliance on coal and oil, fuels that produce more greenhouse gas per unit of heat than natural gas does.

In making policy to reduce greenhouse emissions, Card warned, it is essential to remember, "we have to bring the American public along."

The Clinton administration helped draft the 1997 Kyoto Protocol, a treaty that would require most of the developed countries to reduce their emissions by 2012. But President Clinton never sent it to the Senate for ratification, and, in 2001, President Bush withdrew administration support from it on grounds that it would damage the economy.

If the world decides to regulate emissions, Card asked, who decides on the reduction target, and by what process? There are "huge philosophical issues here," he said.

The Bush administration is relying chiefly on technological innovation to reduce emissions. However, those innovations have to be applicable worldwide, Card observed. "Our coal program is really focused on China and India," he said.

The Hans Landsberg Memorial Lecture is an annual event dedicated to the memory of Landsberg, a pioneer in energy and mineral economics who was a devoted member of the RFF staff for nearly 40 years. ■

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## CEQ Chief Connaughton Addresses Role of Developing Countries in Setting World Climate Policy

Global policy to mitigate global warming will have to include the developing countries from the beginning, said James L. Connaughton, chairman of the White House Council on Environmental Quality. He spoke at an RFF Policy Leadership Forum, held in January.

If developing countries do not participate, he said, the climate regime will suffer “leakage”—the migration of industries to countries with no restrictions on emissions of the greenhouse gases that contribute to climate change.

The Kyoto Protocol, a treaty signed by most of the world’s governments but not yet in force, would put emissions limits only on developed countries. The Bush administration opposes the protocol.

Integrating the developing countries into an effective world climate policy is proving a major issue. Greenhouse gases are generated mainly by burning the fossil fuels on which modern industry runs, and many of the poor countries suspect that emissions limits are a ruse to hold back their rise to prosperity.

Connaughton suggested that the solution might be to address those countries’ immediate concerns by linking ways to reduce air pollution, which has become a major health threat in many of the rapidly industri-



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alizing economies, with the longer-term plans to control greenhouse emissions.

He vigorously defended President Bush’s proposal to use emissions intensity—the ratio of carbon dioxide emissions to Gross Domestic Product—as an appropriate measure of U.S. progress on carbon mitigation. The Kyoto Protocol uses a country’s total emissions as its basic measure. One of President Bush’s reasons for opposing Kyoto is the difficulty, at least in the short-to-medium term, of reducing emissions without shrinking the economy that produces them.

Connaughton’s comments on climate policy came in response to questions from the audience. His talk surveyed the environmental advances of the past 30 years. The administration believes, he said, that technical innovation promises more progress than litigation. ■

## Placing a Value on Health: What's the Right Approach?

**W**e make decisions every day trading off health risks for money or time. How fast should we drive? What should we spend on that health club membership? How often should we go to the doctor? What type of job should we take? Should we cross the street against the red light to save time?

Similarly, policymakers weigh the costs and benefits of their decisions on what to spend on environmental protection, medical research, preventative measures, public outreach, and a host of other health-related activities. Economists quantify these decisions in many ways. Some use a dollars-and-cents framework. One approach is to calculate people's "willingness to pay," which evaluates the trade-offs they make (or think they would make) between health and wealth. Such trade-offs in daily life are easily recognized—we may take a riskier job if higher pay compensates us accordingly—but not so easily quantified. This approach is routinely used by many government agencies in evaluating regulations that affect health or mortality risks.

Another approach, called a quality-adjusted life year, or QALY, combines a person's expected length of life with the quality of that life. This approach can be used in a cost-effectiveness analysis of several competing treat-

ments. For instance, one treatment might entail significant risks of death, but significant promise of full recovery, while another might yield a lower chance of death but a higher chance of keeping the chronic illness. If the cost of each treatment is divided by the QALY measures representing these health outcomes, a cost per QALY improvement can be calculated to help distinguish between the desirability of the two interventions. This approach is often used in the setting described above, but is much less frequently used to address regulatory choices in a public policy setting.

Senior Fellow Alan Krupnick evaluates the willingness-to-pay and the QALY approaches—and others—as they apply to a public policy setting in his new RFF Report, *Valuing Health Outcomes: Policy Choices and Technical Issues*. Krupnick sorts out the assumptions underlying these tools so that policymakers can better understand the implications of their choices with regard to effectiveness, efficiency, and equity.

Some of the political controversies in the field are also addressed in the report. Willingness to pay and "value of a statistical life" (VSL) connote to some that policymakers put a value on human health and life. This reflects several misunderstandings. These values represent the strength of preferences of ordinary individuals for changes in their health states, not those of policymakers. With respect to the VSL, these values represent the average of many individuals' willingness to pay for a small reduction in their risk of death,

divided by that risk reduction. Human life is not being valued.

Krupnick also raises fundamental questions about whose preferences should be considered when formulating health policy—the individual affected, the family, medical professionals, or society? For example, on whose shoulders should rest decisions about how much society should spend to reduce childhood asthma or leukemia as opposed to breast and prostate cancers, which primarily affect older individuals?

Krupnick's report is in response to new guidance issued by the OMB that asks agencies to rely more on cost-effectiveness measures, including those with QALYs, and to seek greater standardization of their health valuation tools. His summation

of the issues will give decisionmakers throughout government, the health care professions, and academia much-needed information to help advance protocols for making better government decisions affecting health.

This report uses source material from a conference

and workshop with valuation experts and practitioners held in 2003 at RFF and sponsored by many government agencies with interests in this topic. *Valuing Health Outcomes* reflects this collective input as well as RFF scholarship in this field. Presentations and participant bios are available at [www.rff.org/ValuingHealthOutcomes](http://www.rff.org/ValuingHealthOutcomes), along with a video interview with the author explaining the basic concepts behind this thought-provoking topic. ■



# Estimating the Economic Impacts from Reuse of Contaminated Sites

*Katherine N. Probst and Kris Wernstedt*

Federal, state, and local agencies are increasingly emphasizing the reuse of contaminated properties as part of their cleanup strategies. The advantages are obvious. Bringing new energy and focus to these sites can sometimes turn a problem property into a positive outcome for the community.

At the federal level, the U.S. Environmental Protection Agency's (EPA) "brownfields" program has embraced both cleanup and reuse as central to its mission since its inception. Under the current and prior administrations, EPA's Office of Solid Waste & Emergency Response has broadened its concern with stimulating reuse to include all four of its major cleanup programs. For example, the Superfund program now touts success stories of turning contaminated properties on the National Priorities List into sites hosting new retail busi-

nesses and golf courses. Many state regulatory agencies also have encouraged reuse at the contaminated properties that come under their jurisdiction, while local governments have promoted reuse as a way to strengthen their local economies and tax bases.

Proponents argue that reusing contaminated land has all sorts of positive impacts such as creating jobs, increasing tax revenues, and helping revitalize transitional neighborhoods. However, few studies have systematically and rigorously documented these kinds of positive economic effects. The fact that various EPA and state efforts to track the effects have used different measures of economic impacts further complicates the picture.

To discuss the challenges of measuring the economic impacts from reuse of contaminated sites, RFF re-

cently held a one-day workshop in conjunction with EPA's National Center for Environmental Economics (the sponsor) and Industrial Economics, Incorporated (IEc). The purpose was to bring together approximately 50 economists, other academics, practitioners in the public and private sectors, and senior EPA managers from all of the major cleanup programs to talk about the available methods for estimating the community impacts of reuse of contaminated properties and to discuss what these estimates mean and how they should be used.

The workshop highlighted that a wide range of perspectives exists on how to measure impacts. It is clear that government officials—at the federal, state, and local levels—face pressure to demonstrate positive results from their programs, with job creation being the most popular measure for doing so. And yet, many of the economists at the workshop cautioned that most of these new jobs likely represent a transfer of jobs from other local businesses or businesses from other areas. For an economist, these transfers do not represent an economic benefit from a national perspective. In other words, the reuse of contaminated properties may well achieve good outcomes, such as helping jump-start economic revitalization in transitional communities, but this does not necessarily mean that this represents the best use of resources for the nation as a whole. At the same time, it may well be that evaluating reuse efforts from an economist's perspective may *not* be the best approach for programs expressly focused on local outcomes.

RFF and IEc will be producing a summary of lessons learned from the workshop, as well as two background papers. For more information go to [www.rff.org/sitereuse](http://www.rff.org/sitereuse). ■



# Splitting the Difference: Protecting Landowners and Energy Producers in the American West

In much of the western United States, private land is subject to legal arrangements known as “split estates,” in which landowners control what is on the surface, while others, such as energy and mining companies, own or lease the rights to underground oil, gas, and minerals.

Fairly balancing the rights of farmers and ranchers—and the industries hoping to extract buried fuels and minerals—is a growing source of conflict in rapidly developing areas of the American West, especially as the search intensifies for subsurface deposits of natural resources.

The federal government owns most of these underground resources. About 58 million acres of privately owned land in the United States are estimated to overlie federal minerals, with most of this acreage in the West.

At an RFF Issues Briefing in March, experts and stakeholders offered contrasting views on several aspects of the split estate controversy. Among the topics addressed: Can the rights of the surface owners be protected during exploration? Who decides how much these rights are worth? And if surface owners are fairly compensated, can the resource be extracted competitively? What is in the nation’s best interest as this issue emerges as part of the debate over U.S. dependency on foreign energy supplies?



Dru Bower, vice president of the Petroleum Association of Wyoming, noted that the most useful strategy is to have both landowners and operating companies build working relationships early in the process. When agreements and expectations are outlined in detail at the start of a negotiation, she said, both parties are more likely to walk away satisfied. “Responsible energy companies have no interest in harming landowners in any way,” she said.

Shaun Andrikopoulos, a cattle rancher near Jackson Hole, Wyoming, responded that past experiences of landowners had not resulted in trust-

ing relationships with oil and gas drillers. “In too many instances, landowners’ interests are overrun with take-it-or-leave-it offers that leave the land scarred and devalued,” he said. “At a time when land is becoming more valuable for its surface amenities—its views, its hunting and fishing and recreational potential, and its solitude—the gold-rush environment in the West is inevitably causing landowners to say, ‘Enough is enough.’”

To help you decide which side of the fence you sit on, you can watch a video presentation of the briefing at [www.rff.org/splitestates](http://www.rff.org/splitestates). ■

# Learning from Each Other: How the U.S. and Japan Can Share Ideas about Climate Change

*William Pizer*

The past several years have witnessed an increasing rift between the United States and most of the industrialized world over the course of international climate change policy. Most countries, including Japan, have ratified the Kyoto Protocol and are pursuing domestic policies to attempt to meet their commitments. The Japanese Ministry of Environment, for example, has proposed a tax on carbon emissions designed to encourage reductions and the Ministry of Economy, Trade, and Industry has proposed sector-by-sector performance standards. In contrast, the United States has withdrawn from the protocol and is pursuing a mostly voluntary approach that would, at best, bring it nowhere near its Kyoto target.

Against this divisive backdrop, RFF and the Institute for Global Environmental Strategies (IGES-Japan) convened a two-day workshop on domestic and international climate policy in February. Bringing together government policymakers, environmental and business stakeholders, and academic experts, the workshop had three goals: enhance mutual understanding of ongoing activities, economics, and politics in the United States and Japan; share ideas for potentially improving domestic policies in each country; and seek out constructive opportunities for bilateral

and multilateral cooperation.

Over the course of these two days, it was clear that great opportunities exist to improve mutual understanding of recent developments, economic analyses, and political nuance in each other's country. For example, American participants were unaware of the success of the Keidanren (the umbrella organization of Japanese business, trade, and industry groups) at exceeding required efficiency standards. Japanese participants were unaware of a key aspect of U.S. treaty tradition, that ratification cannot occur until implementing legislation is in place—a fact that made the Kyoto Protocol virtually unratifiable.

It was also clear that sharing policy ideas inevitably filters each other's thinking. For example, Japan is now experimenting with emissions trading in one prefecture. The top runner program—which requires Japanese equipment manufacturers to match the energy efficiency of the top-performing model—was recently cited as a possible model for reform in U.S. automobile fuel economy standards.

At the international level, one interesting observation from the workshop was the idea that state action in the United States often influences and provides impetus for federal action, and that this same dynamic could work at the international level. Just as some states act unilaterally,

somewhat to their own competitive disadvantage, in order to demonstrate both commitment and possibility, some nations may take unilateral (or at least not universal) action in the same way. Eventually, moral sensibility and a business interest in standardizing regulation could force wider-ranging international commitment.

A second observation is that even absent agreement on mitigation steps, there is considerable scope for technology cooperation, especially between the United States and Japan. While it is unclear how this might proceed—joint standards, commercialization policies, or research and development programs—it is a fruitful area for further work.

Most countries, even those participating in the Kyoto Protocol, are pursuing their climate policies in some degree of isolation from other countries and with differing levels of attention to their actual emissions commitment. This cannot continue indefinitely. As the global need for emissions limits tightens, responses need to be coordinated to avoid encouraging the migration of energy-intensive industries to less stringently regulated countries. The United States and Japan, with their shared history, significant trade relations, and common interest in technological solutions, are particularly able partners. Through improved U.S.–Japanese cooperation, it is our belief that global progress on responding to the threat of climate change is more likely.

This workshop was supported by the Japanese Ministry of the Environment. RFF and IGES are currently seeking funding for two additional workshops, one in Tokyo and another in Washington, to continue this dialogue over the next two years. ■