Global Climate Change: What Does It Mean for the Midwest and the Great Lakes?

A report on the September 10, 1997 EPA Regional Conference sponsored by the EPA Office of Policy, Planning and Evaluation, Office of Economy and Environment

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The Midwest Confronts a Changing Climate

Global climate change could have serious consequences for Midwesterners. At the same time, an international agreement to slow climate change might affect the region's economy. These two viewpoints arose repeatedly during a public conference convened by the U.S. Environmental Protection Agency in Chicago on September 10, 1997.

Global warming is a "complex, challenging, and controversial" issue, EPA's Midwest Acting Regional Administrator David A. Ullrich told the nearly 200 people who attended the meeting.

While acknowledging scientific uncertainties, Ullrich warned that if we don't take global warming seriously, the consequences could be "quite dramatic." Midwestern agriculture and major resources such as the Great Lakes and the upper Mississippi River, he said, are "very vulnerable and sensitive" to changes in climate.

Representatives from 14 news organizations attended the conference, and the Chicago Tribune ran two articles. The ABC and NBC affiliates in Chicago both ran stories on the evening news. National Public Radio also did a story.

Fifteen organizations and agencies co-sponsored the conference, which was attended by representatives from a wide range of businesses; environmental and civic organizations; federal, state, and municipal agencies; electric and gas utilities; academic institutions; law firms; and others. Sponsors and participants represented the six states of EPA's Midwestern region: Minnesota, Wisconsin, Illinois, Michigan, Indiana, and Ohio.

EPA Assistant Administrator David Gardiner told the audience that the Clinton Administration views global warming as a serious threat. Based on scientific evidence in landmark studies by the National Academy of Sciences and the Intergovernmental Panel on Climate Change, the Administration has concluded that it would be "irresponsible" to avoid taking action, he said.

Gardiner added that the United States is working hard to produce a flexible international agreement on global warming that will involve developed and developing countries and that will allow each nation to choose its own most cost-effective strategies to reduce the risk of climate change. The United States advocates such measures as an international emissions trading program that will cut mitigation costs while reducing pollution.

Gardiner emphasized that cost-effectiveness is a driving force behind the U.S. approach. "We should rely on technology and innovation to find a way of tackling this problem while at the same time expanding our economy," he said.

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Nancy Mink, Waste Policy Institute

← EPA Assistant Administrator David Gardiner tells the audience that it would be "irresponsible" not to take action.

Brad Hurley, Waste Policy Institute

→ EPA Midwest Acting Regional Administrator David Ullrich warns that global warming could have "quite dramatic" consequences.

Nancy Mink, Waste Policy Institute

Between conference sessions, David Ullrich chats with two conference speakers—Task Force Chair Karen Witter, of the Illinois Task Force on Global Climate Change, and Deputy Director Bernie Killian, of the Illinois Environmental Protection Agency.

The CO_2 Effect

Nancy Mink, Waste Policy Institute

James Teeri explains that increases in CO_2 could affect ecosystems, even independently of any impacts on climate.

The concentration of carbon dioxide in the atmosphere has increased by 30 percent since the late 1700s and probably will rise to twice pre-industrial levels within the next 50 to 100 years. Independent of any impacts on climate, this increase in CO_2 may affect plants and ecosystems directly, according to James Teeri, director of the Global Change Project at the University of Michigan.

Teeri explained that CO_2 acts like a fertilizer and a hormone, causing most green plants to grow faster and change the way they allocate nutrients to leaves, roots, and stems. Field experiments show that most plants respond dramatically, increasing their rate of photosynthesis by as much as 100 percent in response to a doubling of CO_2.

Most of the additional carbon is returned to the soil when the roots die. The increase in carbon in turn speeds the growth of fungi and bacteria in the soil.

Plants grown under elevated CO_2 have less nitrogen in their leaves, which decreases their nutritional value. Teeri said that when herbivorous insects eat those leaves, their developmental rate slows and the weight of adults decreases. When carnivorous insects eat the herbivores, their growth rate also decreases. In this way, Teeri said, a rise in CO_2, independent of any change in climate or weather, may directly initiate a "cascade" of responses in the ecosystem, affecting plants, herbivores, carnivores, and decomposers.

"To what extent will elevated CO_2 alter the capacity of the earth to support life?" Teeri asked. "Science does not yet have an answer. But preliminary evidence suggests that fundamental changes may occur."

Global Climate Change reports the results of a conference sponsored by the U.S. Environmental Protection Agency entitled, "Global Climate Change: What Does It Mean for the Midwest and Great Lakes?" The conference took place on September 10, 1997 in Chicago, Illinois.

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For more information about the conference, visit the U.S. Environmental Protection Agency's global warming conference Web site at http://www.eis.wpi.org/epaworkshops/.

In addition, EPA publishes a number of fact sheets about global warming and energy conservation. Call EPA's Fax-On-Demand Service (202-260-2860) or access EPA's global warming Internet site at http://www.epa.gov/globalwarming.

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Should We Be Concerned?

While the world as a whole has warmed by about 1 degree Fahrenheit over the past century, the Midwest actually has cooled, according to Stanley A. Changnon, an atmospheric research scientist at the Illinois Department of Natural Resources' State Water Survey.

The slight cooling, however, is consistent with recent climate model projections, Changnon said. The latest results published by the Intergovernmental Panel on Climate Change suggest that the Midwest and the Great Lakes region will experience little temperature change, or perhaps a slight cooling, through the mid-21st century. Precipitation and soil moisture likewise will show little change. "Should we be concerned?" Changnon asked.

The projected cooling is expected to occur because of emissions of sulfate aerosols—tiny particles produced during the burning of fossil fuels. Aerosols reflect sunlight back out into space, causing a short-term, regional cooling effect that offsets the long-term, global warming effect of greenhouse gases.

Frank H. Quinn, head of the physical sciences division at the National Oceanic and Atmospheric Administration's Great Lakes Environmental Research Laboratory, confirmed that there have been few signs of global warming in the Midwest.

One indication that he mentioned, however, is a slight rise in minimum nighttime temperatures, which is consistent with global warming because greenhouse gases trap heat and reduce the normal cooling that occurs at night. Two other observed changes—a trend toward earlier ice breakup in lakes and the earlier springtime return of migratory birds to Michigan's Upper Peninsula in recent decades-also may be related to global warming.

Starting in late 1960s, Quinn said, the Midwest began a prolonged period of very high precipitation. While noting that this is "not exactly what one would expect" under global warming in the Midwest, he said that "it could be consistent" with the latest model projections. In conjunction with the higher precipitation and overall cooling trend, lake levels have been consistently high since 1970. "In Lake Michigan, we've gone from having extreme lake levels occurring once every 75 to 100 years to having three extreme lake level events over the last 30 years," Quinn said.

Brad Hurley, Waste Policy Institute

Stanley Changnon asks, "Should we be concerned about global warming?"

Brad Hurley, Waste Policy Institute

Climatologist Frank Quinn sees a few signs of global warming in the Midwest at present, but this could change if climate variability increases.

A change in climate may cause only a small change in the mean conditions, but could bring a large increase in climate variability. This translates to more floods and more droughts.

In fact, Quinn warned, projections of future climate change in the Great Lakes region suggest that global warming could have a "major impact" on people and the economy, particularly if climate variability increases. "Even though we aren't experiencing much climate change now, that doesn't mean we won't experience it in the future."

The Midwest Confronts a Changing Climate - cont.

Renewable energy and energy efficiency technologies were the subject of a keynote address by Acting Assistant Secretary Joseph J. Romm, of the Office of Energy Efficiency and Renewable Energy of the U.S. Department of Energy. Romm told the audience that emerging technologies such as fuel cells show great promise in reducing greenhouse gas emissions from cars and buildings, and that solar and wind technologies are rapidly becoming cost-competitive.

Not all the conference participants were as optimistic. Several speakers including Jene Robinson, of Illinois Power Company, voiced concerns about the potential impact of emissions controls on the Midwestern economy. Protesters from the Illinois Citizens for a Sound Economy held a demonstration on the street against the global warming treaty that is expected to be negotiated in Kyoto, Japan, this December.

Other speakers said they had been successful in reducing greenhouse gas emissions while saving money and addressing other environmental or social problems. Energy efficiency improvements in city-owned buildings will save Minneapolis taxpayers $1 million a year, according to William S. Anderson, environmental director of the City of Minneapolis. Mary Ann Smith, an alderman from Chicago, told the audience that the city is becoming a better place to live through efforts to reduce traffic. "We are making our city walkable again, making it beautiful and green," she said.

Karen Witter, chair of the Illinois Task Force on Global Climate Change, summed up the dilemma that was on the minds of many conference participants. "We believe that doing nothing can put us all at risk, as the future of essential natural resources and weather-sensitive activities could be affected," she said. "But we also believe that Illinois' unique circumstances will make a return to 1990 greenhouse gas emissions levels very difficult." Low- or no-cost options to cut emissions would move Illinois only partway to that goal, especially because of the impending retirement of nuclear plants that provide the state with 60 percent of its electricity.

Nancy Mink, Waste Policy Institute

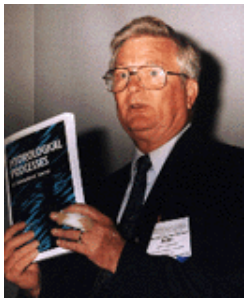
Demonstrators outside the conference site protested against the United States signing a treaty in Kyoto this December.

Closing the conference, David Ullrich noted that policymakers are faced with "tough decisions" about how to act in the face of uncertainty. Conferences such as this one, he said, should help lead to informed decision-making and ensure a common understanding of the issues.

Looking at the Risks

Global warming could affect the availability of freshwater for drinking and irrigation in the Midwest, reduce the diversity of tree species, and increase the risk of respiratory diseases, according to a panel of scientists at the Chicago conference.

Freshwater systems are "very sensitive" to climate change and variation, said John Magnuson of the University of Wisconsin-Madison. While cautioning that the studies he cited do not include the regional cooling effect of sulfate aerosols, Magnuson said that global warming could decrease water supplies, reduce wetland areas, increase the variability of floods, raise the temperatures of lakes and streams, and result in extirpations and extinctions of important species such as game fish.



Brad Hurley, Waste Policy Institute

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John Magnuson, of the University of Wisconsin, describes potential impacts on freshwater.

Brad Hurley, Waste Policy Institute

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EPA's Allen Solomon: Midwestern forests may suffer dieback.

In the Midwest, most areas are expected to see a decline in rainwater runoff under global warming. "This particular kind of change would be expected to have effects on drinking water availability, irrigation, and water levels in the Great Lakes," Magnuson said.

If Great Lakes levels decline as predicted, "one can expect a debate," he said, over the use of the lakes for irrigation, drinking water, and for shipping out of the basin. "These will be major issues."

Lakes in the region would be covered with ice for shorter periods of time, and changes in water temperatures would affect fish—potentially eliminating coldwater species such as trout while creating better habitat for warmwater species such as bluegills.

"We know the results are complex," Magnuson said, "but we anticipate a large variety of changes associated with water runoff, chemical inputs to the lake, and the interaction with other human uses" as the climate changes.

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"Illinois, as a significant emitter of greenhouse gases, and also as an important agricultural state, has a major stake in national and international policy on climate change."

Bernie Killian
Deputy Director
Illinois Environmental Protection Agency

EPA

The Clean Energy Revolution

"I'm here to say that there is a lot of opportunity for us to reduce green-house gas emissions in a manner that will continue to grow the economy," said Acting Assistant Secretary Joseph J. Romm, of the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy, in his keynote address to the conference. A commitment to fight global warming does not have to mean taking expensive, onerous action that will cost jobs and slow economic growth.

Brad Hurley, Waste Policy Institute

Energy Department Acting Assistant Secretary Joseph Romm described promising new technologies.

"It has been demonstrated over and over again that environmental regulations do not hurt U.S. competitiveness," Romm said. "Indeed, if policies are implemented intelligently they create opportunities for U.S. businesses to become more competitive, because they produce less pollution, use less energy, and develop new technologies that they can sell overseas."

To prove his point, Romm discussed a range of promising new technologies in the transportation, building, and industry sectors.

Driving Clean and Green

Development of technology to address one of the largest single sources of CO_2 emissions—transportation—is the goal of the Partnership for a New Generation of Vehicles. This public-private partnership of automakers, suppliers, and national labs is working to develop a prototype vehicle by the year 2004 that will get 80 miles per gallon and cost the same as a conventional automobile.

The new vehicle, the size of a Ford Taurus, will be more aerodynamic and lighter than today's cars. It will have a hybrid engine combining internal combustion and an energy storage device. Romm said that by the end of this year, Ford will have a dozen prototype vehicles that get 60 to 70 miles per gallon.

Another important effort underway is the development of hydrogen-powered fuel cells for vehicles. According to Romm, fuel cells can provide more power and range than electric batteries. In a recent breakthrough, the Department of Energy has developed an on-board processor that will convert gasoline, ethanol, or natural gas to hydrogen, allowing fuel cell cars to take advantage of the existing gas station infrastructure. "We are pretty bullish on fuel cells," Romm declared.

Cellulosic ethanol, a fuel that emits no net CO_2 because it is derived from crops that sequester carbon from the atmosphere, also holds promise for reducing emissions from vehicles. Romm said that the Department of Energy has found ways to get ethanol from new sources, such as wastepaper, crop waste, and dedicated crops such as switchgrass and poplar trees. "We have brought the cost of ethanol down to $1.20 a gallon," Romm told the audience.

Saving Energy in Buildings

"The opportunities for energy efficiency in buildings have barely been scratched," Romm said. Retrofitting existing buildings and designing new buildings to be energy efficient can cut costs significantly and reduce CO_2 emissions. "It is generically true that you can go into any building and save 20-25 percent on energy bills. We have demonstrated that in thousands of homes."

In Chicago, Romm said, the Housing Authority's purchase of some 10,000 efficient apartment-size refrigerators from Maytag will save $500,000 annually in energy bills.

Efforts to build efficient new homes and buildings are leading to exciting developments, Romm added. Working with the Energy Department, Shaw Homes built a house in Grayslake, Illinois, that is nearly 50 percent more energy-efficient than a conventional home and costs only $1,500 more—an expense that owners will recoup in one year through lower energy bills.

Heat and power plants in buildings constitute another promising area for energy savings. Long before fuel cells are cost-effective in cars, Romm said, they will be very cost-effective in buildings for providing electricity and hot water. The Department of Energy projects that fuel cells will provide electricity to buildings at just 6 cents per kilowatt-hour by the year 2005, dropping to 5 cents in 2010.

Another way to save energy in buildings, especially in warm-climate cities, is through light-colored surfacing and shade trees. Such measures, Romm said, could reduce the temperature of a city like Los Angeles by 5 degrees. "It's the single most cost-effective thing that a city can do to reduce its greenhouse gas emissions, cut its air conditioning bill, and reduce urban smog," Romm said.

Saving Jobs and Energy in Industry

"The biggest inefficiency in the entire U.S. energy production system is the fact that we have a utility grid whose average efficiency is about 35 percent," Romm said. "The waste heat that our power plants throw away every year is equal to 20 quads of power, which is more energy than all of Japan consumes in a year."

Romm sees fuel cells and advanced turbine systems as promising technologies that will allow industries to generate their own efficient power at low cost.

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The Clean Energy Revolution - cont.

An advanced turbine being developed by the Energy Department, for example, will provide electricity directly to industry for 3 cents a kilowatt-hour, along with steam for use in manufacturing processes.

In another example, a new drying process developed for the paper industry has cut energy use for paper making by a third. The process allows mills to use more recycled material and increases productivity by about 80 percent.

Clean Choices

While focusing on energy efficiency in the near term is an appropriate strategy, Romm said that ultimately "we need to get off CO_2 as an energy byproduct."

The Department of Energy has been working for 20 years to bring down the cost of renewable energy. The next generation of wind turbines will produce power at just 2 to 3 cents per kilowatt-hour, Romm said. In addition, within the next three years, photovoltaic electricity will become available at the residential rate (8 to 10 cents per kilowatt-hour) in a number of U.S. cities. The global photovoltaic market will experience "huge growth" as well.

Utility restructuring presents an important opportunity for renewable energy development as customers are allowed to select where their electricity comes from. "It will be incumbent on us to choose clean energy and make sure that the companies that we do business with purchase clean energy," Romm said. "When Traverse City, Michigan, did this, they found no difficulty in getting people to sign up to pay a little extra."

Leaders or Laggards?

Romm closed by citing one more reason why the United States should take an aggressive position on global warming. "The country that acts first will be the world leader in the technologies that will be the big job producers of the next century," he said. "The question is whether we will be the world leaders or laggards."

When asked by a member of the audience whether the Administration would impose fuel taxes to promote efficiency, Romm responded that "it's not our preference." If car makers and others pursue the development of new technologies and make them ready when we need them, the government will not have to impose stiff regulatory or economic penalties to get people and companies to reduce emissions. "But if we sit on our hands for 10 or 15 years and the climate changes, that's the time you would get the government regulations that nobody really likes."

→ *During the conference, audience members asked questions about the risk of infectious diseases, the impacts of reducing CO_2 emissions, and the role of developing countries in addressing climate change.*

Nancy Mink, Waste Policy Institute

Nancy Mink, Waste Policy Institute

Eric Glatstein, an environmental engineer with EPA's Region 5, and Jennifer Morgan, of the U.S. Climate Action Network, chat in front of an EPA exhibit on the impacts of climate change on human health.

→ *Conference speaker Stanley Changnon compares notes with EPA's Julie Magee, who played a key role in organizing the conference.*

Nancy Mink, Waste Policy Institute

"I want to find out what the science says."

Michael Mangan
Emerald Energy Company
Delafield, Wisconsin

Looking at the Risks - cont.

Forests in the Great Lakes region, northern Minnesota, and other areas of the Midwest may suffer dieback as the climate warms, according to Allen M. Solomon, of EPA's National Health and Environmental Effects Research Laboratory. CO_2 fertilization could reduce the dieback, especially among seedlings, but the diversity of tree species in the Midwest also might decrease. Warmer winters could cause deciduous hardwoods to replace evergreen softwoods.

Climate change could have a number of impacts on human health in the Midwest, said Mark L. Wilson, of the University of Michigan's School of Public Health. Direct effects include heat-related deaths, increases in respiratory diseases related to air pollution, and catastrophic weather that results in injuries or deaths. Indirect effects include outbreaks of infectious diseases such as malaria, encephalitis, and Lyme disease.

Wilson pointed out that researchers who study the potential effects of global warming on human health have "difficulty in making forecasts that are believable," due to complex interactions that can produce contradictory results. For example, mosquito populations could either increase or decrease depending on the degree of temperature change.

Brad Hurley, Waste Policy Institute

University of Michigan epidemiologist Mark Wilson discusses human health issues.

Similarly, the response of human populations to heat waves depends on where they live and what they are accustomed to. "People living in Jacksonville, Florida, are much better prepared for these kinds of events than people living in cooler climates," Wilson said. "There's no simple way to explain and predict the association between an extreme heat event and the probability of disease or death."

Doing It Smart or Doing It Dumb?

Brad Hurley, Waste Policy Institute

Jene Robinson, of Illinois Power Company, is concerned that reducing greenhouse gas emissions will hurt the economy.

Brad Hurley, Waste Policy Institute

William Moomaw, of Tufts University, showed that the economy prospered even as growth in greenhouse gas emissions declined.

Peggy Duxbury, director of corporate policy for Redefining Progress and moderator of the conference's afternoon session, asked her panelists to consider the following statement from Janet Yellen, chair of the Council of Economic Advisors. Testifying before Congress in July on the costs of fighting global warming, Yellen said, "It boils down to this: If we do it dumb, it could cost a lot. If we do it smart, it could cost much less and indeed could produce net benefits over the long run."

Jene L. Robinson, manager of environmental resources for Illinois Power Company, is worried that the United States may be on track to doing it dumb.

"We don't believe it's right to lower the standard of living in the United States to accommodate some political ambitions, to appease environmentalists, and to redistribute the wealth of this country to developing countries," Robinson said. He cited government studies that conclude, in his words, "that to start lowering CO_2 emissions we will need a $100 per ton carbon tax."

Cost savings would be possible, Robinson said, if the United States were given flexibility on where and when emissions reductions could take place. But he believes that the climate treaty to be negotiated in Kyoto, Japan, this December will not include that flexibility. He expressed concern over the cost of complying with such an agreement, arguing that the conversion of Midwestern coal-fired power plants to natural gas would drive up the price to customers and throw thousands of coal miners out of work.

William Moomaw, of Tufts University, painted a very different picture. He suggested that emissions reductions can be achieved without disrupting the U.S. economy and presented data showing that economic growth did not stop when the rate of increase of CO_2 emissions declined after the oil shocks of the 1970s.

Total CO_2 emissions over a 40-year period in the United States have grown about 88 percent, according to Moomaw. At the same time, population has grown by about 64 percent. But the amount of CO_2 per dollar's worth of gross domestic product is now only 51 percent of what it was in 1950, due to technological innovation. "If our population had remained constant and if our wealth per person had remained constant, we'd be producing half as much carbon dioxide in 1990 as we did in 1950," Moomaw said.

All of this was achieved without a CO_2 policy. "Just imagine what would happen if we had a coherent stabilization or reduction policy," he added.

Moomaw argued for a policy to replace items such as refrigerators, cars, and houses with more efficient models when their useful life is over. "Simply doing that would make an enormous difference" and would allow the United States to reduce CO_2 emissions in a very cost-effective manner.

Will we do it smart or do it dumb? "I vote for doing it smart," Moomaw said.

Success Stories from the "Doing It Smart" Crowd

Many companies, states, and municipalities around the country have decided to move ahead and take voluntary action to help slow global warming. Three speakers at the conference shared their experiences at the corporate and local levels.

Steven J. Teets, senior facility engineer at Lucent Technologies, Inc., explained how his company captured methane from a 70-acre landfill to fuel the primary boiler at Lucent's manufacturing facility in Columbus, Ohio.

Through a partnership with SBM, Inc., a specialized energy company, Lucent obtains about 90 percent of the Columbus facility's heating needs from landfill gas at a cost savings of $120,000 per year. The project has reduced emissions of methane—an important contributor to global warming—and has cut Lucent's overall air emissions, provided the company with a long-term renewable fuel supply, and improved its boiler efficiency. "It's a win-win solution for the developer, industry, the community, and the environment," Teets said.

William Anderson, environmental director for the City of Minneapolis, told the audience that his city is working on a number of fronts to reduce greenhouse gas emissions. A partnership with Northern States Power to retrofit 119 city buildings with energy-efficient equipment will save Minneapolis $1 million a year in energy costs. Other projects include strategic tree planting, recycling, and transportation initiatives.

Anderson emphasized that "doing things smart" involves not just using new technology, but also establishing new partnerships with the business community. He stressed that efforts to reduce greenhouse gas emissions at the local level must be justified on the basis of multiple benefits, such as reducing local air pollution, preserving public health, cutting energy bills, increasing employment, and providing relief from traffic congestion.

"I wouldn't want to go to my city council and tell them they need to focus on global warming," Anderson said. "But as part of a comprehensive environmental program that addresses air quality, energy conservation, and savings, we can have that kind of discussion."

Mary Ann Smith, an alderman from Chicago, has brought the global issue of climate change to a local level. "In the City of Chicago, we decided it was dumb to wait for everyone to come to agreement about whether climate change is a real issue," she said. The city has moved ahead and adopted a policy to employ the best, most efficient technologies when rebuilding old infrastructures, parks, and schools.

Brad Hurley, Waste Policy Institute

Lucent Technologies Engineer Steven Teets describes how his company uses landfill methane for fuel.

EPA's Julie Magee talks with conference speaker William Anderson, environmental director of Minneapolis.

Nancy Mink, Waste Policy Institute

Brad Hurley, Waste Policy Institute

Chicago Alderman Mary Ann Smith tells how cities can become involved in efforts to reduce greenhouse gas emissions.

Chicago has planted more than 600,000 trees since 1989, is using natural gas- and biodiesel-fueled buses, and has introduced propane-fueled vehicles in all city fleet divisions.

Many of the city's efforts are focused on reducing personal vehicle use. "We believe the automobile has done serious harm to the urban infrastructure, urban quality of life, and to families," Smith said. Chicago is working to reduce parking, restore the original pedestrian-oriented urban design, and install a new infrastructure for bicycling.

"We are the model of new urbanism," Smith declared. "We are restoring our neighborhoods, and we are rebuilding the walkability, the beauty, the greenness, the schools, and the parks of the City of Chicago.

Upcoming Conferences

The next regional conference sponsored by the U.S. EPA, "Climate Change: What Does It Mean for the Central Southwest?" will be held October 30, 1997, at The Fairmont Hotel in Dallas, Texas.

"Global Climate Change: What Does It Mean for the Mid-Atlantic States?" will convene November 18, 1997, at the Holiday Inn Select hotel in Philadelphia, Pennsylvania.

For more information, contact Monica Duda, Waste Policy Institute, 703-247-2410.

"The conference has been stimulating and covered the gamut from the complicated science to the difficult control strategies, and the promise of new technologies that we all want to be optimistic about."

Karen Witter
Chair, Illinois Task Force on Global Climate Change

One State's Response

Illinois is well-informed about its greenhouse gas emissions and the best strategies to reduce them, thanks to the state's Task Force on Global Climate Change. The task force, which represents a diverse range of interests, completed its first emissions inventory in 1990 and released a climate change action plan in 1994.

Task Force Chair Karen Witter told the conference that instead of ignoring the climate change issue, Illinois decided it would be smart to monitor what is going on internationally and nationally, assess the potential impacts on the state, and help advise policymakers on issues affecting Illinois.

The action plan focuses on energy efficiency and forestry, with measures such as expanding tree planting programs, partnering with the federal government to implement energy efficiency programs, helping Illinois companies meet their commitments under various Environmental Protection Agency and Department of Energy programs, capturing and using methane from landfills, and testing and promoting joint implementation projects.

Brad Hurley, Waste Policy Institute

Karen Witter, of the Illinois Task Force on Global Climate Change, describes the task force's achievements.

Conference Speakers

William S. Anderson, Environmental Director, City of Minneapolis, Minnesota

Dr. Stanley A. Changnon, Chief Emeritus and Principal Scientist, Office of Applied Climatology, Illinois State Water Survey, Illinois Department of Natural Resources

Peggy Duxbury, Corporate Policy Director, Redefining Progress

David Gardiner, Assistant Administrator for Policy, Planning and Evaluation, U.S. Environmental Protection Agency

Gary Gulezian, Senior Advisor to the Regional Administrator, U.S. Environmental Protection Agency, Region 5

Bernie Killian, Deputy Director, Illinois Environmental Protection Agency

Dr. Kenneth E. Kunkel, Director, Midwest Climate Center, Illinois State Water Survey, Illinois Department of Natural Resources

Dr. John Magnuson, Professor of Zoology, Center for Limnology, University of Wisconsin-Madison

William K. Moomaw, Ph.D., Professor of International Environment and Resource Policy Program, Fletcher School of Law and Diplomacy, Tufts University

Dr. Frank H. Quinn, Head, Physical Sciences Division, Great Lakes Environmental Research Laboratory, National Oceanic and Atmospheric Administration

Jene L. Robinson, Manager of Environmental Resources, Illinois Power Company

Joseph J. Romm, Acting Assistant Secretary, Office of Energy Efficiency and Renewable Energy, U.S. Department of Energy

The Honorable Mary Ann Smith, Alderman, City of Chicago

Dr. Allen M. Solomon, Senior Global Research Ecologist, Western Ecology Division, National Health and Environmental Effects Research Laboratory, U.S. Environmental Protection Agency

Dr. James A. Teeri, Director, Global Change Project, University of Michigan

Steven J. Teets, Senior Facility Engineer, Lucent Technologies, Inc.

David A. Ullrich, Acting Regional Administrator, U.S. Environmental Protection Agency, Region 5, Chicago

Dr. Mark L. Wilson, Associate Professor of Biology and Epidemiology, School of Public Health, University of Michigan

Karen A. Witter, Chair, Illinois Task Force on Global Climate Change