

CONFERENCE TURNOUT HITS NEW RECORD

Attendance at the 2000 State and Local Climate Change Partners' Conference doubled the previous record for attendance, hitting a high of 212. The fourth partners' conference, which was held November 1-3, 2000, in Alexandria, Virginia, also attracted a more diversified audience than ever before.

Participants included managers from environmental departments and planning offices, and representatives of local, state, federal, and international air quality, energy, forestry, public health, recycling, science, solid waste, and transportation agencies. Also attending were representatives of the media, private sector, utilities, nonprofit organizations, political officials, associations, foundations, and universities.



Conference participant asks a question of one of the speakers.

The themes that emerged included the critical importance of stakeholder involvement, the need to seek out state and local champions for outreach and greenhouse gas emissions registries, and the leadership role taken by state and local governments.

EPA Deputy Assistant Administrator for Climate Change John Beale opened the

conference by applauding leaders of state, county, and city governments for their "energy and dedication" to reducing greenhouse gas emissions. "With your talent and passion," he added, "we will meet the challenge of climate change."

Following Beale's remarks, EPA's Dr. Joel Scheraga described the first U.S. National Assessment, calling the potential—but as yet uncertain—effects of climate change on ecosystems "a potential smoking gun."

After a description of potential impacts, the conference turned to an update on international climate policy by Paul Stolpman, director of EPA's Office of Atmospheric Policy. Referring to the Senate resolution calling for involvement by the developing countries, Stolpman said: "In my mind, the resolution basically recognizes that, if we're going to solve this problem, all of the countries of the world have to be involved."

David Gardiner, executive director of the White House Climate Change Task Force, noted the important role of state and local governments. One reason is their capacity to serve as an international model for "real practical solutions," in Gardiner's words.

Steven Kull, of the Center on Policy Attitudes, summarized the results of a 1998 survey of attitudes on global warming. An overwhelming number of the respondents (83 percent) said that the nation should take steps to fight global warming.

The keynote speaker, Joseph Romm, of the Center for Energy and Climate Solutions, pointed to the need for outsourcing energy



Ralph Torrie (right) asks conference participants to participate in a user survey for developing new software that will analyze multiple benefits of strategies to reduce emissions.

services and continuous monitoring of energy efficiency equipment to maintain energy savings.

Other speakers discussed outreach successes, harmonized options for reduction strategies, voluntary registries of emissions reductions, carbon sequestration, and energy tax credits. Additional topics included renewable resource trust funds, transportation opportunities, green power purchasing, and integrating climate change with existing environmental priorities.

EPA's Denise Mulholland wrapped up the conference, calling it an "opportunity to learn from each other about the issues and barriers that we all face. And the solutions."

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AN OPPORTUNITY FOR STATES AND LOCALITIES

Even as the science of climate change is becoming more and more certain, our response—in particular, the Kyoto treaty—is continuing to be uncertain, EPA's **John Beale** told the conference. Despite this uncertainty, an increasing number of Americans see climate change as an opportunity.

Businesses are recognizing that adopting energy-efficient measures can give them a competitive advantage. "Many are making fundamental changes in their approach to climate change," said Beale.



EPA's John Beale, deputy assistant administrator for climate change, welcomed conference participants and described climate change as an exciting opportunity for state and local leaders.

At the same time, he added, many state, county, and city governments are ahead of the federal government on this issue. Beale commended the state of Maryland for adopting new tax incentives for energy efficiency and renewable energy technologies. He applauded Oregon's legislation authorizing the state's energy facility siting council to set new standards for carbon dioxide emissions. Vermont incorporated a significant public benefits fund into its electric utility restructuring package, and California passed a bill authorizing \$50 million in new money for programs to reduce electricity consumption.

"With EPA's assistance, 35 states have completed state-based greenhouse gas emissions inventories, and 17 states have completed state action plans to analyze options for reducing these emissions," he added.

Beale also cited the International Council for Local Environmental Initiatives' (ICLEI) work with cities across the nation and the 21 governments that are partners in EPA's ENERGY STAR® programs. "Through improvements in energy efficiency in their own facilities," he said, "we estimate that these state and local governments could save as much as \$4.5 billion annually."

Under the recently announced Commuter Choice initiative, he added, EPA is partner-

ing with businesses and state and local governments in an integrated effort to offer commuters options such as carpooling, transit vouchers, and cash in lieu of parking spaces. Some of the key partners are Maryland, Georgia, Fort Worth, and the Community Planning Association of Southwest Idaho.

ASSESSING IMPACTS ON THE NATION

Left unabated, the level of carbon dioxide in the atmosphere is expected to be double pre-industrial levels by around 2060, and double current levels by 2100. Noting this trend, **Dr. Joel Scheraga**, director of EPA's Global Change Research Program, told the participants, "This is why people are calling this a 'global experiment.'"

Describing the first U.S. National Assessment, Scheraga said that the key messages are that the climate has already changed and that impacts will have a regional texture. The assessment was organized by the U.S. Global Change Research Program (USGCRP), in partnership with universities and stakeholders across the country. Nineteen regional assessments were conducted, as well as five sectoral assessments: human health, agriculture, forests, water, and coastal areas and marine resources.

Calling the potential—but as yet uncertain—effects of climate change on ecosystems "a potential smoking gun," Scheraga noted that consequent impacts on forests may, for example, have economic implications for the commercial timber industry. He also noted that water is the linchpin connecting many other sectors, and the effects of climate change on water supplies could have important implications for agriculture, recreation, and public health.

"The energy and dedication of people like you," Beale concluded, "is making a difference in terms of the reductions we're getting and the politics here in Washington. With your talent and passion, we will meet the challenge of climate change."



EPA's Joel Scheraga (left) talks with the CDC's Mike McGeheh.

Similarly, impacts on coastal zones will have consequences for wetlands, human structures, and the insurance industry.

The assessment focused on four key questions: (1) What is the current status of resources in the region, and what are the current stresses other than climate change on those resources? (2) How might climate variability and change exacerbate or ameliorate the existing conditions and stresses? (3) What are possible coping mechanisms and adaptation strategies? (4) What are the key information gaps and recommendations for future research?

Climate change is already happening. "This is not pie in the sky," Scheraga insisted, pointing to the example of a sizable area that is already underwater at Blackwater National Wildlife Refuge in Maryland.

The next step is for state and local leaders to employ the information contained in the first U.S. National Assessment as the basis for the decisions that need to be made to protect our nation. "We now have to work with you," Scheraga concluded, "about how to translate this valuable scientific information into decisions that you need to make today to protect air quality, public health, water quality, food supplies, wildlife, and ecosystems."

The U.S. EPA's State and Local Climate Change Program helps states and communities reduce emissions of greenhouse gases. The program:

- Provides technical support for estimating emissions.
- Assesses the economic and environmental risks associated with global warming.
- Offers materials and guidance for evaluating options to reduce emissions.
- Analyzes the connections between lowering greenhouse gas emissions and solving other environmental problems.
- Provides examples of solutions that others have implemented.

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IMPACTS ON TWO SECTORS

The five sectors mentioned by Joel Scheraga are interrelated, and impacts on one sector are likely to affect the others. Conference participants heard descriptions of impacts on two of the five sectors—health and ecosystems—by two experts in those areas. Both speakers stressed the importance of immediate action. After concluding their talks, the speakers addressed questions from the audience.

Health Effects

The health sector presents five main areas of concern: waterborne diseases, infectious diseases, respiratory conditions exacerbated by air pollution, deaths from heat waves, and deaths and injuries from extreme weather. **Dr. Mike McGeehin**, director of the Environmental Hazards Division at the Centers for Disease Control and Prevention, noted that waterborne diseases—the first area of concern—already cause nine million illnesses nationwide each year.

The second area—vector-borne diseases and their possible spread—causes the most controversy among the scientists who study the health impacts of climate change. “We had scientists on our panel of health experts who represent both ends of the spectrum,” said McGeehin.

He maintained that it is unlikely that malaria and dengue fever will become endemic in the United States, as is Lyme Disease. On the other hand, responding to vector-borne diseases may cause a significant impact on people’s lives, similar to what happened when planes sprayed pesticides in New York during the summer of 2000 to control mosquitoes that carry encephalitis. No doubt, some economic and social impacts occurred as a result of the Disney World shutdown after one case of encephalitis was diagnosed in Florida.

Regarding the third area, respiratory conditions and air pollution, he said, “We do

know that air pollution already affects human health, and any increase will cause significant problems.” Hydrocarbons, particulate matter, and ozone damage lung tissue, exacerbate respiratory diseases, and reduce lung function.

The fourth area of concern—heat-related morbidity and mortality—may have the greatest impact on U.S. citizens. Heat waves may double in frequency and intensity because of climate change, but heat waves already are killing people. During the Chicago heat wave of 1995, said McGeehin, “The brownstones with black tar roofs were like brick ovens.”

The last area of concern—injury and illness from the possibility of an increase in extreme weather events—is illustrated by events like the recent flooding in North Carolina. The potential impacts from an increase in extreme weather, McGeehin noted, may be lessened by the use of effective warning systems, floodplain management, and other societal adaptations.

His conclusions were that climate change may affect human health in the United States, and the effects will vary by region. Public education, improved disease surveillance, and other societal adaptations can reduce the impact. “From a public health viewpoint,” McGeehin concluded, “we know what we need to do in all of these areas—*now*.”

Wildlife Impacts

Jennifer Morgan, director of the World Wildlife Fund’s climate change campaign, discussed some of the signals of change so that state and local leaders can make plans to reduce the pollution that causes climate change and the adaptations needed to make ecosystems more resilient.

The core issue, said Morgan, is the rate at which species need to migrate in order to keep up with climate change. She noted



Jennifer Morgan, of the World Wildlife Fund, discussed effects on ecosystems.

that a World Wildlife Fund report found that the species migration rate that will be needed is 10 times greater than the rate that occurred after the last glacial retreat.

The report also found that one-third of the world’s habitats are likely to see significant changes. Ecosystems in the northern hemisphere, in particular, will be affected, especially tundra, boreal forests, and mixed forests in temperate zones. Seven Canadian provinces and Colorado, New Hampshire, Maine, Oregon, and Wyoming are “all looking at potentially high rates of habitat loss,” she said.

Morgan cited a number of studies that suggest that “something is going on.” One study found that 47 species of birds in Michigan arrive 34 percent earlier in the spring than formerly. Research in the United Kingdom indicates that 31 percent of bird species are laying their eggs an average of 8 days earlier since 1971. Breeding dates of Mexican jays in Arizona were occurring 11 days earlier in 1998 than they did in 1971. In California, the average distribution of the Edith’s Checkerspot butterfly has moved 90 kilometers north and 124 kilometers higher in altitude.

A number of studies have shown that tree lines are creeping farther north and upslope. Examples cited by Morgan are the northward movement of the arctic tree line in the Hudson Bay region, trees moving into colder areas of Alaska, other species moving upslope in the Olympic Mountains and Mount Rainier National Park, and plant species moving upslope in the Alps of Switzerland and Austria. In the Everglades, vegetation zones—the boundaries of mangroves and sawgrass habitats—have changed.

“We should expect surprises,” Morgan concluded. “We should expect rapid changes. But we can minimize the impact if we act *now*.”

Conference Co-Sponsors

- ☉ Center for Clean Air Policy
- ☉ Environmental Council of the States
- ☉ International City/County Management Association
- ☉ International Council for Local Environmental Initiatives
- ☉ National Association of State Energy Officials
- ☉ National Association of State Foresters
- ☉ State and Territorial Air Pollution Program Administrators (STAPPA) and the Association of Local Air Pollution Control Officials (ALAPCO)
- ☉ Union of Concerned Scientists
- ☉ U.S. Department of Energy
- ☉ U.S. Department of Agriculture, Forest Service
- ☉ World Wildlife Fund

UPDATE ON INTERNATIONAL CLIMATE POLICY

Applauding states for being further along in emissions inventories and action plans than many countries, **Director Paul Stolpman**, head of EPA's Office of Atmospheric Programs, went on to provide a retrospective on international climate policy and a perspective on the negotiations in 2000 at The Hague in the Netherlands.



EPA's Paul Stolpman told the conference that the role of carbon sinks must be recognized through incentives.

The original U.S. goal of achieving a reduction of 100 million metric tons of carbon equivalent (MMTCE) was thought to represent the growth in emissions from 1990 to 2000. Today, to keep emissions below 1990 levels, the reduction will have to be on the order of 600 to 700 MMTCE. "So we have a much bigger job," Stolpman pointed out.

He described four U.S. victories at the 1997 negotiations in Kyoto: (1) agreement to a five-year block of time for compliance; (2) agreement to a basket of six greenhouse gases, which allows the flexibility to reduce the cheapest pollutants; (3) a prominent role for market mechanisms such as emissions trading; and (4) inclusion of sinks in the options available for meeting targets.

Three key developments have occurred since 1997. The first was the Senate resolution calling for involvement of the developing countries. "In my mind," said Stolpman, "the resolution basically recognizes that, if we're going to solve this problem, all of the countries of the world have to be involved."

The second development was the Climate Change Technology Initiative, which proposed a large U.S. budget increase to enhance existing federal voluntary programs and targeted significant money to tax credits. The third key event was the development of a plan of action at the 1998 Buenos Aires conference.

The goal at The Hague is to put together a working mechanism that will minimize costs, address the involvement of developing countries, and be environmentally effective. The United States wants a mechanism that is equitable, ensures compliance through legally binding consequences for exceeding targets, and provides a roadmap for producing and reporting emissions data that will be "transparent," i.e., open to public scrutiny.

Finally, Stolpman said, the United States holds that emissions trading should operate freely without constraints, developing countries need to be part of the solution, and the role of sinks must be recognized through incentives for enhancing the uptake of carbon in soils and forests.

ROLE OF STATES AND COMMUNITIES

David Gardiner, executive director of the White House Climate Change Task Force, provided five reasons for believing that state and local governments should take action on climate change.

First, climate change is a local issue. Rising sea levels, increasingly long droughts or heat waves, and the possibility of more intense weather events are actually experienced at the state and local levels. For many people, climate change is an abstract issue, but it becomes real through these state and local impacts.

Second, powers uniquely held by state and local governments will determine emissions reductions in areas such as energy use, transportation, and growth and development patterns.

Third, state and local actions can have a real impact on greenhouse gas emissions. For example, the 75 U.S. communities that are currently participating in the International Council for Local Environmental Initiative's (ICLEI) Cities

for Climate Protection Campaign produce 10 percent of the total greenhouse gas emissions in the United States. Gardiner pointed out that these communities already are reducing greenhouse gas emissions by 7.5 million tons and saving \$70 million in energy costs annually. The states that have developed action plans have identified 52 to 70 million metric tons of carbon emissions that can be avoided by 2010 through low-cost or no-cost actions.

Fourth, state and local governments often are in a position to act more quickly than the federal government can. For example, four states—New Jersey, New Hampshire, Wisconsin, and California—have developed greenhouse gas emission registries or emissions trading in some form. Another example is the work that Maryland, Georgia, Wisconsin, and Utah are doing to develop model policies that better integrate climate change and clean air objectives.

Finally, developing countries are eager to find out what states and communities in the



In response to a question from the audience, White House Climate Change Task Force Executive Director David Gardiner quoted the chairman of the Ford Motor Company saying that "anyone who doesn't think global warming is real is in denial."

United States are doing. "State and local governments can help point the way," Gardiner concluded. "There is a strong role for you in helping show real practical solutions."

PUBLIC PERCEPTION OF CLIMATE CHANGE

An overwhelming majority of Americans believe that global warming is a real problem (89 percent). A majority believes that it requires action, and 59 percent favor U.S. ratification of the Kyoto treaty. These are the key findings of a 1998 survey conducted by the University of Maryland for the Program on International Policy Attitudes. **Steven Kull**, director of the Center on Policy Attitudes, said that the poll surveyed 1,448 respondents nationwide.

A total of 44 percent believe that the nation should take gradual steps at minimal cost, and another 39 percent said the problem is serious and warrants steps even if they involve significant costs. A majority (63 percent) is willing to accept increases of \$25 per month in household energy costs—an amount sufficient to comply with the Kyoto Protocol, according to government estimates if the steps include emissions trading.

A majority initially opposed emissions trading but shifted to supporting it after hearing that costs per household would be \$50 per month without the trading regime, but \$10 per month with it.

A majority (53 percent) favors the Kyoto treaty even if developing countries are not required to reduce their emissions. A total of 44 percent say that the United States should refuse to agree to the treaty until all developing countries commit to limits on their emissions. The respondents indicated overwhelming support for providing assistance to developing countries in the form of technologies and training.

Kull concluded that the public tends to underestimate public support. “It’s like a Lake Wobegon effect,” he said. “The public says, ‘I get it, but the public doesn’t.’”

In response to the audience’s questions, Kull noted that the sample was not large



Luncheon speaker Steven Kull said that awareness of global warming is high: 89 percent of respondents to a 1998 survey believe that global warming is a real problem.

enough to disaggregate the responses at the state level. In addition, the American public is strikingly homogeneous. “We look for regional differences all the time,” he said, “but we don’t find them.” *For more information, see: www.pipa.org*

EMERGING TECHNOLOGIES

“A major sea change is taking place,” said **Dr. Joseph J. Romm**, executive director of the Center for Energy and Climate Solutions. Companies like BP-Shell, DuPont, Kodak, IBM, Polaroid, and Johnson & Johnson are making commitments to reduce their greenhouse gas emissions and realizing that they can make a profit by doing so.

Some companies, however, find that the initial savings from energy retrofits in buildings are significant but then decrease over time. The reason is that the retrofits are not maintained and operated correctly, Romm explained.

The solution is “continuous commissioning,” that is, installing data loggers and sensors at various points in a building and then funneling the data to a workstation where the retrofits can be monitored. At the same time, commissioning facilitates verification of CO₂ reductions and awarding of credit for those reductions.

Romm went on to describe outsourcing of energy services as an effective way to help

ensure that savings persist. Energy services companies usually employ their own capital to fund the energy retrofits and guarantee reductions starting in the first year. Employing an energy services company means that the outsourcing company can use its own capital for other purposes.

Owens Corning, Ocean Spray, and Polaroid are among the companies that are outsourc-



In his keynote address, Joe Romm noted that the U.S. growth in CO₂ emissions went down from 1996 to 2000, while the nation’s gross domestic product went up.

ing their buildings management. “Enron Energy Services is now spending \$1 million per day on energy efficiency,” said Romm, “and has the lion’s share of the market.”

He also maintained that it is a myth that Internet usage is exploding the demand for electricity and causing grid reliability problems. At the same time, he added, it is true that the electric grid is becoming less reliable. Companies that lose enormous amounts of money during power outages need a solution. A fuel-cell system such as the one installed by the First National Bank of Omaha provides nearly guaranteed availability of electricity and low life cycle cost, while cutting CO₂ emissions by 45 percent and producing almost no NO_x emissions.

“If states take systematic proactive approaches,” Romm concluded, “they can integrate energy and air issues. It doesn’t make sense to have strong air regulations in a state that buys coal-generated power from a neighboring state.”

TREES AND AIR QUALITY IN NEW JERSEY

In the most densely populated state in the nation, 41 percent of the land is in tree cover. “During the growing season, trees are machines for scrubbing the air of pollutants,” said Supervising Forester **Michael D’Errico**, with the New Jersey Forest Service, “whether particulate matter or carbon.”

Due to attrition, old age, mismanagement, and lack of budget, the state has 2.2 million street tree vacancies in its urban forests. D’Errico noted that civic officials need more than beautification to justify expenditures for planting and maintaining trees. He went on to describe the Urban Forest Effects Model (UFORE), which quantifies the benefits of trees and determines how much carbon is being sequestered.

Applying the model to Jersey City, the data indicate that the community has a very low urban forest cover of 11 percent. Yet those trees are storing 18,500 metric tons of carbon per year. “Tripling the forest cover would almost triple the carbon sequestered,” D’Errico said.

A KANSAS COMMUNITY TAKES ACTION

Overland Park, a rapidly growing, upscale community of 150,000 where it is difficult to get people out of their cars, chose the low-cost actions—the low-hanging fruit—first. Environmental Compliance Manager **George Moody** told how Overland Park reduced its electricity use by 325,327 kilowatt-hours annually by installing heating and lighting upgrades such as high-efficiency light bulbs and motion sensors.

Annual emissions of CO₂ are reduced by 230 tons, SO₂ by 2 tons, and NO_x by 1.5 tons with a seven-year payback for the investments. The city is saving \$12,575 annually. One very effective measure was simply to install decals on switch plates reading, “Energy savings starts here.”

A MENU OF HARMONIZED OPTIONS

Art Williams, director of the Air Pollution Control District of Jefferson County, Kentucky, described a report on harmonized options by the State and Territorial Air Pollution Program Administrators (STAPPA) and the Association of Local Air Pollution Control Officials (ALAPCO). Instead of piecemeal regulatory programs to reduce criteria pollutants, communities can reduce greenhouse gases at the same time with little or no extra cost through a program of harmonized options.

The first part of the report is a sector-by-sector analysis (transportation, power generation, etc.) of the best strategies available today to reduce greenhouse gas emissions and criteria pollu-

tants. The second part is a test of harmonized options scenarios in four communities and states: Louisville; Atlanta; New Hampshire; and Ventura County, California.

If New Hampshire, for example, were to implement selected realistic and feasible options, carbon dioxide (CO₂) would be reduced by 12 percent, sulfur dioxide (SO₂) by 41 percent, nitrogen oxides (NO_x) by 17 percent, VOCs by 3 percent, and particulates by 12 percent by 2012. “All this for the price of one,” Williams noted. *For more information, see <http://www.4cleanair.org/reference.html>.*

DELAWARE CAN MEET ITS TARGET

Delaware can meet its goal of reducing the state’s greenhouse gas emissions by 7 percent below 1990 levels. This good news was shared by **Dr. John Byrne**, director of the Center for Energy and Environmental Policy at the University of Delaware.

To meet the target, the state needs to reduce its emissions by 23 percent by 2010. Even though the state’s action plan is limited to strategies that cost no more than 4 cents per kilowatt-hour and less than the cost of a gallon of gasoline, the goal is attainable if two-thirds of the strategies that meet these stringent requirements are implemented.

An industrial sector database developed by the U.S. Department of Energy contains information on energy audits at 8,000 manufacturing plants and 58,000 different technology upgrades. When a DuPont engineer and facility managers at other Delaware-based companies were shown the database, they responded that the Delaware target is achievable. In fact, according to the DuPont engineer, even greater energy savings are possible. *For Delaware’s action plan, see www.udel.edu/ceep/reports/deccap/deccap.htm.*

NORTH CAROLINA FACES IMPLEMENTATION CHALLENGE

Drs. Neal Lineback and **Jennifer DeHart**, professors at Appalachian State University, told the conference that the North Carolina action plan requires a 38 percent reduction in emissions by 2010 in order to meet a target of 7 percent below the state’s 1990 levels.

The *North Carolina Sensible Greenhouse Gas Reduction Strategies* plan is unique in that it employed Torrie Smith software to evaluate greenhouse gas impacts of strategies. The software used was a modified version of the software used in the ICLEI Cities for Climate Change program.

“We went shopping for sensible reduction strategies,” said DeHart. In the industrial

sector, for example, voluntary options include fuel switching, renewables, energy efficiency, new machine technologies, automation, and new processes—representing a total of 15 percent energy savings per plant.

Lineback and DeHart shared the importance of stakeholder involvement and the need for reduction strategies to overreach the target because some measures will not work well. Finally, Lineback concluded, “We need to organize a policy group that will implement what we started.” *For North Carolina’s action plan, see www.geo.apbstate.edu/bulletin/EPA_projects/NCaction/intro.html.*

VOLUNTARY REGISTRIES OF STATE EMISSIONS REDUCTIONS

If momentum is gathering for developing voluntary state greenhouse gas registries, **Ken Colburn**, director of the Air Resources Division of the New Hampshire Department of Environmental Services, could be considered a driving force. Colburn drafted the legislation and was instrumental in coordinating multi-stakeholder, bipartisan support for the 1998 bill that established the first voluntary state Registry of Greenhouse Gas Reductions in New Hampshire.

Significant concerns about the registry include applicability, reporting, baselines, quantification, verification, confidentiality, ownership, and sequestration. "One of the reasons to move carefully on such issues is so that we can coordinate better with other states," Colburn said. See www.des.state.nh.us/ard and www.state.nh.us/gencourt/bills/99bills/sb0159.html.

Wisconsin is one such state. **Eric Mosher**, climate change specialist at the Wisconsin Department of Natural Resources, spoke about recent legislation in his state that calls for the development of a voluntary registry.

Although the Wisconsin registry is in the initial stages of development, important lessons have emerged such as that stakeholder involvement is crucial to guaranteeing the success of the registry. For example, the initial negative reaction of stakeholders to the department's proposal for a phased approach led staff to rethink the design of the registry.

An example of effective stakeholder involvement was presented by **David Olsen**, president of the CEO Coalition to Advance Sustainable Technology. The California coalition's work led to Governor Gray Davis creating California's Climate Action Registry in September 2000.

The registry is a private-public partnership and is not run by the state. "This makes it

much more attractive for company participation," Olsen emphasized, "and underlines that this is not a regulatory program; it's a voluntary program." He noted that enough companies are interested to make registries viable. See www.leginfo.ca.gov (search for SB 1771.)

Another indication of a wellspring of interest in registries is emerging from the work of **Sue Gander**, senior policy analyst at the Center for Clean Air Policy. The center has helped several states initiate development of registries and offered advice to others who are considering registries.

Gander stressed the importance of keeping the big picture in mind during the development process. She agreed that it is vital to resolve the issues mentioned by Colburn and Mosher. "The more credible and robust the registry," Gander said, "the more likely that the full value [of what is registered] is going to be ultimately recognized."

OUTREACH CHALLENGES AND SUCCESSES

States from coast to coast are conducting outreach on climate change. In Oregon, a comprehensive program includes an eight-minute video, community forums, presentations to city councils, a glossy educational brochure, a marketing campaign for car sharing, and energy fairs where children play with a photovoltaic-powered toy car—all accomplished with a budget of about \$100,000.

Energy Analyst **Sam Sadler**, with the Oregon Office of Energy, explained that video costs were kept low by using file footage and borrowed graphics. The outreach program also took advantage of the opportunity to insert an educational supplement into *The Oregonian*. "Outreach takes numerous partners," Sadler concluded, "and an unassailable scientific foundation."

Maine's outreach program encountered parading picketers and a summons to the state legislature. "The silver lining was that these activities raised public awareness," said **Jim Connors**, senior policy development specialist with the Maine State Planning Office.

In response to the outreach program, a coalition of energy activists, business interests, environmentalists, and other groups organized a statewide conference that attracted 300 participants. Prior to the conference, the media were reluctant to run stories on global warming. Afterwards, articles began to appear, and recently the *Portland Press Herald* ran a favorable editorial. Groups such as the Maine Audubon Society, League of Women Voters, and Maine Council of Churches followed up with extensive activities to increase public awareness.

Motivating the public on the issue of climate change proved to be a challenge in Washington State, according to **Tony Usibelli**, senior energy policy specialist with the Energy Division of the Washington State Department of Community, Trade, and Economic Development. What saved the day for the outreach effort was significant NGO involvement, a strong academic base, three communities that belong to the Cities for Climate Protection Campaign, and major corporate ClimateWise partners.

Outreach themes that hit the mark included the rising importance of the renewables industry and increased value for forests through carbon sequestration. What failed to resonate included climate impacts on the region's hydrology and the survival of salmon. See www.energy.cted.wa.gov.

The role of a new regional nonprofit as described by **Adam Markham**, executive director of Clean Air-Cool Planet, is to produce real reductions in emissions by building a bridge across sectors such as forestry, agriculture, and recreation in New York, New Jersey, and New England states.

The nonprofit is working with a variety of constituencies: universities, churches, small businesses, and the media. Markham pointed out the importance of making the issue relevant through local, personal, and economic impacts; involving stakeholders; producing clear information; demonstrating solutions through case studies; and identifying leaders who can act as change agents.

CARBON SEQUESTRATION AND OFFSETS

Carbon sequestration is one of the most contentious issues in the climate change debate. To help states address the issue, **Richard A. Birdsey**, program manager of Global Change Research at the USDA Forest Service, is compiling state-by-state estimates of carbon sequestration in forests.

The estimates are determined by combining data on forest cover (compiled from both remote sensing and ground sampling) with values for carbon uptake (estimated from models and measured data). The estimates include factors such as what happens after harvesting, afforestation, and deforestation. Next steps include completing estimates for each state, compiling a national estimate, and posting them online. See <http://www.fs.fed.us/ne/global/>.

Although some issues remain unresolved, carbon offset forestation projects are sprouting up across the country. The Forest Resource Trust is one such effort. **James F. Cathcart**, forest resource trust manager of the Oregon Department of Forestry, encouraged the audience to “think of forestry in terms of being one tool in the

toolbox” and “to be patient with trees” because the results are not immediately available, given the time it takes trees to grow.

The trust will invest \$1.5 million (available from an offset portfolio for a power plant in Klamath, Oregon) in family forestland that is currently underproducing but capable of producing a healthy, productive forest. Offsets of 1.16 million metric tons of CO₂ over 100 years are expected from 2,400 acres. The offsets are permanent, but not immediate since forests take decades to develop. See <http://www.odf.state.or.us/fa/SF/FRT/FRT.htm>.

In addition to more traditional forest projects, agricultural carbon sequestration is

also generating interest. To address this, CQuest Ltd. was founded in 1999. **Steve Griffin**, the executive vice president and chief operating officer, discussed a program established to sell or trade carbon credits achieved by farmers in Iowa and the Midwest. Carbon emission reduction and avoidance credits are achieved through a variety of improved livestock waste management systems, soil nutrient programs, reduced tillage practices, cropland deferral, and biofuel projects.

Griffin stated that trading provides incentives for low-cost carbon reductions such as those available through agriculture. He also indicated that “environmental attributes on consumer products and services can sell.” Current marketing of “green,” “organic,” and animal welfare attributes could be expanded to include greenhouse gas attributes. Consumer demand could be the driving force in encouraging greenhouse gas mitigation and sequestration without the force of governmental regulation or international treaty.



Richard Birdsey, James Cathcart, and Steve Griffin presented a panel discussion on carbon offsets in forests and on agricultural land.

ENERGY TAX CREDITS

Oregon is restructuring its tax credit program, said Energy Analyst **Charles Stephens**, of the Oregon Office of Energy, to change the playing field from focusing on energy efficiency to stressing initial costs. Business tax credits when applied to buildings are based on the incremental costs of energy efficiency. But in fact green buildings often cost less to construct than the prevailing square footage costs for conventional structures. Added costs do come in, however, during the design process, so the state energy office is proposing legislation to revamp the program to focus on upfront costs. See www.energy.state.or.us and www.governor.state.or.us.

Another tax incentive law passed in Maryland in May 2000. **Ed Osann**, policy consultant with the American Council for an Energy-Efficient Economy, noted that one guiding principle in Maryland’s bill was to minimize “free riders”—purchasers who would buy a more costly energy efficiency product anyway without additional incentives. Another principle was to keep the incentives temporary—an important selling point.

The law applies to five product lines. In the case of hybrid vehicles, for example, it provides a \$1,500 credit against the state’s titling tax. See <http://www.mlis.state.md.us/#bill>, enter “SB 670,” then scroll down to the bottom and click on “Third Reading.”



Charles Stephens and Ed Osann described their states’ tax credits programs. In Maryland, the program is estimated to cost from \$1.5 million per year up to \$10 million.

SUSTAINABLE ENERGY IN SAN DIEGO

In June 2000, the White House selected San Diego, California, to be a demonstration city for the national Livable Community Initiative. Program Manager **Linda Giannelli Pratt**, of the Community Sustainability Program of the city’s Environmental Services Department, described a collaborative program underway that will address six themes, including renewable energy and advanced transportation technologies.

Included in San Diego’s Livable Community Initiative is an action plan to reduce greenhouse gas emissions. A 1990 baseline study identified 12.4 million tons of CO₂ released within the city. By 2010, with an expected 300,000 increase in population, nearly 50 percent of the anticipated emissions will need to be reduced in order to achieve a 7 percent reduction below the 1990 level. “We’re on the right road and know where we want to go,” said Pratt, “but we have a lot of work left to do before we reach our destination.”



As explained by Linda Giannelli Pratt, San Diego is addressing climate change within its sustainability program.

NEW TOOLS AND RESOURCES

Describing new software for use by state and local governments to inventory emissions and analyze measures for reducing emissions, **Ralph Torrie**, partner at Torrie Smith Associates, said that the software will facilitate integrated analysis of harmonized strategies for reducing greenhouse gas emissions and criteria air pollutants.

The software is expected to be available to STAPPA/ALAPCO members and other state and local government agencies by early 2002. Emphasizing that user needs vary, Torrie noted that the software will be flexible since "no one size fits all." See www.torriesmith.com

Henry Ferland, climate coordinator with EPA's Office of Solid Waste Climate and Waste Program, gave a demonstration of WARM (Waste Reduction Model), an online tool for calculating the greenhouse gas emissions associated with waste management activities and comparing the relative climate benefits of alternative waste management strategies. WARM enables users to enter their waste generation and recovery



Ralph Torrie, Henry Ferland, and Katherine Sibold described new tools for inventories, strategies, and outreach.

data, and also allows entry of certain site-specific waste management characteristics, such as the distance to a landfill and the type of landfill. The model then provides baseline greenhouse gas emissions and the totals under an alternative waste management strategy.

If reductions can be measured, they can be reported. Case in point: Under the U.S. Climate Change Action Plan, EPA's solid waste program is responsible for reducing U.S. emissions by 4.2 million metric tons of carbon equivalent by 2000, and, Ferland noted, "We will pretty much hit that goal." See www.epa.gov/mswclimate.

EPA's *State and Local Climate Change Outreach Kit* was described by **Katherine Sibold**, acting branch chief with the State and Local Capacity Building Branch within the Office of Atmospheric Programs. "The kit is a tool in a one-stop shop for you to do outreach with church groups, school classes, and civic groups," said Sibold.

The kit contains publications that can be downloaded for distribution at meetings after being customized with the user's logo. Among them are fact sheets on technologies such as fuel cells, policies such as net metering, basic and advanced climate change information for school audiences, and information on actions that communities, individuals, and businesses can take. Also included are lists of videos, Internet sites, and other tools, a glossary of climate change terms, a slide presentation, and information on EPA and U.S. Department of Energy (DOE) voluntary programs. See <http://www.epa.gov/globalwarming/publications/outreach/index.html>.

RENEWABLE RESOURCE TRUST FUNDS

In Oregon, new power plants must adhere to a CO₂ standard and allocate funds for CO₂ offsets. The funds are directed to The Climate Trust, a nonprofit organization, to acquire offsets through renewable energy, energy efficiency, supply-side changes, or sequestration. **Mike Burnett**, the trust's executive director, spoke about establishing Oregon's innovative program and its results to date.

The trust currently is negotiating \$1 million in offsets, with an additional \$5.5 million expected in 2001. International interest in the program has been high, suggesting that "CO₂ offsets are practicable," said Burnett, "they are available," and the market can bear the additional cost. See www.climatestrust.org.

Massachusetts' Renewable Energy Trust Fund was implemented to encourage use of renewables during utility restructuring. **Sonia Hamel**, director of Air Policy and Planning at the Massachusetts Executive Office of Environmental Affairs, explained

how the fund works to increase renewable capacity in Massachusetts.

The trust fund focuses on central power generation, development of a market for green power, and distributed generation. The trust is funded by a charge on all electricity consumers and is expected to raise \$150 million in the first five years. The fund is complemented by a renewables portfolio standard that requires suppliers to provide clean energy. According to Hamel, having a standard and a trust fund is absolutely critical since neither will work as effectively without the other. See www.state.ma.us/doer.

California also has approved a public benefits charge to protect renewables during and after restructuring. **Rasa Keanini**, associate energy specialist with the Renewable Energy Program of the California Energy Commission, described the program's structure and results.

The public benefits charge funds four accounts, one each for existing generators,



(From left) Mike Burnett, Sonia Hamel, and Rasa Keanini discussed innovative trust funds for fostering renewable energy.

new renewable generators, emerging technologies, and customer-side, which includes customer credit and consumer education. The program originally received \$540 million and so far has helped fund 103 megawatts of new capacity with an additional 406 megawatts expected to come online by January 2002. "The biggest lesson that we've learned is that flexibility is probably the most important factor," said Keanini, explaining adjustments to the program. See <http://www.energy.ca.gov/renewables>. Case studies available at <http://yosemite.epa.gov/globalwarming/ghg.nsf/actions/CaseStudies>.

TRANSPORTATION OPPORTUNITIES

A smorgasbord of opportunities for leveraging EPA and U.S. Department of Transportation (DOT) funds to help reduce greenhouse gas emissions was the subject for **Ken Adler**, team leader in EPA's Office of Transportation and Air Quality. The newest program, Commuter Choice, a voluntary partnership to help employers enhance the commuting options available to employees, aims to become a standard benefit for employees. Initial partners include Disney, Geico, Kaiser-Permanente, and Intel.

Other opportunities described by Adler include programs to promote smart growth (www.epa.gov/livablecommunities/grants); grants for air pollution control agencies (www.epa.gov/oms/transp/); and brownfields redevelopment. Another initiative, It All Adds Up to Cleaner Air, increases awareness of the link between driving and air quality. Congestion Mitigation and Air Quality is a \$1.3 billion per year program to foster measures such as shared rides and traffic flow improvements. See also www.epa.gov/otaaq and www.fhwa.dot.gov.

Describing EPA's outreach efforts for transportation, **Joann Jackson-Stephens**, envi-

ronmental protection specialist with EPA's Office of Transportation and Air Quality, described four myths about outreach: (1) outreach is like air pollution—if you don't see it, it isn't there; (2) regulatory programs can be successfully implemented without public education; (3) outreach programs can be created without technical expertise; and (4) changing the way that people behave is easy.



(From left) Ken Adler, Joann Jackson-Stephens, and Janet Oakley talked about successful transportation programs.

To accomplish transportation outreach, EPA works through cooperative agreements and partnerships. In addition to three programs for young people (www.letkidslead.org, www.4hcouncil.org, and www.smogcity.com), EPA has resources for state and local governments interested in educating citizens about the relationship between transporta-

tion and pollution. See <http://www.epa.gov/otaaq/traaq/traaqpedo/italladd/>.

Noting that U.S. vehicle miles traveled grew by 70 percent while highway capacity increased by 3 percent, **Janet Oakley**, of the American Association of State Highway and Transportation Officials, said, "Smart Growth should not be a code word for eliminating all new highway capacity."

Oakley cited innovative transportation policies in six states. Delaware restricts use of some roads to through traffic and employs eminent domain to purchase land where development could threaten current road capacity. California recently passed \$6.8 billion in new transportation funds, half of which will go for rail improvements. In 1998 New Jersey committed to build 2,000 miles of bicycle paths by 2010. Maryland's Smart Growth initiative allows state funds to be used for roads only in designated priority areas. Colorado appropriated funds to reduce by one decade the time needed to fix unsafe roads and build light rail. Florida requires local governments to demonstrate that transportation infrastructure is in place before new development is approved.

PURCHASING AND PROMOTING GREEN POWER

The City of Santa Monica, California, has been completely powered by geothermal energy since May 1999. **Susan Munves**, coordinator for the city's Energy and Green Building Program, explained that the city decided to switch to renewable power and put out a call for proposals. After evaluating the proposals, Santa Monica chose Commonwealth Energy to provide geothermal power. In 1999, the city avoided emissions of 13,672 tons CO₂, 16 tons NO_x, 15 tons SO₂, and 2,285 pounds of particulate matter.

Deregulation is often suggested as a means to increase the use of green power. **Donald A. Brown**, senior counsel for Sustainable Development with Pennsylvania's Department of Environmental Protection, discussed how deregulation affected Pennsylvania's energy mix.

When electric choice became available, 15 percent of consumers switched suppliers. Of those, 2.3 percent or 80,000 switched to cleaner power. Other consumers switched to cheaper, dirtier power. "This is an extraordi-

nary problem, and I'm not convinced that markets alone without government intervention are going to solve it," Brown said. He added that Pennsylvania is buying green power as part of its state energy purchases, including a contract with Green Mountain to buy 5 percent of the total state energy purchase as renewable energy.

One way to encourage more consumers to switch to cleaner electricity is through community-based marketing. Program Director **Rudd Mayer**, with the Land and Water Fund of the Rockies, spoke about how a grassroots campaign is building support for wind power in Colorado.

"When recycling began, it was just an idea; now it's a revolution," Mayer stated. "We want to do that with clean energy." The green marketing campaign appears to be working as 13 cities, 500 businesses, and 18,000 consumers in Colorado have signed up for 25 megawatts of wind power. See

www.cogreenpower.org and <http://yosemite.epa.gov/globalwarming/ghg.nsf/actions/CaseStudies>.

As green power and green marketing programs grow, the need to certify that power becomes more important. **Seth Baruch**, of the Center for Resource Solutions, explained the center's certification programs.

Green-e Standard is for restructured states and requires that power suppliers in monopoly states provide at least 50 percent renewables. The strict certification process ensures that consumers receive the renewable energy that they signed up for. "That is probably the most important thing," Baruch said, "and from that we can demonstrate the greenhouse gas reductions and other environmental benefits." See www.green-e.org.

(From left) Susan Munves, Donald Brown, Rudd Mayer, and Seth Baruch described programs to market and certify green power.



ELECTRICITY GENERATION AND REDUCING EMISSIONS

The energy facilities siting board in Massachusetts requires new power plant developers to offset 1 percent of the 20-year CO₂ emissions at \$1.50 per ton through contributions to cost-effective programs for CO₂ mitigation. Conference participants heard from **Sonia Hamel**, director of Air Policy and Planning with the Massachusetts Executive Office of Environmental Affairs, that the state wants to replace old coal plants with new combined-cycle plants as quickly as possible.

“At present,” according to Hamel, “14 proposals are in the application process, and 7 new requests currently are before the board.” The new plants are expected to generate \$3 million in new funds for offsets.

Tree-planting programs are highly visible and popular, but several power plant developers expressed a desire for other options. The siting board agreed to accept funds and locate additional projects. Once a proposal is approved, the developer is not at risk even if the emissions generated are greater than the agreed-on numbers.

Projects accepted must have real, quantifiable offsets. The board is favorable to the use of third-party credit brokers to document transactions. *For more information, see www.state.ma.us/dep/energy/Permit.htm.*

Commissioner **Edward Garvey**, of the Minnesota Public Utilities Commission, began by providing basic information about utility commissions. Governors appoint most of the commissions although a few are elected. The commissions are semi-autonomous, usually have three to five members, may have staffs ranging from 40 people to thousands, and have quasi-judicial and quasi-legislative functions. They regulate all utility monopolies, whether telephone, electricity, or natural gas providers.

Garvey went on to discuss utility restructuring. “The price of electricity is what drives restructuring,” he said, pointing out that states where the price is high are the first to restructure.

He explained a climate change resolution adopted by the National Association of Regulatory Utility Commissioners on July

26, 2000. The resolution encourages “the voluntary filing of greenhouse gas mitigation plans by electric power generators.”

The mitigation plans could discuss total greenhouse gas emissions for 1990, possible impacts of various scenarios on ratepayer costs, and the impacts of other factors such as technological advances, conservation efforts, and fuel conversions. Since early actions may not receive credit, the resolution encourages electric power generators to adopt voluntary cost-effective measures.

In 1999, Vermont established a new model for energy-efficiency programs. Instead of utilities administering the programs, they are run by a private contractor that has no involvement in selling electricity. “We went away from the idea that a utility that makes its money by selling electricity would put its heart and soul into explaining why people don’t need electricity,” said **Michael Dworkin**, chair of the Vermont Public Service Board, the state’s utility commission.

The three-year contract, which was competitively bid, is performance-based, so that 45 percent of the contractor’s administrative overhead is held back until the end of the contract as an incentive fee. The utility companies continue to serve as the collection vehicle, taking in 2.9 mills per kilowatt-hour. This 3 percent surcharge does not represent an increase in Vermont’s typical electricity rate since the money was simply transferred from the utilities’ previous energy-efficiency programs.

The \$17.5 million collected is allocated to seven statewide energy conservation programs for commercial businesses, dairy farms, and so on. The benefit-to-cost ratio is expected to be almost two-to-one.



The conference heard from (left to right) Sonia Hamel, Edward Garvey, Michael Dworkin, and David Konkle on reducing emissions from electricity generation.

“Judging by the first-year report card,” Dworkin said, “it seems to work. We’ve had very few glitches, and the customers like the approach.”

Moving to the local level, Energy Coordinator **David L. Konkle**, with the City of Ann Arbor, Michigan, explained that his state is one of many that require utilities to have a franchise with a city before they can sell electricity in that municipality. Calling Ann Arbor “a progressive city,” Konkle noted that a 1999 survey indicated that 51 percent of the residents are willing to pay 10 percent more for green power.

A utility with an Ann Arbor franchise is required to have a percentage of the power it sells in the city come from “green” energy sources. The percentage starts at 3 percent and ramps up to 10 percent in the fifth year of the five-year agreement. A requirement to contribute to an Ann Arbor fund to help extremely low-income customers help with their energy costs “turned out to be contentious,” said Konkle. Nevertheless, both of the city’s two energy suppliers are making small payments to the fund.

Under the franchise, any electricity sold in Ann Arbor must not increase annual CO₂ emissions above the 1996 level, which was 1,963 pounds of CO₂ per megawatt-hour. The fear was that Michigan has a number of “mothballed” coal plants that would be recommissioned because of restructuring, resulting in dirtier air and more greenhouse gas emissions.

For more information, see the EPA Global Warming Site at <http://www.epa.gov/globalwarming/actions/state>.

COMBINING AN ACTION PLAN WITH SUSTAINABILITY

When trying to persuade companies to buy into the state's climate change action plan, Commissioner **Robert Shinn**, of the New Jersey Department of Environmental Protection, uses the equation, " $S^2 = E^2 + P^2$," where the first factor stands for sustainability and stewardship, the second for energy efficiency, and the third for pollution prevention. In this spirit, New Jersey has integrated its action plan with a number of other state programs: open space, brownfields, natural resources management, and watersheds.

Pointing out that New Jersey is the nation's most densely populated state with miles of

vulnerable coastlines and a number of innovative technology companies, Shinn continues his urging, "If not us, who? If not now, when?"

New Jersey's greenhouse gas target is 3.5 percent below 1990 emissions levels by 2005, representing a reduction of 20.4 million metric tons of carbon equivalent. The state is looking for cost-effective investments with a four-year payback or less.

Two emissions trading projects with the Netherlands are already underway, one public and one private. The Netherlands has the same population density as New Jersey and the same history of cleanups of

contaminated industrial sites. "But they start halfway up the ladder because their cars are smaller and their houses are smaller," Shinn said. "Nevertheless, there are a lot of actions we can take that aren't painful and are cost-effective."



Robert Shinn, Ken Colburn, and William Steinhurst discussed actions taken by states to marry climate change and existing environmental priorities.

INTEGRATING PRIORITIES IN NEW HAMPSHIRE

Ken Colburn, administrator of the Air Resources Division of the New Hampshire Department of Environmental Services, talked about his state's goal of integrating a healthy environment, healthy economy, and public health, while addressing the most pressing priorities.

"We regulate pollutants one by one," Colburn said, "but the impacts are integrated." For example, pollutants like SO_2 undermine a healthy environment but also a healthy economy by reducing forest productivity. Waters polluted by acid rain impinge on recreational fishing, snowfall affected by climate change harms ski tourism, and maple trees killed by a warming climate will hurt the syrup industry.

By improving the environment, the state improves the quality of life of its citizens

and thus the ability of New Hampshire companies to attract and retain employees.

Colburn added that an economic sea change is underway. The traditional connection between high electricity rates and per capita income is belied in New Hampshire where rates are high but the state has low poverty, plus a high growth rate in employment.

"A new paradigm is emerging," Colburn concluded. "A salt-mining operation was terminated after 15 mutual funds said that the company's environmental record is not a good investment. Dow Jones started a sustainability index when it found that tough environmental standards yield unexpected profits and high performance."

MARRYING PRIORITIES

"Vermont has traditionally approached energy issues in a manner that is consistent with other environmental priorities," **Dr. William Steinhurst**, director for regional utility planning with the Vermont Department of Public Service, told the conference. Marrying climate change with existing priorities fits with that tradition.

In 1979 then-Governor Madeleine Kunin issued an executive order setting a climate change target. "We came up with a package of strategies," Steinhurst said, "that came pretty close to meeting that target, at least on paper." Later, the state's annual comprehensive energy plan was merged into a greenhouse gas action plan.

An example of the integration of priorities occurred when a boom in ski resorts and second homes led to an increase in electricity use for heating the new houses and producing snow. The projected need for power lines to meet that load led to concerns about wildlife habitat, and in response the state cut the market share of electric heat from 40 percent to almost zero by applying a pre-existing land use planning law that requires a development applying for a permit to use best energy technologies.

In addition to integrated programs, the state is fostering new energy technologies. With sustainable harvesting, the state's two wood chip power plants supply 25 percent of Vermont's energy needs. That may increase to 50 percent, now that the technical feasibility of biomass gasification has been demonstrated. See www.state.vt.us/psd.

Moderators

Ken Andrasko	U.S. Environmental Protection Agency
Deborah Donovan	Abt Associates, Inc.
Reid Harvey	U.S. Environmental Protection Agency
Brian Hensley	Tennessee Department of Economic and Community Development
Kurt Johnson	U.S. Environmental Protection Agency
Marla Mueller	California Air Resources Board
Denise Mulholland	U.S. Environmental Protection Agency
Arthur Rypinksi	U.S. Department of Energy
Maria Sanders	International Council for Local Environmental Initiatives
Ronald Santoro	U.S. Department of Energy
Katherine Sibold	U.S. Environmental Protection Agency
William Steinhurst	Vermont Department of Public Service
Tony Usibelli	Washington State Department of Community, Trade, and Economic Development