

# The State of Global Warming

States take the lead in U.S. efforts to address climate change

By Scott Richards

**I**n November 2004, a few days after the U.S. presidential election, President Vladimir Putin signed a bill confirming Russia's commitment to the Kyoto Protocol, ensuring the climate change treaty would come into force early this year. Russia was the final signatory needed to put the protocol into effect. Signatory countries now are committed to reducing six key greenhouse gases (GHGs) by 5.2 percent below 1990 levels.

But the United States is not among them. Even with intense international and domestic pressure, the United States has rejected the Kyoto Protocol, arguing that it would harm its economy. Instead the Bush administration has opted for a voluntary, nonbinding GHG emissions goal and further climate change research.

A number of states, however, are not waiting for more evidence that human activity is causing temperature increases. They believe there is enough evidence of global climate change and are acting—individually and collectively—to reduce GHG emissions.

## Consequences of Rising Temperatures

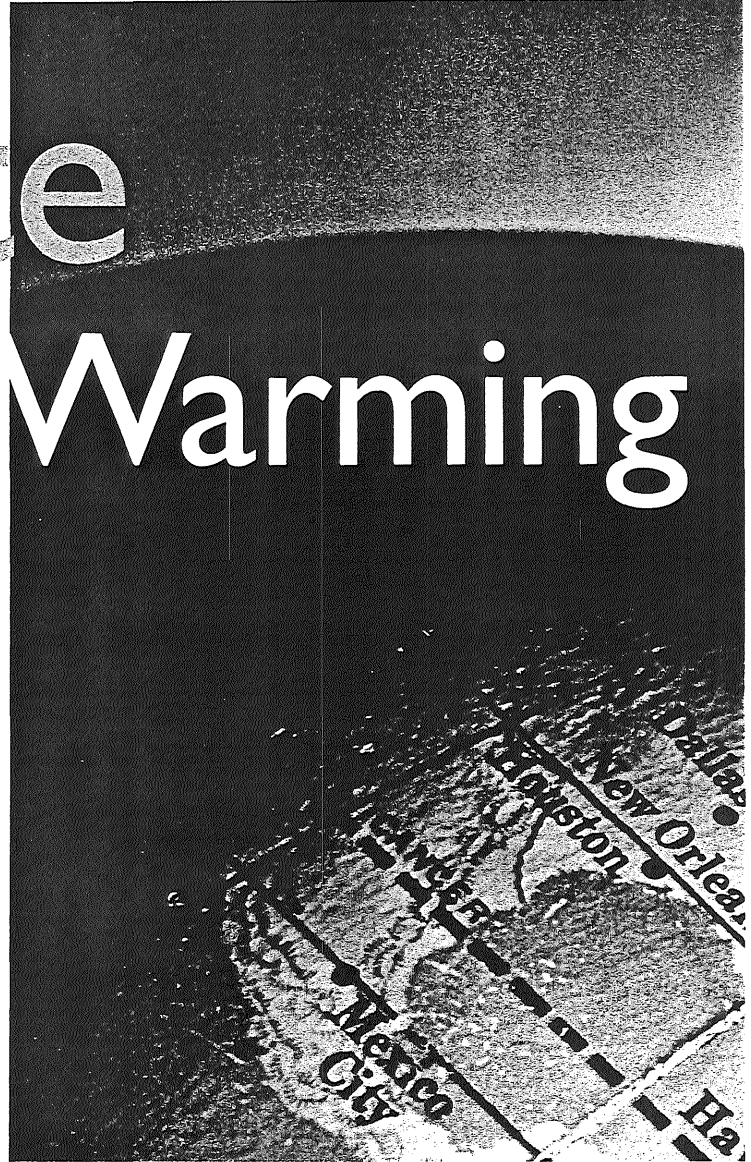
Worldwide, there is growing recognition that dramatic climate changes are underway. A number of reports conclude that the climate is changing—at times at alarming rates. A recent report by the Arctic Council and the International Arctic Science Committee concludes that rising GHG emissions are warming up the Arctic region. *Arctic Climate Impact Assess-*

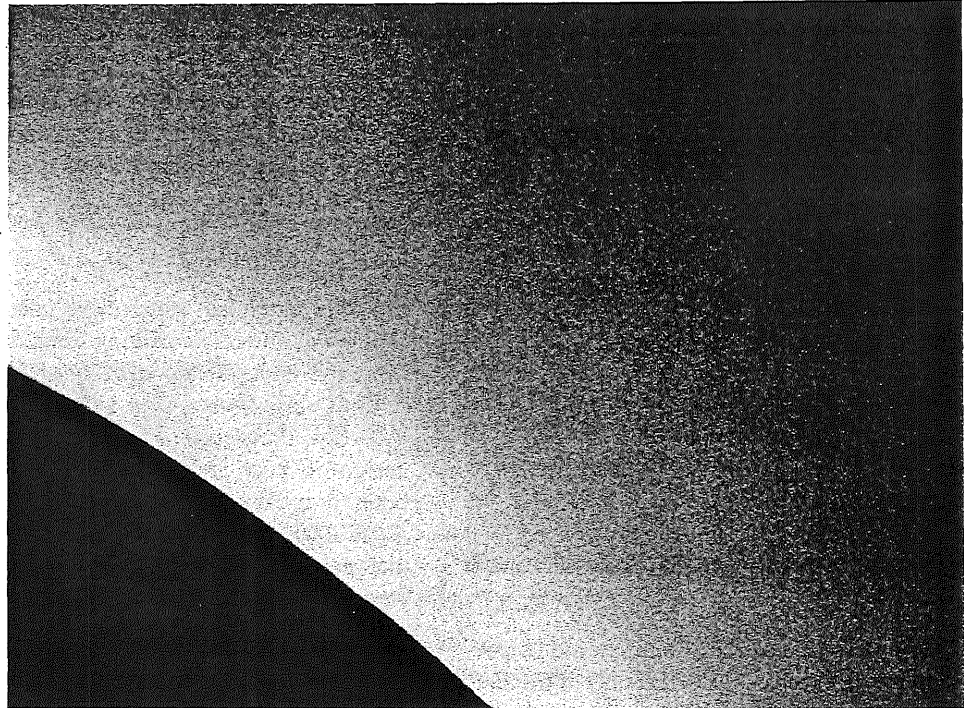
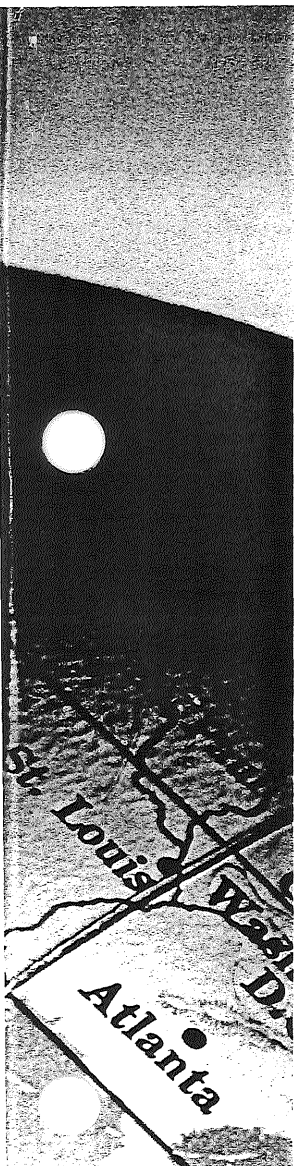
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*ment* says global warming is occurring at an unprecedented rate in the region—twice the rate of the rest of the world—and Alaska will be on the front line of related changes. It warns that the Arctic polar ice cap is melting and that Arctic Sea ice has shrunk by 8 percent, and the shrinkage will likely increase at a faster rate throughout this century.

Alaska is the site of what is considered the first case of global warming refugees. An Inuit community of nearly 600 people on the island of Shishmaref is being relocated to Alaska's mainland. With warming temperatures, the permafrost on which their homes are built is melting. The shrinking polar ice cap means more waves reach land, causing significant shore erosion. The cost of moving the community will be near \$400 million.

Increasing global temperatures are driving these changes in our climate. Over the last 300 years the global temperature has risen by more than 0.7 C, with 0.5 C of this warming happening during the 20th century. Four of the five warmest years during this period were in the 1990s. The 10 warmest years have all occurred since 1990 and 2004 was the fourth-warmest year on record. Also, snow cover in the Northern Hemisphere has declined by 10 percent since the late 1960s. Over the last 100 years, average global sea levels have risen by between 0.1 meters and 0.2 meters.





The Intergovernmental Panel on Climate Change projects that by the end of the 21st century, average global temperatures will rise between 1.4 C and 5.8 C, resulting in more intense precipitation events, greater sea level rises and the continued melting of ice caps in the Northern and Southern Hemispheres.

### States Take the Lead

While there is little debate over whether global temperatures have increased or will continue to increase, there is still debate about whether the rise in temperatures has been caused by human activity. And there is debate about the appropriate policy response.

In the midst of the ongoing deliberations, some states have taking the lead in efforts to address climate change. And they've explored a wide range of policies to do so, such as renewable energy portfolios standards, voluntary and mandatory reporting of GHG emissions, clean energy public benefits funds, promoting clean power, energy efficient building codes and appliance standards, and smart growth policies.

California is a prime example of state leadership in developing environmental policy. Because California began regulating air pollution before the federal government, it is the only state permitted to set air pollution standards for vehicles before the federal government does and to establish regulations that are more stringent than federal standards. Under Section 177 of the Clean Air Act, states have the choice to either adopt California's standards or the federal government's standards.

In October, California became the first governmental body in the world to approve rules that reduce GHG emissions from motor vehicles. The regulations call for cutting GHG emissions from cars and light trucks by 25 percent. Larger trucks and sport utility vehicles will be required to cut GHG emissions by only 18 percent.

Other states are expected to follow California's lead, including a number of Northeastern states. And in January, a delegation of Canadian officials met with Gov. Arnold Schwarzenegger to discuss the new rules.

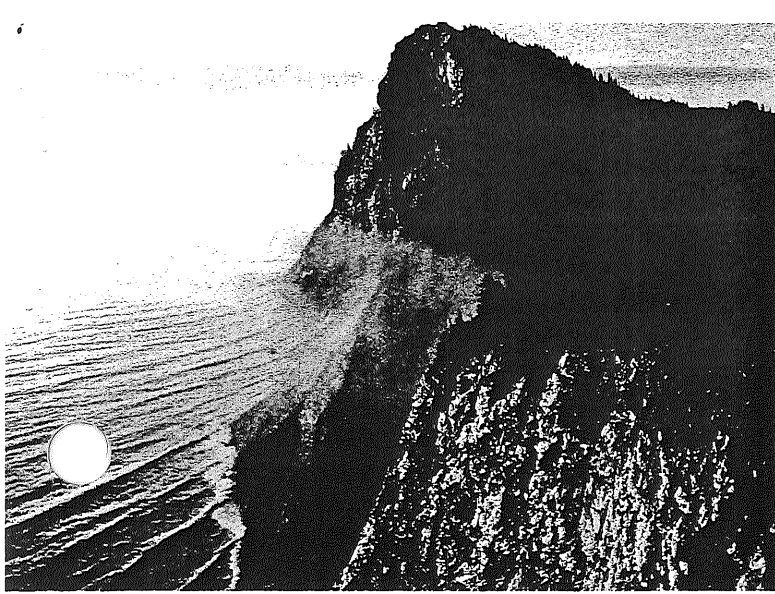
The automobile industry is very concerned about the effects the new regulations will have on their business. Estimates range from a \$1,000 to \$3,000 increase per vehicle to install the technologies needed to comply. However, the industry has until 2009 to introduce vehicles with the necessary control technologies and until 2016 to meet the new standard. Many observers expect the automobile industry to fight the new rules, but Schwarzenegger has promised to vigorously fight any lawsuit brought by automakers.

Along with California, a number of other states took noteworthy actions in 2004 to address climate change:

- *Colorado.* In November, Colorado voters approved Ballot Initiative 37, which requires the state's largest utilities to generate 3 percent of their electricity from renewable energy sources by 2007 and 10 percent by 2015. The initiative also established standards for net

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—Rep. Jim Marzilli, Massachusetts



metering so that small solar electric systems would be permitted to connect to the electrical grid. This is not the first time a state has approved a renewable energy standard, but it is the first time one was approved by voters, rather than a state's legislature. Colorado's Legislature had rejected previous attempts to pass a renewable energy standard. Sixteen other states have enacted renewable energy requirements, and many of them require a higher percentage of electrical generation from renewable energy than Initiative 37 does.

- **Connecticut.** The Connecticut Legislature passed a bill designed to reduce GHG emissions and to develop a strategy for doing so. SB 595 calls for establishing a Governor's Steering Committee on Climate Change; requires GHG emissions reporting requirements; and requires the Department of Administrative Services to collect and maintain information about products, services and practices used by state government to assess the impact of global warming.
- **Georgia.** The Georgia Legislature enacted the Georgia Carbon Sequestration Registry Act (SB 356), which calls for a registry to measure and inventory CO<sub>2</sub> stored in plants and trees. Sequestration of CO<sub>2</sub> emissions in plants and trees can be used to offset emissions from industry and transportation. The registry will assist in developing a market-based trading system for carbon credits and will add value to Georgia's forestry and agricultural sector.
- **Maine.** In 2003, Maine passed the first state law mandating specific goals and timelines for reducing greenhouse gases. The bill mandates reducing CO<sub>2</sub> emissions to below 1990 levels by 2020, requiring GHG emissions cuts to 1990 levels by 2010 and another 10 percent cut by 2020. The law ultimately calls for cutting emissions to 80 percent of 1990 levels. It requires Maine's Department of Environmental Protection to submit a Climate Change Plan recommending necessary steps to meet reduction targets.

In December, the department released the plan with 54 actions needed to achieve the legislative targets. Possible options include requirements to offset CO<sub>2</sub> emissions with new renewable energy and forest management practices;

implementation of vehicle tailpipe GHG emissions standards; participating in a regional cap-and-trade program for electricity generation; and a renewable energy system benefit charge.

## Strength in Numbers

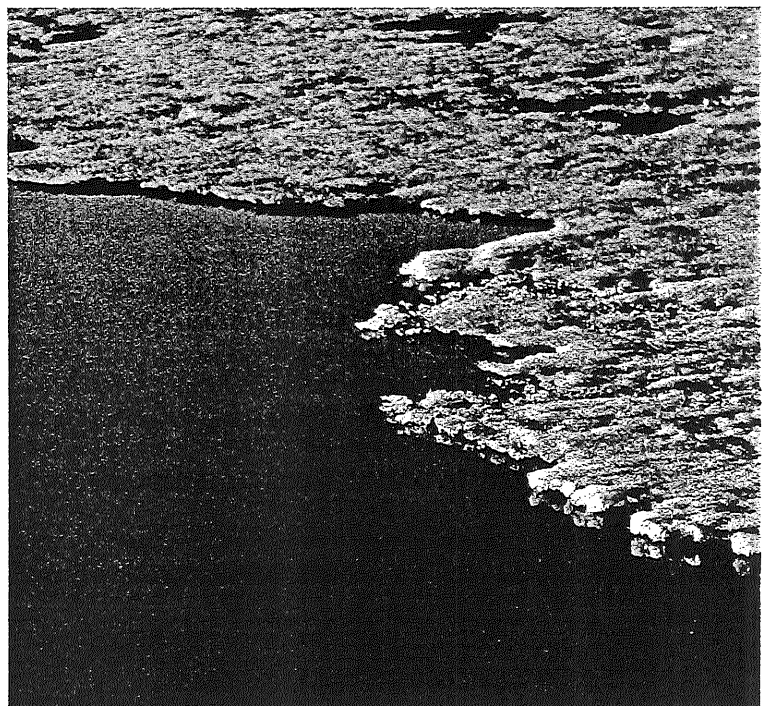
While individual states have taken bold actions to address GHG emissions, an emerging trend in efforts to address climate change is multistate cooperation.

This spring, the nine Northeastern states that form the Regional Greenhouse Gas Initiative (RGGI) will release the design of a cap-and-trade program that will limit CO<sub>2</sub> reductions from the power sector. The group has been working since April 2003 to limit CO<sub>2</sub> emissions through a regional strategy that maintains affordable, reliable electricity. Central to RGGI's strategy is a multistate cap-and-trade system with market-based emissions trading for CO<sub>2</sub> emitted from electrical power generators. Initially, the initiative will focus on reducing CO<sub>2</sub> emissions from power plants, but it is structured to be able to address other sources that emit the gas. Participating jurisdictions include Connecticut, Delaware, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, Vermont and the District of Columbia.

The RGGI wants to create a system that meets the following criteria:

- is uniform to assist with interstate trading of GHG allowances;
- can be expanded to allow other states to join the initiative;
- respects other national, state and regional emissions trading programs; and
- is capable of evolving to focus on reducing emissions in sectors beyond the power industry.

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# Climate change

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In light of the federal government's stance on the Kyoto Protocol, this multistate initiative is attracting the attention of the international climate change community. When the Kyoto Protocol's supreme decision-making body, the Conference of Parties, held its 10th Session in Argentina in December, state actions were high on the agenda. Massachusetts state Rep. Jim Iarzilli reported:

The big news from the U.S. at the Kyoto Protocol negotiations this year is the fact that the states, not the federal government, are leading the way (to) reducing the threat of global climate change. Delegates from around the world recognize RGGI as the single most important environmental protection measure under discussion in the U.S. and are prepared to work with us to make our carbon cap-and-trade mechanism fit into international trading mechanisms. RGGI gives the U.S. its best opportunity to reduce greenhouse gas emissions in a way that will strengthen our regional economy.

## From East Coast to West Coast

Northeastern states are not the only ones to act. In September 2003, the governors of California, Oregon and Washington committed to a regional initiative to reduce greenhouse gases. "Global warming will have serious adverse consequences on the economy, health and environment of the West Coast states," the governors said in a press release, concluding that "the states must act individually and regionally to reduce greenhouse gas emissions and to achieve a variety of economic benefits from lower dependence on fossil fuels."

Since the launch, the three states have been developing recommendations on policies that require regional cooperation. According to the Energy Foundation, they formed multistate workgroups to address the following topics and goals:

- *Hybrid vehicle procurement.* Combine collective purchasing power to obtain fuel-efficient vehicles and low-rolling resistance tires for state fleets.
- *Ports and highway diesel emissions.* Reduce emissions from diesel fuel in transportation by reducing the use of diesel generators in ships at West Coast ports and the use of diesel engines in trucks by creating a system of emission-free truck stops.
- *Renewable energy.* Remove barriers to and encourage the development of renewable electricity generation resources.
- *Energy efficiency.* Upgrade appliance efficiency standards and seek waivers of federal limitations.
- *Measurement.* Develop consistent and coordinated greenhouse gas emission inventories, protocols for standard reporting, and accounting methods for greenhouse gas emissions; and develop scientific tools that more precisely measure the impact of climate change.

In addition to the West Coast Governors' Global Warming Initiative and the Northeastern states' Regional Greenhouse Gas Initiative, other state officials around the country have also taken action. At the 2004 annual meeting of the Western Governors' Association, the governors agreed to develop more of the region's solar, wind and geothermal power. A bipartisan resolution establishes a target of 30,000 megawatts of solar, wind, geothermal and biomass sources of generation by 2015. Clean coal and natural gas technologies may also qualify. The agreement sets a 20 percent increase in energy efficiency by 2020.

And attorneys general from eight states and New York City filed a lawsuit last summer against five of the country's largest electric utilities, which account for 25 percent of carbon dioxide emitted from utilities in the country. The attorneys general are seeking to press the companies to reduce CO<sub>2</sub> emissions as part of federal litigation concerning Clean Air Act New Source Review violations. Rather than suing for monetary damages, they are attempting to force the companies to reduce CO<sub>2</sub> emissions.

## Private Sector Responds

Along with state governments, many private companies have also started responding to climate change, either voluntarily or to comply with mandates. In January, the European Union Greenhouse Gas Emission Trading Scheme began operating as the largest multicountry, multisector greenhouse gas emission trading scheme in the world. The cap-and-trade system on CO<sub>2</sub> emissions from large industrial sources will work to drive down emissions in line with Kyoto Protocol requirements. The scheme will cap CO<sub>2</sub> from industries and will allow the industries to trade emissions rights with emitters in the European Union's 15 nations.

U.S. multinational corporations that have factories or do business in countries that have ratified the Kyoto Protocol are beginning to cut CO<sub>2</sub> emissions in line with the treaty's requirements. Companies such as General Motors, DuPont and Xerox are acting to remain competitive in Europe.

Companies such as BP, Europe's largest oil company, see reducing emissions as a way to be more competitive and return more profit to investors. BP has cut its GHG emissions by 10 percent since 1990, primarily through energy efficiency measures, saving an estimated \$1.1 billion in energy costs as a result.

In December, Cincinnati-based Cinergy Corporation, one of the United States' largest electric utilities, reported to shareholders that carbon dioxide and other greenhouse gas controls are unavoidable and that control measures can be implemented without disrupting the economy. Cinergy urged that decisions to cut GHG emissions in the United States need to be made sooner rather than later to eliminate uncertainty about long-term business decision-making.

Judging by recent trends, Cinergy is not alone in its call for action. States from coast to coast are not waiting on the federal government to address climate change: they are taking the lead.

—Scott Richards is director for environment and energy at The Council of State Governments.

# The Road to Energy Independence

## *Principles for a reliable, 21st century electric system*

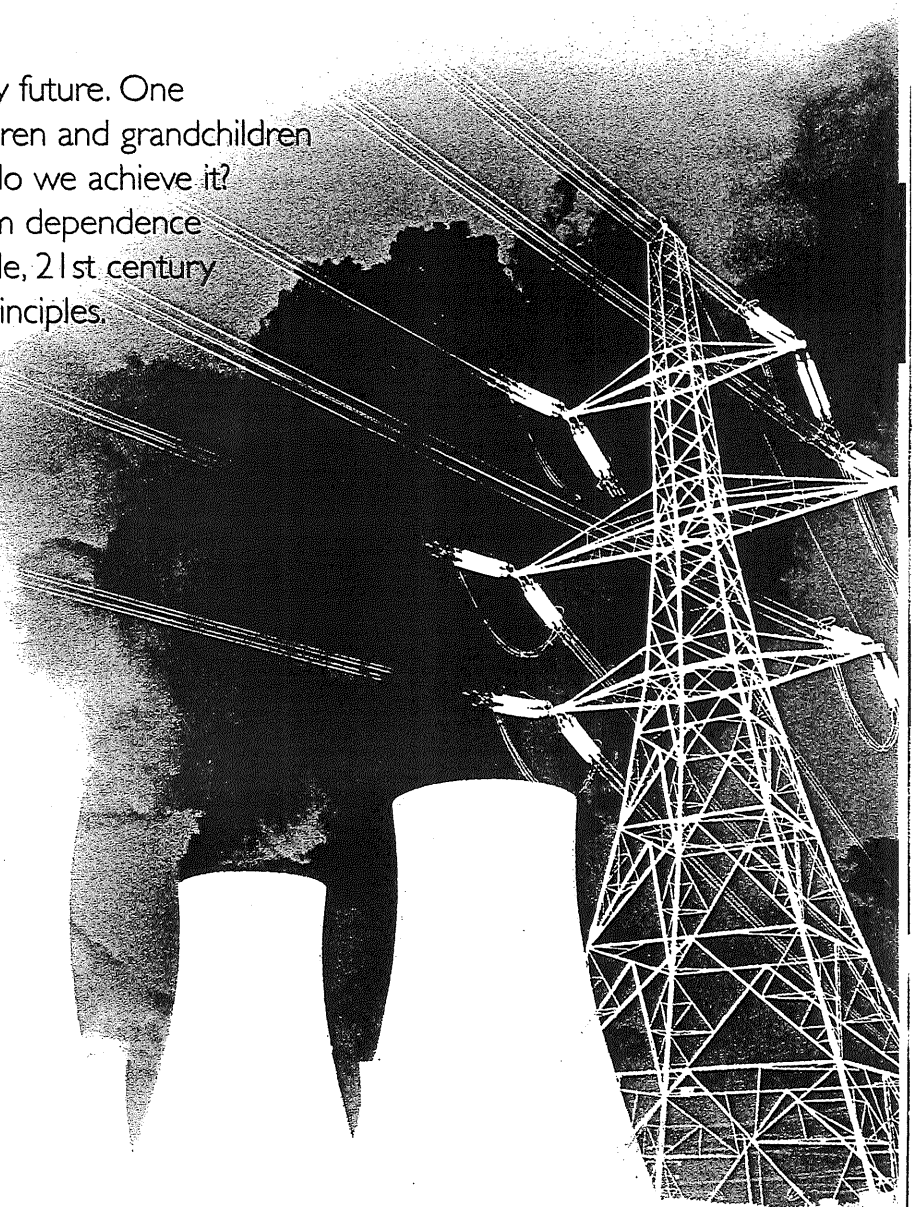
By Richard F. Vander Veen

America deserves a smarter, cleaner energy future. One of the greatest gifts we could give our children and grandchildren would be energy independence. But how do we achieve it? Is it possible to actually free our nation from dependence on foreign and fossil fuels? Creating a reliable, 21st century energy system requires key public policy principles.

**A**s state officials strive to achieve these goals, they need to ask the following questions: Will future energy consumption continue to outpace domestic production? How can we achieve a system that provides reliable, clean electricity at a fair price? Does

this price emphasize conservation, efficiency and clean local power? Is the United States using technologies that complement 20th century coal, nuclear and natural gas generation portfolios? Is our nation laying the groundwork for new, cleaner, 21st century technologies? Are we considering all options for improving reliability—including efficiency, distributed generation and upgrades to existing lines—before deciding which new transmission lines are needed?

By answering these questions and developing sound, integrated energy, economic and environmental policies and principles, lawmakers can encourage a more reliable power system that helps customers and adds value to the “Triple Bottom Line.” The Triple Bottom Line is the concept of balancing economic, environmental and social concerns in decision-making.



## What Can Policy-Makers Do?

State, local and federal policy-makers need to carefully analyze energy decisions to ensure they adhere to three principles:

- Energy technologies should create 21st century solutions and jobs.
- Energy systems should recognize and integrate the true costs of generating, storing, transmitting and distributing clean, reliable power.
- Energy choices should protect public health and our natural resources for future generations.

To help put these principles into action, policy-makers at all levels can take the following steps:

### *Demand Accountability*

- Federal and state lawmakers and regulators must hold utilities accountable for their stewardship of our electric system. The current system of voluntary industry self-regulation of reliability has been uneven and inadequate. The enforcement of standards should not be left to the same industry that caused the problem. Congress should pass strengthened reliability standards as stand-alone legislation.
- States, localities and the public should be guaranteed a voice in the decision-making process for the electricity grid. States and localities, which are often held responsible when something goes awry, and customers (ratepayers and taxpayers, who foot the bill), should have a say in how their power is made and delivered. Local involvement will ensure there are public safeguards over the process. The stakes are too high to allow increasingly unaccountable energy companies to maximize profit at the public's expense.

### *Improve Energy Efficiency*

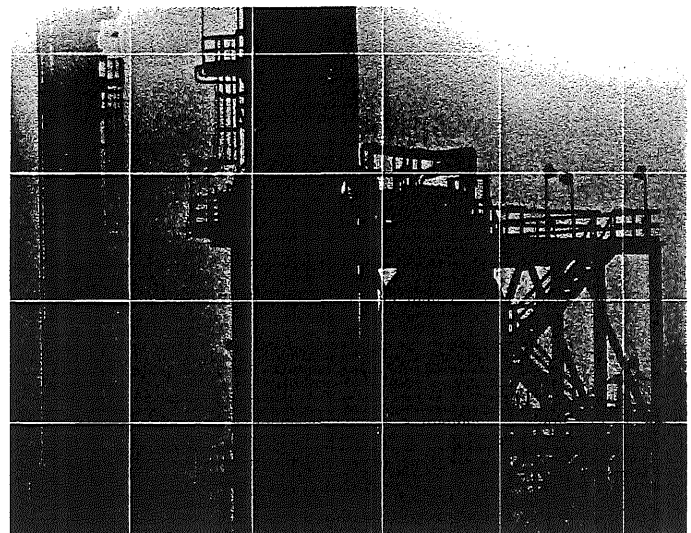
- Federal and state policy-makers should put policies and incentives in place that increase America's energy efficiency. The December 2004 report from the National Commission on Energy Policy listed increasing energy efficiency as one of its top six recommendations. It is the quickest, cheapest, cleanest way to help improve the reliability of our electric grid. We can use energy smarter simply by switching to light bulbs that use one-quarter the energy of traditional bulbs. Increasing air conditioner efficiency to keep people cool while using less energy is another critical step toward stabilizing our electricity system on hot summer days when the system is most vulnerable. By 2030 new efficiency standards could save as much energy as 65 power plants produce.
- Policy-makers can use incentives to encourage innovation. Leaders of the Grand Rapids Public Schools system, for example, reward its energy management system by assuring that a portion of the energy costs saved in fiscal year 2004 are available in FY 2005. This fiscal integrity magnifies the savings and assures that innovation is rewarded.
- State and federal funds should be used to encourage investments in promising renewable energy technologies, low-income assistance programs, and clean energy research and development. Public benefits funds are one example of

state-level programs developed as a result of electric utility restructuring that are beginning to have an effect. It is estimated that a strong federal level public benefits fund could save the equivalent of the output of 500 average-sized power plants by 2020 and save consumers \$135 billion on their energy bills.

- The Environmental Protection Agency released a guidance announcement that sets forth a protocol that allows local communities and utilities to be rewarded for energy efficiency and renewable energy initiatives. By amending State Implementation Plans, states may ensure that Clean Air Compliance Measures such as Ozone Attainment are achieved through new energy efficiency and renewable energy projects.

### *Shift to Clean, Renewable, Local Power*

- *Distributed generation.* Clean, distributed sources can complement long-distance transmission lines. Smaller, distributed biomass systems do not need the same transmission lines required by large centralized sources; they can help supply energy if there is a problem at a distant source. Distributed generation—particularly those sources powered by intermittent power sources such as solar and wind power—does not



eliminate the need for connections to the larger grid, but it would reduce the burden on the grid for power transfers over long distances and reduce price instability caused by over-reliance on fossil fuels such as natural gas. Distributed generation helps create a more resilient national energy system that is less vulnerable to disruption by human threats or natural disasters, and would reduce the number and size of energy processing, storage and distribution facilities vulnerable to mechanical problems or terrorist attack.

- *Net Metering.* Thirty-eight states have net metering laws. Net metering allows for the flow of electricity both to and from the customer through a single, bi-directional meter. To encourage the development of smaller, cleaner energy sources, state officials should consider mandatory net meter-

ing standards that allow consumers who generate their own electricity from renewable and other clean technologies (e.g. a small wind turbine, a rooftop solar panel, a fuel cell generator) to get credit on their energy bills. A national net metering standard would also ensure that all states have a minimum standard applied consistently across the country. Congress should also eliminate obstacles to homes and businesses using waste heat systems; rather, people should be rewarded for opting to use them.

- **Renewable Portfolio Standards.** Sixteen states have adopted laws that require a certain percentage of a utility's overall or new generating capacity or energy sales to come from renewable energy sources. Congress should pass a RPS increasing the amount of electricity generated from renewable sources of energy to 20 percent of power generation nationally by 2020.

## Stimulating the Renewable Energy Market

State and federal policies are essential to the development of renewable energy markets. Around the world, national policies—especially in Europe and Japan—have helped stimulate the renewable energy market, fueling annual growth in wind capacity at an average of 32 percent. Where once the United States led the world

ects would add about 2,500 MW of generating capacity. Energy companies using wind power will get a tax credit of 1.8 cents per kilowatt-hour for 20 years for projects built in 2005. However, this credit will expire in December 2005, creating more uncertainty for the industry. The recently passed Corporate Tax Bill extended these production tax credit to solar and biomass and other renewable energy sources and could logically be extended to wind power projects as well.

Our electric grids should be managed and regulated in a way that ensures the American people receive reliable and clean electricity at a fair price. This must include a full assessment of the long-term uses and purposes of any future investments. It must guarantee that we prioritize investments in conservation, efficiency and clean local power and that we consistently progress toward freedom from dependence on foreign and fossil fuels.

We can achieve these goals by enacting public policies that reward efforts to conserve energy and create a reliable, 21st century electric system. This approach has been proven time and again and we must not allow the growing momentum to die.

—Richard F. Vander Veen is president of Mackinaw Power in Lowell, Michigan, [rfv3@mackinawpower.com](mailto:r fv3@mackinawpower.com).

**Over the last decade the solar sector has expanded at a rate of 25 percent to 30 percent a year.**

### Internet Resources

National Council on Electric Policy

[www.ncouncil.org](http://www.ncouncil.org)

Environmental Protection Agency Guidance

[www.epa.gov/ttn/oarpg](http://www.epa.gov/ttn/oarpg)

American Wind Energy Association

[www.awea.org](http://www.awea.org)

National Wind Technology Center

[www.nrel.gov/wind](http://www.nrel.gov/wind)

Windustry Project

[www.windustry.org](http://www.windustry.org)

The Energy Foundation

[www.ef.org](http://www.ef.org)

Green Power Network

[www.eren.doe.gov/greenpower](http://www.eren.doe.gov/greenpower)

Green Power Partners

[www.epa.gov/greenpower](http://www.epa.gov/greenpower)

American Council for an Energy-Efficient Economy

[www.aceee.org](http://www.aceee.org)

Mackinaw Power

[www.mackinawpower.com](http://www.mackinawpower.com)

in the manufacturing and installation of wind turbines, now Germany does with more than 14,000 MW installed versus 6,300 MW in the United States at the end of 2003. Most of the companies manufacturing these wind turbines are located in Germany, Denmark and the Netherlands—countries that have taken an aggressive policy stance in stimulating this sector.

Solar power has seen similar growth rates in recent years. Over the last decade the solar sector has expanded at a rate of 25 percent to 30 percent a year. The global solar electric market at the end of 2003 was estimated to be in the \$6 billion to \$7 billion range, and the wind market was valued at \$9 billion.

Congress's decision to extend federal tax credits for wind energy production is encouraging: this extension is expected to result in a record number of new wind projects in 2005. Proposed proj-