Human emissions of carbon dioxide and other heat trapping gases are changing our climate. Illinois is already experiencing higher temperatures and more frequent severe storm events and floods. Future changes could include lower Lake Michigan and inland lake levels, increased insurance rates due to severe weather events, and more frequent extreme heat episodes that stress healthcare providers and the electricity generation system. Droughts could place greater demands on surface and ground water and increase the need for irrigation. While the growing season would be longer, some pests and crops would potentially shift northward, and planting and harvesting could be disrupted due to severe storms.

The good news is that we can avoid the most severe outcomes for Illinois by implementing available clean energy and efficiency solutions at the local, state, and national levels. Many of these solutions provide immediate additional benefits including consumer savings on energy costs, cleaner air and water, and new jobs. We must begin implementing these available solutions today to prevent the worst effects of global warming and avoid the need for steeper and costlier emission reductions. We must act now to protect the health and economic well-being of our children and grandchildren.

**Tackling the Problem at the Source**

Power plants and motor vehicles are the biggest sources of emissions in Illinois. In order to tackle the problem, however, we must also reduce emissions from industry, businesses,
and homes as well as other locally important sources such as landfills. In addition, improvements in forestry practices and agricultural soil management offer the potential for reducing emissions and storing carbon, a process that can be thought of as “negative emissions.”

Energy Solutions

Emissions from power plants, industry, businesses, and homes account for nearly two-thirds of heat-trapping emissions in Illinois. Power plants alone account for 25 percent of total emissions, due to the state’s heavy reliance on coal. Forward-thinking energy policies that promote energy efficiency, renewable energy, and cleaner fossil fuel generation can significantly reduce emissions from these sources. Illinois boasts significant potential for renewable power and heating: wind, solar and biomass offer both economic and environmental benefits. Although some state clean energy initiatives, such as the solar energy rebate program and a solar thermal grant program, are already in place, we need to go further.

Illinois should implement the following clean energy solutions:

• **Renewable Electricity Standard:** Requiring utilities to obtain 15 percent of the electricity they provide from clean, renewable sources such as wind, solar, and bio-energy by 2020 would help Illinois realize its tremendous clean energy potential. To date, 22 states have enacted minimum renewable electricity standards. Three Great Lakes states—Minnesota, Pennsylvania, and Wisconsin—currently have standards and have enjoyed significant economic and environmental benefits as a result.

• **Increased Clean Energy Funding:** Boosting state investment in energy efficiency and renewable energy technologies will speed their deployment and bring savings to consumers. The fund should be supported by a small kilowatt hour charge on consumer electricity bills to provide a guaranteed pool of public money for energy management programs.

• **State Residential Energy Efficiency Building Code:** Illinois is one of about eight states without a residential energy efficiency building code. The legislature should approve legislation to adopt such a code, which would yield consumer energy savings and help cut global warming emissions.

• **Incentives for Cleaner Burning Fossil Fuel Generation:** Encourage the use of combined heat and power (CHP) systems that produce both heat and electricity for a facility or surrounding community from a single source of fuel. Some CHP technologies can reach efficiency levels of greater than 80 percent compared with the 33 percent average for conventional coal-burning power plants.

• **Energy Efficient Lighting:** In the Chicago area, if a household replaced six 100 watt light bulbs with equivalent compact fluorescents (CFLs), its annual electric bill savings would be $63, according to the Midwest Energy Efficiency Alliance. The savings will increase to $75 a year as the new electric rates go into effect in 2007. CFLs increase energy efficiency, saving up to 66 percent of energy usage compared to conventional incandescent light bulbs.

In addition to curbing global warming, these clean energy solutions will benefit Illinois with cleaner air, economic development, job growth, and, often, financial savings to consumers and industry. A 2001 study by the Environmental Law and Policy Center in Chicago found that by implementing similar policies in Illinois, CO₂ from power plants could be reduced 71 percent by 2020 relative to “business as usual” scenarios. They also would reduce sulfur dioxide emissions that cause acid rain by 87 percent and nitrogen oxide emissions that cause smog by 82 percent, while creating nearly 57,000 new jobs and generating $6 billion in economic activity. These benefits could be achieved with only slightly higher electricity costs of 1.5 percent in 2010 and 3.4 percent in 2020.

Vehicle Solutions

With nearly one-third of all heat-trapping emissions coming from the transportation sector in the United States, it is critical to reduce emissions from the cars we drive. Because most of the nation’s car manufacturing capacity is in the Great Lakes region, it has a unique opportunity to effect change that not only improves the environment at home, but could help Detroit regain its technological leadership among automakers and preserve jobs vital to the Great Lakes region. To reduce emissions from the transportation sector, Illinois should implement the following policies:

• **State Incentives for Cleaner Cars:** Tax incentives or rebates pegged to fuel economy increases or reductions in global warming gases can attract Illinois buyers and help...
build the market for automakers. They could cut gasoline bills and global warming emissions from new vehicles by as much as 50 percent.

- **State Incentives for Low Carbon Fuels:** Illinois wants to be a leader in ethanol and biodiesel production and to invest in cellulosic ethanol production. Many states offer tax incentives for the use of one or more alternative fuels, such as renewable ethanol and biodiesel. The level of these incentives should be tied to how much heat-trapping emissions are associated with the fuel’s production. Using ethanol and biodiesel would boost two of Illinois’ important commodity crops, corn and soybeans, while progress is made on cellulosic ethanol.

- **Smart Growth Projects:** Supporting projects that reduce the need to drive, such as rideshare, bicycle, and pedestrian programs, mass transit promotions, and parking management will reduce our personal contributions to the global warming problem.

### Agricultural Solutions

Nitrous oxide emissions, primarily from the breakdown of nitrogen fertilizers, make up 64 percent of agricultural emissions. Methane is the next largest source at 34 percent. Aside from climate benefits, reducing the use of nitrogen fertilizers has the important health benefits of cleaner drinking water and improved health of our streams, rivers, lakes, and wetlands. The most promising strategies suggest that Illinois should:

- **Establish “Nutrient-Trading” Programs:** These would reduce water pollution and heat-trapping emissions. A 2000 study by the World Resources Institute found that a nitrogen trading program under the Clean Water Act would provide a means for industrial and municipal wastewater dischargers to pay farmers to reduce their nutrient losses into waterways. This model has a net financial benefit to farmers, allows water treatment facilities to meet their water quality obligations cost-effectively, and has the potential to reduce nitrous oxide emissions from agriculture significantly.

- **Improve Soil Management:** Numerous studies have shown that certain best practices in soil management such as no-till, low input, and use of cover crops can enhance short-term soil carbon storage.

### Forestry Solutions

To increase opportunities for storing carbon in trees and forest soils, the state created the Illinois Conservation and Climate Initiative to provide additional financial incentive for farmers and landowners to use conservation practices that benefit the environment by creating wildlife habitat and limiting soil and nutrient run-off. The carbon benefit of eligible activities will be aggregated and sold as CO₂ credits to the Chicago Climate Exchange—a U.S. leader in developing carbon-trading strategies. Urban forestry projects can also increase carbon storage and provide other benefits. For example, the Chicago Urban Forest Climate Project reduced the city’s air pollutants by more than 6,000 tons in 1991. Planting trees resulted in net savings of annual heating and cooling costs equal to more than $200 per tree. Maintaining and increasing urban tree cover not only stores carbon, but also reduces the urban “heat island” effect by reducing solar radiation and air temperature.

### Integrated Strategies

There are initiatives that address multiple sources of emissions and can play an important role in reducing heat-trapping emissions in Illinois.

- **Climate Change Action Plans:** Illinois is pursuing several initiatives related to global warming, including encouraging land management practices that sequester carbon through the Illinois Conservation and Climate Initiative, joining the Chicago Climate Exchange, and helping develop a voluntary Midwest greenhouse gas registry.

- **Municipal Action:** Chicago has committed itself to local emission reductions through the International Cities for Climate Protection Campaign, the Chicago Climate Exchange and the Large Cities Initiative, and is studying additional global warming-related measures.

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**Union of Concerned Scientists**
Federal Strategies

On the Federal level, a number of cross-cutting policies will help both Illinois and the country reduce emissions:

- **Cap-and-Trade Program**: Establishing an emissions permit trading program, commonly referred to as a “cap-and-trade” system, would draw on the power of the market to reduce heat-trapping emissions in a cost-effective and flexible manner. The “cap” sets limits on emissions from a designated group of polluters, such as power plants, and the “trade” allows innovative, affordable and prudent solutions are available to help reduce the severity of climate change.

  the companies to cost-effectively meet their emission reductions goals. If designed well, such a system also provides incentives for investments in cleaner, more efficient technologies. A market-based cap-and-trade system has been used before to successfully address the acid rain and other pollution problems. At the federal level, the Illinois delegation should support bills introduced in the House and Senate that would help to prevent the worst effects of global warming by ensuring an 80 percent reduction in heat-trapping emissions below 2000 levels by 2050.

- **National Clean Energy Policies**: As a clean energy leader, Illinois stands to gain from establishment of a Renewable Electricity Standard, extension of renewable energy tax incentives, and increased funding for research and deployment of clean energy technologies at the national level. In addition to boosting the state’s economy, these federal policies will ensure greater global warming emission reductions.

- **Increase Fuel Economy Standards**: Federal fuel economy standards already in place save more than 720 million tons of heat-trapping gases per year, the equivalent of taking nearly 80 million cars off the road. Automakers have the technology in hand to deliver additional gas mileage improvements in their fleets, thereby reducing heat-trapping emissions and oil consumption while saving consumers money at the pump. Higher standards will help automakers get on track with the worldwide trend toward addressing the global warming and energy security implications of vehicles.

- **Reduce Methane From Livestock Operations**: The Environmental Protection Agency supports several programs (e.g., AgSTAR, RLEP) that may reduce methane and nitrous oxide emissions from livestock and livestock wastes while improving production efficiency and, in some cases, converting the methane gas into energy for the farm.

Responsible Action Starts Today

Illinois has an opportunity to play a key role in curbing the threat of global warming. Citizens and companies must take immediate action to cut their own global warming emissions and insist that local and national elected leaders implement responsible policy solutions. By acting now, we can protect the rich natural heritage, vibrant economy, and well-being of people and communities in Illinois and throughout the region.

Global Warming Solutions: Reducing Heat-Trapping Emissions in Illinois
supplements the findings of Confronting Climate Change in the Great Lakes Region, a report published in April 2003 by the Union of Concerned Scientists and the Ecological Society of America. This report is available at www.ucsusa.org/greatlakes. For a printed copy of the report or more information on practical solutions to climate change contact the Union of Concerned Scientists at (617) 547-5552.