ENVIRONMENTAL ENTREPRENEURS

REDEFINING PROGRESS

Issue Brief
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EFFECTS OF GLOBAL WARMING ON THE STATE OF MINNESOTA

GLOBAL WARMING WILL HURT MINNESOTA

The vast majority of the world's leading scientists now agree that human activities may lead to substantial impacts on the global climate. Consensus estimates warn of an average increase in temperatures of between 2 and 10 degrees over the next century, leading to more severe drought, rising sea levels, shifting seasons, and increased disease.

In Minnesota, this could lead to a number of problems. Projections show temperature increases of about 4 degrees year-round. These higher temperatures and more frequent heat waves could increase heat-related deaths and illnesses from insect-borne diseases like malaria and West Nile virus. West Nile was detected 80 of 87 counties in 2003, with human cases in 56. Increased temperatures would make the state more habitable for mosquitoes that carry the virus, likely leading to increased human infections.

IMPACTS ON MINNESOTA

- More frequent heat waves
- Increased illness from insect-borne diseases
- Economic and ecological losses due to forest losses
- Increased need for irrigation systems

With substantial agricultural and forest resources, Minnesota is particularly sensitive to variations in the weather. For example, temperatures in Itasca State Park average 5 degrees lower than nearby prairies. Temperature increases in the range predicted could gradually turn the Itasca forests into a prairie. Additionally, temperature increases may force the state's northern and western hardwood forests to die off or migrate out of the state, causing serious damage to local ecosystems and dealing a severe economic blow to the forest products industry. Higher summer soil temperatures would increase evaporation rates, creating potentially large reductions in corn and wheat yields and the need for potentially massive investments in irrigation systems, which are currently rare in the state.

Increased temperatures could also deprive agriculture of its natural defense against various pests currently unable to overwinter in the state's cold. Rising temperatures may reduce stream flows and lake levels, while more frequent heavy rains would increase soil erosion and eutrophication, damaging both agriculture and fish populations.

THE "CLIMATE STEWARDSHIP ACT"

The Climate Stewardship Act (CSA), introduced by Senators McCain and Lieberman is based on a similar and highly successful program implemented in the Clean Air Act, which has led to large reductions in acid-rain causing pollution with a minimum of economic costs. CSA would create a market-based cap-and trade system to reduce emissions of carbon dioxide and other heat-trapping gases from electricity generators and other large industrial and commercial sources, covering 85% of the nation's emissions.

CLIMATE STEWARDSHIP ACT

- Cap and Trade
- Similar program reduced acid rain by 50% at 1/10 the estimated cost
- Lowest cost solution
- Protects Rural Electric Co-ops

Under a cap and trade system, a fixed number of emissions allowances (permits) are distributed to emitters. One permit allows the holder to emit one metric ton of carbon dioxide or an equivalent amount of other gases. Companies that can run their business without using all their allowances can sell their surplus to companies whose actual emissions exceed their allowances. Under such a system, emissions are reduced by those who can do it at the lowest cost, thus minimizing economic impacts. Cap-and-trade systems, such as the one proposed by McCain and Lieberman, make reducing pollution a potential source of profit for companies, giving them an incentive to devise new and even cheaper ways to cut their emissions.

Beginning in 2010, CSA would cap emissions at their 2000 levels. To help meet this target, the Act contains various flexible mechanisms allowing companies to meet their reduction targets through a variety of ways, including investments in clean energy projects outside the U.S., international trading of emission credits and by storing carbon in trees and the soil.

COST-EFFECTIVE FOR THE UNITED STATES

- $250 billion benefits at cost of $150 billion
- 100,000 new jobs by 2015

ECONOMIC IMPACTS

Estimates show that the benefits of CSA would outweigh its costs by a ratio approaching 2:1. While the Act's provisions would impose about $150 billion (at net present value) in emissions reduction costs nation-wide, it would generate $250 billion worth of benefits in the form of increased energy efficiency, reduced energy expenditures and economic growth through 2025. Nationwide, we estimate that the Act would create over 100,000 jobs by 2015. Our analysis is based on research from the Tellus Institute—a non-profit research and consulting organization (http://www.tellus.org)—which studied the impact of the Act's cap-and-trade program as well as energy efficiency programs that would be funded by the Act.

Like the nation as a whole, preliminary analysis shows that the impacts for Minnesota are also largely positive. While the

utility sector would suffer losses of about 700 jobs statewide, these would be more than offset elsewhere, leading to a net increase in employment of about 2000 jobs. The gains would be spread throughout the economy, though the construction industry would particularly benefit.

IMPACTS ON MINNESOTA

- 2,700 new jobs in construction and other sectors (but 700 jobs lost in utilities)
- Increased demand for agricultural and forestry products for bio-energy
- Fostering local production of wind power components

In addition, Minnesota has substantial wind energy resources, ranking 9th in the nation. While the state has already begun to tap into this potential, the vast majority of wind resources remain untouched. Wind potential is estimated to be over 650 billion kilowatt hours a year, or about 10 times the amount of electricity used in the state in 2000. Further developing the state's wind resources could generate substantial economic benefits, not only for the energy sector but also for farmers and ranchers who stand to gain by leasing parts of their land to wind generators. While lease arrangements can vary, a 2000 acre farm would likely receive over $100,000 in land rental fees, while losing access to about 20 acres. Given Minnesota's substantial potential for wind power projects, the state could also see an upsurge in the manufacturing sector to supply the necessary machinery and other components not only within the state but for export to other states, as the Act would spur additional demand for wind power equipment nationwide. Minnesota also stands to gain from the increased use of corn-based ethanol, which currently accounts for about 15% of the state's corn crop and, in the long run, from cellulosic ethanol made from agricultural and forestry wastes and dedicated energy crops.

Nationally, not all sectors of the economy would benefit. Reducing carbon dioxide and other emissions would require reduced use of fossil fuels, leading to economic contraction in those sectors. Increasing energy efficiency, while providing substantial benefits to both residential and commercial energy consumers, leads to reduced demand for electricity, posing some costs on that sector as well. Overall, however, these costs are more than offset by gains in other sectors, like construction, which would see a substantial increase in demand for new projects spurred by the increased implementation of energy efficient technologies. The manufacturing sector would also see increased employment with increased demand for energy efficient equipment.

OTHER BENEFITS

- Consumers save through energy efficiency improvements
- Wind energy could produce 650 billion kilowatt hours/year

Minnesota's consumers stand to benefit from the Act as well. The energy efficiency provisions included in the Act will generate substantial savings in the form of reduced energy expenditures. While energy prices will increase moderately as a result of the pollution reduction requirements in the Act, these costs will be offset by reduced consumption and rebates of revenue raised by allowance sales. Energy savings for households and businesses will free up substantial resources that can be reinvested in state and local economies.

There are other, non-economic benefits as well. While Minnesota currently does not have a substantial air quality problem, about two-thirds of the electricity generated in the state comes from coal fired power plants. Coal-fired electricity results in emissions of fine particles, which trigger respiratory illnesses and increased mortality rates, and of sulfur dioxide and nitrogen oxides, both of which are known precursors of acid rain, which can damage forests, water and wildlife. Coal fired power is also a substantial source of mercury, a known human neurotoxin which can enter the human food chain through fish populations. By reducing Minnesota's reliance on coal, the Act can help reduce these other problems as well.

DON'T UNDERESTIMATE ENTREPRENEURIAL INNOVATION

As the Climate Stewardship Act is debated, a handful of naysayers will undoubtedly claim that doing anything to reduce global warming pollution will be economically disastrous. Some are already making the rounds with their dire predictions. A close look at these predictions will reveal that they have little merit. For example, one such prediction is based on a 6 year-old study of the Kyoto Protocol, a substantially different and more stringent proposal than the Climate Stewardship Act. The study was written by the same "hired guns" that produced the roundly discredited report claiming to show enormous economic benefits from opening the Arctic National Wildlife Refuge (ANWR) to oil drilling. Not surprisingly, both these studies were funded by the oil industry.

Studies predicting economic disaster from environmental protection invariably underestimate the ability of American businesses to innovate to solve new problems. We do this every day in reaction to global and local business conditions. Our ability to innovate is what makes the American economy the strongest in the world. When the Clean Air Act Amendments were debated in 1990, industry lobbyists predicted that the law would turn America into a third rate economic power. Not only have businesses survived the Clean Air Act, but we have thrived, finding new ways to address old problems. Climate change is a problem that needs to be addressed. Our leaders need to have confidence in our ability to innovate rather than trying to hide from problems. We have done it before, and we will do it again, but only if clear standards and appropriate incentives are established by legislation such as the Climate Stewardship Act.

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