ENVIRONMENTAL ENTREPRENEURS

REDEFINING PROGRESS

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EFFECTS OF GLOBAL WARMING ON THE STATE OF PENNSYLVANIA

GLOBAL WARMING WILL HURT PENNSYLVANIA

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 Pennsylvania, 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 in every county in the state 2003, with 237 human cases. Increased temperatures would make the state more habitable for mosquitoes that carry the virus, likely leading to increased human infections. A temperature increase in this range would bring average summer temperatures in Philadelphia up to Atlanta's level and could increase heat related deaths there by 90%. While climate change could bring increased rain to the state, with models predicting a 50% increase in fall precipitation, the cruel irony is that it would likely do far more harm than good. Intense rainfalls would help recharge the state's water supply, but would also lead to increased soil erosion and stream eutrophication. This would also increase flooding in the state that has been the site of some of the most intense flooding in U.S. history. Additionally, Pennsylvania's forests could suffer substantially, as maple, birch, and beech forests in the north of the state migrate further north, possibly out of the state entirely, causing serious damage to local ecosystems and dealing a severe economic blow to the forest products industry.

IMPACTS ON PENNSYLVANIA

- More frequent heat waves
- Increased illness from insect-borne diseases
- More frequent and severe flooding
- Atlanta summer heat in Philadelphia

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.

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.

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

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.

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 (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.

COST-EFFECTIVE FOR THE UNITED STATES

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

Like the nation as a whole, preliminary analysis shows that the impacts for Pennsylvania are also largely positive. While the coal mining and utility sectors would suffer losses of about 3600 jobs statewide, these would be more than offset elsewhere, leading to a net increase in employment of about 4500 jobs. The gains would be spread throughout the economy, though the construction and metals industries would particularly benefit. In addition, Pennsylvania has considerable wind energy resources. While the state has already begun to tap into this potential, the vast majority of its wind resources remain

untouched. Wind potential in Pennsylvania is estimated to be over 45 billion kilowatt hours a year, enough to supply every home 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 who stand to gain by leasing parts of their land to wind generators. The state could also see an upsurge in the manufacturing sector to supply metals, 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. Additionally, the state's many dairy farms stand to gain as well, by using anaerobic digesters to handle their livestock waste. Digesters can convert the waste to biogas which can be used to produce steam or electrical energy for use on the farm or sold to others. At the same time, by reducing their methane emissions, farmers could sell emission reductions in the trading market created by CSA.

IMPACTS ON PENNSYLVANIA

- 7,700 new jobs in construction and other sectors
- Provides incentives for clean coal technologies
- Fostering local production of wind power components and raw materials

Nationally, not all sectors of the economy would benefit. Reducing carbon dioxide and other emissions would require reduced use of fossil fuels where carbon cannot be captured, 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.

OTHER BENEFITS

- Consumers save through energy efficiency improvements
- Wind energy could produce 45 billion kilowatt hours/year

Overall, however, these costs are more than offset by gains in other sectors, like construction and manufacturing, which would see a substantial increase in demand spurred by the increased use of energy efficient buildings and equipment. Furthermore, The CSA will create incentives to accelerate the deployment and development of electricity generation from gasifying coal (integrated gasification combined cycle, IGCC) combined with technologies that capture the carbon dioxide and store it permanently in geologic repositories. While IGCC is a proven and available technology and has been shown to be substantially cleaner than conventional coal fired power plants, it has yet to gain significant market share.

Current government policies are inadequate to deliver economically attractive systems. To accelerate the deployment of IGCC and further development of carbon capture and storage systems, along with the jobs they can create, in the time frame in which they will be needed to address global warming, we must adopt reasonable binding measures to limit global warming emissions. Only then will the private sector have a business rationale for prioritizing investment in this area.

Pennsylvania'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 benefits as well. Pennsylvania's cities already face substantial clean air problems, which will worsen as increased temperatures exacerbate ground-level ozone problems. The Act will move Pennsylvania toward clean coal technologies like IGCC with carbon capture and storage allowing coal to continue to be an important part of Pennsylvania's economy while both reducing global warming pollution as well as addressing these other problems.

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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