

EFFECTS OF GLOBAL WARMING ON THE STATE OF TENNESSEE

GLOBAL WARMING WILL HURT TENNESSEE

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 Celsius over the next century, resulting in more severe drought, rising sea levels, shifting seasons, and increased disease.

In Tennessee, this could lead to a number of problems. Projections show temperature increases of 2-3 degrees year-round. These higher temperatures and more frequent heat waves could increase heat-related deaths and illnesses from insect-borne diseases such as malaria and West Nile virus. In Memphis, which has been particularly susceptible to heat-related deaths, a temperature increase in this range could increase fatalities by 60%. Increased temperatures would make the state more habitable for mosquitoes that carry West Nile Virus, likely leading to increased infections. With substantial agricultural resources, Tennessee is particularly sensitive to changes in climate. The majority of farmland in the state is not irrigated; increased soil temperatures and evaporation rates could require Tennessee farmers to invest substantial resources in irrigation systems. Additionally, increased temperatures could increase the frequency and intensity of heavy rainfalls, leading to flooding and soil erosion, which are already problems in parts of the state.

IMPACTS ON TENNESSEE

- More frequent heat waves
- Increased illness from insect-borne diseases
- Intense rainfall causing soil erosion and flooding

THE "CLIMATE STEWARDSHIP ACT"

The Climate Stewardship Act (CSA), introduced in the Senate by Senators McCain and Lieberman, and in the House by Representatives Gilchrest and Olver, is based on a similar and highly successful program implemented by the Clean Air Act that has led to large reductions in acid rain-causing pollution with a minimum of economic costs. The Act would create a market-based cap-and-trade system to reduce emissions of carbon dioxide (CO₂) and other heat-trapping gases from electricity generators and other large industrial and commercial sources.

Under a cap-and-trade system, a fixed number of emissions allowances are distributed to emitters. One permit allows the holder to emit one metric ton of CO₂ 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 so at the lowest cost, thus minimizing economic impacts. Cap-and-trade systems, such as the one proposed in the CSA, make reducing pollution a potential source of profit for companies, giving them an incentive to devise new and 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, the CSA would cap emissions at their 2000 levels. However, emissions could increase up to 15% beyond the cap if companies purchase offsets from other sources, such as "sequestration" credits from farms which increase carbon storage in soils and vegetation.

ECONOMIC IMPACTS

The benefits of the CSA outweigh its costs by a ratio approaching 2:1. While the Act's provisions would impose about \$150 billion in emissions reduction costs, it would generate \$250 billion worth of benefits nationwide in the form of increased energy efficiency, reduced energy expenditures and economic growth through 2025. Nationwide, the Act would create over 500,000 jobs by 2015. Our analysis of the job impacts is based on research from the Tellus Institute, a nonprofit research and consulting organization (www.tellus.org), which studied the effect of the Act's cap-and-trade program as well as energy efficiency and other technology incentive programs that would be funded through the Act.

COST-EFFECTIVE FOR THE UNITED STATES

- \$250 billion benefits at cost of \$150 billion
- 500,000 new jobs by 2015

Like the nation as a whole, our analysis shows that the net impact of the Act on jobs in Tennessee is also positive. By 2015 over 10,000 new jobs would be created over a business-as-usual approach, growing to almost 16,000 new jobs by 2025. The gains would be spread throughout the state's economy, and while the utility and coal mining sectors together could suffer some job losses statewide, these would be more than offset elsewhere through growth in construction, metals and other industries.

Nationally, not all sectors of the economy would benefit. Reducing CO₂ 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. Overall, however, these costs would be more than offset by gains in other sectors, like construction, which would see a substantial increase in demand spurred by the increased use of renewable energy technologies and energy-efficient buildings and equipment. The CSA will also 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 CO₂ 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.

IMPACTS ON TENNESSEE

- Net increase of 10,000 jobs by 2015
- Provides incentives for clean coal technologies
- Increased demand for agricultural products for bio-energy

Current government policies are inadequate to deliver economically attractive systems. To accelerate the deployment of IGCC and further the 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.

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

OTHER BENEFITS

- Cleaner air
- Consumers save through energy efficiency improvements
- Biomass electricity could serve 67% of Tennessee's homes

In addition, all of Tennessee's major cities, as well as the Great Smoky Mountains National Park, have substantial air quality problems. A number of factors contributing to this would be reduced under the CSA. Emissions from both on- and off-road vehicles would be reduced through greater fuel efficiency and cleaner burning fuels promoted by the Act. About two-thirds of the state's electricity currently comes from coal-fired power plants located in the state. Coal-fired power plants emit sulfur dioxide and nitrogen oxides, both of which are known precursors of fine particles, which trigger respiratory illnesses and increased mortality rates. Sulfur dioxide and nitrogen oxides also lead to acid rain, which can damage

forests, water and wildlife both within the state and across state borders. The CSA would help advance cleaner power production, using such clean-coal technologies as IGCC combined with carbon capture and storage, which will both reduce global warming pollution and address air quality problems.

Tennessee also stands to gain in a number of other ways. For example, the CSA would allow covered entities to buy emissions allowances from forest and agricultural carbon sinks, which could provide an economic boost to the state's agricultural and forestry sectors. Tennessee also has abundant resources for cellulosic ethanol, mainly from agricultural and forestry wastes in the immediate future, and dedicated energy crops in the long run. Additionally, the state has excellent potential for biomass electricity, with enough resources to provide power to about two-thirds of Tennessee's homes. The CSA would boost incentives nationwide for renewable fuel production, providing a boost to Tennessee agriculture.

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. A close look at these dire predictions will reveal that they have little merit. For example, one is based on a 1998 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 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. 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. 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 CSA.

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