

**MEMORANDUM FOR SENATOR MICHEL MCCONNELL**

Matthew J. Traum  
October 30, 2002

**RE:** Climate Change section of the National Energy Policy

**SUBJECT:** Reducing global carbon emissions

I have reviewed the section on the National Energy Policy concerning global climate change. The section contains some statements in agreement with the U.S. scientific and environmental community. Energy production is the primary source of U.S. greenhouse gas: true. Carbon sequestering is occurring through reforestation efforts: true. Ongoing research is instigating various technologies to sequester emissions: true. However, much of the information presented in the section is deceptively optimistic.

Consider the cited case of reforestation in the Lower Mississippi River Valley, an effort utilizing 100,000 acres to sequester 13.5 million tons of carbon. At the moment, the United States emits about 1.7 billion tons of carbon into the atmosphere per annum. A region half the size of Kentucky would have to be completely reforested every year to balance these carbon emissions. Alternative sequestering technologies aimed at placing carbon in geologic formations or under the ocean are unproven and unrealistic at this time. Clearly, the carbon emissions problem cannot be solved by sequestering alone.

The uncontrolled emission of carbon in greenhouse gasses for energy production is a paradigm that evolved over the 150-year period of industrialization in the West. This paradigm is embedded in our institutions, our industries, and our standard of living. No single technology is going to eliminate carbon emissions, and no quick adaptation of policy is going to rescue the planet from an overdose of anthropomorphic carbon in the atmosphere.

What are the effects of releasing billions of tons of carbon into the atmosphere every year? Scientists cannot agree on the influences these emissions impose on the climate. However, a consensus does exist that the concentration of carbon in the air now exceeds any value observed in ice core samples dating as far back as 400,000 years. In addition the speed at which carbon levels have risen over the past century outpaces the historically observed rate by about 100 times. We are clearly in uncharted waters, and the uncertainty about our future climate and its affects on the United States are disconcerting.

The United States should be doing more to reduce global and domestic carbon emissions in a radical way so the condition of the Earth's future climate is not in question. Decreasing the amount of energy produced is the most favorable way to achieve carbon reduction. However, it is important to keep the continued prosperity of the United States in mind while meeting this challenge.

The way forward is represented through a mathematical truth called the Kaya Identity. This equation relates percentage change in carbon emissions, percentage change in carbon intensity, percentage change in energy intensity, percentage change in economic growth, and percentage change in population through the following relationship:

$$\%Carbon\ Emissions = \%Carbon\ Intensity + \%Energy\ Intensity + \%Economic\ Growth + \%Population\ Growth$$

An example application of the Kaya Identity can be gleaned out of The National Energy Policy section on global climate change. The section reports that between 1998 and 1999 the U.S. economy grew by over 4 percent while carbon emissions increased by 1.5 percent. Assuming population growth over that period was small, the Kaya Identity states that the reported economic growth was

accompanied by a 2.5 percent decrease in carbon intensity and energy intensity in the U.S. Accelerating the reduction of these factors will allow the U.S. to trim carbon emissions while continuing to grow economically.

### **Reducing Carbon Intensity**

Carbon intensity measures the carbon created for every unit of energy produced. This quantity can be reduced through improved production-side energy efficiency. I suggest the following specific policy measures to address this initiative.

#### **1. Renegotiate the Kyoto Protocol with stipulations favorable to the U.S.**

- Include corporate representatives in negotiations to assure industrial endorsement
- Negotiate educated agreements on carbon emission reduction numbers. To assure all participants are equally constrained, do not pin agreements to any base year
- Use international U.S. muscle in coalition with our allies to ensure buy-in from all nations and to assure uniform constraints for all developed countries
- Create an international carbon trading market and eliminate the non-trading status of developing countries to allow the U.S. easy benefits for assisting developing nations to reduce emissions

#### **2. Institute domestic carbon trading to enhance industrial reduction of emissions**

- Trading empowers the energy industry to find the cheapest overall carbon reduction methods
- Spur growth in the renewable energy, energy efficiency, and energy research sectors to assure technology can keep pace with decreasing carbon intensity
- Use taxes and revenues from trading to further public education on energy efficiency

#### **3. Create tax and economic incentives making renewable power economically competitive**

- Develop a Federal financing program lowering economic obstacles for individuals and businesses wishing to improve their properties with distributed renewable energy technologies.

### **Reducing Energy Intensity**

Energy intensity measures the energy required to power the U.S. economy. This quantity can be reduced through improved demand-side energy efficiency. I suggest the following specific policy measures to address this initiative.

#### **1. Educate the U.S. population about the importance of energy conservation**

- Develop an intense, long-term program to educate the public about the potential danger of carbon emissions and the benefits of conservation
- Impose a gradual carbon tax on the industrial, commercial, and residential sectors slowly enough so adjustment to higher bills goes unnoticed
- Based on those increases, create tax incentives for industrial, commercial, and residential customers to invest in technology or change practices to lower energy bills
- Encourage the availability of end-use technologies that make conservation economical such as high-efficiency lighting, motion sensors, and insulation.

#### **2. Create Federal legislation enforcing energy efficiency in industrial, commercial, and residential building codes**