



U.S. House of Representatives
Committee on Transportation and Infrastructure

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May 11, 2007

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SUMMARY OF SUBJECT MATTER

TO: Members of the Committee on Transportation and Infrastructure
FROM: Committee on Transportation and Infrastructure Staff
SUBJECT: Hearing on Administration Proposals on Climate Change and Energy Independence

PURPOSE OF HEARING

On Friday, May 11, 2007, at 10:00 a.m., in Room 2167 Rayburn House Office Building, the Committee on Transportation and Infrastructure will receive testimony from the Secretary of Transportation, the Administrator of the United States Environmental Protection Agency, the Administrator of the United States General Services Administration, the Assistant Secretary of the Army for Civil Works for the Army Corps of Engineers, Acting Architect of the Capitol, and the Chief Administrative Officer of the House of Representatives on executive and legislative branch proposals and actions on climate change and energy independence.

BACKGROUND

This memorandum briefly summarizes climate change and its potential impacts. It then focuses in more detail on administration proposals and policies regarding climate change and energy independence. It will also look at legislative branch proposals and policies regarding climate change and energy independence.

Climate Change

In February, 2007 the Intergovernmental Panel on Climate Change¹ (IPCC) declared that evidence of atmospheric warming is “unequivocal.”² The IPCC also stated with “very high

¹ Recognizing the problem of potential global climate change, the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) established the Intergovernmental Panel on Climate Change (IPCC) in 1988. It is open to all members of the UN and WMO. The role of the IPCC is to assess on a comprehensive, objective, open and transparent basis the scientific, technical and socio-economic information relevant to understanding

confidence”³ that human activities have resulted in global warming. The results of this warming may result – and to a degree may already be resulting – in sea level rise, increased hurricane and storm activity, changed precipitation patterns resulting in more frequent floods and droughts, among other potential impacts.

The IPCC defines climate change as “any change in climate over time, whether due to natural variability or as a result of human activity.”⁴ While some climate change can occur as a function of natural variability, the IPCC notes that the warming that has occurred, and is expected to continue, is “*very likely* due to an observed increase in anthropogenic greenhouse gas concentrations”⁵ which are a result of human activities such as industrial processes, fossil fuel consumption, and changes in land use, such as deforestation.⁶

Current and projected global warming occurs because of the “greenhouse effect.” The greenhouse effect is a natural process in which the atmosphere absorbs heat – resulting in a warm and habitable earth. Specifically, visible sunlight passes through the atmosphere without being absorbed. Some of the sunlight that strikes the earth is absorbed and converted to heat, warming the surface. The surface then emits some of this heat back into the atmosphere where it is absorbed by greenhouse gases such as carbon dioxide (CO₂), methane, and nitrous oxides, among others. For the previous 10,000 years, the greenhouse effect has produced an average global temperature of 57 degrees Fahrenheit. The absence of greenhouse gases would result in an inhospitable planet unable to support most life forms with an average temperature well below freezing.

Human activities that emit greenhouse gases to the atmosphere increase the amount of heat that gets absorbed before it could otherwise escape into space. Anthropogenic, or human, emissions of greenhouse gases therefore enhance the natural greenhouse effect and cause global warming.

It is without question that global warming has occurred, and is occurring. Average surface temperatures have increased by an estimated 1.4 degrees Fahrenheit between 1900 and 2005. Eleven of the last 12 years (1995-2006) rank among the 12 warmest years of global surface temperature⁷ since 1850.⁸ Other observations of observed climate change include:⁹

the scientific basis of risk of human-induced climate change, its potential impacts and options for adaptation and mitigation. The IPCC does not carry out research nor does it monitor climate related data or other relevant parameters. It bases its assessment mainly on peer reviewed and published scientific/technical literature.

<http://www.ipcc.ch/about/about.htm> (accessed 9 May 2007)

² IPCC, February 2007. *Climate Change 2007: The Physical Science Basis – Summary for Policymakers*. p.5

³ The IPCC uses “the following levels of confidence...to express expert judgments on the correctness of the underlying science: *very high confidence* at least a 9 out of 10 chance of being correct; *high confidence* about an 8 out of 10 chance of being correct.” IPCC, February 2007. *Climate Change 2007: The Physical Science Basis – Summary for Policymakers*. p.5; Virtually certain >99% probability of occurrence, Extremely likely>95%, Very likely>90%, Likely>66%... *Climate Change 2007: The Physical Science Basis – Summary for Policymakers*. p.4.

⁴ IPCC, February 2007. *Climate Change 2007: The Physical Science Basis – Summary for Policymakers*. p.2

⁵ IPCC, February 2007. *Climate Change 2007: The Physical Science Basis – Summary for Policymakers*. p.10

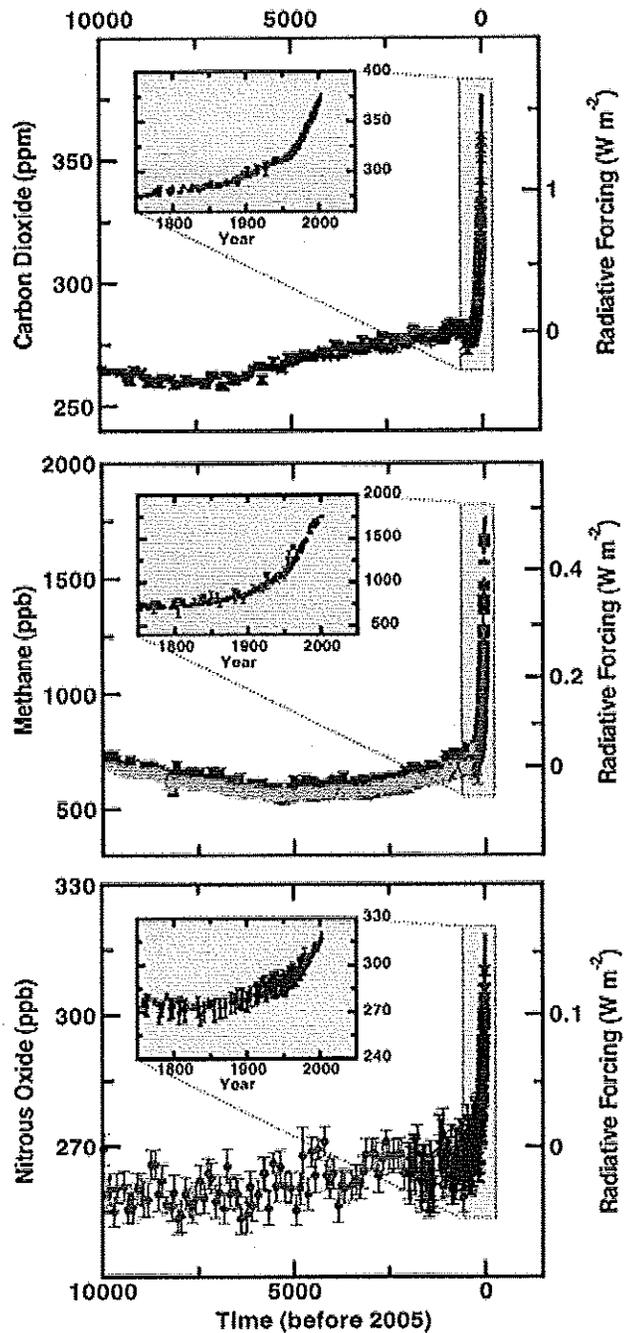
⁶ IPCC, February 2007. *Climate Change 2007: The Physical Science Basis – Summary for Policymakers*. p.2

⁷ The average of near surface air temperature over land, and sea surface temperature. *Climate Change 2007: The Physical Science Basis – Summary for Policymakers*. p.5

⁸ IPCC, February 2007. *Climate Change 2007: The Physical Science Basis – Summary for Policymakers*. p.5

⁹ IPCC, February 2007. *Climate Change 2007: The Physical Science Basis – Summary for Policymakers*. pp.7-8; Emanuel, K.A. 2005. “Increasing Destructiveness of Tropical Cyclones Over the Past 30 Years.” *Nature*. 436; 686-88; Webster, P.J., et al. 2005. “Changes in Tropical Cyclone Number, Duration, and Intensity in a Warming Environment, Science.” *Science*. 309: 1844-46.

- The IPCC estimates that the total 20th Century sea level rise is 0.17 meters (.55 feet). They have “high confidence” that observed sea level has increased from the 19th to the 20th centuries;
- Average Arctic temperatures have increased at almost twice the global average rate in the past 100 years;
- Satellite data since 1978 shows that annual average Arctic sea ice extent has shrunk by 2.7 percent per decade;
- Temperatures in the Arctic permafrost layer (including areas of Alaska) have increased since the 1980s, and the maximum area covered by seasonally frozen ground has decreased by about 7 percent in the Northern Hemisphere since 1900;
- Precipitation changes have taken place including increased precipitation events in eastern sections of North and South America, northern Europe, and central Asia, and drying or drought events in the Sahel, the Mediterranean, southern Africa, and sections of south Asia;
- Increased frequency of heavy precipitation events over most land areas;
- Increased frequency of high-intensity (category 4 and 5) tropical cyclones (hurricanes) globally since 1970 as a function of increased sea surface temperatures among other factors.



The IPCC reports that:

Global atmospheric concentrations of carbon dioxide, methane and nitrous oxide have increased markedly as a result of human activities since 1750 and now far exceed pre-industrial values determined from ice cores spanning many thousands of years. The global increases in carbon dioxide concentration are due primarily to fossil fuel use and land-use change, while those of methane and nitrous oxide are primarily due to agriculture.¹⁰

¹⁰ IPCC, February 2007. *Climate Change 2007: The Physical Science Basis – Summary for Policymakers*. p.2

The figure below comes from the 2007 IPCC report and shows the observed increases in greenhouse gases over time.¹¹

While a variety of greenhouse gases play a role in atmospheric warming, carbon dioxide is the most common and “the most important anthropogenic greenhouse gas.” Prior to 1800, the beginning of the Industrial Revolution (when fossil fuels, such as coal, began to be used on a wide scale), there were roughly 280 parts per million (ppm) of CO₂ in the atmosphere.¹² In 2005, 379 ppm of CO₂ were measured in the atmosphere. This “concentration of carbon dioxide in 2005 exceeds by far the natural range over the last 650,000 years (180 to 300 ppm) as determined by ice cores.” **As a result of these increasing levels, carbon dioxide is attributed to account for approximately 80 percent of all observed global warming.**

Other greenhouse gases do play an important part in observed global warming. Methane had a pre-industrial (pre-1800) value of around 715 ppb in the atmosphere. In 2005 it was measured at a level of 1,774 ppb. Methane is around 60 times more effective at capturing heat energy than CO₂. However, it lasts fewer years in the atmosphere than CO₂, and is produced in significantly lower amounts. It is estimated that methane will account for 15 to 17 percent of all global warming experienced this century. Nitrous oxide concentration has increased from a pre-1800 level of approximately 270 ppb to 319 ppb in 2005.

The IPCC projects that “continued greenhouse gas emissions at or above current rates would cause further warming and induce many changes in the global climate system during the 21st century that would *very likely* be larger than those observed during the 20th century.”¹³

Climate Change Impacts

The IPCC projects a number of environmental, ecosystem, and public health impacts will take place as a result of climate change.

For example, climate scientists hold that an increase in sea surface temperature – driven by climate change – will likely result in an increased frequency of higher intensity (categories 4 and 5) hurricanes.¹⁴ While the deadly hurricane season of 2005 cannot be directly linked to changes in the earth’s climate, it does echo these concerns. In just one storm, Hurricane Katrina, 1,118 people were confirmed dead, and 135 are still missing and presumed dead. Direct damage to residential and non-residential property is estimated at \$21 billion. Damage to public infrastructure is estimated at another \$6.7 billion. Almost one-half of the region’s population that was affected by the storm has still not returned to their homes. And nearly 124,000 jobs were lost as a result of the hurricane.¹⁵ The impacts of Hurricanes Katrina and Rita might be considered a harbinger of future economic and human impacts as a result of climate change.

¹¹ IPCC, February 2007. *Climate Change 2007: The Physical Science Basis – Summary for Policymakers*. p.3

¹² Ppm (parts per million) or ppb (parts per billion) is the ratio of the number of greenhouse gas molecules to the total number of molecules of dry air.

¹³ IPCC, February 2007. *Climate Change 2007: The Physical Science Basis – Summary for Policymakers*. p.13

¹⁴ Emanuel, K.A. 2005. “Increasing Destructiveness of Tropical Cyclones Over the Past 30 Years.” *Nature*. 436: 686-88; Webster, P.J., et al. 2005. “Changes in Tropical Cyclone Number, Duration, and Intensity in a Warming Environment, Science.” *Science*. 309: 1844-46.

¹⁵ American Society of Civil Engineers – Hurricane Katrina External Review Panel. 2007. *The New Orleans Hurricane Protection System: What Went Wrong and Why*.

Observed and anticipated impacts cited by the IPCC include:¹⁶

- Increased heat-related mortality has been observed in Europe;
- Disturbed forests due to increased incidences of fire and pests;
- Coastal flooding impacts due to sea level rise, and increased frequency and/or severity of storms;
- Average annual river runoff and water availability is projected to increase by 10-40 percent at high latitudes and in some wet tropical areas;
- Average annual river runoff and water availability is expected to decrease by 10-30 percent in some presently dry regions in the mid-latitudes, and in the dry tropics;
- Heavy precipitation events will increase in frequency, adding to flood risk;
- Water supply storage in glaciers and snow pack will decline. This decline is anticipated to reduce water availability in regions supplied by melting snow from major mountain ranges – home to one-sixth of the world's population;
- Approximately 20-30 percent of plant and animal species are likely to be at increased risk of extinction if global average temperature increases exceed 1.5-2.5 degrees Celsius;
- Acidification of the ocean due to increasing CO₂ is expected to have negative impacts on marine shell forming organisms (shellfish and corals) and their corresponding ecosystems;
- Crop productivity is projected to increase slightly in mid to high latitudes and spring planting seasons may begin earlier in some areas. Crop production is expected to decrease in the tropics;
- Coastal wetlands will be negatively affected due to sea level rise, and decrease in sediment;

Federal Climate and Energy Independence Policies

Research has been the primary vehicle for U.S. action on climate change.¹⁷ Research funding reached \$5.1 billion in fiscal year (FY) 2004.¹⁸ Federal expenditures for science and technology research, voluntary programs, international assistance, and tax incentives received budget authority of \$5.8 billion in FY2006 and a budget request of \$6.5 billion in FY2007.

Expenditures on climate-related programs are spread across more than a dozen agencies. The Department of Energy has traditionally had the largest share (more than 44 percent) of the climate budget, followed by the National Aeronautics and Space Administration (NASA) (approximately 20 percent).¹⁹

Implementation of the Federal Government's climate programs are coordinated by the Cabinet-level Committee on Climate Change Science and Technology Integration. Programs generally fall within one of four major areas:

¹⁶ IPCC, April 2007. *Climate Change 2007: Climate Change Impacts, Adaptation and Vulnerability – Summary for Policymakers*. Pp.4-8

¹⁷ Congressional Research Service. 2007. *Climate Change: Federal Expenditures*. (January 22, 2007). Summary

¹⁸ Congressional Research Service. 2007. *Climate Change: Federal Expenditures*. (January 22, 2007). Summary

¹⁹ Congressional Research Service. 2007. *Climate Change: Federal Expenditures*. (January 22, 2007). Summary

- Climate Change Science Program (CCSP): includes the Global Change Research Program (GCRP) and the Climate Change Research Initiative (CCRI);
- Climate Change Technology Program (CCTP): includes the National Climate Change Technology Initiative (CCTP is also included in the Advanced Energy Initiative);
- International assistance: includes the Asia-Pacific Partnership;
- Tax provisions or incentives that “may” reduce greenhouse gas emissions.²⁰

There is currently no statutory or regulatory regime to explicitly limit greenhouse gas reductions. The current administration heavily relies on voluntary initiatives (in which individuals or companies voluntarily engage in a desired activity, in lieu of government regulation) to reduce the growth of greenhouse gas emissions.²¹ The Administration’s 2002 Climate Action Report lists more than 50 Federal Government programs to deal with emissions and climate change.²² Of these, only six can be described as “regulatory” - the rest are voluntary.²³ The “regulatory” programs were not, however, enacted to explicitly deal with climate change or greenhouse gas emission reduction – but are rather energy efficiency or air quality initiatives.²⁴ Compared to the voluntary programs, the six listed ‘regulatory’ programs have been more effective at reducing emissions over the previous decade.²⁵

In 2002, the Administration did announce its Global Climate Change Initiative. A major element of this program was not to reduce total emissions – but only the rate of increase of emissions (referred to by the Administration as emissions intensity.) Because of improvements in technology, and market-driven moves towards efficiency emissions reduction is expected in the absence of any formal or explicit action to reduce emissions. While the Administration announced an intention for the nation to voluntarily reduce emissions intensity by 18 percent, 14 percent of that was expected to occur anyway. In essence, then, the Administration’s Global Climate Change Initiative, was expected to only lower emissions intensity by 4 percent above what would have occurred anyway. The Government Accountability Office, however, “did not find a specific basis or rationale for the Administration’s decision to establish a 4-percentage-point reduction goal beyond the already expected reductions.”²⁶

Department of Transportation

The Subcommittee on Highways and Transit has jurisdiction over the Federal Highway Administration and the Federal Transit Administration. Both administrations oversee a number of

²⁰ Congressional Research Service. 2007. *Climate Change: Federal Expenditures*. (January 22, 2007). Summary

²¹ Congressional Research Service. 2007. *Climate Change: Federal Laws and Policies Related to Greenhouse Gas Reductions*. (January 8, 2007). Summary

²² Congressional Research Service. 2007. *Climate Change: Federal Laws and Policies Related to Greenhouse Gas Reductions*. (January 8, 2007). Summary

²³ Congressional Research Service. 2007. *Climate Change: Federal Laws and Policies Related to Greenhouse Gas Reductions*. (January 8, 2007). Summary

²⁴ Congressional Research Service. 2007. *Climate Change: Federal Laws and Policies Related to Greenhouse Gas Reductions*. (January 8, 2007). Summary

²⁵ Congressional Research Service. 2007. *Climate Change: Federal Laws and Policies Related to Greenhouse Gas Reductions*. (January 8, 2007). Summary

²⁶ Government Accountability Office. 2003. *Preliminary Observations on the Administration’s February 2002 Climate Initiative*. (October 1 2003) GAO-04-131T

programs pertinent to energy conservation efforts. The Subcommittee on Aviation has jurisdiction over the Federal Aviation Administration.

The Federal Highway Administration (FHWA)—Since the 1950s, vehicle exhaust fumes have been recognized as a major contributor to air pollution in urban areas. There are a number of programs in place to tie transportation decision-making to air quality, as well as programs to reduce vehicle emissions and encourage alternative forms of transportation.

Transportation Conformity—The Clean Air Act Amendments of 1990 and the Intermodal Transportation Efficiency Act of 1991 (ISTEA) established a close linkage between clean air goals and transportation investments. This linkage has been retained in subsequent surface transportation reauthorizations. The Clean Air Act requires that, in areas experiencing air quality problems, transportation planning must be consistent with air quality goals. This requirement is enforced through the transportation conformity process. Where air quality goals are not being met, sanctions on highway program funds may be imposed under the Clean Air Act as an incentive for areas to comply with air quality planning requirements.

Congestion Mitigation Air Quality Program—The Congestion Mitigation and Air Quality Improvement Program (CMAQ) provides funding for projects that contribute to air quality improvements and reduce congestion. It provides funds to State DOTs, MPOs, and transit agencies to invest in projects that reduce emissions from transportation-related sources.

Eligible uses of CMAQ funds include: public transportation improvements, traffic flow improvements, transportation demand management, bicycle and pedestrian projects, alternative fuel projects, inspection and maintenance programs, intermodal freight transportation, public education and outreach, idle reduction technology, intelligent transportation systems, diesel retrofits for on-road motor vehicles and for non-road engines used in highway construction projects, purchase of integrated, interoperable emergency communications equipment, and advanced truck stop electrification. Construction of additional highway capacity, other than construction of high-occupancy vehicle lanes, is not an eligible use of CMAQ funds.

The FHWA recently published Interim Guidance that would deny transit agencies the flexibility to use CMAQ funds for the first three years of operating costs for new transit projects. This proposed change goes well beyond Congressional intent, and deprives local communities of a resource in their effort to reduce traffic congestion and air pollution.

Bicycle and Pedestrian Programs—The FHWA also provides resources for a number of programs that promote alternative transportation modes, such as bicycling and walking. These programs include:

- The Safe Routes to School program, which provides funding for infrastructure projects and educational programs that make it easier and safer for kids to walk or bike to school;
- The Nonmotorized Transportation Pilot Program, which establishes pilots in four communities to demonstrate the extent to which walking and bicycling can carry a significant portion of the transportation load;
- The Recreational Trails Program, which provides funding for a variety of trails, and mandates that at least 30 percent of the funds be used for nonmotorized trails;
- The Transportation Enhancements Program, of which a significant portion of the funding is used to create bicycle and pedestrian trails;

- The full-time Bicycle and Pedestrian Coordinator, required in each state, who is in charge of facilitating the increased use of nonmotorized transportation.

The Federal Transit Administration (FTA)—The FTA administers federal funding to support a variety of locally planned, constructed, and operated public transportation systems throughout the U.S. These systems provide an effective means of increasing mobility and relieving congestion. According to the American Public Transportation Association, more than 10 billion passengers used public transportation last year, the highest level since 1957.

In the President's Fiscal Year 2008 budget, the Administration proposed a \$300 million reduction from the SAFETEA-LU guaranteed funding level for the FTA's highly competitive Capital Investment Grants program. This proposed reduction could delay the implementation of many important transit projects around the country, and ignores the significant pipeline of New Start projects seeking funding.

Within the proposed \$300 million reduction from Capital Investment Grants, \$100 million would be cut from the new Small Starts program, which is authorized in SAFETEA-LU for \$200 million a year for each of fiscal years 2007, 2008 and 2009. The FTA has yet to issue final regulations for this new program, which is designed to assist communities in constructing lower cost fixed guideway transit services.

DOT's Congestion Initiative—In May 2006, the U.S. Department of Transportation announced an initiative to reduce congestion on the nation's transportation system. This plan was designed to provide Federal, State, and local officials tools to reverse congestion.

The Administration's budget proposes \$175 million for this new congestion reduction initiative. Included within this total is \$100 million for Urban Partnership Agreements, under which DOT proposes to make these funds available to a select number of large-scale pilot projects, based on their willingness to implement a comprehensive congestion reduction strategy. That strategy would include demonstration of some form of congestion pricing, commuter transit services, commitments from employers to expand work schedule flexibility, and faster deployment of real-time traffic information. The remaining \$75 million will be divided equally among three programs: Corridors of the Future program, which enables the Secretary to target a small number of projects that show they can help expand capacity and improve operations along heavily congested interstate travel and trade corridors; Real-Time System Management Information Programs; and \$425 million to expand congestion-related research activities under the Intelligent Transportation Systems Research and Development program.

In addition, the Department's congestion initiative attempts to "reduce or remove barriers to private sector investment in the construction, ownership, and operation of transportation infrastructure."

The Subcommittee on Railroads, Pipelines, and Hazardous Materials has jurisdiction over the Federal Railroad Administration (FRA) and the Pipeline and Hazardous Materials Administration (PHMSA). Both agencies oversee a limited number of programs pertinent to energy conservation efforts.

Freight Rail. In the past 26 years, railroads have made enormous fuel efficiency gains. In 2006, one gallon of diesel moved one ton of freight an average of 414 miles, the approximate distance from Washington, DC to Boston, MA. This is a 76 percent improvement since 1980, when one gallon of diesel fuel moved one ton of freight an average of 235 miles. The Association of American Railroads (AAR) attributes the increased fuel efficiency to new, high horsepower locomotives, improved information technology systems, reduced idling, and new locomotive crew training programs.

Railroads are also investing in new technologies for additional fuel efficiency and emissions reductions. For example, General Electric will soon unveil the world's first 4,400 horsepower mainline hybrid locomotive that will be capable of capturing energy dissipated during braking and store it in a series of sophisticated batteries. That stored energy can be used by the crew on demand—reducing fuel consumption by as much as 15 percent and emissions by as much as 50 percent compared to most of the freight locomotives in use today.

Railroads significantly reduce highway congestion. A single intermodal train can take up to 280 trucks (the equivalent of more than 1,100 cars) off our highways. The American Association of State Highway and Transportation Officials (AASHTO) found that if one percent of the long-haul freight that currently moves by truck in the U.S. moved by rail, fuel savings would be approximately 110 million gallons per year and annual GHG emissions would fall by some 1.3 million tons. If 10 percent of long-haul freight now moving by truck moved by rail instead, annual GHG emissions would fall by nearly 13 million tons.

Passenger Rail. Passenger rail can significantly help reduce congestion, GHG emissions, and energy consumption. The Texas Transportation Institute estimates the annual cost of highway congestion in the U.S. is \$63 billion for wasted time (3.7 billion hours) and wasted fuel (2.3 billion gallons) sitting in traffic. According to the Department of Energy's *Transportation Energy Data Book*, one full passenger train can take 250-350 cars off the road, for a GHG savings of 1,900-2,600 tons per year. If the passenger train's fuel included 10 percent biodiesel, the GHG savings would be 3,000-4,100 tons per year. Passenger rail also consumes less energy, with automobiles' energy intensity at 3,549 British Thermal Units (BTUs) compared to 2,751 BTUs for passenger rail.

The benefits of passenger rail can also be extended to congestion in the skies. According to the *Transportation Energy Data Bank*, commercial airlines consume 3,587 BTUs versus 2,751 BTUs for commuter rail or 2,935 BTUs for corridor trains. According to AASHTO, passenger rail is competitive with air travel for distances of 500 miles or less. Over 80 percent of all trips exceeding 100 miles in length are less than 500 miles.

The Pipeline and Hazardous Materials Safety Administration—PHMSA is the federal agency charged with the safe and secure movement of almost one million daily shipments of hazardous materials by all modes of transportation. The agency also oversees the nation's 2.2 million miles of gas and hazardous liquid pipelines, which account for 64 percent of the energy commodities consumed in the United States.

Pipelines are important tools to improve energy efficiency. For example, the City of Tampa Bay, Florida is currently constructing a pipeline to deliver jet fuel from the Port of Tampa Bay to the Tampa Bay airport. When completed, the pipeline would take 157 trucks off the road daily.

PHMSA is working on a number of projects to improve energy independence. For example, it is collaborating with the U.S. Department of Agriculture to develop standards to improve the design, construction, and testing of pipelines and high pressure containers carrying ethanol and hydrogen fuels.

It is also working to develop new standards to increase energy efficiency, including standards to increase the maximum operating pressure for certain gas transmission pipelines to improve gas supply and reliability. This will result in more efficient energy delivery, and also help to lower the delivery's cost.

The Federal Aviation Administration—The Federal Aviation Administration's prime mission is to ensure the safe operation of the aviation system. The FAA forecasts that airlines are expected to carry more than 1 billion passengers by 2015, increasing from approximately 744 million in 2006. As demand for aviation services continues to grow, so too does aviation's impact on the environment.

The FAA's preliminary computations by the Agency's Joint Planning Development Office show that aviation noise and emissions are likely to increase by 140-200 percent under future aviation growth scenarios unless aggressive actions are taken to control and reduce aviation's environmental footprint. Historically, most of the substantial aviation environmental gains have come from new technologies. The FAA's goal is to have a fleet of quieter, cleaner aircraft that operate more efficiently with less energy. The FAA states that solutions that involve technology improvements in engines and airframes in a foreseeable timeframe require successful maturation and certification of new technologies within the next 5-8 years.

The Administration's FAA reauthorization proposal includes two new environmental programs. The first program would allow the FAA to fund six projects at public-use airports that would take promising environmental research concepts that have been proven in the laboratory into the actual airport environment for demonstration. Eligible projects would demonstrate whether research would measurably reduce or mitigate aviation impacts on noise, air quality or water quality in the airport environment. The second program would direct the FAA to enter into a cooperative agreement with the Partnership for Air Transportation Noise and Emissions Reduction (PARTNER) Center of Excellence to form a research consortium for the development, maturing and certification for continuous lower energy, emissions and noise (CLEEN) engine and airframe technology. The consortium's work is to be carried out over the next decade and have performance objectives for aircraft fuel efficiency, nitrous oxide emissions from aircraft engines, aircraft noise, alternative fuels, and retrofit technologies.

U.S. Environmental Protection Agency

The Environmental Protection Agency (EPA) climate change programs largely rely on voluntary initiatives to reduce greenhouse gas intensity, spur new investments, and remove barriers to the introduction of cleaner technologies. The EPA does not have explicit regulatory programs to lower greenhouse gas emissions. It is involved with other agencies (like the Department of Energy) in producing rules to require the use of a given percentage of renewable fuels, pursuant to the Energy Policy Act of 2005. In addition to these activities, EPA has a long-term global change research program. This research is coordinated through the CCSP and focuses on understanding

the effects of climate change on air and water quality, ecosystems, and human health in the United States.

EPA has voluntary programs to reduce emissions and promote energy efficiency in the transportation arena (the SmartWay Transport Partnership), to promote energy efficiency (Energy Star), and greenhouse gas reduction (Climate Leaders.) Climate Leaders is an EPA voluntary partnership that encourages individuals and other organizations to develop long-term, comprehensive climate change strategies. This is one of EPA's pre-eminent climate change programs. The Government Accountability Office (GAO) has criticized the Climate Leaders program. Chief amongst these criticisms was that "EPA and DOE expect participants in their voluntary emissions reduction programs to complete a number of actions; however, participants' progress toward completing those actions, as well as the agencies' efforts to track accomplishments, has varied."²⁷ In other words, EPA (and the Department of Energy for its corresponding program) has not been able to effectively show results. In addition, while companies had joined the program, GAO found that not all of them had even set performance goals for themselves, nor were many companies enrolled in the program.²⁸

General Services Administration

The Public Building Service (PBS) within the General Services Administration provides workplaces for the federal workforce of over a million federal employees. PBS is the largest real estate organization in the country, with an inventory of over 342 million square feet of workspace for federal workers. PBS holds title to about 1,500 governments owned buildings and acquires space through either leasing or new construction. PBS also repairs, alters, and renovates existing facilities.

The Energy Center of Expertise is an office within the PBS. The Center reduces federal utility costs by encouraging energy efficiency and reduced energy use. PBS's client agencies expect that the energy center will negotiate utility contracts that are both cost-effective and environmentally responsible. The energy center procures electricity, natural gas, water, and sewage services. According to the energy center their new program, the Natural Gas Program, is a program that specializes in providing natural gas to federal facilities, along with supply management. The energy and water management program monitors the utility use and cost data in all GSA buildings nationwide. The total annual cost of this program is approximately \$250,000,000.

The Federal Government is the Nation's single largest energy user, and as such should lead by example. In January 2007, President Bush signed Executive Order 13423 which requires federal agencies to reduce greenhouse gas emissions through a reduction in energy intensity of 3 percent a year or 30 percent by the end of fiscal year 2015 (compares with 2 percent per year and 20 percent overall from EPA 2005). Federal Energy Management Program provides several project planning resources for both existing buildings and new construction.

²⁷ Government Accountability Office. 2006. *EPA and DOE Should Do More to Encourage Progress Under Two Voluntary Programs*. (April 2006) GAO-06-97

²⁸ "As of November 2005, 38 of the 74 firms had established goals, while most of the other 36 firms, including 13 that joined in 2002, were still working to establish goals; most of the remaining firms had joined the program recently and had not yet established goals." Government Accountability Office. 2006. *EPA and DOE Should Do More to Encourage Progress Under Two Voluntary Programs*. (April 2006) GAO-06-97. p.3

Army Corps of Engineers – Civil Works

The United States Army Corps of Engineers, the largest engineering organization in the world, provides engineering and related support for the country in four areas: military construction and support, engineering research and development, support to government agencies, and water and natural resources management. The corps is responsible for the development, management, and maintenance of the nation's water resources. The corps does not collect or interpret scientific information related to climatology; rather, it utilizes information provided by other entities, such as NOAA, USGS, and NASA.

Hurricanes Katrina and Rita highlighted the need for the corps to adapt its development and management of water resources to variances in climate and the possibility of large-scale natural disasters. To that end, the corps designated the following responsibilities to address outstanding issues in water management projects: coping with droughts and floods due to changing precipitation patterns, evaluating the implications of changes in hurricane frequency or intensity along coasts, addressing fluctuating need and values by balancing water allocation among competing users, reducing vulnerability of ecosystems to stream flow and wetlands maintenance and growth, and progressing towards holistic, integrated planning and management of river basins and watersheds.

While the Corps may be moving towards improving its responses to climate change in some areas, it is not clear whether it incorporates modern climate science principles and findings into its planning, construction, and operation of water-resource projects.

Legislative Branch Climate and Energy Independence Policies

Office of the Architect of the Capitol

The Architect of the Capitol is responsible to the United States Congress for the maintenance, operation, development, and preservation of the United States Capitol Complex, which includes the Capitol, the congressional office buildings, the Library of Congress buildings, the Supreme Court building, the U.S. Botanic Garden, the Capitol Power Plant, and other facilities.

The Office of the Architect of the Capitol has implemented a number of projects, is conducting audits and studies, and has plans to save energy and increase efficiencies in operation of the legislative operating complex. The Architect of the Capitol, in accordance with requirements under the Energy Policy Act of 2005, reduced energy consumption by 6.5 percent in FY2006, against a baseline set in FY2003.

To achieve these energy reductions the Architect of the Capitol has installed lower energy lighting systems, low-flow water devices, more efficient heating and cooling equipment, purchased only Energy Star appliances and equipment, among other measures.

The Architect of the Capitol has also undertaken a number of energy audits. The Government Accountability Office advocates use of energy audits because they “identify cost-effective systemwide energy-efficiency and renewable-energy projects.”

The Architect of the Capitol states that it will continue seeking to promote energy-efficiency practices and implementing energy reduction measures by implementing such programs as:

potentially installing either a green or solar roof over the Rayburn House Office Building; purchasing Green Energy from energy retailers such as Pepco Energy Services; improve energy and water metering to accurately measure usage rather than estimating it; continue analyses for reduced energy consumption.

The Architect of the Capitol also operates the Capitol Power Plant. It is used to generate steam and chilled water used for heating and cooling of the 23 building located in the legislative complex. It does not produce electricity. Electricity is purchased from Pepco. The Architect of the Capitol states that the power plant uses three fuels: coal (49 percent), natural gas (43 percent), and fuel oil (8 percent). In his testimony for the May 11, 2007 hearing, the Architect of the Capitol states that "Fuel selection is made based on a combination of economics and equipment availability." The Washington Post has reported that in 2000 the Architect of the Capitol took steps to remove coal from the fuel mix. However, senatorial preferences resulted in coal remaining as the predominant fuel used by the Capitol Power Plant.²⁹ The Architect of the Capitol states that air quality improvements have been made and will continue to be made.

Office of the Chief Administrative Officer

The Office of the Chief Administrative Officer (CAO) provides operations support services and business solutions to the U.S. House of Representatives in a variety of areas, including information technology, finance, budget management, human resources, payroll, child care, food and vending, procurement, logistics and administrative counsel.

In March, 2007 the Office of the Chief Administrative Officer of the U.S. House of Representatives was directed by the House leadership to take steps to reduce the environmental impacts associated with operation of the House building complex. The Chief Administrative Officer reviewed operating procedures based on energy conservation, sustainability, and other related matters.

The Chief Administrative Officer determined that the House complex was responsible for approximately 91,000 tons of greenhouse gas emissions during FY2006. Electricity use was the largest source of emissions. Fuel for the House complex came from a variety of sources including coal, nuclear, natural gas, renewables, and fuel oil.

Following this analysis of the House complex energy usage, the Chief Administrative Officer is implementing the following recommendations:

1. Operate the House in a carbon neutral manner;
2. Shift to 100 percent renewable electric power;
3. Aggressively improve energy efficiency;
4. Adopt sustainable business practices;
5. Continued leadership on sustainability issues;
6. Offset to ensure carbon neutral operations.

²⁹ Washington Post. 2007. "Reliance on Coal Sullies 'Green the Capitol' Effort." (21 April 2007) <http://www.washingtonpost.com/wp-dyn/content/article/2007/04/20/AR2007042002128.html> (accessed 10 May 2007)

WITNESSES

PANEL I

The Honorable Mary E. Peters
Secretary of Transportation
U.S. Department of Transportation

The Honorable Stephen Johnson
Administrator
U.S. Environmental Protection Agency

The Honorable John Paul Woodley, Jr.
Assistant Secretary of the Army for Civil Works
Department of the Army

The Honorable Lurita Alexis Doan
Administrator
U.S. General Services Administration

PANEL II

Mr. Stephen T. Ayers, AIA
Acting Architect of the Capitol and
Deputy Architect/Chief Operating Officer
United States Congress

Mr. Daniel P. Beard
Chief Administrative Officer
U.S. House of Representatives