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AFL-CIO Executive Council February 20, 1997 Statement

U.N. CLIMATE CHANGE NEGOTIATIONS

The U.S. government is involved in United Nations negotiations pursuant to the "Berlin Mandate" for an amendment to the Rio Treaty on Climate Change. The Rio Treaty committed the United States and other nations to voluntarily stabilize carbon emissions at 1990 levels by the year 2000. Current negotiations are aimed at mandatory reductions below 1990 levels after the year 2000.

The Berlin Mandate specifically excludes developing nations from emission reduction requirements while legally binding the United States to future emission reductions. By exempting developing nations from any future commitments, the Berlin Mandate ensures that there will be no meaningful worldwide effort to stabilize atmospheric concentrations of carbon dioxide.

We believe the parties to the Rio Treaty made a fundamental error when they agreed to negotiate legally-binding carbon restrictions on the United States and other industrialized countries, while simultaneously agreeing to exempt high-growth developing countries like China, Mexico, Brazil and Korea from any new carbon reduction commitments. As much as 60 percent of global carbon emissions are expected to come from such countries in the next few decades, with China becoming the single-largest emitter in the near future. The exclusion of new commitments by developing nations under the Berlin Mandate will create a powerful incentive for transnational corporations to export jobs, capital, and pollution, and will do little or nothing to stabilize atmospheric concentrations of carbon. Such an uneven playing field will cause the loss of high-paying U.S. jobs in the mining, manufacturing, transport and other sectors.

Carbon taxes, or equivalent carbon emission trading programs, will raise significantly electricity and other energy prices to consumers. These taxes are highly regressive and will be most harmful to citizens who live on fixed incomes or work at poverty-level wages.

As corporations shut down domestic factories, mines and mills as a result of higher energy

costs, they will have additional incentives, beyond the search for cheap labor and anti-labor regulatory regimes, to locate new capacity off-shore, in countries with no carbon reduction commitments. Carbon emissions, therefore, will be transferred to the developing world along with the jobs, thus providing no real benefit to the environment.

The U.S. government has not completed a thorough economic analysis of the effects of a treaty amendment on the U.S. economy, even though U.S. negotiators have been at the bargaining table for over 18 months and have agreed to a December 1997 deadline for reaching agreement on this far-reaching treaty amendment.

The AFL-CIO Executive Council calls upon the responsible agencies of the U.S. government to provide it and its affiliates with any existing studies of the economic impact of future treaty obligations and, further, make available the results of the economic modeling effort currently being undertaken by the government within 30 days of completion.

The AFL-CIO Executive Council further urges that in the ongoing negotiations to amend the Rio Treaty on climate change, the United States insist upon the incorporation of appropriate commitments from all nations to reduce carbon emissions; and seek a reduction schedule compatible with the urgent need to avoid unfair and unnecessary job loss in developed economies. The President should not accept and the Congress should not ratify any amendment or protocol that does not meet these standards.



A SENSIBLE AND FAIR POLICY ON GREENHOUSE EMISSIONS

As the international community takes steps to reduce the levels of greenhouse gases in the environment, the United States should not be asked to shoulder an unfair level of responsibility that would jeopardize our economy and the millions of industrial and transportation jobs it supports. In 1992, the United States signed the Rio Framework Convention on Climate Change which required a reduction in greenhouse gases such as carbon dioxide to 1990 levels by the year 2000. In 1995, the United States and other parties to the 1992 climate convention agreed in the "Berlin Mandate" for a process of new negotiations to establish emission reduction goals for the next century. The Berlin Mandate calls for developed countries, such as the United States, to take the lead in combating climate change, but excludes developing nations from any new obligations to further reduce greenhouse emissions.

This double standard means that while global warming is an international problem and that most of the world's future growth of carbon emissions will come from high-growth countries like Mexico, China, and Korea, the U.S. is being asked to do more than its fair share. Even more troubling is the fact that the problem of global warming will not be adequately addressed. Companies wishing to avoid emission control requirements will simply move their operations to countries that were able to evade the provisions embodied in the Berlin Mandate.

The United Nations is currently conducting negotiations that will determine the magnitude of the reductions that the U.S. will have to undertake under the Berlin Mandate and the timetable required for meeting these objectives. In these negotiations the Clinton Administration is supporting an emission control program modeled after the 1990 Federal acid rain law. In order to meet the goals of this program, an increased energy tax on carbon fuels several times larger than all current state and federal energy taxes combined, or an equivalent permit trading program, would have to be imposed on consumers of fossil fuels. The negative impact this would have on our economy cannot be overstated.

It is clear that the use and transportation of coal would be greatly curtailed if not eliminated, gasoline prices would skyrocket, and the increased cost of basic electricity would be felt in the production of almost every consumer good. The Department of Commerce has estimated that a carbon tax sufficient to reduce CO₂ emissions by 20% would result in 800,000 jobs lost by the year 2000 and 1.7 million jobs by 2010. An independent research corporation found that 1.4 million American jobs could be "severely at risk" under a carbon tax of \$24 per ton. This includes over 132,000 rail workers, 76,300 transit employees, 157,000 involved in water transportation, and 625,200 aviation workers. The entire economy would be placed at risk with little or no environmental benefit. Transportation labor is not opposed to reasonable steps that will reduce greenhouse gases, but we cannot support policies that unfairly harm American workers while allowing less developed nations to avoid any responsibility for solving this global problem.

THEREFORE BE IT RESOLVED:

■ That transportation labor call on the Clinton Administration to renegotiate the terms of the Berlin Mandate so that all nations bear an equal level of responsibility for addressing the concerns arising out of greenhouse emissions;

■ That TTD will urge the Clinton Administration and the Congress not to accept any treaty or other agreement that will force the U.S. to adopt policies that will damage our economy and result in massive job loss; and

■ That TTD will educate and inform transportation workers about the damage the Berlin Mandate could have on the financial health of the transportation industry and the security of thousands of jobs.

Resolution No. 2-97(1)

(Adopted February 15, 1997)

FOR MORE INFORMATION CALL: 202-628-9262



IUD Resolution On U.N. CLIMATE CHANGE NEGOTIATIONS

The United States is involved in United Nations Negotiations pursuant to the "Berlin Mandate" for an amendment to the Rio Treaty on Climate Change.

The Berlin Mandate specifically excludes developing nations from emission reduction requirements while legally binding the U.S. to future emission reductions.

The exclusion of new commitments by developing nations under the Berlin Mandate will create an uneven playing field in favor of developing nations such as China, India, Mexico and Brazil in the competition for jobs and economic growth.

Such an uneven playing field will cause the loss of high-paying U.S. jobs in the mining, utility and manufacturing sectors.

Processes which generate carbon emissions will be transferred to the developing world along with the jobs, thus providing little or no real benefit to the environment.

The U.S. government has not completed a thorough economic analysis of the effects of a treaty amendment on the U.S. economy;

THEREFORE, BE IT RESOLVED:

That the Industrial Union Department of the AFL-CIO calls upon the Congress and the President of the United States to refrain from entering into or ratifying any treaty amendment or protocol that causes the loss of U.S. jobs; and

That the U.S. renegotiate the Berlin Mandate to ensure that all nations have appropriate commitments to reduce carbon emission to prevent the transfer of jobs and emissions to the developing world.

Adopted by IUD November 13, 1996

PETER S. JICICCO

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JOSEPH B. UEHLEIN

ATTORNEY GENERAL

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ANDREW L. STERN

PRESIDENT

ROBERT E. WAGES

PRESIDENT

RESOLUTION ON GLOBAL CLIMATE CHANGE

WHEREAS, the United States was among the very first nations to sign and ratify the United Nations "Framework Convention on Climate Change" (Rio Treaty), and

WHEREAS, the Rio Treaty entered into force on March 21, 1994 after securing its fiftieth ratification; and

WHEREAS, the Rio Treaty has as its ultimate objective achieving "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system;" and

WHEREAS, "dangerous anthropogenic interference" is predicated on the assumption that human activities will trigger extreme changes in world climate; and

WHEREAS, assumptions about the potential for extreme climate change flow from interpretation of data generated by computerized General Circulation Models (GCMs) which attempt to calculate the atmosphere's physical and chemical processes; and

WHEREAS, the short-comings and failures of the GCMs in their ability to replicate current conditions or predict future conditions are well-known and acknowledged within the climatological community; and

WHEREAS, there are dramatic differences between climate conditions as observed during the last 100 years and climate conditions as calculated using the GCMs; and

WHEREAS, policymakers cannot make informed judgements about "dangerous anthropogenic interference with the climate system" for the further reason that there is wholly inadequate information concerning positive and negative impacts resulting from any assumed climate change; and,

WHEREAS, the Clinton Administration has accepted the premise of the potential for "dangerous anthropogenic interference" with climate and has submitted to the U.N. a voluntary action (National Action Plan) to deal with U.S. emissions of greenhouse gases, particularly carbon dioxide (CO₂), and

WHEREAS, the Clinton Administration is asking U.S. companies to voluntarily reduce the rate of growth of their greenhouse gas emissions as a part of the National Action Plan to reduce emissions to 1990 levels by the year 2000, and

WHEREAS, because the huge growth of anticipated greenhouse gas emissions in developing countries will dwarf any reductions in such emissions from the United States and other developed nations, restrictions on U.S. greenhouse gas emissions will not stabilize greenhouse gases on a global scale; and

WHEREAS, representatives of the U.S. delegation to the Rio Treaty's Intergovernmental Negotiating Committee have claimed that there is a need for further reductions in greenhouse gas emissions beyond those contemplated by the current commitments in the Rio Treaty, and

WHEREAS, stabilizing greenhouse gas concentrations at current levels will require a 60- 80 percent reduction in current emission rates, and

WHEREAS, fifty-six percent of the electricity generated in the U.S. uses coal combustion technologies, and coal is the nation's largest domestic fuel resource; and

WHEREAS, the availability of low-cost energy has improved energy efficiency in the American economy, and

WHEREAS, energy efficiency in the United States industrial sector has increased significantly in recent years, and

WHEREAS, auto fuel efficiency has increased, and

WHEREAS, CO₂ emissions have decreased significantly in seven major manufacturing industries, and

WHEREAS, increased energy efficiency results in less emission of greenhouse gases; and

WHEREAS, a strategy to arbitrarily limit greenhouse gas emissions can be self-defeating since limits on emissions necessarily lead to higher prices for energy; and

WHEREAS, higher energy prices could lead to less energy efficiency and greater greenhouse gas emissions; and

WHEREAS, one part of the National Action Plan recognizes the benefits associated with energy efficiency technologies, the development of which is due in part to the availability of low-cost energy;

NOW THEREFORE BE IT RESOLVED that (insert state) urges the U.S. Congress to hold open hearings and take other actions deemed appropriate concerning the Rio Treaty and U.S. participation in the Conference of The Parties to the Rio Treaty, including an evaluation of the science review process upholding the Treaty.

BE IT FURTHER RESOLVED, that Congress evaluate the economic, environmental, and societal impact of imposing involuntary limits on greenhouse gas emissions; and

BE IT FURTHER RESOLVED, that Congress embrace as a central part of the U.S. climate change action strategy the proposition that the single best policy for the U.S. economy, and its citizens, and for the environment, is one of low cost and abundant energy; and

BE IT FURTHER RESOLVED, that if Congress finds compliance with the Rio Treaty entails great cost and discourages low cost and abundant energy from domestic sources that Congress take such steps as are appropriate to withdraw from the Rio Treaty, pursuant to Article 25 of that Treaty.



American Corn Growers Association

P.O. Box 18157 • Washington, DC 20036 • 202-835-0330 • Fax: 202-429-3741

BOARD OF DIRECTORS RESOLUTION ON U.N. TREATY ON GLOBAL CLIMATE CHANGE

WHEREAS, America's corn growers are affected economically by international environmental treaties concerning global climate changes and greenhouse gas emissions; and

WHEREAS, the U.N. Treaty on Global Climate Change has trade implications for agriculture products, including corn and corn products; and

WHEREAS, the U.N. Treaty on Global Climate Change in its present form would increase input costs to American agriculture producers and cause economic hardships to their surrounding rural communities; and

WHEREAS, major trading competitors for American farm products, including corn, would be exempt under the present form the the U.N. Treaty; therefore

BE IT RESOLVED, that the American Corn Growers Association urges the United States to reject the U.N. Global Climate Treaty if it results in unfair economic burdens to America's family farmers;

BE IT FURTHER RESOLVED, that the United States should not enter into any U.N. Treaty which exempts trading competitors of American agriculture producers unfairly.

(Approved, September 14, 1997, Board of Directors Meeting)

52nd Annual Meeting
Midwestern Legislative Conference
of
The Council of State Governments

Marriott Hotel
Overland Park, Kansas

July 13 - 16, 1997

Proposed Resolution
On
Global Climate Change

- WHEREAS,** the amount of greenhouse gases in the Earth's atmosphere is increasing as a result of human activities, and this is cause for thorough scientific research and analyses; and
- WHEREAS,** many in the scientific community recognize that current climate models cannot accurately forecast the timing, magnitude or likely regional impacts, if any, of human activities on the global climate; and
- WHEREAS,** thousands of U.S. companies, in an effort to comply with the aim of the 1992 Rio Treaty, voluntarily participate in U.S. government programs aimed at limiting greenhouse gas emissions; and
- WHEREAS,** energy use is the foundation for economic growth and a rising standard of living; and
- WHEREAS,** a growing body of economic studies demonstrates that any U.S. effort to significantly limit near-term greenhouse gas emissions would slow economic growth, cost hundreds of thousands of American jobs, and reduce investments in more energy-efficient technologies or facilities; and
- WHEREAS,** mandatory constraints on fossil fuel use could raise the cost of monthly electricity, heating, and cooling bills, limit personal mobility; and could seriously disrupt our economy and our lives, as did gasoline lines and high energy prices in the 1970s and early 1980s; and
- WHEREAS,** constraints on energy use would be particularly harmful to those on fixed incomes; those living in rural areas and/or dependant on private vehicles to transport themselves and their families to work, school, and stores; and those whose business could no longer compete as effectively against their foreign counterparts as a result of the higher cost for fuel; now therefore be it
- RESOLVED,** that the Midwestern Legislative Conference supports climate policies that are balanced and cost-effective, and that do not unfairly burden the citizens of a particular community, state, or country; and be it further
- RESOLVED,** that the Midwestern Legislative Conference is opposed to any global climate proposals that are not justified by sound science and sound economic policy; and
- RESOLVED,** that this resolution be dispatched to the President of the United States, the Vice President of the United States, and appropriate members of Congress and congressional Committees.

1. PROPOSED POLICY POSITION

MONITORING GLOBAL CLIMATE CHANGE POLICIES

BACKGROUND

The amount of greenhouse gases in the Earth's atmosphere is increasing as a result of human activities, and this is cause for thorough scientific research and analysis. At present, there is robust scientific debate as to the timing, magnitude or likely regional impacts, if any, of human activities on the global climate. Furthermore, thousands of U.S. companies, in an effort to comply with the aim of the 1992 Rio Treaty, voluntarily participate in U.S. government programs to limit greenhouse gas emissions.

Accordingly, the U.S. government is involved in the negotiations of the United Nations which are aimed at reducing greenhouse gas emissions in the post-2000 period. These negotiations are expected to culminate in an agreement by December 1997 to reduce carbon emissions. However, these restrictions would only be imposed on industrialized nations; whereas, high-growth developing countries like China, Mexico and Brazil would be exempt.

The negotiations are quietly in process and the endpoint is quickly approaching with very little input from the states' policymakers. However, the consequences of a treaty on the U.S. economy have not been fully analyzed and understood. This issue has particular relevance now as states begin to focus on economic development strategies to enhance their competitiveness globally.

Energy use is the foundation for economic growth and a rising standard of living. A growing body of economic studies demonstrates that any U.S. effort to significantly limit near-term greenhouse gas emissions could slow economic growth, cost hundreds of thousands of American jobs, and reduce investments in more energy-efficient technologies or facilities. Ill-advised policies on climate change could raise the cost of monthly electricity, heating, and cooling bills; limit personal mobility; and seriously disrupt our economy. Further, ill-advised policies could be particularly harmful to those on fixed incomes; those living in rural areas and/or dependent on private vehicles to transport themselves and their families to work, school, and stores; and those whose businesses could no longer compete as effectively against their foreign counterparts as a result of the higher cost of fuel.

Indeed, the outcome of a legally-binding agreement could impose a heavy burden on U.S. economic growth. Southern states will be burdened by the loss of manufacturing jobs, as the incentive to move industry abroad to those exempt high-growth developing countries would be heightened. New jobs in Mexico, China and Brazil will likely mean lost jobs in the U.S.

RECOMMENDATION

The Southern Legislative Conference of The Council of State Governments is dedicated to educating its members, constituents and others as to the risk to economic growth and standards of living from ill-advised policies on climate change. Hence, it is critical that state and local

governments be made aware of the Administration's plans to proceed with signing a treaty to reduce greenhouse gas emissions.

Furthermore, the Southern Legislative Conference supports climate policies that are balanced and rely on voluntary, cost-effective measures that do not unfairly burden the citizens of a particular community, state or country.

Also, the members of the Southern Legislative Conference believe that the U.S. should not agree to any international global climate proposals that are not justified by sound science and sound economic policy.

Finally, the members of the Southern Legislative Conference request that this policy position be dispatched to the President of the U.S., the Vice President of the U.S., and appropriate members of Congress and Congressional Committees.

KENTUCKY MINORITY FARMERS
2925 Hwy 79
Brandenburg, KY 40108

August 17, 1997

Billy Ray Smith
Commissioner
Kentucky Agriculture Department
Capital Plaza Tower, 7th Floor, 500 Mero St.
Frankfort, KY 40601

Dear Commissioner Smith:

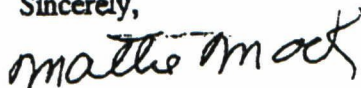
As you well know, most of Kentucky's farmers are family sized operations that depend on hard work and watching expenses to make ends meet. Even a small increase in input costs, for example, can be significant to our bottom line.

The Clinton Administration is currently negotiating the U.N. Global Climate Treaty. The proposed treaty could increase energy costs for Kentucky's family farmers and have a direct economic impact on our rural communities.

As the treaty goes forward, I urge the Kentucky Agriculture Department to take an active role to assure that the United States does not enter into a global climate treaty that hurts Kentucky's family farmers.

Thanks for your attention to this issue. The Kentucky Minority Farmers association, as always, wants to work with you to keep our rural communities growing.

Sincerely,



Mattie Mack
Organizer
Kentucky Minority Farmers

MID-CONTINENT HIGHWAY USERS CONFERENCE

September 3 - 5, 1997
Eureka Springs, Arkansas

GLOBAL CLIMATE RESOLUTION

WHEREAS, greenhouse gas emissions of developing countries are rapidly increasing and have surpassed emissions of developed countries and as much as 60 percent of global carbon emissions are expected to come from developing countries in the next few decades, and

WHEREAS, the United Nations Framework Convention on Climate Change may adopt a protocol or another legal instrument that strengthens commitments to limit greenhouse gas emissions by developed countries this coming December for the post-2000 period, and

WHEREAS, highway users in the Mid-Continent region strongly believe that the proposals under negotiation, because of the disparity of treatment between developed and developing countries and the potential level of required emission reductions, could result in serious harm to the United States economy, including significant job loss, trade disadvantages, increased energy and consumer costs, and

WHEREAS, the United States Senate voted 95-0 to pass the Byrd-Hagel Climate Policy Resolution calling on President Clinton not to sign any international agreement that would harm the US economy, and

WHEREAS, it is desirable that the U.S. Senate and the House of Representatives monitor the status of negotiations on Global Climate Change.

NOW THEREFORE BE IT RESOLVED, that the delegates attending this Mid-Continent Highway Users Conference believe that the United States should not be a signatory to any protocol to, or other agreement regarding, the United Nations Framework Convention on Climate Change of 1992, at negotiations in Kyoto, Japan, in December 1997 because such action could lead to increased fuel costs for highway users and lead to serious harm to the economy of the United States, and

BE IT FURTHER RESOLVED, that copies of this resolution be dispatched to the President of the United States and members of Congress from the Mid-Continent region.

NATIONAL ASSOCIATION OF FARMER ELECTED COMMITTEEMEN

RESOLUTION ON GLOBAL CLIMATE CHANGE

WHEREAS, America's farmers and rural communities are directly affected by international environmental treaties and agreements concerning global climate changes and greenhouse gas emissions; and

WHEREAS, America's agriculture producers compete economically against both developed and developing countries; and

WHEREAS, the impact of international treaties and agreements on America's food producers is immediate and affects their economic livelihoods in very direct ways; and

WHEREAS, climate change energy proposals can potentially increase input costs to America's food producers and cause economic burdens to them and their rural communities; and

WHEREAS, the scientific evidence to quantify the human influence on global climate is uncertain;

NOW THEREFORE BE IT RESOLVED, that the *National Association of Farmer Elected Committeemen* urges that the Administration and Congress evaluate the scientific, economic, environmental and social impact of imposing global environmental regulations on America's farmers and rural communities before entering into any such treaty or agreement; and

BE IT FURTHER RESOLVED, that any international treaty or agreement on global warming and greenhouse gas emissions should not cause unprecedented and unfair economic hardships for America's food and fiber producers; and

BE IT FURTHER RESOLVED, that any treaty or agreement on global climate changes and greenhouse emissions should not place America's food producers at an unfair disadvantage against its international economic competitors.

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RESOLUTION 97-28

Global Climate Change

WHEREAS, the amount of greenhouse gases in the Earth's atmosphere is increasing as a result of human activities, and this is cause for thorough scientific research and analysis; and

WHEREAS, many in the scientific community recognize that current climate models cannot accurately forecast the timing, magnitude or likely regional impacts, if any, of human activities on the global climate; and

WHEREAS, thousands of U.S. companies, in an effort to comply with the aim of the 1992 Rio Treaty, voluntarily participate in U.S. government programs aimed at limiting greenhouse gas emissions; and

WHEREAS, energy use is the foundation for economic growth and a rising standard of living; and

WHEREAS, a growing body of economic studies demonstrate that any U.S. effort to significantly limit near-term greenhouse gas emissions would slow economic growth, cost hundreds of thousands of American jobs, and reduce investments in more energy-efficient technologies or facilities; and

WHEREAS, mandatory constraints on fossil fuel use would raise the cost of monthly electricity, heating and cooling bills; limit personal mobility; and could seriously disrupt our economy and our lives, as did gasoline lines and high energy prices in the 1970s and early 1980s; and

WHEREAS, constraints on energy use would be particularly harmful to those on fixed incomes; those living in rural areas and/or dependent on private vehicles to transport themselves and their families to work, school and stores; and those whose businesses could no longer compete as effectively against their foreign counterparts as a result of the higher cost for fuel;

THEREFORE BE IT RESOLVED BY THE 20TH ANNUAL LEGISLATIVE CONFERENCE OF THE NATIONAL BLACK CAUCUS OF STATE LEGISLATORS (NBCSL), ASSEMBLED IN BILOXI, MISSISSIPPI, DECEMBER 3-7, 1996, That the NBCSL dedicates itself to educating its members, constituents and others that there is no compelling scientific reason for near-term limits on greenhouse gas emissions; and that the economic results of such limitations would lead to an increase in living

expenses through job loss and the higher costs of essential items such as food and clothing; and

BE IT FURTHER RESOLVED, that the NBCSL supports climate policies that are balanced and cost-effective, and that do not unfairly burden the citizens of a particular community, state, or country; and

BE IT FURTHER RESOLVED, that the NBCSL is opposed to any global climate proposals that are not justified by sound science and sound economic policy; and

BE IT FINALLY RESOLVED, that this resolution be dispatched to the President of the United States, the Vice President of the United States, and appropriate members of Congress and Congressional Committees.

PROPOSED RESOLUTION SUBMITTED BY:

Representative Bettye Davis (AK)

RESOLUTION APPROVED WEDNESDAY, DECEMBER 4, 1996 BY:

Committee on Transportation and the Environment

COMMITTEE ACTION CERTIFIED BY:

Representative Bettye Davis (AK), Chair

Committee on Transportation and the Environment

RESOLUTION RATIFIED IN PLENARY SESSION, SATURDAY, DECEMBER 7, 1996.

RATIFICATION CERTIFIED BY:

Representative Lois DeBerry (TN), President

NATIONAL BLACK CHAMBER OF COMMERCE, INC.

RESOLUTION

on

Global Climate Change

WHEREAS, in December, 1997, in Kyoto, Japan, the parties to the United Nations Framework Convention on Climate Change plan to adopt a protocol or another legal instrument that strengthens commitments to limit greenhouse gas emissions by developed countries for the post-2000 period; and

WHEREAS, the amount of greenhouse gases in the Earth's atmosphere may be increasing as a result of human activities, and this is cause for thorough scientific research and analysis; and

WHEREAS, many in the scientific community recognize that current climate models cannot accurately forecast the timing, magnitude or likely regional impacts, if any, of human activities on global climate generally; and

WHEREAS, thousands of U.S. companies, including small and minority-owned businesses, in an effort to comply with the aim of the 1992 Rio Treaty, voluntarily participate in U.S. government programs aimed at limiting greenhouse gas emissions; and

WHEREAS, energy use is the foundation for economic growth and a rising standard of living, especially in growth-dependent urban areas; and

WHEREAS, a growing body of economic studies demonstrate that any U.S. effort to significantly limit energy use through taxes, caps or limits on greenhouse gas emissions, as proposed by the Administration, would slow economic growth, cost hundreds of thousands of American jobs, especially in urban areas seeking to revitalize, and would further reduce or delay investments in more energy-efficient technologies or facilities; and

WHEREAS, notwithstanding the potential severe economic impacts on Americans, which disproportionately affect U.S. urban economic growth, the Administration, in its testimony before the U.S. House of Representatives (Commerce Subcommittee on Energy and Power, by the Chair, Council of Economic Advisors, July 15, 1997) announced its attempts to produce an economic analysis of climate policy a "failure" and that "the effort to develop...a(n) answer to the economic impacts of a given climate change policy is futile," and

WHEREAS, urban communities are the venue for 98 percent of all Black-owned businesses; and

WHEREAS, mandatory constraints on fossil fuel use would raise the cost of monthly electricity, heating and cooling bills; limit personal mobility; and could seriously disrupt urban economies and our lives, as did gasoline lines and high energy prices did in the 1970's and early 1980's; and

WHEREAS, constraints on energy use would be particularly harmful to those Black-owned businesses seeking to enter the marketplace; as well as individuals on fixed incomes, those living in rural areas and/or who are otherwise dependent on personal transportation for work and other worthwhile social activities, and those Black-owned businesses who depend on transportation to compete effectively against their foreign counterparts as a result of higher fuel costs;

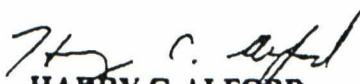
THEREFORE, BE IT RESOLVED AT THE NATIONAL BLACK CHAMBER OF COMMERCE'S (NBCC) 5TH ANNUAL BUSINESS CONVENTION, ASSEMBLED IN DENVER, COLORADO, JULY 31 THROUGH AUGUST 3, 1997, that the NBCC dedicates itself to educating its members, constituents and others that there is no scientific reason for limits on greenhouse gas emissions; and that the economic implications for urban areas and specifically Black-owned businesses would lead to an increase in costs and lost jobs, as well as higher living expenses in terms of such essential items as housing, food and clothing; and

BE IT FURTHER RESOLVED, that the NBCC supports climate policies that are balanced and cost effective, and that do not unfairly burden Black minority-owned businesses and the citizens of a particular urban area or community, state or country; and

BE IT FURTHER RESOLVED, that the NBCC urges the Administration to renew its efforts to provide all Americans with an economic analysis and assessment of global climate policies and options, and that the NBCC is opposed to any global climate proposals that are not justified by sound science and sound economic policy and fairness to U.S. interests; and

BE IT FURTHER RESOLVED, that the United States should not be a signatory to any protocol to, or other agreement regarding the United Nations Framework Convention on Climate Change of 1992, at negotiations in Kyoto in December, 1997, or thereafter, which would mandate new commitments to limit or reduce greenhouse gas emissions for the U.S., unless the protocol or other agreement also mandates new specific scheduled commitments to limit or reduce greenhouse gas emissions for developing countries within the same compliance period, would result in job loss or serious harm to the economy of the United States; and;

BE IT FINALLY RESOLVED, that this RESOLUTION be dispatched to the President of the United States, the Vice President of the United States, and appropriate Members of Congress and Congressional Committees.


HARRY C. ALFORD
PRESIDENT/CEO

8/3/97


ARTHUR A. FLETCHER
NATIONAL DIRECTOR

8/3/97

SOUTHERN GOVERNORS' ASSOCIATION RESOLUTION

Regarding the conditions for the United States becoming a signature to any international agreement on greenhouse gas emissions under the United Nations Framework Convention on Climate Change.

WHEREAS, in December 1997, in Kyoto, Japan, the parties to the United Nations Framework Convention on Climate Change plan to adopt a protocol or another legal instrument that strengthens commitments to limit greenhouse gas emissions by developed countries for the post-2000 period;

WHEREAS, parties have already agreed to specifically exempt all developing countries from any new commitments;

WHEREAS, in July 1996, the U.S. negotiators called for the first time for "legally binding" emission limitation targets and timetables for developed countries;

WHEREAS, greenhouse gas emissions of developing countries are rapidly increasing and have surpassed emissions of developed countries and as much as 60 percent of global carbon emissions are expected to come from developing countries in the next few decades;

WHEREAS, the U.S. Department of State has declared that it is critical to include developing countries in the next steps for global action, but has proposed that consideration of additional steps to limit developing countries' greenhouse gas emissions would not begin until after a protocol or other legal instrument is adopted in Kyoto, Japan in December 1997;

WHEREAS, the exemption for developing countries will mean no environmental progress;

WHEREAS, the Southern Governors' Association strongly believes that the proposals under negotiation, because of the disparity of treatment between developed and developing countries and the potential level of required emission reductions, could result in serious harm to the United States economy, including significant job loss, trade disadvantages, increased energy and consumer costs; and

WHEREAS, it is desirable that the U.S. Senate and House of Representatives monitor the status of negotiations on Global Climate Change.

NOW, THEREFORE, BE IT RESOLVED that:

the United States should not be a signatory to any protocol to, or other agreement regarding, the United Nations Framework Convention on Climate Change of 1992, at negotiations in Kyoto in December 1997, or thereafter, which would: mandate new commitments to limit or reduce greenhouse gas emissions for the U.S., unless the protocol or other agreement also mandates new specific scheduled commitments to limit or reduce greenhouse gas emissions for developing countries within the same compliance period, or would result in job loss or serious harm to the economy of the United States; and

any such protocol or other agreement should be accompanied by a detailed explanation of any legislation or regulatory actions that may be required to implement the protocol or other agreement and should also be accompanied by an analysis of the detailed financial costs and other impacts on the economy of the United States which would be incurred by the implementation of the protocol or other agreement.

SOUTHERN STATES ENERGY BOARD RESOLUTION

sponsored by: Senator Jack Reason, Virginia

Unanimously approved by the Southern States Energy Board on September 8, 1997

Regarding the conditions for the United States becoming a signatory to any international agreement on greenhouse gas emissions under the United Nations Framework Convention on Climate Change.

1. WHEREAS, in December 1997, in Kyoto, Japan, the parties to the United Nations Framework Convention on Global Climate Change plan to adopt a protocol or another legal instrument that strengthens commitments to limit greenhouse gas emissions by developed countries for the post-2000 period; and
 2. WHEREAS, parties already have agreed to specifically exempt all developing countries from any new commitments; and
 3. WHEREAS, in July 1996, the U.S. negotiators called for the first time for "legally binding" emission limitation targets and timetables for developed countries; and
 4. WHEREAS, greenhouse gas emissions of developing countries are rapidly increasing and have surpassed emissions of developed countries and as much as 60 percent of global emissions are expected to come from developing countries in the next few decades; and
 5. WHEREAS, the U.S. Department of State has declared that it is critical to include developing countries in the next steps for global action, but has proposed that consideration of additional steps to limit developing countries' greenhouse gas emissions would not begin until after a protocol or other legal instrument is adopted in Kyoto, Japan in December 1997; and
 6. WHEREAS, the exemption for developing countries will mean no environmental progress; and
 7. WHEREAS, the Southern States Energy Board strongly believes that the proposals under negotiation, because of the disparity of treatment between developed and developing countries and the potential level of required emission reductions, could result in serious harm to the United States economy, including significant job loss, trade disadvantages, increased energy and consumer costs; and
 8. WHEREAS, it is desirable that the U.S. Senate and House of Representatives monitor the status of negotiations on Global Climate Change.
9. NOW, THEREFORE, BE IT RESOLVED that:
- a) Any protocol to, or other agreement regarding, the United Nations Framework Convention on Climate Change of 1992, signed by the United States at negotiations in Kyoto in December 1997, or thereafter, should:
 - i) be voluntary as much as possible;
 - ii) include all nations, developed and developing, under comparable criteria and within the same compliance period;
 - iii) assist developing nations in growing economically while increasing energy efficiency;
 - iv) promote technology approaches that can reduce adverse impacts on consumers and the economy; and
 - b) any such protocol or other agreement should be accompanied by a detailed explanation of any legislation or regulatory actions that may be required to implement the protocol or other agreement and should also be accompanied by an analysis of the detailed financial costs and other impacts on the economy of the United States which would be incurred by the implementation of the protocol or other agreement.

February 4, 1997

Resolution 97 - 002

SPONSOR: Governor Schafer

SUBJECT: National Policies Regarding Global Climate Change

A. BACKGROUND

1. Atmospheric concentrations of greenhouse gases are rising and are projected to continue to increase. There is continuing scientific debate as to what the impact of increasing contributions of greenhouse gases would be on the climate.
2. The failure to take appropriate actions to address global climate change, risks economic, environmental and human damage.
3. The costs for stabilizing greenhouse gas emissions could be substantial and may be borne in large part by each state. Voluntary federal programs for electric utilities and other emitters are already in place.
4. The U.S. Department of State is participating in international negotiations on treaties and protocols for the mitigation of greenhouse gases.

B. GOVERNORS' POLICY STATEMENT

1. The Western Governors' Association urges that the President, Congress, the U.S. Department of State, and other federal agencies include the interests and expertise of the states as part of any national debate on the mitigation of greenhouse gases to ensure fully coordinated policies.
2. The Western Governors' Association supports a full and vigorous discussion, including all stakeholders, and consideration of all alternatives regarding the mitigation of greenhouse gases, adaptation of policies and other global climate change measures.
3. The Western Governors' Association supports a coordinated research effort on the effects of human activities on the accumulation of greenhouse gases and their contribution to the impact on global climate change.
4. The Western Governors' Association urges that the President and the U.S. Department of State international negotiating team to proceed cautiously with regard to new aims and post-2000 commitments for greenhouse gas mitigation strategies that would place an undue cost burden on energy consumers of the states while supporting agreements for globally applicable provisions that will significantly reduce the impacts of greenhouse gas emissions.
5. The Western Governors' Association supports a national policy on global climate change that is consistent with efforts to develop cost-effective alternative energy sources and more efficient use of energy.

C. GOVERNORS' MANAGEMENT DIRECTIVE

1. This resolution shall be conveyed to the President of the United States, the secretaries of State and Energy, the Administrator of the Environmental Protection Agency, the chairman and ranking member of the appropriate Senate and House committees, and to the western congressional delegation.

NATIONAL INDIAN BUSINESS ASSOCIATION

RESOLUTION

ON

GLOBAL CLIMATE CHANGE

WHEREAS, in December, 1997, in Kyoto, Japan, the parties to the United Nations Framework Convention on Climate Change plan to adopt a protocol or another legal instrument that strengthens commitments to limit greenhouse gas emissions by developed countries for the post-2000 period; and

WHEREAS, the amount of greenhouse gases in the Earth's atmosphere may be increasing as a result of human activities, and this is cause for thorough scientific research and analysis; and

WHEREAS, many in the scientific community recognize that current climate models cannot accurately forecast the timing, magnitude or likely regional impacts, if any, of human activities on global climates generally; and

WHEREAS, thousands of U.S. companies, including small and Native American-owned businesses, in an effort to comply with the aim of the 1992 Rio Treaty, voluntarily participate in U.S. government programs aimed at limiting greenhouse gas emissions; and

WHEREAS, energy use is the foundation for economic growth and a rising standard of living, especially in growth-dependent Native American communities; and

WHEREAS, a growing body of economic studies demonstrate that any U.S. effort to significantly limit energy use through taxes, caps or limits on greenhouse emissions, as proposed by the Administration, would slow economic growth; and

WHEREAS, notwithstanding the potential severe economic impacts on Americans, which disproportionately affect Native American economic growth, the Administration, in its testimony before the U.S. House of Representatives (Commerce Subcommittee on Energy and Power, by the Chair, Council of Economic Advisors, July 15, 1997) announced its attempts to produce an economic analysis of climate policy a "failure" and that "the effort to develop...a(n) answer to the economic impacts of a given climate change policy is futile;" and

WHEREAS, mandatory constraints on fossil fuel use would raise the cost of monthly electricity, heating and cooling bills, limit personal mobility, and could seriously disrupt Native American economies and our lives, as did gasoline lines and high energy prices did in the 1970's and early 1980's; and

WHEREAS, constraints on energy use would be particularly harmful to those Native American-owned businesses seeking to enter the marketplace, as well as individuals on fixed incomes, those living on Indian reservations and/or who are otherwise dependent on personal transportation for work and other worthwhile social activities, and those Native American-owned businesses who depend on transportation to compete effectively against their foreign counterparts as a result of higher fuel costs;

THEREFORE, BE IT RESOLVED THAT THE NATIONAL INDIAN BUSINESS ASSOCIATION (NIBA) dedicates itself to educating its members, constituents and others that there is no scientific reason for limits on greenhouse gas emission, and that the economic implications for Native American-owned businesses would lead to an increase in costs and lost jobs, as well as higher living expenses in terms of such essential items as housing, food and clothing; and

BE IT FURTHER RESOLVED, that the NIBA supports climate policies that are balanced and cost-effective, and that do not unfairly burden Native American-owned businesses and the citizens of a particular Native American community; and

BE IT FURTHER RESOLVED, that the NIBA urges the Administration to renew its efforts to provide all Americans with an economic analysis and assessment of global climate policies and options, and that the NIBA is opposed to any global climate proposals that are not justified by sound science and sound economic policy and fairness to U.S. interests; and

BE IT FURTHER RESOLVED, that the National Indian Business Association (NIBA) urges that any Agreement or Treaty entered into by the United States be applied fairly and equitably to all parties, including developing countries, and that assurances be given that such Agreement or Treaty will not result in economic harm to the United States and, in particular, Indian Country.

BE IT FINALLY RESOLVED, that this RESOLUTION be dispatched to the President of the United States, the Vice President of the United States, and appropriate Members of Congress and Congressional Committees.

RESOLUTION CERTIFIED BY:

TITLE:

DATE:

Rita Gomez
President
9/12/97



TEXAS ASSOCIATION OF MINORITY BUSINESS ENTERPRISES

Barbara A. Burton
President & CEO

Resolution on Global Climate Change

WHEREAS, in December, 1997, in Kyoto, Japan, the parties to the United Nations Framework Convention on Climate Change plan to adopt a protocol or another legal instrument that strengthens commitments to limit greenhouse gas emissions by developed countries for the post-2000 period; and

WHEREAS, the amount of greenhouse gases in the Earth's atmosphere may be increasing as a result of human activities, and this is cause for thorough scientific research and analysis; and

WHEREAS, many in the scientific community recognize that current climate models cannot accurately forecast the timing, magnitude or likely regional impacts, if any, of human activities on global climate generally; and

WHEREAS, thousands of U.S. companies, including small and minority-owned businesses, in an effort to comply with the aim of the 1992 Rio Treaty, voluntarily participate in U.S. government programs aimed at limiting greenhouse gas emissions; and

WHEREAS, energy use is the foundation for economic growth and a rising standard of living, especially in growth-dependent urban areas; and

WHEREAS, a growing body of economic studies demonstrate that any U.S. effort to significantly limit energy use through taxes, caps or limits on greenhouse gas emissions, as proposed by the Administration, would slow economic growth, cost hundreds of thousands of American jobs, especially in urban areas seeking to revitalize, and would further reduce or delay investments in more energy-efficient technologies or facilities; and

WHEREAS, notwithstanding the potential severe economic impacts on Americans, which disproportionately affect U.S. urban economic growth, the Administration, in its testimony before the U.S. House of Representatives (Commerce Subcommittee on Energy and Power, by the Chair, Council of Economic Advisors, July 15, 1997) announced its attempts to produce an economic analysis of climate policy a "failure" and that "the effort to develop ... a(n) answer to the economic impacts of a given climate change policy is futile," and

WHEREAS, urban communities are the venue for 98 percent of all Black-owned businesses; and

WHEREAS, mandatory constraints on fossil fuel use would raise the the cost of monthly electricity, heating and cooling bills; limit personal mobility, and could seriously disrupt urban

economies and our lives, as did gasoline lines and high energy prices did in the 1970's and early 1980's; and

WHEREAS, constraints on energy use would be particularly harmful to those Black-owned businesses seeking to enter the marketplace; as well as individuals on fixed incomes, those living in rural areas and/or who are otherwise dependent on personal transportation for work and other worthwhile social activities, and those Black-owned businesses who depend on transportation to compete effectively against their foreign counterparts as a result of higher fuel costs;

THEREFORE, BE IT RESOLVED THAT THE TEXAS ASSOCIATION OF MINORITY BUSINESS ENTERPRISES (TAMBE), ASSEMBLED IN AUSTIN, TEXAS, SEPTEMBER 17 THROUGH SEPTEMBER 20, 1997, that the TAMBE dedicates itself to educating its members, constituents and others that there is no scientific reason for limits on greenhouse gas emissions; and that the economic implications for urban areas and specifically Black-owned businesses would lead to an increase in costs and lost jobs, as well as higher living expenses in terms of such essential items as housing, food and clothing; and

BE IT FURTHER RESOLVED, that the TAMBE supports climate policies that are balanced and cost effective, and that do not unfairly burden Black minority-owned businesses and the citizens of a particular urban area or community, state or country; and

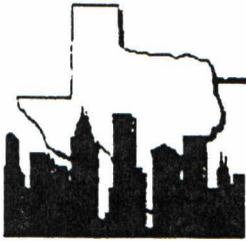
BE IT FURTHER RESOLVED, that the TAMBE urges the Administration to renew its efforts to provide all Americans with an economic analysis and assessment of global climate policies and options, and that the TAMBE is opposed to any global climate proposals that are not justified by sound science and sound economic policy and fairness to U.S. interests; and

BE IT FURTHER RESOLVED, that the United States should not be a signatory to any protocol to, or other agreement regarding the United Nations Framework Convention on Climate Change of 1992, at negotiations in Kyoto in December, 1997, or thereafter, which would mandate new commitments to limit or reduce greenhouse gas emissions for the U.S., unless the protocol or other agreement also mandates new specific scheduled commitments to limit or reduce greenhouse gas emissions for developing countries within the same compliance period, would result in job loss or serious harm to the economy of the United States; and;

BE IT FINALLY RESOLVED, that this RESOLUTION be dispatched to the President of the United States, the Vice President of the United States, and appropriate Members of Congress and Congressional Committees.



Barbara A. Burton
President and CEO
Texas Association of Minority Business Enterprises



TEXAS CONFERENCE OF BLACK MAYORS

Chairman
Mayor Ron Leverett
Prairie View, Texas

Executive Director
Barbara A. Burton
Austin, Texas

Resolution on Global Climate Change

WHEREAS, in December, 1997, in Kyoto, Japan, the parties to the United Nations Framework Convention on Climate Change plan to adopt a protocol or another legal instrument that strengthens commitments to limit greenhouse gas emissions by developed countries for the post-2000 period; and

WHEREAS, the amount of greenhouse gases in the Earth's atmosphere may be increasing as a result of human activities, and this is cause for thorough scientific research and analysis; and

WHEREAS, many in the scientific community recognize that current climate models cannot accurately forecast the timing, magnitude or likely regional impacts, if any, of human activities on global climate generally; and

WHEREAS, thousands of U.S. companies, including small and minority-owned businesses, in an effort to comply with the aim of the 1992 Rio Treaty, voluntarily participate in U.S. government programs aimed at limiting greenhouse gas emissions; and

WHEREAS, energy use is the foundation for economic growth and a rising standard of living, especially in growth-dependent urban areas; and

WHEREAS, a growing body of economic studies demonstrate that any U.S. effort to significantly limit energy use through taxes, caps or limits on greenhouse gas emissions, as proposed by the Administration, would slow economic growth, cost hundreds of thousands of American jobs, especially in urban areas seeking to revitalize, and would further reduce or delay investments in more energy-efficient technologies or facilities; and

WHEREAS, notwithstanding the potential severe economic impacts on Americans, which disproportionately affect U.S. urban economic growth, the Administration, in its testimony before the U.S. House of Representatives (Commerce Subcommittee on Energy and Power, by the Chair, Council of Economic Advisors, July 15, 1997) announced its attempts to produce an economic analysis of climate policy a "failure" and that "the effort to develop ... a(n) answer to the economic impacts of a given climate change policy is futile," and

WHEREAS, urban communities are the venue for 98 percent of all Black-owned businesses; and

WHEREAS, mandatory constraints on fossil fuel use would raise the the cost of monthly electricity, heating and cooling bills; limit personal mobility, and could seriously disrupt urban

economies and our lives, as did gasoline lines and high energy prices did in the 1970's and early 1980's; and

WHEREAS, constraints on energy use would be particularly harmful to those Black-owned businesses seeking to enter the marketplace; as well as individuals on fixed incomes, those living in rural areas and/or who are otherwise dependent on personal transportation for work and other worthwhile social activities, and those Black-owned businesses who depend on transportation to compete effectively against their foreign counterparts as a result of higher fuel costs;

THEREFORE, BE IT RESOLVED THAT THE TEXAS CONFERENCE OF BLACK MAYORS (TCBM), ASSEMBLED IN AUSTIN, TEXAS, SEPTEMBER 17 THROUGH SEPTEMBER 20, 1997, that the TCBM dedicates itself to educating its members, constituents and others that there is no scientific reason for limits on greenhouse gas emissions; and that the economic implications for urban areas and specifically Black-owned businesses would lead to an increase in costs and lost jobs, as well as higher living expenses in terms of such essential items as housing, food and clothing; and

BE IT FURTHER RESOLVED, that the TCBM supports climate policies that are balanced and cost effective, and that do not unfairly burden Black minority-owned businesses and the citizens of a particular urban area or community, state or country; and

BE IT FURTHER RESOLVED, that the TCBM urges the Administration to renew its efforts to provide all Americans with an economic analysis and assessment of global climate policies and options, and that the TCBM is opposed to any global climate proposals that are not justified by sound science and sound economic policy and fairness to U.S. interests; and

BE IT FURTHER RESOLVED, that the United States should not be a signatory to any protocol to, or other agreement regarding the United Nations Framework Convention on Climate Change of 1992, at negotiations in Kyoto in December, 1997, or thereafter, which would mandate new commitments to limit or reduce greenhouse gas emissions for the U.S., unless the protocol or other agreement also mandates new specific scheduled commitments to limit or reduce greenhouse gas emissions for developing countries within the same compliance period, would result in job loss or serious harm to the economy of the United States; and;

BE IT FINALLY RESOLVED, that this RESOLUTION be dispatched to the President of the United States, the Vice President of the United States, and appropriate Members of Congress and Congressional Committees.



Ron Leverett
Mayor, Prairie View, Texas
Chair, Texas Conference of Black Mayors

THE WHITE HOUSE
Washington, DC

OFFICE OF THE STAFF SECRETARY

Fax Transmittal Sheet

To: Jane Perkins

Fax Number: 202-508-6967

Telephone Number: 202-686-5004

From: Jonathan Adashek

Subject: White House Conference on Global Climate Change

Date: 29 September 1997

Number of Pages (including cover sheet): 3

Message: Jane,

Attached are the names of those invited to
to the conference as well as a copy of the
letter that was sent to John Sweeny inviting
him to the October 6th conference.

(If all pages are not received, please call (202) 456-2702.)

The document accompanying this facsimile transmittal sheet is intended only for the use of the individual or entity to whom it is addressed. This message contains information which may be privileged, confidential or exempt from disclosure under applicable law. If the reader of this message is not the intended recipient, or the employee or agent responsible for delivering the message to the intended recipient, you are hereby notified that any disclosure, dissemination, copying or distribution, or the taking of any action in reliance on the contents of this communication, is strictly prohibited.

THE WHITE HOUSE
WASHINGTON

29 September 1997

MEMORANDUM TO

Jane Perkins

FROM

Jonathan Adashek 

SUBJECT

White House Conference on
Global Climate Change

Jane, attached you will find the letter that was sent to John Sweeny inviting him to the 6 October White House Conference on Global Climate Change. Please use this as an example for all letters that were sent out.

Listed below are the names of those invited from the labor sector, as well as their attendance status.

1. John Sweeny - No response yet
2. Richard Trumka - No response yet
3. Robert Wages - No response yet
4. Cecil Roberts - No response yet
5. Steve Yokich - No response yet
6. George Becker - Yes
7. John Barry - No response yet
8. Charles Jones - No response yet
9. Robert Georgine - No response yet

If you have any questions, or need anything else please contact me.

THE WHITE HOUSE
WASHINGTON

September 18, 1997

Mr. John Sweeney
President
AFL-CIO
815 16th Street, N.W.
Washington, D.C. 20006

Dear John:

It is my great pleasure to invite you to join me at the *White House Conference on Climate Change: The Challenge of Global Warming*, to be held October 6 at Georgetown University.

Climate change is one of the most important issues facing this and future generations. The science is real -- we know enough to recognize the need to begin taking serious actions to limit our greenhouse gas emissions. Just as important, we must react sensibly. Any response we choose must be consistent with sustained economic growth and must ensure that all nations of the world participate in a meaningful, equitable way.

This conference will bring together a range of national leaders to explore the scientific, economic, and international aspects of climate change. Throughout the day, you will hear from panels of experts in these areas and have the opportunity to speak with senior members of my Administration.

The goals of this conference are twofold: first, to help improve the understanding of climate change among all aspects of American society; and second, to inform U.S. policy as we work to develop an appropriate response. This effort is particularly timely, as we prepare for an international climate change conference in December, at which we hope to sign an agreement limiting emissions of greenhouse gases.

I hope you will be able to attend the conference, and I am enclosing a fact sheet with more detailed information and R.S.V.P. instructions. I look forward to meeting with you on October 6 and to hearing your views.

Sincerely,

Bill Clinton

MESSAGE CONFIRMATION

SEP-30-97 12:52

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NAME :

FAX NUMBER : 95086967

PAGE : 03

ELAPSED TIME : 01'44"

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RESULTS : O.K

AUTO

DOE

NEWS

NEWS MEDIA CONTACTS:

Hope Williams/Jacqueline Johnson, 202/586-5806

FOR IMMEDIATE RELEASE

October 27, 1997

DOE-FORD-IFC TEAM SUCCESSFULLY RUNS AUTOMOBILE-SIZED FUEL CELL ENGINE

High-Efficiency, Zero-Emission Fuel Cell System Unveiled

A government-industry team announced that for the first time, a proton-exchange-membrane (PEM) fuel cell system fueled by hydrogen, produced more than 50 kilowatts of electrical power without an air compressor. That's enough power to propel a lightweight mid-size car. Eliminating the need for a compressor greatly simplifies the system and decreasing the auxiliary power requirements translates to greater energy efficiency. A fuel cell is an electrochemical device that combines hydrogen and oxygen to produce electricity with zero emissions, low noise, and high energy efficiency. This is a major milestone toward high-mileage, non-polluting electric vehicles.

A partnership among the Department of Energy, Ford Motor Company and International Fuel Cells (IFC) is responsible for this accomplishment in automotive fuel cell technology. It is the culmination of three years of development effort -- under a \$13.8 million cost-shared contract -- directed at advancing state-of-the-art, PEM fuel-cell technology.

"As the nations of the world focus on slowing global climate change, advanced automotive technology becomes an increasingly important part of the solution," said Secretary of Energy Federico Peña. "Today's announcement shows that extraordinary progress is being made in using technology to reduce greenhouse gases, improve the air we breathe, and use our energy more efficiently."

This first-of-a-kind system is based on technology developed by IFC over the last 10 years. IFC's advanced PEM technology enables operation at ambient pressure giving the system cost, weight, and reliability characteristics superior to pressurized systems. The automotive power plant, developed under this program by IFC, incorporated ambient pressure technology, was acceptance tested in South Windsor, Conn., and met all operating goals. The system weighs 300 pounds and takes up approximately nine cubic feet of space. It can fit easily under the hood of a car. The system is currently at the Ford Research Laboratory in Dearborn, Michigan and will undergo dynamic testing to measure performance under a simulated typical driving cycle. The technology is clean and efficient, with absolutely no emissions, except for water. This could lead to vehicles that get up to three times the mileage of a conventional car.

(MORE)

R-97-118



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■ U.S. Department of Energy

● Office of the Press Secretary

● Washington, DC 20585

This fuel cell research project was conducted in support of the Partnership for a New Generation of Vehicles initiative. The Partnership for a New Generation of Vehicles is a joint research and development program by the federal government and the United States Council for Automotive Research (USCAR, a cooperative venture among Ford, General Motors and Chrysler). The goal of the partnership is to develop technology that leads to a passenger automobile with 80 miles per gallon fuel economy.

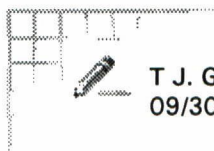
With this direct hydrogen fuel cell system, hydrogen is stored on board the vehicle. Today, a hydrogen fuel cell vehicle could be a practical approach for vehicles in fleet service because they could be refueled at the same station every day. However, an important issue for future widespread use of fuel cell vehicles is the availability of a hydrogen refueling infrastructure. For this reason, one area of focused research is the conversion or processing of more common transportation fuels (such as gasoline and methanol) into hydrogen-rich gas that can be used by the fuel cell. This fuel processing can be done either on-board the vehicle or at a stationary fuel processing site.

Last week, the department announced a breakthrough in this on-board fuel processor technology that demonstrated that gasoline and clean alternative fuels can be converted to power an electric car. Today's announcement focuses on Ford and IFC's success in building the automobile-sized (50-kilowatt) fuel cell.

The Energy Department recently signed a cooperative agreement with IFC to design an automotive-scale, fuel-flexible fuel cell system that incorporates a fuel processor with a 50-kilowatt fuel cell stack to operate in an automobile. This program is designed to be the next step in demonstrating critical components that will make fuel cell vehicles technically, functionally and economically viable.

-DOE-

Auto



T J. Glauthier
09/30/97 10:34:50 AM

Record Type: Record

To: Todd Stern/WHO/EOP

cc:

Subject: Meetings with the auto companies

Todd, as background for the meeting that I believe you and the President will have this week with the auto company executives, I am sending you the email below from my staff on the status of the PNGV effort. I've gotten this same general status report from OSTP and CEO, too. They are all concerned that the auto companies are backing away from their commitment to the PNGV goals.

----- Forwarded by T J. Glauthier/OMB/EOP on 09/30/97 10:30 AM -----

Randolph J. Steer
09/25/97 09:26:58 PM

Record Type: Record

To: T J. Glauthier/OMB/EOP

cc: Alecia Ward/OMB/EOP, Kathleen Peroff/OMB/EOP, Gary L. Bennethum/OMB/EOP

Subject: PNGV OSG meeting on Oct. 1

Attached below is an article I'm submitting to our weekly report, but you may want to look at it before then -- it addresses one of the key issues that will be discussed at the PNGV Operational Steering Group meeting on Oct. 1. An agenda still has not been prepared -- the meeting will start at 8am and probably continue until early afternoon. I'll let you know as soon as I hear what the schedule of issues will be.

After you've read the following, though, you may want to come to as much of the meeting as you can.

Randy.

Industry Turns Away from Ambitious Goals in PNGV (Randy Steer)

Industry is preparing to announce their technology "down-select" decisions at the next "Operational Steering Group" (OSG) meeting, on Oct. 1. This will be the technology choice that will be incorporated into "concept cars" due to be presented in the year 2000. (Production prototypes are then due in 2004.)

The advance briefings that we have received indicate that the auto companies would like to go with what might be characterized (pardon the cynicism) as a "timid hybrid" configuration. This would derive most of its power from a diesel engine, with a small electric motor/battery

system that would absorb energy as the car is braking and would use that energy to help accelerate the car when it starts moving again. (This is known as "regenerative braking.") Given that the goal of PNGV is to stretch automotive technology, this choice is disappointing because I drove just such a concept vehicle at GM *two years ago*. If the auto companies declare that this will be their year 2000 concept car, the PNGV program will be loudly criticized as having labored expensively and produced a mouse. That is not to say that even a "timid hybrid" won't offer some fuel economy and greenhouse-gas benefits -- it will, but not all that the Administration had hoped for.

OMB, OSTP, and CEQ will be pressing the auto industry to raise their sights, and OMB will also be recommending increased funding for some of the "breakthrough technologies" that could be available in the next decade. The U.S. auto companies may be holding a lot of technologies in reserve, because their competition is pressing ahead with more serious hybrid concepts. If they are, though, we need to draw a more formal commitment out of them. Daimler-Benz has spent more than \$230 million to fund development of an automotive fuel-cell by a Canadian company, which is now considered to be well ahead of the rest of the world. Toyota will begin production *next year* (in limited quantities of 1,000 per year) of a hybrid vehicle that is more ambitious than the proposed PNGV year 2000 concept car. It will be sold only in Japan, however.

Another issue that will be discussed at the PNGV OSG meeting Oct. 1 is guidance to Federal agencies on the levels of industry cost-sharing that should be required for various contracts and cooperative agreements. A copy of the guidance (prepared by OMB in consultation with DOE and DOC) is available on the OMB intranet at:

<http://intranet.omb/esd/energy/pngv/cs-princ.htm>

Auto

—

To: Todd Stern
Ford is sending
this out to all
their employees.

~~Therapist~~ 11/17/93
would want a copy

— Julie Luvon

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Chairman

Dear Ford Salaried Employees and Retirees:

Some of you have heard me talk about global climate negotiations as the biggest policy issue the auto industry – and the nation – face in the next decade.

Negotiators from more than 160 nations are meeting in Kyoto, Japan in December. There's a strong possibility they'll sign a legally binding international treaty on global climate with little understanding of the impacts, timing and causes of climate change and with a timetable that could take sensible approaches off the table.

Ford has many experts who have been working on this issue for years – both from the standpoint of understanding the facts and of being ready with solutions that will be less disruptive to our economy than the proposals now being debated.

I hope you'll take time to read this booklet, which lays out the facts from Ford and external sources. If you agree with me that there is reason to be concerned the U.S. is taking the wrong approach, we hope you will get the word out to your family and friends and take time to drop a note to the policymakers in Washington who will be deciding this issue in the next month or so.

Ford takes its environmental stewardship seriously. But unrealistic timetables that are not supported by scientific facts aren't in the nation's economic or environmental interest. Please take the time to understand this issue and be a part of the public debate.

Sincerely,

A handwritten signature in dark ink, appearing to read "Alex J. Mann".



Auto

'97 JUL 25 PM4:10

MEMO

To: Jim Dorskind
Todd Stern ✓
From: Tracy Sisser, Presidential Letters *JS*
456-5516 (phone) / 456-5426 (fax)
Subject: Language for NAAQS and climate change
Date: July 25, 1997

I have attached draft language for incoming correspondence from the Big Three automakers regarding their concerns about climate change as well as EPA's new air standards for ozone and particulate matter.

This letter has been cleared by:

Dirk Forrister, White House Climate Change Task Force Director
Shelley Fidler, Council on Environmental Quality Chief of Staff
Kathleen Wallman, National Economic Council Chief of Staff
Sally Katzen, Office of Management and Budget/Office of Information and Regulatory Affairs
Administrator.

July 21, 1997

^F10?^
^F18?^
^F20?^
^F21?^
^F22?^
^F23^, ^F25^ ^F27^

Dear ^F9^:

Thank you for your recent letter regarding the Environmental Protection Agency's new air quality standards and climate change. I appreciate your candor, and I hope that we can continue a dialogue on these issues, which are of great importance to the public health, the environment, and the economy. I completely agree that openness and transparency of process, as well as a healthy and candid dialogue, are critical to the development and implementation of successful policies.

With respect to the air quality standards, my decision in setting the new standards was based on the need to protect the public health with an adequate margin of safety, as the Clean Air Act and good public policy require. However, my decision also included direction to the EPA to develop creative, flexible, and common sense implementation plans that will achieve these important results in a cost-effective way. I am confident that we can both protect the public health and sustain the prosperity that you rightly recognize our country has enjoyed in recent years.

Representatives of the EPA will be discussing these implementation plans with you in detail in the near future. With regard to fine particle standards, these plans will ensure that no area of the country will be designated out of attainment with the new standard for at least five years. During that time, EPA will complete another review of any newly available relevant scientific information. With respect to ozone, no area will have any new requirements imposed as a result of the new standard until at least 2004.

With respect to climate change, as I said in my speech last month at the United Nations, I believe this is a serious problem, and we have a responsibility to confront it for ourselves and future generations. With the best ideas and thoughtful strategies, we can turn this challenge to our advantage. In this regard, I share your continued commitment to and enthusiasm for the Partnership for a New Generation of Vehicles as an important part of our response to climate change. I look forward to further discussions with you on the progress of that project, as well as additional opportunities for partnerships to address these vital environmental and public health issues.

Sincerely,

BC/JAD/efr-lynn (Corres. #^F58^)
(7-10airquality)



June 30, 1997

The President
The White House
1600 Pennsylvania Avenue, NW
Washington, DC 20500

Dear Mr. President:

We want to express to you our deepest concern and disappointment with your Administration's decisions both on air quality and also with the direction that negotiations on global climate change are now headed.

The sustained U.S. prosperity of the past five years is now seriously threatened by the profound policy changes you are endorsing — changes that lack clear scientific rationale. The impact on the auto industry — and indeed on the entire U.S. economy — will be disruptive of and, ultimately, damaging to the solid progress we have made on many fronts in the last few years, including progress on environmental challenges and continued progress on the heavy investments we have made in urban areas during your first term.

These actions by your Administration are unnecessary to achieve the environmental goals we all seek. Our industry has made significant contributions to cleaner air, and we are continuing to make substantial headway on programs designed both to produce even cleaner vehicles and also to reduce the energy consumption of both our products and our facilities.

In supporting the EPA proposals for new standards for ozone and particulate matter, the Administration has shown a disturbing disregard for the need to base regulation on science, an aversion to cost-benefit analysis, and even a denial of cause and effect. As a result, for negligible health benefits, billions of dollars of costs will be incurred.

We are also deeply concerned about the lack of openness and transparency in the climate change negotiations. Experience shows that balanced, supportable public policy cannot be developed through such a process. You are about to embark on a negotiation in Kyoto that will bind future generations and impose enormous costs. We cannot leave all the questions about how this would work until after a treaty is signed. Policies should fit the nature of the issue, which is long-term. There is time to do the sound research necessary to verify the dimensions of the problem, and we are willing to work with you on this. If we do have a problem, we have the time to marshal the scientific and technological resources to deal with it. We simply do not have enough information now to agree to legally binding targets and timetables.

The Partnership for a New Generation of Vehicles, which we have undertaken, working cooperatively with your Administration and academia, provides a far better example of how we should approach the globe's environmental challenges. Rather than committing the country to mandatory reductions in energy use, a far more productive focus would be on creating global partnerships for developing breakthrough technologies and helping other countries to develop efficiently, through technology research and transfer and low cost mitigation.

Mr. President, your decisions are taking us in a direction that will hurt U.S. economic performance and competitiveness, with potentially adverse consequences for our production base here in the United States. Since these decisions impact the very vitality of our companies and our employees, it will be important for us to widely communicate our views. We ask that your Administration be as thoughtful as it is determined in its quest for environmental progress.

Sincerely,

Robert J. Eaton
Chairman & CEO
Chrysler Corporation

Alex Trotman
Chairman, President & CEO
Ford Motor Company

John F. Smith, Jr.
Chairman, CEO & President
General Motors Corporation



American Automobile Manufacturers Association

ROBERT E. MOSS

Vice President,
Government Affairs Division

June 30, 1997

Dear Ms Currie:

Kindly deliver the enclosed envelope
to the President.

Thank you.

Bob Moss

7/2/97

Send to Donskyid?

Yes ☒

BC
8/7

no ☐

coordinate w/CEQ

Yes ☐

for letter
to J. D. [unclear]

Per [unclear]
(Cover attached)

no ☐
Tracy - Thanks
C.



(RM) 7/7

Auto Industry

—

TS

7/10
draft

Transportation: Light Duty Vehicles and Carbon Emissions

Key Findings

- ❖ Based upon data from AEO97, the transportation sector will use about 25.4 quads of energy in 1997, about 27 percent of the nation's total energy requirements. Because of its almost total dependence on petroleum fuels (accounting for 97 percent of total energy use), the transportation sector is responsible for 34 percent of the overall U.S. greenhouse gas emissions.
- ❖ Light duty vehicles, including automobiles and light trucks, will account for about 58 percent of the nation's total transportation energy requirements in 1997. In contrast, freight trucks will use only 16 percent of the transportation energy in 1997. The remaining 25 percent of the transportation share will be used by air, rail and marine travel, pipeline fuels and lubricants.
- ❖ The transportation sector has the potential to reduce energy use and carbon emissions by 15-20 percent over 2010 baseline forecasts through cost-effective investments in energy efficient technologies, and in some cases, low-carbon technologies. The savings can be achieved without significantly affecting either comfort, safety or travel.
- ❖ The anticipated 2010 energy and carbon savings could be achieved in the case of automobiles, for example, if new car sales in that year achieve one-third of the fuel economy represented by the PNGV goal of 80 MPG.
- ❖ Assuming that PNGV cost goals are not met, and that the price of new vehicles in 2010 reflect current estimates of new technology costs, a 45 MPG car will cost between \$800 and \$1,200 more than a 28 MPG car (in 1995 dollars). Assuming 13,600 vehicle miles traveled for new vehicles and a gasoline price of \$1.23 in 2010 (also in 1995 dollars), this implies a roughly 3.5 to 5.3 year simple payback for a car that has an expected 14-year lifetime.

Background

After a roughly 15-year period (1975-1990) of energy efficiency improvements in the nation's vehicle fleet, energy use in the transportation sector now appears to be growing at nearly the same rate as the gross domestic product (GDP). In the case of light duty vehicles, the growth in energy consumption is driven by increases in the vehicle miles traveled (VMT), and the significant growth of light trucks (including vans, sport cars and recreational vehicles) which have a substantially smaller fuel economy. The sales of light trucks have grown from a 20 percent market share in 1975 to a 40-percent market share in 1994. Whereas new cars are rated at 28 MPG, light trucks enter the market with a rating of only 20.5 MPG.

Savings Potential

Despite the significant growth in energy use by light duty vehicles, the technology exists to increase the average fuel economy of the nation's transportation fleet by 40 percent or more in the year 2010 — without the need for reduced travel or increases in the cost of travel. This is true in both the movement of people and freight. This success would be achieved in the case of automobiles, for

example, if new car sales achieve one-third of the fuel economy represented by the Partnership for a New Generation Vehicle (PNGV) goal of 80 MPG.

Major technologies for near-term light duty vehicle improvements include, for example, material substitution, reduced aerodynamic drag, improved automatic transmissions, reduced engine friction, variable valve timing, and advanced tire designs. Many of these technologies have already emerged in the market, lacking only appropriate policy signals to accelerate their diffusion, or to redirect their use toward fuel economy instead of improving other vehicle attributes. Honda, as one example, employs a system of variable valve timing that is used to boost power and improve fuel economy. General Motors has one vehicle that has already achieved a low aerodynamic drag. On the other hand, lean-burn engines which increase engine thermal efficiency are a low-risk technology that should be readily available by 2010.

Work developed for the "Car Talk" advisory committee¹ resulted in estimated reductions of both energy use and carbon emissions (measured in million metric tons of carbon, or mmMTCe) through a variety of both technology and policy options. Summarized in the table below, and generally covering the period 2005 through 2025, the options include improved land-use planning, higher fuel prices, fuel economy standards and feebates, the PNGV vehicle, and the use of low life-cycle carbon fuels.

Modeling a different set of technology assumptions showed a significantly different set of results. DRI focused on largely behavioral response to reduce transportation energy consumption, while Markal-Macro had a larger technology bent. The table on the following page highlights these differences. (Note: the reference to CCAP is the so-called Case Two scenario which moved toward but did not necessarily hit a rate of decline in E/GDP of 1.25 percent. This compares to an assumed 1.00 percent decline in the base case. The Case two scenario includes both the full set of CCAP programs as well as "announcement effect." Case three, the Technology Case formerly described as the 1.75 Case, assumes a higher level of investment potential for cost-effective energy efficient/low-carbon technologies.)

In case two (with stabilization), DRI forecasts a 9 percent reduction in VMT with an 8 percent increase in MPG for new automobiles. DRI's case three (with stabilization) forecasts a 5 percent VMT reduction with a 10 percent increase in new car MPG. MM shows a seven percent drop in VMT for the CCAP scenario. This rebounds, however, to nearly base case levels with better assumptions about improved levels of technology. Although new cars in MM enter the market in 2010 with a high EPA-rated fuel economy (again, with about one-third of the improvements of the PNGV goal), the entire fleet of automobiles show an on-road MPG of only 30 MPG because of the time needed for fleet turnover. Hence, it is the on-road change in fleet fuel economy — moving from 24.2 to 30 MPG — that drives much of the transportation energy and carbon savings.

In the Markal-Macro assumptions, a new vehicle at 45 MPG would cost an estimated \$1,200 above new cars in the base case. The newly released *Energy Innovations* study suggests an added cost of about \$800 dollars (in 1995 dollars). However, owners of the new vehicles would save about \$225 per year in avoided gasoline costs (also in 1995 dollars, assuming an average driving range of

1. The "Car-Talk" committee is the *Policy Dialogue Advisory Committee to Assist the President in the Development of Measures to Significantly Reduce Greenhouse Gas Emissions from Personal Motor Vehicles* formed in 1993 to see whether a consensus set of policies could be developed to return personal transport GHG emissions to 1990 levels by 2005, 2015 and 2025. The committee failed to agree on such policies, but substantial analytic results were developed by a team of government analysts working with several expert committee members.

13,600 miles per vehicle and a cost of gasoline of \$1.23 per gallon). Simple payback for this technology improvement would range, therefore, from 3.5 to 5.3 years. In comparison, the average life of a new car would be about 14 years.

Car-Talk Summary Table of Policy Options²
(mmMTCe)

Policy Measure	Policy Type	2025 Annual Emission Reduction
Land Use and Transit Policy Package	Less VMT	25
Fuel Price Increases (\$0.50/gal.)	Less VMT	120
Parking Tax (\$2.00 nationwide)	Less VMT	25
Road Pricing	Less VMT	25
Fuel Economy Standards, "Feebates"	More Fuel Efficiency	90
PNGV	More Fuel Efficiency	60-200
Bio-Ethanol Subsidy	Low Emission Fuels	100
GHG Savings Needed to Return Personal Transport Emissions to 1990 Levels by 2020-2025		200-260

Key Automobile Indicators in 2010

	DRI			Markal-Macro		
	Base	CCAP	Technology	Base	CCAP	Technology
VMT	1526	1403	1450	1619	1509	1597
MPG New Car (EPA)	29.2	31.4	32	30.7	43.4	44.7
MPG Car Fleet (EPA)	24.7	26.5	30.6	29.3	32.7	35.7
MPG Car Fleet (On-Road)	23.3	24.5	26.9	24.4	27.3	30

2. Emission reductions may not be added since the impact of implementing multiple policies may be significantly less than is implied by adding up the individual estimates. However, the motor vehicle GHG model used to develop most of these estimates can be used to forecast the effect of multiple policies.

Page 1
Draft, 6/10/97

Freight, Aircraft and Rail Emissions Projections and Potential for Reduction

Key Points

- Total carbon emissions from the transportation sector in 1995 were nearly 470 MMT. The freight, aircraft and rail sectors accounted for nearly 200 MMT of carbon emissions, or 42 percent of all transport emissions.
- All modes of freight transport, including trucks, rail, pipeline, shipping, and air, have improved their energy efficiency. However, intermodal shifts to more energy-intensive trucking and air transport has meant very little change in the amount of energy used to haul a ton of freight from 1972 to 1995.
- Energy use and carbon emissions from non-personal vehicles is likely to surpass energy use and emissions from automobiles shortly after the millenium.
- Opportunities to reduce carbon emissions or energy use in commercial vehicle transport before 2010 will likely come mainly from trucking and air transport. Analysis of possibilities in a study by 5 DOE laboratories estimated that roughly 20-45MMT could be saved by new technologies, increased use of cellulosic ethanol fuel, and improved traffic flows. About 10 MMT in reduced emissions come from trucking, 10-15 come from air transport, and 7-10 from rail. Beyond 2010, further significant reductions are possible through improved aerodynamics (laminar flow) and more efficient propulsion in aircraft, and in rail and trucking, major improvements could be made if hybrid/fuel cell powertrain technology can begin to capture more than a trivial share of the market.
- To achieve the savings in emissions by 2010 will require a more aggressive program of research and development in conventional powertrains and propulsion, as well as policies to encourage the use of new technologies and/or capital turnover. The same is true, but at significantly greater scales, of very low emission or zero emission technologies like fuel cell/fuel cell hybrid powertrains in rail and truck, and advanced laminar flow technologies in aircraft.

Background

The transportation sector, which includes both personal transportation (cars and light trucks, rail and air) and freight (heavy trucks, rail, aircraft, pipeline, and ships) accounts for almost 11 percent of U.S. GDP. The freight sector accounts for about a third of that.

Total emissions from freight and aircraft were just over 200 MMT, with heavy trucks and aircraft each accounting for about one-third of the total. Aircraft emissions account for all aviation, including freight, passengers, and military, with the lion's share of aviation carbon

Page 2
Draft, 6/19/97

emissions coming from passenger travel. Air freight was estimated at 1% of all air transport in 1989, and while it is the fastest-growing mode of non-local freight transport, it probably only accounts for a few percent of all freight transport in 1997. The share of emissions due to freight alone is unavailable, as many commercial flights carry both passengers and freight.

The U.S. economy moves more ton-miles of freight every year, on every mode. All modes of non-local freight transportation increased between 1970 and 1994. Air freight increased the most (434%), followed by trucks (210%), rail (57%), pipeline (41%), and water (37%). Water, rail, and trucks are each responsible for about 25% of freight movement, measured in ton-miles.

Truck use for freight has increased dramatically in the last 15 years. Historically, rail has had an advantage in hauling heavier freight. In recent years, however, trucking loads have grown heavier; between 1982 and 1992, mileage traveled by trucks with operating weights above 80,000 lbs. increased 193%, and 120% for trucks below 33,000 lbs. The average length of haul increased from 224 miles in 1979 to 817 miles in 1994.

All modes have consistently improved their energy efficiency. Improvements have come from both technology and operational efficiencies. Between 1984 and 1994, heavy truck energy use per vehicle mile decreased 0.4% per year, and 1.6% annually per ton-mile. In rail, energy use per car-mile dropped 0.9% per year, and 2.7% annually per ton-mile.

Between increasing efficiency and the shift to more energy-intensive modes (trucks and air), the net energy effect is about a wash: if energy intensities of 1972 still prevailed, 1994 freight movements would have required about as much energy as was actually used in 1994 to haul more than three times the amount of freight.

Trends

According to Argonne National Laboratory, total energy use by non-personal vehicles is expected to surpass that of personal vehicles before 2005. Improvements in fuel efficiency improvement have slowed in personal vehicles, but continue in other modes of transport. In freight, the weight and cost of fuel carried has a direct effect on the amount of freight that can be carried, so there are incentives to improve fuel efficiency even when fossil fuel prices are low.

Trucks and aircraft are expected to continue as the fastest-growing forms of non personal transport, and will account for the greatest increases in emissions. The airline industry, since deregulation, operates close to maximum efficiency, and opportunities to use alternative fuels in aircraft are limited. Therefore most of the opportunities to reduce emissions from aircraft are in development and deployment of more fuel-efficient engine and airframe technology.

Reducing emissions from surface freight, on the other hand, is possible through both technological improvement and progress in reducing inefficient use of trucks (e.g. continued reduction in empty backhauls, more efficient routing, intrastate warehousing) and shifting from trucks to rail.

Results and Potential for Reducing Emissions

Neither DRI nor SGM include technological advances that affect emissions, or energy consumption, in the freight sector. DRI, in fact, assumes constant MPG for all heavy trucks through 2010, at just over 5 mpg, less than the average for heavy trucks now (approximately 6.8 mpg on-road).

Page 3
Draft, 6/19/97

Markal Macro includes several advanced technologies to improve the energy and carbon efficiency of freight. All three cases (base, stabilization with a rate of improvement in the use of energy as a share of GDP of 1.25%/year, and stabilization with an annual rate of improvement of 1.75 percent) bring in more fuel-efficient diesels, with faster rates of introduction in the 1.25 and 1.75 cases. In addition, both advanced technology cases phase out existing gasoline trucks, and penetration of trucks LPGfuel. The 1.75 case shows very rapid penetration of diesel trucks that are 20% more efficient than current diesel trucks, starting in 2010 and accounting for well over 95% of vehicle miles traveled by 2020. Fuel efficiency of heavy trucks increases to 6.9 mpg in the 1.25 case and 7.3 mpg in the 1.75 case of Markal Macro. Carbon emissions in 2010 are forecast to be nearly 98 MMT in the base case, 88 MMT in the 1.25 case and 18 MMT in the 1.75 case (see figure above).

Emissions from rail, freight, air freight and pipelines were specified exogenously for the IAT, since none has more than a marginal impact on energy use and carbon emissions as a whole. The forecast shows emissions from rail freight at 10.5 MMT in the base case, and 9.7 and 9.8 MMT, respectively, in the 1.25 and 1.75 cases. Emissions from shipping are reduced from 8.5 MMT currently to about 7.6-7 for all cases in 2010.

Technology Options: Trucks. There are many opportunities to improve energy efficiency and carbon dioxide emissions in freight. Improved aerodynamic design, advanced diesel engines, vehicle weight reduction through materials substitution, improved tires, and electronic engine and transmission controls can achieve fuel economy improvements ranging from 2 to over 20 percent in heavy trucks, as can advances in computational methods (hardware and software) aimed at understanding turbulence both for aerodynamics and within fuel chambers. More revolutionary technological advances, including the use of fuel cells in powertrains, are possible with an aggressive program to develop fuel cells for motor vehicles, along with the storage devices (batteries and ultracapacitors), fuel storage, and infrastructures supporting increased use of hydrogen fuel. With such a program, it might be possible to introduce hybrid fuel cell/electric powertrains into trucks before 2010, though significant market penetration is very unlikely by then.

Rail. Fuel cell/electric powertrains may be somewhat more likely to happen in locomotives than trucks, though significant market penetration of fuel cells in rail before 2010 is doubtful. The cost of fuel cell power is still prohibitive in rail, but with further development and expansion in the use of fuel cells for other applications (light duty motor vehicles and terrestrial power generation, e.g.) the economics may become more favorable. While widespread use of fuel cells for any kind of transport poses some significant infrastructural, maintenance, and technical problems, there has been significant progress in fuel cell and other hybrid powertrain technology over the past several years, with significant contributions from PNGV and NASA and DOD programs. With increased spending on hybrid powertrain development and the appropriate incentives to develop infrastructure and support for operation and maintenance, fuel cell applications may be possible, though at no significant scale, by 2010.

Technology Options: Aircraft. In aircraft, energy efficiency is a perennial concern primarily because reducing the weight of fuel is one way of reducing aerodynamic drag, a central and constant concern of aircraft and engine designers. NASA programs aimed at achieving greater fuel efficiency in engines were both technically and economically successful in the 1980s, improving the efficiency of existing engines as well as producing new, more efficient jet engine cores and components. NASA and industry (principally GE and Pratt and Whitney) also

Page 4
Draft, 6/19/97

produced advanced turbofan and unducted fan engines that achieve significant gains in energy efficiency, but have not been commercialized primarily because falling fossil fuel prices reduced the payoff to greater efficiency in the late 1980s; these engines, however, are still available and could be incorporated into aircraft designs with less expense and development expense than clean-sheet designs would entail should they become more attractive options in the future. Ongoing NASA/DOD/industry work on energy efficiency continues, under the Integrated High Performance Turbine Engine Technology program, aimed at achieving a 40 percent improvement in energy efficiency by 2003. NASA research on computational fluid dynamics and numerical simulation is also showing promise for modifying the skins of aircraft to include tiny, micron-thin riblets that could decrease turbulence, and thereby, drag, by 5 or 6 percent, increasing fuel efficiency and airlines' profit margins. It is quite likely that some of these improvements could show up on commercial aircraft before 2010, although full market penetration will take decades due to lengthy capital life.

Intermodal Switching. Intermodal shifting, or switching from truck to rail haul or air transport, has been underway for some time. Intermodal transportation of freight, or using both trucks and rail or aircraft, cuts emissions by relying on more energy-efficient modes (rail and air) rather than trucks for part of the trip. The Department of Transportation estimates in its 1996 annual transportation statistics report that intermodal freight hauls meant 1.5 million fewer large trucks on the highways. A simulation done in Markal Macro shows that diverting 10 percent of truck ton-miles of freight to rail could save 4.3 to 4.7 MMT of carbon. Whether such a shift would be operationally feasible is unknown. Markal Macro includes no cross-elasticities to optimize intermodal shifts, and while DRI does, no shifts occurred in IAT runs of DRI's energy model.

Action

Overall, the IAT model runs could be described as technologically conservative in the freight area. Foreseeable technologies could make more significant reductions in emissions, particularly with more aggressive efforts to develop and diffuse the technologies. Programs to develop transportation technologies such as PNGV and NASA programs on energy efficiency and aerodynamics could probably bring these new technologies to proof of concept or demonstration before 2010, and several, particularly in truck componentry and efficiency, could be well established in the market. Energy experts at DOE's multiprogram laboratories point out, however, that current levels of funding for PNGV are probably inadequate to achieve the program's technical goals.

Technical success in research and development does not assure adoption or diffusion of new technology. Successful completion of the technical program of PNGV and NASA's engine and laminar flow programs must also be followed by investment in commercial development and marketing by industry in order to achieve market penetration. Moreover, capital in the freight sector tends to be turned over quite slowly; with maintenance and overhauls, trucks can last a couple of decades and locomotives and aircraft even longer. Incentives to hasten capital turnover, such as accelerated depreciation programs or investment tax credits, would also help to achieve stabilization. Finally, improving energy and carbon efficiency can also pay off in terms of improved competitiveness of efficient engines and powertrains on international markets.

Page 5
Draft, 6/10/97

Market mechanisms can also reduce emissions while improving economic efficiency when prices are brought in line with true costs. Better pricing truck use of highways is justified considering that trucks probably do not pay their fair share for use of federally-funded highways, according to the Department of Transportation. Obliging trucks to pay a greater share of the cost of highway construction and maintenance would also be likely to increase incentives for intermodal switching, as would subsidizing rail transport or operating freight railroads.

Electric Power

Key Findings:

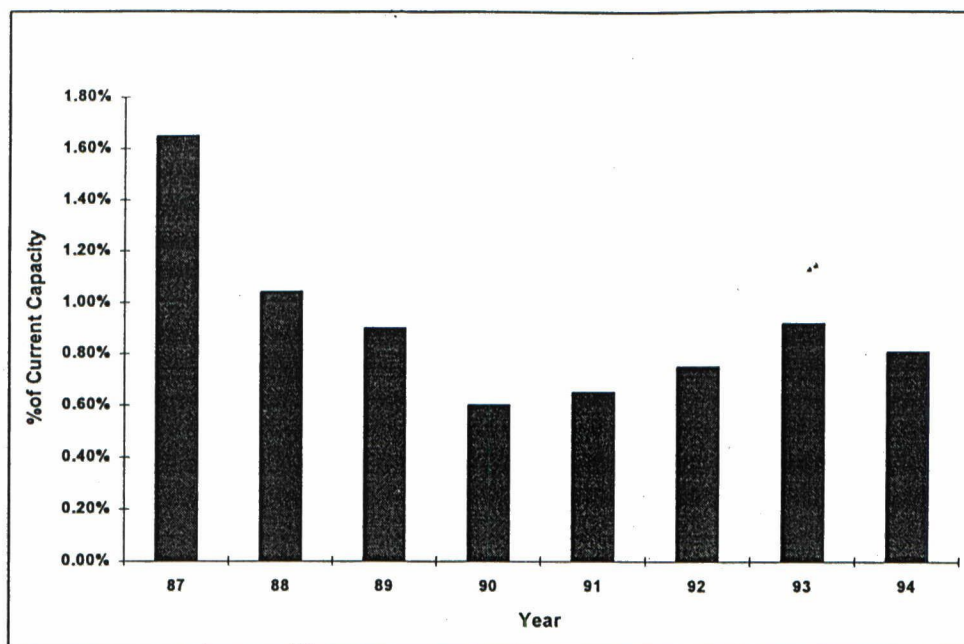
- Potential reductions from this sector are very large (250MT+) and will make up a substantial portion (25-50% or more) of the total needed to stabilize national emissions.
- If the capital stock of this industry continues to turn over at the rates seen in the last decade, it will take 1000 years to retire the existing stock of power plants. Changing the rate of retirement of existing plant would facilitate the transition to a lower carbon intensive power sector.
- Coal use will certainly decline and delivered power prices will increase if carbon use is constrained. The decline in coal use (both in the electric sector and nationally) will be from 25-60% under stabilization. According to the IAT, prices will rise by about 25%.
- Natural gas, demand-side efficiency and renewable power are the main means of reducing emissions. These options would compete with each other in a carbon-constrained economy. The outcome of this competition is uncertain: gas use could increase in this sector by 15- 50% depending on the relative economics of these options.
- Non-hydro renewables currently account for about 2.7% of the US power supply; even at fairly rapid rates of growth, these technologies will not constitute a large share of generation for some time. To be commercially viable, costs of renewable technologies need to decline from current levels of around \$0.05/kWh to perhaps \$0.03-0.035/kWh (in the absence of high fossil fuel prices).
- Competitive trends and air pollutant regulation will need to be integrated with climate policy.

Background

Electric power meets just over 30% of US energy demand. Electric power generation continues to grow in tandem with economic growth, unlike most other forms of energy consumption. Electric power sales of roughly \$200 billion represented 3% of US GDP in 1995. Despite advances in the efficiency of fuel use, US electric power supply maintains an historic reliance on coal and (increasingly) natural gas, leading to an upward GHG emissions trend that is expected to continue in the absence of climate policies.

The critical role of capital turnover is demonstrated by the near-absence of power plant retirements in the 1990s (See Figure 1 below). Access to new markets, regulatory uncertainty and regional conditions have all contributed to the slowdown of plant replacement, with planned 10-year retirement rates falling below 1% in 1989 and holding at low levels through the 1990s. This implies a 1,000-year period to turn the entire stock over once, an extraordinary (and presumably temporary) situation. Changing this trend is a key job for climate policy.

Fig. 1: 10-Year Plant Retirement Forecasts, 1989-1994



Coal will continue supplying more than half of the Nation's electric power through 2010. Coal consumption, of which 90% is in the electric sector, will reach 1 trillion tons in 1997, and by 2010 is expected to reach 1.1 trillion tons. Natural gas supplies 15% of US power, near its historic peak share, and is growing most rapidly today. Nuclear power, currently 20% of the US power supply -- an historic high -- will decline as plants age and face increased competition.

Most renewable power is currently hydroelectric, supplying 9% of US electricity. The potential for hydro expansion is limited. Non-hydro renewables currently account for about 2.7% of the US power supply. Even at fairly rapid rates of growth, these technologies will not constitute a large share of generation for some time. To be commercially viable, costs of renewable technologies need to decline from current levels of around \$0.05/kWh to perhaps \$0.03-0.035/kWh (in the absence of high fossil fuel prices).

Model Results and Potential for Reducing Emissions

This sector will be a key contributor to any GHG emissions reduction strategy. The IAT results show this sector reducing emissions by 20-33%. Because there are no direct emissions control technologies, achieving reductions relies on reducing demand or changing fuels. The rate of turnover in the capital stock becomes an important factor in determining both the means and the cost of GHG emissions control in the electric power sector.

The dominant emission reduction option is to use natural gas in place of coal, either through co-firing or repowering in existing coal units, or through increased use of new high-efficiency gas plants. Baseline (AEO97) coal capacity is forecast to increase from 315 GW in 1995 to about 330 GW in 2015 (including 40 GW of new plant and 25 GW of retirements) with virtually no coal-gas switching in existing plants. GHG policy will lead to less new coal capacity, more retirements, and some fuel switching at existing units. By 2015, coal *capacity* will fall to 275 GW, a drop of 55 GW or 15%. About 10-20 GW of coal-gas conversions are forecast, consistent with the Interlab study. Coal *use* (both in the electric sector and nationally) will decline by 25-60% if a stabilization target is met. Fuel use is affected more than installed capacity, because of resulting changes in dispatch.

Stabilization will result in very large additions of gas combined-cycle capacity -- up to 150 GW. Natural gas use is affected by several sectors and competing fuels and is very sensitive to assumptions. IAT

models project increased gas demand in the electric power sector of 15-50%, but this could be offset by declines in other sectors (some models indicate net declines in US natural gas demand under a GHG stabilization policy). Most models show a small increase (about 5%) for a limited period. If electricity demand is reduced through efficiency, however, all of these fuel impacts could be considerably lessened.

As part of a GHG emissions reduction strategy, generation from non-hydro renewables will increase. Some models indicate that wind and biomass may become cost-effective options as more emissions reductions are called for. For example, MARKAL-MACRO and DRI both indicate a 35% increase in non-hydro renewable use in 2010 under GHG stabilization. Models may understate the potential of renewables because they do not consider 'green power' demand from consumers, niche markets or dispersed power (small scale production scattered throughout the system).

Further electricity supply options include increasing the efficiency of existing fossil plants, and improving other parts of the power system (mainly the transmission grid) to minimize losses. Impacts on the industry are sensitive to demand responses. When end-use demand is lowered, fewer new high-efficiency natural gas power plants are built and less gas and renewable power is used. Coal use is relatively less affected. Overall costs in the utility sector are lower. Combining end-use efficiencies with new supply technologies yields the lowest cost estimates for achieving substantial emissions reductions in the power sector.

Physical responses are generally similar between models, but the estimated costs of reducing emissions vary. The cost of replacing power from an existing coal plant with a new natural gas plant may appear quite similar between models (see box), given assumptions for fuel and equipment costs in 2010. However, the modeled costs of reducing emissions are quite different. These differences mainly result from assumptions about capital replacement decisions and cost allocation. Other factors include some early coal-gas switching, and the potential natural gas price response. As a result, estimates of delivered (weighted average) electricity price impacts vary: +25% in DRI, +40% in NEMS.

Relationship to other trends

A carbon constraint will be introduced at the same time as a competitive restructuring of the industry and the implementation of the NAAQS. The combination of open power markets and market-based air regulation (i.e. a set of cap-and-trade systems for SO₂, NO_x and CO₂) will likely make climate-related policy incentives work faster and more effectively. At a minimum, there will be interactions between these changes which will alter the emissions profile of the sector.

For air regulations, early analysis using IPM and NEMS indicates that although new ozone and particulate matter rules will have a limited effect on CO₂ emissions (a reduction of approximately 5% from 2010 baselines), GHG limits could induce significant reductions in the criteria pollutants, on the order of 5-10% for SO₂ and 25-35% for NO_x.

Initial work on competitive power markets indicates that the ongoing restructuring of the power industry may have important effects. GHG emissions may increase in the near term (by perhaps 5-7% in the first ten years), due to increased sales by the cheapest coal units and higher demand. But competition may

Fuel switching cost analysis, costs in cents per kWh			
Assumes baseloaded units at 70% capacity factor,			
capital recovered over 30 years (levelized)			
Year=2010			
Non-fuel costs (capital plus O+M)			
	DRI	NEMS	IPM
Old coal	0.55	0.76	0.55
New gas	0.5	0.74	0.5
Fuel costs—without C tax (2010 baseline)			
	DRI	NEMS	IPM
Coal	0.89	1.14	0.72
Nat. gas	1.61	1.62	1.39
Total production costs--without C tax			
	DRI	NEMS	IPM
Old coal	1.44	1.9	1.27
New gas	2.11	2.36	1.89
Split	0.67	0.46	0.62
\$/ton C	54	31	50

prove helpful in the long run if new technologies can readily enter markets, and if market-based incentives are a part of climate policy. One great unknown is the potential demand for cleaner power on the part of consumers, who will have new information and choices.

Combining market-based environmental policy, consumer choice, and new technologies may offer greater efficiency and enable the power sector to provide electricity that is both cleaner and higher-value. The technologies and physical changes needed for large-scale GHG emissions reductions appear to be reasonably achievable, although the costs of reductions are less certain. Industry restructuring, air regulations, and climate policy can work together, if closely integrated to achieve the best fit.

The Carbon Reduction Potential in the U.S. Buildings Sector

July 8, 1997 Draft

Summary

Substantial reductions in greenhouse gas emissions are possible in residential and commercial buildings through greater use of cost-effective energy efficiency technologies that not only cut energy use, but also save consumers and businesses money. Estimated potential carbon emissions savings in the residential sector are 13-40 million metric tonnes (MMT) in 2010 and 30-70 in 2020. In the commercial sector, potential emissions savings are 13-40 million metric tonnes (MMT) in 2010 and 30-70 in 2020.

Background

Energy is used in buildings to provide a variety of services such as space heating and cooling, lighting and refrigeration and to power a broad array of appliances and equipment. U.S. buildings energy consumption accounts for nearly one third of total primary energy consumption and related greenhouse gas emissions. The 1996 bill for these energy services was over \$200 billion.

Energy intensity in buildings has declined substantially over the past twenty years. Energy use per square foot of commercial space declined by about 30% between 1979 and 1992, while residential energy use per square foot has dropped by 18% since 1978. Despite these past gains, the latest EIA business-as-usual forecasts project that commercial energy use in the future will decline by only 0.2% per year, and residential energy use by 0.5% per year. However, numerous studies (National Academy of Sciences, 1991 and Office of Technology Assessment, 1991, EMF-12, 1994) have indicated that a substantial potential remains for cost-effectively reducing U.S. energy consumption and greenhouse gas emissions - particularly in buildings.

Despite the large opportunity, there is clear evidence that many of the potential reductions are not being realized in the current market system because of a number of institutional, organizational, and other barriers that work against the diffusion of energy-efficient technologies. These barriers include lack of appropriate and reliable product information; split incentives between efficiency purchasers and those receiving benefits; lack of expertise for design, installation and operations; and low cost sources of capital.

Potential

Analysis results indicate that large reductions in future greenhouse gas emissions could be realized through the use of more energy-efficient technologies at a net reduction in the total cost of energy services in residential and commercial buildings. The table below shows the baseline EIA projections of primary energy consumption in a future without a global climate treaty, any market signals to reduce carbon emissions or substantial technological advances in these areas.

	1995	2010	2020 ¹
Residential total (quads)	10.5	11.9	13.8
Commercial total (quads)	7.1	8.1	8.9
Buildings total (quads)	17.6	20.0	22.7

¹ Market/Macro Base Case

The potential energy use reductions indicated by the IAT analysis are shown below. These results assume a binding international climate treaty leading to increased emphasis on U.S. carbon emissions reduction as well as federal and State policies to accelerate the use of existing cost-effective energy efficient buildings technologies.

	Market		DRI		Labs Study
	2010	2020	2010	2020	2010
Residential total (quads)	1.2-2.5	3.4	1.4-1.5	1.6-2.1	0.5-1.1
Commercial total (quads)	1.1-1.2	1.4	1.0-1.2	1.6-1.7	0.6-1.1
Buildings total (quads)	2.3-3.7	4.8	2.4-2.7	3.2-3.8	1.1-2.2

The IAT number translate into carbon savings of 26-33 MMT in 2010 and 35-44 MMT in 2020. A complementary bottom-up analysis is contained in the forthcoming study by five national laboratories, U.S. Carbon Reductions by 2010 and Beyond: The Potential of Energy Efficient and Low-Carbon Technologies. This study, which is a much more detailed sectoral analysis, indicates a lower overall energy savings potential, but a significantly higher electricity savings potential. As a result, estimated potential carbon emissions savings are 25-50 MMT. The major sources of reductions include residential miscellaneous uses, commercial other uses (such as office equipment), lighting and space conditioning. These investments are estimated to have a annualized cost of \$14-\$24 billion, but result in annual energy bill savings of \$33 billion.

While the IAT and the national laboratories study differ on the precise size of the potential for these three markets, they do agree that they are substantial. This suggests a need for additional technology development and deployment in these areas as part of a national climate strategy.

Implications

The IAT analysis results are rather difficult to place in context because of the top-down method of analysis. The National Laboratories study, however, is quite clear on what is required, as it is based on a technology-by-technology and end-use by end-use analysis. In order to achieve the lower end of the range, about 35% of buildings in 2010 need to be using existing cost-effective buildings technologies. The high end of the range requires 65% of buildings in 2010 to use such technologies. Efficiency gains could be higher, but would require lower technology capital costs than those assumed in the analysis. This range does not require premature retirement of capital stocks - only normal retirements of various equipment and currently expected renovation timing.

The key opportunities for efficiency gains in the residential sector include miscellaneous electrical appliances such as electronic equipment and small appliances, lighting, water heating, space heating, air conditioning and refrigeration. End-use energy savings in the top three areas are estimated to be 0.7, 0.2 and 0.3 quads, respectively. Overall, these results require the average energy efficiency of residential equipment in the affected buildings to improve by 12% over the next 13 years. The specific rates of improvement vary substantially among end uses - from 50% in lighting to 30% for miscellaneous electrical appliances to 12% for air conditioning to 10% for electric space heating. Building shells are assumed to become 4-14% more efficient. All these improvements are based on currently available technologies.

The opportunities for efficiency improvements in the commercial sector include miscellaneous electrical and natural gas uses (such as telecommunications equipment, medical equipment, pumps, light product assembly and many other activities not easily categorized), lighting, space heating and air conditioning. End-use energy savings in the top three areas are estimated to be 0.4, 0.4 and 0.3 quads, respectively. These results require the overall energy efficiency of commercial equipment in the affected buildings to improve by 18% over the next 13 years. The specific rates of improvement vary substantially among end uses - from 30% for miscellaneous electrical appliances to 25% for air conditioning to 20% for gas space heating. As in residential, all these improvements are based on currently available technologies. Thus these estimates appear plausible relative to the performance improvements, stock turnover and infrastructural

although wind turbines could be imported as well. For biomass co-firing, a net of 2.5-3.5% of coal electricity production is co-fired with biomass in 2010 and 4-8% is co-fired in 2020. That would require a maximum of 2-3 million acres of woody and herbaceous energy crops in 2010 and 5-10 million acres in 2020 - largely on marginal farmland - although substantial use of agricultural and forestry wastes could reduce these requirements

In reality, It is more likely that a portfolio of technologies would account for the projected increases in renewable energy. Wind and co-firing of biomass with coal are the likely lowest cost options by 2010, but geothermal power could also make a sizable contribution. By 2020, it is expected that a diversified portfolio of technologies would be used - including wind, biomass, geothermal, photovoltaics and solar thermal. These technologies would all be cost competitive in many areas - allowing power generation companies to select technologies that make best use of local resources and best match their power demands.

Actions

While electricity from fossil fuels continue to become cleaner and cheaper, expanded R&D and deployment could make a number of renewable technologies beyond wind competitive on purely economic grounds in the next 10 to 20 years: photovoltaics, biomass gasification, solar thermal, and geothermal. In a greenhouse-gas constrained world, these zero-carbon emitting sources of power would be even more competitive. The following actions could accelerate the use of these technologies by 2010 and make a large difference beyond 2010.

- expanded technology research and development to continue to lower costs and increase performance;
- expanded cost-shared technology deployment efforts with industry to increase utility system experience and increase U.S. production renewable energy production capacity - lowering costs still further; and
- promotion of U.S. renewable energy technologies abroad to tap the huge market for renewables in the developing world - enabling U.S. producers to further lower costs.

The Role of Renewable Energy in a U.S. Climate Change Strategy

July 8, 1997 Draft

Summary

Renewable energy has substantial potential to reduce U.S. carbon emissions in the mid and long term. These technologies are significant options because they emit little or no carbon. While renewable energy technologies have typically been viewed by some as both costly and futuristic, rapid and steady declines in costs and improvements in performance have resulted in several of these technologies being competitive in selected markets today and the expectation that others will be competitive in broader markets in the near future. Estimated potential carbon savings from increased use of renewable electricity generation are 22-26 million metric tons (MMT) in 2010 and 50-85 in 2020.

Background

Renewable sources of energy are either continuously resupplied by the sun or they tap inexhaustible resources, such as geothermal energy. The use of modern renewable energy technologies to generate electricity either does not pollute or emits far less pollution than burning any fossil fuel. Most renewable energy technologies produce no greenhouse gas emissions at all during operation, and are responsible for only very small emissions during manufacture. Biomass fuels emit no net carbon on a life cycle basis--the amount of carbon released by biomass combustion is equal to the amount absorbed from the atmosphere during growth. Today, roughly 12% of the country's electricity generating capacity is based on renewable power systems. Over 85% of this generation is from hydropower - which has little potential for expansion. However, the remaining renewable technologies - including wind, biomass, photovoltaics, solar thermal and geothermal - are becoming increasingly economic and have large potential to expand and reduce greenhouse gas emissions in the mid to long term. Both wind and photovoltaics are experiencing a 20% cost reduction for every doubling of cumulative production. Photovoltaic cells, which convert sunlight into electricity, have dropped from 90 cents per kilowatt-hour in 1980 to under 20 cents today, while wind power has dropped from 25 cents per kWh to 5 cents. Cost reductions will continue to occur because of R&D advances such as thin film photovoltaics as well as manufacturing factors such as economies of scale and improvements in manufacturing processes that come with increased production. Several major international companies, most notably Royal/Dutch Shell, expect these technologies to be the dominant global source of energy by the middle of the next century and are beginning to make substantial investments in their development.

Two of these technologies - wind and biomass - could also play important roles by 2010. Wind is projected to have a leveled cost of energy of 2.6-3.2 cents per kilowatt-hour by 2005 - quite competitive even in a world without a climate treaty. Biomass has a large potential in two key markets: co-firing with coal and cogeneration of power and steam in industry. Incremental costs for co-firing for many sites are less than \$200/kW - making it a low cost low-carbon option. Industrial biomass gasification and high efficiency cogeneration have a large potential for emissions reductions - especially in the forest products industry, which has abundant biomass feedstocks. Geothermal energy also could play a significant role by 2010. Geothermal energy has a large potential in two markets - building space conditioning through geothermal heat pumps and electricity generation.

Potential

Analysis results indicate that renewable electric technologies have a large potential for reducing carbon emissions. The table below shows the baseline EIA projections for renewable electricity generation capacity as well as the results of the Markal Macro and DRI models. The EIA baseline assumes a future without a global climate treaty, any market signals to reduce carbon emissions or substantial technological advances in renewables. The IAT results assume increased focus on U.S. carbon reduction and a continuation of the current trend of improvements in the performance and costs of renewable electric technologies.

Renewable Energy Generation Capacity (GW)	1995	2010	2020
EIA AEO97 Base Case	9	14	26
Markal Macro	9	31-33	70-120
DRI	9	?	?

Note: 2020 EIA baseline estimates are extrapolated from 2015 projections.

These numbers translate into carbon savings of 15-16 MMT in 2010 and 35-60 MMT in 2020 - assuming that renewable energy technologies displace efficient gas generation. However, the IAT models have limited representation of utility and industrial cogeneration markets, so biomass capacity is likely underestimated. The forthcoming study by five national laboratories, U.S. Carbon Reductions by 2010 and Beyond: The Potential of Energy Efficient and Low-Carbon Technologies, offers a more detailed analysis of biomass. That study suggests a substantially higher potential for biomass co-firing with coal and greater potential for biomass gasification and cogeneration in industry. These numbers translate into additional carbon savings beyond the IAT Markal results of 7-10 MMT in 2010 and 15-25 MMT in 2020.

Implications

The analysis suggests that the contribution of renewable electric technologies in 2010 could be substantially higher than projected in the base case. However, the contribution of these technologies in 2010 (excluding hydroelectricity) is still expected to be less than 5% of U.S. generation capacity. However, in considering renewables, it is important to realize that they are in the midst of a major, long term transition from "advanced technologies" with only a peripheral market role to mainstream technologies that will be technologies of choice in the energy marketplace early in the next century. This is critically important, because in the long term, zero-carbon energy supply technologies will likely be the most important component in a national greenhouse gas emissions reduction strategy. The use of these technologies is also rapidly expanding in developing countries - particularly those without national utility systems. Development of the U.S. renewable industries is vital to any U.S. desire to be a major exporter of environmental technologies in the 21st century.

The pace and timing of the transition of renewable energy is difficult to project because of uncertainties in the rate of R&D progress, the evolution of restructuring and energy policies and consumer interest in "green energy". Four factors will tend to accelerate the use of renewable energy. First, restructuring of the electricity industry will make available more choices to consumers allowing consumers to choose electricity based not only on cost, but a variety of other factors including environmental impact. Second, it has been demonstrated in many areas that consumers are willing to pay a premium for "green power" - indicating that environmental choices presented by industry could be quite popular with consumers. Third, some energy policies at the State level are evolving in a direction that directly support renewable energy. For example, several States have already passed renewable energy portfolio standards and several more are considering similar actions. Finally, continued decreases in renewable energy costs - especially in the face of potentially rising costs of fossil fuels - will motivate additional investments in these technologies.

The renewable energy projections imply a substantially higher growth rate in investments in renewable electric technologies than projected in the business as usual base case. In the base case, the overall growth rate is 3.5% per year through 2010 and over 6% per year between 2010 and 2020. In the IAT technology investment case, renewable electricity capacity grows 10% per year through 2010 and 8-14% per year between 2010 and 2020. The Markal model suggests that wind and biomass co-firing with coal will account for most of the renewable energy increase. The 2020 wind power projections are consistent with use of about 10% of total U.S. wind resource, so the only potential major constraint is one of wind turbine manufacturing capacity. The growth rates would require a major expansion of a small U.S. industry -

investments they imply.

The potential for energy efficiency gains in residential and commercial buildings is not limited by technology but rather by market barriers that impede the rapid market penetration of these cost-effective measures. The probability of realizing the potential savings estimated thus is largely dependent upon the effectiveness of policies in removing the barriers to these investments.

Actions

Realizing the potential savings above will require a proactive set of federal, state and local policies that accelerate technology deployment, energy efficient building design and construction and energy efficient building operations. This is critical because most of the carbon savings estimated above will result not from new technologies, but rather from increased market uptake of existing and near-term technologies. Maintaining carbon emissions stabilization or cutting emissions further will also require continued technology improvement. Federal agencies, State governments and many local organizations already conduct programs to move the buildings sector toward a lower carbon future. However, the challenge in implementing such policies is considerable since the industry is so fragmented - there are hundreds of thousands of builders, designers, suppliers and others. Some of the federal actions that will need to continue or begin include:

- working with state and local partnerships to improve efficiency of existing buildings through information, demonstrations, technical assistance (e.g., Rebuild America, Energy Star);
- facilitating the manufacture and purchase of high-efficiency equipment and appliances;
- working with the insurance companies, financial industries, utilities and other market intermediaries to remove barriers to investments in energy efficiency;
- Accelerated development of a portfolio of advanced buildings technologies - such as fuel cells in buildings, reflective surfaces and materials, and advanced windows.

Industrial Emissions and Economic Impacts

Key Findings

- ◆ Based upon data from AEO97, the industrial sector now uses 37 percent of the nation's energy. It is responsible for 32 percent of the overall U.S. greenhouse gas emissions.
- ◆ The industrial sector has the potential to reduce energy use and carbon emissions by 10-15 percent over 2010 baseline forecasts through cost-effective investments in energy efficient technologies, and in some cases, low-carbon technologies.
- ◆ The annual investment necessary to achieve this level of carbon reduction is on the order of \$2.3 to \$3.8 billion per year through 2010. This is about 2-3 percent of the investments made by the manufacturing sector in 1995. Such investments should have only a small impact on the rate of capital stock turnover compared to a base case — accelerating the depreciation rate, for example, from a 30-year to a 29-year average life of equipment and structures.
- ◆ Many of the most successful technologies have multiple benefits, including environmental- or productivity-enhancing features. Since these new technologies tend to lower the overall cost of doing business, investments in energy efficient technologies may actually improve the competitive position of many industries.
- ◆ These energy savings and reduction in carbon emissions are unlikely to happen without policy measures driving the improvement in the industrial capital stock.

Background

The industrial sector has made important strides in reducing overall energy intensity over the past 25 years. However, there are still readily-available but underutilized technologies with two and three-year paybacks that can reduce industrial energy use by 10 percent or more. The use of heat recovery and combined heat and power (i.e., cogeneration) systems, for example, can save 10 percent of energy use with an internal rate of return of 30-60 percent. Better maintenance of compressed air systems can save 40 percent of the energy used in such systems. And more energy-efficient motor systems can also provide a significant source of electricity savings.

Broadly speaking the industrial sector includes farming and ranching, agricultural services, fisheries, forestry, mining, construction and manufacturing. While many policy analysts think of "industry" as a homogenous set of economic activities, it embraces an incredibly diverse set of processes ranging from the growing and processing of food products to the production of paper, plastic resins, cars and computers. The process and energy requirements of each of the individual industries that are within the industrial sector are as different as the products that they produce. While many products have similar uses, the processes involved in making them may be vastly different. For example, plastic drink bottles, glass drink bottles, and aluminum cans all are similar products; however, they share almost no processes in common. For this reason, it is important to develop climate policies which reflect these important differences among the industrial sectors.

Based upon data from the Energy Information Administration, the industrial sector now uses 37 percent of the nation's energy, or 34.4 out of a total 93.6 quads. Carbon emissions are now at about 32 percent of total emissions in the United States, or 471 of 1467 MMT. With normal rates of capital stock turnover, the industrial energy intensity is expected to decline at a rate of 1.2 percent in base case forecast for the period 1997-2015 (*Annual Energy Outlook 1997*).

Savings Potential

The DOE National Lab study (*U.S. Carbon Reductions by 2010 and Beyond*, 1997) suggests that by 2010, the technology exists such that overall energy consumption can be reduced by 2.0 to 3.8 quads over the baseline forecasts. A combination of energy efficiency investments and low-carbon fuels can reduce carbon emissions by 22 to 73 MMT. Industry's share of further carbon reductions available in the electricity sector would increase overall carbon savings by perhaps another 40 to 50 MMT. The incremental investment costs are estimated to be \$11.60 to \$13.88 per mmBtu. Based upon the AEO97 energy costs for the year 2010, this reflects a payback period of 1-4 years. According to the Lab study, the cumulative investment requirements are between \$23.2 and \$47.2 billions of 1995 dollars in the period 1998 through 2010. The level of energy savings are roughly the same for both electricity and fossil fuels. A new study published by a consortium of non-governmental organizations suggests an overall energy savings potential of 3.75 quads of energy and 41 MMT of carbon in the year 2010 (*Energy Innovations*, 1997).

The table on the following page summarizes key indicators for the industrial sector for the years 2010 and 2020. The National Lab study suggests that by the year 2010 it is possible to reduce energy use by 5 to 10 percent over the base case forecast through cost-effective investments in energy efficient technologies. The Markal-Macro simulation for 2010 suggests a savings potential of 11 to 15 percent. The DRI model suggests a similar level of savings, estimated to be 11-12 percent of the base case forecast in 2010. These results are somewhat larger than either the National Lab study or the Energy Innovations analysis. Two reasons account for most of this difference. The first is that the Lab study results are reported in primary energy units while the Markal-Macro and DRI results are reported at the end-use. The second is that the consumption reported in the table for both models do not include petroleum or natural gas feedstocks.

Many of the most successful technologies have multiple benefits, including environmental- or productivity-enhancing features. A technology that reduces product loss or increases process throughput, for example, will often reduce labor and other material costs as well as energy costs. These additional co-benefits are generally not reflected in the results of either the MM or the DRI models. Hence, the benefits to the industrial sector may be somewhat understated. Stated differently, the competitive position of many industrial sectors may actually be strengthened — depending upon the type and flexibility of the climate policies that are actually implemented. These energy savings and reduction in carbon emissions are unlikely to happen at this level without additional policy measures to drive the needed improvements in the industrial capital stock.

Actions

Most analysts agree that there are significant opportunities to improve overall energy efficiency within the industrial sector. In addition, there are important opportunities to reduce the carbon intensity of industrial operations through changes in the fuel mix, and by using lower-carbon fuels. The latter includes biomass gasification, natural gas diesel and fuel cell technologies. The more efficient use of chemical feedstocks will also contribute to a reduction in carbon intensity.

Broadly speaking, there are four sets of policies to encourage the more rapid diffusion of existing technologies as well as the development of a new generation of process efficiencies and industrial energy supply technologies. These policies include: (1) incentives to accelerate the investment in new capital stock and equipment (with such incentives ranging from targeted financial support as investment tax credits to increased regulatory flexibility that allows industries to more fully optimize overall plant operations); (2) increased RD&D to facilitate the development of improved technologies as well as the development of a new generation of industrial technologies; (3) incentives to increase the use of recycled feedstocks; and finally, (4) expediting the use of combined heat and power systems through improved environmental permitting and by incorporating provisions into the ongoing utility restructuring that facilitate the sale of excess power by industrial plants.

Key Industrial Indicators for 2010 and 2020

Indicator	Markal-Macro							DRI						
	1995	2010			2020			1995	2010			2020		
		Base Case	Case 2	Case 3	Base Case	Case 2	Case 3		Base Case	Case 2	Case 3	Base Case	Case 2	Case 3
Output (1995=1.000)	1.000	1.408	1.400	1.412	1.544	1.531	1.551	1.000						
Energy (Quads)	19.6	22.8	19.3	20.2	24.3	19	20.1	22.8	25	21.9	22.3	26.4	21.9	22.4
Emissions (MMT)	466	563	421	465	592	407	456	472	521	436	445	542	419	422
10-Year Rate of Annual Efficiency Improvement	n/a	1.1%	2.6%	1.7%	0.8%	1.5%	1.4%	n/a	1.5%	2.6%	2.7%	0.9%	1.5%	1.4%