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18. Global Warming / Climate Control 1997 [AFL-CIO]

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COLLECTION:
Clinton Presidential Records
Communications
Subject Files
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FOLDER TITLE:
18. Global Warming / Climate Control 1997 [AFL-CIO]

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RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P1 National Security Classified Information [(a)(1) of the PRA]
P2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P3 Release would violate a Federal statute [(a)(3) of the PRA]
P4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P5 Release would disclose confidential advice between the President and his advisors, or between such advisors [a)(5) of the PRA]
P6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.
PRM. Personal record misfile defined in accordance with 44 U.S.C. 2201(3).
RR. Document will be reviewed upon request.

Freedom of Information Act - [5 U.S.C. 552(b)]

b(1) National security classified information [(b)(1) of the FOIA]
b(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
b(3) Release would violate a Federal statute [(b)(3) of the FOIA]
b(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
b(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
b(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
b(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
b(9) Release would disclose geological or geophysical information concerning wells [(b)(9) of the FOIA]

CLAIM ON U.S. COMPETITIVENESS/JOBS MOVING OVERSEAS

CLAIM: ***A global warming treaty, particularly one without developing country commitments, would injure U.S. competitiveness and send jobs overseas.***

FACT: **There is no substantive evidence to support this claim.**

- A review of the academic literature demonstrates, "that there is little to document the view that environmental regulations have had a measurably adverse effect on competitiveness... studies attempting to measure the effect of environmental regulations on net exports, overall trade flows, and plant-location decisions have produced estimates that are small, statistically insignificant, or not robust to tests of model specification." (Sources: Jaffe, Peterson, Portney, and Stavins, "Environmental Regulation and International Competitiveness: What Does the Evidence Tell Us?" Resources for the Future, Discussion Paper 94-08)

- While there is limited empirical literature on the specific impacts of carbon policies, a number of factors suggest that reducing carbon emissions is unlikely to have a serious negative effect on U.S. jobs and competitiveness:

  - ✓ Most emissions come from sectors which cannot move overseas. Transportation and buildings, for example, account for roughly two-thirds of U.S. emissions. (Source: U.S. Climate Action Report, 1997)

  - ✓ Energy costs for manufacturing industries average just 2.2 percent of total costs (Source: 1995 Annual Census of Manufacturers), making it highly unlikely that shifts in the relative price of energy would affect location decisions or trade flows.

  - ✓ Substantial differentials in energy prices between countries already exist. For example, the price of a barrel of heavy fuel oil in Venezuela in 1994 was $5.06 compared with $13.65 in the United States, yet American firms did not generally flee to Venezuela. (Source: *Statistical Abstract 1996*, Table 1359, page 848)

- Certain energy intensive industries, accounting for some 2-3 percent of total industrial output, are more sensitive to shifts in relative energy prices. However, the economic literature illustrates that the effects on these industries would vary tremendously depending on which emissions reduction policies are chosen. (Source: "The Costs of Climate Protection: A Guide for the Perplexed", Robert Repetto and Duncan Austin, World Resources Institute, 1997)

- The Clinton Administration has made no determination about emissions reductions policies to be implemented, yet has tended to favor those, such as joint implementation, which are widely regarded as having the greatest potential to reduce the overall costs. (Sources: U.S. Climate Protocol Framework, January 1997; "The Costs of Climate Protection: A Guide for the Perplexed", Robert Repetto and Duncan Austin, World Resources Institute, 1997)

- The Clinton Administration has taken a firm stand on developing country obligations, consistently making it clear that any climate treaty must include meaningful developing country commitments. (Sources: U.S. Climate Protocol Framework, January 1997; Speech by President Clinton to the UN General Assembly, June 1997)

CLAIM ON ECONOMIC DAMAGE

CLAIM: ***The Administration's plans on climate change would devastate the economy -- raising unemployment, significantly reducing GDP, and costing hundreds of thousands of American jobs.***

FACT: **The Clinton Administration has made no determination about specific emissions reduction policies to be implemented, and has consistently emphasized the importance of securing reductions in the most cost-effective way possible.**

- President Clinton's priority is and will remain sustaining a healthy and robust economy. Since the President took office, the private sector of the economy has grown at more than twice the rate of the previous four years, business investment has boomed at a rate not seen since the Kennedy Administration, unemployment is at a 24 year low, and 12.9 million new jobs have been created. (Sources: Bureau of Economic Analysis, Department of Commerce; Bureau of Labor Statistics, Department of Labor)

- More than 2,300 economists, including eight Nobel Laureates, agree that taking preventive steps to confront climate change is justified and that it is possible to do so without harming American living standards. In fact, they state that long-term productivity could be improved by such steps. (Source: Economists' Statement on Climate Change, January 1997)

- A review of the economic literature suggests that the costs of achieving emissions reductions would vary enormously, from substantially negative to slightly positive, depending on which specific policies are chosen. (Source: "The Costs of Climate Protection: A Guide for the Perplexed", Robert Repetto and Duncan Austin, World Resources Institute, 1997)

- While the Administration has not decided on a specific level or timeframe for emissions reductions, nor the policies by which reductions would be achieved, it has tended to favor policies, such as joint implementation, which are widely regarded as having the greatest potential to reduce the overall costs. (Sources: U.S. Climate Protocol Framework, January 1997; "The Costs of Climate Protection: A Guide for the Perplexed", Robert Repetto and Duncan Austin, World Resources Institute, 1997)

"I have devoted my passion and the best ideas I could come up with to try to get this country in good shape economically and socially. But I do believe it is folly for us to believe that we can go into the next century without a strategy that says we're going to be responsible and we're going to do our part and lead the world on environmental issues... Let's find a way to preserve the environment, to meet our international responsibilities, to meet our responsibilities to our children, and grow the economy at the same time."

-- President Clinton

CLAIM ON ENERGY INTENSIVE INDUSTRIES

CLAIM: ***Industries that are particularly energy intensive would be especially hard hit by any actions to limit or reduce carbon emissions. This conclusion is supported by the Department of Energy's own Argonne Lab study.***

FACT: **Impacts on energy intensive industries and on the economy as a whole from limitations on carbon emissions will depend on the level of reductions sought and on the policies used to achieve them. The Administration has made no decisions in either area.**

- The Department of Energy's Argonne Lab study assumes fuel price scenarios that fail to account for key policies that have the potential to substantially reduce the cost of emissions reductions, including multi-year emissions budgets, international emissions trading, and joint implementation. These are policies for which the Administration has expressed support. (Sources: U.S. Department of Energy; U.S. Climate Protocol Framework, January 1997)

- While the six energy intensive industries that the Argonne study focused on would tend to be more sensitive to shifts in relative energy prices, the economic literature illustrates that such shifts would vary tremendously depending on the specific emissions reduction policies chosen. (Source: "The Costs of Climate Protection: A Guide for the Perplexed." Robert Repetto and Duncan Austin, World Resources Institute, 1997)

CLAIM ON SCIENTIFIC UNCERTAINTY

CLAIM: ***Enormous scientific uncertainty exists about the issue of global warming. Predictions of future warming are highly speculative. Any meaningful action should wait until the science is better understood.***

FACT: **Global warming has been extensively studied by the international scientific community. The existing scientific consensus provides overwhelming evidence of the need to take action to reduce emissions.**

- The Intergovernmental Panel on Climate Change (IPCC) is the authoritative international scientific source on this issue. It includes the work of over 2,000 of the world's leading climate experts from some 60 countries. The IPCC was created to provide decisionmakers with the very best information about climate change, about the human role in it, and about the impacts to humankind were the climate system to change. (Source: Dr. Daniel Albritton, Director of the Aeronomy Lab, NOAA, Briefing for Reporters, July 24, 1997)

- Over 2,700 scientists familiar with the causes and effects of climate change have endorsed the IPCC's work. (Source: Scientists' Statement on Global Climatic Disruption, June 1997)

- In its Second Assessment Report completed in 1995, the IPCC concluded that:

  - ✓ Greenhouse gas concentrations (carbon dioxide, methane, and nitrous oxide) have increased substantially since pre-industrial times.

  - ✓ The Earth's climate has changed over the past century, including rising global temperatures and sea levels, precipitation increases over land in high Northern latitudes, and particularly hot temperatures in recent years.

  - ✓ "The balance of evidence suggests a discernible human influence on global climate." The magnitude, timing, and geographic pattern of temperature changes observed over the last century are unlike any ever seen in the natural record and track closely with models projecting the effects of human activities.

  - ✓ Future climate changes are expected. Projected warming in the next century of 2.0-6.5 degrees F would be faster than any seen in 10,000 years and is expected to cause sea level rise of up to 3 feet, increased frequency and intensity of floods and droughts, and other factors which could produce severe impacts on humankind.

  - ✓ Uncertainties still exist. "Surprises" are virtually inevitable, as the complex climate system reacts to rapid changes in the atmospheric concentrations of greenhouse gases. (Source for the above: IPCC Second Assessment Report, Summary for Policymakers)

- As greenhouse gases emitted today will remain in the atmosphere for decades, reversing climate change is a very slow process. The longer we wait, the more serious a legacy we leave for future generations. (Source: Dr. Jerry Mahlman, Director of the Geophysical Fluid Dynamics Laboratory, NOAA, Briefing at the U.S. Department of State, March 10, 1997))

CLAIM ON NEW TAXES

CHARGE: *The Administration's answer to climate change will be to impose more taxes.*

FACT: **The Administration has not endorsed any particular implementation plan to address climate change.**

- The President does not want to raise taxes. In fact, he has just signed an agreement to cut taxes while balancing the budget.

- There are a number of mechanisms that could be used to reduce greenhouse gas emissions. Modelers and other climate change policy experts sometimes focus on options that could increase revenues, but most consider revenue neutral policies to be a natural baseline. (Source: "The Costs of Climate Protection: A Guide for the Perplexed", Robert Repetto and Duncan Austin, World Resources Institute, 1997)

- At this point, the Administration is not ruling anything in or out with respect to various policies to address climate change.

CLAIM ON PRESENT EFFECTS

CLAIM: ***There is no detectable evidence that human-induced global warming is occurring. Changes over the past century are nothing more than natural variability in the climate system.***

FACT: **The clear scientific consensus is that human influence on the climate system is now discernible. Furthermore, it is virtually unanimously agreed within the international scientific community that increasing greenhouse gas emissions will cause accelerated warming within the next century.**

- The Intergovernmental Panel on Climate Change (IPCC) is the authoritative international scientific source on this issue. It includes the work of over 2,000 of the world's leading climate experts from some 60 countries. The IPCC was created to provide decisionmakers with the very best information about climate change, about the human role in it, and about the impacts to humankind were the climate system to change. (Source: Dr. Daniel Albritton, Director of the Aeronomy Lab, NOAA, Briefing for Reporters, July 24, 1997)

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- Any warming and resulting climate effects that have been felt up to now are small when compared to what is likely for the next century. Even under its most conservative estimate, the IPCC concludes that the rate of warming in the next century will be greater than any seen in the last 10,000 years. The impacts are predicted to include rising sea levels, an increase in the frequency and intensity of severe weather (such as floods and droughts), the spread of infectious diseases into new areas, changes in agricultural productivity, and the shifting or disappearance of some natural ecosystems. (Source: IPCC Second Assessment Report)

"There is no debate among any statured scientists of what is happening...The only debate is the rate at which it's happening... Scientists, by nature, are very conservative... They don't want to overstate things. In this debate, the skeptics are atypical of the general scientific community. The irony is that when you find scientists who are adamant on any side, they look very curious within the scientific community. But to the general public, they come across as the most knowledgeable and authoritative of all."

-- Harvard University earth scientist James McCarthy, The Washington Post, 5/25/97

CLAIM THAT THE PRESIDENT IS NOT SERIOUS

CHARGE: *The Administration's recent overtures on climate change reflect an attempt to make the President appear engaged, even though he hasn't done much on this issue.*

FACT: **The Clinton Administration has a strong record in confronting climate change.**

- In 1993, President Clinton developed the **Climate Change Action Plan (CCAP)** with the goal of returning total U.S. greenhouse gas emissions to their 1990 levels by 2000. Although lower-than-expected fuel prices and higher-than-expected economic growth and electricity demand have caused CCAP to fall short of its goal, its programs will result in a reduction of 76 million metric tons of carbon equivalent. (Source: U.S. Climate Action Report, 1997)

- Through almost 50 initiatives with a wide range of industry sectors, this effort has demonstrated that government and the private sector can work together successfully to cut emissions.

- Had the Congress not substantially cut funding for these programs (about 40 percent in recent years), they would have the brought the U.S. closer to the objective of lowering emissions to 1990 levels by the year 2000.

- Additional initiatives, including the **Partnership for a New Generation of Vehicles** and the **Million Solar Roofs**, demonstrate the President's commitment to developing the technologies that will ultimately be needed to solve the climate change problem.

CLAIM ON THE EUROPEAN UNION POSITION

CHARGE: *The European Union has proposed an emissions target of 15 percent below 1990 levels by 2010. If they can make those kinds of cuts, why can't the U.S.?*

FACT: **The U.S. believes that the EU position is unrealistic and unnecessarily stringent. We will not support binding targets that cannot be achieved or that would impose undue costs on the economy.**

- The EU target represents a target for the block as a whole, not for each country. While some nations within the EU are to reduce their emissions, others will actually increase theirs. The ultimate goal is to have a total reduction of 15 percent below 1990 levels.

- Despite this "bubble" concept, the EU has not supported the proposals put forward by the U.S. to allow other nations to trade emissions, nor have they endorsed the concept of joint implementation.

- The EU favors a set of mandatory, harmonized policies and measures for reducing emissions. These include carbon taxes, energy efficiency standards, and other mechanisms.

- The U.S. has not seen evidence to convincingly demonstrate how the policies advanced by the EU, if indeed they could even succeed in putting them in place, would result in the kinds of emissions cuts they have advocated.

- The EU has been virtually silent on the issue of developing country commitments.

- The U.S. will not propose a target that we believe to be unrealistic or overly stringent. The Administration is carefully considering what level of cuts we would find acceptable. Furthermore, the U.S. will not sign an agreement that prescribes internationally mandated policies and measures for reducing emissions. We believe strongly that those decisions must be left to individual governments which should be given the widest range of options possible for attaining cuts cost-effectively . Lastly, the U.S. will not consider an agreement that exempts developing countries. This is neither environmentally nor economically justifiable.

CLIMATE CHANGE SKEPTICS BACKED BY ENERGY INDUSTRY GROUPS

Most Scientists Think That Climate Change Is Occurring. Harvard University earth scientist James McCarthy recently said, "There is no debate among any statured scientists of what is happening... The only debate is the rate at which it's happening... Scientists, by nature, are very conservative... They don't want to overstate things. In this debate, the skeptics are atypical of the general scientific community. The irony is that when you find scientists who are adamant on any side, they look very curious within the scientific community. But to the general public, they come across as the most knowledgeable and authoritative of all." [Washington Post, 5/25/97]

Western Fuels Association Made Effort To Find & Fund Skeptical Scientists. The 1994 annual report of the Western Fuels Association -- a nonprofit organization that purchases coal for electric utilities -- states that "there has been a close to universal impulse in the [fossil fuel] trade association community here in Washington to concede the scientific premise of global warming... We have disagreed, and do disagree, with this strategy." To counter it, the group said it would support the work of those who challenged the premise. Western Fuels wrote, "Scientists were found who are skeptical about much of what seemed generally accepted about the potential for climate change. " [Washington Post, 5/25/97]

Ties Between Skeptics & Fossil Fuel Industry Made Public In 1995 Minnesota Hearing. The close ties between scientists who cast doubts on global warming and the fossil fuel industry were made public in a May 1995 hearing before Judge Allan Klein of the Minnesota Public Utilities Commission. Klein was charged with the responsibility of determining the environmental costs of the burning of coal by Minnesota power plants. At the hearing global warming skeptics Patrick Michaels and Robert Balling revealed under oath that they had received more than $165,000 and more than $300,000 respectively in industry and private funding over the previous five years. [Washington Post, 5/25/97]

Balling Admits Receiving Hundreds Of Thousands Of Dollars From Energy Industry Groups. In March 1996, Robert Balling told the Washington Post that he receives about $20,000 a year in speaking fees from oil and coal groups, and that he has received a total of about $200,000 in personal income from such groups over the past eight years. He also said that his research institution receives roughly $150,000 annually from such sources. In March 1997, Balling said, "I'm not suggesting I've become filthy rich by being involved in global warming, but it has been exciting... and the rewards have been not just professional, but also financial." [Washington Post, 3/21/96; The Observer, 3/9/97]

CLIMATE CHANGE SKEPTIC	ENERGY INDUSTRY GROUP FUNDING
Patrick Michaels, Associate Professor of Climatology at the University of Virginia	**Over $300,000 In The Past Five Years.** The Western Fuels Association funded two journals that he edited and provided a $63,000 grant for his research. The German Coal Mining Association gave Michaels another $49,000 and the Edison Electric Institute gave him $15,000. Michaels received $40,000 from western mining company Cyprus Minerals.
Robert Balling, Director of Climatology Program at Arizona State University.	**Over $700,000 From Coal & Oil Interests.** Balling has received, either alone or with colleagues, over $700,000 in research funding from coal and oil interests. This includes roughly $50,000 from Cyprus Minerals, $80,000 from the German Coal Mining Association, $75,000 from British Coal Corporation, and at least $48,000 from two Kuwaiti government foundations which also published his 1992 book, "The Heated Debate," in Arabic.
Sherwood Idso Phoenix, AZ-based physicist	**Undisclosed Amount of Funding From Energy Industry Groups.** Idso works closely with Balling and has received an undisclosed amount of funding from oil, gas and utility sources. A company founded by Idso was paid $250,000 in 1991by the Western Fuels Association to produce a video entitled, "The Greening of Planet Earth," which said that CO2 emissions were good for the environment.
S. Fred Singer, Head of "Science & Environmental Policy Project," Former University of Virginia Professor	**Funded By Oil Companies & Rev. Moon**. Singer has received funding from Exxon, Shell, ARCO, Unocal and Sun Oil. Singer is also on the executive advisory board of the Rev. Sun Myung Moon's s magazine, The World and I. Singer's organization, "The Science and Environmental Policy Project," received free office space funded by Moon -- who owns the Washington Times. Moon's organization has also published three of Singer's books.
Richard S. Lindzen Meteorology Professor at MIT	**Makes $2,500 Per Day As Consultant For Energy Companies.**

[Sources: Washington Post, 3/21/96; 5/25/97; Houston Chronicle, 10/6/96; The Observer, 3/9/97; Boston Globe, 11/17/95; Gannett, 4/12/96; Nightline, 2/24/94; Harper's, 12/95]

GOP heats up climate on global-warming issue

By Sandy Hume

In search of a wedge issue for the 1998 campaign, Republicans have launched a frontal assault on the Clinton administration for its support of a global-warming treaty and its consideration of energy tax hikes.

Capitol Hill was abuzz this week as Republicans scrambled to make hay of reports that President Clinton's commitment to a global-warming treaty could necessitate taxes that would drive up power bills and gasoline prices.

Speaker Newt Gingrich (R-Ga.), who has been putting together a 'truth squad' to attend the global-warming summit in Kyoto, Japan, in December, led off Monday by blasting the administration on energy taxes.

By Tuesday afternoon, the National Republican Congressional Committee (NRCC) was issuing challenges to Democrats to go on record opposing the potential tax hikes.

And with the House Science Committee holding its own hearings on global climate change Tuesday morning, Rep. Bill Paxon (R-N.Y.) was preparing to brief House Republicans today on his resolution opposing any new energy taxes to support a global-warming treaty.

Paxon sent a letter to the White House on Monday — while Clinton was attending a climate conference at Georgetown University — charging that the plan to sign on to the restrictive global-warming treaty is "both politically misguided and economically disastrous."

Paxon has already picked up an endorsement of the resolution from the National Taxpayer's Union, which called it "a vital effort on behalf of America's overburdened taxpayers."

Rep. Dana Rohrabacher (R-Calif.) has accepted Gingrich's invitation to serve as a dissenting voice on global warming at the December summit. A member of the Science Committee who spent Tuesday morning in hearings on climate change, Rohrabacher gave a preview of the message he will deliver in Kyoto.

"It is clear that there is no consensus in the scientific community to warrant even a minimal expenditure of federal funds, much less a commitment to change our entire way of life," Rohrabacher said.

He may be joined by other members of the Science Committee and the Commerce Committee in Japan to provide skeptical sound bites on global warming, and to warn of negative economic impacts of the adoption of an emissions-reducing treaty.

PAMELA HAZEN/THE HILL

Rep. Bill Paxon (R-N.Y.) opposes new energy taxes.

Rohrabacher predicted that the Kyoto summit will be "a gathering of ideological and environmental extremists ... representing the [Clinton administration's] radicalism on the subject of global warming."

The GOP's rapid scathing response to indications from the White House that its global-warming plan may well feature an energy tax translated quickly into electoral politics. House Republicans are admittedly searching for issues to distinguish themselves from Democrats they joined on the balanced budget deal.

The NRCC quickly went after 91 Democrats, some of whom supported the Btu (British thermal unit) and gas tax hikes proposed to finance the Clinton administration's 1993 health care plan. They sent out releases detailing the highest possible tax hikes contemplated by the administration, challenging Democrats to go on record as being opposed.

"This is where Rep. [Walter] Capps (D-Calif.) will show his true colors," NRCC Chairman John Linder declares in one release. "If he supports hard-working Americans, he will oppose this destructive new tax plan, instead of making it even harder for overburdened taxpayers to make ends meet."

The Kyoto conference on the international agreement to cut emissions of greenhouse gases, such as carbon monoxide and methane, will be held in the historic Japanese city, Dec. 1-10.

UNION OF
CONCERNED
SCIENTISTS

Selected Quotes from Signers of the "Call for Action"

"This call to action shows the depth of international agreement and concern about climate change – concern that extends well beyond the Intergovernmental Panel on Climate Change and climate specialists."

Mario Molina
Nobel laureate in Chemistry (1995)

"The consensus for action at Kyoto runs deeply throughout the scientific community. The world's great ecological systems are already severely stressed. We must get the process of greenhouse reductions moving."

Jane Lubchenco
Chair of the American Association for the Advancement of Science

"Things could get even worse than scientists anticipate. People take out insurance against much less likely threats than climate change. We need to act now to curb global warming."

Paul J. Crutzen
Nobel laureate in Chemistry (1995), Mainz, Germany

"Scientists have a duty to keep reminding the people and politicians of the world that our global problems need urgent attention."

Sir Michel Atiyah
Former President of the Royal Society of London

"The negative impacts of modern societies on the environment are very strong and very destructive. It would therefore be quite prudent to set the groundwork, without delay, for a program on worldwide scale that can stem the destructive activities and correct, as well as possible, the damage that has already been done. The point of no return may be closer than most people suspect."

Isabella Karle
National Medal of Science (1995)
Jerome Karle
Nobel laureate in Chemistry (1985)

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California Office: 2397 Shattuck Avenue Suite 203 • Berkeley, CA 94704-1567 • 510-843-1872 • FAX: 510-843-3785

UNION OF
CONCERNED
SCIENTISTS

World Scientists' Call for Action at the Kyoto Climate Summit

Addendum
September 29, 1997

Additional Signatories:

A. Berbich, Morocco
Mildred Cohn, USA
Harold Kalant, Canada
Riccardo Giacconi, Germany
Alberto Antionio Giesecke, Peru
Sir Andrew Huxley, UK (Nobel laureate)
M. Philip Langleben, Canada
Manuel de Jesus Limonta Vidal, Cuba
Pamela Matson, USA
Federico Mayor, France
Riazuddin, Saudi Arabia
V.K. Prest, Canada
Harold A. Scheraga, USA
Ralph O. Slayter, USA
Paul P. S. Teng, Philippines
Wim J. Wolff, Netherlands

Total Number of Signatories as of Sept. 29, 1997: 1,512

Countries Represented: 63

Nobel Laureates: 103, including 98 of the 171 living Nobel Prize winners in the sciences

US National Medal of Science winners: 60

World Scientists' Call for Action at the Kyoto Climate Summit

Five years ago, in the World Scientists' Warning to Humanity, 1600 of the world's senior scientists sounded an unprecedented warning:

> Human activities inflict harsh and often irreversible damage on the environment and on critical resources. If not checked, many of our current practices put at serious risk the future that we wish for human society and the plant and animal kingdoms.

Addressed to political, industrial, religious, and scientific leaders, the Warning demonstrated that the scientific community had reached a consensus that grave threats imperil the future of humanity and the global environment. However, over four years have passed, and progress has been woefully inadequate. Some of the most serious problems have worsened. Invaluable time has been squandered because so few leaders have risen to the challenge.

The December 1997 Climate Summit in Kyoto, Japan, presents a unique opportunity. The world's political leaders can demonstrate a new commitment to the protection of the environment. The goal is to strengthen the 1992 Framework Convention on Climate Change by agreeing to effective controls on human practices affecting climate.

This they can and must do, primarily by augmenting the Convention's voluntary measures with legally binding commitments to reduce industrial nations' emissions of heat-trapping gases significantly below 1990 levels in accordance with a near-term timetable. Over time, developing nations must also be engaged in limiting their emissions. Developed and developing nations must cooperate to mitigate climatic disruption. The biosphere is a seamless web.

Completion of an effective treaty at Kyoto would address one of the most serious threats to the planet and to future generations. It would set a landmark precedent for addressing other grave environmental threats, many linked to climate change. It would demonstrate that the world's leaders have now recognized, in deeds and words, their responsibility for stewardship of the earth. The stark facts carry a clear signal:

There is only one responsible choice—to act now.

We, the signers of this declaration, urge all government leaders to demonstrate a new commitment to protecting the global environment for future generations. The important first step is to join in completing a strong and meaningful Climate Treaty at Kyoto. We encourage scientists and citizens around the world to hold their leaders accountable for addressing the global warming threat. Leaders must take this first step to protect future generations from dire prospects that would result from failure to meet our responsibilities toward them.

The Web of Environmental Effects

Atmospheric Disruption

Predictions of global climatic change are becoming more confident. A broad consensus among the world's climatologists is that there is now "a discernible human influence on global climate."

Climate change is projected to raise sea levels, threatening populations and ecosystems in coastal regions. Warmer temperatures will lead to a more vigorous hydrologic cycle, increasing the prospects for more intense rainfall, floods, or droughts in some regions. Human health may be damaged by greater exposure to heat waves and droughts, and by encroachment of tropical diseases to higher latitudes.

The developing world is especially vulnerable to damage from climatic disruption because it is already under great stress and has less capacity to adapt.

Climate Change: Linkages and Further Damage

Destructive logging and deforestation for agriculture continue to wreak havoc on the world's remaining tropical forests. The burning of the Amazonian rain forests continues largely unabated. Other forests in developed and developing nations are under heavy pressure. Destruction of forests greatly amplifies soil erosion and water wastage, is a major source of loss of species, and undermines the environment's natural ability to store carbon. It releases additional carbon to the atmosphere, thereby enhancing global warming.

Fossil-fueled energy use is climbing, both in industrial nations and in the developing world, adding to atmospheric carbon. Efforts to enhance energy conservation and improve efficiency are much hindered by low energy costs and by perverse incentives that encourage waste. Without firm commitments, most industrial nations will not meet the carbon-emission goals they agreed to at the 1992 Rio conference. The transition to renewable, non-fossil-carbon-based energy sources is feasible but is not in sight for lack of aggressive political will.

The insurance industry has recognized the risks posed by climate change. Leading economists have identified viable policies for reducing these risks. Markets undervalue ecosystems worldwide and inflict few penalties against practices that do long-term environmental and resource damage. Political leadership must introduce incentives that reward sound practices.

Water Scarcity and Food Security

Humanity now uses over one-half of the total accessible freshwater runoff. Freshwater is the scarcest resource in the Middle East and in North Africa. Efforts to husband freshwater are not succeeding there, in East Asia, or in the Pacific.

Global food production now appears to be outpaced by growth in consumption and population. There is broad agreement that food demand will double by 2030. Most land suitable for agriculture is already in production. Sub-Saharan Africa's increase in agricultural production is one-third less than its population growth. The region now produces 80 percent of what it consumes, and per capita production is declining. Projections indicate that demand for food in Asia will exceed the supply by 2010.

Thus, food consumption levels in many countries are likely to remain totally inadequate for good nutrition. Widespread undernutrition will persist unless extraordinary measures are taken to ensure food for all, measures not now even contemplated by governments. Climate change is likely to exacerbate these food problems by adversely affecting water supplies, soil conditions, temperature tolerances, and growing seasons.

Destruction of Species

Climate change will accelerate the appalling pace at which species are now being liquidated, especially in vulnerable ecosystems. One-fourth of the known species of mammals are threatened, and half of these may be gone within a decade. Possibly one-third of all species may be lost before the end of the next century.

Biodiversity gives stability to the ecosystems that we are so dependent on, enhances their productivity, and provides an important source of new foods, medicines, and other products. ◆

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Selected Prominent Signatories to the World Scientists' Call for Action

❖ Nobel Laureates

Philip W. Anderson, USA. Physics 1977
Kenneth J. Arrow, USA. Economics 1972
Julius Axelrod, USA. Physiology/Medicine 1970
David Baltimore, USA. Physiology/Medicine 1975
Georg J. Bednorz, Switzerland. Physics 1987
Baruj Benacerraf, USA. Physiology/Medicine 1980
Hans A. Bethe, USA. Physics 1967
J. Michael Bishop, USA. Physiology/Medicine 1989
James W. Black, UK. Physiology/Medicine 1988
Konrad E. Bloch, USA. Physiology/Medicine 1964
Nicolaas Bloembergen, USA. Physics 1981
Thomas R. Cech, USA. Chemistry 1989
Stanley Cohen, USA. Physiology/Medicine 1986
Elias James Corey, USA. Chemistry 1990
John W. Cornforth, UK. Chemistry 1975
James W. Cronin, USA. Physics 1980
Paul J. Crutzen, Germany. Chemistry 1995
Jean Dausset, France. Physiology/Medicine 1980
Hans G. Dehmelt, USA. Physics 1989
Johann Deisenhofer, USA. Chemistry 1988
Peter C. Doherty, USA. Physiology/Medicine 1996
Renato Dulbecco, USA. Physiology/Medicine 1975
Christian R. de Duve, Belgium. Physiology/Medicine 1974
Manfred Eigen, Germany. Chemistry 1967
Gertrude B. Elion, USA. Physiology/Medicine 1988
Richard R. Ernst, Switzerland. Chemistry 1991
Leo Esaki, Japan. Physics 1973
Edmond H. Fischer, USA. Physiology/Medicine 1992
Ernst Otto Fischer, Germany. Chemistry 1973
Val L. Fitch, USA. Physics 1980
Jerome I. Friedman, USA. Physics 1990
Donald A. Glaser, USA. Physics 1960
Sheldon L. Glashow, USA. Physics 1979
Herbert A. Hauptman, USA. Chemistry 1985
Dudley Herschbach, USA. Chemistry 1986
Antony Hewish, UK. Physics 1974
Roald Hoffmann, USA. Chemistry 1981
Godfrey Hounsfield, UK. Physiology/Medicine 1979
David H. Hubel, USA. Physiology/Medicine 1981
Robert Huber, Germany. Chemistry 1988
Jerome Karle, USA. Chemistry 1985
Henry W. Kendall, USA. Physics 1990
John Kendrew, UK. Chemistry 1962
Klaus von Klitzing, Germany. Physics 1985
Aaron Klug, UK. Chemistry 1982
Arthur Kornberg, USA. Physiology/Medicine 1959
Edwin G. Krebs, USA. Physiology/Medicine 1992
Harold Kroto, UK. Chemistry 1996
Leon M. Lederman, USA. Physics 1988
David M. Lee, USA. Physics 1996
Yuan T. Lee, Taiwan. Chemistry 1986
Jean-Marie Lehn, France. Chemistry 1987
Wassily Leontief, USA. Economics 1973
Rita Levi-Montalcini, Italy. Physiology/Medicine 1986
Edward B. Lewis, USA. Physiology/Medicine 1995
William N. Lipscomb, USA. Chemistry 1976
Rudolph A. Marcus, USA. Chemistry 1992
Simon van der Meer, Switzerland. Physics 1984
R. Bruce Merrifield, USA. Chemistry 1984
Hartmut Michel, Germany. Chemistry 1988
Cesar Milstein, UK. Physiology/Medicine 1984
Mario J. Molina, USA. Chemistry 1995
Ben Mottelson, Denmark. Physics 1975
Joseph E. Murray, USA. Physiology/Medicine 1990
Daniel Nathans, USA. Physiology/Medicine 1978
Louis Néel, France. Physics 1970
Erwin Neher, Germany. Physiology/Medicine 1991
Marshall W. Nirenberg, USA. Physiology/Medicine 1968
Christiane Nusslein-Volhard, Germany. Physiology/Medicine 1995
Douglas D. Osheroff, USA. Physics 1996
George E. Palade, USA. Physiology/Medicine 1974
Max F. Perutz, UK. Chemistry 1962
John Polanyi, Canada. Chemistry 1986
Ilya Prigogine, Belgium. Chemistry 1977
Norman F. Ramsey, USA. Physics 1989
Burton Richter, USA. Physics 1976
Richard J. Roberts, USA. Physiology/Medicine 1993
Martin Rodbell, USA. Physiology/Medicine 1994
Heinrich Rohrer, Switzerland. Physics 1986
Joseph Rotblat, UK. Peace 1995
F. Sherwood Rowland, USA. Chemistry 1995
Bengt Samuelsson, Sweden. Physiology/Medicine 1982
Frederick Sanger, UK. Chemistry 1958, 1980
Arthur L. Schawlow, USA. Physics 1981
Glenn T. Seaborg, USA. Chemistry 1951
Herbert A. Simon, USA. Economics 1978
Richard E. Smalley, USA. Chemistry 1996
Michael Smith, Canada. Chemistry 1993
Jack Steinberger, Switzerland. Physics 1988
Henry Taube, USA. Chemistry 1983
Richard E. Taylor, USA. Physics 1990
E. Donnall Thomas, USA. Physiology/Medicine 1990
Samuel C. C. Ting, USA. Physics 1976
James Tobin, USA. Economics 1981
Susumu Tonegawa, USA. Physiology/Medicine 1987
Charles H. Townes, USA. Physics 1964
Desmond Tutu, South Africa. Peace 1984
John Vane, UK. Physiology/Medicine 1982
Thomas H. Weller, USA. Physiology/Medicine 1954

continued on reverse

Torsten N. Wiesel, USA. Physiology/Medicine 1981
Robert W. Wilson, USA. Physics 1978
Rolf M. Zinkernagel, Switzerland. Physiology/Medicine 1996

❖ Crafoord Laureates

Vladimir I. Arnold, France. Mathematics 1982
Paul R. Ehrlich, USA. Biosciences 1990
Daniel H. Janzen, USA. Biosciences 1990
Eugene P. Odum, USA. Biosciences 1987
Edward O. Wilson, USA. Biosciences 1990

❖ Selected Officers of National and International Scientific Academies and Associations

Carlos Aguirre, President, Bolivian Academy of Sciences
Jorge Eduardo Allende, Former President, Chilean Academy of Sciences
A. Andreev, Vice-President, Russian Academy of Sciences
Sir Michael Atiyah, Former President, The Royal Society (UK)
Francisco J. Ayala, Former President, American Association for the Advancement of Science
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Bert Bolin, Former Chair, Intergovernmental Panel on Climate Change
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Sir John Horlock, Vice-President, The Royal Society (UK)
Carl-Olof Jacobsen, Former Secretary-General, Royal Swedish Academy of Sciences
Alf Johnels, Former President, Royal Swedish Academy of Sciences
Triloki Nath Khoshoo, Former President, Indian National Academy of Sciences
Sir Aaron Klug, President, The Royal Society (UK)
Gustavo Kouri, Vice-President, Cuban Academy of Sciences
Torvard Laurent, Former President, Royal Swedish Academy of Sciences
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Digby McLaren, Former President, Royal Society of Canada
Hubert Markl, President, Max Planck Society
M. G. K. Menon, Former President, International Council of Scientific Unions
G. A. Mesiatz, Vice-President, Russian Academy of Sciences
Harold A. Mooney, Secretary General, International Council of Scientific Unions
Lawrence A. Mysak, Former President, Academy of Sciences of the Royal Society of Canada
Jan S. Nilsson, President, Royal Swedish Academy of Sciences
Erling Norrby, Secretary General, Royal Swedish Academy of Sciences
Thomas Odhiambo, President, African Academy of Sciences
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Igor Saavedra, Former President, Chilean Academy of Sciences
Gian Tommaso Scarascia Mugnozza, Chair, Italian National Academy of Sciences
Arun Kumar Sharma, Founding President, Federation of Asian Scientific Academies and Societies
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Richard Willems, Vice-President, Estonian Academy of Sciences
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Guang-Zhao Zhou, President, Third World Academy of Sciences

White House Conference on Climate Change:
The Challenge of Global Warming
October 6, 1997

Neera Tanden from Bill Anthonis

10:00 - 10:05
Vice President Gore: *Welcome attendees*

10:05 - 10:20
President Clinton: ***Opening Remarks***

10:20 - 11:20
Panel I: The Science of Global Warming and Climate Change

Presentation: **John Holdren,** Professor, Department of Earth and Planetary Sciences and the John F. Kennedy School of Government, Harvard University. Head of President's Committee of Advisors on Science and Technology (PCAST).

Panelists: **Robert Watson,** Incoming Chair of the Intergovernmental Panel on Climate Change (IPCC); Director for Environment, World Bank.
Tom Karl, Senior Scientist, NOAA, National Climatic Data Center.
Diana Liverman, Chair, National Academy of Sciences Committee on Human Dimensions of Global Change; Director, Latin American Studies Program, University of Arizona.
Don Wilhite, Director, National Drought Mitigation Center, University of Nebraska.

11:30-11:45
Vice President Gore: *Remarks*

11:45-12:45
Panel II: The Role of Technology in Reducing Greenhouse Gas Emissions

Presentation: **Federico Peña,** Secretary of Energy.

Panelists: **Tom Casten,** President & CEO, Trigen Energy Corporation.
Michael Bonsignore, President and CEO, Honeywell Corporation.
Mason Willrich, CEO, EnergyWorks.
Kurt Yeager, President, Electric Power Research Institute.
Larry Papay, Bechtel Corporation

1:00-2:00
Lunch: Breakout Discussions with the Cabinet

2:15-2:30
First Lady Hillary Rodham Clinton: ***Remarks***

2:30-3:30
Panel III: The Kyoto Conference and U.S. National Interests

Presentation: **Madeleine Albright,** Secretary of State.
Panelists: **James D. Wolfensohn,** President, World Bank.
Richard Schmalensee, Professor of Economics and Management, Massachusetts Institute of Technology; Director of MIT Center for Energy and Environmental Policy Research; member of Council of Economic Advisers, 1989-91.
Daniel Yergin, President, Cambridge Energy Research Associates; author of "The Prize: The Epic Quest for Oil, Money and Power," winner of the Pulitzer Prize.
E. Linn Draper, Chairman, President, and Chief Executive Officer, American Electric Power.
Fred Krupp, Executive Director, Environmental Defense Fund.
Mae Jemison, President, Jemison Group, Inc. and Jemison Institute for Advancing Technology in Developing Countries at Dartmouth University. Former NASA astronaut.
Jessica Tuchman Mathews, President, Carnegie Endowment for International Peace.

3:30-4:30
Panel IV: Climate Change Policy and the U.S. Economy

Presentation: **Larry Summers,** Deputy Secretary of the Treasury.
Panelists: **Robert Repetto,** Vice President and Senior Economist, World Resources Institute. Co-author, "The Costs of Climate Protection: A Guide for the Perplexed."
William Nordhaus, Whitney Griswold Professor of Economics, Yale University. Author of "Efficient Use of Energy Resources," "Managing the Global Commons."
Robert Stavins, Professor of Public Policy and Chair of Environment and Natural Resources Program, the John F. Kennedy School of Government, Harvard University.
John Sweeney, President, AFL-CIO.
Richard Sandor, Chairman & Chief Executive, Centre Financial Products Limited; Vice-Chair of Chicago Board of Trade.

THE WHITE HOUSE

WASHINGTON

October 5, 1997

White House Conference on Climate Change

DATE: October 6, 1997
LOCATION: Georgetown University (Gaston Hall)
TIME: 10:00 a.m.-4:30 p.m.
FROM: Todd Stern

I. PURPOSE

To engage in a substantive discussion of global climate change science and policy with key stakeholders.

Objectives for the Conference: (1) To enhance the basic national understanding of the climate change issue by providing a clear articulation of the science and by presenting the key aspects of an effective response; (2) to help stimulate a national dialogue on the issue of global climate change by bringing together the people from around the country who have thought the most about the issue and who have the greatest amount at stake in any response we choose; (3) to build support for developing a climate change policy based on the principles of binding targets, flexible implementation mechanisms, and global participation.

II. BACKGROUND

The White House Conference on Climate Change: The Challenge of Global Warming is the highlight of your outreach effort on this issue in the lead-up to the Kyoto meeting this December.

The Conference will include some 200 invited guests from a broad range of interests, including industry, organized labor, the environmental and scientific communities, leading economists, Congress, and state and local officials. In addition, the Conference will be broadcast live via satellite to more than 30 locations across the country.

The Conference follows on a series of events that have included you, the Vice President, members of the Cabinet, and other senior Administration officials. These include the July 24 scientists' roundtable hosted by you and the Vice President; your meetings with business CEO's and environmental leaders; some twenty events across the country featuring the Cabinet (including Secretaries Daley, Peña, Slater, Cohen, Babbitt, and Glickman, and Administrator Browner), numerous meetings with key constituencies hosted by Todd Stern, Katie McGinty, Gene Sperling, Dan Tarullo, and other members of your climate team; and most recently the weathercasters event last week.

Still, your opening remarks will be your first opportunity to speak to the American people about this issue in a substantive way. Interest in global climate change is higher than it has ever been, both because of the upcoming Kyoto meeting and the efforts you have undertaken over the last few months. The weathercasters event, for example, scored some 400 television hits nationwide.

While we are not announcing any new policy at the Conference, the audience will be paying very close attention to everything you say for a hint of how you might be leaning. You should be careful of any comments that imply support for a particular target and timetable or that seem to favor a particular implementation regime.

Topics for discussion: After opening remarks from the Vice President and you, the Conference will be divided into four panel discussions covering the scientific, technological, international, and economic aspects of climate change. Additionally, there will be lunchtime breakout sessions where invited guests will have the opportunity to discuss climate change with members of your Cabinet and other senior White House officials.

You will be present for the first two panels -- the first on the science of climate change and the second on existing and developing technologies that have the potential to reduce greenhouse gas emissions.

The Vice President will remain for the two afternoon panels.

At the panel tabs that follow in this book, you will find descriptions and goals of the panels, bios of the panelists, and a script.

III. PARTICIPANTS

Pre-brief Participants:

Todd Stern, Katie McGinty, Gene Sperling, Dan Tarullo, Jim Steinberg, John Podesta, Erskine Bowles, Jack Gibbons, Janet Yellen.

Event Participants:

The event will include roughly 200 invited guests from industry, labor, the environmental and scientific communities, Congress, and state and local governments, as well as leading economists, authors, and others who bring substantive knowledge to the issue. A complete list is attached.

Also in attendance will be approximately 230 Georgetown University students along with several faculty.

IV. PRESS PLAN

The entire conference, with the exception of the lunchtime breakout sessions, will be OPEN PRESS.

V. SEQUENCE OF EVENTS

- YOU and the Vice President enter Gaston Hall.
- Father O'Donovan welcomes the attendees and introduces the Vice President.
- The Vice President makes remarks and introduces YOU.
- YOU make opening remarks.
- YOU and the Vice President lead a panel discussion on the science of climate change.
- YOU and the Vice President lead a panel discussion on technology.
- YOU depart.
- Breakout sessions during a working lunch hour, led by Cabinet Officers.
- Prof. Robert Gallucci introduces the First Lady to open the afternoon session.
- The First Lady speaks about Children's Health Day and climate change.
- The Vice President leads a panel discussion on international issues.
- The Vice President leads a panel discussion on economic issues.
- The Vice President makes very brief closing remarks.
- A reception is held in the Indian Treaty Room.

VI. ATTACHMENTS

Conference Agenda
Panel by panel descriptions, bios, and scripts
List of Participants (to be forwarded)
Remarks (to be forwarded)
Background
Articles

Labor Union Climate Change Resolutions

- AFL-CIO
- Industrial Union Department, AFL-CIO
- Transportation Trades Department, AFL-CIO
- Maritime Trades Department, AFL-CIO
- ICEM

American Federation of Labor and Congress of Industrial Organizations

815 Sixteenth Street, N.W
Washington, D.C 20006
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Arthur A. Coia
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M.A. "Mac" Fleming
Joe L. Greene
James LaSala
Andrew McKenzie
Robert A. Scardelletti
Andrew L. Stern

James E. Hatfield
Marvin J. Boede
Gene Upshaw
Moe Biller
James J. Norton
Frank Hurt
Stephen P. Yokich
Carolyn Forrest
Sonny Hall
William Lucy
A.L. "Mike" Monroe
Robert E. Wages

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.

PETER S. d'CICCO
PRESIDENT
202-842-7800

JOSEPH B. UEHLEIN
SECRETARY-TREASURER
202-842-7800

INDUSTRIAL UNION DEPARTMENT, AFL-CIO

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

815 16TH STREET NW • WASHINGTON, DC 20006 • FAX 202-842-7839

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.

MARITIME TRADES DEPARTMENT

AMERICAN FEDERATION OF LABOR and CONGRESS OF INDUSTRIAL ORGANIZATIONS

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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.

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We believe the parties to the Rio Treaty made a fundamental error when they agreed to negotiate legally-bind 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.

ICEM

International Federation of Chemical, Energy, Mine and General Workers'

Climate Change

The nations of the world are involved in the United Nations negotiations pursuant to the Berlin Mandate for amendment to the Framework Convention on Climate Change (RIO Treaty).

In view of the far-reaching implications of this Convention, not only for the future of the planet, but also for the livelihoods of workers involved in the resource and energy-using industries, and for global economic growth, the ICEM calls upon the parties to the Framework Convention on Climate Change to insist upon a treaty amendment that:

1. Places the highest priority on the needs of workers and consumers who will shoulder the greatest burdens of efforts to address global climate change.

2. Promotes improvements in energy efficiency in all countries, and provides assistance for this purpose to developing countries.

3. Includes the protection of existing jobs and the creation of new ones, and the improvement of living standards in all countries as a critical goal to be met in any climate treaty.

4. Provides adequate time for both developed and developing countries to meet the needs of the environment and the needs of working people.

Statement of Cecil E. Roberts
President
United Mine Workers of America
on the
DRI and EPI Economic and Employment Impact Analyses
September 17, 1997

Today we are releasing the results of two economic and employment studies of climate change policies. These studies, conducted by DRI McGraw Hill (DRI), the same economic forecasting firm used by the Clinton and Bush administrations, and the Economic Policy Institute (EPI), a well known Washington-based economic think tank, should give pause to the administration and its negotiators in the Berlin Mandate process.

Background

As you know, the U.S. is participating in negotiations pursuant to the Berlin Mandate to amend the 1992 Framework Convention on Climate Change, also known as the Rio Treaty. Negotiations are scheduled to conclude in December at a meeting in Kyoto, Japan. We believe the Berlin Mandate is a flawed instrument for dealing with climate issues. It is flawed because it specifically exempts more than half of the world's future emissions from any controls, while asking for substantial sacrifices from American workers and consumers. And as currently structured, it will do nothing to address the climate change issue.

Job Losses

The job losses that are likely to result from carbon reduction efforts are staggering. DRI projects that a policy aimed at reducing emissions in 2010 to 1990 levels will cost nearly 1.6 million jobs in 2005. Job losses will hit every region of the country and every industrial sector (with the exception of the federal government). For most industries and regions there is no recovery throughout the forecast period, which runs to 2020. The coal industry is devastated, but numerous other industries are hard hit--110,000 jobs lost in the transportation and public utility

sector, 199,000 jobs lost in the manufacturing sector, 426,000 jobs lost in the services sector and 182,000 jobs lost in state and local governments as the tax base erodes.

For a policy to reduce emission 10% below 1990 levels by 2010, DRI projects the loss of nearly 2.3 million jobs by 2005, increasing to a high of 2.7 million lost American jobs.

Economic Output and Trade

DRI projects that climate policies will reduce U.S. gross domestic product 1.8% to 2.9% during the forecast period. This means that the U.S. economy will lose over $200 billion annually at the peak of the phase-in effects in 2005-2010. Climate policies limited to developed nations are also likely to significantly increase the U.S. trade deficit. EPI notes that the DRI model may underestimate the trade flow implications of such policies. EPI estimates that real imports are likely to increase substantially and real exports are likely to decline. EPI estimates that this could result in an increase of up to $240 billion in the U.S. trade deficit. If this occurs, EPI estimates that job losses could be as high as 2-4 million.

Wage Growth

The EPI report notes that carbon reduction policies are likely to depress wage growth, as higher wage jobs are knocked out of the economy and only partially substituted with lower wage jobs. EPI estimates that future wage growth could be cut by 50%. This will exacerbate the stagnation and decline in real wages that American workers have endured for the last two decades and will tend to increase the already wide income disparity in our economy.

Energy Prices

The policies analyzed by DRI were based upon the U.S. proposal for a carbon permit trading scheme modeled on the U.S. acid rain sulfur dioxide trading program. DRI estimates that carbon permit prices would have to be $180-190 per ton (1995 dollars) in 2010 to reduce

emissions to 1990 levels, and would rise to $270-280 per ton in 2020.

The carbon permits will act like a carbon tax, raising the price of energy based on its carbon content. Coal, with the highest carbon content of all fossil fuels, will be taxed the highest. But all fossil fuels are projected by DRI to increase in price. Gasoline prices are projected to increase $0.41-$0.64 per gallon. Electricity prices will increase over 11 cents per kilowatthour and natural gas prices will increase $1.14 per therm (100,000 Btu). For an average American family these energy price increases will add nearly $900 per year to the annual household energy bill by 2005, increasing to about $2,200 per household by 2020.

Energy taxes are highly regressive by nature. Families, regardless of income, must heat and cool their homes, cook their food and travel to work. For example, the U.S. Department of Energy estimates that a family with an annual income of less than $10,000 still spends nearly $1,000 per year in energy costs in the home. Energy taxes, or equivalent carbon permit schemes, will be crushing for low-income workers and seniors living on fixed incomes.

Conclusion

The upcoming U.N. climate treaty is **All Pain and No Gain** for American workers and consumers. It is a bad deal for American families, and will provide a perverse incentive for American corporations to relocate their operations abroad. That is why the labor movement has taken positions warning the administration to avoid signing a treaty amendment that harms workers, consumers and our economy. We have had unanimous votes on climate policies at the Industrial Union Department of the AFL-CIO, the Transportation Trades Department, the Maritime Trades Department, and the full AFL-CIO Executive Council. Because of concerns about increased energy prices, the National Council of Senior Citizens (NCSC) has adopted similar positions. The fear that we may be on the verge of signing a bad deal also motivated the Senate in July to adopt unanimously a resolution calling on the administration to insist that all nations participate in any new commitments and that any proposed treaty not harm the American economy. The studies we have released today clearly show that efforts to reduce greenhouse

gases in the short time frames being discussed will have significant negative effects in terms of lost jobs, higher consumer energy prices, and higher trade deficits. I repeat, this is a bad deal for American families.

For those who question the science of climate change, this is a dumb idea. For those who believe the science is compelling, this is a dumb idea. Developed nations alone cannot address this issue, and we believe developing nations will be less likely to join a treaty after we have built in trade and economic advantages for those nations through a flawed treaty. The U.S. should not compound the flaws of the Berlin Mandate by signing a flawed treaty in Kyoto.

these issues using a model developed by DRI/McGraw-Hill (1997). The results of this modeling exercise are analyzed and contrasted with a recent administration study of the costs of climate change policies (Interagency Analytic Team 1997). DRI/McGraw-Hill also prepared the most extensively cited model used in the IAT report. We refer here to that earlier effort as the IAT model.

There have been a number of surveys of the cost of climate change policies.[3] We rely on some of these studies in our analysis. This report contributes an analysis of the distribution of the costs of climate change policies across society to the debate. We make no assessment of the potential benefits of GHG policies, in terms of potential risks or damages that could be avoided, nor do we take a position on the advisability of adopting any further policies to restrict GHG emissions. However, we recommend that if such policies are implemented, two specific, additional measures regarding adjustment assistance and border taxes are needed to limit their disruptive effects on the economy, and on the lives of American workers.

We begin by describing the baseline forecasts for the economy (business as usual case) and then review the overall effects of potential GHG policies on output (GDP) and consumption, including a comparison of the DRI/McGraw-Hill (1997) results with those of the IAT. The next section considers the effects of these policies on key sectors of the economy, including employment, wages, profits, and foreign trade. We then examine GHG policy-effects on industries and regions of the economy. The paper concludes with a discussion of policy implications and areas for future research.

The Macroeconomic Impacts of GHG Policies

The model used in this study is the DRI/McGraw-Hill macro-economic model. This is a short-run forecasting model with an input-output-based structure. Some analysts have criticized the use of the DRI model to analyze issues such as GHG policies because of its short-run orientation, arguing that the policies proposed should be designed to reduce energy use and carbon emissions over the next century.[4] However, the policies discussed in IAT (1997) would take effect in the year 2000 and be phased in over 10 years. They would have substantial short-run impacts on economic output, which would exceed the costs identified in the other long-run models used in the IAT report.[5] Therefore, it is appropriate to examine these adjustment costs when considering the distributional effects of GHG policies.

Many models have estimated the costs of stabilizing the emissions of carbon, on a national basis, at 1990 levels by the year 2010. This scenario has become the standard of comparison for modeling of the costs of GHG policies. The IAT chose this scenario as a baseline, and also ran a number of "sensitivity-test" scenarios which varied key assumptions, including a range of targets between 90% and 110% of 1990 level emissions in the year 2010. Most scenarios assume that emissions are held constant after the target is achieved in 2010. The European Union has proposed emission reductions of 15% of 1990 levels by 2010 as a starting point for the the Kyoto-round negotiations. It is also important to point out that ultimate stabilization of atmospheric CO_2 may require further reductions in global emission levels beyond these targets, with attendant increases in the costs of GHG policies.[6] Comparison of cases 1 and 2 suggests that the costs of emissions control increase exponentially. Therefore adjustment costs could continue and expand if future COP meetings results in additional, increasingly restrictive agreements to reduce GHG emissions in the Annex-I countries, as seems likely.

Baseline forecasts

DRI/McGraw-Hill (1997) assumes that real GDP growth will average two percent per year between 2000 and 2010, and 1.5% per year thereafter. GDP growth declines after 2010 because the rate of growth of the labor force declines from about one percent per year between 2000 and 2010 to 0.5% per year thereafter, as the baby boom generation begins to exit the labor force. The energy intensity of the economy is forecast to decline by one percent per year throughout the forecast period. Carbon emissions therefore increase 1.3 percent per year between 2000 and 2010 and 0.8% per year thereafter.

Total carbon emissions in the baseline case are 1,746 million metric tons (MMT) in 2010 and 1,894 MMT in 2020. Actual emissions in 1990 in the U.S. were 1323 MMT, according to DRI/McGraw-Hill (1997).[7] Therefore total emissions in the baseline case grow 32.0% and 43.2%, respectively, in 2010 and 2020 in this model. These are the amounts by which carbon emissions would have to be reduced to stabilize emissions at 1990 levels.[8] Some fuels, such as natural gas and petroleum, emit much less carbon per unit of energy released, so energy use would not have to fall by this amount if fuel switching were to occur (as is assumed in the DRI model).

Policy Scenarios

It is assumed that a system of tradeable carbon emission permits is announced and implemented beginning in 2000. The number of permits in circulation is reduced each year from 2000 to 2010, until the emissions target is achieved. Permits are not traded internationally, but are tradeable within the domestic market, to facilitate adjustment at least possible cost. Three cases are analyzed[9]:

Case 1: **(Grandfathered Permits)**. Allowance are issued to industry at no cost. Emissions are stabilized at 1990 levels in 2010.

Case 2: **(Grandfathered Permits, 90% of '90 Emissions)**. Allowances are issued to industry at no cost. Emissions stabilized at 90% of 1990 levels in 2010.

Case 3: **(Auction, Deficit Reduction)** Allowances auctioned by U.S. Government, no revenue recycling. Emissions stabilized at 1990 levels in 2010.

Carbon prices range from $180 to $200 per ton in 2010 and $270 to $320 per ton 2020 in DRI/McGraw-Hill (1997), as shown in **Table 1**. These prices have very different effects on different types of fuel, as noted above. Gasoline prices increase only 31.5% to 49.2% in 2010, for example ($.41 to $.63/gallon). However, coal prices rise much more rapidly, 450% to 680%, because coal has a much higher carbon content per unit of energy, as noted above. Natural Gas, which is one of the most carbon-efficient fuels, rises substantially more in price than gasoline because fuel switching sharply increases demand, and capacity is slow to respond.

Energy prices in the IAT draft report are compared in the bottom two sections of Table 1. The base case prices are nearly identical in the two studies. However, carbon prices are much lower in the IAT scenarios. There are two reasons for this. First, the IAT model assumes slightly higher baseline improvements in energy efficiency (1.25% vs. 1.0% per year). Therefore, carbon emissions in 2020, for example, are projected to be 1805 MMT in the IAT base case, versus 1894 MMT in DRI/McGraw-Hill (1997), a difference of about 5%. Second, and more importantly, the IAT report apparently assumes larger price and substitution elasticities than DRI/McGraw-Hill (1997). The IAT report has been criticized because "The price elasticities for energy demands need further explanation. Some very rough ...calculations suggest that they may

be on the high side."[10] These comments suggest that the estimates in DRI/McGraw-Hill (1997) may be more reliable than those developed for the IAT.[11]

Effects on Output and Consumption

Figure 1 shows that in the cases considered here, GHG policies could have significant costs for the economy, especially in the next ten to fifteen years. Policies designed to stabilize U.S. emissions of greenhouse gases at 1990 levels in 2010 — the least restrictive policies now being discussed for the Kyoto negotiations — could reduce the level of national output by 1.8 to 2% in the short run. If GHG emissions are reduced by 10% in 2010, then the short-run costs increase sharply, to 2.9% of GDP and 3.6% of consumption. The maximum impact occurs in 2007 in all three scenarios, seven years after the permit system begins to be phased in, but three years before emissions are fully reduced to the target level. Output falls because of the increase in energy prices, shown in Table 1 above, which depresses consumption and investment spending.

Overall inflation rates, shown in **Figure 2,** rise by 0.25 to 1 percentage points during the initial implementation period. By 2020, in the grandfathered permits cases, the cumulative effect of these price effects causes a 7% to 9% increase in the level of the GDP price deflator, relative to the base case, because businesses will pass along the cost of permits to their customers. This increase in the *level* of the GDP deflator is permanent, even though inflation returns to base case levels by 2015.

If permits are auctioned by the government, the policy will have a more depressing effect on output, because the permit fees will cause a sharp, permanent increase in government savings. The effect of the permits is similar to that of a tax increase. Inflation increases in the short run, and then falls below the base case after 2008, reflecting the permanent suppression of demand

caused by this policy.

In all three scenarios, investment recovers and is increased as a share of GDP, relative to the base case, as shown in Figure 10, below. Firms and consumers increase their spending on capital goods to increase energy efficiency, effectively substituting capital for energy and accelerating the replacement of the existing capital stock. For example, total purchases of vehicles in 2020 in the three policy scenarios are 200,000 to 500,000 units higher than in the base case. As a result of the increased investment, the available stock of effective non-residential capital increases steadily throughout the forecast period, as shown in Table A, above. By 2020, it is 85 to 10% higher than in the base case.

The increase in investment is effectively financed through a forced increase in national savings in the three policy scenarios. If the permits are simply granted to businesses, free of charge, then business revenues and corporate profits will increase dramatically. Part of these retained earnings will then be available to finance increased investment spending. Savings through the federal budget also increase in all three models, after an initial adjustment period. If permits are grandfathered, then corporate profit tax revenues will increase. If the permits are auctioned by the government, then the revenues will flow directly into the treasury. The model assumes in all cases that the government uses the increased revenues to reduce the deficit or, if there is a surplus, to reduce the stock of outstanding federal debt, increasing the effective rate of government savings.

The increase in national savings and investment that would result from a system of energy permit sales is a key element in all models of the effects of GHG policies. In the long run, the increase in savings and investment causes GDP to be higher in 2020 than in the base case, in all

three scenarios, as shown in Figure 1. Furthermore, GDP is growing 0.1 to 0.2 percentage points faster than in the base case in all three scenarios in 2020. Hence, the stimulus to investment provided by GHG policies could slightly increase the underlying rate of growth of the domestic economy, in the long run. However, the assumption that permit sales would increase national savings is highly questionable, for reasons discussed below. In the absence of the stimulus to savings and investment, GDP levels and growth rates would be lower throughout the forecast period.

Figure 3 demonstrates that the increase in real energy prices has a bigger effect on consumption than it does on output. GHG policies have a larger impact on consumption than on GDP for at least two reasons. First, a larger share of output is devoted to investment, for reasons explained above, and thus consumption must decline as a share of national income. Second, the increase in energy prices will force consumers to reduce real purchases of other goods, holding everything else constant (unless overall demand for energy is price elastic, which is not the case in most models).

Consumption losses reach a peak of 2.2 to 3.6 percent in 2007, relative to the base case, as shown in Figure 2. Consumption also recovers, following the GDP path in figure 1. However, overall consumption levels remain about one-half percent below the base case in 2020 in all three scenarios, despite the increased levels of output in that year, reflecting the increase in savings discussed above.

Comparisons with IAT Estimates.

The IAT estimates generated much smaller projections of the losses than would result under similar policy scenarios. For example, **Figure 4** compares predicted changes in total

consumption from the base case, assuming grandfathered permits in both the IAT and the DRI/McGraw-Hill (1997) models. The maximum loss in the IAT model, of 1.4%, occurs two years earlier (2006) and is only 55% as large as the maximum loss in the DRI/McGraw-Hill (1997) model of 2.5% of base consumption. The difference between the two forecasts reflects the two key differences in energy forecasts: 1) lower base case energy use in the IAT model; and 2) higher price elasticities in that model.

The Reliability of Critical Assumptions

There are substantial economic and practical reasons to question some of the assumptions underlying both the IAT and the DRI/McGraw-Hill (1997) models. One key assumption concerns they way that revenues from the sale of permits are used in the economy. **Figure 5**, which contrasts two scenarios from the IAT report, illustrates the effects of different ways of handling permit revenues on total consumption in the U.S. If permit revenues are recycled to consumers, rather than being used for deficit reduction, losses to consumers will not fade away over time.[12] In this case, consumption will fall and remain at a lower level throughout the forecast period. Given the political realities of the federal budget processes, it is highly unlikely that permit revenues of the type envisioned here would be used to reduce the budget deficit or the federal debt. For example, forecasts in mid-1997 that the federal budget could achieve a small surplus within the next few years if the economy continues to grow at its current pace have generated a wide range of proposals for using projected revenues for new tax cuts, and/or public spending increases. Therefore, national savings are unlikely to increase as assumed in these models.

Higher levels of federal spending for consumption purposes, for example for defense spending, will not stimulate growth in the way envisioned in the DRI model. Thus the permits are

not likely to stimulate as much growth in GDP, nor as rapid a recovery, as is forecast in either the DRI/McGraw-Hill (1997) or IAT (1997). On the other hand, some type of public investment, in areas such a R&D, educational programs and other types of public infrastructure, could have an even larger impact on productivity and economic growth rates than the private investment spending that drives the DRI/McGraw-Hill results. Therefore, the ultimate effects of GHG policies on the economy will be heavily effected by the ways in which the resulting revenues are utilized.

For these reasons it is unlikely that all of the GHG revenue collected by the government would go to deficit reduction. Some federal revenues will probably be returned to consumers (through tax cuts) or otherwise result in new public consumption expenditures. While tax cuts or other expenditures could stimulate the economy, they could not fully offset the depressing effects of GHG policies. Therefore, output is likely to fall with GHG policies, in the long run, in contrast with the case reviewed here.[13] Figure 4 shows that consumption will fall when the permit system is put in place in 2000, recover slightly, and then begin to decline again. The sustained decline is caused by the increase in the cost of carbon permits and energy prices shown in Table 1, above.[14] The increased cost of energy puts an increasing drag on the rate of growth of economic output. This is the most important long-run cost of GHG policies.

The initial decline in consumption shown in Figure 4 is smaller if all the revenues are returned to consumers, perhaps through reductions in income or other labor taxes (such as the social security tax). This "revenue neutral" policy has a less depressing effect on total output and consumption than the grandfathered permits policy. Losses begin to increase in 2015 because of the long-run effects of higher energy prices. The losses and distortion effects shown in Figure 4

would increase with the size of the effective carbon tax. Permit fees as large as those estimated in DRI/McGraw-Hill (1997, $180 to $320 per ton, Table 1 above) would have proportionately larger effects on consumption than the IAT cases (in which permit fees are only $95 per ton in 2010 and $125 in 2020).

One final economic reason for questioning the results of both the IAT and DRI/McGraw-Hill (1997) is that investment may not respond in the way assumed in the models. In each case (except for the auction, 100% to consumer case shown in Figure 4), it is assumed that increases in savings by the business and government sector stimulate a proportionate increase in domestic investment.[15] However, even though corporate retained earnings would rise sharply if permits were grandfathered to existing energy users, there is no guarantee that the resulting excess cash would be invested in the U.S. Investment opportunities elsewhere in the world could be more attractive, particularly if there are parts of the world not subject to GHG policies (as discussed below). In fact, recent empirical research has shown that in the long run, about one-quarter of any given change in savings has flown out of the U.S. in the past. This ratio could change in the future, as well. For these reasons, investment (and therefore GDP and consumption) might not receive the stimulus expected in the IAT and DRI/McGraw-Hill (1997) models even if savings are increased. In fact, increased corporate earnings could accelerate capital flight problems that are discussed below.

On balance, we expect that GHG policies designed to stabilize emissions at 1990 levels will reduce consumption by at least $50 to $100 billion per year, on average, between 2000 and 2020. Losses are likely to continue and grow in the future because the policies will reduce the economy's potential growth rate, because permit revenues are likely to be spent on tax cuts or

new public expenditures, and because savings and investment will be diverted to other countries because of the effects of GHG policies on economic incentives. However, the Kyoto negotiations also need to consider the distribution of the benefits and the costs of these policies.

Distributional Effects of GHG Policies

Since 1973, U.S. production workers have experienced a steady decline in their real wages and earnings, as shown in **Figure 6.** After rising steadily at an average rate of $0.14 per hour (in $1982) through 1973, real compensation began to decline steadily thereafter at a rate of $.035 per hour. This decline in production worker incomes contrasts sharply with the continued growth in real hourly earnings of the top twenty percent of the labor force, which has been maintained throughout the 1980s and 1990s. Earnings inequality, the gap between the top and bottom classes of wages earners, has increased sharply as a result. For example, the ratio of the top to the bottom deciles of workers has increased from 3.7 to 4.5 since 1973, an increase of more than 20%.

Wages have been eroding and income inequality has been increasing for a number of reasons, including declining rates of unionization, falling real values of the minimum wage, deregulation and increased rates of immigration. Rapid growth in foreign trade and investment are also important causes of declining real wages (Mishel, Bernstein and Schmitt, 1997). Unless these issues are considered in the development of GHG policies, those measures will exacerbate the effects of globalization on American workers. Recent reports suggest that trade may be responsible for at least 20 to 25% of the increase in U.S. income inequality in this period (Tyson, 1997).[16] With these facts in mind, we turn next to an analysis of the effects of GHG policies on labor and other factors of production, and then examine the effects of GHG policies on trade in

some detail.

The effects of GHG policies on employment in DRI/McGraw-Hill (1997) are illustrated in **Figure 7.** As GDP and consumption fall after the permit system is introduced, unemployment (not shown) rises initially and peaks (relative to the base case) in 2006. Overall, unemployment (not shown) is increased by 0.6 to 1.1 percentage points in. To put this in perspective, in the 1990-1991 recession in the U.S., unemployment increased by 2.2 percentage points from its 1989 low of 5.3 percent. Thus, the effects of GHG policies on unemployment are projected be one-quarter to one-half as large as the last U.S. recession.

Job displacement peaks in 2007 or 2008 and persists, as shown in Figure 7, even as excess unemployment is eliminated. Displacement persists, though at lower levels, throughout the forecast period because real wages are depressed by the rise in energy prices (and the overall price level), causing workers to drop out of the labor force. Job losses are especially large in the scenario with the lowest emission targets (grandfathered permits, 90% of '90 emissions), in which energy prices must rise most rapidly.

GHG policies have a strikingly consistent, negative impact on real wages, as shown in **Figure 8.**[17] The rate of growth in real wages is reduced by 0.4 to 0.55 percentage points immediately after the introduction of the permit system in 2000. These reductions in real wage growth, relative to the base case, persist for over a decade. The losses are largest with the most restrictive emission limits (90% of '90 emissions), and least for the case with grandfathered permits and 1990 emission targets. In the latter case there is a small, offsetting, positive effect from the increased ability of corporations to grant wage increases when permits are grandfathered, which increases corporate revenues.

The decade-plus suppression of wage growth rates could cumulatively reduce the growth in the level of real wages by more than 50% between 1995 and 2020, relative to the base case, as shown in **Figure 9.** Real wages decline in all three scenarios between 2000 and 2006, and by 2020 they are only 3% to 4% higher than they were in 1995 (versus a 9% increase in the base case) This translates into an average growth rate of less than 0.2% per year. With such low rates of wage growth the continued increase in inequality will lead to falling wages for most workers. Only the top groups of wage earners are likely to experience any real wage gains over this period.

Impacts on the Business Sector

If GHG policy simply grants permits to business at no cost, then businesses currently using energy will effectively capture the stream of income that is equal to the value of those permits. They can choose to either use the permits themselves, or sell them to other users on the open market. The advantages of this system are that: 1) as the number of permits in circulation is reduced between 2000 and 2010, the lowest cost means of eliminating energy use will be identified by market forces; and 2) the grandfathering of permits will provide some compensation to businesses that will face higher costs of energy because of the implementation of GHG policies.

Under this policy scenario, businesses will capture revenue stream, which will grow in value with the prices of permits, if the permits are given away, as shown in **Figure 10**. Corporate profits (before taxes) are forecast to rise steadily in the base and auction, deficit reduction cases from $500 billion in 1995 to $1.6 trillion in 2020. This reflects both the growth of the capital intensity of the economy (the capital stock is growing faster than in the base case) and an increase in the expected returns to capital, as well as the general growth in real output. If permits are

grandfathered, annual corporate profits in 2020 will increase by an additional $1.1 to $1.2 trillion dollars, an increase of about 66%, as a result of the infusion of GHG permit revenues and associate increases in the prices of domestic products.[18]

Investment as a share of GDP will increase in all three GHG scenarios, as shown in **Figure 11.** Higher energy prices will increase the levels of investment in both residential and non-residential goods, including houses, cars and producer durable equipment (production machinery). This will have important side effects, by stimulating the production of capital goods and construction sectors, as shown below. The increase in investment, if it materializes, is the key to generating increased levels of GDP in the DRI/McGraw-Hill forecasts.

A policy induced increase in the level of profits will cause profits to rise sharply as a share of GDP in the two cases where permits are simply given to businesses (grandfathered), as shown in **Figure 12.** This sizeable increase in profits reflects returns on the incremental investment shown in Figure 11, and also returns on the asset value of carbon permits in circulation. In the DRI/McGraw-Hill model, increasing profits have a positive macroeconomic impact, because they provide savings to fund the investment growth. However, rising profits, as a share of national income, also imply a fall in the labor share of income, providing further evidence that production workers will be squeezed by GHG policies. The profit share of output increases by 9.4 and 11.2 percentage points, respectively, in the two cases with grandfathered permits in 2020, with the larger effect occurring with the restrictive target of 90% of '90 emissions. In the base case, profits rise gradually from 7.4% to 15% of GDP. In Scenario's 1 and 2, profits rise to 24.6% to 26.5% of GDP. Such large increases in capital's share of national income would virtually ensure a sizeable increase in the inequality of income distributions in the U.S. .

Effects of GHG Policies on Trade and Investment flows

By 2020, U.S. Imports would rise sharply under GHG policies because higher energy prices would make foreign goods (made with cheaper energy inputs) more attractive, as shown in **Figure 13.** In the short run, as output falls due to the introduction of the permit system, imports will decline slightly. After 2007 they surpass the base case (no GHG policies), and by 2020 they are $175 to $275 billion higher than in the base case. Imports rise most rapidly under the scenario with the most restrictive limits on GHG gases (90% of '90 emissions), because the high costs of carbon permits. The auction, deficit reduction case has the smallest effect on imports, because output is slightly lower than in the case with grandfathered permits (at '90 emission levels).

Real exports, shown in **Figure 14** would fall below base case exports until at least 2013, for all three policy scenarios. Exports recover somewhat thereafter, because of the effects of increased domestic productivity. In particular, in case 2 (permits auctioned, revenues used for deficit reduction) exports are $25 billion higher than in the base case by 2020.

On balance, the increase in imports is considerably larger than the increase of exports, in the long run, in all three cases. Therefore the trade deficit (imports less exports) increases sharply as a share of GDP, as shown in **Figure 15.** The balance improves slightly during the initial period of adjustment to GHG policies, between 2000 and 2010, because of the decline in consumption, but the deficit expands rapidly thereafter. By 2020, the deficit has increased to between 6.0% and 7.5% of GDP, as compared with a 1997 deficit of approximately 2% of GDP. The trade deficit is forecast to grow substantially in the base case, as well. However, the GHG policies would add between $149, $287 and $240 billion to the trade deficit in 2020 in cases 1 through 3, respectively. The trade deficit would increase by 1.3, 2.7 and 2.1 percentage points of GDP in the

respective cases.

Deficit increases of this size would have huge impacts on traded goods, especially manufacturing-sector products. We have estimated that $1 billion worth of exports would generate approximately 14,000 domestic jobs, including direct and indirect employment effects, in 1995 (Scott and Lee, 1997). Using this multiplier, the forecast increases in the trade deficit could eliminate a gross total of 2 to 4 million job opportunities in goods producing and related industries. As shown below, the DRI/McGraw-Hill industry projections for 2020 do not reflect employment losses of these magnitudes, because the model assumes that the economy returns to full employment and displaced workers are reabsorbed into other industries by that time.[19] However, if the forecast changes in trade flows are correct, then 2 to 4 million fewer jobs will exist or be created in industries producing traded goods, and related inputs, could occur with GHG policies, as compared with base case employment forecasts. In the long run, increased imports will cause shifts in employment within the manufacturing sector, and between manufacturing and services. As a result, gross job displacement is likely to exceed the net job losses that are discussed below.

If GHG policies do eliminate such a large number of manufacturing jobs, they will have a much larger impact on wages and incomes, especially for non-college educated workers, than is suggested by the DRI/McGraw-Hill macroeconomic model, because wages and incomes are much higher in manufacturing than in other sectors of the economy. Further research is needed to separately estimate the effects of GHG policies on the wages and incomes of blue- and white-collar workers.

There is also a more fundamental set of international trade and investment issues that are

not addressed in the DRI model, as suggested by outside reviewers of the IAT, noted above. The DRI model assumes that the share of imports coming from the Annex-I countries (that will impose GHG emission limits) and non-Annex-I countries (which will presumably not be limited, for some time to come) will remain fixed in the base case. However, the structure of trade flows has shifted rapidly in the past 10 years, even without the incentives provided by GHG policies. The share of U.S. imports originating in the developing countries increased from 29.1% in 1978 to 36.4% in 1990, even while the ratio of imports to value added in the manufacturing sector was increasing sharply, from 18.3% to 30.7% (Sachs and Shatz 1994, 10 and 12).

GHG policies will also create incentives to accelerate the pace of globalization and integration of the world economy. Globalization will take at least two forms. First, the share of U.S. imports originating in developing countries will grow, even more rapidly than it has in the past (for example, Mexico and China have experienced some of the most rapid rates of growth in U.S. imports in the 1990s). Second, investment will be diverted from the U.S. to non-Annex I countries, especially Mexico and other countries with large supplies of low-wage, semi-skilled labor. The pool of investment capital available for investing abroad could also be increased if grandfathered permit policies are implemented, as shown above. For the past two decades trade has grown twice as fast as world income, and foreign direct investment has grown four times as fast as income. Globalization is likely to accelerate if GHG policies are implemented that do not limit or otherwise control production shifts designed to escape GHG limits.

Sectoral and Regional Impacts of GHG Policies

Tables 2 and 3 forecast the effects of GHG policies on total and sectoral employment, at a fairly aggregated level in the economy (1- and 2-digit SIC categories of output). Employment

changes in 2007 (Table 2) will be dominated by the initial reduction in output, relative to the base case, as noted above. Employment changes will be almost universally negative, and will be spread more or less evenly across the economy. Total losses are greatest when GHG limits are most restrictive (90% of '90 emissions). DRI/McGraw-Hill predicts that a net total of 1.5 to 2.6 million jobs, or about 1.0% to 1.8% of total employment in the base case, will be lost in this first recession. At the high levels of aggregation shown in Table 2, only the energy-related sectors are predicted to experience very large job losses in the short run, including mining (down 11.5% to 15.4%) and petroleum refining (down 2.5% to 7.4%)

In 2020 employment changes are more mixed (Table 3). Total employment declines by 400,000 to 1 million jobs (0.1% to 0.4% of base case employment in 2020), because of the reduction in real wages discussed above. However, employment grows in some sectors (such as other services, retail trade and durable goods) while declining in others (including mining, transportation and non-durables manufacturing). Contract construction employment increases in the two cases with less restrictive limits on carbon emissions because of increased levels of investment. Significant employment losses spread to a much wider range of industries, as the effects of higher energy costs and related changes in other costs are spread throughout the economy. Mining losses rise to 22% to 24% of the base case and petroleum refining employment declines by 17% to 24%. Several industries are forecast to have significant job losses under grandfathered permits, but gains when permits are auctioned and the revenues used to reduce the federal deficit or increase savings, including apparel products, leather products, electrical machinery and miscellaneous manufacturing. These are all sectors that are open to international competition, where production is highly sensitive to wage levels. Nominal wages would be about

six percent lower than in the base case by 2020 in the auction, deficit reduction scenario. However, wages are higher than in the base case when permits are grandfathered, which explains why employment impacts differ at the sectoral level in these scenarios.[20]

Employment shifts between industries could contribute to the downward pressure on wages discussed above. **Table 4** reproduces forecasts for employment changes in 2020 from Table 3 for a selected group of the most highly aggregated industries, and also includes information on average production worker wages in these sectors in 1995. This table strikingly illustrates one reason why wages grow so slowly in these scenarios. 400,000 to 500,000 job opportunities in mining, transportation and public utilities, where wages average between $14.22 and $15.32 per hour, would be eliminated (relative to base-case forecasts), while 240,000 to 290,000 jobs would be created in retail trade, which had wages averaging $7.70 per hour in 1995. In addition, 180,000 to 340,000 manufacturing jobs, paying between $11.60 and $12.90 per hour, would also be eliminated if GHG emission quotas were allocated to industry (rather than auctioned to raise government revenues). This process of structural change resulting from GHG policies will contribute to increasing inequality within labor markets in the U.S.

DRI/McGraw Hill also provides detailed forecasts at the 3 digit level for industries, and at the 2 digit level for the 10 census regions of the U.S. **Table 5** reports the industries that are predicted to gain or lose more than 5% of base-case employment in 2020. Losses outweigh gains in Table 4, in several ways. The number of industries experiencing losses of more than 5% of output is more than twice as large as the number with gains of more that 5%. In addition, there are 13 industries that lose more than 10% of output in 2020, including Rubber and Plastics footwear (-56%) coal mining (-45%), other leather goods (-34%) and electric utilities (30%).

However, there are no industries that gain more than 7.1% in total output. These trends reflect the broader tendency for employment to fall in manufacturing, especially durable goods, and rise in services sectors, including education services, retail and wholesale trade and state and local governments, as shown in Tables 3 and 4, above. Other individual industries that would be especially hard hit by GHG policies include kitchen products, apparel, toys, and various other mining industries (fertilizers, nonferrous metals and iron and ferroalloy ores).

Coal mining is one of largest and most heavily affected industries under GHG policies.[21] Coal output is projected to fall by 45 to 50% in 2020, relative to a base case with no restrictions on carbon emissions. The coal industry employed 116,000 workers in 1995. DRI/McGraw-Hill's (1997) base case forecasts that coal industry employment will decline to 80,000 workers in 2020. GHG policies will eliminate another 35,000 to 38,000 jobs in this industry by 2020, reducing total employment to between 42,000 and 45,000 workers. GHG policies will double projected job losses in this hard-hit sector between 1995 and 2020.

The tendency for GHG policies to shift employment from manufacturing to services would be much more pronounced if trade and foreign investment effects were larger, for the reasons noted above. In addition, given the large increase in imports and the trade deficit, shown in Figures 12 and 14 above, DRI may be underestimating the effect of the GHG policies on output at the sectoral level. The shift of employment from manufacturing to services, the growth of imports and the decline in the price competitiveness of U.S. products would all have depressing effects on U.S. wages, for the reasons discussed above.

The shift from manufacturing to services, especially retail trade, is illustrated in **Table 6**, which summarizes forecast changes in population and employment in the 10 census regions of the

U.S. in 2020, under the case 1 assumptions (grandfathered permits, 1990 emission limits). Manufacturing employment (shown in the last column) declines in 9 of 10 regions, rising only in the Pacific Northwest, where it is attracted by the availability of relatively cheap hydro-powered electricity. Retail trade experiences employment gains in 7 of the 9 regions that experience declining manufacturing employment. Mining, especially coal mining, declines sharply in all regions of the country, as noted above. Construction absorbs some of excess labor in regions that are forecast to enjoy stable or rising population levels because of GHG policies. Overall, employment declines in 6 of the regions (more than 1% in the East South Central and West South Central areas), and population declines in 3 of the 10 regions. Changes in energy costs, and the location of employment opportunities drive population shifts. In general, there is a substantial shift of jobs and population to the Pacific Northwest, with the other 7 regions not noted here experiencing small net gains or losses of jobs and employment in Case 1.

Regional and industrial shifts in production and employment will reinforce the tendency of GHG policies to increase income disparities in the U.S. The movement of labor out of high-wage sectors, such as manufacturing and mining, and into low wage sectors, such as retail trade, will tend to increase income inequality across the U.S., as the supply of good jobs for the bottom three-fourths of the labor force is reduced. Regionally, the Pacific Northwest, which already enjoys relatively high standards of living, will experience employment and population gains, while relatively low-income regions such as the East South Central will experience job and populations losses. These changes will tend to increase the disparity which exists in wages and income distributions among these regions, by increasing labor demands in the regions that gain and reducing labor demand in the regions that lose jobs and population.

Policy Implications and Areas for Future Research

To date, the discussion of GHG policies has paid inadequate attention to sectoral, regional and other adjustment policies needed to minimize the negative effects of GHG policies on the distribution of income. Previous research on GHG policies has focused almost exclusively on the identification of costs and benefits at the macroeconomic level of the economy. This analysis adds consideration of equity issues to the debate.

Optimal GHG Control Strategies

As noted above, policy makers are discussing a range of goals for the Kyoto-COP-III meetings and potential agreements. These range from stabilizing emissions in the Annex-I countries at 110% of 1990 levels by 2010 (IAT, 1997), or 2020, to reducing them by up to 20% as soon as 2005.[22] DRI/McGraw-Hill (1997) estimates that stabilizing or reducing emissions at 1990 levels will require an effective carbon permit price of $180 to $192/ton in 2010, and $270 to $281 per ton in 2020 (Table 1, above). Further emission reductions would require substantially higher carbon prices.

Nordhaus (1994, 93-96) has developed a simple simulation model of the costs and benefits of global climate change which identifies optimal emission control rates and the carbon taxes needed to achieve those levels of control (the carbon tax would have essentially the same effect as a carbon permit-fee on energy use and carbon emissions). His model suggests that very small and gradual controls are needed, with carbon taxes of only $5.29 per ton (in 1989 $), rising to $17.75 per ton in 2075.[23] He reviews a number of other, earlier studies which also reached similar conclusions. Fankhauser and Tol (1996) also review a number of recent estimates of the marginal damage of a ton of carbon emissions of $5 to $125 per ton of carbon, "with most estimates in the

lower end of this range." This literature suggests that the emission limits considered in IAT (1997) and DRI/McGraw-Hill (1997) may be too restrictive, in the sense that marginal costs would exceed marginal benefits at the given levels of carbon emission limits.

Measures to Offset the Effects of GHG Policies on Income Distribution

This report makes no assessment of the potential benefits of GHG policies, in terms of potential risks or damages that could be avoided, nor does it take a position on the advisability of adopting any further policies to restrict GHG emissions. However, we recommend that if such policies are implemented, two specific, additional measures are needed to limit their disruptive effects on the economy, and on the lives of American workers.

The first concerns the impact of GHG policies on globalization of trade and investment. If two different sets of standards or timetables for emission reductions are established for developed and developing counties, they will create incentives for firms to increase imports and move production and investment out of the U.S., in order to take advantage of lower energy prices and less restrictive emission limits in the developing countries. There are policies available which can reduce the trade and investment distorting effects of GHG policies.

In order to reduce or eliminate the negative effects of GHG policies on U.S. trade and investment, it could even be necessary to establish a border equalization tax policy. This tax would rebate the cost of emission limits on the energy content of exports, and assess an equivalent fee on products imported into the U.S. This kind of policy could eliminate the incentive to import goods and move plants abroad to escape U.S. emission limits. Other policies which could reduce the effects of GHG policies on trade and foreign investment include quotas on energy intensive imports, and safeguard measures to limit import surges. However, each of these measures could

conflict with our obligations under the GATT, increasing the difficulty of developing a comprehensive GHG policy package.

The second type of policy that would be needed is a set of measures that would provide substantial assistance to the workers and communities damaged by the creation of greenhouse gas policies. For workers, such a program should involve meaningful retraining opportunities, and several years of income support while involved in those activities. For particularly hard hit sectors and regions, special programs could be required to provide for early retirements, buyouts and to ensure continuation of health and pension benefits. For communities, there are many options including, but not limited to, industrial and R&D policy support.

Worker retraining policies, especially in the trade adjustment area, have established a poor track record, which may raise questions about the wisdom of incorporating such measures into a GHG policy or treaty package. These policies have failed for several reasons. They have historically been poorly funded, not providing sufficient resources for meaningful retraining nor the time and family income needed to sustain it. In addition, commitments have often been dishonored in the past, when funding for adjustment programs was terminated or drastically reduced after the policy had been implemented. For these reasons, a much larger and more dependable commitment of resources would be needed to compensate workers and communities for the costs of GHG policies.

Limitations and Areas for Future Research

Finally, we conclude by noting three areas of uncertainty. First, there is substantial uncertainty about the pace of global warming and the precise climactic impact of a given volume of CO_2 emissions. Second, this report analyzes the costs, but not the potential benefits of climate

change policy, including any possible economic benefits. Third, there are many unknowns about the costs of reducing emissions. The DRI model provides one way to estimate those costs. This model could overstate or understate the costs of reducing GHG emissions. If the energy efficiency of the economy grows more slowly than is expected in the base case, then greater reductions in energy use will be required to meet any given standard, which would dramatically increase the costs of compliance. On the other hand, in the past such modeling exercises have produced estimates that have proved, in retrospect, to significantly overestimate the costs of new pollution controls. However, even if the models discussed in this report overestimate the costs of GHG policies by 50% or more, the actual costs would still be large and significant.

In addition to these general areas of uncertainty, this report has raised a number of specific concerns that require future research. These include the effect of GHG policies on foreign trade and investment, including sectoral details and relationships between the major accounts (merchandise, services, current and capital accounts); and if permits are traded internationally, or joint implementation is allowed (neither of these alternatives was considered in this report), the implications for trade and exchange rates in a general equilibrium context. Another major area of concern is the system for implementing permits, how they will be created and traded, the nature of the property rights involved, and the wealth effects of grandfathering or other forms of distribution to the private sector. There is a related set of issues concerning the distribution of income between labor and capital, and the future rate of return on capital, that GHG policies will also intersect with. Finally, further disclosure, review and debate is needed about the technical assumptions of the models used to analyze GHG policies. This review should include the relevant price and/or substitution elasticities and the potential (and cost) of increasing the energy-efficiency

of the domestic economy without GHG policies. Differences in base case level of energy use, during the forecast period, can have a very large impact on the cost of limiting carbon emissions and this issue has not been adequately addressed in the literature.

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Endnotes

1. This section is based on, and the quotes are drawn from Bernstein, Montgomery and Rutherford (1997)

2. Nordhaus (1994), which estimates optimal GHG policies from an explicitly defined welfare model is a notable exception. Other examples include Boyd, Krutilla and Viscusi (1995) and Madisson (1995).

3. See, for example, Hoeller, Dean and Nicolaisen (1991) and Repetto and Austin (1997).

4. See, for example, comments on the IAT draft report in letters released to the House Subcommittee on Energy and Power, as an appendix to Yellen (1997):
Dale Jorgenson and William D. Nordhaus (April 24, 1997) "This model is ... highly inappropriate...extremely sensitive to assumptions about energy prices."The letter also criticized the "use of fixed-coefficient, input-output model." and Raymond J. Kopp (May 15, 1997) stated that the DRI model is "...useful only for the analysis of short-term adjustments, and even here, one should proceed with caution..." because the model is "driven from fixed coefficient input-output tables that can give very distorted views of the adjustment behavior of the economy."

5. The IAT report utilized three models. In addition to the DRI model discussed here, the IAT also developed forecasts for a similar set of policy scenarios using the Markal-Macro and Second Generation Models (SGM). These are simulation-type models that calculate equilibrium output levels, given constraints (such as available energy resources) and a set of initial conditions and assumptions about the structure of the economy. The Markal-Macro and SGM models are not designed to estimate adjustment costs or economic disequilibria that will result from policy changes. Hence the DRI model is better suited to the analysis of displacement issues, while the general class of simulation models are more appropriate for estimating long-run consequences. Note, however, that the IAT was criticized by reviewers for: 1) failing to utilize a full computable general equilibrium model, rather than the Markal-Macro or SGM; and 2) because neither of those models included a well developed foreign trade sector. See comments by Nordhaus and Jorgenson (previously cited), Ray Kopp, John Weyant and Richard Richels, in letters released to the House Subcommittee on Energy and Power, as an appendix to Yellen (1997).

6. See Wiley, T.M.L., R. Richels and J.A. Edmonds 1996.

7. Note that IAT (1997, Table 1) reports that total carbon emissions in 1990 were 1338 MMT, 1.1% more than is reported for 1990 consumption levels in DRI/McGraw-Hill (1997).

8. These target reduction levels are 5% to 8% larger than those required in IAT (1997). The difference is explained by the combination in the IAT report of more rapid declines in the energy intensity of the economy (1.25 percent per year vs. 1.0 percent per year), and the slightly higher baseline level of carbon emissions. The efficiency assumption is the most important difference, by far, between the two baseline cases.

9. A fourth case and a new base case are also analyzed in DRI/McGraw-Hill (1997). These cases assume that the energy intensity of the domestic economy in the "heroic base case" improves at 1.75% per year. This corresponds to a similar scenario in the IAT report. Results parallel those of the cases discussed below. The scenario in case 4 is otherwise identical to case 1 (grand fathered permits). Case 4 and its comparable base case are not analyzed here because the "heroic base case" scenario is highly unlikely to occur.

10. Comments on the IAT draft report released to the House Subcommittee on Energy and Power, as an appendix to Yellen (1997) in letter from Richard Richels, May 30, 1997. See also letter from Larry Goulder, June 2, 1997, "The report seems consistently to employ assumptions and policy scenarios that contribute to low costs of emissions reductions."

11. This view is also supported by Ray Kopp, in a letter of May 30, 1997, who noted that "All of the departures from AEO97 used in the draft report serve to decreased carbon emissions [in the base case] and therefore make attainment of a 1990 stabilization less costly." (Letter released to the House Subcommittee on Energy and Power, as an appendix to Yellen, 1997).

12. Figure 4 is derived from two of the scenarios shown in Figure 16 (p. 28) of the IAT draft report.

13. If public investment were to be increased using GHG revenues, then output, consumption and other segments of the economy could achieve higher levels in the long run than in the cases considered here. However, increases in public investment would appear less likely to obtain than general or targeted tax cuts, in the present political environment in the U.S.

14. Bovenberg and de Mooij (1994) have shown that, in theory, revenue raising environmental taxes can lower economic output because they "exacerbate, rather than alleviate, preexisting tax distortions." Goulder (1995) develops a general equilibrium model which shows that the problem with the carbon tax is its "focus on intermediate inputs and its relatively narrow base in comparison with income taxes." In principle, raising the cost or limiting the supply of energy inputs will change the shape and position of the production possibility frontier, generally reducing the amount of output that can be generated with any given set of other inputs.

15. For example, comparing Case 1 and the Base Case, the increase in investment is about 90% as large as the increase in total national savings.

16. Mishel, Bernstein, and Schmitt (1997, 195) estimate that trade could be responsible for more than 30% of the increase in income inequality in the U.S. between 1979 and 1989.

17. The effects on real wages are estimated by dividing the employment cost index by the consumer price index series in DRI-McGraw-Hill (1997, 20 and exhibit 15). The base case value for this series is then contrasted with each of the forecasts to determine the change in the real value of compensation. Note that DRI-McGraw Hill draws a sharp contrast between changes in the nominal wage series for case 3 (permit auctions) which decline sharply, and the other policy cases, where nominal wages increase because of increases in corporate revenues and hence the

ability to pay. However, the variation in these results is eliminated when real wage series (and the corresponding differences of consumer prices in each case) are considered.

18. This increase in before-tax corporate profits appears to primarily reflects an increase in the implicit rate of return on capital. The cumulative increase in fixed nonresidential capital between 2000 and 2020 in the three cases analyzed here is between $1.0 and $1.4 trillion, roughly equivalent to the increase in annual corporate profits by 2020. Therefore most of the increase in profits would appear to reflect higher returns on existing capital stock. This implicit forecast of increased returns is unrealistic, unless the world-wide corporate rate return on invested capital rises sharply because of GHG policies. However, an alternative view might treat the incremental profits as the returns on the imputed capital value of carbon emission permits. This view suggests that grandfathering of permits will not only transfer revenues to permit holders, but also new assets with a significant capital value. The implicit rate of return of capital, and wealth transfers associated with the permits, are important issues for future research.

19.Note that the DRI/McGraw-Hill (1997) forecasts for the three scenarios contain puzzling and potentially contradictory results. The Merchandise trade balance worsens by less than $100 billion in each case, although the calculated trade balances (including services) decline much more sharply, as indicated in the text. It is unlikely that services trade can or will account for these differences. In addition, the current account balance *improves* by $87 to $175 billion in the three GHG scenarios, presumably because of the increase in national savings. However, improvements of this magnitude in the current account are unlikely unless they are mirrored in changes in the trade balances, which dominate current account transactions.

20. Exchange rates are essentially unchanged in the DRI/McGraw-Hill (1997) forecasts, so changes in nominal wages and prices directly effect competitiveness. The rigidity of exchange rates in these forecasts is a potential source of error.

21. There is a greater percentage drop in employment in rubber and plastic footwear under GHG policies, as shown in Table 4. However, output in this industry was less than $1 billion in 1995, as compared with coal industry output of over $28 billion in that year.

22. Association of Small Island States, 1995, "Draft Protocol Submitted to the United Nations Framework Convention on Climate Change," as referenced in Repetto and Austin (1997, 1).

23. Nordhaus and Yang (1996) develop a regional bargaining model which generates slightly higher optimal permit prices of roughly $30 per ton of carbon in 2090, versus $21 in the DICE model developed in Nordhaus (1994).

bc-Independent-Petroleum 10-22

Oil and Natural Gas Producers Respond to Clinton Global Warming Solutions

To: National Desk, Environment Writer

Contact: Kate Hutcheons or Jeff Eshelman, 202-857-4722, or jeshelman(at)ipaa.org, both of the Independent Petroleum Association of America

WASHINGTON, Oct. 22 /U.S. Newswire/ -- Today President Clinton unveiled a plan to cut greenhouse gas emissions as a so-called ``solution'' to stop the theory of global warming. The Independent Petroleum Association of America, which represents the nation's 5,000 crude oil and natural gas producers, responded with the following statement. IPAA Chairman-Elect George Yates, president of Harvey E. Yates Company, Roswell, N.M., said:

``America's crude oil and natural gas producers are extremely concerned that President Clinton is offering high-cost, economically risky solutions to a problem that has not been proven to exist.

``The president should be listening to the legions of independent scientists and other knowledgeable voices whose expertise is in the field of climatology and meteorology. In offering these so-called 'solutions,' the president has catered to international pressure and emotion-based politics, and he has ignored science.

``Are we in denial that global warming could exist? Absolutely not. But it still has not been demonstrated that man is turning up the heat.

``Quite simply, the jury is still out. And it is the president's responsibility to study this issue exhaustively before sacrificing thousands of jobs and spending billions in taxpayer dollars. I'm afraid the Clinton administration hasn't done that important job.''

IPAA member companies drill 85 percent of the nation's crude oil and natural gas wells. Yates will be speaking before the American Society on Competitiveness in Tulsa, Okla., tomorrow on global warming and other issues.

Editors: Some computer systems do not recognize the ``at'' sign. It is an important component of e-mail addresses and should be used in place of the symbol (At) in the contact information above.

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BC ENVIRONMENT CLIMATE-TALKS 1STLD
FOCUS-US stance on climate awaited at Bonn meeting
(Recasts, adds comments from U.N. delegates)
By Terence Gallagher

BONN, Oct 22 (Reuters) - U.S. President Bill Clinton's announcement later on Wednesday of proposals to address global warming may prove disappointingly cautious, but would not derail international negotiations on the issue, delegates to a U.N. convention on the climate said on Wednesday.

The delegates, while reluctant to respond to a plan that has not yet been officially unveiled, said all proposals, including those from Washington, were part of a complex negotiating endgame that, with luck, would produce a compromise in Kyoto, Japan, in December.

That is where industrialised countries hope to reach an agreement on how much to restrict their output of carbon dioxide and other gases seen as a responsible for a gradual rise in the earth's temperature that could have catastrophic consequences for the environment and the global economy.

The U.S. position, which Clinton is expected to unveil in a speech in Washington starting at 1840 GMT, is the last among major industrialised nations to be presented.

Industry sources say it sets the least ambitious targets, aiming to roll back emissions of greenhouse gases only to 1990 levels by the year 2010.

The 15-nation European Union, which has proposed a 15 percent cut from 1990 levels, has already sharply criticised a Japanese plan calling for five percent cuts.

If the U.S. offers less, the EU will have to condemn it, but it cannot afford to do so too strongly if it wants the Kyoto conference to succeed.

Raul Estrada Oyuela, chairman of the current working session in Bonn which runs until October 31, declined to comment on the reported U.S. stance, saying: ``We need to know what the proposal really is.''

The delegates, grappling with piles of conflicting proposals, face a difficult task in coming up with a single document all can agree on.

Small island nations, who say their existence is threatened by a rise in the sea level caused by melting polar ice caps, say even the EU proposal does not go far enough.

Energy producing nations including Australia and the Organisation of Petroleum Exporting Countries are opposed to further cuts.

U.S. industry has launched a major advertising campaign saying the planned reductions will cost more than the damage they seek to prevent.

In setting low goals, Clinton may be pragmatically showing he is reluctant to set targets that cannot be met. The final agreement may not resemble any single proposal now on the table, delegates said.

``Japan has put forward a plan we think is reasonable, and we hope it becomes a focal point for everyone to gather around,'' said Toshiaki Tanabe, the chief negotiator from Tokyo.

``If we propose goals we cannot attain, this will be nothing more than a beauty contest,'' Tanabe said.

German Foreign Minister Klaus Kinkel, on a visit to Tokyo, threatened to reject the Kyoto agreement if it is too weak, and criticised the Japanese proposal as inadequate.

``We cannot accept an insufficient outcome,'' Kinkel said. ``The Kyoto conference must be made a success.''

The environmentalist group Greenpeace urged Clinton to abandon his ``dinosaur policies'' and agree to significant reductions in greenhouse gases.

Greenpeace erected a six-metre (20-foot) -high sculpture of a dinosaur assembled from old car parts, oil barrels and scrap metal outside the Bonn meeting.

``The dinosaurs died out because of climate change and they couldn't adapt. Japan and the U.S. are running dinosaur policies. They are not adapted to the realities of the modern world, particularly the threat of climate change,'' said Greenpeace climate policy director Bill Hare.

Environmentalists are already concerned the industrialised nations will not meet the goals they set at the 1992 Earth Summit in Rio de Janeiro, where they agreed to cut emissions of greenhouse gases to 1990 levels by 2000.
REUTERS

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bc-greenpeace-climate 10-22

Greenpeace Calls Clinton Proposal Black Wednesday for Climate Talks

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all of Greenpeace

WASHINGTON, Oct. 22 /U.S. Newswire/ -- The following was released today by Greenpeace:

Today the Clinton/Gore administration announced its official negotiating position as part of the United Nations Framework Convention on Climate Change. The position calls for a stabilization of carbon dioxide emissions at 1990 levels during a budget period from 2008-2012.

``This is the black Wednesday for the climate negotiations,'' said Kalee Kreider, director of the Greenpeace USA Climate Campaign. ``President Clinton has broken the promise he made at the Second Earth Summit where he called for 'a strong American commitment to realistic and binding limits that will significantly reduce our emissions of greenhouse gases.' To respond with such complacency to climate change is to ignore the threat to human health and the environment.''

Industry groups have funded a $13 million advertising campaign in the United States designed to derail any agreement at Kyoto, and the oil and gas industry alone has funneled more than $50 million into the coffers of both U.S. political parties.

The U.S. position is far behind the European Union proposal which calls for a 15 percent reduction in CO2 emissions by 2010 with an interim 7.5 percent reduction by 2005, all based upon1990 levels. Greenpeace, along with the Alliance of Small Island States, supports a 20 percent reduction in CO2 emissions by 2005 based upon 1990 levels -- a position that is just within nature's safety limits.

``If the U.S. position as reported were adopted at Kyoto, then we would consider the agreement a failure,'' continued Kreider.

Clinton also announced that the United States would support a set of tax breaks and financial incentives to promote renewable technologies and energy efficiency into the marketplace. The administration will not, however, remove large corporate subsidies to the coal, oil and gas companies, the industries most responsible for climate change. Approximately 98 percent of U.S. emissions of carbon dioxide come from the burning of oil (40 percent), coal (35 percent) and gas (22 percent).

``Five years ago at the Rio Summitt, Al Gore and Bill Clinton accused the Bush White House of being the 'lone holdout' and an 'obstacle to progress' after it refused to support mandatory (as opposed to the non-mandatory agreement ultimately signed) curbs on greenhouse gases. Now it is Al Gore and Bill Clinton who are the obstacles,'' concluded Kreider.

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Economic Scene

Peter Passell

What Price Cleaner Air?

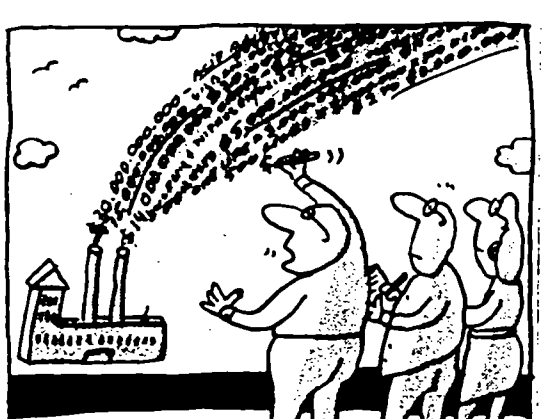
LIKE purer hearts or thinner thighs, cleaner air is an unalloyed virtue. But like other virtues, cleaner air can only be attained through sacrifice. And according to Paul R. Portney, an environmental economist at Resources for the Future in Washington, Americans may be on the verge of giving up too much for too little: They are not likely to get their money's worth from the sweeping amendments to the Clean Air Act now being cobbled together by Congress.

According to Mr. Portney's startling analysis, to be published in the next issue of the American Economic Association's Journal of Economic Perspectives, the amendments will double the current $30 billion cost of the air quality regulation. But the benefits will probably be worth just $14 billion, Mr. Portney concluded. His analysis is all the more depressing because the legislation is the first to draw on the expertise of efficiency-minded economists.

• • •

The first of the three big-ticket items in the clean air package would require coal- and oil-fired power plants to slash emissions of sulfur and nitrogen oxides. The likely bill for antipollution equipment and more expensive fuel: about $4 billion annually. But the benefits should exceed the costs. Mr. Portney reckons that the value in better health and reduced damage to forests, lakes and farms will run about $5 billion.

Thereafter, however, the economics of the clean air amendments is all downhill. Tougher regulation of urban polluters will cost $19 billion to $22 billion annually. But the benefits, everything from reduced incidence of asthma to increased crop yields downwind, will probably fall in the $4 billion to $12 billion range, Mr. Portney says.



Nicolae Asciu

The third expensive item, reductions in emissions of 190 cancer-causing industrial chemicals, Mr. Portney estimates, will probably run $6 billion to $10 billion annually. But by Government analysis, the risks from these toxic effluents is much smaller than commonly supposed; lives saved will probably not exceed 500 annually. Valuing these lives at $3 million each, the total benefits will fall short of $2 billion.

These estimates, Mr. Portney readily acknowledges, are educated guesses. But the guesses, from a variety of sources ranging from the Congressional Office of Technology Assessment to studies commissioned by the Environmental Protection Agency, do apparently represent the state of the scientific art.

Some environmental advocates — perhaps a majority — deny the relevance of such analysis. Cleaner is better, they insist, no matter what the green-eyeshade types say. But for economists (and those who think like economists), comparisons of costs and benefits must matter in a world of limited resources. An extra billion spent sanitizing the air around oil refineries is a billion less to spend on, say, safer tankers or tastier tomatoes. And if regulation itself breeds inefficiency — if less money spent elsewhere could accomplish the same task — the approach is even more problematic.

That raises a troubling question. Never have so many smart, free-market-oriented economists been so involved in drafting new environmental rules. If resulting legislation is such a bad deal, why are they now silent?

One reason is that the free-market enthusiasts within the clean air lobby did win one big victory: Utilities will be allowed to buy and sell rights to pollute, insuring that the polluters who can cut emissions most cheaply will do the cutting.

This will reduce the acid rain cleanup cost by $2 billion to $3 billion annually, Mr. Portney says. Moreover, "emissions trading" on acid rain could serve as the precedent for a least-cost solution for the big kahuna of environmental problems, containment of the "greenhouse effect" gases that cause atmospheric warming. But the price of this victory was acquiescence on air toxics regulation, which many environmental economists privately concede will be about as cost-effective as the Pentagon's $600 toilet seats.

• • •

The other bargain for silence cannot be rationalized so high-mindedly. President Bush's economic advisers have long been unhappy with the urban air quality amendments as well as the air toxics provisions; the former, it is argued, would effectively force the whole country to use expensive emission controls that make sense only for the dozen most heavily polluted cities.

But the self-proclaimed environmental President seems readier to settle for a wasteful bill than to share the blame for a legislative deadlock. And the pinchpennies in the budget office, who might have been expected to stiffen Mr. Bush's spine, seem unconcerned because Washington won't foot the bill. Consumers will.

Chrysler Begins Making New Mini-Vans

By DORON P. LEVIN

pany in the next two to three years," said Charles Brady, automotive analyst for Oppenheimer & Company.

not exotic enough. You don't mess with success," Lee A. Iacocca, Chrysler's chairman and chief executive,

To Our Readers

Because a service that provides The Associated Press with market data remained without power yesterday after a

CHARLTON RESEARCH COMPANY

PUBLIC OPINION ON GLOBAL CLIMATE ISSUES

Tracking Public Opinion and Attitudes — **May 1997**

Charlton Research has been examining public perception on environmental issues including global climate change for the past decade. Charlton Research recently conducted a nationwide public opinion study regarding global climate issues to gauge attitudes among the general public on the current debate on global climate change. This survey was sponsored by the Small Business Survival Committee.

EXECUTIVE SUMMARY

- Knowledge of US global climate policy is low. Further, the public does not feel represented on global climate issues.
- Americans believe that global climate change is a international issue that needs to be addressed by all nations, including developing countries.
- The public does not feel the United States should pay for other countries to obtain new technologies so they can limit their emissions of carbon dioxide.
- By two to one, repondents oppose the Clinton-Gore proposal that would require the United States to pay a fee to other countries if it uses more energy that its quota would allow.
- People feel global climate policy also needs to reflect economic considerations.
  - Policy must be market-based, cost-effective and comprehensive.
  - It should not be limited to selected countries or one economic sector.
  - It must not hinder economic and job growth.
- Americans oppose energy-use quotas and international permits.
- The public favors voluntary energy reductions, such as driving motor vehicles less often, and voluntary reduction of home heating and air conditioning.
- People oppose increasing gasoline and energy prices for individuals to reduce energy use.

A Majority of Americans Do Not Feel Represented on Global Climate Policy

Although there has been extensive media coverage of global climate issues, public knowledge of US global climate policy is low. Only four percent of respondents said they were familiar with US global climate policy. Respondents do not feel they are being adequately represented on this issue. In fact, seven-out-of-ten respondents feel government officials are making decisions that will affect them without regard to public opinion on global climate issues. (See Figure 1)

Furthermore, the public does not want government to take immediate steps to reduce global warming concerns. Instead, nearly three-fourths of respondents said the government should continue voluntary programs, continue research and avoid any treaty commitments that would lock the United States in to long-term costly programs if environmental benefits are not assured and costs would be high. (See Figure 2)

Global Climate Issues Need to be Addressed Internationally

The environment is an international issue for the American public, and Americans feel strongly that it should be addressed by all nations. Respondents do not feel that the United States and Europe should be the only nations to limit energy use. Instead, all nations, including developing countries such as China, India and Mexico, need to address global warming concerns. (Figure 3)

Further, the public strongly opposes United States taxpayers bearing the financial burden for developing nations to obtain new technologies so they can limit their emissions of carbon dioxide.

Americans Do Not Feel Represented on Global Climate Policy

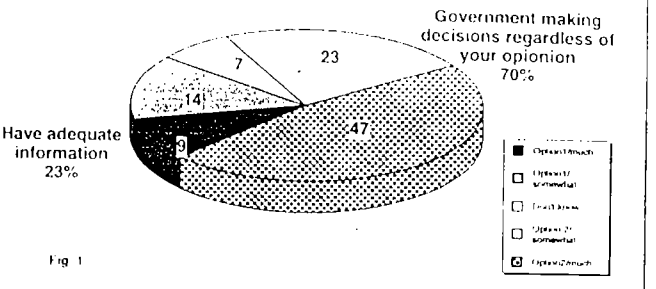


Fig. 1

Government Should Avoid Long-Term Global Climate Policy Programs

Which one of the following policy options would you select:

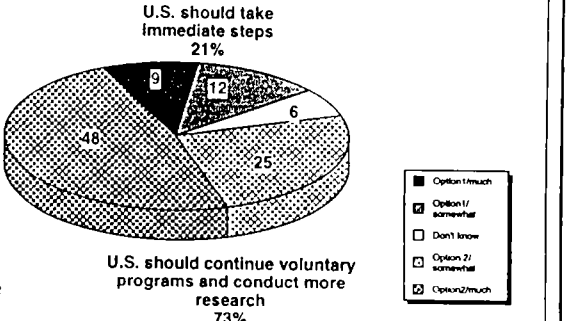


Fig. 2

Global Warming Conerns Need To Be Addressed By All Countries

Global warming concerns need to be addressed on a global scale by all countries including China, India and Mexico and not just by a select few countries such as the US and Europe.

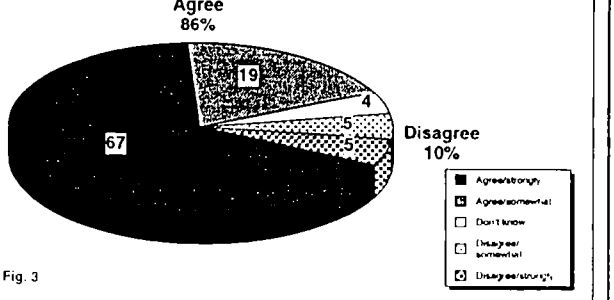


Fig. 3

Global Climate Policy Must Not Hinder US Economic Growth

Global [illegible] must have their foundations in sound economic policy and must not hinder economic growth. Three fourths of respondents favor global climate policies that are market-based and cost effective. In addition, three fifths oppose the Administration's international permit proposal. (See Figures 4 and 5)

Public Opposes A System of International Permits For Energy Use

Two-thirds of opposed a proposed a system of international permits under which countries would be given an energy use quota

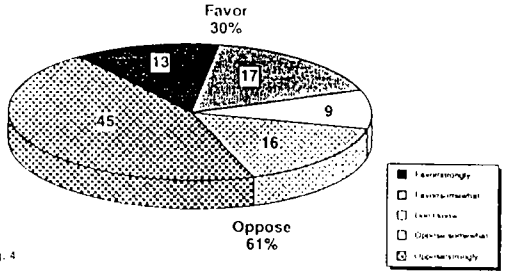


Fig. 4

Policies Should Be Market-Based And Cost-Effective

Policies developed to address global warming concerns should be market-based and cost effective.

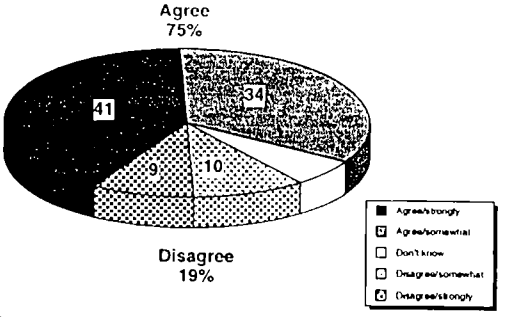


Fig. 5

Americans Oppose Increased Gasoline Prices and Mandatory Energy Restrictions

Respondents were asked a series of trade-off questions on potential methods to reduce energy use. In every situation, Americans opposed paying more for gasoline and other energy needs. For example, 53% of respondents favor giving up the use of motor vehicles one or two days every week versus only 29% of respondents who favor the government increasing the price of gasoline by 50 cents per gallon. Respondents were also more willing to reduce home heating and air conditioning by regulating their thermostats rather than paying 50% more to heat and cool their homes.

Respondents were also read a list of energy saving measures that could be used to reduce energy consumption and address global warming. Eighty-eight percent of respondents were not at all willing to allow the government to limit the size home they could buy. Eighty-two percent of respondents were also not at all willing to pay 75 cents more per gallon of gasoline, and 68% opposed a 50 cent per gallon of gas increase. (See Figure 6)

Individuals Unwilling To Make Financial And Lifestyle Sacrifices

Now I am going to read you a list of things that you could personally do to address the issues of global warming. Please tell me on a scale of one to ten with one meaning "not at all willing" and ten meaning "extremely willing" how willing you would be to ...

	Not at all willing %	Moderately willing %	Extremely willing %	Don't know %
Let the government limit the size home you buy	88	6	4	2
Pay 75 cents more per gallon of gasoline	82	10	8	*
Pay 50 cents more per gallon of gasoline	68	18	13	1
Agree to a rationing plan-- reducing vehicle use to 1-2 days a week	57	23	18	2
Index home mortgages so that people who live close to work will pay less interest	56	20	21	3
Commit your family to use vehicle less and public transportation, walking, and biking more	51	26	20	3
Restrict drivers' licenses to people over 21 and under 80	45	20	32	3

Fig. 6

METHODOLOGY

A national telephone survey was conducted from May 17 - 23, 1997 among 800 adults 18 years and older. The margin of error for a sample of this size is ±3.5%. The sample was proportionate to the country's demographics, including geography, gender and ethnicity.

Charlton Research Company is a research and consulting firm which has been developing campaign and communications strategies for business and political clients since 1983. The company specializes in analyzing changes in today's socio-political and economic environments. By combining research findings with public policy issues and political insights, we provide clients with timely, cost-effective, intelligence and advice.

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Web http://www.eic.org

FOR IMMEDIATE RELEASE
Sept. 9, 1997

Contact: George Abar, Peter Kelley
202-887-8800

Public Alerted to Industry Misinformation Campaign That Denies Need for Action on Global Warming

Corporations Behind Campaign Revealed as Major Polluters

WASHINGTON, Sept. 9—A coalition of some of the world's largest corporations today announced a multimillion-dollar ad campaign meant to stop the Clinton Administration from negotiating a treaty to reduce greenhouse gas emissions and slow global warming.

Including leading oil, coal and automobile producers, the group calls itself the "Global Climate Information Project." But from documents already released, the Project's intent is clear: to spread *mis*information. It will spend $13 million this fall (according to the *Financial Times*) on TV, radio, and print ads to confuse the public about climate change, diverting attention from their industries' contribution to the problem in the same way that tobacco companies tried to deny evidence that smoking causes health problems.

"It's dirty money. Their only intention is to mislead," said Philip E. Clapp, President of Environmental Information Center. "They don't have the science on their side—2,600 scientists worldwide have signed a statement warning that human-induced global warming is underway. They don't have the economics on their side—2,500 economists have signed a statement that we can grow our way out of this problem, and that the energy savings will even help our economy. These are the polluters, and all they have is $13 million in dirty money to spend on a misinformation campaign. It's not an Information Project, it's a Propaganda Project."

Despite the overwhelming scientific consensus that human-induced climate change is underway (see the Science Tuesday section of today's *New York Times*, for example), these corporations and their trade associations can be expected to continue their aggressive public relations and lobbying effort to convince the public and policymakers that we can pollute without consequence, and that action will cost more than inaction.

On the science: The Global Climate Information Project on its internet home page recycles "scientific" arguments that have been soundly refuted. An example is the "Leipzig Declaration," which corporations claim is a statement from "scientists" warning that "there is still no scientific consensus on the subject of climate change." This PR stunt was debunked over a year ago, when investigative reporting revealed that many of the signers are not what the public would consider experts in climate science. Some of the signers have no professional scientific credentials, let alone expertise in climate science. The declaration was instigated by Fred Singer, whose work has been funded by Exxon, Shell, and ARCO, to name a few. (See *St. Petersburg Times*, July 29, 1996)

(MORE)

Consider the source: The Global Climate Information Project is comprised of some of the most notorious polluters in America. Hiding behind their trade associations are companies that have polluted our land, rivers, lakes, oceans and air for years. Following is a Lineup of some of the companies associated with this ad campaign. It outlines only a very few of their environmental problems, from multimillion dollar fines for polluting our water to responsibility for the release of known cancer-causing chemicals. As the Lineup shows, it is likely that whatever these companies and their lobbyists spend to stop the climate treaty, it will be dwarfed by what they spend in civil, criminal, and administrative fines and other costs related to massively polluting our environment.

THE LINEUP

Leading corporations behind multimillion-dollar misinformation campaign

ARCO: Agreed to pay $363,000 in civil penalties and an annual fine of $63,000 until remediation begins at a site in Pennsylvania. (As of SEC, Form 10-k, 12/31/96)

Chevron: Fined $8 million in 1992 for violating the Clean Water Act. (Press reports from 8/30/96) In 1988, the company was ordered to conduct an $86 million cleanup after it allowed some 252 million gallons of fuel to leak into ground water below its El Segundo refinery. (MultiNational Monitor, 9/9/97)

Chrysler: Facing possible civil penalties potentially higher than $100,000 from the Indiana Department of Environmental Management for improper disposal of waste. At the same time, the company was potentially responsible for at least 107 Superfund sites. (As of SEC, Form 10-K. 12/31/96)

Conrail: Sentenced to pay a fine of $2.75 million by the EPA in October 1996. Conrail pleaded guilty in the criminal case to charges of discharging oil and grease into a Massachusetts river. (As of EPA release, 2/25/97) In a separate case in Pennsylvania, Conrail has agreed to comply with an EPA Administrative Order to extend public water to some 700 - 1000 homes and businesses near a contaminated site—Conrail notes the site is only "allegedly" contaminated. (As of SEC. Form 10-K, 12/31/96)

Dow Chemical: Facing proposed civil fines of $125,000 for violations of the Clean Water Act in Michigan. The company paid a $100,000 civil penalty in a case brought by the Michigan Attorney General for discharge of phosphorus and other chemicals into a Michigan river. (As of SEC, Form 10-K, 12/31/96)

Mobil: Agreed this year to pay a $125,000 penalty for violating standards for the release of harmful smoke, dust, ash and other material, which can lead to heart and lung diseases. (As of EPA release, 3/11/97)

Shell: The U.S. Department of Justice announced in June of 1997 a proposed agreement that would require the company to pay a $678,000 civil penalty. DOJ alleges that Shell failed to control benzene emissions. The chemical has been linked to various blood and bone marrow diseases and leukemia. (As of EPA release, 6/27/97)

Texaco: A suit by the Justice Department seeks civil penalties of $4.2 million in connection with oil spills along a Texaco company pipeline in Kansas. EPA is seeking $3.8 million in civil penalties for alleged notification and reporting violations involving hazardous waste (PCBs) at a Texas facility. Also pending are EPA charges that on 12 occasions, a Texaco company violated the Clean Water Act by allowing oil to leak into surface water. (As of SEC, Form 10-K, 12/31/96)

###

All 50 States Lose Jobs by 2005

State	Jobs Lost	State	Jobs Lost
Alabama	49,410	Montana	5,310
Alaska	3,460	Nebraska	4,630
Arizona	33,800	Nevada	1,190
Arkansas	11,490	New Hampshire	5,860
California	154,750	New Jersey	47,850
Colorado	16,730	New Mexico	4,140
Connecticut	10,320	New York	101,100
Delaware	4,990	North Carolina	47,560
District of Columbia	4,840	North Dakota	1,110
Florida	74,030	Ohio	86,140
Georgia	60,990	Oklahoma	7,150
Hawaii	2,610	Oregon	21,390
Idaho	6,540	Pennsylvania	72,060
Illinois	68,710	Rhode Island	3,640
Indiana	37,380	South Carolina	27,210
Iowa	11,480	South Dakota	1,530
Kansas	10,850	Tennessee	57,620
Kentucky	27,920	Texas	125,410
Louisiana	19,620	Utah	9,470
Maine	3,410	Vermont	2,250
Maryland	37,040	Virginia	48,120
Massachusetts	22,360	Washington	23,320
Michigan	55,990	West Virginia	17,070
Minnesota	18,130	Wisconsin	26,830
Mississippi	15,630	Wyoming	5,040
Missouri	22,730	**TOTAL**	**1,548,920**

"The Impact of Carbon Mitigation Strategies on Energy Markets, The National Economy, Industry, and Regional Economies"
Prepared by Data Resources, Inc.
September 17, 1997

Overview

In response to international efforts to address global climate change, the Clinton Administration has proposed adoption of legally binding targets and timetables for reducing manmade emissions of carbon dioxide to 1990 levels or lower. As the energy sector accounts for the majority of these emissions, any proposals to reduce carbon emissions would disproportionately affect the energy sector.

For this reason, The Labor Management Positive Change Process Fund (LMPCP), a cooperative program between the United Mine Workers of America - BCOA, commissioned a study to determine the effect emission mitigation strategies would have on energy markets, the national economy, industry, and regional economies. In order to ensure objectivity, the LMPCP commissioned Data Resources Inc., the same respected research firm employed by the Federal Government, to conduct the study.

Unfortunately, for the American worker the study confirmed our worst fears. Without a requirement in place that would commit developing nations like China and Mexico to similar emission reduction policies as developed nations, the entire U.S. economy would be placed at risk with little or no environmental benefit.

If the current proposal is enacted, use and transportation of coal would be greatly reduced if not eliminated, gasoline prices would skyrocket, millions of jobs would be lost and hundreds of thousands more sent overseas, and the increased cost of electricity would be felt in the production of almost every consumer good.

Specific study results are summarized below.

- Energy industries would be devastated, with coal mining by far the hardest hit of all the industries followed by electric utilities, natural gas, gas utilities, petroleum refining, and crude petroleum.

- If emissions are stabilized at 1990 levels by 2010:

  - nearly one out of every two coal miners will lose their jobs.
  - 1.7 million more American jobs will be eliminated.

- If emissions are stabilized by 2010, by 2020 gasoline prices would rise 43%, fuel oil prices by 119%, and electricity prices by 94%.

- Among others, this would hit low-income workers, senior citizens, retirees and those who live on fixed incomes particularly hard.

- If emissions are stabilized at 1990 levels by 2010, every region of the country suffers heavy employment losses. The sharpest employment decline occurs in the East South Central region (220,000 jobs) followed by the West South Central region (270,000 jobs). The largest absolute employment losses occur in the South Atlantic region where 430,000 jobs will be lost.

- Every sector of the economy — with the exception of the federal government — will suffer job losses. Energy industries are particularly hard hit, but other sectors also suffer — 110,000 jobs lost by 2005 in the transportation and public utility sector, 199,000 jobs lost in the manufacturing sector, 426,000 jobs lost in the services sector, and 182,000 jobs lost in state and local governments.

Economic Policy Institute Analysis of the Economic Effects of Climate Change Policies on U.S. Workers
September 1997

The Economic Policy Institute (EPI), a Washington, D.C.-based economic think tank with an impressive track record of analysis in wage and employment forecasts, was asked to review the DRI study with special attention to employment impacts.

EPI's analysis supports the DRI results. It also highlights additional negative impacts, including further wage erosion among American workers and significant increases in the American trade deficit if the treaty is signed as proposed. Specific EPI analysis results are summarized below.

- Wages Decline:

  GHG policies could cut wage growth in half over the next two decades. Real wages decline in all three scenarios between 2000 and 2005, and by 2020 they are only 3% to 4% higher than they were in 1995 (versus a 9% increase in the base case). With such low rates of wage growth, the continued increase in inequality will lead to falling wages for most workers, and will exacerbate the widening income inequality in America.

- Good Jobs Lost:

  In the short run, overall employment growth will decrease by 1.5 to 2.6 million jobs in 2006.

  In the long run, 400,000 to 500,000 high paying job opportunities in mining, transportation, and public utilities and 180,000 to 340,000 high-wage manufacturing jobs would be eliminated in 2020.

- Trade Deficit Widens

  The GHG policies would increase the trade deficit by up to $240 billion. Deficit increases of this size would have huge impacts on traded goods, especially manufacturing-sector products.

- Energy Prices Skyrocket:

  Emission policies will sharply increase energy prices in the U.S. In the first DRI scenario:

  - By 2010, gasoline prices will rise to $1.73 per gallon, 33% more than it will cost with no treaty;

- By 2020, the price per gallon will jump to $2.06 per gallon or 43% more than it will cost with no treaty;

- Natural Gas prices will increase 129% in 2010 and jump 157% by 2020;

- Coal prices will rise 482% in 2010 and jump a staggering 761% by 2020;

- Electricity prices will increase 66% in 2010 and 94% in 2020.

Energy prices increase even more sharply in an alternative scenario which assumes more restrictive limits on emissions.

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2013-0306-F
jm1348

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Biography of
CECIL E. ROBERTS, JR.

Cecil Edward Roberts, Jr., a sixth-generation coal miner and one of the labor movement's most stirring orators, became president of the United Mine Workers of America on October 22, 1995, having served as vice president of the union since December 1982. Roberts succeeds Richard L. Trumka, who was elected secretary-treasurer of the AFL-CIO.

In 1984, Roberts served on the UMWA negotiating team that won the first national coal industry agreement in 20 years without a strike. Again in 1988, he was part of the bargaining team that secured major contract gains without a strike. In 1984 and 1987, he headed the union's negotiating team that won contract improvements from coal operators in the West. He played a key role on the negotiating team which won a 1993 agreement with the Bituminous Coal Operators Association, ending a bitter 8-month selective strike. The agreement included major gains in job security, the largest pension increase in UMWA history, and the Labor-Management Positive Change Process that empowers UMWA members with a voice in coal mining operations.

In 1989, Roberts was the on-the-scene leader and day-to-day negotiator in the UMWA's militant 10-month strike against the Pittston Co., which had cut off health benefits to its retirees and was trying to walk away from its obligations to the UMWA Health and Retirement Funds. For his role in that successful strike, Roberts received the Rainbow Coalition's Martin Luther King award as well as awards from Citizen Action and the Midwest Academy.

Born to Evelyn and Cecil E. Roberts, Sr., on (b)(6) Roberts grew [001] up on Cabin Creek in Kanawha County, WV. His great-uncle, Bill Blizzard, was a legendary organizer during the West Virginia mine wars of the 1920s and a UMWA district president under John L. Lewis. Both of his grandfathers were killed in the mines.

After college and military service in Vietnam, Roberts began work at Carbon Fuels' No. 31 mine in Winifred, W.Va., in 1971. He worked for 6 years in a variety of underground jobs including general inside laborer, shuttle car operator, unitrack operator, greaser, beltman and mechanic.

His fellow Local Union 2236 members elected him to the local's mine, safety and political action committees. He became active in the Miners for Democracy movement that restored control of the UMWA to its membership in December 1972.

In 1976, he taught contract education classes for District 17. He served as an investigator for district and International attorneys in the Carbon Fuels lawsuit which ended in a major UMWA victory when the U.S. Supreme Court ruled that an International union cannot be held liable for unauthorized work stoppages in which only local unions are involved.

In 1977, his local elected him a delegate to the District 17 convention, where he chaired the constitution committee. The same year, he was elected vice president of District 17 by a 2-to-1 margin. In May 1981, he was reelected without opposition.

On November 9, 1982, Roberts was elected vice president of the UMWA, again by a 2-to-1 margin, running on a slate headed by Trumka and including John J. Banovic, who was elected secretary-treasurer. The Trumka-Roberts-Banovic team was reelected without opposition 5 years later.

On November 10, 1992, Roberts was reelected by an 80-percent margin to his third term as vice president. Trumka was reelected president and Jerry D. Jones, secretary-treasurer.

In December, 1995, Roberts assumed the UMWA presidency, following Richard Trumka's resignation to become the AFL-CIO's new secretary-treasurer. Subsequently, Jones was named vice president and Carlo Tarley was appointed by Roberts to be the UMWA's new secretary -treasurer.

In August 1997, Roberts was elected by acclamation to a new, five-year term, winning the support of 99 percent of the locals participating in the union's nominating process. He is once again joined at the union's helm by Vice President Jones and Secretary-Treasurer Tarley. Also of note, for the first time in UMWA history, the entire leadership team's slate, including tellers and auditors, ran unopposed.

In addition to serving as UMWA president, Roberts has also held office or worked on behalf of several other organizations over the years, including serving on the Committee for Employer Support of Veteran Employment and the West Virginia Employment Opportunities and Economic Development Commission. In 1985, he was elected president of the National Council of the Holmes Safety Association.

Roberts has also served on the boards of directors of Blue Cross and Blue Shield of Southern West Virginia and the Cabin Creek Clinic in Cabin Creek, W.Va., and on the Advisory Committee of the Black Lung Program at the Cabin Creek Clinic. He has been elected as General Vice President of the National Council of Senior Citizens by their Executive Board. He has also been appointed to serve as a member of the West Virginia University Institute for Labor Studies and Research Advisory Board in 1996. He is a member of the Vietnam Veterans of America and the American Legion.

Roberts graduated in 1964 from East Bank High School in East Bank, W.Va. He was drafted into the U.S. Army in May 1966, serving a year in Vietnam with the 196th Light Infantry Brigade, Americal Division. After his military service, he attended Beckley Junior College for two years, majoring in sociology. In 1987, he graduated from West Virginia Technical College.

Roberts is married to the former Carolyn Sue Stewart. They have a son, Kyle Edward, a daughter, Melissa Dawn, and two grandsons, Aaron and Brandon.

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DOCUMENT NO. AND TYPE	SUBJECT/TITLE	DATE	RESTRICTION
002. profile	DOB (Partial); POB (Partial) (1 page)	08/1997	b(6)

COLLECTION:
Clinton Presidential Records
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FOLDER TITLE:
18. Global Warming / Climate Control 1997 [AFL-CIO]

2013-0306-F
jm1348

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

P1 National Security Classified Information [(a)(1) of the PRA]
P2 Relating to the appointment to Federal office [(a)(2) of the PRA]
P3 Release would violate a Federal statute [(a)(3) of the PRA]
P4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
P5 Release would disclose confidential advice between the President and his advisors, or between such advisors [a)(5) of the PRA]
P6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

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RR. Document will be reviewed upon request.

Freedom of Information Act - [5 U.S.C. 552(b)]

b(1) National security classified information [(b)(1) of the FOIA]
b(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
b(3) Release would violate a Federal statute [(b)(3) of the FOIA]
b(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
b(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
b(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
b(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
b(9) Release would disclose geological or geophysical information concerning wells [(b)(9) of the FOIA]

Peabody

Biography

PETER B. LILLY

Present Position:	President and Chief Operating Officer, Peabody Holding Company, Inc., St. Louis, Mo., July 1995-present.
Responsibilities:	Responsible for overseeing Peabody Holding's North American coal operations that produce approximately 143 million tons of coal annually.
Past Positions:	Executive Vice President, Peabody Holding Company, Inc., St. Louis, Mo., 1994-1995. President, Eastern Associated Coal Corp., Charleston, W.Va., 1991-1994. President, Kerr-McGee Coal Corporation and Senior Vice President, Kerr-McGee Corp., Oklahoma City, Okla., 1989-1991. Vice President-Marketing and Planning, Kerr-McGee Coal Corporation, 1988-1989. General Manager, Galatia Mine, Kerr-McGee Coal Corporation, Harrisburg, Ill., 1983-1988. Director of Administration, Kerr McGee Coal Corporation, 1981-1983. Manager-Maintenance Planning, Kerr-McGee Coal Corporation, 1980-1981. Management Consultant (Coal Industry), Emory Ayers Associates, New York, N.Y., 1977-1980.
Education:	U.S. Military Academy, West Point, N.Y., B.S. General Engineering and Applied Science, 1970. Harvard University, M.B.A., Finance, Industrial Marketing and Operations Management, 1977. Northwestern University, Kellogg Graduate School of Management, Advanced Executive Program, 1988.
Military Service:	U.S. Army, 1970-1975, Captain.
Activities:	Chairman, West Virginia Coal Association (1993-1994); member, National Coal Council (1989-present); Board of Directors, American Mining Congress (1989-1991); Board of Directors, National Coal Association (1989-1991 and 1995-present); Board of Advisors, West Virginia University, Morgantown, W.Va. (1991-present); and Young Presidents' Organization.
Born:	(b)(6)
Immediate Family:	

Office Address:

Peabody Holding Company, Inc.
701 Market Street, Suite 700
St. Louis, Missouri 63101-1826
Phone: (314) 342-7780
Fax: (314) 342-7720

[002]

8/97

Greenpeace International

BACKGROUND INFORMATION ON PATRICK MICHAELS

The IPCC has found that Michael's work on pattern detection is seriously flawed. Michaels is paid by the fossil fuel industry and is opposed to any action on greenhouse gas emission on economic grounds.

SUPPORTS COAL PRODUCERS AND IS OPPOSED TO ANY ACTION ON EMISSION REDUCTIONS BECAUSE OF ECONOMIC IMPACTS

> *"Any attempt to force emissions reductions will impose further stringencies on economic machines that are already well-oiled. ....There is clearly advantage to some, decadally stagnant economies (referring to European countries) if they can by force of the UN or other international law reduce the productivity of the competition (referring to the USA and Australia)"*

Statement to Coal Producer's Conference in Australia in May 1996 in paper entitled "The Satanic Gases: Greenhouse Effect Science and Policy". Michaels criticised the IPCC science but his motivation is clear from his opening statement.

The Australian Coal industry invited Patrick Michaels to address their conference in May, he also visited New Zealand at the invite of the influential right wing Business Round Table lobby group. (Australia and New Zealand were key countries associated with the JUSCANZ group at the Berlin Climate Summit: a group associated with blocking concrete action till the last minute). Michaels was cast by industry as an IPCC scientist and a moderate. The IPCC has in fact reviewed Michaels work and found that it does not pass crucial scientific tests of veracity or accuracy (see attachment).

EXPOSED IN HARPER's MAGAZINE AS PART OF FOSSIL FUEL INDUSTRY PUBLIC RELATIONS CAMPAIGN

Harper's Magazine in December 1995 reported that:

> *"In the last year and a half, one of the leading oil industry public relations outlets, the Global Climate Coalition, has spent more than a million dollars to downplay the threat of climate change."*
>
> *"For the most part the industry has relied on a small band of skeptics - Dr Richard Lindzen, Dr Patrick Michaels, Dr Robert Balling, Dr Sherwood Idso, and Dr Fred Singer, among others - who have proved extraordinarily adept at draining the issue of all sense of crisis."*
>
> *"...in this persistent well funded campaign of denial they have become interchangeable ornaments on the hood of a high-powered engine of disinformation."*

IPCC HAS FOUND HIS WORK ON PATTERN DETECTION HAS SERIOUS PROBLEMS

The IPCC as is required by its mandate has reviewed the claims of scientists such as Patrick Michaels. BD Santer, TML Wigley, TP Barnett, et al in Chapter 8 Detection of

Climate Change and Attribution of Causes. (In Climate Change 1995: The Science of Climate Change. Cambridge University Press, Cambridge, UK, 1996, p.8.12.) state:

> *"The only other recent pattern-oriented work that has attempted to find a CO2-only signal in observed surface air temperature data is that by Michaels et al. (1994). This investigation makes use of the time-dependent signal from a transient greenhouse warming experiment performed with the GFDL CGCM (Manabe et al. 1991). The premise underlying this investigation is that if the model-predicted transient signal is not found in the observed temperature record, the model is wrong. The authors fail to find this signal in the observed data, a result that is used to justify a condemnation of climate models in general.*
>
> *"There are a number of serious problems with this analysis. As discussed in Section 8.2.4, a time dependent greenhouse warming experiment performed with a fully-coupled CGCM does not have a pure signal output. The output consists of signal plus noise, and the early decades of such simulations are often dominated by the noise. A null result on the basis of a single transit experiment such as this does not constitute "proof" that the model is erroneous, nor that the searched-for signal does exist.*
>
> *"Furthermore, the Michaels et al. study categorically dismisses the possibility that their failure to find a time-dependent greenhouse-gas signal may be due to the making effects of anthropogenic sulphate aerosols. This dismissal is made on the following grounds. Michaels et al. argue that if sulphate aerosols have had an impact on climate, then the impact should be very small or close to regions remote from areas where the forcing due to aerosols is large. This hypothesis is not supported by recent GCM experiments, which suggest that atmospheric general circulation can, via dynamics, produce large remote surface temperature responses to highly-regionalised forcing by sulphate aerosols (Taylor and Penner, 1994; Roeckner et al. 1995; Mitchell et al. 1995b).*
>
> *"The Michaels et al. Results are difficult to compare with those of other Stage 2 studies that have searched for a CO2-signal, primarily due to differences in definition of the signal, methodology and in the areas of the globe considered. Nevertheless, their failure to find the sub-global -scale pattern of this signal is consistent with the results of Santer et al. (1993, 1995a). A likely explanation for this result is that some part of the regional-scale features of a CO2-only signal has been obscured by aerosol effects (see Section 8.4.2.3)."*

References: Michaels PJ, Knappenberger PC, Gay DA (1994). Journal of the Franklin Institute, 331A, 123-133. Manabe S, Stouffer RJ, Spelman MJ, Bryan K (1991). J. Climate, 4, 785-818. Taylor KE, Penner JE (1994). Nature, 369, 734-736. Roeckner E, Siebert T, Feichter J (1995). In Aerosol Forcing of Climate. John Wiley and Sons (in press). Mitchell JFB, Davis RA, Ingram WJ, Senior CA (1995b). J. Climate (accepted). Santer BD, Wigley TML, Jones PD (1993). Clim. Dyn., 8, 265-276. Santer BD, Taylor KE, Wigley TML, Penner JE, Jones PD, Cubasch U (1995a). Clim. Dyn. (In press).

FOR FUTHER INFORMATION:

Bill Hare Climate Policy Director, Greenpeace International
Kirsty Hamilton, Climate Campaigner, Greenpeace International
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THE NEED FOR ACTION TO REDUCE GREENHOUSE GASSES:
A Clear Consensus Among Scientists, Economists And Other Leaders

Over 2600 American Scientists Agree On The Need For Action:

"We are scientists who are familiar with the causes and effects of climatic change as summarized recently by the Intergovernmental Panel on Climate Change (IPCC). We endorse those reports and observe that the further accumulation of greenhouse gases commits the earth irreversibly to further global climate change and consequent ecological, economic and social disruption. The risks associated with such changes justify preventive action through reductions in emissions of greenhouse gases."

> -- Statement singed by over 2600 American Scientists on Global Climate Disruption, June 18, 1997 (emphasis added)

More Than 2000 Economists, Including Eight Nobel Laureates, Agree On The Need For Action:

"As economists, we believe that global climate change carries with it significant environmental, economic, social, and geopolitical risks, and that preventive steps are justified. Economic studies have found that there are many potential policies to reduce greenhouse-gas emissions for which the total benefits outweigh the total costs. For the United States in particular, sound economic analysis shows that there are policy options that would slow climate change without harming American living standards, and these measures may in fact improve U.S. productivity in the longer run."

> -- Economists' Statement on Climate Change, January 1997, Endorsed by over 2000 Economists, including eight Nobel Laureates (emphasis added)

Many In The Business Community Agree On The Need For Action:

"[T]here is now an effective consensus among the world's leading scientists and serious and well-informed people outside the scientific community that there is a discernible human influence on the climate and a link between the concentration of carbon dioxide and the increase in temperature. ...[T]here is mounting concern about two stark facts. The concentration of carbon dioxide is rising, and the temperature of the earth's surface is increasing. If we are all to take responsibility for the future of our planet, then it falls to us to begin to take precautionary action now."

> -- John Browne, Group Chief Executive, British Petroleum from a May 19, 1997 address at Stanford University (emphasis added)

"[International Climate Change Partnership] ICCP continues to recognize the climate change issue as an important matter with which governments should be concerned.... Our companies have determined that the current state of scientific understanding requires a prudent long-term approach to address this issue."

> -- Prepared Statement of Kevin J. Fay, Executive Director International Climate Change Partnership Before the Senate Committee on Foreign Relations Subcommittee on International Economic Policy on June 19, 1997 (NOTE: Among the member of the ICCP are companies including British Petroleum, Chevron, Dupont, Enron and AT&T)

DRAFT

OPPOSITION TO ACTIONS TO PROTECT THE ENVIRONMENT: WRONG THEN, WRONG NOW

INDUSTRY COALITIONS -- WRONG THEN, WRONG NOW:

William D. Fay, administrator of the Clean Air Working Group, an industry coalition whose members include USX Corp., LTV Steel Corp. and the Aluminum Association, "predicts a loss of 600,000 jobs nationwide, primarily in the high-sulfur coal industry;... price increases of 10 cents to 15 cents per gallon for reformulated gasoline in the nine citites in which it is required; and an additional $500 per new car, in addition to many other costs."[The Oil Daily, 11/16/90]

Fay also said, "The new Clean Air Act will dramatically change our lifestyle and the way most companies do business. Fully implemented, the act will add $51 billion each year to the $32 billion Americans already spend for cleaner air." [The Oil Daily, 11/16/90]

The Clean Air Working Group also said of the Clean Air Act, "Consumer costs for goods and services will rise, jobs will be lost and many more will be less seriously affected, and the nation's competitiveness will be eroded." [The Oil Daily, 5/28/90]

"The Clean Air Working Group (CAWG), industry's 2,000-member lobbying coalition, pegs the added yearly price tag [of the Clean Air Act of 1990] at more than $50 billion."[1990 Penton/IPC, Industry Week, 11/19/90]

NATIONAL ASSOCIATION OF MANUFACTURERS -- WRONG THEN, WRONG NOW:

The National Association of Manufacturers claims that the Clean Air will put 'millions of jobs at risk. Richard Siebert, NAM's vice-president, said "This bill will put millions of American workers at risk, put thousands of small companies out of business, further weaken our economy and limit our capacity to become energy independent."[Chemical Marketing Reporter, 8/20/90]

"Richard Siebert, National Association of Manufacturer's vice president of resources and environment, says American consumers and businesses will face sharply higher prices if the current proposals become law. Mr. Siebert says that Americans can also expect higher gasoline costs due to the reformulated gas mandates in the bill. Reformulated gas must be sold in the smoggiest cities by 1994. 'This gas is more expensive. Government and industry price estimates range between 10 cents to 25 cents per gallon higher for reformulated gas. New emission standards will also add $600 to the base price of a new car,' says Mr. Siebert. [Chemical Marketing Reporter, 8/20/90]

DRAFT

THE AMERICAN PETROLEUM INSTITUTE -- WRONG THEN, WRONG NOW:

Inflating the cost of gas from environmental regulation.... The Clean Air act pushed for reformulated gas to cut down on harmful auto emissions. This is what the American Petroleum Institute and Mobil said it would do to gas prices: "American Petroleum Institute president Charles DiBona said the cleaner fuel would likely add about 5 cents to the price of gallon of gasoline at the pump while Mobil's Murray said the added cost would probably be closer to the 15 cents a gallon."[1991 Reuters, 11/18/91]

BUSINESS ROUND TABLE, WRONG THEN, WRONG NOW:

Claims the Clean Air Act will 'Shut Down' Industries... At a Business Round Table press conference on the Clean Air Act, Philip X. Masciantonia, a spokesman for USX Corp., warned, "Such a law could have serious side effects, namely, reduced industrial production, job losses, employment dislocations and possibly even 'shutdowns' of industries."[State News Service, 8/20/90]

Claims of harm to particular industries:

"The electric-utility industry, for example, maintains that the acid-rain provisions [of the Clean Air Act of 1990] alone will cost it as much as $7 billion a year."[1990 Penton/IPC, Industry Week, 11/19/90]

Industry groups say Clean Air Act will kill industries. "Implementation of the Clean Air Act regulations will force smaller size refineries, which produce 50,000 barrels of crude oil or less a day, to sell their facilities or consolidate, a number of analysts said.... 'This legislation is going to squeeze [small refineries] out of business,'" said Debra Coy, analyst at County NatWest Washington Analysis Group.[Portfolio Letter, 11/18/91]

The Basics of Global Climate Change

What's the Problem?

The Earth's climate is changing. Over the past century, global temperature has increased, sea levels have risen, glaciers have receded, and precipitation has increased. While some amount of climate change is natural, mounting scientific evidence suggests an emerging human role.

By burning fossil fuels and cutting down forests, we are releasing large amounts of carbon dioxide into the air. Carbon dioxide is a greenhouse gas. It traps some of the sun's heat and keeps the planet warmer than it would otherwise be.

A certain balance of carbon dioxide in the atmosphere is necessary to sustain life as we know it, and natural processes have maintained this balance for millennia. We are changing it. Just since the Industrial Revolution, we have increased the carbon dioxide concentration in the atmosphere by nearly 30%.

Unless actions are taken to reduce carbon dioxide emissions, the atmospheric concentration of this gas could more than double in the next century. Scientists expect that this will cause global temperature to increase between 2.0 - 6.5 degrees Fahrenheit -- a faster rate of change than any seen in 10,000 years.

Why do we Care?

Rising global temperatures will further change the Earth's climate. Exactly how much and how fast remains uncertain. Nevertheless, the world's best climate scientists have carefully examined the potential impacts of projected temperature increases and have concluded that they are likely to be serious.

Warmer temperatures could increase heat-related deaths and lead to the spread of certain infectious diseases into formerly inhospitable areas. They could shift zones of agricultural productivity and threaten the survival of many animal and plant species. Rising sea levels could flood thousands of miles of U.S. coastline and render near-shore areas more susceptible to tidal surges and storms. More extreme weather, such as floods and droughts, could take additional lives and cause severe economic damage. While these changes could profoundly affect our society, they are likely to have even more serious consequences in the developing world where countries have less capacity to adapt.

What are we Doing?

Climate change is enormously complicated, and there remains a great deal about it that we do not understand. Still, almost every government in the world recognizes that climate change is a real and legitimate concern that merits a policy response.

Five years ago at the Earth Summit in Rio, the nations of the world agreed to an international climate change treaty. Under this treaty, the U.S. and other developed nations were to reduce their emissions of greenhouse gases to an agreed level by the year 2000.

For a variety of reasons, most countries, including ours, will not meet the Rio goal. This fact, coupled with better scientific evidence of global climate change, has led nations to try to negotiate a new climate change agreement. The plan is to conclude this agreement at a meeting in Japan this December.

The United States is now in the process of developing its policy for what such an agreement should look like and how emissions could be reduced domestically.

Wide Open ClashOver Coal and Clean Air

By E. W. KENWORTHY

WASHINGTON—"All of a sudden it's their environment and we're monsters," said Donald C. Cook, bitterly, the other day at the end of a three-hour interview.

By "we" Mr. Cook meant the electric utility industry in general and particularly the American Electric Power Company, of which he is chairman and chief executive officer. American Electric, with $5-billion in assets, is the nation's largest privately owned generator of electricity—and 93 per cent of its generating capacity is coal fired.

By "they" Mr. Cook meant what he calls "rabid environmentalists," most especially the Federal Environmental Protection Agency, which in his view is infested with them.

For nearly a year, Mr. Cook, a former chairman of the Securities and Exchange Commission, has been directing from his office at No. 2 Broadway, in New York, a furious—and some think wrong-headed—battle against what he regards as the "ignorant" dogmatists and idealists in charge of the agency's enforcement of the 1970 Clean Air Act.

He is particularly enraged by E.P.A.'s aggressive championing of "scrubbers" to capture pollutants in flue cases from coal-fired steam generating plants. Mr. Cook contends that these "monstrous contraptions" will not work reliably, and are ruinously expensive and unnecessary.

But Mr. Cook's offensive also extends to what he calls the "unreasonable" standards themselves — namely the health-related standards for flyash and sulphur dioxide, which are the two principal pollutants from coal-fired electric power plants. He also contends that emission standards set by state governments are unrealistic."

At 65, Donald Cook does not look or act his age. There are no lines in his face, no pouches beneath the sharp eyes. He speaks—at length—with fervor and some eloquence.

He was recently quoted in Nation's Business magazine as saying he got his greatest pleasure out of work. He also admitted that "I don't mind being abrasive if it will make a contribution."

A colleague said recently, "Don Cook may sometimes be wrong, but he's never in doubt."

Mr. Cook believes that he and the "rabid environmentalists" are met at Armageddon, and that he is battling for the Lord, the nation, the economy, the electric power industry—and American Electric.

His critics grant his sincerity, but some of them—including John R. Quarles, E.P.A. deputy administrator—question whether Mr. Cook's priorities are necessarily in the above order. Mr. Cook has chosen Mr. Quarles as the prime target of his abrasiveness because he regards him as the toughest and smartest of the agency's bureaucrats.

His critics, inside and outside the industry, think Mr. Cook has overstated his case and been unnecessarily harsh. But they give him good marks for fighting in the open rather than trying to work his will behind the scenes in Washington as so many industry officials do.

Seeking to prevail by generating public support for his crusade, Mr. Cook last February launched an advertising campaign built around three points:

¶That the solution of the energy crisis lies in generating more power and not simply conserving it,

¶That the way to do this is to relieve the nation progressively from its dependence on Middle East oil by exploiting its abundant coal reserves,

¶That this sensible solution is being thwarted by the Department of the Interior's moratorium on leasing of Federally-owned low-sulphur coal deposits in the West and by the Clean Air Act and by E.P.A. regulations which restrict the use of Eastern and Midwestern high-sulphur coal.

To date there have been 32 full-page ads, most of them running in the New York Times, the Washington Post, the Wall Street Journal, Time, Newsweek, U.S. News

Continued on page 14

Donald C. Cook

INSIDE

Donald Cook Battles Clean Air Standards

Continued from page 1

World Report and Business Week.

ads have also run in the 69 daily 92 weekly papers in the seven-state where A.E.P. sells power. Those states are Virginia, West Virginia, Tennessee, Kentucky, Ohio, Indiana and Michigan, served by the operating subsidiaries of the parent company: the Appalachian Power Company, the Indiana and Michigan Electric Companies, the Kentucky Power Company, the Kingsport Power Company, the Michigan Power Company, the Ohio Power Company and the Wheeling Electric Company.

A.E.P.'s interlocking grid is, for most of its length, built atop bituminous coal fields, some mined deeply and others stripped.

Some of the ads have drawn strong protests not only from environmental groups but also from Russell Peterson, chairman of the White House Council on Environmental Quality, and John C. Sawhill, deposed head of the Federal Energy Administration.

For example, in several ads last spring, A.E.P. inveighed against those "who shrill for less energy and no growth," asserting that the government's energy conservation proposals would "generate galloping unemployment, and reduce America to the 'bad life.'"

Government officials immediately protested that Washington does not advocate "no growth" in generating capacity, nor a cut-back, but rather reduction in the annual rate of growth of energy consumption—from about 5 to 2.5 percent.

Mr. Sawhill wrote the company: "I urge you to cease this kind of advertising. It masks the total energy problem and gives the incorrect impression that conservation implies strongly negative impacts."

Mr. Peterson wrote that the "galloping unemployment" ad was not only "nonsense" but "subversive of the public interest."

Mr. Cook was infuriated when Mr. Peterson released the letter to the press and so to then-President Nixon, complaining the "scurrilous" letter, and asking ou fully investigate both the official clandestine activities of Mr. Peterson in the conduct of his office."

In any event, the $3.7-million ad campaign represents small change for A.E.P., which had operating revenues of $967-million, and profits of $183-million in 1973. Its profit margin was 18.9 per cent, much above the industry average. Revenues for 1974 are expected to reach $1.2-billion although earnings may be down somewhat because of high interest payments.

The company's 20 power plants have a generating capacity of more than 15,000 megawatts (exceeded only by the Tennessee Valley Authority system) and it expects to expand to 26,000 megawatts by 1982.

Some years ago it decided to rely on coal and not to go for nuclear power in a big way. Its only nuclear plant will not start up until next month. It also has one oil-fired and two hydroelectric plants, all small.

In 1973, the A.E.P. system consumed 31 million tons of coal—nearly one-tenth of the coal used by the nation's electric utilities and about one-fifteenth of all the coal consumed in the whole country. Its own mines supply about one-fifth of its coal and by 1981 are expected to supply 50 per cent.

•

The average sulphur content in what A.E.P. burns is 2.5 per cent, but about one-third is only 1 per cent or less. The rest, particularly that burned by Ohio Power, the biggest company in the system, is high sulphur.

There is no dispute between Mr. Cook and the E.P.A. over the availability of technology to deal with flyash, also called particulates, which give the plume from an unregulated power plant its grey-black color.

Electrostatic precipitators, which act like a magnet, were developed in the nineteen- and have been improved to the where nearly all flyash can be col-

e were environmentalists long before it was popular," says one A.E.P. ad, adding that the company tested its first precipitator in 1941. However, it did not install precipitators in all its plants, and did not keep abreast of the developing technology. As a result, in order to meet the standards under the Clean Air Act by 1977, A.E.P. is investing nearly $500-million to "backfit"

A E P —At a Glance

3 mos. ended Sept. 30	1974	1973
Revenues	$338,300,000	$239,100,000
Net income	45,700,000	45,000,000
Earnings per share	62 c	68 c

12 mos. ended Dec. 31	1973	1972
Revenues	$966,500,000	$860,600,000
Net income	182,600,000	156,300,000
Earning per share	2.85	2.63

Assets, Dec. 31, 1973	$5,071,320,000
Stock price (N.Y.S.E.), Nov. 22, 1974	14 3/4
Stock price, 1974 range	27 1/8 - 13 5/8
Employes	16,303

Major subsidiaries:
Appalachian Power (Va.), Indiana and Michigan Electric, Kentucky Power, Kingsport Power (Tenn.), Michigan Power, Ohio Power, Wheeling Electric (W.Va.)

nation's air each year. The E.P.A. has set an atmosphere standard of 80 micrograms per cubic meter, equivalent to 0.03 parts of the gas to per million parts of air, effective June 1, 1975. Many states have set much tougher standards. The target sought by the E.P.A. and most states is a 90 per cent-plus control of emissions.

Mr. Cook outlined four strategies for attacking the sulphur dioxide problem, three of which he approves, and the one—scrubbers—that he violently opposes.

First, he said, is "conforming fuel," with less than 1 per cent sulphur content. He says that 46 per cent of A.E.P.'s generating capacity is already in compliance with state emission limitations, burning Appalachian and Western low-sulphur coal.

The E.P.A. agrees on this solution, if there is strict control of strip-mining to prevent the ravaging of Western farm and grazing lands. But it asserts that Western low-sulphur coal will not be available in anything like the quantities needed until the mid-nineteen-eighties.

Second, as a long-range solution, Mr. Cook would remove the gas by a "front-end" process—such as coal liquefaction or gasification—leaving a clean fuel to be burnt.

Again, the E.P.A. agrees, but Mr. Quarles notes that A.E.P. and Allegheny Power System, Inc., are each contributing only $1-million over two years to a $13-million research project on liquefaction, with the government putting up the rest.

Mr. Cook's third strategy, is the "intermittent control system"—tall stacks, 800 feet or more, of which A.E.P. already has 11, to disperse the sulphur dioxide high in the air and allow the standard to be met most of the time at ground level. He argues that it is wrong for the E.P.A., and the states, to base regulations on measurements at the top of the stack rather than at ground level "where people live."

A ground monitoring system, of which A.E.P. has several, would warn a plant manager whenever atmospheric conditions create excessive ground-level concentrations of the gas. The manager could then switch to an emergency supply of low-sulphur coal or cut back his production and call on another plant in the system to make up the deficit.

Mr. Cook's advocacy of tall stacks has the backing not only of much of the industry but also of the Federal Power Commission, The Federal Energy Administration and the White House Office of Management and Budget.

But the E.P.A. responds that intermittent control is acceptable as an interim device, but not as a permanent control measure. It argues that neither low-sulphur coal nor an alternate source of power may be available during a pollution alert.

More important, the agency contends, the tall stacks simply spew out sulphur dioxide to fall at a distance as acid rain or as minute sulphate particles. And it takes the potential health hazards of those two very seriously indeed.

But the E.P.A. also admits that the evidence is still "tentative" and it has not set sulphate standards.

Mr. Cook leaps on this admission. "There have been a lot of statements on sulphates, he said, "all cast in terms of suspicion. If We start running a government on suspicion, we are not far from a knock on the door in the night. If they have anything on sulphates, let them promulgate regulations."

The E.P.A., meanwhile, is still holding out for "scrubbers," as the most immediately promising control system for sulphur dioxide. They do as Mr. Cook contends, have "horrendous problems."

The chemistry is simple in theory but tricky in practice; the chemical engineering is complex and difficult. Calcium sulphate and sulphite formed in the process plug up spray nozzles and valves. Every few days, the scale has to be removed by high-pressure hoses, or, in bad cases, with hammers, requiring a shutdown.

Mr. Cook cites the recent findings by hearing examiners for the Ohio Environmental Protection Agency, who said that no scrubbing had yet met the criteria set by the National Academy of Engineering in 1970—that a scrubber should operate for a year with 90 per cent availability on a 100 megawatt or larger unit.

Furthermore, he contends that disposal of the "massive amounts of sludge" produced and possible leaching from disposal sites into the water supply involve environmental and health hazards greater than those posed by dispersal of sulphur dioxide by tall stacks.

E.P.A. officials reply that the problems are being surmounted, that several units are approaching the reliability criteria, and that during the last year the numbers of scrubbers in operation, under construction or planned, has jumped from 44 to 93. This represents hundreds of millions of dollars of capital investment and operating and maintenance costs.

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These officials are particularly angered by what they regard as misleading statements in some A.E.P. ads. For example: "Applied to a 12,000 megawatt, coal-fired system, limestone scrubbers would in only five years produce enough . . . oozy gook to cover, for instance, 10 square miles of Washington, D. C., five feet deep." (A later ad, citing an Interior Department figure on sludge produced, raised the depth to 10 feet.)

Agency officials point out that 12,000 megawatts is almost as large as the entire seven-state A.E.P. system and that sludge would be dispersed among many, relatively small, remote sites and at a depth much more than five or 10 feet.

In the light of industry experience with scrubbers so far, the E.P.A. draws two conclusions.

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The second conclusion is that a large number of coal-fired plants—from 65 to 100—will not be able to comply with its standards by 1977 by installing scrubbers. The time is too short for design, manufacture and installation. Therefore, these plants must be given variances, or the law must be changed to extend the compliance date, probably to the mid-nineteen-eighties.

Where does A.E.P. fit into these conclusions? Mr. Cook boasts that his company has always been a "pioneering" utility, and cites its development of very high temperature boilers, the nation's largest generating units high voltage transmission and advanced circuit breakers and so on.

When Mr. Dowd, the general counsel, stressed this point at E.P.A. hearings a year ago, however, an agency official observed that "A.E.P. is willing to take the risk [of investing larger sums]when the technology in question happens to be generating technology but is unwilling to take any risk when it comes to pollution control, at least sulphur pollution control."

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How Scrubbers Work

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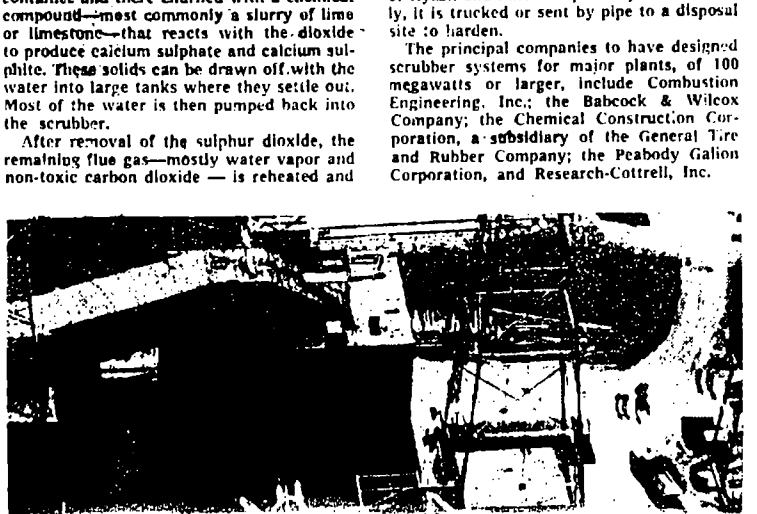
From a plant's boiler, flue gas containing toxic sulphur dioxide is pumped into this container and there churned with a chemical compound—most commonly a slurry of lime or limestone—that reacts with the dioxide to produce calcium sulphate and calcium sulphite. These solids can be drawn off with the water into large tanks where they settle out. Most of the water is then pumped back into the scrubber.

After removal of the sulphur dioxide, the remaining flue gas—mostly water vapor and non-toxic carbon dioxide — is reheated and forced up the stack by large induction fans.

The sludge containing the calcium sulphate and calcium sulphite—truly, as scrubber critics charge, "an oozy gook"— is pumped from the settling tanks to small ponds where it is stabilized by the addition of flyash and lime and partially dried. Finally, it is trucked or sent by pipe to a disposal site to harden.

The principal companies to have designed scrubber systems for major plants, of 100 megawatts or larger, include Combustion Engineering, Inc.; the Babcock & Wilcox Company; the Chemical Construction Corporation, a subsidiary of the General Tire and Rubber Company; the Peabody Galion Corporation, and Research-Cottrell, Inc.



"unemployment" ad was not only "nonsense" but "subversive of the public interest."

Mr. Cook was infuriated when Mr. Peterson released the letter to the press and so wrote to then-President Nixon, complaining about the "scurrilous" letter, and asking that "you fully investigate both the official and clandestine activities of Mr. Peterson in the conduct of his office."

In any event, the $3.7-million ad campaign represents small change for A.E.P., which had operating revenues of $967-million and profits of $183-million in 1973. Its margin was 18.9 per cent, much above industry average. Revenues for 1974 are expected to reach $1.2-billion although earnings may be down somewhat because of high interest payments.

The company's 20 power plants have a generating capacity of more than 15,000 megawatts (exceeded only by the Tennessee Valley Authority system) and it expects to expand to 26,000 megawatts by 1982.

Some years ago it decided to rely on coal and not to go for nuclear power in a big way. Its only nuclear plant will not start up until next month. It also has one oil-fired and two hydroelectric plants, all small.

In 1973, the A.E.P. system consumed 31 million tons of coal—nearly one-tenth of the coal used by the nation's electric utilities and about one-fifteenth of all the coal consumed in the whole country. Its own mines supply about one-fifth of its coal and by 1981 are expected to supply 50 per cent.

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The average sulphur content in what A.E.P. burns is 2.5 per cent, but about one-third is only 1 per cent or less. The rest, particularly that burned by Ohio Power, the biggest company in the system, is high sulphur.

There is no dispute between Mr. Cook and the E.P.A. over the availability of technology to deal with flyash, also called particulates, which give the plume from an unregulated power plant its grey-black color.

Electrostatic precipitators, which act like a magnet, were developed in the nineteen-thirties and have been improved to the point where nearly all flyash can be collected.

"We were environmentalists long before it was popular," says one A.E.P. ad, adding that the company tested its first precipitator in 1941. However, it did not install precipitators in all its plants, and did not keep abreast of the developing technology. As a result, in order to meet the standards of the Clean Air Act by 1977, A.E.P. is spending nearly $500-million to "backfit" boilers, 11 plants with new precipitators.

Mr. Cook's complaint is that the cost of the new equipment is excessive for the small additional control.

"We backfitted [one] plant," he said, "to achieve flyash control of 98.5 per cent, and then when West Virginia issued its implementation plan in January, 1972, it was twice as stringent as the Federal requirement, and we had to rebackfit to achieve 99.7 per cent control. That additional 1.2 per cent cost $56-million."

Sulphur Dioxide is another matter. Here Mr. Cook disagrees vehemently with the E.P.A. not only on how to control emissions of this colorless, toxic gas but also on its hazards to public health.

Coal-fired power plants are also responsible for about 56 per cent of the 30 million tons of sulphur dioxide emitted into the

emission limitations, burning Appalachian and Western low-sulphur coal.

The E.P.A. agrees on this solution, if there is strict control of strip-mining to prevent the ravaging of Western farm and grazing lands. But it asserts that Western low-sulphur coal will not be available in anything like the quantities needed until the mid-nineteen-eighties.

Second, as a long-range solution, Mr. Cook would remove the gas by a "front-end" process—such as coal liquefaction or gasification—leaving a clean fuel to be burnt.

Again, the E.P.A. agrees, but Mr. Quarles notes that A.E.P. and Allegheny Power System, Inc., are each contributing only $1-million over two years to a $13-million research project on liquefaction, with the government putting up the rest.

Mr. Cook's third strategy, is the "inter-

another plant in the system to make up the deficit.

Mr. Cook's advocacy of tall stacks has the backing not only of much of the industry but also of the Federal Power Commission, The Federal Energy Administration and the White House Office of Management and Budget.

But the E.P.A. responds that intermittent control is acceptable as an interim device, but not as a permanent control measure. It argues that neither low-sulphur coal nor an alternate source of power may be available during a pollution alert.

More important, the agency contends, the tall stacks simply spew out sulphur dioxide to fall at a distance as acid rain or as minute sulphate particles. And it takes the potential health hazards of those two very seriously indeed.

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To which Mr. Cook replies that A.E.P. has invested over $1-billion in environmental controls—precipitators, tall stacks and monitoring, huge towers to cool and recirculate water to prevent thermal pollution of rivers, reclamation and tree-planting of a company-owned strip mine in Ohio, and contracts for low-sulphur coal.

But he stands firm against spending even one dollar for scrubber technology.

The E.P.A.'s John Quarles thinks this attitude irresponsible. He does not see why the giant A.E.P. with a billion dollars a year revenue and an 18.9 per cent profit margin should not invest in this sort of sulphur control when, for example, the Louisville Gas and Electric Company, with revenues of $160-million and a 12.7 per cent margin, is investing $50-million.

But Mr. Cook says "we are not going to be the sacrificial goat on scrubbers."

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A lime scrubbing unit, center at left, in use at the Louisville Gas and Electric Co.

Three Plants—Three Experiences

WASHINGTON — In one advertisement, the American Electric Power Company stated that stack gas scrubbers to remove sulphur oxide from power plant emissions are "unreliable and impractical."

In a press release two months ago, the Environmental Protection Agency said: "The experience of electric utilities so far with 'scrubbers' in actual operation shows they can be used continuously, reliably and effectively."

Among the plants where lime or limestone scrubbers have been installed are: The Phillips Station of the Duquesne Light Company of Pittsburgh, the Paddy's Run Station of the Louisville Gas and Electric Company and the La Cygne Station in Kansas, jointly owned by the Kansas City Power and Light Company and the Kansas Gas and Electric Company. [illegible]

six boilers, representing 220 megawatts, have been hooked into a retroactively fitted, four-module lime scrubbing system.

The first is a dual unit, with one scrubber removing flyash, and the other, sulphur dioxide. The other three are chiefly for flyash removal, with one of them on standby.

Steve L. Pernick in charge of Duquesne's environmental program, has been plagued with problems since the dual scrubber went into operation last March.

There has been much scaling and plugging by calcium sulphate and calcium sulphite solids produced by the reaction of sulphur dioxide and the lime. Two or three times a month it has been down for a day or two at a time.

As for efficiency when operating, the dual unit has been removing 90 per cent of the sulphur dioxide passing through it—which is only 20 [illegible]

to 60 per cent of the gas has been removed. Flyash removal is over 97 per cent.

Mr. Pernick is confident that if dioxide scrubbers were added to the three single flyash units, the plant, which burns coal containing 2 per cent sulphur, would be in compliance with the state's emission limitations.

Disposal of sludge—over 500,000 tons a year if all boilers were hooked to dual scrubbers—is a problem because the plant is on the outskirts of the city.

Completed installation at Phillips, and another at the company's Elrama plant, would mean a capital cost of $110-million. Annual operating costs, including sludge disposal, would be $30-million. This might mean a 25 per cent increase in consumer bills, Mr. Pernick estimated.

Paddy's Run is the E.P.A.'s showpiece. Its capacity is 330 megawatts, but only one [illegible]

more than 99 per cent of the flyash.

The scrubbing agent in the slurry is carbide lime, a throwaway product from an acetylene plant nearby. The plant burns 4 per cent sulphur coal.

The scrubber unit was planned by Robert P. Van Ness, manager of the company's environmental affairs and a chemical engineer. It went into operation April, 1973, and Mr. Van Ness says that 90 per cent of the gas is now being removed.

He attributes the system's success to the fact that, by carefully controlling the chemical reaction, he winds up with calcium bisulphite, a soluble salt, meaning no scaling or plugging problems.

From April through December last year, when the boiler was operating full time, availability of the scrubber was 70 per cent, and from August through December, it was 98 per cent.

The [illegible] cost was $17- [illegible]

Louisville Gas and Electric is planning to add scrubbers to four other units. Annual operating cost of the five will be $14-million, costing consumers about 15 per cent in rate increases, it is estimated.

The five units will produce 900,000 tons of sludge a year, and Mr. Van Ness thinks that eventually this should be piped into worked-out mines or used for fill in strip-mined areas.

De Cygne, located in the Kansas prairie 50 miles from Kansas City, Mo., began operating June 1, 1973. It's big, with total capacity of 820 megawatts.

However, it is producing only 650 megawatts because of a design miscalculation that has necessitated "stealing" hot air from the boiler to help push flue gases up the stack after passing through the scrubbers. The scrubbers cost $42-million, or $51 a kilowatt.

The plant burns coal, strip-mined about three miles dis- [illegible]

scrubbers use limestone, quarried a mile away, the plant burns 2 million tons of coal a year and uses 500,000 tons of limestone.

There is only one boiler; the stack is 700 feet. Of the 90 tons of flyash produced every hour, two-thirds is removed from the bottom of the boiler and the rest, along with 40 tons of sulphur dioxide an hour, goes to seven scrubber modules.

Clifford P. McDaniel, the engineer in charge of the scrubbers, has had rough problems with scaling and plugging.

Each night of the week, in rotation, one module is shut down for cleaning—an operation that takes two or three men ten hours and loses 90 to 110 megawatts of output.

Nevertheless, Mr. McDaniel says, at present 98.4 per cent of flyash and 69 to 83 per cent of sulphur dioxide are being removed. Availability of the system has increased from 37 per cent last [illegible]

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ed on Page 15, Column 1

United Press International

In Quanloi, South Vietnam, Cobra gunships are refueled for action against ground forces

First Signs of a Backlash Emerge in Ecology Drive

By WILLIAM K. STEVENS

Signs of a backlash against the crusade for a cleaner environment and restoration of the ecological balance are beginning to appear.

And consumers, who might help to lessen pollution by buying items in returnable containers and by using non-polluting soaps and detergents, seem to be displaying attitudes ranging from total indifference to sporadic interest.

These conclusions emerge from interviews with industrialists, businessmen, conservationists, consumers, public officials and scholars in a number of cities.

The potential backlash so far is muted and is generally expressed gingerly, in terms that caution against "hysteria" and emotion, express fears that the crusade will divert attention from more familiar problems of poverty and other social ills, or indicate that someone's self-interest will be harmed by the environmental crusade.

"When you get away from the generalities discussed at Earth Day and down to the specifics," said Lloyd Tupling, Sierra Club representative in Washington, "then you will run into what amounts to opposition. The backlash will develop once you start talking about specifics."

One example involves the United States Steel Corporation's plant in Duluth, Minn., which has been told to meet minimum air quality standards. Corporation officials say the plant will be forced to close if the standards are enforced. At stake are the jobs of 2,000 workers.

The example is cited by

Continued on Page 57, Column 3

U.S. SENDS LON NOL MERCENARY UNITS

Force of 2,000 Well-Armed Cambodians Is Flown In From South Vietnam

Dispatch of The Times, London

PNOMPENH, Cambodia, May 3—More than 2,000 well-armed Cambodians serving in American-operated units in South Vietnam were flown into Pnompenh last night and Friday as reinforcements for the Cambodian Army.

Their arrival—in a fleet of planes from Bienhoa, near Saigon—was kept secret, but today many of them could be met near the temporary billets given them at the sports stadium in the center of the city.

These men are the Khmer Kampuchea Krom — lower, or delta, Cambodians—some of the two and a half mililon ethnic Cambodians living in South Vietnam. The Cambodian Government does not consider them to be foreign troops and Premier Lon Nol asked President Nixon on April 20 for their use.

In answer to a question about the men, a United States Embassy spokesman replied: "As far as we know these are ethnic Cambodians who wish to fight for the Cambodian Gov-

Continued on Page 6, Column 4

ked for Hospital Abortions

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needed, Mr. Gelfand said, to prevent out-of-city women from overtaxing New York hospitals to take advantage of the state's relaxed law.

"Even today," he said, "many patients are being turned down for lack of beds and physicians are being told to delay non-emergency operations as long as two or three months."

The Councilman added:

"The staggering burden of caring for the residents of this city grows worse every year. It is unfair to ask our people to subsidize a hospital system which may be devoted to making New York City the nation's abortion capital."

The only exception his bill

Continued on Page 24, Column 4

British Hoopla Honors Staid Pilgrims

By BERNARD WEINRAUB

Special to The New York Times

PLYMOUTH, England May 3—The voyage of the May-

smocks danced around a maypole on the promenade facing the mist-covered bay — the city's fond gaze into the past

drizzle fell, Mr. Saltonstall and thousands of others gazed at the fireworks and bonfires shimmering in this southwest

f The Times

Best Shot

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Cassius Clay

Ali [illegible] and lawyer, Robert
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First Signs of Backlash Emerge In Drive for Ecological Balance

Continued From Page 1, Col. 5

Luther P. Gerlach, University of Minnesota anthropologist, as one situation in which tensions could develop as the clean environment crusade is pressed.

Professor Gerlach, who has studied the ecology movement for the last two years, said he has expected opposition to the movement for about a year.

Grave Division Seen

"People felt ecology would unite the country," he said. "It will be more divisive than black power, even more divisive than the war in Vietnam. The conflicts in ecology are latent. Ecology demands more fundamental changes than any other revolution."

The prospect of change has already stirred some dissent, in various forms. For example, the Daughters of the American Revolution has approved a resolution saying that the pollution problem "is being distorted and exaggerated by emotional declarations and by intensive propaganda."

Several newspapers around the country noted that Earth Day, dedicated to fighting pollution, fell on Lenin's birthday. One, The Richmond News-Leader, said, "The date was not selected by chance. Here we have a classic example of how the Communists pervert idealism and worthwhile causes to their own purpose."

Wants Larger Population

Floyd Oles, acting city manager of Tacoma, Wash., who is a conservative, also noted the coincidence with Lenin's birthday.

He further told the Tacoma Mall Kiwanis Club recently that pulp-mill and smelter pollution in the city "smell like jobs" and that he regretted Tacoma residents no longer boasted about smokestacks going up in the industrial area. He said he would be happy if the United States had a larger population, "because we are only a small minority on this globe."

Mayor Carl B. Stokes of Cleveland, a Negro, expressed a different kind of concern that seems to be widespread among black leaders.

"I am fearful that the priorities on air and water pollution may be at the expense of what the priorities of the country ought to be: proper housing, adequate food and clothing," he said. There is "glamor" in ecology, and it "makes people in the suburbs of the country feel involved," he went on.

State Representative Joseph L. Torak, a Republican from suburban Montgomery County, near Philadelphia, has told the Pennsylvania Legislature he sees no merit in a plea by United States Senator Gaylord Nelson for control of pollution, or in two student speakers' requests for birth control programs.

Finds Beliefs Challenged

He said, in regard to the proposals, "Another unsuspecting and trusting state legislature was the victim of another snow job by the leadership." Never before have the basic Christian-Judaic beliefs been challenged as now with phony social reform propositions."

Glenn Kimble, director of air and water resources at the huge Union Camp papermill in Savannah, among Georgia's largest single sources of pollution, is one of several industrialists in that state who have strenuously complained about "hysteria" over ecology.

He used the whooping crane as an example.

"People get extremely emotional about losing a species," Mr. Kimble said in a recent newspaper interview. "But animals have been dying out every year clear back to the dinosaurs, and in most cases man had nothing to do with it. For that matter, it probably won't hurt mankind a whole hell of a lot in the long run if the whooping crane doesn't quite make it."

Blames the Consumer

Milton Friedman, the University of Chicago economist, is one of several observers who have said they believe the ecology crusade may be a fad, and he decries what he believes to be the tendency of some crusaders to cast industrial polluters as "evil devils who are deliberately polluting the air." The real source of pollution, he contends, is mostly the consumer.

Around the country, there is little evidence that concern over pollution has so far changed the habits of many consumers. Although some motorists are reportedly buying lead-free gasoline, and although here and there appear pockets of enthusiasm for returnable containers and biodegradable detergents, most buying habits appear to be untouched.

Supermarkets in Boston say their surveys show no major fluctuations in consumer habits, and they have therefore not taken the initiative in stocking their stores with nonpolluting products and containers.

Some consumers say they would buy nonpolluting detergents if they could only be clearly informed about them.

Supplementary Over-Counter

The following is a supplementary list of over-the stocks prepared by the National Association of S Dealers. It consists of securities less widely held that, for other reasons, do not appear on the dail the-Counter list. The range shown reflects prices securities could have been sold (bid) or bought last Friday.

	Bid.	Asked.
ABC F	2	2½
ASI Com	5	5¾
Ab & Fitch	9	10½
Acadia	1½	2¼
Acousica As	1	1½
Acquston Sy	1½	1⅞
Ad Pres	5¾	6¼
Ad Mig	24	24¾
AdvMem$	13½	14½
Aeroflex	4¼	5¼
Agrotron	1⅝	2⅛
AircraftMch	1⅛	2⅛
Alden Care	4¾	5¼
Allegri T	1	1½
Allen RG	5¾	6½
Allied Aero	1⅜	1⅝
Allied Fd	11¼	12
AlliedM&S	9	10½
Allied Res	2	2¼
Am Agron	14½	15½
Am Auto TC	2	3
Amer Cap	1⅜	1⅞
Am Expld	62	62½
Am Foods	1⅞	2⅜
Am Med All	3	3½
Am Rcwys	3⅛	3⅜
Am Sc Eng	6	7
Am Ser	2⅛	2⅜
Americar	4¾	5¼
Anchr Alys	2¼	2¾
Antarenni	5¼	6¼
Ap Nat Life	3	3½
App Logic	6¼	7¼
Arch Mrbl	3	3½
Atl App	1¾	2¼
Automer	4¼	5
Automtique	2¾	3¼
Autimcs	1¼	1¾
BMA Asso	3	3½
Balt Airco	61	62
Balt Bus F	15	16
Basic Fd	5¼	5¾
Bel Fuse	2	3
BerkshGr	5.66	6.19
Bio Sc R	2	3
Borne Ch	1	1⅜
Boro El	7¾	8½
Broadcastn	2⅞	3⅜
Brogan Asso	2¼	2¾
Brun Sens	2	2½
Bun&Burger	1¼	2
Burnham F	9.09	9.09
Buxton's	3½	4¼
CTP	1¼	1¾
Cam Nu	10	11½
Camp Aff	7	8
Cand Fel	4	5
CarrolsDay	8	8¾
Carter Gr	2	2¾
Carvel	6½	7½
Casselte Cf	8	8¾
Cert Creat	2½	3½
Chalco Eng	3	3½
Char-Carson	2	2⅜
Chatam	1⅜	1⅞
Chem Polls	7½	9
Chemtree	1¼	1¾
Class St Ser	8	9
Clay Mark	17½	19½
Cle Ware	8½	9¼
Clinton Eng	1⅛	1⅜
Coast Dyn	3¾	4½
Coast Photo	2⅜	3⅛
Colgate Mot	2¼	2¾
Col Prop	1¾	2½
Colman A	5½	6¼
Colo Inst	7	7¾
Col Cable	9¾	10¼
Col Tech	1¾	2⅛
Com Share	5½	6¼
Comp'nts	6	6¾
Compucolor	4⅛	4½
Comp Age	1⅜	2⅛
Comput Clr	2⅞	3⅜
Comp Data	6⅛	6½
Comp Ent	1¼	1¾
Comp Env	6¼	7¼
Comp Int	1½	2
Comp Met	1¼	1⅜
Com Net	5	6
CompOptcs	7	8
Comp Stat	1⅝	2⅛
Comp Stud	5	6
Comtel	1¾	2⅛
Connsuranc	2⅞	3⅜
Cons An	1¼	1⅝
Cons.Mut.	10.54	10.54
Consol Prod	6	6¾
Cons&Tech	11	14
ConsWater	19½	21
Cont Semi Con	2½	3
Control Ind	3	3½
Cooky's Steak Pub	2¼	2¾
Cord's Crp	26	28
Corn N	11½	12½
Cosmos	1	1¼
CreativeCap	5½	7½
Crow Milk	5⅞	6¼
Curtis Elect	2⅜	2½
Cut & Curl	7½	8¼
Cybern Ed	1¼	2
Davos Inc	1⅞	2⅛
DFI Com	1¾	2½
Data Dyn	1½	2
Data Mgt	2½	3
Dataram	8	9
DaylistInd	1⅛	1½
Dean Des	3¾	4¼
Del Elec	1⅜	1⅞
Delanair	1	1½

	Bid.	Asked.
Delta Corp	9	5¼
DeyNuclear	1	1¼
Dextra Corp	1⅜	1⅝
Diamond Sh Com	10½	11½
Diapulse	3¾	4¼
Digitek	2¼	2¾
Disc Corp of N.Y.	47½	49
Doll Fund	8.06	8.06
Dolar Gen	14⅜	14⅞
Dolas&Lom	8¼	8¾
Dowz Elec	7¾	8½
Drexel Dyn	1¾	2¼
Drico Ind	5	5¾
Dubow Chm	1¼	1½
Dublin Ens	3½	4
Duncan	7⅞	8¼
Dyna Ray	1½	2½
E. H. Rsch	13	14½
E.L.I. Ind	6½	7¼
EME Ind	1	1½
Eagle Gen	1¾	2¼
Eagle Inc	1½	2
Eanco Inc	1¼	2
Eastco Saf Eq	1½	2
East Ind	12¾	13¾
Edison E.	12¼	13¼
Edwards Ind	8	8¾
Elco Elect	1⅞	2⅜
Elnson Free & Det	3½	4
Eldon Ind	11	13
Elctr Mch	4	4½
Elec Con	2¾	3½
Elec Tab	4	4⅜
Equity Leasing Corp	3½	4¼
Exec Sec	15	20
Expln Co	14	14¾
Fact Sy	2¼	3
Fearn Int.	11¾	12¾
Fed Pet	4¼	5
Fed Screw	20	22
Ferry C&S	7¾	8¾
FirstRepAm	1¾	2
Fla Tile	14½	15¼
Foam USA	2⅜	2⅞
Food Res	6¼	6¾
Forbes	3½	4½
Four Star	2	2½
Fownes Br	6¾	7½
Frigitrncs	21	22
Frouge	1½	2¼
GBC Clsd Cr TV	11	12
Gal Frl	1	1½
G.L.Enter	3⅜	3⅞
Galaxy Fd	5.86	6.40
Galaxy Oil	2⅞	3⅛
Gelliss (S) & Co	8	9
Gen. Comp. Corp	2½	4½
GenCmpSy	10	11
Gen East	16½	18½
Gen Laser	3¾	4½
Gen House	10	11
Gen Microw	1¾	2¼
Gen Nur Hm	1¾	2½
G Tel Cal	11½	12¼
Geon Ind	9	9¾
Georgia Bd Fib	4	4½
Gibson C.R.	5¾	6¾
Girard Ind	3⅛	3⅝
Goddard Ind	1⅜	2
Gold Pre	3⅞	4⅜
Goldsmith	5	6
Gondas Crp	5½	6
Gr Yellow	1¾	2
Gulf Res	6	7
HTV Syst	3	3¾
Hall (Frank B.) & Co.	14¾	15½
Harv Ind	3¾	4¼
Hawaii Pac	16	16¾
Haydn Pub	4½	5½
Hem Hotels Corp	3¾	4¾
Henry's Dr	2⅛	2⅜
Herbert AM	1¼	1½
Hermitite Corp	6¼	7¼
Hrld Fd	101.15	103.19
Hill Bros	2¾	3⅛
Hdges (Wm)	6¼	7
Hzns Res	8¼	9
House of Westmore	1½	1⅞
Hydro Tech	1	1¼
ICP Inc	9½	11
ILC Ind	4	4½
Image Sys	13½	14½
Imperial Ind	7	7½
Ind Fin Ag	1¾	2¼
Index Fd. of Boston	11.89	12.99
Instrumnt S	1⅜	1⅝
Int Rsrcs	42	44
Intelectron	5½	6½
IntLife Ins	10	11
Interdata	8	8¾
Int Grth Fd	3.58	3.91
Int Res Sev	1	1¼
Inv Counsel	1⅛	1⅜
Irving Pl	2¾	3¼

	Bid.	Asked.
Isomet	8½	10½
J K Ind	2¼	2½
Joyce Leslie	4	4¾
Julie Res Labs	1⅝	2
K B Mark Sys	9	10½
KC Life	405	420
KentMoore	28	29½
Kent Ind	1⅛	1⅜
Knick Toy	3⅜	4
Kratos	2⅛	2½
Lad El Sys	1¼	2
Lamb Coin	3	4
Lampert Ag	2¾	3¼
Lamston M H	20	21½
Landa Ind	1⅛	1⅜
LandsVrkCo	2⅜	3⅛
Lannet Co	2¾	3¼
LeTourneau R G	5	7
Lee Wilson Eng	2½	2¾
Leisure Dyn Inc	9½	11
Levin Townsend Comp.	1¼	2
Lexington Inst	2⅛	2⅜
Lipe Rollwy	8	8½
Lisa Int	3¾	4½
Lord Hardwick	9	10
Lovie Prod	2¾	3¾
Lumex	8¼	9¼
Lumidor Ind	2½	3
Lunn Lam	2⅜	3⅛
Madison Ind	3¾	4¼
Magic Mark	1½	1⅞
Magma Pow	1⅝	1⅞
Manati-Sug	3¾	4½
Marva Ind	1	1¾
Marcon C	9¼	10¼
Mkt Facts	26	27
Markite Corp	2½	3
Marshall Elec	2⅜	2⅞
Massengill S E	22	23
Master Craft	2	2½
Masters Inc	9	10
Math Appl	2⅞	3⅜
Maust C&C	1⅛	1½
Mach Bld	1½	2
Media-Creat	3	3½
Medlatrics	2	2½
Medicaid El & Phar	5	5⅜
Medici Fd	7.30	7.30
Merc Elec	1⅜	1¾
Met Pro W	17	18
Michaels J	8¼	9¼
Micro Unid	3⅜	4⅛
Mid Atl Ut	6	7
Minn NG	15	15¾
Mir Mart	6¼	7
Mo Fu Tr	1⅜	1⅝
Mirl Mart	6¾	7¾
Mo PRRB	7.25	8.00
Mo-Res-Lab	3¾	4
Mod Div	2	2⅜
Mr. Swiss	3¾	4¾
Monrch Tile	1⅜	1⅝
Monica SC	3⅛	3⅜
Mmouth El	1⅛	1⅜
Monroe Co	3⅛	3⅜
Motor Coils	5	5¾
Motor Parts	3¾	4¾
Motor Travl	1⅛	1⅜
Moxie Co	3¾	4½
Multi Media	1	1¼
Music Fair	1⅞	2⅜
My Toy	6	7
Naes Thom	2167	2189
Nasco Ind	7½	8½
Natl Beryl	10½	12½
Nat Cleve	1⅜	1⅞
Natl Spin	7⅞	8⅜
Nat Tel	2¾	3¾
Nationwide	1½	1⅞
Nwide Auto	1¼	2¼
Nease Ch	3½	4
Neotec	9	10
Netgo Ltd	1⅞	2⅜
Network El	2⅛	2½
Nevada S&L	4¼	4¾
N J Life	2	2¼
Nisarc Com	2½	3
Nissen Co	9	10
Nfield Prc	2⅞	3¾
Ocean Rc	1¾	2¼
Odl Fort	6½	7½
Omni-Spec	7½	8¼
Omnitec	2	2½
On Guard	3	4
Oper Match	1½	2⅛
Orlen Re	3½	4¼
Osles Ors	2¾	3¼
Osrow Prd	2⅛	2½
Oseas Shldg	7½	7⅞
PRF Corp	2⅛	2⅜
Pack Elec	7	8½
Pack Prod	5	5½
Pan A Dyn	9½	10¼
ParagonNatl	5	6
Penn Va	61	65
Perry Ch	3¾	4¼
Pell Res	1⅜	2
Phillips P	3⅞	4⅜

Photo M		
Planet C		
Planet O		
Polypi S		
Pundeso.		
PortCan		
Power M		
Preston		
Prince C		
Princeto		
Printogs		
ProfitBy		
Prog Cor		
Prog Ind		
Quatron		
Qualifas		
Quanta S		
RJ Com		
Racon In		
Radition		
Recoton		
Rectisel		
Red Rop		
Rentex S		
Robls Co		
Roch Ins		
Rudd Me		
SYS Asso		
St.JohnD		
Sal & Sal		
St. Lou S		
Samson		
Sav Suga		
Savant In		
Saxton P		
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Siera Rsc		
Sigma C. Ind		
Silo		
Simplex		
Snig & Sn		
Sorg Prin		
So Divers		
Spec Stun		
Spec Con.		
Std Mfg		
Stan Res		
Staninc		
Stange Co		
Sterscp T		
Suava Sh		
Summit		
Super'r Cr		
Swift Ind		
Swiss Ch		
Synchone.		
Syracuse		
Syst Asso.		
Taca Intl		
Tad's Ent.		
Tax Cp Am		
TechDent.		
Technogr		
Toeg Resc		
Termnl E		
Tex Tenn		
Textone In		
Thiel Inc		
Thomas H		
Titan Well		
Tizon Chm		
Toledo Mi		
Trans-A E		
Trans-Son		
TrnsidynG		
Trans Pool		
Travel Ma		
Triang Pa		
Tronch Re		
Ultrascnce		
Ultrasoncs		
UnicareSer		
U.S. Comp		
U.S. Crow		
US Lumbe		
Univers In		
Upson		
Vacu Dry		
VacuumCo		
Vngrd Dat		
VentureSF		
Venus DD		
Vesco Corp		
VibratnMnt		
Viking Gen		
Viking Ind		
Vista Ind		
Vitabath		
Wasko Gold		
WackEd&C		
Weingartn		
WestmCoat		
West Lfins		
WTravelLif		
WhitehallC		
Wynn Ind		
Xlox		
YankeePlst		
Yard Man		
Zemco Ind		