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OA/ID Number: 13727
FolderID:

Folder Title:
Environment - Pro Aggressive Action [Climate Change] [1]

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M E M O R A N D U M

TO: Jeff Frankel, Council of Economic Advisers
FROM: Rob Stavins 
DATE: October 6, 1998
RE: ***Press Clippings***

This set of clippings was sent to me by a clipping service.
Perhaps you'll find them of use.

Enclosure

—

Rocky Mountain News

August 9, 1998

5B

Global warming skeptics playing Chicken Little, too

By Robert N. Stavins

Advocates of aggressive action to avert potential damages from global climate change are frequently accused — sometimes reasonably — of playing “Chicken Little” by sketching doomsday scenarios of what will happen if nothing is done.

But strident global warming skeptics, too, can be subject to this same criticism when they use unduly gloomy economic forecasts of the costs of taking remedial action.

Recently, Wharton Econometrics Forecasting Associates released a study that suggests grave economic consequences for the United States from any attempt to implement the Kyoto Protocol on Climate Change. There is legitimate scientific and economic disagreement about many aspects of the climate change debate, but the WEFA study, unfortunately, does not make an honest argument. Instead, it provides a worst-case — indeed, an impossible case — analysis of the costs of U.S. compliance.

To forecast the future outcomes of public policies, economists frequently must employ complex and powerful computer models. Every such model contains mathematical assumptions to represent real-world policies or conditions. The WEFA model, as its analysts freely acknowledge, omits in its assumptions all of the flexibility mechanisms included in the Kyoto Protocol and in the Clinton administration's stated policy positions.

First, the WEFA study assumes that no countries undertake emissions trading, even though the right of the industrialized countries to engage in such trading is stated in the Kyoto agreement. Studies by Stanford University's highly regarded Energy Modeling Forum indicate that international trading among industrialized countries could reduce U.S. costs of emission reductions by 50 percent.

Second, the WEFA study assumes that developing countries will do nothing to reduce greenhouse gas emissions. But the Kyoto Protocol establishes the Clean Development Mechanism, which could lower U.S. costs by an additional 20 percent. More important, if key developing countries participate more fully, the U.S. costs could be reduced even more.

Third, the WEFA study assumes that emissions reductions would occur only through carbon dioxide reductions. But all six major greenhouse gases are covered by the protocol. Moreover, the Kyoto agreement gives nations the flexibility to choose which greenhouse gases to reduce. Allowing for “trading” across gases could lower costs by another 10 percent.

By ignoring these flexibility mechanisms, the WEFA analysis fails to assess accurately the costs of complying with the Kyoto Protocol. As the administration has stated over and over again, reducing greenhouse emissions can be done “smart” or it can be done “dumb.” By failing to account for

these flexibility mechanisms, the WEFA analysis calculates the costs of doing it “dumb.”

Greenhouse gas emissions that contribute to global warming can be reduced cost-effectively by employing market mechanisms. The result is that the economic cost to the United States of complying with the Kyoto Protocol targets can be 10 percent of what WEFA estimates. That's 90 percent less than the WEFA study claims.

The president and vice president have made it perfectly clear that the Kyoto Protocol will not be submitted to the Senate until there is meaningful participation by key developing countries. Thus, the WEFA study is not only a worst-

case analysis, it is essentially an impossible-case analysis. By making a grossly unfair comparison, WEFA raises the specter of “Chicken Little,” warning that the economic sky will fall, and thereby further distorting the already contentious and confusing debate.

Most likely, the economic costs of reducing the risk of climate change will be significant. Contrary to overly optimistic claims about abundant “win-win opportunities,” it could cost the U.S. economy between three-tenths of 1 percent and 3 percent of annual gross national product to meet the U.S. targets under the Kyoto Protocol, depending on the degree to which flexibility mechanisms are employed.

Such costs are not trivial, but neither do they represent national economic catastrophe, as some have claimed. Indeed, none of these cost estimates tell us much of value, in the absence of sound estimates of the other side of the ledger — the economic benefits of reducing the risk of damages due to climate change.

The policy process is poorly served by exaggerations from either side of the debate.

Robert N. Stavins is Albert Pratt Professor of Business and Government and faculty chair of the Environment and Natural Resources Program at the John F. Kennedy School of Government at Harvard University.

The Journal of Commerce

AUGUST 7, 1998

PAGE 7A

Climate change: Talk sense

BY ROBERT N. STAVINS

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AUGUST 4, 1998

**Bacon's**

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The High Tide of the Conquer- quarters. A... ..

Skeptics of global warming playing chicken little, too

By Robert N. Stavins
scripps Howard News Service

— COMMENTARY —

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AUGUST 4, 1998



Bacon's

3986

ECOLOGY VS. ECONOMY 'Kyoto' enemies are polluting the debate with false numbers

By Robert N. Stavins

Scripps Howard News Service

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AUGUST 5, 1998



Bacon's

Global warming skeptics use dubious economic model

By ROBERT N. STAVINS
Scripps Howard Service

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AUGUST 5, 1998



Bacon's

3786 Global-warming skeptics exaggerate cost of reducing gases

By ROBERT N. STAVINS
Scripps Howard News Service

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AUGUST 7, 1998



Bacon's

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AUGUST 17, 1998



Bacon's

3786

OK - SAN ANGELO STANDARD-TIMES

Global warming facts skewed

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To forecast the future outcomes of public policies, economists frequently must employ complex and powerful computer models. Every such model contains mathematical assumptions to represent real-world policies or conditions. The WEFA model, as its analysts freely acknowledge, omits in its assumptions all of the flexibility mechanisms included in the Kyoto Protocol and in the Clinton administration's stated policy positions.

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COMMENTARY

emission reductions by 50 percent.

Second, the WEFA study assumes that developing countries will do nothing to reduce greenhouse gas emissions. But the Kyoto Protocol establishes the Clean Development Mechanism, which could lower U.S. costs by an additional 20 percent. More important, if key developing countries participate more fully - for example, by taking on emissions targets and participating in international trading - the U.S. costs could be reduced even more.

Third, the WEFA study assumes that emissions reductions would occur only through carbon dioxide reductions. But all six major greenhouse gases are covered by the protocol. Moreover, the Kyoto agreement gives nations the flexibility to choose which greenhouse gases to reduce. Allowing for "trading" across gases could lower costs by another 10 percent.

Fourth and finally, the WEFA study assumes that no carbon sink opportunities for absorbing greenhouse gas emissions are available. But the Kyoto agreement explicitly includes forestry activities and counts them in a way that is particularly attractive for the United States. Including low-cost carbon sink options reduces U.S. compliance costs even more.

By ignoring these flexibility mechanisms, the WEFA analysis fails to assess accurately the costs of complying with the Kyoto Protocol, in part because the analysis is fundamentally inconsistent with the Clinton administration's publicly stated approaches to reducing greenhouse gas emissions.

As the administration has stated over and over again, reducing greenhouse emissions can be done "smart" or it can be done "dumb." By failing to account for these flexibility mechanisms, the WEFA analysis calculates the costs of doing it "dumb."

Greenhouse gas emissions that contribute to global warming can be reduced

cost-effectively by employing market mechanisms. The result is that the economic cost to the United States of complying with the Kyoto Protocol targets can be 10 percent of what WEFA estimates. That's 90 percent less than the WEFA study claims.

The president and vice president have made it perfectly clear that the Kyoto Protocol will not be submitted to the Senate until there is meaningful participation by key developing countries. Thus, the WEFA study is not only a worst-case analysis, it is essentially an impossible-case analysis.

By making a grossly unfair comparison, WEFA raises the specter of "Chicken Little," warning that the economic sky will fall, and thereby further distorting the already contentious and confusing debate over what to do about the threat of global climate change.

Most likely, the economic costs of reducing the risk of climate change will be significant. Contrary to overly optimistic claims about abundant "win-win opportunities," it could cost the U.S. economy between three-tenths of 1 percent and 3 percent of annual gross national product to meet the U.S. targets under the Kyoto Protocol, depending on the degree to which flexible, international policy mechanisms are employed.

Such costs are not trivial, but neither do they represent national economic catastrophe, as some have claimed. Indeed, none of these cost estimates tell us much of value, in the absence of sound estimates of the other side of the ledger - the economic benefits of reducing the risk of damages due to climate change.

The policy process is poorly served by exaggerations from either side of the debate.

Robert N. Stavins is Albert Pratt Professor of Business and Government and faculty chair of the Environment and Natural Resources Program at the John F. Kennedy School of Government at Harvard University.



cc: JF ✓
JA
RL
Anne orig

**CENTER FOR INTERNATIONAL ENVIRONMENTAL LAW, GREENPEACE USA, INSTITUTE FOR
POLICY STUDIES, NATIONAL ENVIRONMENTAL TRUST, OZONE ACTION, PUBLIC INTEREST
RESEARCH GROUP, WORLD WILDLIFE FUND**

April 24, 1998

Mr. Todd Stern
Assistant to the President for Special Projects
The White House
Washington, DC

Mr. Stuart Eizenstat
Undersecretary of State for Economic, Business and Agricultural Affairs
Department of State
Washington, DC

Dear Todd and Stu:

Thank you for your determination and commitment to averting the threat of climate change. Without your labor, we would not have an international mechanism, the Kyoto Protocol, for reducing greenhouse gas emissions. Despite this achievement, much work is needed to properly implement the Protocol. We believe that there are many opportunities for improving its environmental effectiveness and hope you will carefully consider some of the following ideas.

Many of us worked hard on a letter that was sent to you on March 27 from some members of the environmental community, and we endorse most of its recommendations. The undersigned organizations would like clarify our priorities and concerns.

- **Prioritize Domestic Action:** All nations should achieve most, if not all, of their emissions reductions at home, consistent with the Protocol. This is particularly important for the US as it would signal that the US intends to finally make good on its own commitments, which will be the best vehicle to get the developing world on board. Early action on domestic reductions will galvanize the deployment of low and no-carbon technologies and make our economy more energy efficient. This is critical because much deeper cuts will be needed later on.

On this subject, we were dismayed that the President did not target carbon dioxide in his proposal for electric utility restructuring and we urge you to reconsider this position. To not use this opportunity to address one of the largest sectoral sources of greenhouse gases in the United States is simply unacceptable and sends a signal to the rest of the world that the US is not committed to domestic action. Simply requiring old power plants to meet the

same standards as new coal-fired power plants could help us achieve approximately 20 percent of the US Kyoto commitment.

- **Limit Flexibility Measures:** To insure that all countries properly prioritize domestic action, the US should negotiate a quantifiable limit on the amount of reductions any country can achieve through the three international "flexibility" measures: joint implementation, international emissions trading, and the Clean Development Mechanism. While these measures could improve the cost-effectiveness of reductions, they are simply a means, not an end. These tools must be able to deliver demonstrable reductions. Therefore, these mechanisms should be narrowly restricted in order to experiment in a controlled manner. Based on our analysis of what it would take to get at the "hot air," we suggest a quantified "buyer" and "seller" cap on all international flexibility transactions. In other words, no country should be able to buy most of its obligations abroad, and no country should be able to sell an inordinate amount of credits either.
- **Hot Air:** One of the biggest loopholes in the Kyoto Protocol is the Russian target and consequent "hot air." Measures should be taken to restrict the amount of hot air available to the rest of the world from countries with economies in transition. This could be done by requiring selling countries to adopt policies and measures that would result in emissions reductions at least much as the amount they sell. Imposing a buyer and seller cap on the amount any country is allowed to trade via Article 17 (trading) or joint implementation would also help limit hot air. Finally, the US should work through other forums such as the G-8 Summit in Birmingham to ask the Russians to voluntarily strengthen their target to at least 10% below 1990 levels. We understand they were prepared to accept 5% but never received enough pressure to do so.
- **Scientific Review of Sinks:** Implementation or further elaboration of the land use change and forestry provision of the Kyoto Protocol should be *preceded* by a thorough IPCC analysis of all the problems associated with so-called "sinks" of greenhouse gases. This analysis should study the methodological, reporting, and verification issues specifically mentioned in the Protocol. In addition, a much broader examination is needed to assess the long-term implications for both climate and forest protection, including any perverse incentives that could arise from the effective commodotization of the world's forests based on their carbon value. This June, the Subsidiary Body for Scientific and Technical Advice (SBSTA) should request the IPCC to write a special report on the subject.
- **Horse Before the Cart – Rules Before Credit:** It is absolutely critical that rules are developed for the various flexibility mechanisms before *any* transfer and acquisition of carbon credits. Otherwise, those entities already experimenting with "early action" will retroactively twist the rules to suit their

needs. In particular, a rigorous domestic monitoring, reporting, verification and enforcement regime must be in place *before* any emissions trading or project-based emission reduction projects is permitted. The principle of verifiability and transparency must be foremost in your minds as rules are developed over the next few years for the Protocol's implementation.

- **Clean Development Mechanism:** If the CDM is to be used as a vehicle for sustainable development, then it should be focused on supporting those technologies that are most sustainable and chronically underfunded. In defining the additionality requirement, project activities should be limited to renewable energy and energy efficiency projects. Coal, oil or nuclear power projects should be prohibited. Emissions "credits" generated before 2008 should not be added to Annex I parties' allocation because that could inflate their budgets, enabling global emissions to be higher than what they otherwise would be. Until a full scientific analysis has been conducted by the IPCC, credit should not be granted for sinks.¹

The Kyoto Protocol must be environmentally effective. The measures outlined above provide a first step toward reaching that goal. Much stronger steps will be needed, especially deeper reductions, to truly avert the threat of climate change.

Sincerely,

John Passacantando
Ozone Action 202-265-6738

Gary Cook
Greenpeace USA

Peter DeBrine
World Wildlife Fund

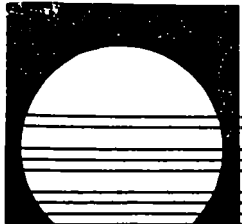
Phil Clapp
National Environmental Trust

Daphne Wysham
Institute for Policy Studies

Don Goldberg
Center for International Environmental Law

Gene Karpinski
Public Interest Research Group

¹ CIEL's position on the CDM is not precisely the same as the one given here.



SECC

NEWS RELEASE

Safe Energy Communication Council • 1717 Mass. Ave., N.W., Suite 805 • Washington, D.C. 20036
(202) 483-8491 Fax: (202) 234-9194

For Immediate Release:
Tuesday, April 21, 1998

Contact:
Linda Pentz, (202) 483-8491

**Statement of
Scott Denman, Executive Director
Safe Energy Communication Council
on behalf of the
Sustainable Energy Coalition**

(Washington, D.C.) Good Morning. I am Scott Denman, Executive Director of the Safe Energy Communication Council, the energy watchdog coalition based in Washington, D.C. The Council is proud to be one of the founding members of the Sustainable Energy Coalition and to represent the Coalition today to report the results of its national Earth Day survey on federal energy and climate policy.

The Sustainable Energy Coalition has commissioned the only annual national poll on federal energy budget policy over past four years. This year, conducted by International Communications Research (ICR) of Media, Pennsylvania, the national survey of 1,000+ registered voters was conducted on April 8-14, and has a margin of error of +/- 3 percent. The number of survey respondents was weighted to mirror the U.S. demographic mix. IRC's client portfolio includes survey services for such news organizations as ABC, NBC, *Newsweek*, *Associated Press*, *USA Today*, and *The Washington Post*.

With the focus on federal energy funding priorities, the findings of this survey are consistent with past results and reflect unequivocal support for clean energy research and development (R&D). This year, fully six out of ten (60%) American voters, whether Republican, Independent or Democrat, want renewable energy or energy efficiency to be the top priority for federal R&D funding. Among those surveyed, 32% selected renewable energy R&D as their top choice and 28% chose energy efficiency. The combined endorsement rises to 72% when just those stating a preference are considered – a higher level of support than recorded in 1996.

These results are in stark contrast to the respondents selecting natural gas (10%), fossil fuels (8%) and, lastly, nuclear power R&D (6%) as their top choice for taxpayer support. On Earth Day, it's time for Congress follow the lead of the people by substantially shifting energy R&D funding toward affordable and sustainable energy technologies.

*** More ***

Safe Energy Communication Council

Environmental Action • Friends of the Earth • Greenpeace • Media Access Project • Nuclear Information & Resource Service • Organizing Media Project •
Public Media Center • Renew America • Sierra Club • Telecommunications Research & Action Center • U.S. Public Interest Research Group

The poll's respondents were equally emphatic when asked to identify their top candidates for cutting among the U.S. Department of Energy's (DOE) major energy R&D programs. When asked which energy options should be subject to funding cuts first, 32% of those responding said cutting nuclear power programs was their top choice.

Linked with the responses to the question on funding priorities, it should be easy for Congress to respond by axing the new line items for nuclear power in the Fiscal Year (FY) 1999 DOE budget: the Nuclear Energy Research Initiative and the Nuclear Power Plant Optimization Program. To paraphrase the Senate Appropriation Committee report of last year, if this mature industry wants nuclear R&D, it should pay for it itself. Cuts in fossil fuels received the second highest response (22%). Following well behind were renewable energy technologies at 8%; natural gas at 8% and energy efficiency programs at 4%, virtually the margin of error.

Voters were then asked to address a combination funding and climate change policy question. They were asked whether: (A) Congress should act now to increase funding for energy efficiency and renewable energy programs to combat global warming caused in large part by the burning of fossil fuels; or (B) Congress should wait until the Senate ratifies the Kyoto treaty on limiting greenhouse gas emissions before increasing funding for these programs.

Nearly six out of ten (57%) of those voicing an opinion want Congress to act now to increase these energy R&D programs that can help to cut greenhouse gas emissions. Among just those offering an opinion, 61% of independent voters support increasing funding now and a majority of Democrats (60%) advocate an increase now. Even half of those Republicans offering an opinion support a funding increase now when presented with the two options.

Historically, according to the Congressional Research Service, among all the energy R&D options, nuclear power has received more than half of all taxpayer support for energy research and development from 1948 through 1996. Yet, today, nuclear reactors generate less than 10% of the total U. S. energy supply – approximately 20% of U.S. electrical production.

On the other hand, renewable sources, energy efficiency and conservation have received less than 20% percent of government R&D support over the same period, despite the fact that efficiency "sources" alone have reduced projected energy demand by some 20 percent since 1975 – a greater contribution than nuclear power has been able to supply in its history.

*** More ***

Furthermore, the DOE's own internal analysis conducted during the Bush Administration by the DOE's Office of Policy, Planning and Analysis determined that efficiency and renewables technologies should be highest on the list of DOE priorities, while relegating nuclear and other conventional sources to the lowest rankings on that same priorities list.

Therefore, we concur with President Clinton's past statement that "it's time to make the right energy choices." We cannot simply re-tread the tired energy policies of the past to meet the environmental and economic challenges of today. The Sustainable Energy Coalition survey offers a clear direction for advancing energy policies for a more prosperous economy and healthier environment. We urge Congress to follow the leadership of their voting constituents by vigorously backing sustainable energy programs with strong financial support and public leadership. Thank you.

*** End ***



SUSTAINABLE ENERGY COALITION

315 Circle Avenue, #2; Takoma Park, MD 20912-4836; 301-270-2258; fax: 301-891-2866

National Earth Day Survey Finds Strong Support for Funding Energy Efficiency and Renewable Energy But Broad Opposition to Nuclear Power and Fossil Fuel Programs

Voters Support Increasing Sustainable Energy Budgets to Fight Climate Change Whether or Not U.S. Senate Ratifies Kyoto Treaty

For Release: April 21, 1998

Contact: Henry Griggs 202-326-8714

Washington DC -- A national public opinion survey released today by a broad coalition of business, environmental, consumer, and energy policy organizations reveals overwhelming, bi-partisan, and consistent support for federal funding of renewable energy and energy-efficient technologies. Moreover, voters support increasing funding for these technologies now to reduce the emission of greenhouse gases whether or not the U.S. Senate ratifies the proposed global climate change treaty negotiated in Kyoto this past December. However, little support exists for additional federal funding for fossil fuels such as coal and oil or for nuclear power technologies.

These are among the key findings of the survey, "America Speaks Out on Energy: A Survey of Federal Energy Funding Priorities," conducted for the Sustainable Energy Coalition by International Communications Research of Media, PA from April 8-14 among a sample of 1,000+ registered voters. The survey has a margin of error of +/-3.0%.

For the fourth year in a row, a majority of all voters (60%), and nearly three-quarters (72%) of those expressing a preference, would give the highest priority to funding the U.S. Department of Energy's (DOE) renewable energy and energy efficiency research and development (R&D) programs. On the other hand, nearly a third (32%) of respondents selected nuclear power as the first R&D program that should be subject to budget cuts, followed by fossil fuels (22%). In fact, this survey found even higher levels of support for sustainable energy programs and opposition to nuclear power and fossil fuels than were measured in the Coalition's earlier polls. These findings are consistent among Republicans, Democrats, and Independents.

Moreover, among voters offering an opinion on the issue, a clear majority (57%) favor increasing funding for renewable energy and energy efficiency programs now to curb greenhouse gas emissions rather than wait until such time as the U.S. Senate ratifies the proposed Kyoto treaty. This sentiment is particularly strong among Independents (61%) and Democrats (60%) while Republicans are evenly divided. The Clinton Administration has requested a 30% increase in funding for DOE's sustainable energy programs in FY'99 but the Republican congressional leadership is opposing any increases unless and until the Senate ratifies the Kyoto treaty.

#####

The Sustainable Energy Coalition, founded in 1992, consists of 33 national organizations including environmental and consumer groups, energy efficiency advocates, and business associations.

Copies of the 20-page survey are available for \$10; a 6-page executive summary can be faxed to members of the media upon request.



U.S. Public Interest Research Group

National Association of State PIRGs

FOR IMMEDIATE RELEASE
February 2, 1998

CONTACT:
Rebecca Stanfield
(202)546-9707

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STATEMENT OF REBECCA STANFIELD, ENERGY ADVOCATE, U.S. PIRG

"The American public, both Republicans and Democrats, favor spending federal dollars on clean renewable energy sources, such as solar, wind, geothermal, biomass and hydroelectric power, not on continued reliance on polluting fossil fuels and not on nuclear power. Unfortunately, it is less clear that Congress will heed the call for renewable energy, or that the Clinton Administration will provide the necessary leadership to make renewable energy available in the marketplace.

When it comes to moving the nation towards a clean, affordable energy future, DOE's FY99 budget sends a mixed signal. If Congress approves this request, \$389 million dollars will fund programs that will help us prevent pollution and create jobs. At the same time the Administration's budget includes increases funding for polluter pork programs, those that subsidize the very industries most responsible for greenhouse gas emissions, air pollution and nuclear waste.

Even the modest step forward by the Clinton Administration is receiving a cold reception in Congress. Despite the benefits of renewable energy to public health, climate stabilization and the environment, Congress seems reluctant to approve any increase for renewables in the FY99 budget.

The Clinton Administration's recent utility deregulation proposal was also disappointing. This proposal contained a watered-down renewables portfolio standard which would require just 5.5% of our energy needs to be met by renewable energy sources by the year 2010. This target is much lower than is necessary to curb global warming and to clean our air, and is much lower than what is achievable. Ironically, almost twenty years ago, President Carter set a national goal of 20% of our energy needs being met by renewable energy by the year 2010. We believe, as Senator Jeffords recommended in his energy deregulation bill, that no less than 10% of our energy needs can and must be met by clean renewable energy by the year 2010.

Finally, although President Clinton's climate change tax package outlined some provisions to support renewable energy, the Administration has yet to formally send a legislative proposal to Congress. Meanwhile, Congress has not come forward with a legislative proposal that would promote renewable energy.

The public has spoken time and again, but it remains to be seen whether Congress or the Clinton Administration will listen, and lead the nation toward a clean, safe and affordable energy future."

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U.S. PIRG is the national lobbying office of the state Public Interest Research Groups. PIRGs are non-profit, nonpartisan consumer and environmental advocacy groups, active across the country.



American Council for an Energy-Efficient Economy

WASHINGTON, DC

For Immediate Release

For further information:

Howard Geller 202-429-8873

Ed Osann 202-429-8873

Statement of Howard Geller
Executive Director
American Council for an Energy-Efficient Economy

What does the business world know that Washington doesn't? The answer is technology. Investment in technology will be critical to the performance of companies and national economies in the new century. Energy-saving technologies are being incorporated today into a wide variety of equipment, appliances, building, and vehicles. Many more energy saving technologies are under development. These technologies work to perform comparable tasks using less energy and at lower overall cost to American businesses and consumers.

If the United States is serious about climate change -- as well as the wide range of air pollution problems associated with the extraction and combustion of fossil fuels -- we must encourage more investment in energy-efficient technology. Greater energy efficiency makes sense from both an economic and environmental perspective. Increased investment in cost-effective energy-saving technologies will save consumers money, improve our competitiveness, create jobs, cut air pollution, and make our climate objectives much more attainable.

Last October, the Administration announced its intention to propose a modest package of tax incentives and increased appropriations for energy efficiency and renewable energy technologies. In February, the President's FY 99 Budget included \$808 million for the Department of Energy's energy efficiency R & D and deployment programs, an increase of \$196 million, or 32% above levels provided by Congress for FY 98. The Budget also proposed \$3.6 billion in tax incentives for the commercialization and sale of advanced energy efficiency and renewable energy technologies.

Where are we today? The Administration has yet to submit the details of its tax proposals, neither specific legislative language nor supporting documentation on the energy-saving and carbon-reducing potential of their proposals. And the Administration has not been promoting its proposed tax incentives on the Hill or educating the Congress. This needs to change in order for the tax incentives to stand any chance of being enacted this year, which is still a possibility.

-- more --



NATIONAL HYDROPOWER ASSOCIATION
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FOR IMMEDIATE RELEASE
April 21, 1998

Contact: David Tuft
202-383-2537

Hydropower Offsets CO₂ Gases

WASHINGTON, D.C.—In recognition of the 27th anniversary of Earth Day, the National Hydropower Association (NHA) released a paper today highlighting the industry's contributions to a cleaner environment.

The trade association calculated that in 1996, the most recent year for which such data are available, an additional 327 million tons of carbon dioxide (CO₂) would have been generated from fossil fuels at the nation's utilities, were it not for hydroelectric generation. That is the equivalent of burning an additional 140 million tons of coal, plus 18 million barrels of oil, and 437 billion cubic feet of gas.

The U.S. Department of Energy, estimates that electric utilities added 2,047 million tons of CO₂ from fossil fuel combustion in 1996. Fossil fuels include coal, petroleum and natural gas.

"Hydropower's environmental benefits are crystal clear," said Linda Church Ciocci, NHA's Executive Director. "As the leading renewable energy source, Earth Day is the ideal day upon which to recognize hydropower's enormous contribution to a sustainable, more livable planet."

"At a time when concern over global warming is growing," she said, "it our hope that policymakers will join us in recognizing the unique characteristics of hydropower, and will use this information to guide them when addressing our nation's energy policy."

The National Hydropower Association is a non-profit national trade association that represents all segments of the hydropower industry. NHA seeks to secure hydropower's place as an emissions-free, domestic and renewable energy source which serves the nation's environmental and energy policy objectives.

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NATIONAL HYDROPOWER ASSOCIATION

HYDROPOWER: AMERICA'S BEST ENERGY SOURCE FOR CLEAN AIR

"... Carbon dioxide and other greenhouse gases produced by burning oil, gas and coal are accumulating in the atmosphere at an accelerating rate, and in coming decades they are likely to influence the earth's climate in unpredictable and potentially destructive ways. . . . In many ways, power generation is the sector most reachable by government policy, and if the industry is going to restructure . . . climate change should be a factor in its investment decisions . . ."

—The Washington Post, editorial, March 26, 1998

By now, we are all familiar with the concern over greenhouse gases in our atmosphere. A recent Harris poll showed that 87 percent of adults considered global warming to be "very serious" or "somewhat serious." But concrete answers to this complex issue appear to be scarce or costly, and always controversial.

Yet amid all the debate about global warming, one excellent energy alternative is often overlooked: power generated from emission-free, renewable and reliable hydroelectric facilities.

In 1996, hydropower generated enough energy to supply all the homes in California, Florida, New York, Pennsylvania, Ohio, and North Carolina combined. In the Pacific Northwest, hydropower generates up to 80 percent of that region's electricity.

Without domestic hydropower, NHA estimates that, in 1996, an additional 327 million tons of carbon dioxide (CO₂) would have been generated from the burning of fossil fuels nationwide. That's the equivalent of burning an additional 140 million tons of coal, plus 18 million barrels of oil, and 437 billion cubic feet of gas.

The Obstacles for Hydropower: Hydropower's environmental benefits are crystal clear, yet, due to a complex web of federal regulation, its future is cloudy. As recently as 1940, hydropower accounted for 40 percent of U.S. electrical generation. Today that number ranges between 10 and 12 percent.

A recent U.S. Department of Energy (DOE) study concluded that hydropower's decline is due to regulatory burdens, costs and uncertainties associated with the federal relicensing process. Begun in the early 1900's, the licensing process has evolved into a grossly complicated system. Interstate and interagency conflicts abound with no single agency empowered to weigh all project values and be the final arbiter governing the process.

A typical hydro project can take from eight to 10 years to weave its way through the licensing process—some have taken as long as 28 years. In comparison, gas fired plants which emit large amounts of CO₂ gas, can typically be sited and licensed in 18 months.

Another DOE study predicts that the cumulative effect of federal laws and regulations places 520 existing hydropower plants at risk of losing 166 megawatts of generating capacity over the next



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For Immediate Release
April 21, 1998

Contact: Mary Wertschnig
(202) 289-3835

ETHANOL'S CONTRIBUTIONS TO CLEAN AIR CELEBRATED ON EARTH DAY

Washington, D.C. – The clean air benefits of ethanol, including reduced exhaust emissions of harmful pollutants and greenhouse gases and displacement of toxic gasoline components, were praised today at a press conference hosted by the Sustainable Energy Coalition in honor of Earth Day - April 22. "Ethanol, which significantly reduces carbon monoxide, VOCs, NOx, toxics, and carbon dioxide, is one of the best tools we have to fight urban air pollution," said Eric Vaughn, President of the Renewable Fuels Association.

Ethanol provides a renewable alternative to petroleum-derived and increasingly imported gasoline and oxygenates. Because ethanol is produced from renewable agricultural products, the use of ethanol reduces carbon dioxide (CO₂) in the air - through a process known as the carbon cycle. CO₂ is a greenhouse gas that "traps" the earth's heat and can contribute to global warming. But as CO₂ is absorbed by plants grown to produce ethanol, greenhouse gas emissions are dramatically reduced.

A recent study by Argonne National Laboratory, *Fuel-Cycle Fossil Energy Use and Greenhouse Gas Emissions of Fuel Ethanol Produced from U.S. Midwest Corn*, found that ethanol results in 35 to 46 percent reductions in greenhouse gas emissions and 50 to 60 percent reductions in fossil energy use. During a radio address on ethanol yesterday, **Vice President Al Gore** said,

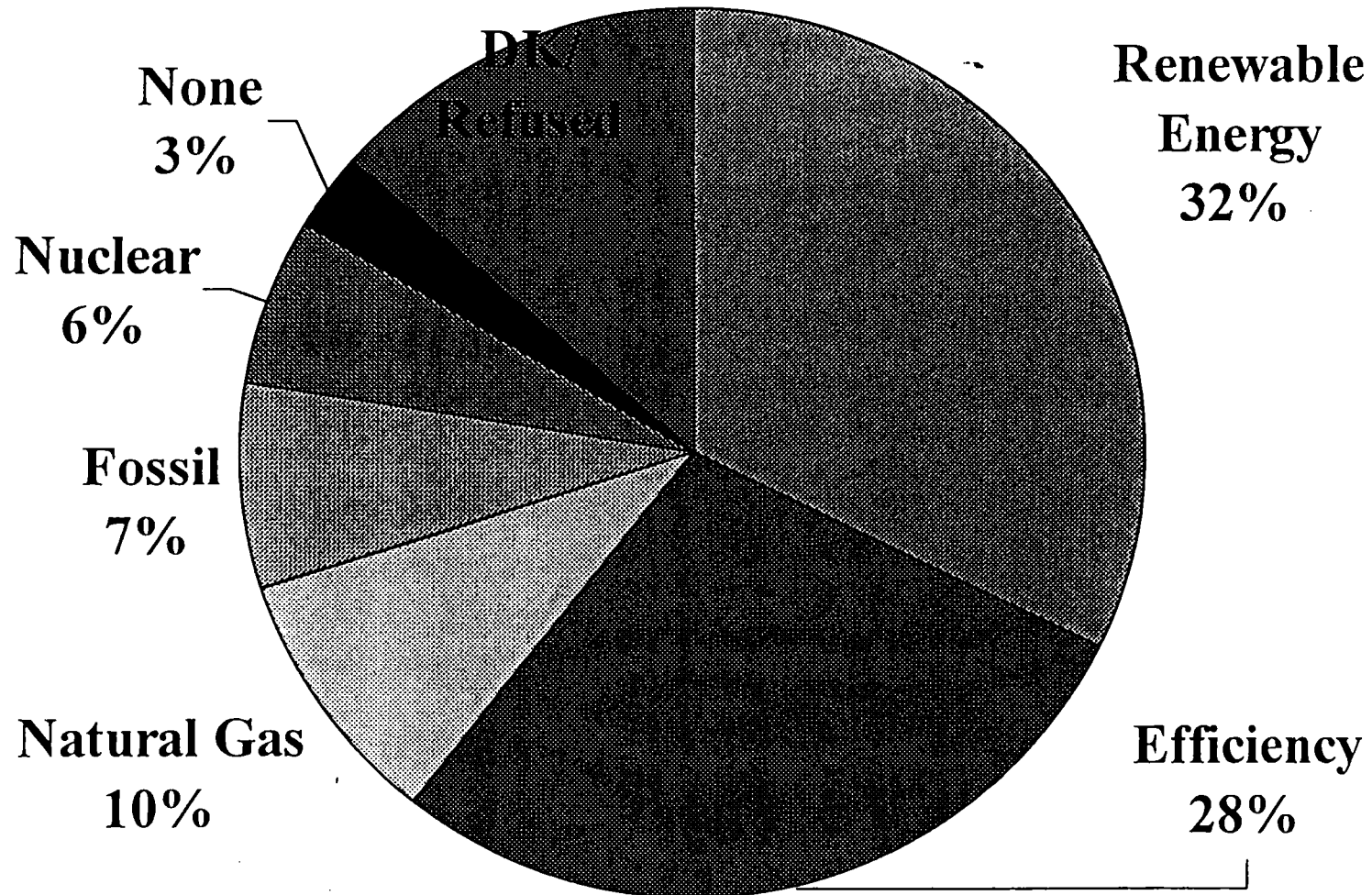
"New research shows that ethanol can reduce greenhouse gas emissions compared to traditional fuels. As we more fully understand the heavy toll of carbon-based fuels on our environment - particularly air quality - it makes sense to invest in clean fuels that protect our environment without sacrificing our quality of life."

Transportation accounts for one third of our nation's CO₂ emissions and represents the fastest growing segment of greenhouse gas emissions. According to the U.S. Environmental Protection Agency, an average passenger car emits 8,800 pounds of CO₂ per year. "Each gallon of ethanol reduces CO₂ pollution by 5.84 pounds, for a total annual reduction of 8.76 billion pounds from the 1.5 billion gallon domestic ethanol industry. That's the equivalent of removing one million vehicles from the road!" said Vaughn.

Fuel cell vehicles offer another exciting opportunity for clean-burning ethanol. Developers of fuel cells at Arthur D. Little, Cambridge, Massachusetts, prefer to power fuel cells with renewable fuels like ethanol because of ethanol's higher efficiencies, lower emissions and better performance relative to other fuels, including gasoline.

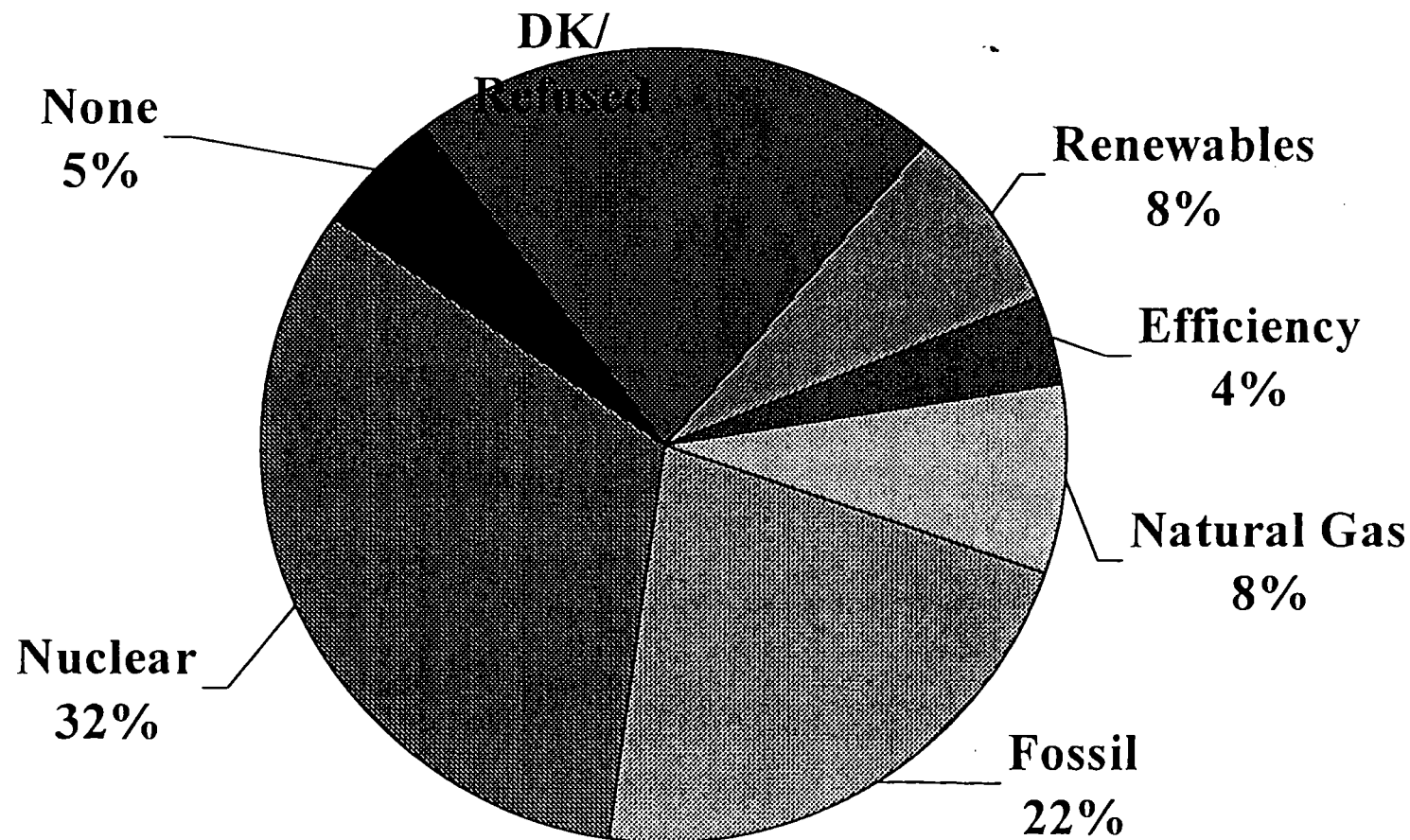
Highest Funding Priority

Federal Energy R&D



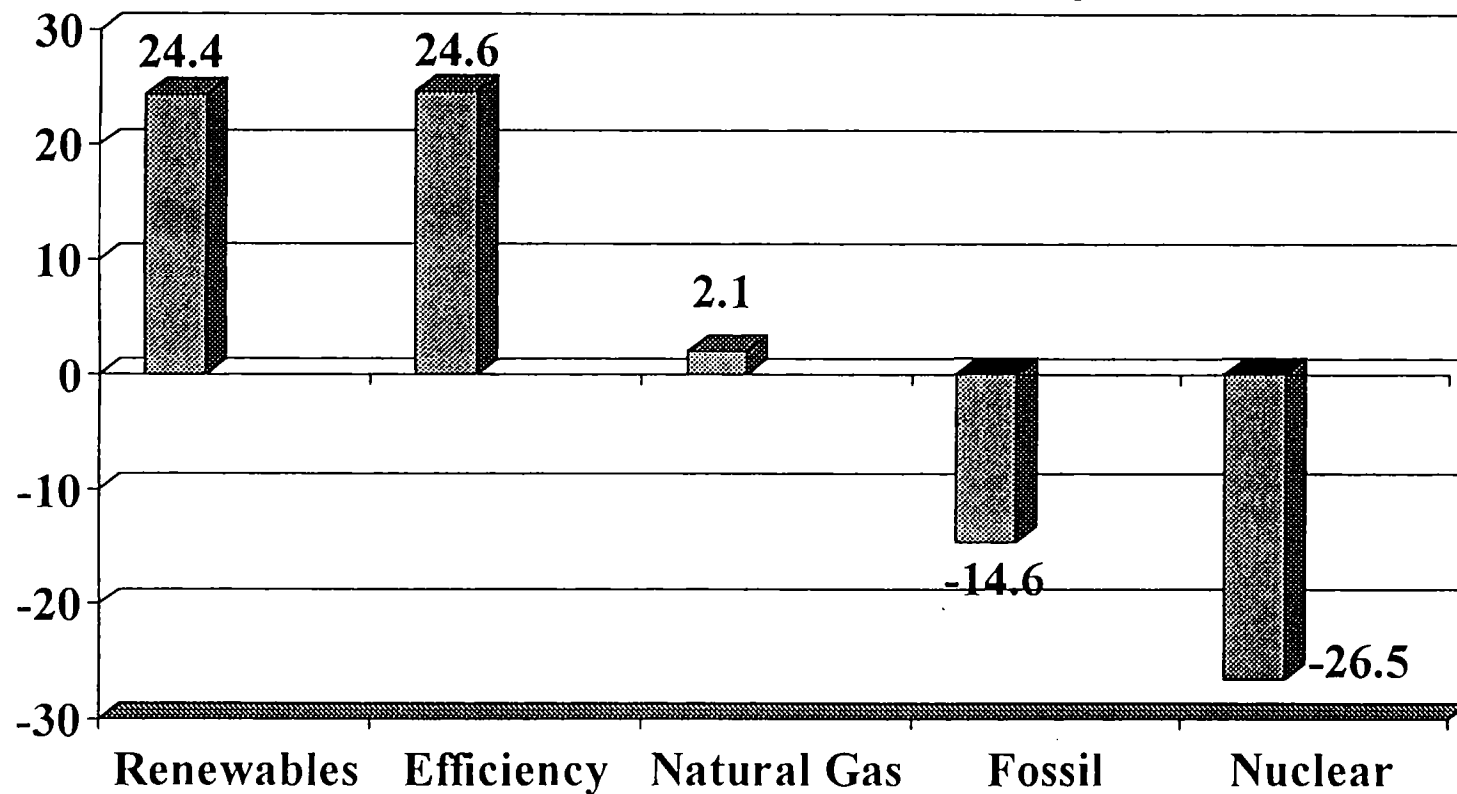
Which Program Should be Cut?

Federal Energy R&D



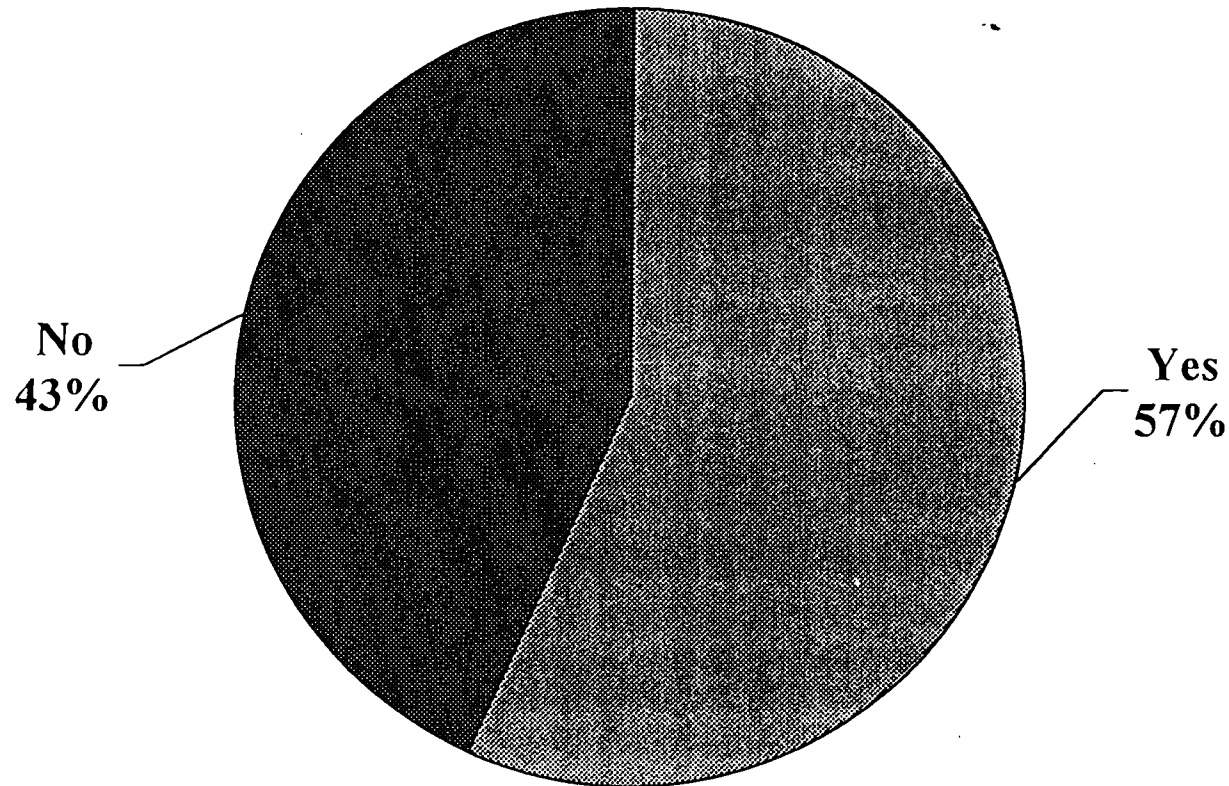
Highest Priority minus Cuts

Federal energy R&D



Increase Support for R/E and E/E without climate treaty?

(Excluding DK/Refused)





RECENT CORPORATE REMARKS ON CLIMATE:

John Browne, Group Chief Executive of British Petroleum:

May 19, 1997 – Stanford University

“There’s a lot of noise in the data. It is hard to isolate cause and effect. But there 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 . . .”

“The time to consider the policy dimensions of climate change is not when the link between greenhouse gases and climate change is conclusively proven . . . but when the possibility cannot be discounted and is taken seriously by the society of which we are part. We in BP have reached that point.”

“We’ve been looking at alternative energies for a long time, and our conclusion is that one source which is likely to make a significant contribution is solar power.”

From Shell Oil statement, “Matching Green Words with Clear Actions:”

“I have tried to explain that we believe that business should be a partner in sustainable development and that it must be based on the three pillars of economic success, environmental improvement and social responsibility.”

“ . . . [W]e are continuously improving our eco efficiency by reducing the waste emissions from our activities and products through a comprehensive environmental management and product stewardship programme.”

Ozone Action

1636 Connecticut Avenue, NW Third Floor Washington, DC 20009

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www.ozone.org

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20502

20 October 1997



MEMORANDUM FOR GENE SPERLING
 KATIE MCGINTY
 JANET YELLEN
 TODD STERN
 DAVID SANDALOW
 PETER ORSZAG
 JEFF FRANKEL

FROM: ROSINA M. BIERBAUM

RE: HEADS UP ON CO2 EMISSIONS STUDIES

Attached, please find 2 studies that will be released sometime this week.

- 1) The Battelle study (see p. 10) says costs of stabilizing US emissions at 1990 level by 2010 range from \$26/ton carbon to \$108/ton carbon -- depending on trading.
- 2) The WWF study puts emissions at 20% below 1990 levels by 2010 "with net economic benefits."



WWF Climate Change Campaign

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MEMORANDUM

To: Rosina Bierbaum
From: Adam Markham
Date: 17 October 1997
Subject: Policies and Measures to Reduce CO₂ Emissions in the United States

Rosina,

I'm attaching summaries of two new studies WWF has undertaken, and which will, I hope, be useful for you in developing a final position for Kyoto. Some additional polling carried out after we briefed you a couple of weeks ago, and a detailed new study on emissions reduction policy options, costs and benefits for the U.S.

New energy study shows potential for significant cuts below 1990 levels by 2010.

The "policies and measures" study is a peer-reviewed report prepared by Boston-based consultants, the Tellus Institute. The bottom line is that it provides a blueprint for an innovative and cost-effective set of measures which, if followed, could bring US carbon emissions 21% below 1990 levels by the year 2010. Cumulative net economic benefits are calculated at more than \$278 billion through 2010.

The Climate Protection scenario lays out a series of cost-effective measures including:

- Renewables content standards
- Pollutant emissions cap and trade schemes
- An advanced vehicle initiative
- Investment tax credits
- Regulatory reform
- Market transformation incentives
- Appliance and building standards
- Biomass cofiring expansion

Detailed parameters for these policies and measures were used as inputs to the Energy Information Administration's National Energy Modeling System (NEMS), and additional analysis carried out to compensate for some of the limitations of NEMS:

It is worth noting that to get the 10% reduction by 2005 requires the incremental costs to be \$60/ton of CO₂. If, for example, an 8% reduction is the goal, the marginal costs would be significantly lower. It should also be noted that it would be possible to achieve the same cumulative emission reductions by 2010 without going so deep in 2005, perhaps at lower overall costs and lower marginal costs.

This report is in its final pre-publication stage, and we expect to release it early next week. I wanted you to see at least the summary as soon as possible, and I will courier a full copy of the study over as soon as we have a final draft.

New polling results show strong support for unilateral action by US at Kyoto

The other attached memo, from the Mellman Group, is self-explanatory. It details polling carried out in the first week of October, in which we tried to clarify whether Americans feel that developing countries should be required to commit to emission targets before the US takes action. The answer is clearly no. 71% support action by the developed world alone, and 57% would support unilateral US action. It seems there is a strong feeling in the country that a significant commitment by the US in Kyoto would be a good thing.

I'm also sending these results to Beth Viola, Tim Wirth, Todd Stern and TJ Glauthier.

Policies and Measures to Reduce CO₂ Emissions in the United States

An Analysis of Options for 2005 and 2010

Tellus Institute and SEI-Boston

October 17, 1997

Abstract

The Intergovernmental Panel on Climate Change has unequivocally reported that in order to prevent global climate disruption and its attendant ecological, economic, geo-physical, demographic and political consequences, it is necessary to stabilize atmospheric concentrations of greenhouse gases well below the levels that would result if greenhouse gases continued to accumulate along current trends. Thus, to protect global climate, annual greenhouse gas emissions must be reduced by at least 60 percent below present emission rates. As the principal greenhouse gas is carbon dioxide, which is released in the energy production and use at the heart of industrial economies, this daunting objective will require two complementary sustained initiatives. First, the advanced industrial societies must dramatically reduce their carbon emissions from current levels. Second, industrializing nations must economically develop along a path of low carbon-intensity. Arguably, the United States, whose current per capita carbon emissions are roughly five times the present global average, must radically decrease emissions as its contribution to climate protection.

This study finds that the US can reduce its annual carbon emissions to 10 percent below 1990 levels by 2005 and to 21 percent below 1990 levels by 2010, at net savings to its economy relative to the present energy-intensive and fossil-based path. The US can achieve this by implementing an ambitious set of targeted policies, beginning in 1998, which would overcome market and institutional barriers and stimulate more rapid introduction of advanced technologies and fuels that are cleaner and more efficient. These near-term carbon reductions, and the technologies and policies that underlay them, establish a trajectory and a basis for the much deeper long-term cuts that are needed for climate protection.

This study was commissioned by the World Wildlife Fund (WWF) as a companion to parallel studies of the European Union (Blok *et al* 1996) and Japan (Morita *et al* 1997), which together with the US are responsible for roughly 40 percent of the world's annual carbon emissions. The study builds and expands upon another study -- *Energy Innovations: A Prosperous Path to a Clean Environment* (EI 1997), which was recently released by five non-profit energy and environmental policy research organizations. This study strengthens, accelerates and adds to the policies identified and analyzed in *Energy Innovations*, to build an augmented policy package that more aggressively captures near-term carbon emissions reductions, in the time frame proposed by the Alliance of Small Island States (AOSIS).

I. Introduction and Summary

Background

At the 1992 Earth Summit in Rio de Janeiro, signatories to the Framework Convention on Climate Change committed themselves to achieving ...stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous interference with the climate system. Since that time, however, emissions of greenhouse gases have continued to rise, even as the community of climate scientists has moved toward the consensus that already human activities are having a discernible impact on global climate (IPCC 1996).

Annual carbon dioxide emissions of the industrialized countries are about 4 billion metric tons (a bit more than 3 tons per capita) including US emissions of about 1.5 billion tons (at 6 tons per capita), while the developing world releases about 2 billion tons (at about 0.5 ton per capita). Adequate response to the threat of global climate change will require stabilizing annual global carbon emissions at least 60 percent below current levels. However, under a business-as-usual future, in which no special attention is paid to the threat of climate change, overall annual emissions would likely *increase* from the current 6 billion tons to about 14 billion tons by 2050, driven by conventional economic development and a near doubling of population. Avoiding this path will require that two trajectories be established and sustained to reach the required global emissions of less than 2.5 billion tons; the industrialized world must reduce its annual carbon dioxide emissions from about 3 tons per capita (for the US, 6 tons per capita) to about one quarter ton per capita, and the industrializing world must be helped to achieve economic growth along a path of low carbon intensity.

Equity considerations aside (such as the current carbon accumulations owing to historic industrial development, which have nearly saturated the atmosphere's capacity to absorb additional carbon without inducing large-scale climate change; and the current imbalance in per capita emissions among nations), it is essential for climate protection that the industrialized countries take vigorous action to drive down their emissions towards the levels identified above, *no matter what action developing countries take*; the chief consideration affected by developing country action is how rapidly this must occur. Indeed, recognition of these facts is implied in the commitment to action by the industrialized world, prior to that of the developing world, in the Berlin Mandate.

The upcoming December, 1997 Conference of Parties to the FCCC in Kyoto offers a pivotal opportunity to make concerted progress toward this goal. Signatory states are obligated to formulate a greenhouse gas reduction regime in Kyoto, including quantified reduction targets and explicit timetables that will be legally binding on industrialized nations. The signatories will be considering the proposal offered by the Alliance of Small Island States (AOSIS), which targets a reduction in greenhouse gas emissions to 20 percent below to 1990 emissions by 2005, a reduction target already adopted by some nations as their individual targets but argued by others to be unrealistic (Blok *et al* 1996).

The present study, along with parallel studies for the European Union and Japan, has been commissioned by the World Wildlife Fund (WWF) to develop a set of concrete policies and measures for emissions reductions that could realistically approach the AOSIS' proposed 20 percent reduction target by 2005. Although very little time remains to achieve this, especially as current levels of emissions exceed considerably the 1990 benchmark, it is also

clear that tremendous potential exists for emissions reductions below projected business as usual levels.

This study has sought to identify policies and measures that (1) achieve significant carbon emissions reductions quickly, (2) are economical in the aggregate, owing to the energy-cost savings that are induced, even without considering greenhouse gas, pollution and ancillary benefits, and, perhaps most importantly, (3) serve as an effective transitional strategy that establishes a foundation and builds momentum toward the much deeper long-term emissions reductions required for climate protection.

Methodology

The analysis reported here builds and expands upon *Energy Innovations: A Prosperous Path to a Clean Environment* (EI 1997), a collaborative effort recently released by the Alliance to Save Energy, American Council for an Energy-efficient Economy, Natural Resources Defense Council, Tellus Institute, and Union of Concerned Scientists. The aim of *EI* was to formulate and model a set of targeted and complementary policies that would guide the US economy towards lower cost, less polluting, more secure, and more sustainable ways of producing and using energy. The *EI* methodology, which we have adopted and extended for the present study, consisted of translating the selected policies into technical and economic parameters that were then used as inputs to the Energy Information Administration's National Energy Modeling System (NEMS) as the primary analytical tool (EIA 1995). Supplemental analysis was done to compensate for limitations of NEMS, as mentioned in the sections below. Experts on the technologies for the residential, commercial, industrial, transportation and electricity generation sectors reviewed the detailed specifications used in NEMS and refined them as appropriate. This report borrows heavily from the original *EI* study, which was peer-reviewed by many leading US energy analysts.

This analytical approach is based on an integrated model that simultaneously considers the entire set of policies and models the direct impact of each policy along with the interactions among them. As this analytical approach yields results that are comprehensive and integrated, it is necessarily difficult to unambiguously attribute carbon reductions to specific policies or technology measures. Owing to the integrated nature of the analysis, individual measures have impacts that interact with one another, and have non-additive and sequence-dependent effects. In the sectoral descriptions below, we briefly describe the individual policies, give the modeling assumptions into which they translate, and report the resulting carbon reductions as aggregate figures for each sector. To the degree feasible, we also report the separate impacts of individual policies or groups of policies.

The baseline scenario considered in this study is essentially a "business as usual" projection, which was derived from the baseline scenario in *EI* by using updated fuel price projections (EIA, 1997). This projection assumes that there are continued modest improvements in the fuel economy of new vehicles, continued decline in industrial energy intensity, and continued penetration of more efficient equipment in buildings at historical rates. However, the steady increase in demand for energy services more than compensates for these improvements, and by 2005 energy consumption increases 20 percent and carbon emissions 17 percent above 1990 levels, rising further in 2010 to 24 percent and 22 percent,

respectively. (For further details regarding the baseline scenario see the respective sections below and *EI*.)

The policy-driven scenario developed in *EI* (dubbed the *Innovation Path* in that report) projects carbon emissions to fall below the 1990 benchmark by 6 percent in 2005 and 10 percent in 2010, both substantially short of the 20 percent reduction target proposed by AOSIS for 2005. However, owing to the policies of the *Innovation Path*, carbon emissions were projected to continue their decline, reaching the 20 percent reduction level by about 2015, and 45 percent by the 2030 horizon of the study.

It is interesting to note that the policies and measures modeled in the *Innovation Path* are roughly as effective as those developed for the European Union (EU) study commissioned by WWF (Blok 1996) -- each achieving a 19 percent reduction in emissions relative to its own baseline scenario projections for 2005. The lower reductions relative to 1990 found in *EI* reflect a quicker growth of baseline emissions in the US than in the EU, due in part to shifts from coal to gas made feasible by the comparable prices of these fuels in the EU.

The present study strengthens, accelerates and adds to the policies identified and analyzed in *Energy Innovations*, to build an augmented policy package that more aggressively captures near-term carbon emissions reductions. The key changes are acceleration of combined-heat-and-power (CHP) in the industrial sector, more rapid penetration of ethanol in blends with gasoline for transportation, and co-firing of biomass in coal-fired electric generation. The enhanced policy package achieves carbon emissions reductions to 10% below 1990 levels by 2005 and 21% below 1990 levels in 2010.

Policies

The *Climate Protection* scenario developed in this study is an integrated and balanced set of policies that can put the US on a path of technological diffusion and innovation towards an economically and environmentally sustainable future. The sector-specific policies and programs would guide the economy toward more efficient, lower cost, less polluting, more secure, and more sustainable production and consumption of energy. Some of the key policies are:

- *renewables content standards*, which would require increasing proportions of renewable resources for electricity and motor fuels, through credit-trading market mechanisms.
- *pollutant emissions caps*, which would limit SO₂, NO_x, particulates and CO₂ emissions in the electric power sector through allowance trading systems
- *biomass cofiring expansion*, which would quickly establish a significant amount of renewable energy in the electricity supply sector without requiring substantial investment in new power plants
- *an advanced vehicles initiative*, which would introduce stronger fuel economy and emissions standards along with pricing reform, incentives and demand management,

with the objective of encouraging the commercialization of clean and efficient vehicles and more environmentally benign travel patterns

- *investment tax credits*, which would speed the adoption of modern and energy-efficient technologies for new manufacturing equipment, through an incentive that is paid for by fees on energy purchases
- *research, development and technical support*, to ensure that innovation proceeds at a pace that makes improved energy-efficient and low-carbon technologies available more rapidly
- *regulatory reform*, to refine protocols and ensure market access, to fairly represent the economic and environmental benefits of industrial combined-heat-and-power (cogeneration) and, thereby, to speed its adoption by industrial firms
- *market transformation incentives*, including technology demonstrations, manufacture incentives, and consumer education, which would reduce transaction costs, help move products from prototype to commercial production, and lower the key hurdles between potential and realized energy savings
- *appliance and building standards*, which would establish norms for equipment, design and performance that, through purchases and practices, would reduce energy used in providing services in homes and offices

Details on these and additional policies in the *Climate Protection* scenario are provided in the relevant sections below.

Results

Carbon Reductions

The *Climate Protection* scenario developed here builds on the original *Innovation Path* (EI 1997) by implementing additional and strengthened policies in each sector to achieve deeper carbon reductions in the time-frame proposed by AOSIS. The policies and modeling results for each sector are described in the following sections. The combined effect of the more aggressive set of policies calculated in the integrated analyses is a 10 percent carbon reduction in 2005, which still falls short of the AOSIS target. However, reductions reach 21 percent by 2010, with excellent momentum towards deeper long-term reductions.

The carbon emissions of the baseline and *Climate Protection* scenarios are given in Figure 1. This figure reflects the separate and combined impacts of the sectoral policies -- in buildings, industry, transportation and electricity supply -- which induce decreases in energy-intensity through more efficient technologies, processes and practices, in addition to decreases in carbon-intensity through shifts to lower carbon energy sources and associated energy conversion facilities. The upper and lower curves give total carbon emissions for the two scenarios, while the shaded regions show the reductions from policies in each sector in succession. For this presentation, we adopt a convention for allocating electric sector emissions reductions that consists of first obtaining the reductions owing to electric supply

policies, which decrease the carbon-intensity of electric power generation, and then obtaining the further reductions from demand sector policies, which decrease the amount of power required. The latter reductions are allocated to the demand sectors in proportion to their demand reductions.

PRELIMINARY: Figure 1 shows baseline scenario carbon emissions reaching 1567 million metric tons (MTc) by 2003 and 1634 MTc by 2010, increases of 17 percent and 22 percent, respectively over the 1990 carbon emissions of 1338 MTc. The *Climate Protection* scenario projects carbon emissions that decrease to 1203 MTc in 2005 and 1061 MTc in 2010, reductions of 10 percent and 21 percent, respectively below 1990 emissions.

{Figure 1}

PRELIMINARY: *Economic Costs and Benefits*

On balance, the set of policies of the *Climate Protection* are estimated to be cost-effective by a significant margin, as shown in Figure 2, which provides cumulative discounted (present value) of costs, savings and net benefits through 2005 and 2010. Cumulative present value net benefits are almost \$70 billion through 2005 and almost \$200 billion through 2010. This magnitude of net economic benefits could be taken as leeway for yet more aggressive carbon reduction measures that have net incremental costs. However, the rather aggressive set of measures already embodied in the policy scenario of this study have costs per saved carbon-dioxide at the margin of about \$60/ton; identifying realistic additional measures at a reasonable cost in the time-frame of this study is difficult; further improvements in efficiency and greater reliance on alternative energy sources before 2005 are constrained by the slow capital stock turnover in the four sectors. Rather than implementing more aggressive measures that might incur substantial cost, an effective longer-term strategy would involve implementing and sustaining the policies discussed here (or variations upon them) while committing substantial resources to R&D for broad classes of promising technologies that can provide the basis for the deeper long-term carbon emissions reductions needed to prevent global warming.

{Figure 2}

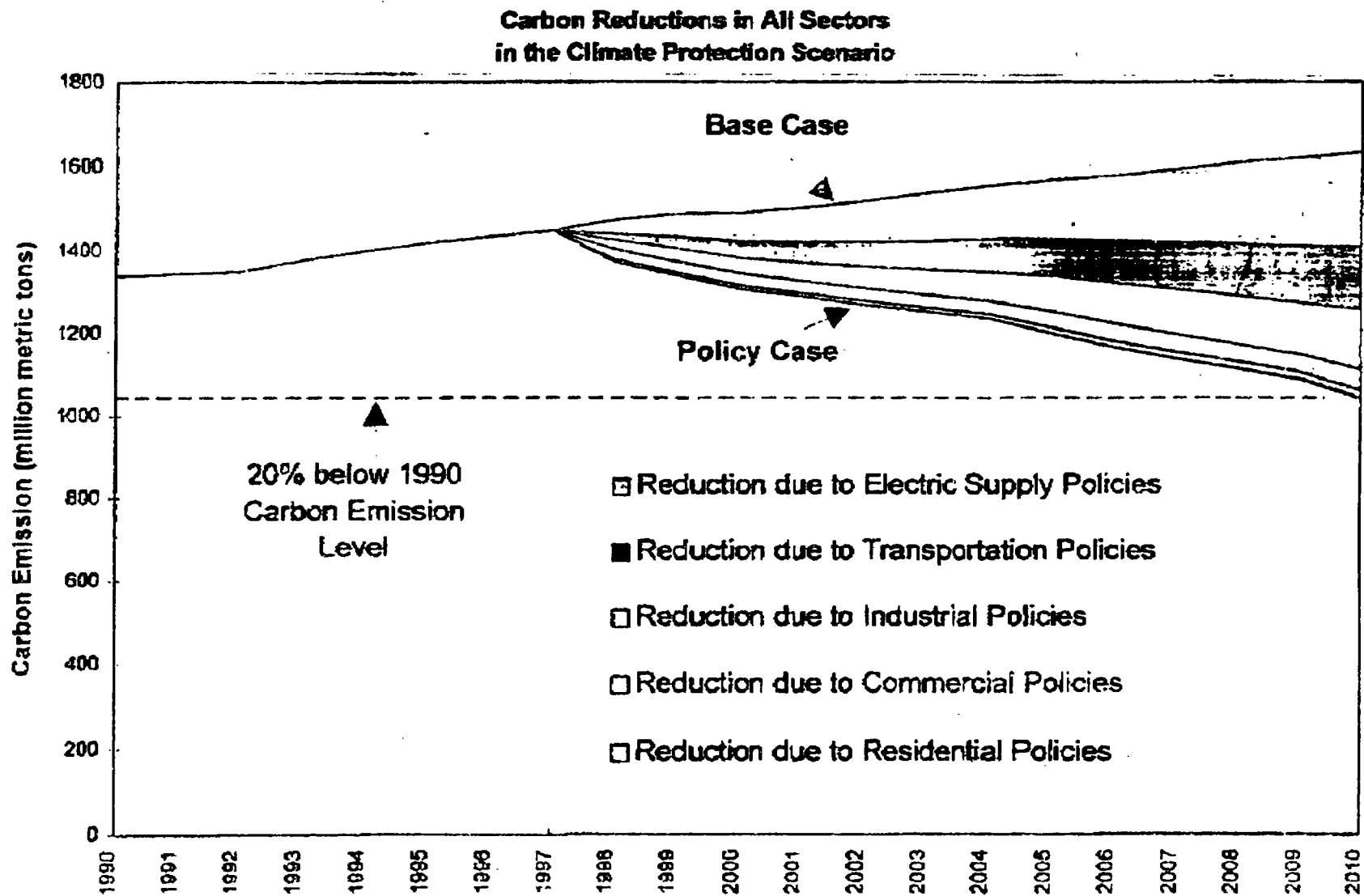


Fig 1

The Cumulative Present Value of Economy-Wide Costs, Savings and Net Benefits of the Climate Protection Scenario

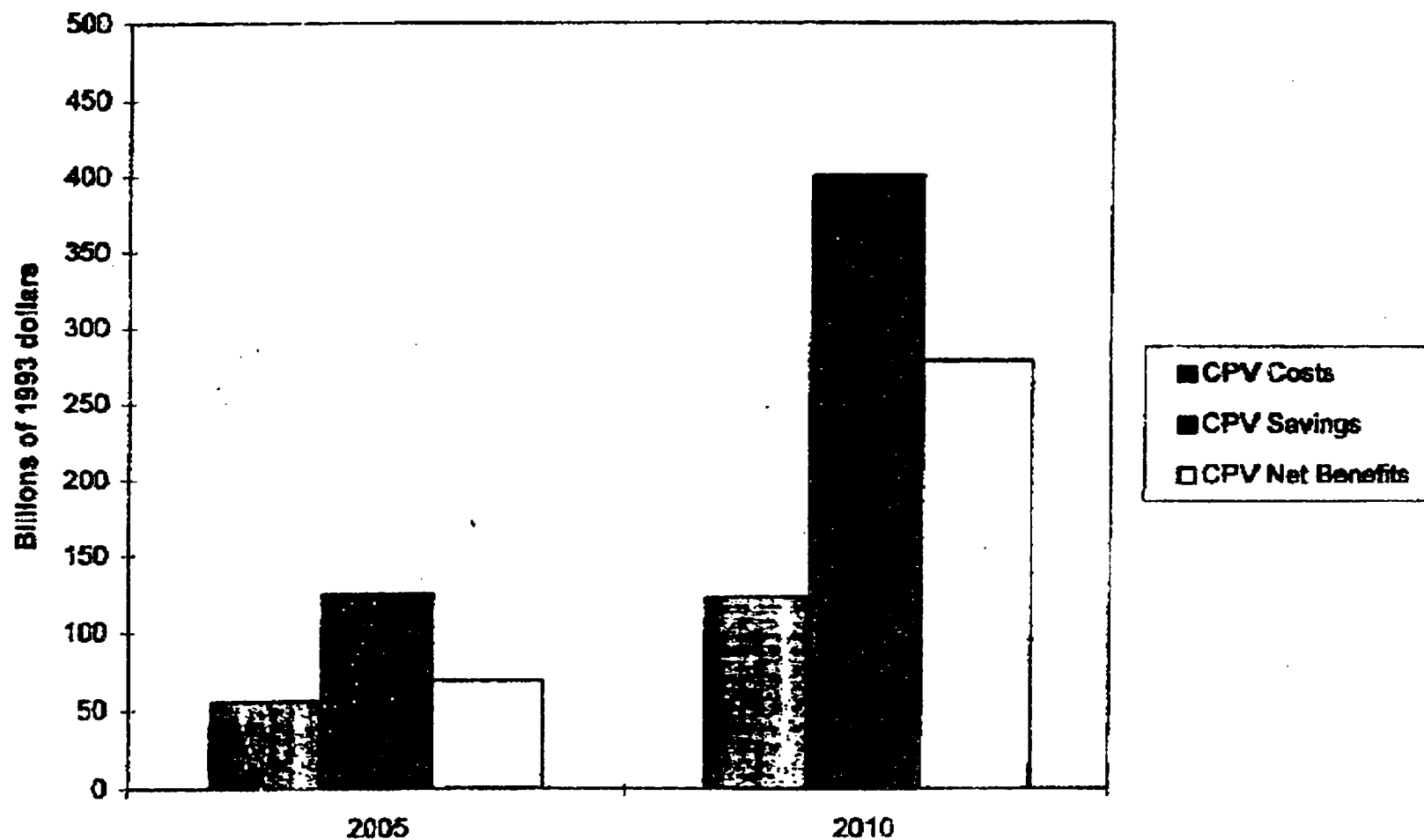


Fig 2
V



TO: World Wildlife Fund

FROM: The Mellman Group

RE: Support For Unilateral American Action To Curb Global Warming

DATE: October 9, 1997

This analysis reports the findings from a national survey of 1,012 adults who were interviewed by telephone October 3-7, 1997. The study is based on a random-digit dialing (RDD) probability sample of all telephone households in the continental United States which ensures that every telephone household had an equal chance of participating in the survey. The margin of error for the sample as a whole is +/- 3.1 percentage points at the 95% confidence level. The margin of error for subgroups varies and is larger.

Our previous survey provided the first comprehensive examination of public attitudes toward global warming. We found that while the issue may not be at the top of the public agenda, Americans nonetheless believe global warming is real and presents a serious threat. Also evident in that survey was a clear demand for action on the part of elected officials to curb carbon dioxide emissions. One piece of evidence for that public demand was the overwhelming support for an international treaty to reduce carbon emissions by 20% by the year 2005. Since then an intensive industry campaign has argued that the United States should not sign the treaty because it excludes the developing countries. Our latest survey was designed in part to test that argument.

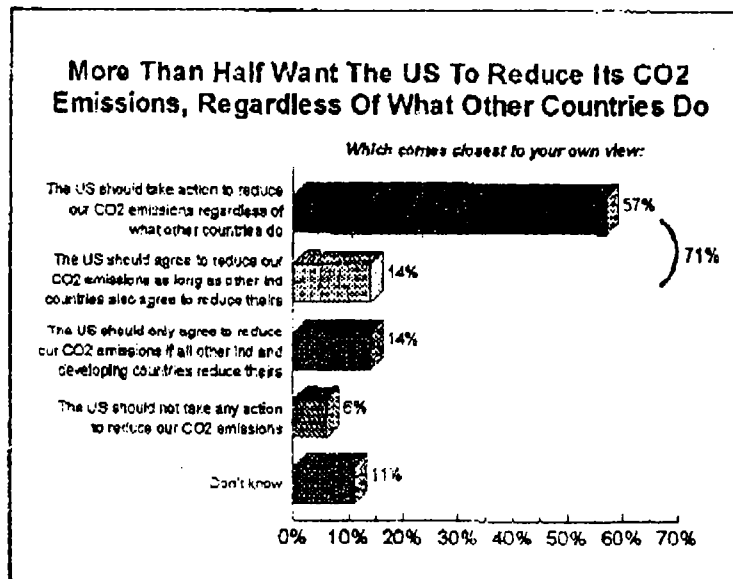
The results are clear. A majority of Americans support unilateral action on the part of the United States to reduce its carbon dioxide emissions to help stop global warming. There is strong support for an international agreement among the industrialized countries to reduce carbon dioxide emissions by the year 2005. Support for such an agreement is even stronger when respondents are told how much of the world's carbon dioxide emissions are produced by the United States, other industrialized countries and the developing world.

Another goal of this briefer study was to re-examine support for proposals to achieve carbon dioxide reductions through emissions credit trading schemes. Our earlier survey described these proposals in ways some regarded as negative, and we found majorities opposed. In this survey we offered a positive phrasing of these proposals and find support to be mixed at best. More Americans support a proposal to reduce emissions by establishing a worldwide limit and allowing countries to cut their own emissions or contribute to other countries' efforts to do so,

than support a similar plan for emissions reductions within the United States. However, neither proposal receives even majority support, let alone the overwhelming support found in our previous poll for regulatory action such as requiring cleaner burning engines in cars or requiring utilities to provide clean energy. Support for economic incentives, such as providing incentives to households to increase energy efficiency or to utility companies to sell clean energy, was also substantially greater than the support for trading proposals.

Americans Support Unilateral Action By The United States To Reduce Carbon Dioxide Emissions

Fully 71% of Americans believe that the United States and the other industrialized



countries of the world should agree to reduce carbon dioxide emissions **irrespective of what the developing countries do**. Indeed, more than half of Americans (57%) say that the United States should take action to reduce emissions **regardless of what any other countries do**. Despite an aggressive industry advertising campaign, only 14% believe that the United States should not agree to carbon dioxide emission reductions unless all the industrialized and all the developing countries agree to reduce their emissions. A mere 6% say the U.S. should do nothing to

curb its carbon emissions. The view that the United States should take action in this regard cuts across demographic and geographic groups, with those living in the West (65%) supporting unilateral action most strongly.

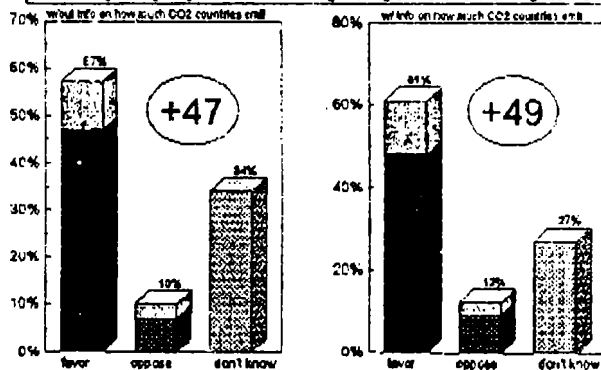
Americans Support A Treaty Among The Industrialized Nations

A majority of Americans (57%) support an international treaty to reduce carbon dioxide emissions by just the industrialized nations (47% strong support). A mere ten percent oppose such a treaty, while 34% are undecided. Another half of the respondents were also told that the United States has 4% of the world's population and produces 22% of the world's carbon dioxide emissions, the rest of the industrialized world produces 38%, and the developing countries produce 40% of the world's carbon dioxide emissions. Among this group, support for an agreement among the industrialized countries is 61%, while only 12% are opposed and 27% are undecided.

A Majority Support An International Treaty To Reduce CO2 Emissions Among Industrialized Nations

Support Remains Consistent When Respondents Learn How Much The US Produces Compared To Other Countries

If it has been proposed that the industrialized countries of the world agree to reduce their CO2 emissions by 20% by the year 2005 in order to significantly slow down the rate of global warming,



Support for a treaty among the industrialized countries to limit carbon dioxide emissions remains strong even after respondents hear arguments for and against such a treaty. Respondents were read two arguments. One argued against the treaty saying:

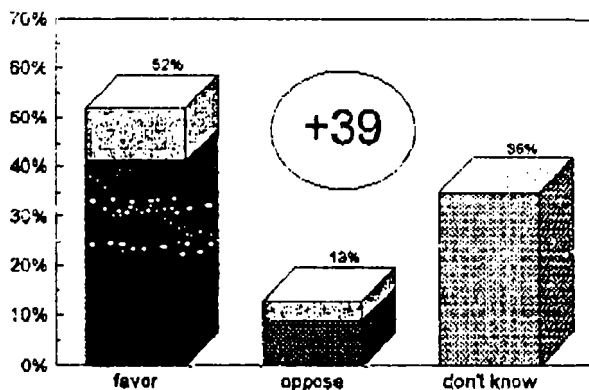
"making these reductions will mean much higher gas taxes, half a million lost jobs a year and will mean making major changes to our lifestyle. Opponents say that this treaty is not global because developing countries don't have to reduce their carbon dioxide emissions at all."

The other statement argued that:

"because the United States and the rest of the industrialized countries produced most of the carbon dioxide, we have a responsibility to limit carbon emissions no matter what other countries do. Supporters say these limits will help stop the effects of global warming which is causing increased respiratory problems, extreme weather and the destruction of animals and their habitats. They say the technology already exists to reduce carbon dioxide emissions without increasing taxes or costing jobs."

After hearing both arguments, still 52% support a treaty to limit emissions among industrialized nations, 13% oppose the treaty and just over a third (35%) are undecided.

After Hearing Arguments On Both Sides, A Majority Continue To Support A Treaty Among Industrialized Nations



Americans Are Mixed On Emissions Credit-Trading Proposals

Voters are evenly divided on a proposal to reduce carbon dioxide emissions in the United States by establishing a total limit on emissions and allowing businesses to bid for emission credits which they can then trade in order to choose between reducing their own emissions or paying other companies to reduce theirs in order to meet the overall limit more cheaply. One-third (33%) support such a proposal, while 34% oppose and 33% are undecided. There is slightly more support for a similarly structured global proposal which would give countries the right to discharge carbon dioxide up to a limit and trade their emissions credits with one another. Forty percent (40%) of Americans support such a plan, while 31% are opposed and 29% are undecided.

Our earlier poll asked similar questions; however, these particular proposals were framed as allowing companies and countries to bid for the "rights to pollute" -- what some regarded as a negative description of the proposals. In this survey these proposals were described more positively as "carbon emission credits." Support for the "carbon emission credits" proposals (within U.S. 34% oppose, 33% favor; worldwide 31% oppose, 40% favor) is greater than for "pollution rights" proposals (within U.S. 57% oppose, 29% favor; worldwide 56% oppose, 32% favor), though this support is still mixed at best. Thus, support for emissions credit proposals seems to be sensitive to how the proposals are described. While "pollution rights" are reviled, "carbon emission credits" generate a more even division. At the same time, even when framed very positively, these solutions are still far less popular than regulatory action or incentives. In substantial numbers Americans favor regulatory action to curb emissions such as requiring cleaner burning engines in cars (86% favor) or requiring utilities to offer clean energy (82% favor). They also strongly support incentives to help reduce emissions, such as incentives to households for energy efficient appliances (85% favor) and incentives to utility companies to encourage the sale of clean energy (81% favor).

SUSTAINABLE ENERGY COALITION

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301-270-2258; fax: 301-891-2866

America Speaks Out on Energy: A Survey of Federal Energy Funding Priorities

Released: April 1998

\$10.00

survey results gathered in April 1998 by
International Communications Research
attn: Joe Jennings
605 West State Street, Media, PA 19063-2620
(610-565-9280; fax: 610-565-2369)

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Introduction:

This survey presents the results of a national survey of 1,000+ registered voters on federal energy budget issues. The study was conducted April 8 - 14, 1998. The margin of error for samples of this size is +/-3.0 percent at the 95% level of confidence (i.e., in 95 out of 100 samples of this type, the sample value is within +/-3.0 percentage points of the population value).

The three questions summarized here address:

- * the public's funding priorities for the U.S. Department of Energy's (DOE) research and development programs;
- * the public's priorities for funding cuts for the U.S. Department of Energy's (DOE) research and development programs; and
- * views on whether to increase funding for renewable energy and energy efficiency to reduce greenhouse gas emissions now or wait until the U.S. Senate ratifies an international global climate change treaty.

Funding for this survey was provided by the Energy Foundation, the Global Horizons Trust, and the member organizations of the Sustainable Energy Coalition (see next page for list).

SURVEY QUESTIONS AND REPOSSES

Q.1 Energy Budget - Funding Priorities: Congress is presently making decisions on whether to increase, decrease, or maintain funding levels in the next fiscal year for all programs and services supported by the federal government. Take the Department of Energy, for example. It has five spending areas for research and development that are under review (ROTATE ORDER OF CHOICES) ... Which one of these programs, if any, do you think should receive the highest priority for funding?

Renewable energy: involving solar, wind, geothermal, biomass, and hydroelectric power (Rep. 31.6%; Dem. 29.7%; Ind. 38.0%)	32.3%
Technologies to improve energy efficiency and conservation (Rep. 26.2%; Dem. 29.7%; Ind. 27.3%)	28.2%
Natural gas (Rep. 7.9%; Dem. 13.3%; Ind. 6.8%)	9.7%
Fossil fuels such as oil, gasoline, and coal (Rep. 5.6%; Dem. 7.7%; Ind. 7.8%)	7.5%
Nuclear power (Rep. 9.1%; Dem. 3.8%; Ind. 6.0%)	5.9%
None (Rep. 4.9%; Dem. 2.3%; Ind. 1.3%)	2.9%
Don't Know (Rep. 12.8%; Dem. 12.1%; Ind. 11.8%)	12.2%
Refused (Rep. 1.9%; Dem. 1.5%; Ind. 1.0%)	1.4%

Q.2 Energy Budget - Cuts Priorities: Which one of these programs, if any, do you think should be subject to funding cuts in the Department of Energy's research and development budget? (ROTATE ORDER OF CHOICES)

Nuclear Power (Rep. 27.5%; Dem. 34.0%; Ind. 35.5%)	32.4%
Fossil fuels such as oil, gasoline, and coal (Rep. 22.4%; Dem. 21.7%; Ind. 23.9%)	22.1%
Renewable energy: involving solar, wind, geothermal, biomass, and hydroelectric power (Rep. 9.7%; Dem. 8.4%; Ind. 5.8%)	7.9%
Natural gas (Rep. 8.7%; Dem. 7.2%; Ind. 6.1%)	7.6%

ANALYSIS

DOE Energy Research and Development Funding Priorities:

Respondents were informed that Congress is presently making decisions on the federal budget for the next fiscal year. With this as a back drop, they were asked about five energy research and development (R&D) programs: renewable energy (i.e., solar, wind, geothermal, biomass, and hydroelectric power); nuclear power; technologies to improve energy efficiency and conservation; fossil fuels such as oil, gasoline, and coal; and natural gas. People were asked which of these programs should receive the highest priority for funding in DOE's research and development budget.

Renewable energy programs receive the most public support for R&D funding priorities (32%) followed by energy efficiency and conservation (28%) for a combined total of 60%. By comparison, only 10% cite natural gas as their first priority for federal R&D funding, followed by other fossil fuels (8%), and nuclear power (6%). About 16% of the respondents did not select one of the offered responses. Thus, nearly three-quarters (72%) of those who expressed a preference among the proffered choices (60% out of 84%), select either DOE's renewable energy or energy efficiency R&D programs.

Support for renewable energy and energy efficiency programs cuts across political party lines; among those expressing a preference, 72% of Republicans, 71% of Democrats, and 76% of Independents choose these technologies as their top priorities.

This suggests an even greater level of support for these technologies than the last time this same question was posed question to voters. In a November 1996 survey of 1,200 registered voters conducted by Research/Strategy/Management (R/S/M) for the Sustainable Energy Coalition, 66% of those with a preference selected either DOE's renewable energy or energy efficiency R&D programs. Similar levels of support were found in surveys conducted in December 1995 and December 1994 by R/S/M for the Sustainable Energy Coalition.

DOE Energy Research and Development Cuts Priorities:

When the topic shifts to budgetary cuts, the public focuses on two of these programs: nuclear power and fossil fuels. Nearly a third of the respondents (32%) select nuclear power as the first R&D program that should be subject to budget cuts followed by fossil fuels (22%) for a combined total of 54%. By comparison, 8% select renewable energy programs as the first that should be subject to budget cuts followed by natural gas (8%). Only 4% of respondents feel that energy efficiency programs should be the first subject to budget cuts. About a quarter of respondents (26%) did not express a preference among the proffered choices (which may indicate that a large segment of the public is not conversant with sustainable energy issues). Thus, nearly three-quarters of respondents (74%) expressing a preference among the proffered choices (54% out of 74%) recommend cutting funding for either nuclear power or fossil fuel programs first.

Again, these views were bipartisan and consistent regardless of the respondent's political affiliation; among those expressing a preference, 69% of Republicans, 75% of Democrats, and 78% of Independents select either nuclear power or fossil fuels as their first choice for budget cuts.

Though close to the margin of error, this survey suggests even less support for funding nuclear power and fossil fuel programs than when this same question was posed in the Sustainable Energy Coalition's earlier

TABLE 001

TP-1. Congress is presently making decisions on whether to increase, decrease, or maintain funding levels in the next fiscal year for all programs and services supported by the federal government.

Take the Department of Energy for example. It has five spending areas for research and development that are under review ...

Which one of these programs, if any, do you think should receive the highest priority for funding?

Base: Total Qualified Registered Voters

	SEX			AGE					HOUSEHOLD INCOME					REGION				EDUCATION			POLITICAL AFFILIATION			
	TOTAL	MALE	FE-MALE	18-34	35-44	45-54	55-64	65+	UNDER \$15K	\$15K-\$24.9	\$25K-\$39.9	\$40K-\$49.9	\$50K+	NORTH EAST	NORTH CNTRL	SOUTH	WEST	H.S. LESS	SOME COLL	COLL POST	REP.	DEM.	IND.	OTHER
TOTAL UNWEIGHTED	1018	492	526	246	219	194	141	184	122	124	206	102	309	227	256	348	187	407	295	311	316	338	312	6
TOTAL WEIGHTED	937	435	502	246	207	154	117	185	124	118	188	86	270	213	233	313	178	432	247	254	277	340	274	5
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
		(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)	(Q)	(R)	(S)	(T)	(U)	(V)	(W)	(X)
Any Of These (Net)	783	381C	402	217	181	132	94	142	97	100	169	81	237	178	199	250	156	347	215	219	223	286	235	5
	83.5	87.6	80.0	88.5	87.2	85.8	80.5	77.2	78.5	84.9	90.0	94.2	87.9	83.4	85.4	80.0	87.4	80.4	87.1	86.3	80.4	84.2	85.9	93.9
Renewable energy: involving solar, wind, geothermal, biomass, and hydroelectric power	303	162C	141	85	86H	53	37	38	34	26	66	33	113J	71	79	90	64	115	92R	96R	88	101	104	3
	32.3	37.1	28.1	34.6	41.6	34.5	31.9	20.7	27.8	21.6	34.9	38.7	41.7	33.2	33.8	28.6	35.8	26.6	37.4	37.7	31.6	29.7	38.0	65.5
Technologies to improve energy efficiency and conservation	264	100	165B	69	53	52	30	51	16	37I	65I	36I	77I	60	83P	75	46	109	73	82	72	101	75	1
	28.2	22.9	32.8	28.1	25.5	33.6	25.7	27.6	12.9	31.3	34.6	41.9	28.5	28.3	35.7	24.1	25.6	25.2	29.6	32.3	26.2	29.7	27.3	28.4
Natural gas	91	40	51	24	22	11	9	24	26KLM	9	15	1	23	17	14	31	280	54T	22	15	22	45	19	-
	9.7	9.2	10.1	9.9	10.4	7.1	8.1	12.8	21.4	7.7	7.9	1.2	8.4	7.9	6.2	10.0	15.7	12.5	8.8	6.0	7.9	13.3	6.8	-
Fossil fuels such as oil, gasoline, and coal	70	38	32	27	11	8	9	13	11	15	14	6	14	19	16	26	10	43T	16	10	15	26	21	-
	7.5	8.7	6.4	11.2	5.4	5.0	7.9	7.0	9.0	12.9	7.3	7.4	5.3	8.8	6.8	8.2	5.4	10.0	6.4	3.9	5.6	7.7	7.8	-

(sig=.05) (n_k) columns tested BC, DEFGH, IJKLMN, NOPQ, RST, UVWX

Note: Frequencies are reported in 100,000's.

937 = 93,700,000 which represents the U.S. Population of Qualified Registered Voters.

TABLE 002

TP-2. Which one of these programs, if any, do you think should be subject to funding cuts in the Department of Energy's research and development budget?
Base: Total Qualified Registered Voters

	S E X			A G E						H O U S E H O L D I N C O M E					R E G I O N				E D U C A T I O N			P O L I T I C A L A F F I L I A T I O N			
	TOTAL	MALE	FE- MALE	18-34	35-44	45-54	55-64	65+	UNDER \$15K	\$15K- \$24.9	\$25K- \$39.9	\$40K- \$49.9	\$50K+	NORTH EAST	NORTH CNTRL	SOUTH	WEST	H.S. LESS	SOME COLL	COLL POST	REP.	DEM.	IND.	OTHER	
TOTAL UNWEIGHTED	1018	492	526	246	219	194	141	184	122	124	206	102	309	227	256	348	187	407	295	311	316	338	312	6	
TOTAL WEIGHTED	937	435	502	246	207	154	117	185	124	118	188	86	270	213	233	313	178	432	247	254	277	340	274	5	
-----	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	
	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)	(Q)	(R)	(S)	(T)	(U)	(V)	(W)	(X)		
Any Of These (Net)	690	335	354	209FG	160H	111	84	112	95	91	151	61	219	154	176	227	132	310	193	185	199	252	207	5	
-----	73.6	77.0	70.6	84.9H	77.0	71.8	71.9	60.7	76.7	76.5	80.0	71.3	81.0	72.4	75.5	72.4	74.4	71.8	78.3	72.9	71.9	74.1	75.6	93.9	
Nuclear power	303	134	170	90	65	60	34	49	43	36	79	23	95	70	77	95	61	144	86	74	76	116	97	3	
	32.4	30.7	33.8	36.8	31.4	39.0	28.9	26.8	34.4	30.5	41.8	27.3	35.3	33.0	33.0	30.4	34.1	33.3	34.6	29.1	27.5	34.0	35.5	51.1	
Fossil fuels such as oil, gasoline, and coal	208	109	99	60	61H	29	27	29	25	19	45	19	78	51	62	55	40	77	63	67	62	74	65	2	
	22.1	25.0	19.7	24.3	29.6	19.0	22.9	15.6	19.9	15.7	23.8	22.2	29.0	24.0	26.4	17.6	22.4	17.9	25.5	26.5	22.4	21.7	23.9	42.8	
Renewable energy: involving solar, wind, geothermal, biomass, and hydroelectric power	74	40	34	23	12	7	12	14	15	8	10	5	27	15	14	33	12	35	17	22	27	29	16	-	
	7.9	9.1	6.8	9.4	5.9	4.4	10.5	7.7	11.8	6.7	5.3	5.8	9.8	7.0	6.0	10.6	6.5	8.0	7.0	8.6	9.7	8.4	5.8	-	
Natural gas	71	36	35	20	14	11	9	15	5	21IKM	11	9	14	12	16	33	11	38	16	17	24	24	17	-	
	7.6	8.3	7.0	7.9	7.0	7.4	7.3	8.0	4.2	17.7	5.6	10.2	5.0	5.6	6.7	10.5	6.0	8.9	6.4	6.6	8.7	7.2	6.1	-	
Technologies to improve energy efficiency and conservation	34	17	17	16	6	3	3	5	8	7	7	5	5	6	8	10	10	16	12	5	10	10	12	-	
	3.6	3.9	3.4	6.4	3.1	2.0	2.2	2.7	6.5	5.9	3.6	5.8	1.9	2.8	3.5	3.3	5.5	3.8	4.8	2.1	3.6	2.9	4.4	-	

(sig=.05) (n_k) columns tested BC, DEFGH, IJKLM, NOPQ, RST, UWX

Note: Frequencies are reported in 100,000's.

937 = 93,700,000 which represents the U.S. Population of Qualified Registered Voters.

TABLE 003

TP-3. Sometime over the next few years, the United States Senate will consider whether to ratify an international treaty to combat global warming caused in large part by greenhouse gas emissions from the burning of fossil fuels.

Which of the following two statements comes closer to your view regarding federal support?

Base: Total Qualified Registered Voters

	SEX			AGE						HOUSEHOLD INCOME					REGION				EDUCATION			POLITICAL AFFILIATION			
	TOTAL	MALE	FE-MALE	18-34	35-44	45-54	55-64	65+	UNDER \$15K	\$15K-\$24.9	\$25K-\$39.9	\$40K-\$49.9	\$50K+	NORTH EAST	NORTH CNTRL	SOUTH	WEST	H.S. LESS	SOME COLL	COLL POST	REP.	DEM.	IND.	OTHER	
TOTAL UNWEIGHTED	1018	492	526	246	219	194	141	184	122	124	206	102	309	227	256	348	187	407	295	311	316	338	312	6	
TOTAL WEIGHTED	937	435	502	246	207	154	117	185	124	118	188	86	270	213	233	313	178	432	247	254	277	340	274	5	
-----	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	
	(B)	(C)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)	(Q)	(R)	(S)	(T)	(U)	(V)	(W)	(X)	
In order to curb these emissions, we should increase federal support for energy efficiency and renewable energy now, whether or not the United States ratifies this proposed treaty.	460	228	233	130	103	84	55	76	52	58	101	50	144	107	118	150	85	199	120	141	120	175	148	3	
	49.1	52.3	46.4	53.1	49.8	54.2	47.0	41.1	42.3	49.4	53.5	58.1	53.2	50.5	50.7	47.8	47.8	45.9	48.6	55.5	43.4	51.5	54.0	58.1	
We should not increase federal support for these programs until the United States ratifies this proposed treaty.	351	166	185	96	82	56	46	66	49	48	72	25	112	76	83	128	64	160	102	87	122	119	94	2	
	37.4	38.1	36.8	39.0	39.4	36.6	39.3	36.0	39.8	40.5	38.4	29.0	41.3	35.6	35.5	40.8	36.1	37.1	41.4	34.3	44.1	35.1	34.4	41.9	
Don't Know	109	32	77	18	20	11	11	40	DEF	21	10	12	11	12	27	29	28	26	66	ST	20	21	29	42	26
	11.7	7.4	15.3	7.3	9.6	7.1	9.5	21.9	17.4	8.1	6.4	13.0	4.4	12.5	12.2	8.9	14.7	15.2	8.1	8.4	10.4	12.3	9.5		

(sig=.05) (n_k) columns tested BC, DEFGH, IJKLM, NOPQ, RST, UVWX

Note: Frequencies are reported in 100,000's.

937 = 93,700,000 which represents the U.S. Population of Qualified Registered Voters.

EXCEL National Telephone Omnibus Study METHODOLOGY

EXCEL is a national twice-weekly telephone omnibus service designed to meet the standards of quality associated with custom research studies.

Sample Design

Each **EXCEL** survey consists of a minimum of 1,000 interviews, 1/2 with men and 1/2 with women. **EXCEL** uses a fully-replicated, stratified, single-stage random-digit-dialing (RDD) sample of telephone households. Sample telephone numbers are computer generated and loaded into on-line sample files accessed directly by the CRT system. Within each sample household, one adult respondent is randomly selected using a computerized procedure based on the "Most Recent Birthday Method" of respondent selection.

Field Period

Interviewing for each **EXCEL** survey is conducted over a 5-day period, via CRT's, encompassing both weekdays and weekends. Up to four attempts are made to a number on various days and at different time periods.

Questionnaire Design/Respondent Information

Each **EXCEL** is composed of two distinct parts. The first part is the series of inserts containing proprietary questions. Because of the broad range of subjects in any particular wave, an appropriate transitional statement introduces each section to ensure complete respondent understanding and attention. Placement of each insert is determined by overall question flow.

The second part of the questionnaire includes standard demographic/classification data:

Respondent Demographics

- o Age*
- o Sex*
- o Education*
- o Employment Status
- o Race*
- o Marital Status
- o Political Affiliation

Household Characteristics

- o Income*
- o Own/Rent
- o Household Size/Composition
- o Number of telephone numbers
serving sample household

Amory B. Lovins

Save Energy, Make Piles of Money

The idea that reducing global warming will harm the U.S. economy is flatly contradicted by business experience.

Arguing about how to share the alleged pain of the energy savings required to abate global warming is irrelevant. Climate protection is actually a lucrative business opportunity disguised as an environmental problem. The same energy efficiencies that reduce global warming are hugely profitable in strictly business terms, without even ascribing any value to the environmental benefits of squeezing more work out of fossil fuels.

Energy efficiency is a competitive advantage, not a burden, because it's cheaper to save fuel than to buy and waste it, even at today's low prices. Modern energy-efficient technologies in all sectors often yield after-tax returns of upward of 100 percent a year, while providing superior service quality.

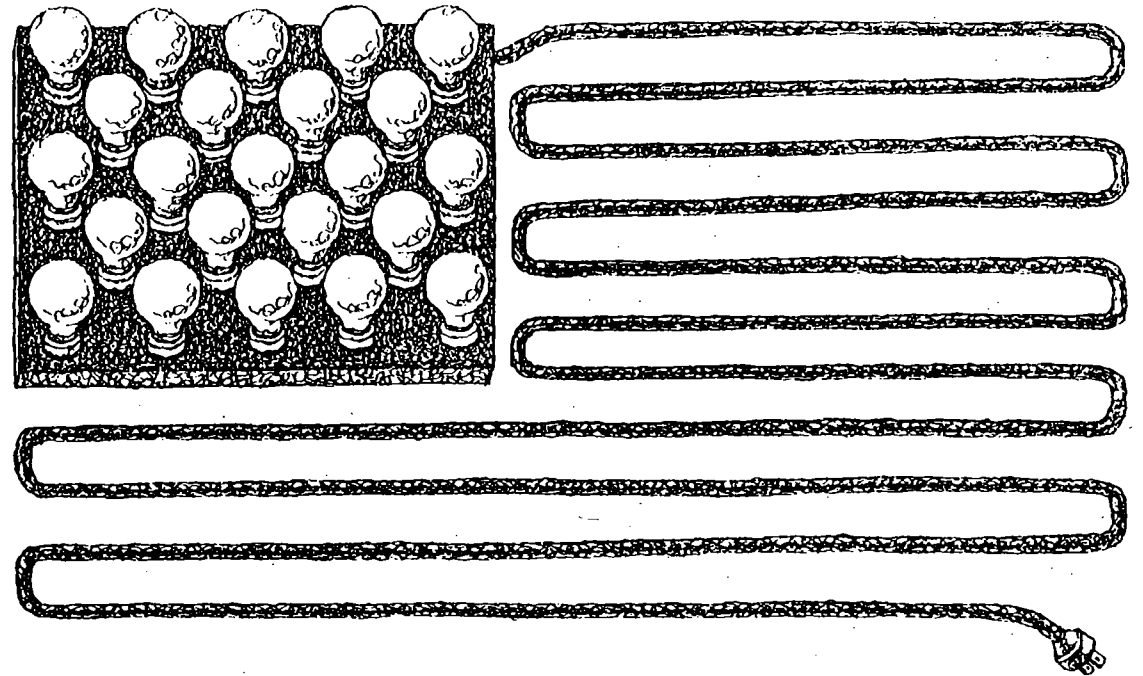
True, not every last shred of this waste can be eliminated at a net profit, but there are more than enough profit opportunities in energy savings to reach ambitious targets for greenhouse-gas reductions while satisfying the most demanding investors.

The U.S. economy as a whole is only about 2 percent energy efficient compared with what physics permits. Cars use only one percent of their fuel energy to move the driver. As a nation, we waste about \$300 billion in energy every year—more than the defense budget and federal deficit combined.

Consider the production of electricity, the costliest and most carbon-intensive form of energy. America's power plants turn fuel into one-third electricity and two-thirds waste heat. This waste heat alone is the equivalent of Japan's total national energy use. Yet cogeneration processes to use the heat—already common in Europe—could harness up to 91 percent of a fuel's energy content, providing more electricity per unit cost and doing so profitably, perhaps cutting carbon emissions threefold and costs twofold.

Or consider Dow Chemical, an industry leader in energy savings. Dow increased profits \$110 million a year in its Louisiana division alone by implementing some 900 energy-saving ideas suggested by workers. Dow, Mitsubishi, Interface, Xerox, Southwest, Carrier and other forward-looking corporations are discovering thousands of ways to rethink, redesign and re-engineer their products and industrial processes to save money by cutting energy waste. Substituting economically rational design criteria would save much of the energy now being used by industry, while reducing capital costs at the same time.

So if energy efficiency is so profitable, why aren't more businesses cashing in? Markets are imperfect mechanisms, and



complex organizations run by real people don't make perfectly rational choices. Just because something makes economic sense doesn't mean it's going to get done.

Detailed scrutiny of business experience reveals more than 30 specific kinds of barriers that interfere with what should be common-sense savings: everything from inattentive business practices to obsolete government regulations and perverse economic incentives.

For example, nearly all electric utilities are rewarded for selling more energy and penalized for cutting customers' bills. But a few states have decoupled utilities' profits from sales volumes, letting companies keep a portion of what they save their customers. The nation's largest investor-owned utility, Pacific Gas and Electric, thus added more than \$40 million to its 1992 bottom line while saving its customers nine times that much simply by removing this one perverse economic incentive. Similarly, architects and engineers design much more efficient buildings if they are rewarded with a share of the savings—rather than, as is now the case, getting fees that are based on the cost of what they design.

Much energy is wasted because bad choices are made by people who don't foot the bill. For example, most buildings are wired with skinny electrical wire, which costs a little less but wastes far more in electricity because of its increased resistance. Using larger-diameter wire would yield an average after-tax

return of 169 percent per year. But an electrician who specifies thicker wire isn't likely to be the low bidder who gets the job.

It is ironic that many supposed proponents of free-enterprise capitalism have so little faith in the ingenuity and vitality of the marketplace when it's used to reduce global warming profitably. We already have shown that this can work. It is a little-known fact that U.S. energy savings since 1973 have cut our national energy bill by some \$150 billion to \$200 billion a year—quietly and profitably—without disrupting economic growth or compromising our quality of life. From 1979 to 1986 the U.S. economy grew by 19 percent, while energy use shrank 6 percent.

While that stunning success was spurred by high energy prices, doing it again needn't be. For example, although electric rates are only half as high in Seattle as in Chicago, Seattle has, in the 1990s, been saving electric load 12 times as fast as Chicago and electric energy 3,640 times as fast. Why? Because Seattle City Light has helped create an informed, efficient and effective market for savings. Chicago's utility hasn't.

It's time to stop thinking of energy efficiency as bitter economic medicine. As Edwin Land, inventor of the Polaroid camera, used to say, the future may require "not so much having a new idea as stopping having an old idea."

The writer, a specialist in energy efficiency, is founder of the Rocky Mountain Institute in Colorado.

Robert D. Novak

Taxes and the Bush Boys

Anti-tax activist Grover Norquist used to tell friends that Jeb Bush must have been adopted, because he does not share his family's predilection for raising taxes. No longer. Bush, making a second try for governor of Florida, refuses to sign Norquist's no-tax-increase pledge.

Norquist got the news last week when he caught up with a Dec. 16 letter from Bush. While asserting "I oppose new taxes," Bush added: "I will continue to refrain from signing specific-issue pledges during the course of this campaign." This collides with the maxim of Norquist's Americans for Tax Reform (ATR)—that any candidate who won't take the pledge cannot be depended on in office.

Behind Jeb Bush's refusal are con-

licts roiling the Republican Party as it seeks to solidify majority status in the country. An element within the GOP establishment sees the party as taken over by right-wing ideologues such as Norquist and so consigned to minority status. Many of Bush's friends and family members believe he lost to Democratic Gov. Lawton Chiles in 1994 by drifting to the right.

Prior to the 1994 election, Jeb was regarded by party insiders as a more likely presidential prospect than his older brother, Texan George W. Jeb was considered smarter, more likable, more disciplined, more articulate and clearly more conservative. Jeb was regarded as a good bet to defeat Chiles, while George was an underdog against Democratic Gov. Ann Richards in Texas.

But the actual outcome of those elections made George the putative Republican presidential front-runner in 2000, while Jeb tries again for governor. Why did he fail? Chiles's commercials misrepresenting his positions hurt him with Florida's massive bloc of senior citizens. But he also lost votes in upper-income Republican areas, and close Bush associates say the reason was his overly conservative tone.

So in early campaigning for 1998, Bush has declined to promise no new taxes—a pledge already made by his Democratic opponent, Lt. Gov. Buddy MacKay. I relayed that information to a surprised Norquist, who had been telling fellow conservatives that he could never back George W. for president, considering the Texas governors

failed attempt to raise business taxes, but that Jeb had avoided the family curse. Weeks of Norquist trying to determine Jeb's position ended with the Dec. 16 letter.

Bush wrote Norquist that not only has he "long been a supporter of the ideals and vision of ATR" but that he and his lieutenant-governor running mate (Secretary of State Sandy Morham) had a hand in the only two tax cuts in Florida's history. Democratic wheel horse MacKay is described in the letter—despite his pledge—as supporting 25 tax hikes during 28 years of public service and advocating \$15 billion in new Florida taxes as lieutenant governor. "Grover," concluded Bush, "it does not take a pledge to figure out who truly supports lower taxes."

In his letter, Bush did not mention his father's broken no-new-taxes promise of 1992, but he did so to me over the telephone last week. "Maybe it's personal history," he said. Many Bush loyalists maintain that the former president's error was not in breaking his tax pledge but in making it.

Jeb Bush denied to me that he is repudiating his conservatism of 1994. A Catholic convert, he regularly attends Mass and is an unapologetic foe of abortion—a position he said "I don't believe hurt me" in the last election.

But taxes, not abortion, comprise the real litmus test for Republicans. Of GOP candidates in the two 1997 races for governor, Jim Gilmore in Virginia took the pledge and rode his promised repeal of the car tax to a landslide

victory, while Christie Whitman in New Jersey refused and barely won reelection. Indeed, since then, Whitman has advocated and signed a cigarette tax increase.

The ATR tax pledge, signed by 244 of the 535 members of Congress, was extended by Norquist after 1994 to candidates for governor. The supposedly less-conservative Bush, George W., signed, as did most Republicans. But Illinois Secretary of State George Ryan, a conservative facing a tough race for governor in a key state where Republicans have been prodigious tax-increasers, joins Jeb Bush in refusing. The party has not fully learned the lesson of President Bush's fiasco.

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The Washington Post

MONDAY, JANUARY 5, 1998

Charles E. Bayless and Thomas R. Casten

Leave CO₂ to the Entrepreneurs

Our companies burn fossil and other fuels to create electricity, heat and chilled water. There is no question in our minds that global warming is a potentially devastating problem and that humankind must reduce emissions of carbon dioxide. As power producers, we understand how much unnecessary CO₂ this nation emits, and we know how to cut fuel waste in heat and power generation.

Negotiators from the United States and other developed countries went to Kyoto seeking caps on carbon dioxide emissions from each country. Our negotiators reached a deal with developed countries and committed the United States to significant cuts. Countries with less developed economies, including China and India, rejected this approach, fearing that carbon caps would become de facto caps on their future economic growth. Because the Kyoto accord does not provide for participation by developing countries, many here in the United States fear that implementing caps here, but not in developing countries, will cause the United States to lose its competitive position.

The administration is going to have to explain to America how it intends to decide who will be allowed to emit CO₂. Moreover, the administration will have to show that we can lower CO₂ emissions in a way that actually strengthens our economy. We believe that these twin goals can be met by unleashing market forces and rewarding efficiency.

The best approach will be: Set a standard of fossil-fuel use for every unit of heat and electricity produced. Then, tighten the standard over time. This standard will lead the power industry to deploy more energy-efficient heat and power plants and to develop renewable energy from solar, hydro, wind and bio-mass.

It is easy to measure and enforce a standard of fossil-fuel use per unit of heat or electricity. This standard solves the difficult question of who will have rights to emit. Each unit of heat and/or power produced would automatically receive credit equal to the standard. Those not meeting the standard in a given year would have to: (a) increase efficiency, (b) lower their average fossil fuel use per unit of energy by investing in renewable energy, (c) purchase credits from more efficient power producers, (d) incur penalties. There is, however, one problem.

Seventy years of monopoly "protection" have severely impeded innovations in the U.S. electric utility industry. The average American power plant burns three units of fuel to produce only one unit of electricity, venting the other two-thirds as heat. In effect, two-thirds of every coal mine is a wasted hole in the ground. It's as much wasted energy as Japan uses each year to fuel its entire economy. And it's a huge amount of money wasted on fuel. Consumers pay for the wasted fuel, and the atmosphere suffers from the pollution.

Anticipating free competition for electricity sales, an increasing number of utilities are adopting new

strategies. For example, our joint venture in Golden, Colo., serving Coors brewery, achieves more than double the average U.S. efficiency. We convert 70 percent of the fuel to useful energy—electricity, steam and chilled water. We cut CO₂ in half, save enough fuel to cut Coors' costs and make money. The entire electric industry would do better but for outmoded regulations.

It is essential to steer the energy industry toward efficiency now, otherwise many companies will continue to build inefficient plants, which could remain in service for half a century. In this regard, the administration and Congress need to address the fact that electric utilities relied on monopoly rules to invest many billions of dollars in power plants that need to be shut down or modified for the good of the country and planet. The right incentives to handle these so-called "stranded investments" will speed the transition to a modern, low-emitting energy system.

Eliminate monopoly rules, and entrepreneurs will revolutionize the power industry. Guide the emerging competition with an efficiency standard that tightens according to a predetermined schedule. Entrepreneurs then will replace or retrofit our obsolete electric-only generation to capture waste heat and produce additional products such as steam, and hot and chilled water. Entrepreneurs will be rewarded for developing and deploying renewable energy. These market forces will lower the cost of heat and power to all consumers. Developing nations that don't adopt similar efficiency standards will fall further behind the increasingly efficient United States.

The Kyoto protocol commits the United States to reduce greenhouse-gas emissions by 7 percent below 1990 levels in 10 years. This is achievable simply by increasing U.S. electric generation efficiency to just over 50 percent—by wasting only half the fuel. There is proof that this is possible. Great Britain opened its electric markets in 1989, and market competition has reduced CO₂ from electric generation by 39 percent. This translates to a 13 percent drop in total U.K. CO₂ emissions in just six years. (U.K. electric prices have dropped by 15 percent to 20 percent in the same period.)

To mitigate climate change and save money, we must pick the low-hanging fruit of improved efficiency. We must deregulate electricity so market forces can achieve greenhouse-gas-reduction targets and lower electric prices. This will help the U.S. economy, and help those developing nations that adopt similar efficiency standards. The United States must demonstrate to the rest of the world that it is in their economic and environmental interests to reduce CO₂.

Charles E. Bayless is chairman, president and CEO of Tucson Electric Power Co. Thomas R. Casten is president and CEO of Trigen Energy Corp.

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Praise for the Global Warming Initiative

B.P.'s Chief Nudges Reluctant Colleagues

By YOUSSEF M. IBRAHIM

LONDON, Dec. 11 — When he graduated from Cambridge in the mid-60's, John Browne did not want to become an academic, a civil servant or a diplomat, proper careers for a member of Britain's intellectual elite.

Three decades later, Mr. Browne, 49, still recalls the reaction of one of his teachers to the career he did choose. It was "amusing," the don remarked loudly, that young Browne wanted to become "a captain of industry."

As chief executive of the British Petroleum Company Mr. Browne has indeed become a captain of industry and within the rarefied circles in which he travels, he is still a maverick of sorts. Under his leadership, British Petroleum, one of the world's biggest energy companies, has won grudging approval from some environmentalists, many of whom place his company at the forefront of multinationals willing to tackle the problem of global warming.

Mr. Browne today was quick to praise what he described as the limited progress achieved at the Kyoto climate conference. In a statement issued at his London headquarters, he said he hoped that future agreements would go further. "We don't underestimate the amount of work which still needs to be done," he said, "and we believe business has a constructive role to play in the process."

In a series of speeches, and in an interview earlier this week, he said that corporations needed to restrain emissions of carbon dioxide — and he has taken concrete action to support his views, setting strict standards for B.P. refineries and factories, and investing \$160 million in solar energy. He hopes solar power will generate a trillion dollars for the company in a decade.

This has won Mr. Browne recognition in unlikely quarters. "Compared to other oil companies, B.P. was the first major to come out in favor of policies to reduce CO₂ emissions," said Chris Røge, deputy executive director of the environmental activist organization Greenpeace, in Britain. "I guess you can say on a scale of good to bad, they, and the Shell Oil Company, are the good guys in this industry."

"I believe we've now come to an important moment in our consideration of the environment," he said in an interview in the company's state-board room in the financial district of London.

In Mr. Browne's view, it is time for the business world to accept the realities of global warming, which he described as facts backed by "effective consensus among the world's leading scientists and serious and well-informed people." Rather than



Jonathan Player for The New York Times

John Browne, chief executive of British Petroleum, at his office. "I guess you can say on a scale of good to bad, they, and the Shell Oil Company, are the good guys in this industry," a Greenpeace director says.

fight environmentalists, companies can save and eventually earn money if they begin to make this "investment in the future."

Contrast that with the Exxon Corporation, the world's No. 2 oil company behind Royal Dutch/Shell. In the 1980's it cleared out its portfolio of renewable energy projects, selling its solar unit in 1984.

In Beijing earlier this month, Lee Raymond, Exxon's chairman, asserted that the link between burning of hydrocarbons and harm to the

the meaning of the music, a director who is sympathetic to the conductor and singers able to both sing and act," he said. "So when it all comes together it is fantastic."

Puffing on a slim cigar (he says he is cutting down) and sipping coffee, Mr. Browne said B.P.'s foray into the business of pollution control was engaging the entire company.

"We have an action plan in which 50,000 people participate," he said.

The plan includes setting targets for each refinery, factory and outfit of the company around the world to use less energy, with fixed targets reviewed periodically.

Special training in energy conservation has been set up for employees in scores of countries in which B.P. operates. The company has set a goal of eliminating the flaring of natural gas by repackaging it. Above all, B.P. has gone further than any other energy company in developing solar energy as a nonpolluting substitute, with factories producing solar panels in Spain, Australia and Saudi Arabia — a dozen more factories are under consideration. "We already have 10 percent of the market in solar energy," Mr. Browne said.

Companies had better take action before someone else does it for them, he said, contending that he wanted to lead no one. It was simply, he said, that "we in B.P. have reached that point."

The continuing process of globalization, he said, has made businesses transparent. Globalization has "terrifying implications for localities," he said. "You have to demonstrate what you are doing, where is the edge of your role and the beginning of someone else's role. Business must keep projecting the fact that on balance, it is a good thing."

An oil executive bows to the mounting scientific data.

climate remained unproved. "Many people, politicians and the public alike, believe global warming is a rock-solid certainty," Mr. Raymond said. "But it's not."

For his part, Mr. Browne said: "No one knows precisely what's going on, but it doesn't mean you do nothing. Our position is to continue to provide energy to the world but do it better."

Under Mr. Browne, B.P.'s market capitalization has increased from \$35 billion in November 1994 to \$81 billion today. Profits have increased from \$2.3 billion to \$4.1 billion in the same period.

An engineer who has become a wizard in the art of finance, Mr. Browne is an opera buff. He compares a successful corporation to a well-performed opera. "You have got to have a well-trained orchestra, a conductor who is sympathetic to

Canadian Court Ruling Broadens Indian Land Claims

By ANTHONY DePALMA

TORONTO, Dec. 11 — The Supreme Court ruled today that the claims of native peoples to vast areas of Canadian territory — and the natural resources they contain — are far broader than current law recognizes even without written treaties, complicating concessions for mines, timber and other resources throughout the country.

In practical terms, legal experts say, the court decision will have no immediate impact on urban areas in the western province of British Columbia, where native claims based on oral traditions for 22,000 square miles had been contested in a lawsuit that had dragged on for 10 years.

But mining and timber concessions in the province could be voided if they have not been approved by the native people with claims to the land. And the ruling could force large compensation payments to be made to native groups for the rights to the resources on the land.

Awaiting the ripple effects of a landmark Canadian case.

Whether the ruling will lead to a reinterpretation of the treaty terms in other parts of Canada where treaties were signed many years ago is less clear. But the ruling was seen as a landmark in the way it deepens the legal standing of native peoples and their claims to the land, whether written or not.

"What it does is send a clear message to all of Canada," said Phil Fontaine, national chief of the Assembly of First Nations, a national organization representing many native peoples. "Neither the government of Canada nor any province can unilaterally engage in development without taking into account the

first nations because these activities affect the fundamental rights of our people."

One of the most important aspects of the judges' opinion is the way it clears up a longstanding dispute over traditional claims, a debate that some native people said at times bordered on being racist because it devalued the oral histories and traditions on which their culture is based.

The Supreme Court specifically rejected a lower court ruling in which native claims to land in British Columbia were denied. In the course of those proceedings, native people came to court to perform traditional ceremonies, chanting and dancing in ancient ways to relate the histories that had been passed down for untold generations about how they came to be on the land.

The lower court flatly rejected the oral evidence. But in today's unanimous decision, the justices made it clear that the lower court had erred.

"In practical terms, this requires

the courts to come to terms with the oral histories of aboriginal societies, which, for many aboriginal nations, are the only record of their past," wrote Chief Justice Antonio Lamer.

In Canada, the term aboriginal is used to describe native Indian and Inuit people, as well as those of mixed race.

In recognizing aboriginal titles to land, the court said native people not only have the right to occupy traditional lands, but are also entitled to use the land in ways not limited to traditional activities like hunting and fishing. The only exception was uses not compatible with the native people's "attachment to the land," such as strip mining.

For the Gitksan and Wet'suwet'en people in British Columbia who are likely to be most directly affected (the names are pronounced GIT-sen and wet-SOH-wetten), the decision today was a sweet reward after after pursuing their land claim in court for 10 years.

"We were given a diamond for Christmas instead of a lump of coal," Herb George, a spokesman for the Gitksan people, told reporters in Ottawa.

The Supreme Court's decision left open the possibility of a new trial in the lower courts, but there does not seem to be much appetite on either side for renewing the legal battle. The court itself preferred that negotiation, not litigation, be the path taken to resolve the long outstanding issues.

"Let us face it, we are all here to stay," Chief Justice Lamer wrote in his decision.

The federal Government, which has been involved in negotiation, saw the ruling as an affirmation of its approach. "We have always felt that section 35 in the Constitution protects aboriginal rights," said Jane Stewart, Minister of the Department of Indian Affairs and Northern Development. "It's up to us to find practical ways to protect those rights."

For the last few years, the provin-

cial government has been negotiating with 43 native groups who proximately 70 percent of the province's territory. He expected to resume negotiations with the groups involved in the suit.

"I don't expect a new trial would be worth the cost," Mr. Cashore said.

Businesses reacted cautiously. "All the implications aren't immediately evident," said Peter Wypkema, director of government relations for the Council of Forest Industries, a trade association that represents about 130 forestry companies in British Columbia. "We expected something a little more definitive."

Outside of British Columbia and parts of the Yukon and the Northwest Territories, where treaties also were not signed, experts believe today's ruling could lead to a reinterpretation of existing treaties.

"The court's decision opens the door for a new understanding of ancestral territory," said Patrick Macklem, an expert on native affairs and associate professor of law at the University of Toronto. That might include the view that at least in some cases, treaties did not extinguish native rights, but merely surrendered them to the Government.

Corrections

An article on Tuesday in the special Giving section, about the contemporary art collector Hubert Neumann, who indicated that he would leave his holdings to his daughters, referred imprecisely to his marital status. While he and his wife do not live together, they are not divorced. The article also misstated the first name of Mr. Neumann's brother, with whom he shared the inheritance. The brother is Dr. Arthur Neumann, not David.

An article in the Giving section on

Tuesday about criticism aimed at some recipients of the John D. and Catherine T. MacArthur Foundation's "genius grants" misidentified an institution at which the program's new director, Daniel J. Socolow, previously served. He was president of the American University of Paris, not the University of Paris.

A photograph yesterday of E. L. Doctorow, the author of "Ragtime," with an article about the coming musical version, carried an erroneous credit. The photographer was Sara Krulwich.

Russians Want to Scrap a Nuclear Deal

MOSCOW, Dec. 11 (Reuters) — The Atomic Ministry said today that it intends to get out of a multibillion-dollar contract to sell uranium from dismantled nuclear weapons under United States auspices.

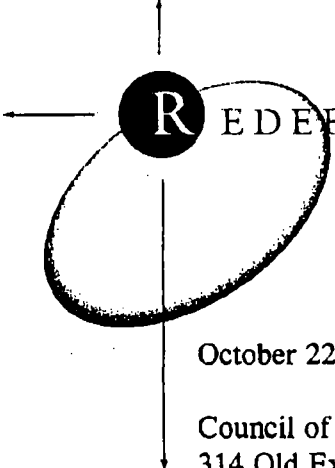
The decision could increase Russia's revenues by \$300 million to \$500 million, officials said, but the West would have less control over the sale of commercial-grade uranium. "We will not accept discriminatory, unprofitable conditions," said the First Deputy Atomic Energy Minister, Aleksandr Beloskhov, at a news conference. He was referring to the 10-year agreement in principle that

Russia signed in August to sell through an American entity, the United States Enrichment Corporation, which began as a public agency but has been sold to private owners.

Russian officials said they expected Western Europe, North America and Southeast Asia to be the main buyers of the uranium. Asked if rogue countries would gain access to the uranium, Albert Shishkin, director of Tekhsnabeksport, a Government entity handling uranium sales, said Moscow would strictly comply with international regulations. The August agreement had its roots in a 1994 deal.

The New York Times

FRIDAY, DECEMBER 12, 1997

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JLY
*JAF**AM**RC**JA*

October 22, 1997

Council of Economic Advisers
314 Old Executive Office Building
Washington, DC 20502

Dear Dr. Yellen,

Enclosed is Steve DeCanio's Background Paper, "The Economics of Climate Change." This paper reviews the economic and risk factors associated with unchecked greenhouse gas emissions including health problems, biodiversity loss, changes in weather patterns and sea level rise. It also includes an introduction to the technical literature comparing the implementation costs and benefits of policies designed to avert global climate change.

Both the Economists' Statement on Global Climate Change and the Background Paper emphasize the significance of the climate change issue and the utility of market-based policy approaches in the future to meet domestic targets for greenhouse-gas reductions.

As always, Redefining Progress appreciates your work and commitment to this important issue. If you would like additional copies of the enclosed document please call Jill Chopyak in our Washington, D.C. office at (202) 588-8900.

Sincerely,

Maureen Kennedy

Maureen Kennedy^{jr}
Executive Director

*4 copies requested
via voice mail
10-24*

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OCTOBER 1997

THE ECONOMICS OF CLIMATE CHANGE

BY STEPHEN J. DECANIO

BACKGROUND PAPER

REDEFINING PROGRESS



UNDER SECRETARY OF STATE
FOR GLOBAL AFFAIRS
WASHINGTON, D.C. 20520-7250

To: Climate Lunch Group

From: Timothy Wirth

Attached are two publications that I
found helpful:

- Guide to the Economics of Climate (1997)
- Guide to the Science of Climate (1996)

Both were done by Environmental Media Services,
a sound & careful group.

Tim

Howard Shalansky

UCB 2nd yr ec. Telecom Clerk for Scalia
PHD + JD strong of Body now Timothy
EXCELLENCE could ask to serve in Jan. unflinching

July 21

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THE SCIENCE IS IN.
GLOBAL WARMING IS HAPPENING.

1996 MEDIA GUIDE TO CLIMATE CHANGE

A SUMMARY OF THE SCIENTIFIC
CONSENSUS ON CLIMATE CHANGE

ENVIRONMENTAL MEDIA SERVICES