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INDEPENDENT

May 12, 1998

BY FACSIMILE

The Honorable Janet L. Yellen
Chair
Council of Economic Advisers
Old Executive Office Building
Washington, D.C. 20500

Dear Chair Yellen:

This letter is to confirm that on Tuesday, May 19, 1998, at 10:00 a.m. in Room 2154, Rayburn House Office Building, the House Subcommittee on National Economic Growth, Natural Resources, and Regulatory Affairs will hold a hearing on the potential impact of the Kyoto Protocol on the U.S. economy and energy system.

On behalf of the Subcommittee, I want to thank you for accepting our invitation to testify at this hearing. At that time, we would like you to present and discuss the Administration's analysis to date of the potential economic effects of implementing the Kyoto Protocol.

In connection with the upcoming hearing and in response to our inquiry of March 13, 1998, your Chief of Staff, Michele Jolin, has indicated that the Council of Economic Advisers will be submitting on Friday, May 15, 1998, analyses and supporting documentation concerning the testimony you presented on March 4, 1998 before the House Subcommittee on Energy and Power.

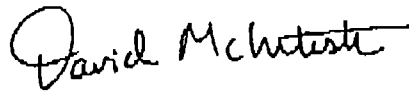
In addition, pursuant to committee procedures, please provide 25 copies and a disc of your written testimony by 5:00 p.m. on Friday, May 15, 1998. Please provide 75 more copies of the testimony at the time of the hearing for distribution to the public and the press. If you have any questions, please contact Senior Counsel Larisa Dobriansky at 225-4407.

Andrew Wilder
Rm B377 Rayburn

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Thank you for your courtesy and attention to this matter.

Sincerely,

A handwritten signature in black ink, reading "David McIntosh". The signature is written in a cursive style with a large initial "D" and a long horizontal stroke at the end.

David M. McIntosh
Chairman
Subcommittee on National Economic Growth,
Natural Resources, and Regulatory Affairs

cc: The Honorable Dan Burton
The Honorable John Tierney

DAN BURTON, INDIANA
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TO: The Unavailable Suret YellenFAX NUMBER: 395-6958# of PAGES: 3 (including cover page) DATE: 5/12/98

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✓ Chairman David M. McIntosh

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April 9, 1998

BY FACSIMILE

The Honorable Janet L. Yellen
Chair
Council of Economic Advisers
Old Executive Office Building
Washington, D.C. 20500

Dear Chair Yellen:

On Thursday, April 23, 1998, at 11:30 a.m., the House Subcommittee on National Economic Growth, Natural Resources, and Regulatory Affairs will hold a hearing on the White House Initiative on Global Climate Change.

On behalf of the Subcommittee, I want to invite you to testify at the hearing for the Council of Economic Advisers. Specifically, we would like you to present the Administration's detailed economic analysis of the effects of the Kyoto Protocol.

Pursuant to committee procedures, please provide 25 copies of your written testimony by 5:00 p.m. on Tuesday, April 21, 1998. Please provide 75 more copies of the testimony at the time of the hearing for distribution to the public and the press. If you have any questions, please contact Senior Counsel Larisa Dobriansky at 225-4407.

Thank you for your courtesy and attention to this matter.

Sincerely,

David McIntosh

David M. McIntosh
Chairman
Subcommittee on National Economic Growth,
Natural Resources, and Regulatory Affairs

cc: The Honorable Dan Burton
The Honorable John Tierney

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~~The Honorable~~ Janet Yellen

FAX NUMBER:

395-6958 or 395-6947

of PAGES: 3 (including cover page)

DATE: 5/1/98 -

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✓ Chairman David M. McIntosh

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May 1, 1998

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BY FACSIMILE

The Honorable Janet Yellen
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Old Executive Office Building
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Dear Chair Yellen:

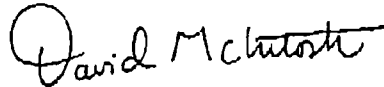
This letter follows up on the March 13, 1998 letter to you in which the Subcommittee on National Economic Growth, Natural Resources, and Regulatory Affairs raised questions about the Administration's global warming policies and the potential impact of the Kyoto Protocol on the U.S. economy. Not only has my Subcommittee not received any response to that letter, but also your staff has indicated that they have not even begun to draft any answers.

This unexplainable delay is impeding my Subcommittee's effective oversight of these matters. When the Subcommittee conducted its first hearing on global warming policies last week, all of the federal agency witnesses indicated that you are the Administration's voice on the likely economic consequences of the Kyoto Protocol. It is, therefore, both astounding and unacceptable that the Council has not provided any information to date, not even concerning the testimony you presented on March 4, 1998 before the House Commerce Committee.

As you know, the Subcommittee plans to conduct another hearing on these issues in May and has invited you to testify. Therefore, it is crucial that we receive your responses before the hearing. Please contact Larisa Dobriansky, Senior Counsel, at (202) 225-4407, no later than Tuesday, May 5, 1998, with a schedule for expeditiously submitting the requested information.

Thank you in advance for your cooperation with respect to this request.

Sincerely,



David M. McIntosh

Chairman

Subcommittee on National Economic Growth,
Natural Resources, and Regulatory Affairs

cc: The Honorable Dan Burton
The Honorable John Tierney

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May 12, 1998

BY FACSIMILE

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Old Executive Office Building
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Dear Chair Yellen:

This letter is to confirm that on Tuesday, May 19, 1998, at 10:00 a.m. in Room 2154 Rayburn House Office Building, the House Subcommittee on National Economic Growth, Natural Resources, and Regulatory Affairs will hold a hearing on the potential impact of the Kyoto Protocol on the U.S. economy and energy system.

On behalf of the Subcommittee, I want to thank you for accepting our invitation to testify at this hearing. At that time, we would like you to present and discuss the Administration's analysis to date of the potential economic effects of implementing the Kyoto Protocol.

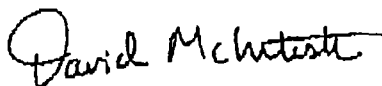
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2

Thank you for your courtesy and attention to this matter.

Sincerely,



David M. McIntosh

Chairman

Subcommittee on National Economic Growth,
Natural Resources, and Regulatory Affairs

cc: The Honorable Dan Burton
The Honorable John Tierney

**TESTIMONY OF DR. JANET YELLEN
CHAIR, COUNCIL OF ECONOMIC ADVISERS
BEFORE THE
U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON INTERNATIONAL RELATIONS**

MAY 13, 1998

Thank you, Mr. Chairman. The President has said that we can work to avert the grave dangers of climate change, while at the same time maintaining the strength of our economy. I agree and am pleased to have this opportunity to appear before the Committee to elaborate on the Administration's views on these issues.

The international agreement that was reached in Kyoto this past December is a crucial step forward in addressing global climate change. But it is only one step in a journey. Since the international effort to reduce greenhouse gas emissions is still in some respects a work-in-progress, it is not yet possible to provide a full authoritative analysis of it. Many of the specifics in several crucial areas are not completely resolved in the diplomatic arena, forcing analysts to make a variety of assumptions about the ultimate form of the international regime. In my testimony today, I will attempt to identify key elements of the agreement and the Administration's policy, such as international emissions trading, meaningful developing country participation, inclusion of land-use activities that absorb carbon ("sinks") and six categories of gases, as well as domestic initiatives, that together can ensure that reductions in global greenhouse gas emissions are consistent with continued strong economic growth. I will explain the reasoning underlying our conclusion that, under these conditions, economic impacts are likely to be modest.

The Administration is strongly committed to ensuring that these key elements are reflected in our domestic and international climate change policies. We are firmly committed to meaningful developing country participation, the use of sinks to offset emissions requirements, and emissions trading both domestically and internationally. And as you know, the President's FY 1999 budget includes a \$6.3 billion package of tax cuts and R&D investments over the next 5 years; this package makes good sense in terms of energy policy and will jumpstart our efforts. A final component of the President's climate change policy is his support for electricity restructuring in a manner that will offer approximately \$20 billion in cost savings to electricity consumers, while reducing greenhouse gas emissions.

I. Basic Economic Rationale of the Kyoto Treaty

To begin our analysis, it may be worth stepping back and examining the larger question of the basic rationale, from an economist's perspective, for the Kyoto Protocol.

The earth's surface appears to be warming from the accumulation of greenhouse gases from myriad sources worldwide. None of these emitters presently pays the cost to others of warming's adverse effects -- a classic externality in the language of economists. As a result of these distorted incentives, disruption of the Earth's climate is likely to proceed at an excessive pace and if left uncontrolled may pose substantial costs in terms of harm to commerce and the environment alike. The fundamental economic logic of the Kyoto Protocol is thus that without such an international agreement, individual nations will not have the proper incentives to address the threats from global climate change.

II. Costs of Climate Change

In evaluating efforts to mitigate global warming, the first step is to consider the costs of inaction. These costs --and they are significant-- provide the primary motivation for actions to reduce greenhouse gas emissions.

The Intergovernmental Panel on Climate Change (IPCC) jointly established by the World Meteorological Organization and the United Nations Environment Programme, concluded in 1995 that "the balance of evidence suggests that there is a discernible human influence on global climate." Current concentrations of carbon dioxide, methane, nitrous oxide, and the other so-called greenhouse gases have reached levels well above those of preindustrial times. Of these, carbon dioxide (CO₂) is the most important: net cumulative CO₂ emissions resulting from the burning of fossil fuels and deforestation account for about two-thirds of potential warming from changes in greenhouse gas concentrations related to human activity.

Climatic Impact

If growth in global emissions continues unabated, the atmospheric concentration of CO₂ will likely double relative to its preindustrial level by midway through the next century and continue to rise thereafter. As a result of the increased concentration of CO₂, the IPCC estimates that global temperatures will increase by between 2 to 6 degrees Fahrenheit in the next 100 years, with a best guess of about 3.5 degrees Fahrenheit. While scientists believe that human activities are leading to a gradual warming of the *average* temperature of the earth, the change in temperature in a given region at a given time may differ substantially from this average. Indeed, models predict warming will be greater in high latitudes than in the tropics, and greater over land than ocean.

Potential consequences associated with this shift in climate include a rise in sea levels, greater frequency of severe weather events, shifts in agricultural growing conditions from changing weather patterns, threats to human health from increased range and incidence of diseases, changes in availability of freshwater supplies, and damage to ecosystems and biodiversity.

Economic and Monetary Damages

The derivation of quantitative or monetary estimates of the damages from such a change in the climate is extremely difficult given the capacity of today's models. Estimates of the economic damages from climate change fall into the following broad areas: agriculture, sea-level rise, air conditioning and heating, water supply, human life and health, air pollution, and other costs (hurricanes, relocation costs, human amenity, construction, leisure activities, urban infrastructure, and ecological damages such as forest loss and species loss). Although the quantification of these effects is quite demanding, researchers have developed estimates that prompt substantial concern. The IPCC reports that a doubling of carbon dioxide levels would lead to approximately 10,000 estimated additional deaths per year for the current U.S. population from higher summer temperatures, even after netting out the effects of warmer winters and assuming acclimatization. Other researchers have predicted sea level increases of about 20 inches by 2100, with greater increases in subsequent years.

Despite the difficulties, respected researchers have developed estimates of the monetary damages expected from an average worldwide temperature increase. For example, William Cline, then of the Institute for International Economics, estimated that a temperature change of 4.5 degrees Fahrenheit would impose annual damages of about 1.1 percent of GDP per year on the U.S. economy. That amounts to \$89 billion in today's terms. (Cline's original estimate is quoted in 1990 dollars. The figure given above translates this number into 1997 terms by scaling it to current GDP.) William Nordhaus of Yale University has likewise computed estimates of the dollar loss attributable to a doubling of greenhouse gas concentrations. Although he uses methods that differ from Cline's in several respects, Nordhaus estimates that a slightly larger temperature change of 5.4 degrees Fahrenheit would impose losses equal to about 1 percent of GDP. A third independent estimate reported by Nordhaus is close to Cline's. It must be noted, however, that this similarity among aggregated estimates masks the true uncertainty associated with forecasts of the damages from given increases in global warming -- the estimates are all fundamentally based on extrapolations from current and past experience, and may not fully incorporate effects that will unfortunately become apparent only with future experience.

One key difficulty in interpreting and monetizing these estimates of damages is uncertainty over the extent that they should be discounted because they occur in the distant future. Since the benefits of stemming future climate change accrue over not only decades but centuries, small changes in the discount rate can produce substantial changes in the results. But the precise discount rate that should be used to evaluate questions as important as the future climate of the planet remains a subject of intense debate. It is safe to say that there is, as yet, no professional consensus on the issue. Indeed there can be no technical answer to the ethical question how we should value the welfare of future generations.

A similar difficulty with such estimates is that they do not include potential non-linearities in the relationships between greenhouse gas concentrations and temperature, between temperature and economic damages, or in the various other complicated relationships governing interactions between greenhouse gas emissions, the climate, and the economy. Current estimates of damages do not, and cannot, accurately reflect the value of reducing the unknown risk of large-scale and potentially irreversible discrete events with potentially catastrophic consequences.

Two such possibilities serve as illustrations. Warming of Northern tundra may release huge amounts of methane from the permafrost, thereby leading to accelerated warming. We do not know at what point, if any, such potentially unstable activity would be triggered. Second, evidence from climate models suggests that some types of climate change may lead to changes in ocean currents, including weakening of the Gulf Stream that warms Western Europe. Scientific evidence suggests that abrupt seawater temperature shifts have occurred over periods as short as decades.

To what extent are we willing to take such chances with our planet? There is a strong argument for the Kyoto Protocol as a form of planet insurance. But what numerical weight should one assign to these catastrophic risks? In other words, what is the value of the insurance policy? Although it is difficult for an economist, or anyone, to know, reductions in the risk of such catastrophic outcomes must be considered in addition to the costs and benefits that can be reasonably quantified. Since human beings are typically averse to risk, such catastrophic risks are especially important in evaluating whether the benefits of a particular climate control policy justify the costs. One must have at least some sympathy with those who criticize economists on the grounds that the effects of climate change are extremely difficult to quantify in a single monetary number.

III. Addressing Global Climate Change in an Efficient Manner

The costs of unabated climate change may thus be difficult to quantify, but they are nonetheless real and provide the motivation for reducing greenhouse gas emissions. In taking action to reduce those emissions, economic analysis suggests that two elements are absolutely essential:

- The effort must be global, to address the global externality inherent in the nature of the problem.
- The effort must be flexible and market-based, to ensure that we achieve our objectives in the most efficient manner possible.

Need for Global Action

Climate change is a global problem requiring a global solution. As I mentioned earlier, no single country has an incentive to reduce emissions sufficiently to protect the global environment against climate change. Each has an economic incentive to “free ride” on the efforts of others. Even if the United States sharply reduced its emissions unilaterally without an international agreement limiting emissions abroad, greenhouse gas emissions from all other countries would continue to grow, and the risks posed by climate change would not be significantly reduced. It is important to emphasize that emissions of different gases anywhere in the world have very similar effects on global climate.

The threat of disruptive climate change has led to coordinated international efforts to reduce the risks of global warming by reducing emissions of greenhouse gases. A landmark international agreement to address global warming was the Framework Convention on Climate Change signed during the Earth Summit in Rio de Janeiro in 1992. This convention established an objective of limiting greenhouse gas concentrations and called upon industrial countries to return their emissions to 1990 levels by 2000. Since then, it has become clear that the United States and many other participating countries will not meet this voluntary goal; quite the contrary, emission levels have continued to rise not fall among both developed and developing countries.

To address the lack of progress among many industrialized countries toward meeting the Rio objective, the United States and approximately 160 other nations agreed in negotiations held in Kyoto, Japan, last December, to reduce emissions of greenhouse gases. The Kyoto Protocol, which requires the advice and consent of the Senate, would place binding limits on each industrial country's combined emissions of the six principal categories of greenhouse gases: carbon dioxide (CO₂), nitrous oxide (N₂O), methane, sulfur hexafluoride, perfluorocarbons, and hydrofluorocarbons. These limits apply to the 38 so-called Annex I countries, which are the industrialized countries, defined to include Russia, Ukraine, and most Eastern European countries.

Under the Kyoto Protocol, each industrial country's baseline is its 1990 emissions of CO₂, methane, and N₂O and its choice of 1990 or 1995 levels of the other three categories of gases. The United States agreed to a target of 7 percent below this baseline by the period between 2008 and 2012. Given the changes in the definition of the baseline for the three long-lived chemical compounds (HFCs, PFCs and SF₆) from 1990 to 1995 combined with a change in the way sinks are accounted for in the baseline, the actual reduction required in the U.S. is no more than 2-3% more than the President originally proposed as the U.S. negotiating position. The targets for the European Union and Japan are 8 percent and 6 percent below 1990 levels, respectively. Australia, New Zealand, Norway, Russia, and Ukraine all have limits somewhat less ambitious when phrased as cuts relative to their 1990 levels. In sum, over the period from 2008 to 2012, the industrial countries are expected to reduce their average emissions of greenhouse gases to about 5 percent below their 1990 levels.

The President has made clear that he will not submit the Kyoto Protocol to the Senate without meaningful participation from key developing countries (who are not included in Annex I).

There are several reasons why meaningful participation from developing countries is essential. First, developing countries are projected to contribute a majority of world emissions around 2030 under a continuation of business-as-usual. Without the participation of developing economies, efforts by the industrialized countries to limit emissions will therefore not provide adequate protection from climate change.

Second, developing country participation is crucial because it would permit relatively low-cost emissions reductions to be internationally recognized as a substitute for more expensive emissions reductions that might otherwise be achieved domestically by U.S. companies and those in other industrialized countries. Since greenhouse gas emissions have the same basic impact on the climate regardless of where they occur, emission reductions in developing countries have the same environmental benefit as reductions in the U.S. But these reductions are much less costly than reductions in the U.S. or in other developed nations, because of the very inefficient and carbon-intensive uses of energy in these countries today. It thus makes sense, from both an environmental and an economic perspective, to incorporate emissions reductions in developing countries into the international system.

Third, principles of basic fairness suggest all countries should do their part, depending, in part, on their ability to contribute to the solution. Thus even poor countries should participate, although the lack of resources in such countries may limit the extent of their participation.

Some have expressed fears that the Kyoto Protocol might adversely affect the competitive position of American industry. Evaluating how the Kyoto Protocol could affect competitiveness of a few specific manufacturing industries -- especially those that are especially energy-intensive, such as aluminum and chemicals -- is complex. The answer depends, in part, on the impact of the agreement on energy prices, which we will shortly address. In general it is difficult to undergo a structural change in the economy without having the effect of expanding some sectors and contracting others. But to provide some perspective on this issue, consider the following facts. First, on average, energy constitutes only 2.2 percent of total costs to U.S. industry. Second, energy prices already vary significantly across countries. According to the *1997 Statistical Abstract*, for example, in 1996 premium gasoline cost \$1.28 per gallon in the United States -- but only 8 cents per gallon in Venezuela. Similarly, gas prices were \$3.71 per gallon in Switzerland and \$4.41 per gallon in France. Electricity prices also vary significantly: in the U.S., for industry, they were 5 cents per kilowatt hour in 1995, a fraction of prices in Switzerland of 13 cents per kilowatt hour. Yet U.S. industry is not moving en masse to Venezuela, nor is Swiss industry moving to the United States. Third, roughly two-thirds of all emissions are not in manufacturing at all, but in transportation and buildings, sectors which, by their very nature, are severely limited in their ability to relocate to other countries. We therefore believe we need developing country participation because the problem is global and cost-effective solutions are essential, than to avoid adverse effects on competitiveness.

Flexibility and Market Mechanisms

A global solution is thus critical to the global problem of climate change. Globalizing the solution is not, however, enough by itself. We must also ensure that our reductions in global greenhouse gas emissions are attained in the most efficient manner possible. The nature of the climate change problem suggests three basic methods to lower costs of achieving given levels of environmental protection. They can be characterized in terms of three categories of flexibility: (1) “when” flexibility; (2) “what” flexibility; and (3) “where” flexibility, which may be the most important of all. Such methods have long been championed by economists interested in increasing the efficiency of protection. Indeed, over 2,500 economists from academia, industry, and government alike urged such approaches in a letter they signed last year advocating action on climate change:

“Economic studies have found that there are many potential policies to reduce greenhouse gas emissions for which the total benefits outweigh the total costs...The most efficient approach to slowing climate change is through market-based policies.”

1. “When flexibility” (timing)

First is “when flexibility” or timing. Since climate change is a long-term problem, the exact timing of emissions reductions is, within some range, not of primary importance. Thus the freedom to delay or accelerate reductions within an agreed upon time frame -- while ensuring credibility of emissions reductions -- lowers costs.

As a result of U.S. leadership, the Kyoto Protocol incorporates this principle of “when flexibility” in four ways:

- First, the initial emissions reductions are less severe, and the period over which they occur ends much later than what had been proposed by many other countries. By adopting a gradual and credible path of reductions in the early years, we can greatly reduce costs such as those from prematurely scrapping coal-fired electricity plants, while attaining the same ultimate environmental goals.
- Second, under the Kyoto Protocol, the emissions target is not specified in terms of a specific year, but rather in terms of an average over a five-year period (2008-2012). Averaging over five years, instead of requiring countries to meet a specific target each year, can lower costs, especially given an uncertain future. The averaging can smooth out the effects of short-term events such as fluctuations in the business cycle and energy demand, or hard winters and hot summers that would increase energy use and emissions.

- Third, there is allowance for "banking" emission reductions within the 2008-2012 commitment period, for use in a subsequent commitment period [although the emission targets of the subsequent periods have not yet been specified].
- Fourth, CDM credits achieved between 2000 and 2008 may be banked until 2008 to 2012.

2. "What flexibility" (gases and sinks)

The second type of flexibility is "what flexibility", along two dimensions. The first is the inclusion in the agreement of all six greenhouse gases. Emissions of different kinds of gases, not just carbon dioxide, contribute to the greenhouse effect. Since the IPCC has developed conversion factors for all greenhouse gases by estimating their global warming potentials, reductions in emissions of one gas can be used to substitute for increases in emissions of another by an amount that has equivalent environmental effects. Again at U.S. urging, all six gases are included, while Japan and the EU had insisted until the end on covering only three. Thus the U.S. succeeded in having the Kyoto Protocol stipulate that countries with binding targets are to reduce their *total* greenhouse gas emissions by certain percentages, but does not require specific reductions for specific gases. Since a molecule of sulfur hexafluoride is 23,900 times more potent over 100 years than a molecule of CO₂, it may be cheaper to achieve the same environmental benefit by eliminating one molecular unit of SF₆ than nearly 24,000 units of CO₂.

Some initial analysis indicates that a strategy of reducing non-CO₂ greenhouse gas emissions by a greater percent than CO₂ emissions could lower emissions permit prices by as much as 10 percent. Thus allowing countries flexibility in what gases they reduce -- essentially trading emissions reductions across gases -- can help lower significantly the costs of meeting their targets.

The second source of "what flexibility" is the treatment of sinks, i.e., land use activities that promote the removal of carbon from the atmosphere through the growth of plants. At the urging of the U.S. delegation, sinks can be used to offset emissions targets. Promoting such sinks through afforestation and reforestation may reduce atmospheric concentrations of CO₂ at much lower costs than reducing emissions of greenhouse gases.

3. "Where flexibility" (international)

The third type of flexibility, and perhaps the most important, is "where flexibility" (international). As I have already emphasized, emissions have the same environmental consequences regardless of where in the world they occur. Therefore, the least-cost approach to controlling climate change is to reduce emissions wherever such reductions are cheapest. The Kyoto Protocol, because of U.S. insistence and persistence, includes three important cost-saving provisions of this nature.

- First, it provides the opportunity for countries that take on binding targets to trade rights to emit greenhouse gases with each other. This market in emissions permits could ensure that emissions reductions occur where they are least expensive within the industrial countries. In particular, U.S. companies could purchase emissions reductions in other participating countries when doing so would reduce their costs -- thus lowering costs without affecting the level of environmental protection. While currently only industrialized countries have emissions caps, this mechanism also offers an incentive for developing countries to take on emissions targets.
- Second, the agreement provides for Joint Implementation by Annex I countries. Thus if some countries do not develop programs to trade permits internationally, U.S. firms could nonetheless implement projects in those countries for which they could receive emissions reductions credits in the U.S.
- Third, the agreement allows industrial countries to invest in "clean development" projects in the developing world and use these projects' certified emissions reductions toward meeting their targets. Many such clean development projects may be quite cheap in terms of the cost per ton of emissions avoided, as has been illustrated by the Joint Implementation pilot program that is already in place in the U.S.

Details of how these provisions will operate will be discussed in future negotiations such as the one in Buenos Aires later this year. Nonetheless, effective international trading of emission credits, Joint Implementation, and the Clean Development Mechanism can lead to substantial reductions in costs relative to alternative policies that do not exploit the power of market incentives. To illustrate briefly the ability of U.S. industry to perform beyond expectations when given appropriate economic incentives, consider further EPA's highly acclaimed sulfur dioxide (SO₂) program, which relies, among other things, on a system of tradeable permits to reduce emissions of SO₂ from electric utilities. The SO₂ program has been successful in several ways: a large number of utilities participate, SO₂ emissions and ambient concentrations have fallen and the costs of reducing emissions are considerably lower than originally forecast.

As has been frequently noted, the average cost of SO₂ emissions reductions has recently been significantly lower than was originally forecast, in part due to the role of incentives in fostering innovation. Emission permit prices, currently at approximately \$100 per ton of SO₂, are well below earlier estimates of around \$250 to \$400 per ton.

Trading programs may not always bring cost savings as large as those achieved by the SO₂ program; trading programs will not always be accompanied by the discovery of much cheaper control strategies. However, the SO₂ experience demonstrates clearly how programs like international permit trading, Joint Implementation, and the Clean Development Mechanism will lead firms to find cheaper ways of reducing emissions that can lead to unexpectedly low costs.

IV. Difficulties of Economic Analysis of the Kyoto Protocol

Now that we have a Protocol -- even if it is not yet fully complete nor ready for the President's submission to the Senate -- it is possible to examine it in somewhat more detail from an economic perspective. But, once again the inherent limitations of any such estimates deserve emphasis. Such limitations should not be surprising to you: economists have a difficult enough time projecting the behavior of the economy over the next quarter or year, let alone over the next two decades. The scale of the forecasting exercise is therefore daunting, and any specific results should be treated with substantial caution.

The difficulties associated with economic analysis of climate change fall into three broad categories. First are the uncertainties that still remain over the terms of the ultimate treaty, necessitating assumptions on which the analysis is predicated. Second are the inherent limitations of available models to analyze even short-term costs and benefits. And finally is a topic discussed earlier: the impossibility of putting a single monetary number on the long-term benefits of climate change mitigation, although there will clearly be economic benefits of emission reductions.

Uncertainties in the International Effort to Combat Climate Change

The Kyoto Protocol was an historic accomplishment, delineating the broad terms of the international effort to address climate change. But although we know a lot more than we did before Kyoto about how that international system can work, and that informs our analysis, there is still much that we do not know.

First, some provisions raise complex implementation issues. At issue here is the treatment of so-called sinks -- activities that affect the rate at which carbon is removed from the atmosphere and "sequestered," e.g., by the planting of trees.

Second, the details of a number of items -- primarily concerning international trading, the Clean Development Mechanism, and developing countries -- are the subject of further discussions including future negotiations in Buenos Aires next fall, because they had not been definitively settled by the end of the Kyoto talks.

Finally, and most importantly, we have not yet negotiated international agreements to limit emissions beyond the 2012 window. The emission cuts agreed upon at Kyoto are only a first step on a long journey. The first step that we propose to take over the next 15 years is critical. But the reason it is critical is *not* that, by itself, it will solve the climate change problem -- emissions during any given decade are small compared to the cumulative concentrations in the atmosphere. Rather, the first step is critical because we can not take the second and third steps until we have taken the first. At the same time, any analysis is complicated by the lack of knowledge over what the subsequent steps will be.

Inherent Limitations of Models

In addition to these uncertainties about the details of the international effort to address climate change, are the inherent limitations of the models used to evaluate that effort. Even within a given model, answers depend critically on the precise nature of the question asked. For example, the costs of emissions reductions depend critically on the extent of global participation and international trading that a treaty is assumed to feature. But in addition to the dependence of the results from a given model on the precise assumptions, different models can give different answers even when all the assumptions are specified to be the same -- a concrete illustration of the range of uncertainty to which we must assign the predictions of any one individual model.

One area in which the uncertainty is particularly large is the pace of technological progress --especially the diffusion of existing energy-efficient technologies, but also the development of new technologies -- and the extent to which the pace will accelerate in response to government programs. Models and experts on climate change policy tend to have a wider range of disagreement on the scope for speeding the diffusion of existing energy-efficient technologies than on any other single issue.

Furthermore, each model has strengths and weaknesses; each has questions to which it is better or worse suited to answer. Some, for example, model the energy sector in detail. Some allow for the fact that a coal-fired power plant cannot costlessly be converted to one that runs on natural gas. Some show the effects of hypothetical tax cuts made possible by the new revenues earned through the auction of emissions permits. Some are capable of showing recessions and booms. Others include a long-term "carbon cycle" model that can keep track of the accumulation of greenhouse gas concentrations in the atmosphere and their climatological effects. Some break down the rest of the world into regions and so can model international trade. No one model does everything, and therefore we must not rely blindly on the results of any one model or set of models. Professional judgement and economic intuition, along with diplomatic assessments, are also crucial.

Benefits of Averting Climate Change

As discussed above, it is evident that the benefits of averting climate change are potentially immense. But we have chosen not to try to quantify them in monetary terms, in light of the difficulties we have enumerated. These include the uncertainty of these benefits, their timing and therefore the extreme sensitivity of the results to the chosen discount rate, and the dependence of benefits on emissions paths after the 2008 to 2012 budget period specified in Kyoto.

V. Assessing the Kyoto Protocol

In order to evaluate the likely net economic impact of the Kyoto Protocol, *excluding the benefits of mitigating climate change itself*, we have drawn upon a variety of tools to assess the various possible costs and non-climate benefits of the Administration's emissions reduction policy. To give away the punch line, our conclusion is as follows: the net costs of our policies to reduce emissions are likely to be small, assuming those reductions are undertaken in an efficient manner and we are successful in securing meaningful developing country participation as well as effective international trading, and the Clean Development Mechanism in future negotiations. That potential small net premium, even excluding the benefits of mitigating climate change, in effect, purchases a partial insurance policy against a serious environmental threat.

Because the results from any model must be treated with caution, the Administration has employed a broad set of economic tools to assess the Kyoto Protocol. We have drawn on the insights of a wide range of models of the energy sector and economy over the next 25 years, including but not limited to the results of the Stanford Energy Modeling Forum exercises, the IPCC's review of the economic and social dimensions of climate change, the work of the OECD on Economic Dimensions and Policy Responses to Global Warming, and the staff-level Interagency Analytical Team analysis produced last year. Other tools include simple relevant statistics, "meta-analyses" such as work by the World Resources Institute, models, and basic economic reasoning. Drawing on this broad array of analytical tools is crucial to an intelligent evaluation of the policy alternatives.

To our knowledge, no model -- whether used inside the government or not -- has yet been set up to analyze the implications of the Kyoto Protocol, since this agreement is only a few months old and remains unfinished. In particular, no model is currently designed to assess Kyoto's treatment of sinks, or all six greenhouse gases. Some model-builders outside the government tend to take as long as several years to incorporate changes in policy parameters into their models.

Our thinking has been informed, however, by simulations conducted with the Second Generation Model of Battelle Laboratories, one of the leading models in the field. The SGM is one of the models best positioned to analyze the role of international trade in emission permits, which we consider to be a critical element of the Kyoto Treaty. However, the SGM does not cover all six gases included in the Kyoto Protocol or include a role for sinks. We have used the SGM model as one input into our overall assessment of the Kyoto treaty, but have attempted to supplement its results with additional analysis to account for such special features of the agreement as the inclusion of six gases, a possible trading arrangement that could include a subset of the Annex I countries and the Clean Development Mechanism. We will share with you today some preliminary results of this analysis. To the extent possible, we have compared results obtained with the SGM model with those of other modelling efforts.

Mindful of the limitations of any single model, we are eager to see features of the Kyoto Protocol assessed by other models to obtain a better feel for the range of possible effects. This work is just beginning and much of it will continue to go on outside the government. For example, the Energy Modeling Forum, based at Stanford University, is a long-running model comparison exercise involving many of the leading climate models. EMF is currently studying how features of the Kyoto legal language can be translated into terms recognizable to economic modelers. We expect that the group will conduct a full scale analysis of the Kyoto Protocol. The Energy Modeling Forum believes that its members will need at least until mid-year to update their results.

VI. Assessing the Potential Costs of Emissions Reductions

I said in Congressional testimony last July that we can do this smart or we can do this dumb. I was referring to the point that the costs of cutting emissions can be much reduced if flexible, market-based mechanisms are used. Our economic analysis highlighted the importance of such flexible, market-based mechanisms -- which are therefore reflected, at the President's insistence, in the Kyoto Protocol and our ongoing diplomatic strategy.

Within the Kyoto Protocol, this means an insistence on international trading, Joint Implementation, the Clean Development Mechanism, and, ultimately, on meaningful developing country participation. Domestically, this means that we implement any emissions reductions through a market-based system of *tradeable* emissions permits, which ensures that we achieve reductions wherever they are least expensive. But this also means taking serious and responsible steps in the short run to prepare us to meet our obligations in the longer term.

The first such step is the inclusion in this year's budget of an aggressive, \$6.3 billion program of tax cuts and R&D investments -- \$1.3 billion more than the \$5 billion package the President promised in his October 22 speech on this issue. The goal is both to stimulate the development of new energy-saving and carbon-saving technologies and to encourage the dissemination of those that exist already. The proposed package contains \$3.6 billion over the next 5 years in tax cuts for energy efficient purchases and renewable energy, including tax credits of \$3,000 to \$4,000 for consumers who purchase highly fuel efficient vehicles, a 15 percent credit (up to \$2,000) for purchases of rooftop solar equipment, a 20 percent credit (subject to a cap) for purchasing energy-efficient building equipment, a credit up to \$2,000 for purchasing energy-efficient new homes, an extension of the wind and biomass tax credit, and a 10 percent investment credit for the purchase of combined heat and power systems. The package also contains \$2.7 billion over the next 5 years in additional research and development investments -- covering the four major carbon-emitting sectors of the economy (buildings, industry, transportation, and electricity), plus carbon removal and sequestration, Federal facilities, and cross-cutting analyses and research. One example of the R&D effort is the Partnership for a New Generation of Vehicles (PNGV). PNGV is a government-industry effort to develop attractive, affordable cars that meet all applicable safety and environmental standards and get up to three times the fuel efficiency of today's cars. In FY99, the combined proposal for PNGV is \$277 million, up from \$227 million appropriated in FY98. Similar government-industry efforts are proposed to develop more efficient diesel engines for both light trucks and heavy trucks.

A second responsible step entails industry-by-industry consultations to prepare emission reduction plans in key industrial sectors. The Administration will work in partnership with industry to identify ways in which the Federal government might remove regulatory hurdles that discourage energy efficiency. In addition, DOE will spearhead a comprehensive effort to improve the energy efficiency of the Federal government's own operations and purchases.

The third step is the promotion of an environmentally-responsible electricity restructuring bill, which the President identified as part of his domestic climate change package in his address to the National Geographic Society on October 22. An electricity sector freed from government regulation would be a more efficient energy sector. Costs to consumers would fall. In addition, stronger incentives for improved generation efficiency in conjunction with appropriate market based provisions could achieve modest reductions in emissions. A reasonable overall estimate of the contribution of federal electricity restructuring to the rest of the President's program to address climate change is that it would make further progress to the same emission reduction goals at a cost saving of roughly \$20 billion per year. These steps should be taken regardless of Kyoto, because they make sense in terms of energy efficiency. But they have the added benefit of preparing us for Kyoto.

Estimated Reduction in Costs from Annex I Trading

In the language of the treaty, "Annex I," is the set of countries that have agreed to take on binding limitations in emissions of greenhouse gases. Even without meaningful developing country participation -- which, again, the President has emphasized is essential before the treaty would be submitted for ratification -- costs could be reduced substantially by emission trading among the Annex I countries. To provide some indication of the possible efficiency improvements, Russia and Ukraine consume six times as much energy per dollar of output as does the United States. Such large international differences in energy efficiency suggest that adoption of existing U.S. technology would yield very large emissions reductions in these countries.

Estimates derived from the SGM model confirm that emissions trading among Annex I countries can reduce the cost to the United States of achieving its targets for 2008-2012 emissions by about half relative to a situation in which such trading was not available. This concept of costs is meant to capture aggregate resource costs to the US economy, including the cost to domestic firms of purchasing emission permits from other countries where emission reductions may be cheaper than in the United States. Although these estimates reflect idealized international trading in efficient markets, the overall conclusion is clear. The dramatic reduction in costs potentially available from Annex I trading within the SGM model -- cutting the costs involved by half -- highlights why the President insisted that international trading be part of the Kyoto Protocol; and why its achievement by our negotiators in Kyoto was such an important accomplishment.

Estimated reduction in costs from umbrella trading

One possibility that emerged in Kyoto, which none of us foresaw, was the idea developed there by the U.S. delegation, that the United States might undertake trading with a subset of Annex I countries, dubbed the “umbrella”. Countries that have expressed interest in the umbrella include the United States, Australia, Canada, New Zealand and Russia, with strong indications of interest from some others. This subset of Annex I countries shares a common interest in promoting market-based mechanisms, most specifically, fully flexible rules for international trading of emissions permits.

It is too early to state the precise form the umbrella will take. But we can envision a number of potential benefits. The umbrella could, for example greatly reduce costs to the U.S. Results that we have derived from various SGM simulations of efficient international trading suggest that, relative to the situation in which there is no trading at all, the umbrella can reduce costs by an estimated 60-75 percent, depending on whether the former Warsaw Pact countries fall within the umbrella. The Kyoto Protocol classifies these countries outside of the EU bubble for the first budget period 2008-2012.

Estimated reduction in costs from developing country participation

The next consideration is participation by developing countries. The President has said that he will not submit the treaty for ratification without meaningful participation by key developing countries. Such participation would further reduce the costs involved.

The substantial potential gains from meaningful developing country participation are highlighted by the significant benefits that will likely accrue from the limited role that the developing countries have already agreed to: the Clean Development Mechanism (CDM), modeled after the U.S. joint implementation concept. The CDM cannot realistically be expected to yield all the gains of binding targets for developing countries, but it might shave costs by roughly another 20 to 25 percent from the reduced costs that result from trading among Annex I countries.

Another possibility is that we persuade some of the key developing countries that are the largest emitters to commit to targets, and allow us to buy emission reductions from those paths. Simulations with the SGM model suggest that full participation by non Annex I countries could cut roughly 55 percent off the reduced costs that result from Annex I trading. The actual cost reduction would depend on the extent of developing country participation that is ultimately obtained, as well as the effectiveness of international trading arrangements. The more developing countries that take on modest binding targets and trade in international permit markets, the lower will be costs.

These cost-saving opportunities are fundamental tenets of the U.S. position. The promise of Kyoto cannot be achieved without effective emissions trading. Moreover, if we do not get meaningful participation by key developing countries, we won't submit the treaty for ratification to the Senate. So, while our analysis may be predicated on some ambitious conditions concerning trading and developing country participation, it is exactly those conditions that form the foundation of the U.S. position in international negotiations including those at Buenos Aires.

Accounting for Carbon Sinks

The preceding discussion has emphasized the importance of trading arrangements and the CDM. In reaching an overall economic assessment, it is also important to factor in the potential role of carbon sinks. Again, the U.S. delegation obtained a novel concept, that carbon absorbing activities called sinks could be used to offset emissions. The arrangements concerning carbon sinks in the Kyoto Protocol have received less attention than they merit. The Kyoto Protocol specifies that removals of CO₂ by sinks count toward meeting the target. The Kyoto Protocol counts the net emissions effects of three sink activities --afforestation, reforestation, and deforestation. Very preliminary estimates of the implications for the United States of the Kyoto provision on sinks indicate that carbon sinks could comprise a significant portion of the total required emissions reductions. Moreover, decreasing the required emissions reduction by, for example, 10% would likely result in cost-savings greater than 10%.

Even this estimate of the effect of sinks is conservative in one respect: it is based on an assumption for sink activity in the U.S. over the 2008-2012 period, and no assumed benefits from sinks elsewhere in the world. Very preliminary estimates suggest that incorporating the gains from sinks *throughout the world* can substantially reduce the costs of meeting the Kyoto target, on top of the gains from trading among Annex I countries. (Furthermore, no model has yet even tried to take into account that government policies can help increase the activities qualifying as allowable sinks, like some tree-planting.) Because the quantitative uncertainty is so large, we do not yet have an estimate with which we are comfortable. But we expect that complete modelling of the Kyoto provision pertaining to sinks will likely have favorable and potentially large effects on projected costs.

Accounting for the role of improvements in energy efficiency

Another issue in analyzing the Kyoto protocol concerns future improvements in energy efficiency due to innovation and diffusion of existing technology. The parameter that figures most prominently in analysis of energy efficiency is the rate of improvement in the so-called Autonomous Energy Efficiency Index (AEEI), that is the rate at which the total use of energy falls relative to GDP. A plausible assumption on the AEEI is an improvement of 1.0 percent per year. Reflecting a conservative interpretation of the 15-year impact of various climate change initiatives, this is only a small increase above the 0.9 percent number in the Energy Information Administration's Annual Energy Outlook. That assumption is not the most

optimistic outcome that might occur. Some authorities in the field of energy policy forecast more rapid technological progress. Experts at five national laboratories managed by the Department of Energy, using an engineering approach rather than an economic paradigm, found that a third of the emissions reductions necessary to return to 1990 levels by 2010 could be achieved through the adoption of existing energy-efficient technologies at no net resource cost, or even some savings. The National Academy of Sciences reached qualitatively similar conclusions in a 1992 report.

The President's FY 1999 budget, as I have noted, includes a \$6.3 billion package of tax cuts and R&D investments intended to spur the discovery and adoption of new technologies. If the Administration is successful in this effort, the rate of improvement in energy efficiency could rise and such improvements would lower the cost of meeting our Kyoto target. For example, published results based on SGM model simulations with different assumed rates of AEEI suggest that an increase in the AEEI of 25 percent could lead to declines in the permit price of approximately 40 percent.

Our justification for incorporating into our assessment a small assumed impact of Administration technology policies is somewhat analogous to the Administration's rationale for employing mainstream economic assumptions in our budget forecasts: in the presence of uncertainty, we are conservative in our estimates of the speed with which the economy will grow, tax receipts will rise, and the budget will improve. That way, any revisions or surprises that occur are likely to be in the pleasant direction. In this instance, we prudently and conservatively assume that there will be substantial delays between investments in new technology or the diffusion of existing technology, and the returns to such investments.

Moreover, at the recent automobile show in Detroit, General Motors announced that it has developed a hybrid-based vehicle that can achieve fuel efficiency of 80 miles per gallon, and that this car could be in commercial production within a few years. Ford also exhibited a prototype of a light-weight highly fuel efficient sedan that could be in commercial production by the middle of the next decade. These announcements followed an earlier breakthrough announced by DOE and its partners of a fuel cell that could run on gasoline and double current fuel economy while reducing conventional air pollution emissions by 90 percent. These technological advances have been made possible through the efforts of the Partnership for a New Generation of Vehicles between the Administration and the U.S. auto companies and their suppliers.

Such progress may be replicated in other sectors. VCRs and TVs, while switched off, consume about \$1 billion worth of electricity annually. EPA has established a partnership with major manufacturers that has a goal of achieving up to a 70 percent reduction in energy use by VCRs and TVs while they are switched off, without sacrificing product quality, usefulness, or increasing costs. This partnership offers promise of substantial improvements in energy efficiency.

Non-Climate Benefits

A final factor that should be included in any comprehensive assessment of the economic implications of the Kyoto protocol are the benefits of the agreement. The literature has emphasized that any relative price shifts that prove necessary to reduce emissions should produce non-climate benefits in three areas: traffic congestion, highway accidents, and air pollution unrelated to climate change. These benefits are hard to quantify precisely but are potentially significant: our rough estimates suggest that these three benefits could offset approximately a quarter of the resource cost of the climate change policy.

Synthesis

A comprehensive evaluation of the economic impact of the Kyoto Protocol must integrate all of the factors described above: reliance on flexible market-based mechanisms domestically; international trading and Joint Implementation among Annex I countries; the Clean Development Mechanism; meaningful developing country participation; the potential cost-mitigating role of including six gases and carbon sinks; the benefits of electricity restructuring; and emissions reductions achieved as a consequence of other proposed Administration climate change initiatives. Assuming that effective mechanisms for international trading, Joint Implementation and the Clean Development Mechanism are established, and assuming also that the U.S. achieves meaningful developing country participation, our overall assessment is that the economic cost to the United States in aggregate and to typical households of attaining the targets and timetables specified in the Kyoto Protocol, will be modest.

This conclusion that the impact will be modest is not entirely dependent upon, but is fully consistent with, formal model results. I have previously emphasized the limitations of relying on any single model in assessing the economic impact of the Kyoto Protocol, and continue to view any such results as just one input into an overall analysis. But it is worth emphasizing that model results reflecting the details of the Kyoto Protocol are consistent with our conclusion. For example, under the assumptions of either trading under the umbrella or within Annex I, the CDM and permit trading with developing countries, estimates derived using the SGM model, which adjust for the inclusion of six gases and assume little banking of credits beyond 2012, suggest that the resource costs of attaining the Kyoto targets for emission reductions might amount to \$7 to \$12 billion per year in 2008 to 2012. This implies that overall costs, excluding not only climate and non-climate benefits, but also such cost mitigating factors as sinks and payoffs from the President's electricity restructuring and climate change initiatives, would reach roughly one tenth of one percent of projected GDP in 2010.

A more tangible measure of costs is the estimated effects on energy prices. Excluding the impact of electricity restructuring and the ancillary benefits of mitigation and better forest management, the SGM-based estimate, corresponding to the gross resource cost estimate cited above, is an emissions price in the range of \$14 to \$23 per ton of carbon equivalent. This translates into an increase in energy prices between 2008 and 2012 at the household level of

between 3 and 5 percent, an increase in fuel oil prices of about 5 to 9 percent, natural gas prices of 3 to 5 percent, gasoline prices of 3 to 4 percent (or around 4 to 6 cents per gallon), and electricity prices of 3 to 4 percent. This increase in energy prices at the household level would raise the average household's energy bill in ten years by between \$70 and \$110 per year, although such predictions may not be observable because they would be small relative to typical energy price changes, and nearly fully offset by electricity price declines from Federal electricity restructuring. In particular, this increase in energy prices is small relative to the average of *year to year* real energy price changes experienced by U.S. consumers since 1960: such *annual* changes have averaged 3.8 percent. In addition, by 2008-2012, the anticipated 10 percent decline in electricity prices from the restructuring that is part of our climate change agenda is projected to lead to expenditure reductions of about \$90 per year for the average household.

As highlighted earlier, there are substantial but unavoidable uncertainties surrounding estimates like these. For example, the estimate just discussed is predicated, among other things, on the developing country participation that we are insisting upon as a condition for our ratifying the Kyoto Protocol, but which is not yet part of that Protocol, and on effective international trading. Moreover, other models will yield other answers and much work remains to be done by the modeling community to test the robustness of these results. Preliminary comparisons of the SGM model to the few other models that have attempted to evaluate the Kyoto accord, suggest that its predictions concerning the impact of the Kyoto Protocol on carbon permit prices are neither the most conservative nor the most optimistic of the models that have been developed. The predictions of the SGM model are robust in the sense that virtually all energy models reveal the potency of effective, flexible, domestic and international trading mechanisms to reduce substantially the cost and energy price impact of meeting the Kyoto targets.

Of course, the most important factor that has been left out of the above assessment is the benefit of mitigating climate change itself. A full cost-benefit analysis would include mitigation in the benefits column. The only reason we have not done so, explained repeatedly above, is the difficulty in coming up with a number to capture the monetary benefits. But nobody should lose sight of our ultimate objective -- keeping our planet the hospitable home that we enjoy today.

Effects on employment and aggregate output

So far we have said nothing about job losses resulting from climate change policy. Although there may be job gains in some sectors and job losses in others, we do not anticipate any significant aggregate employment effect if we achieve the conditions we have discussed. The effects on energy prices described above will occur only 10 to 14 years in the future. Not only are these effects small relative to historical variations in energy prices, and offset by other policies like electricity restructuring, they would occur sufficiently far in the future to enable monetary policy to keep the economy operating at its potential. In energy-intensive sectors some employment reduction could occur, although given the very small predicted change in energy prices, impacts in most such sectors are apt to be minimal. Furthermore, a large number of jobs will be created in other sectors -- many of them high-tech jobs paying high wages. The President is firmly committed to assisting any workers who are adversely affected during the transition to a climate-friendly economy.

VII. Conclusion

In conclusion, the Kyoto Protocol and the President's general approach to climate change reflect the insight of economic analysis. The Kyoto Protocol includes key provisions on international trading and Clean Development projects. The President's approach relies on market incentives -- first, with a system of tax cuts and R&D investments, and then later with a market-based system of tradeable permits -- to ensure that our objectives are achieved as efficiently as possible.

Our overall conclusion is that the economic impact of the Protocol will be modest under the conditions we have identified. The purpose of this testimony has been to explain the reasoning underlying this conclusion, which draws insights from not only the forecasts of individual models, any one of which has its own strengths and limitations, but also a broad variety of additional analyses.

I look forward to continuing to work with members of this Committee, as well as other interested parties, in further analyzing the Kyoto Protocol and evaluating the net effects of reducing greenhouse gas emissions. It is my hope that economic analysis will continue to play a key role in designing policies in this area.

I welcome your questions.

EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS

May 14, 1998

TO: Larisa Dobriansky

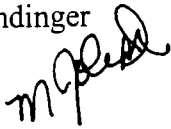
FROM: Michele Jolin 

In accordance with our discussion yesterday, attached are the materials that were provided by the Council of Economic Advisers to the Commerce Committee. I will contact you about arrangements to review the other materials.

Attachments

EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS

May 14, 1998

TO: Elizabeth Munding 
FROM: Michele Jolin 

In accordance with our discussion earlier today, attached are the materials that were provided by the Council of Economic Advisers to the Commerce Committee. I will contact you about arrangements to review the other materials.

Attachments

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8. Dr. Yellen, could you discuss the possible impact the Administration's climate change policy could have on our imports of oil?

EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS



Date:

May 12, 1998

Please deliver to:

Julie Anderson

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343-1163

Telephone number of addressee:

343-1091

From:

Michele Jolin
CEA Chief of Staff

FAX number of sender:

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Let me know if you
need anything else.
Michelle

EXECUTIVE OFFICE OF THE PRESIDENT
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May 12, 1998

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Maria Pica

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CEA Chief of Staff

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MICHAEL H. VAN DUSEN
DEMOCRATIC CHIEF OF STAFF

Via Fax 395-6958

Dr. Janet Yellen
Chair
Council of Economic Advisors
The White House
3140 OEOB
Washington, D.C. 20502

Rec'd at CEA
5-1-98

Re: The Kyoto Protocol

Dear Dr. Yellen:

I would like to invite you to appear before the House International Relations Committee for a full committee meeting on the Kyoto Protocol at 10:00 a.m. on Wednesday, May 13, 1998, in Room 2172 of the Rayburn House Office Building.

Your statement should review the highlights of the recent agreement in Kyoto, the major challenges you see presented by that agreement and the potential costs of its implementation. Your statement should last up to five minutes. We will, of course, include a longer prepared statement for the record. I have attached our instructions to witnesses for your reference. If you have any questions regarding this hearing, please feel free to contact Mark Kirk of the committee staff at (202) 225-5021.

With best wishes,

Sincerely,

Ben Gilman

BENJAMIN A. GILMAN
Chairman

Enclosure

COMMITTEE ON INTERNATIONAL RELATIONS

*Room 2170 Rayburn House Office Building
Washington, D.C. 20515
Telephone: (202) 225-5021 -FAX: (202) 225-2035*

INSTRUCTIONS FOR WITNESSES

BIOGRAPHICAL SKETCHES AND PREPARED STATEMENTS

Please forward to the committee office, as soon as possible, a short biographical sketch. So that your biographical sketch may be used by the committee staff and Members of Congress attending the hearing, you may FAX it to this office. However, a clear, hard copy of your biographical sketch must be given to a member of the committee staff or delivered to this office following the hearing so that it may be copied into the hearing record.

A copy of your prepared statement must be FAXed to the committee office as early as practicable, but at least 48 hours before the hearing date. **In addition, we require that a copy of the statement be submitted on disc in order to put the testimony on our Internet website as is required by a new House rule.** Statements marked "draft" will be treated as such. Committee staff needs at least 60 single-spaced copies of your prepared statement delivered to the committee office on the day prior to the hearing. If you wish your statement to be distributed to press or public attending the hearing we will need an additional 50 copies. PLEASE NOTE THAT STAFF WILL NOT REPRODUCE YOUR STATEMENT. IF STATEMENTS ARE NOT BROUGHT NONE WILL BE DISTRIBUTED AT THE HEARING.

Your prepared statement should display the following information on the first page:

- 1) Your name
- 2) Your title and organization affiliation
- 3) Date of the hearing at which you are testifying
- 4) The name of the Congressional committee - "House Committee on International Relations"

In keeping with clause 2(g)(4) of House Rule XI, nongovernmental witnesses are required to include with their testimony a "curriculum vitae and a disclosure of the amount and source (by agency and program) of any Federal grant (or subgrant thereof) or contract (or subcontract thereof) received during the current fiscal years by the witness or by an entity represented by the witness."

Witnesses are asked to keep their oral presentations to no more than 5 minutes. This will allow adequate time for testimony by all witnesses as well as questions by the Members of the committee. Your prepared statement may be as long as you wish and can be submitted for the record; however, if you believe it will take more than five minutes to deliver orally, Committee rules stipulate that you present a "brief summary of views." If you will be summarizing your prepared statement, it would be appreciated if you would inform the Chairman when you begin testifying. In the event that you do summarize your statement, your entire prepared statement will be included in the hearing record.

ADDITIONAL MATERIAL

We cannot guarantee that additional material will be included in the hearing record -especially very lengthy material. Any additional material which you wish to be included in the hearing record should be limited and given to the committee staff prior to or following the hearing.

HEARING TRANSCRIPTS

Stenographic transcripts are made of each hearing. Each witness will receive for editing purposes a copy (or part) of the hearing transcript soon after it is obtained from the reporters (usually within two weeks). Witnesses should edit their remarks without changing basic meaning or context. Please do not edit the remarks of other witnesses or Members of Congress. Edited transcripts should be returned to the committee office as quickly as possible to permit timely publication of the hearing record. All witnesses will receive copies of the printed hearing record as soon as it becomes available.

**IF YOU HAVE ANY QUESTIONS PLEASE DO NOT HESITATE
TO CONTACT ALLISON KIERNAN AT THE ABOVE ADDRESS AND
PHONE NUMBER**

EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS



Date:

May 12, 1998

Please deliver to:

Mark Kirk

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225-2035

Telephone number of addressee:

225-5021

From:

Council of Economic Advisers

FAX number of sender:

(202) 395-6958

Telephone number of sender:

(202) 395-5084

Number of pages, including cover sheet:

22

Message:

Attached = May 13 testimony of
Dr. Janet Yellen

= Bio
* Copies of testimony to be delivered via W.H. Messenger

this afternoon, with Bio
original & disp testimony

**TESTIMONY OF DR. JANET YELLEN
CHAIR, COUNCIL OF ECONOMIC ADVISERS
BEFORE THE
U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON INTERNATIONAL RELATIONS**

MAY 13, 1998

Thank you, Mr. Chairman. The President has said that we can work to avert the grave dangers of climate change, while at the same time maintaining the strength of our economy. I agree and am pleased to have this opportunity to appear before the Committee to elaborate on the Administration's views on these issues.

The international agreement that was reached in Kyoto this past December is a crucial step forward in addressing global climate change. But it is only one step in a journey. Since the international effort to reduce greenhouse gas emissions is still in some respects a work-in-progress, it is not yet possible to provide a full authoritative analysis of it. Many of the specifics in several crucial areas are not completely resolved in the diplomatic arena, forcing analysts to make a variety of assumptions about the ultimate form of the international regime. In my testimony today, I will attempt to identify key elements of the agreement and the Administration's policy, such as international emissions trading, meaningful developing country participation, inclusion of land-use activities that absorb carbon ("sinks") and six categories of gases, as well as domestic initiatives, that together can ensure that reductions in global greenhouse gas emissions are consistent with continued strong economic growth. I will explain the reasoning underlying our conclusion that, under these conditions, economic impacts are likely to be modest.

The Administration is strongly committed to ensuring that these key elements are reflected in our domestic and international climate change policies. We are firmly committed to meaningful developing country participation, the use of sinks to offset emissions requirements, and emissions trading both domestically and internationally. And as you know, the President's FY 1999 budget includes a \$6.3 billion package of tax cuts and R&D investments over the next 5 years; this package makes good sense in terms of energy policy and will jumpstart our efforts. A final component of the President's climate change policy is his support for electricity restructuring in a manner that will offer approximately \$20 billion in cost savings to electricity consumers, while reducing greenhouse gas emissions.

I. Basic Economic Rationale of the Kyoto Treaty

To begin our analysis, it may be worth stepping back and examining the larger question of the basic rationale, from an economist's perspective, for the Kyoto Protocol.

EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS



Date:

5/13/98

Please deliver to:

~~XXXX~~ Randi Woods

FAX number of addressee:

225-5915

Telephone number of addressee:

8

From:

Michele Jolin
CEA Chief of Staff

FAX number of sender:

(202) 395-6958

Telephone number of sender:

(202) 395-5084

Number of pages, including cover sheet:

2

Message:

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4-23

Hold
per MJ

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United States Senate

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WASHINGTON, DC 20510-6100

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BRUCE KING, STAFF DIRECTOR FOR THE MINORITY

<http://www.senate.gov/committee/budget.html>

April 20, 1998

The Honorable Stuart E. Eizenstat
Under Secretary for Economic, Business and Agricultural Affairs
U.S. Department of State
2201 C Street, N.W.
Washington, D.C. 20520

Dear Under Secretary Eizenstat:

The Administration has urged Congress to support the Kyoto Treaty once certain side agreements have been reached. I believe that the Treaty's economic impact must be studied in greater detail before the Administration promotes a proposal of this magnitude. To supplement private analysis, the Administration should provide its own thorough study on this issue.

Recently, you and CEA Chair Janet Yellen commented on the Kyoto Treaty's possible economic impact before the House Commerce Committee. However, it is my understanding that the Administration report cited consisted only of written testimony, which referenced work done on one model. No documentation was provided on the results themselves, nor was any detail given on the underlying assumptions used and adjustments made.

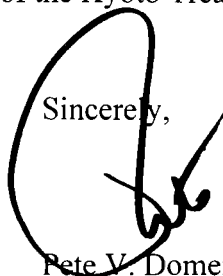
I plan to schedule a major hearing on the economic effects of the Kyoto Treaty. However, before such a hearing can be scheduled, I believe that the Administration should undertake further detailed study of the Treaty's potential economic impact which:

- 1) employs several types of models, so as to reflect both the short-term and long-term impact on GDP, consumption and energy prices;
- 2) provides documentation of its results and explicitly states its assumptions;
- 3) states how permits are to be allocated -- via auctioning or grandfathering. If via auction, it should indicate what is done with the added revenue and how this affects the overall results;
- 4) addresses the impact of an international trading permit system on international trade and capital flows;
- 5) is reviewed by outside academics and experts.

The Administration's Interagency Analytic Team made a commendable effort last year to attempt to examine the potential economic impact of freezing greenhouse emissions at 1990 levels. However, the terms of the Kyoto Treaty have changed since last summer, bespeaking the need for a new comprehensive economic analysis. A new study would also permit the full incorporation of the remedial suggestions made by the panel of outside experts who reviewed the IAT's report.

While I understand that it will take time to investigate the Kyoto Treaty's full economic effects, I believe that it should be a topic of ongoing analytic efforts within the Administration if it is serious about promoting the Treaty to Congress. As such, I request that the Administration conduct and submit a comprehensive economic analysis of the Kyoto Treaty that addresses the points raised above.

Sincerely,

A handwritten signature in black ink, appearing to read "Pete V. Domenici", written over a large, loopy circular flourish.

Pete V. Domenici
Chairman

cc: The Honorable Janet Yellen ✓
The Honorable Larry Summers

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THOMAS H. ALLEN, MAINE

BERNARD SANDERS, VERMONT
INDEPENDENT

March 13, 1998

BY FACSIMILE

The Honorable Janet Yellen
Chairman
Council of Economic Advisers
Old Executive Office Building
Washington, D. C. 20500

Dear Chair Yellen:

The Subcommittee on National Economic Growth, Natural Resources, and Regulatory Affairs is conducting oversight of the Administration's global climate change policies and its initiatives to jump-start U.S. efforts to achieve the Kyoto Protocol greenhouse gas emissions reductions targets.

Pursuant to the Constitution and Rules X and XI of the United States House of Representatives, please provide the Subcommittee with detailed information in response to the questions in sections A and B of the attached inquiry, to the extent that they are applicable to your agency, and the questions in sections C through E. In responding to this inquiry, please restate each question and subpart with each of your answers, and follow the attached definitions and instructions concerning the production of records.

Please provide your responses to the written questions and requests for production of records not later than 12 noon, April 7, 1998 to the Subcommittee in Room B-377 Rayburn. In addition, please contact Larisa Dobriansky, Senior Counsel, at (202) 225-4407 as soon as practicable to coordinate the timely production of the information to the Subcommittee.

Hold per MS

Thank you in advance for your attention to this request.

Sincerely,

A handwritten signature in black ink that reads "David McIntosh". The signature is written in a cursive style with a large, looped "D" and a long, horizontal flourish at the end.

David M. McIntosh

Chairman

Subcommittee on National Economic Growth,
Natural Resources, and Regulatory Affairs

cc: The Honorable Dan Burton
The Honorable John Tierney

Enclosure

Questions Regarding Global Climate Change Policies and Initiatives

A. Budget Information and Performance Measures

1. Please provide a table with Fiscal Year (FY) 89 - FY 99 historical budget authority for your agency for the various components of the President's "Climate Change Technology Initiative," including the previous "Climate Change Action Program/Plan" and any other new or previously authorized Research and Development (R&D) herein (except for the U.S. Global Change Research Program included in Question 3 below). For each component, please indicate each specific budget account, the specific legislative authority (including the specific statute, the section citation, and the language of the section) for the program, and a brief description of the program.
2. In Section 2 ("Programmatic Details") of OMB's February 2, 1998 handout, "Climate Change Technology Initiative - 1999 Budget Briefing Materials," please provide the following information associated with each paragraph description in which your agency has been funded or is requesting funding: the associated funding in FY 97, FY 98, and FY 99. Also, for each paragraph, for the requested funding in FY 99, please provide evidence of any accomplishments from the FY 93 - FY 97 funding, if any. Lastly, for each paragraph, please indicate any program performance measures for the requested funding, and, for each such measure, please provide data for the 1990 base year and annual data for the most recent three-year period for which data are available.
3. Please provide a table with FY 89 - FY 99 historical budget authority for your agency for the various components of the "U.S. Global Change Research Program" which were or are devoted exclusively to climate change R&D. For each component, please indicate each specific budget account, the specific legislative authority for the program (including the specific statute, the section citation, and the language of the section), and a brief description of the program.
 - If funded in any of FY 93 - FY 97, please provide evidence of any accomplishments from these dollars. Also, for requested funding in FY 99, please indicate any program performance measures for the requested funding, and, for each such measure, please provide data for the 1990 base year and annual data for the most recent three-year period for which data are available.
4. Please provide a table with FY 89 - FY 99 historical budget authority for your agency for any other components of the Administration's climate change program (i.e., in addition to those included in answer to questions 1 and 2). For each component, please indicate each specific budget account, the specific legislative authority for the program (including the specific statute, the section citation, and the language of the section), and a brief description of the program.
5. For the FY 99 request, please provide a table showing what part is funding to continue initiatives funded in FY 98 or prior years and what part is brand new activity. For each component, please indicate each specific budget account, the specific legislative authority for the program (including the specific statute, the section citation, and the language of the section), and

a brief description of the program. For each brand new activity, please indicate expected requested funding annually through FY 03.

6. Please identify the full set of your agency-specific performance measures for the Administration's Climate Change proposal (besides those indicated in response to questions 2 and 3), including data for at least the 1990 base year, FY 97, FY 98, and FY 99. Also, please identify how any of your agency-specific measures (including those in response to questions 2 and 3) relate to those for any other Federal agency. Lastly, please describe any interagency efforts to identify and relate the entire set of climate change performance measures, including which agencies are involved and the names of the agency representatives.

7. Please provide a table for FY 93 - FY 97 identifying all assistance (including grants, cooperative agreements, and other transactions) and contract awards to non-profit and for-profit organizations for any climate change activity, including the date, amount of the award, name of the organization, purpose of the award, and a summary of any result(s) from the award. Please provide a copy of any final report from these awards.

B. Economic, Policy, and Legal Analyses

8. Since January 1993, has your agency participated in any interagency effort(s) relating to climate change in any of the following areas: (a) review of current legislation and/or the need for any new legislation; (b) review of current rules, any needed revisions to current rules, and/or any needed new rules; (c) production or review of any environmental data and/or analyses; (d) production or review of any cost-benefit data or analyses; and/or (e) production or review of any economic data and/or economic analyses? If so, please identify the interagency effort, its member agencies, its membership not only from your agency but also from other Federal agencies and/or any non-Federal parties, all drafts and analyses from the effort(s), and any comments from your agency on any drafts.

9. Has your agency either prepared or reviewed any environmental, cost-benefit, and/or economic data and analyses relating to the White House Initiative on Global Climate Change? If so, please provide a copy of all data, analyses, and any comments by your agency.

10. Did your agency comment on any of the draft testimony on climate change by Administration witnesses since the President's 1998 State-of-the-Union address? If so, please provide a copy of the draft testimony and any comments by your agency.

11. Has your agency suggested any alternative policy options for climate change? If so, please provide a copy of all drafts and supporting analyses and any comments from other Federal agencies on your alternatives.

12. Does your agency plan to revise any existing legislation or propose any new legislation relating to climate change (including legislation that will have the effect of reducing greenhouse

gas emissions whether or not that is the intended purpose of the legislation)? If so, please identify and describe all such initiatives, including a timetable for their development and submission to Congress. Also provide any and all legal and policy analyses regarding the applicability and availability of existing legislation to implement the Kyoto Protocol and any comments from other Federal agencies on the analyses.

13. Does your agency plan to revise any existing rules or propose any new rules relating to climate change (including regulatory actions that will have the effect of reducing greenhouse gas emissions whether or not that is the intended purpose of the regulatory action)? If so, please identify and describe all such initiatives, including any cost-benefit analysis, and a timetable for their development and promulgation. Also, provide any and all analyses that were prepared or considered of the cumulative effects on the U. S. economy and/or energy system of all or any combination of regulations that were issued since 1992, that were proposed, and that are being developed that have or will have such effects.

14. Has your agency participated in discussions or reviewed any documents relating to international emissions trading, joint implementation, and/or the Clean Development Mechanism? If so, please provide a copy of all drafts and any comment provided by your agency.

C. Dr. Yellen's Testimony before the House Commerce Committee on March 4, 1998

15. Please provide any and all analyses that support the Administration's conclusion that impacts on the U.S. economy of complying with the terms of the Kyoto Protocol "are likely to be modest." Also, explain fully how the Administration can make such a forecast responsibly when, as Dr. Yellen stated, "it is not yet possible to provide a full authoritative analysis" of the Kyoto Protocol. Among other things, Dr. Yellen noted that there is still "much that we do not know" because much has been left unresolved by this treaty (for example, implementation issues, the rules and procedures governing international emissions trading, joint implementation projects, and the Clean Development Mechanism, and future emissions reductions obligations). Moreover, Dr. Yellen asserted that, to her knowledge, "no [economic] model -- whether used inside the government or not -- has yet been set up to analyze the implications of the Kyoto Protocol, since this agreement is only a few months old. . . ."

16. In her testimony, Dr. Yellen supported the Administration's conclusion that "economic impacts are likely to be modest" with other optimistic conclusions about the effects of the Kyoto treaty "flexibility" mechanisms and U.S. electricity restructuring, and about the rate of technological progress. Please provide any and all analyses that support the following estimates:

16a. U.S. electricity restructuring "will offer approximately \$20 billion in cost savings."

16b. Emissions trading among Annex I countries "can reduce the cost to the United States of achieving its targets for 2008-2012 emissions by about half."

16c. Emissions trading among a subset of Annex I countries (for example, the United States, Australia, Canada, New Zealand, and Russia) “can reduce costs by an estimated 60-70 percent.” Also, based on the estimates presented in Dr. Yellen’s testimony, please explain and fully document how more limited trading among this subset of countries would produce greater cost reductions than from either trading among all Annex I countries or trading with the full participation of non-Annex I countries.

16d. The Clean Development Mechanism “might shave costs by roughly another 20 to 25 percent.”

16e. Overall costs “would reach roughly one tenth of one percent of projected GDP in 2010” (resource costs of achieving Kyoto targets for emissions reductions were estimated to be \$7 to \$12 billion per year in 2008 to 20012). Also, please explain how it is possible that compliance with the Kyoto Protocol, which has been projected by independent economists to be the most expensive environmental undertaking ever, could cost less than compliance with the recently issued U.S. air quality rules for particulate matter and ozone (the final Regulatory Impact Analysis for those rules estimated costs of \$46 billion).

16f. The assumption that the rate of improvement in energy efficiency (Autonomous Energy Efficiency Index) will be 1.0 percent per year (which is greater than that assumed by the Energy Information Administration). In particular, please reconcile this assumption with the statement of the Council of Economic Advisers in its 1998 Annual Report that, “[u]ntil an emissions cap and trading system are in place, however, the economic incentive to use [technologies supported by the Administration’s budget] may be low.” Is the Administration assuming that such a system will be put into place in the short-term?

16g. The estimated effect on energy prices will range from “\$14 to \$23 per ton of carbon equivalent.”

16h. “In energy-intensive sectors some employment reduction could occur, although given the very small predicted change in energy prices, impacts in most such sectors are apt to be minimal. Furthermore, a large number of jobs will be created in other sectors--many of them high-tech jobs paying high wages.”

16i. As to each analysis, please indicate who prepared the analysis and provide all records of comments from other federal agencies.

17. Please provide any and all analyses that support the Administration’s estimate that benefits relating to traffic congestion, highway accidents, and air pollution unrelated to climate change “could offset approximately a quarter of the resource cost of the climate change policy.” As to each analysis, please indicate who prepared the analysis and provide all records of comments from other federal agencies.

18a. In her testimony, Dr. Yellen stated that, in evaluating the “likely net economic impact of the Kyoto Protocol,” the Administration has “drawn upon a broad array of analytical tools” and a “wide range of models of the energy sector and economy over the next 25 years” to assess the various possible costs and non-climate benefits of the Administration’s emissions reduction policy. Please specify all of the models and analytical tools that the Administration has used and describe in detail their strengths and weaknesses.

18b. According to the testimony, the Administration has relied particularly on the Second Generation Model (SGM) of Battelle Laboratories for many of its estimates. However, the Interagency Analytical Team report indicated that the SGM model “focuses on long-term transitions and measures the economy in five-year intervals,” so that “it risks racing past short-term transition issues,” such as GDP loss and impacts on specific industries. Specify all of the Administration’s estimates that were derived by this model. Also, indicate why many of the Administration’s key estimates were derived from this model? Finally, please identify the corresponding estimates derived from each model that the Administration has used in assessing the impacts of the Kyoto Protocol.

19. What are the 1990 baseline, the Fiscal Year 1997, 1998 and 1998 data, and the annual outyear estimates until 2012 for the following outcome performance measures mentioned in Dr. Yellen’s testimony: morbidity rates for some diseases, mortality rates for some causes, monetary damages from temperature increases, consequences from some catastrophes, traffic congestion, highway accidents, and air pollution unrelated to climate change?

20. Why does the Administration maintain that the U. S. acid rain program experience “clearly demonstrates how programs like international permit trading, joint implementation and the Clean Development Mechanism will lead firms to find cheaper ways of reducing emissions that can lead to unexpectedly low costs”? Why does the Administration believe that it is appropriate to extrapolate from that experience to the global arena? Won’t the effectiveness of the international system, joint implementation, and the Clean Development Mechanism depend on different factors, such as the rules and procedures governing these mechanisms, the extent of participation by other countries, including developing countries, etc?

21a. In her testimony, Dr. Yellen stated that part of doing it smart (i.e., lowering the costs of reducing greenhouse gas emissions) under the Kyoto Protocol means “taking serious and responsible steps in the short run to prepare us to meet our obligations in the longer term.” She indicated that these steps include a \$6.3 billion program of tax cuts and R&D investments, industry-by-industry consultations to prepare emission reduction plans in key industrial sectors, and legislation to restructure the electrical industry. Under what authority is the Administration pursuing this unilateral executive branch course of action in furtherance of the treaty’s emissions reductions targets and without Senate ratification?

21b. If the Administration is delaying the submission of the treaty to the Senate until it obtains “meaningful participation” by developing countries, doesn’t that decision also require the

Administration to delay any unilateral executive branch action to address global warming until that cooperation is forthcoming?

21c. Given that the Kyoto Protocol seeks to address a global issue, isn't harmful to U.S. interests to proceed without the full participation of developing countries?

21d. Besides being unconstitutional, isn't it also premature and harmful to U.S. interests to take such unilateral actions, without ratification, when the Administration has characterized the Protocol as a "work in progress" -- a Protocol that "is not yet fully complete nor ready for the President's submission to the Senate"?

D. Cost/Benefit Analysis of the Kyoto Treaty

22a. Please provide any and all analyses that the Administration or any federal agency prepared (or had prepared) or is preparing (or is having prepared) of the costs and benefits of imposing on the U.S. the binding targets and timetables set forth in the Kyoto Protocol for reducing greenhouse gas emissions, taking into account the global implications of the way in which this agreement is structured. Also, please analyze and document the following:

22b. Whether the benefits of implementing this Protocol are justified by the costs;

22c. Evaluate the effectiveness of this agreement by comparing the marginal abatement costs of the most plausible alternative scenarios for meeting the Kyoto targets, given the way in which this agreement is structured, with the marginal costs of other reasonable alternative compliance schemes;

22d. With respect to each scenario that is analyzed, identify the assumptions used, explain any uncertainties concerning the assumptions, and examine the sensitivity of net effects to the different compliance strategies, using a range of plausible assumptions about future economic development and about fundamental climate processes;

22e. Evaluate the opportunity costs of pursuing the Administration's strategy for the abatement of greenhouse gas emissions under the terms of the treaty; and

22f. Evaluate how the benefits and burdens of complying with this treaty would be distributed on the national and household levels, describing, among other things, the disparate regional and industrial sector impacts, and the effects on different income levels.

23a. In evaluating alternative scenarios, please examine the following:

23b. Compare the economic and environmental effects of not including developing countries in the effort to reduce global emissions (with the potential for binding developed

countries to even greater obligations, without limiting developing countries at all) against the effects of addressing greenhouse gas mitigation on a global scale by the international community.

23c. Compare the economic and environmental effects of complying within the timeframes set forth in the Kyoto Protocol with the effects of complying over a longer time period.

23d. Compare the impacts of reducing greenhouse gas emissions using international emissions trading, joint implementation, and the Clean Development Mechanism with the impacts of relying upon domestic emissions permit trading. In this regard, evaluate alternative international trading scenarios: trading only between Annex I countries, trading that extends to a number of “key” developing countries, and trading in which all countries are fully participating.

24. With respect to any analysis provided, please identify and explain the basis for assumptions used regarding such factors as the rate of improvement in energy efficiency, the effectiveness of market incentives in increasing the market share of fuels that emit less carbon, and economic and demographic growth. Also, explain fully any assumptions on how emissions reductions will be achieved as, for example, through the early retirement of coal plants or nuclear plant life extensions.

25. In considering the opportunity costs, evaluate the extent to which the Administration’s climate change strategy will require the diversion of funds from savings and/or investments which would have provided other benefits, such as saving social security, or more funding for education, health care, etc.

26. In assessing the impacts on the U.S. of complying with the Kyoto targets and timetables, please explain in detail the potential effects on the following indicators of economic performance: gross domestic product (GDP), per capita GDP, unemployment, income and real wages, trade competitiveness, and energy prices.

27. In assessing the benefits of complying with the Kyoto treaty, please evaluate fully the potential offsetting negative effects of exempting developing countries and of “carbon leakage.” Also, if the economies of developed countries experience reductions in economic growth, evaluate the impact that this will have on the ability of emerging countries with export markets to transition to more energy efficient technologies.

28. President Clinton has suggested that the U.S. economy can continue to grow under this agreement. Please indicate at what rate the Administration expects that the economy will continue to grow during the next ten to 20 years if the treaty is ratified and at what rate it is expected to grow if the treaty is not ratified.

29. Have any of the cost-benefit analyses performed by the Administration or any agency been peer-reviewed? If so, please identify the reviewers and provide their comments on all drafts of

the analyses. If not, does the Administration plan to do so? Please describe fully the steps that the Administration plans to take.

30. In connection with these cost-benefit analyses, fully explain how the baseline(s), against which costs and benefits were calculated, was determined.

31a. Please provide all records of written or oral comments from other federal agencies on each of the cost-benefit analyses that were performed.

31b. Please provide all records of comments submitted by federal agencies on Dr. Janet Yellen's draft testimony about the economics of Kyoto for the hearing before the House Commerce Committee on March 4, 1998.

32a. Given the significant economic costs projected by private sector studies, why did the Administration abandon a year and a half-long effort to develop cost estimates of the President's proposed policies to reduce greenhouse emissions?

32b. Please identify any and all private parties that are currently performing economic analyses of the Kyoto treaty or any aspect of it for the Administration. Describe their work and provide all products of their work in draft or final form.

E. International Emissions Trading

33a. Even assuming that effective rules and procedures can be developed for an international emissions trading system and for joint implementation projects and that key developing countries agree to participate, isn't there a real risk that these mechanisms could effect an enormous transfer of wealth and jobs out of this country overseas, especially to the countries of the former Soviet Union, China, India, South Korea, Brazil, and Mexico (i.e., that this system would be essentially a foreign aid program)? Some studies have estimated that more than 50% of our reductions would have to be purchased from other countries.

33b. Please provide and document estimates of the percentage of U.S. emissions reductions that might have to be purchased from other countries to minimize the costs of reducing emissions and which countries likely would be the beneficiaries.

34. What real incentives do developing countries have to participate in the international emissions trading system, which would require them to commit to mandatory reductions, when they can transfer emissions reductions credits in connection with joint implementation projects and obtain financing through the Clean Development Mechanism?

Definitions and Instructions for the Production of Records

1. When a request calls for the production of records, the Subcommittee requests all responsive records that are in the agency's possession, custody, or control through the date of the final submission of records to the Subcommittee, unless the request clearly states that the Subcommittee is only interested in records received during a particular time period.
2. Please sequentially number all records that you produce to the Subcommittee, and indicate the source of any record if the source is not accurately reflected on the record itself. Please submit all records on single-sided paper and submit an inventory of records produced if the volume is more than 100 pages.
3. To the extent practicable, please organize the records or documents in tabbed binders or folders that indicate which records are responsive to which requests for information.
4. For the purposes of this and related requests in the future, the "record" or "records" shall include any and all drafts, originals, and non-identical copies of any item whether written, typed, printed, electronically recorded, transcribed, punched, or taped, however produced or reproduced, and includes but is not limited to any writing, transcription, or recording, produced or stored in any fashion, including any and all computer entries, memoranda, notes, talking points, letters, journal entries, reports, studies, calendars, manuals, press releases, opinions, documents, analyses, messages, summaries, bulletins, e-mail messages (in hard copy and electronic forms), disks, the text of any alphanumeric messages or other electronic paging devices, briefing materials, cover sheets or routing cover sheets and any other machine readable material of any sort whether prepared by current or former officers and employees, agents, consultants or by any non-employee without limitation. "Record" or "records" shall also include redacted and unredacted versions of the same record.

Robert Weiner
Room 128
OEOB

Charles Ruff
Counsel to the President
2nd Floor, West Wing
The White House

John Podesta
Assistant to the President and
Deputy Chief of Staff
1st Floor, West Wing

Todd Stern
Ground Floor
West Wing

Dinah Bear, General Counsel
Council on Environmental Quality
722 Jackson Place

Gene Sperling
Director, NEC
2nd Floor, West Wing

Sally Katzen, Deputy Assistant to the
President & Deputy Director, NEC
Room 231
OEOB

Bob Damus
General Council
Office of Management & Budget
Room 262, OEOB

*Congressional Request /
Climate Change*

Addressees

per Michele

► Michele Jolin
03/16/98 11:17:21 AM
.....

Record Type: Record

To: Sandra F. Daigle/CEA/EOP

cc:

Subject: Re: Monday mtg

These are the people that the materials should go to. AND would you also add Roger Ballentine to the list.

Thanks.

----- Forwarded by Michele Jolin/CEA/EOP on 03/16/98 11:16 AM -----

 Robert N. Weiner 03/16/98 09:56:50 AM

Record Type: Record

To: Michele Jolin/CEA/EOP

cc:

Subject: Re: Monday mtg 

Meeting includes: Chuck Ruff, John Podesta, Todd Stern, Dinah Bear, Gene Sperling, Sally Katzen, Bob Damus, you and me.

55750

722 Judson

Gen Counsel

Re: Q & A

CEQ

231

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DDir

NEC

EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS



Date:

3-26-98

Please deliver to:

Rob Weiner

FAX number of addressee:

XL61647

Telephone number of addressee:

From:

Michele Jolin
CEA Chief of Staff

FAX number of sender:

(202) 395-6958

Telephone number of sender:

(202) 395-5084

Number of pages, including cover sheet:

3

Message:

per my e-mail.

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THE EXECUTIVE OFFICE BUILDING

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3-26-98

Please deliver to:

Roger Ballentine

FAX number of addressee:

66468

Telephone number of addressee:

From:

Michele Jolin
CEA Chief of Staff

FAX number of sender:

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Number of pages, including cover sheet:

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Message:

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Date: 3-26-98

Please deliver to: Todd Stern

FAX number of addressee: 62215

Telephone number of addressee: 62702

From: Council of Economic Advisers

FAX number of sender: (202) 395-6958

Telephone number of sender: (202) 395-5084

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U.S. House of Representatives
Committee on Commerce
 Room 2125, Rayburn House Office Building
 Washington, DC 20515-6115

March 26, 1998

FYI -
 Michel

JAMES E. O'DRISCOLL, CHIEF OF STAFF

The Honorable Janet Yellen
 Chair
 Council of Economic Advisors
 Old Executive Office Building
 Washington, D.C. 20502

Dear Dr. Yellen:

Thank you for your testimony before Subcommittee on Energy and Power on March 4, 1998 regarding the Kyoto Protocol and its Economic Implications. Your participation was helpful in assisting Members' understanding of the overall terms, objectives, and implementation of the Kyoto Protocol.

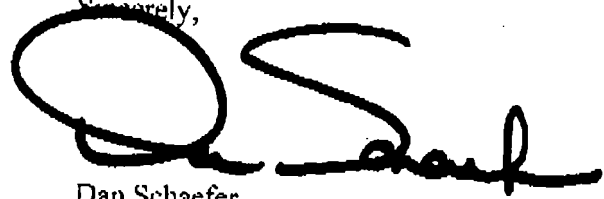
As you will recall from that hearing, however, I requested in my opening statement that you provide to the Subcommittee a complete analysis of the Administration's conclusions presented in your testimony. As you undoubtedly are aware, this information is of great importance to Subcommittee Members, many of whom had questions regarding the specifics relating to the Administration's analysis of the economic effects of the Kyoto Protocol that went unanswered during the hearing.

It is my understanding that the economic analysis I have requested has already been completed. After all, this analysis presumably served as the basis for the findings included in your March 5 testimony. Though your response to this particular request was due last week, I appreciate the multiple and challenging demands faced by you and your staff, and I understand that you have been out of the country in recent days. Given CEA's track record in responding to my requests, however, I am concerned that last week's missed deadline may now become a perpetually moving target. Accordingly, I ask that you provide the data that supports the economic analysis by no later than next Wednesday, April 1.

Thank you for your cooperation on this matter. If you have any questions concerning this outstanding request, please contact Ms. Catharine Van Way of the Commerce Committee staff at 225-2927.

The Honorable Janet Yellen
March 26, 1998
Page 2

Sincerely,

A handwritten signature in black ink, appearing to read 'Dan Schaefer', with a large, stylized initial 'D'.

Dan Schaefer
Chairman
Subcommittee on Energy and Power

cc: The Honorable Ralph Hall, Ranking Member
Subcommittee on Energy and Power

**COMMITTEE ON COMMERCE
U.S. HOUSE OF REPRESENTATIVES
2125 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, D.C. 20515
(202) 225-2927
FAX (202) 225-1919**



FAX TRANSMISSION

To: Michelle Jolin 395-6958

From: Cathy Van Way

Date: March 26, 1998

Number of Pages (including cover sheet): 3

Notes:

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 BARBARA CUBIN, WYOMING
 JAMES E. ROGAN, CALIFORNIA
 JOHN SHIMKUS, ILLINOIS

JOHN D. DINGELL, MICHIGAN
 HENRY A. WAXMAN, CALIFORNIA
 EDWARD J. MARKEY, MASSACHUSETTS
 RALPH M. HALL, TEXAS
 RICK BOUCHER, VIRGINIA
 THOMAS J. MANTON, NEW YORK
 EDOLPHUS TOWNS, NEW YORK
 FRANK PALLONE, JR., NEW JERSEY
 SHERROD BROWN, OHIO
 BART GORDON, TENNESSEE
 ELIZABETH FURSE, OREGON
 PETER DEUTSCH, FLORIDA
 BOBBY L. RUSH, ILLINOIS
 ANNA G. ESHOO, CALIFORNIA
 RON KLINK, PENNSYLVANIA
 BART STUPAK, MICHIGAN
 ELIJAH L. ENGEL, NEW YORK
 THOMAS C. SAWYER, OHIO
 ALBERT R. WYNN, MARYLAND
 OFNE GREEN, TEXAS
 KAREN MCCARTHY, MISSOURI
 TED STRICKLAND, OHIO
 DIANA DIGETTE, COLORADO

U.S. House of Representatives
Committee on Commerce
 Room 2125, Rayburn House Office Building
 Washington, DC 20515-6115

March 26, 1998

JAMES E. O'DRISCOLL, CHIEF OF STAFF

The Honorable Janet Yellen
 Chair
 Council of Economic Advisors
 Old Executive Office Building
 Washington, D.C. 20502

Dear Dr. Yellen:

Thank you for your testimony before Subcommittee on Energy and Power on March 4, 1998 regarding the Kyoto Protocol and its Economic Implications. Your participation was helpful in assisting Members' understanding of the overall terms, objectives, and implementation of the Kyoto Protocol.

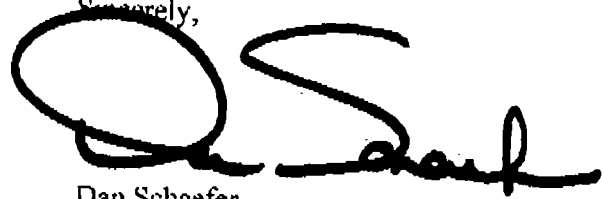
As you will recall from that hearing, however, I requested in my opening statement that you provide to the Subcommittee a complete analysis of the Administration's conclusions presented in your testimony. As you undoubtedly are aware, this information is of great importance to Subcommittee Members, many of whom had questions regarding the specifics relating to the Administration's analysis of the economic effects of the Kyoto Protocol that went unanswered during the hearing.

It is my understanding that the economic analysis I have requested has already been completed. After all, this analysis presumably served as the basis for the findings included in your March 5 testimony. Though your response to this particular request was due last week, I appreciate the multiple and challenging demands faced by you and your staff, and I understand that you have been out of the country in recent days. Given CEA's track record in responding to my requests, however, I am concerned that last week's missed deadline may now become a perpetually moving target. Accordingly, I ask that you provide the data that supports the economic analysis by no later than next Wednesday, April 1.

Thank you for your cooperation on this matter. If you have any questions concerning this outstanding request, please contact Ms. Catherine Van Way of the Commerce Committee staff at 225-2927.

The Honorable Janet Yellen
March 26, 1998
Page 2

Sincerely,

A handwritten signature in black ink, appearing to read "Dan Schaefer". The signature is fluid and cursive, with a large initial "D" and "S".

Dan Schaefer
Chairman
Subcommittee on Energy and Power

cc: The Honorable Ralph Hall, Ranking Member
Subcommittee on Energy and Power



EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS
WASHINGTON, D.C. 20500

CHIEF OF STAFF

March 18, 1998

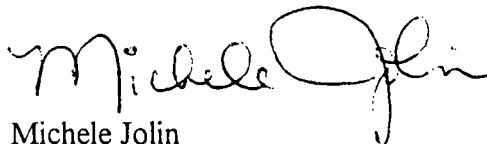
Dear Cathy:

In accordance with our discussion, I am writing to let you know that the Council of Economic Advisers (CEA) will not be submitting today materials responsive to Chairman Schaefer's March 4 request. As you know, Chairman Schaefer in his opening statement at the Subcommittee's March 4 hearing on the Kyoto Protocol and its Economic Implications asked CEA Chair Janet Yellen to provide a complete analysis of the conclusions presented in her testimony.

As we discussed, Dr. Yellen is out of the country this week and will be leading the US delegation to OECD meetings in Paris next week. CEA staff are currently working on the response to Chairman Schaefer's request. As I am sure you understand, because we are a small agency, these staff are also responsible for continuing their usual policy and analytic responsibilities, as well as responding to several other requests from Congress on climate change issues. They are making every effort, in the context of these other demands, to be responsive to Chairman Schaefer. We will be in a better position to respond once Dr. Yellen returns.

If you have any questions, please let me know at (202) 395-5084.

Sincerely,


Michele Jolin

Ms. Cathy Van Way
Counsel
Subcommittee on Energy and Power
House Committee on Commerce
Washington, D.C. 20515-6115