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WHITE HOUSE STAFFING MEMORANDUM

DATE: 10-5 ACTION/CONCURRENCE/COMMENT DUE BY: 10-6

SUBJECT: Climate Change Memo

	ACTION	FYI		ACTION	FYI
VICE PRESIDENT	☑	☐	McCURRY	☐	☑
BOWLES	☑	☐	McGINTY	☐	☐
McLARTY	☐	☐	NASH	☐	☐
PODESTA	☑	☐	RADD	☐	☐
MATHEWS	☑	☐	REED	☐	☐
RAINES	☑	☐	RUFF	☐	☐
BAER	☐	☐	SMITH	☐	☐
BERGER	☑	☐	SOSNIK	☐	☐
ECHAVESTE	☐	☐	SPERLING	☐	☐
EMANUEL	☑	☐	STREETT	☐	☐
GIBBONS	☐	☐	TARULLO	☐	☐
HILLEY	☑	☐	VERVEER	☐	☐
IBARRA	☐	☐	WALDMAN	☐	☐
KLAIN	☑	☐	YELLEN →	☑	☐
LEWIS	☐	☐	_____	☐	☐
LINDSEY	☐	☐	_____	☐	☐
MARSHALL	☐	☐	_____	☐	☐
			_____	☐	☐

REMARKS: Comments to this office.

RESPONSE:

Staff Secretary
Ext. 6-2702

'97 OCT 5 AM4:06

VP

THE WHITE HOUSE

WASHINGTON

October 4, 1997

MEMORANDUM FOR THE PRESIDENT

FROM: **GENE SPERLING**
KATHLEEN McGINTY
DANIEL TARULLO
JIM STEINBERG
TODD STERN

SUBJECT: **Climate Change Recommendations**

Together with principals, we have worked hard over the past several weeks to put together options for you on climate change. As we note below, we have reached consensus in many areas -- such as our general stance towards developing countries, and a preliminary package of policies that we could embrace independently of the international negotiations. But reflecting the magnitudes of the tradeoffs involved in this issue, we have not been able to reach full Cabinet consensus on some fundamental aspects of our policy stance. This memorandum therefore presents three different plans, with their supporters and their pros and cons.

The memorandum is organized into four sections:

I. Summary of difficulties we face
II. Developing country policy
III. Common components of all three options
IV. The three options

I. SUMMARY OF DIFFICULTIES

As we have emphasized in previous memos and meetings, the complexity of the issue is reflected in four different constraints:

- Environmental. This issue is the premier environmental challenge of our generation. The environmental community is pushing for strong, early action to reduce greenhouse gas emissions.

- Diplomatic. Much of the world is calling for deep, early emissions reductions. The European Union is proposing 10-15 percent cuts from 1990 emissions levels by 2010; Japan is proposing 0-5 percent cuts in the same period.

- Economic. Costs are substantially higher the earlier emissions reductions are required. The cost of deep, early emissions reductions could be very large.

- Business/Labor/Hill. Aggressive approaches would expose us to well-financed campaigns -- by major corporations and labor unions -- that demagogue our policies as excessively costly and as a large energy tax increase.

In essence, the three different plans represent different views about the importance of the first two constraints relative to the second two constraints:

- The first plan moves away from the 1990 target and substitutes a lower-cost approach for achieving emissions reductions. This strategy emphasizes the third and fourth constraints by allowing a more gradual adjustment period.

- The second plan commits the nation to 1990 by 2015 or 2020 -- while capping the economic cost. It tries to address all four constraints, but could be viewed as not meeting any of them adequately.

- The third plan, which involves a commitment to 1990 levels by 2010 or 2015 while capping the cost at a higher level than under the second plan, emphasizes the importance of our environmental responsibilities and maximizes our chances for (but does not in any way guarantee) a successful agreement at Kyoto.

II. DEVELOPING COUNTRY POLICY

Given domestic political realities and the underlying environmental imperative, your advisers favor a tougher line on developing countries than we have taken to date. It is important to emphasize that developing countries are unlikely to agree to even our current demands, let alone tougher ones, in the foreseeable future. Furthermore, we will get little (if any) support from other developed countries for our position. *The position recommended by your advisers on this issue could very well endanger an agreement being signed this December in Kyoto.*

In particular, your advisers favor pushing for a "Kyoto Mandate" this December. The mandate would set the terms for a new round of negotiations with respect to:

- Binding emissions targets for key developing countries (China, India, etc.); and

- A "graduation mechanism," under which countries automatically assume additional obligations as they develop.

Developing country targets would be less stringent than those for developed countries, and might include a ceiling on costs.

There is some disagreement among your advisers on exactly how to proceed as we seek greater commitments from developing countries.

- Under the "two-step approach," which is favored by the State Department, Energy Department and your environmental team, we would try to reach agreement among developed countries in Kyoto, but not seek to implement that agreement until negotiations with respect to developing country commitments are complete (several years, at a minimum). One possibility would be for you to issue an authoritative statement that we would not submit a treaty for ratification until the Kyoto Mandate was met. Another possibility would be to take a formal reservation to any agreement in Kyoto for the same purpose.

- Under the "one-step approach," which is favored by some on the economics team, we would decline to adopt an agreement in Kyoto, and not adopt any new agreement with respect to developed country commitments until developing country commitments are agreed as well.

The two-step approach offers the possibility of maintaining momentum in the international negotiations (although even this approach will provoke a negative reaction abroad and could preclude an agreement in Kyoto). The cost is that we will have committed to a target and timetable before we know what we'll get from developing countries. It is unclear how the Senate would react to such a strategy.

Our best approach may be to maintain some ambiguity about our precise intentions: to emphasize that we won't bring back a treaty without real commitments from the developing countries. Since we don't know precisely how other countries will react to the one-step or two-step approach, it may be best to emphasize the general point -- and to maintain some flexibility for our negotiators in Kyoto.

Regardless of our approach, however, demanding binding targets from key developing countries implies that we will not be ratifying any international climate agreement for at least several years. Furthermore, *insisting on a Kyoto Mandate may produce an extremely negative reaction abroad, and that reaction could preclude any agreement in Kyoto even under the two-step approach.*

III. COMMON COMPONENTS OF ALL THREE PLANS

In addition to toughening our stance on developing countries, your advisers agree that the following policy components should form part of any plan on climate change:

1. Tax cuts

There is much interest in a Climate Change Tax Plan package of tax *cuts* in the near term

to spur energy efficiency and lower-carbon technologies. But there are two critical questions about such a tax package:

- An overall strategic question, given the budget agreement, is whether we want to offer tax cuts in any area. A potential danger with proposing a Climate Change Tax Plan -- emphasized in particular by Secretary Rubin -- is that we could open up a bidding war over tax cuts generally. If we decide to include tax cuts in our FY 1999 budget anyway, this is clearly less of a problem.

- A specific question, if we decide to offer a tax cut package, is how best to design the package. Treasury is working with DOE, EPA, and other agencies to put together a package of tax cuts amounting to perhaps $1.5 billion per year. But accordint to Treasury staff, the options are unlikely to produce carbon reductions for less than $100 per ton.

Some of the preliminary ideas include: tax subsidies to convert coal-fired power plants to gas; extension of the existing tax incentive for wind and "closed loop" biomass energy; tax credits for purchases of "superstar" energy-efficient devices and fuel-efficient cars; investment credits for energy-efficient buildings; and an expanded research tax credit for energy-efficiency research. The package will be further developed and refined over the next week. The goal is to be prepared in case you want to announce the broad outlines of a tax cut plan when you announce our overall policy package later this month.

2. Federal R&D effort

Your advisers support an aggressive Federal technology and R&D effort, including an additional $500 million per year starting in FY 1999 and ramping up to an additional $1 billion by FY 2003. The Department of Energy's 5-Labs study, the Department of Energy's 11-Nation Labs draft study, and the recent report from the President's Committee of Advisors on Science and Technology (PCAST) have all studied potential technologies that could help to reduce the cost of carbon emissions reductions.

The effort would focus on promising areas including:

- Energy efficient equipment (e.g., a public service campaign to attract attention to the "Energy Star" label);

- 21st Century Housing (streamline federal, state, and local building and utility regulations in ways that encourage innovation in construction);

- Expanded Partnership for the Next Generation Vehicle (expand work on the next generation vehicle technologies including fuel cells; and expand PNGV to include light trucks/sport-utility vehicles);

- PNGV for Heavy Trucks (partnership with engine manufacturers to double the efficiency of heavy-duty trucks for civilian and military applications);

- Industries of the Future (enhance industry/government research partnerships in areas such as chemicals, aluminum, forest products and steel manufacturing technologies); and

- Renewables R&D (expand research partnerships in key renewable technologies such as wind, photovoltaics, geothermal, biomass and hydropower to accelerate cost reductions).

DOE and EPA believe that such a package could have a substantial effect on carbon emissions by 2010. Others believe that the package will be beneficial, but that its results will only manifest themselves over a longer period of time.

3. Federal procurement system

The federal government spends more than $7 billion per year on energy. While Federal energy consumption is a tiny fraction of the total U.S. energy consumption, we are still the nation's single largest consumer of energy. Significant strides have already been made during the past decade -- energy consumption per square foot in federal buildings, for instance, is down by 15 percent from the 1985 level, and energy use in federal vehicles (both civilian and military) is down about 27 percent from 1985. We can still do more, for example by expanding the use of Energy Savings Performance Contracts, reinventing federal procurement, taking a "sustainable design" approach to federal facilities, and developing more efficient military propulsion systems. This effort could include a 6-12 month review of existing Executive Orders on purchases and a directive to federal agencies to prepare greenhouse gas reductions plans.

4. Industry out-reach

Several industries have approached us recently to offer cooperation in reducing greenhouse gases. Steel, for example, believes it could reduce emissions 10 percent *below* 1990 levels by 2010 with a sectoral plan. The cement industry believes it can significantly reduce emissions in the same time frame.

Your advisers recommend that you ask leading industrial sectors to prepare greenhouse gas reduction plans over the next 6-12 months. These plans could help inform our domestic implementation strategies, including the design of our domestic emissions trading program. It could also help build a constituency for action among moderate business groups.

5. 5-Year Science Reviews

Under the existing climate treaty, the Intergovernmental Panel on Climate Change is charged with reviewing the state of the science every five years. Several corporate and Congressional leaders have suggested supplementing these reviews with additional studies by the

National Academy of Sciences or your Committee of Advisors on Science and Technology (PCAST), on a similar 5-year cycle.

6. Emphasize long-term goal of stabilizing concentrations

The goal of the existing climate treaty is "to stabilize concentrations of greenhouse gases in the atmosphere at levels that avoid dangerous anthropogenic interference with the climate system." However, the Parties to the climate treaty have never defined precisely what levels are dangerous. Support for a specific, long-term goal would be well-received in both the business and environmental communities. Many business constituencies have advocated focus on the long-term goal, to assist with planning. Environmental constituencies believe such a focus would help educate the public.

Your advisers believe the United States should announce support for a specific, long-term goal. The task of defining the goal (e.g., to keep concentrations of greenhouse gases from significantly exceeding twice pre-industrial levels, or roughly 550 ppm) could be assigned to the National Academy of Sciences as part of the first five-year scientific review mentioned above.

7. Global Environmental Facility

The United States is significantly in arrears to the Global Environmental Facility, which assists developing countries in reducing greenhouse gas emissions. (Of the $430 million pledged for FY93-FY97, we have been able to contribute roughly $185 million.) These arrears reduce our leverage with developing countries in negotiations under the climate treaty.

Your advisers recommend you reemphasize your strong commitment to the Global Environment Facility and support clearing U.S. arrears at the earliest practical date. Funding for the Global Environment Facility should be pursued as a top priority.

8. Bilateral dialogues

We are pursuing bilateral dialogues with key developing countries (including China, Brazil and India) to promote clean energy. Often, interest in energy efficiency and renewable energy is greater in these settings than in the politicized, multilateral setting of the Climate Convention. Discussions focus on regulatory structures for clean energy development, technical assistance, export credit and related items.

You or members of your Cabinet will sign several agreements of this type during your upcoming trip to Latin America. Work is underway in this area in connection with the Jiang Zemin state visit later this month. Your advisers recommend that we pursue these dialogues with increased effort in the years ahead.

9. Other possibilities

Other possible elements, which have not yet been fully vetted, include a renewable portfolio standard and other carbon-reducing policies in electricity deregulation; National Environmental Policy Act (NEPA) guidance with respect to greenhouse gas emissions; common energy-efficiency guidelines for export credit agencies; a corporate greenhouse gas reporting system modeled after Toxic Release Inventory; and streamlined standards to improve energy efficiency, where appropriate.

IV. THREE OPTIONS

PACKAGE 1

OVERALL STRATEGY

- The long-term goal of the treaty is to *stabilize concentrations* of greenhouse gases in the atmosphere at a level that will prevent dangerous anthropogenic interference with the climate system. This goal could be achieved with concentrations at or somewhat above a doubling of pre-industrial levels in the next one hundred years.

- The strategy here is to propose the least-cost approach, both in terms of timing and developing countries, to stabilizing concentrations over the long run. The logic is that only by proceeding in this least-cost approach could we get domestic agreement to undertake a serious climate change policy.

TARGETS AND TIMETABLES

- Concentrations can be stabilized through the following targets and timetables:

  Reduce emissions growth in the United States in the near term (for example, growth from 2000-2010 less than growth over 1990-2000); then

  Eliminate emissions growth in developed countries 10 to 20 years after treaty is signed (e.g., 2010-2020); then

  Reduce emissions levels in developed countries gradually to reach — and then to decline below — 1990 levels in later years to be decided, stabilizing concentrations.

- This timetable begins effective action soon to establish Presidential leadership.

- The schedule of reducing emissions and emissions growth is determined by the degree of economic cost that is acceptable, coupled with the rate of improvement in emissions-reduction technologies that results from increases in carbon prices.

- As in the second plan (see below), there would be periodic review of the underlying science, the data on the path of emissions, and the economic impact, to allow for adjustments in the policy.

- Insist on the current U.S. flexibility positions of international trading, multiple multi-year targets, joint implementation (subsidies of non-carbon energy sources in developing countries), banking, and borrowing.

DEVELOPING COUNTRIES

- The goal is the least-cost global approach to stabilization of carbon concentrations in the atmosphere.

- Negotiate and begin a new Kyoto Mandate, requiring developing country participation (in stages), starting with more-advanced (Annex B) developing countries, with graduation as countries develop. Developing countries commit to reduce the rate of growth of emissions consistent with stabilizing carbon concentrations and continued economic growth, with ceilings on costs.

- One-step: the U.S. will not initial agreement until Annex B countries have binding commitments.

DOMESTIC IMPLEMENTATION

- Develop a tradable permits system, with auction of all permits (rather than grandfathering), in the near term; impose the system at a level of emissions near the baseline (for example, with an implied permit price of perhaps $10 per ton). The system could take effect while the Kyoto Mandate was negotiated, to emphasize U.S. leadership and credibility; or it could be postponed until the treaty was ratified, as an incentive for developing-country compliance. (A carbon tax, if feasible, would be an alternative method of implementation.)

- Change the number of permits in small, gradual, predetermined steps, based on economic cost and aggressive technological progress (with the implied permit price rising to perhaps $22 per ton or more by 2015). As in the second plan below, review domestic implementation system periodically.

- A portion of funds raised would be used for cost-effective technology research and diffusion programs, including basic research. The bulk would be available for a range of domestic priorities (tax relief for individuals; business investment incentives; the solution to the fiscal effects of the demographic imbalance; infrastructure; etc.) chosen to make the program attractive.

- Begin a series of voluntary industry programs to develop plans to meet the targets.

- Provide for banking and borrowing to deal with short-term fluctuations. Borrowed permits would be issued at a premium cost, and banked permits could be resold later at higher prices.

- Provide economic growth insurance or a cost cap on permits that would allow the sale of additional permits. The price would be set consistent with our estimate of the acceptable

economic cost, and would be high enough to encourage emissions-efficient investment choices in the near term. (If the cost cap were in effect over an extended period, the target would not be met.)

- These policies are market-oriented. There would be no inefficient, command-and-control regulations used to reduce emissions.

- Include common components listed above.

SUPPORTERS

Larry Summers, Janet Yellen, Frank Raines, Secretary Daley, and Secretary Herman.

PROS

- The principal benefit of this approach is that it reduces the cost of beginning to address climate change by allowing more time for the economy to adjust gradually to the new constraints being placed on it.

- Business and labor groups would support this approach.

- The approach would also be strongly supported by leading economists, such as William Nordhaus of Yale. It is consistent with the economics consensus on the least-cost path to the environmental goal of stabilizing concentrations in the very long run.

CONS

- This approach would be completely unacceptable to the environmental and international communities. We could respond that if the emissions path it envisions is met, it would stabilize concentrations and thus produce the same climate benefits as other paths that are substantially more economically costly.

- This option depends on steep -- and possibly implausible -- emissions reductions in distant decades to achieve our environmental goals.

- It would be awkward to reconcile this approach with previous statements made by both you and the Vice President. We could respond that we are starting over with a new Kyoto Mandate, and that part of that mandate will be to achieve environmental goals through the least-cost approach.

- There is no chance of an international agreement in Kyoto or the near future with this proposal. But if an agreement is reached that incorporates this approach, it may be much easier to ratify.

PACKAGE 2

OVERALL STRATEGY

- This approach involves a hybrid plan that includes a commitment to reduce emissions to 1990 levels by 2015 or 2020 with a safety valve to cap economic costs.

- The approach begins with the tax cuts, R&D, and other initial steps in the common components section above, before the permit system becomes effective.

- The safety valve would ensure that permit prices could never rise above some ceiling, by allowing the U.S. Government to sell an open-ended number of additional permits at that price. This approach thus allows you to set an ambitious goal for the country while insuring that the costs are not excessive. But with a relatively low ceiling price, the overwhelming majority of economists will claim that we could not possibly avoid having to trigger the safety valve and thus fail to meet the stated goal of 1990 by 2015 or 2020. Opponents could attack the approach as lacking in credibility.

TARGET AND TIMETABLE

- 1990 by 2015 *or* 1990 by 2020, with a safety valve (explained below). The purpose of the safety valve is to allow us to adopt a relatively aggressive target and timetable, with the understanding that we will only meet it if possible to do so at reasonable cost.

- An issue that needs to be resolved is how the safety valve would be handled in the international negotiations, if at all.

- Additional reductions (to be determined) after 2015 or 2020.

- Support international trading and joint implementation.

DEVELOPING COUNTRY

- Kyoto Mandate for negotiations, with a goal for them to be completed by 1999.

DOMESTIC IMPLEMENTATION

Initial actions

- Common components plan. Emphasize tax cuts and R&D to build corporate support.

- Emphasize commitment to market-oriented policy tools to reduce emissions.

- Avoid decisions about grandfathering vs. auctions. Instead appoint commission to suggest structure of domestic emissions trading program -- auctioning with tax cuts, or grandfathering with an excess profits tax.

  -- The commission would work with industry groups to evaluate their vision of the trading system.

  -- The commission would also study possible adjustment programs for areas and sectors that will bear a disproportionate burden from emissions reductions.

  -- One possibility would be to give the commission's recommendations base-closing legislative treatment, although there may be concerns about such a mechanism given the scope and importance of the commission's work.

  -- Deadline for commission to report would be early 1999 or 12 months following treaty.

Domestic emissions trading program (with safety valve) starts in 2005

-- Commission decides on structure of permit program.

-- The permit requirements between 2005 and the first review in 2008 could be set slightly below business-as-usual levels.

-- Ceiling on permit price, as defined below, to cap economic costs

Safety valve (ceiling on price) in permit trading system

-- The tradeable permit system would include a safety valve: the U.S. government would stand ready to sell a potentially unlimited number of permits at a given price, ensuring that the permit price could not rise above that level. *This safety valve is absolutely essential to the domestic viability of this approach.*

-- The price would start at $10 per ton in 2005 and rise in real terms by $1-$2 per year (0.25-0.5 cents per gallon) until it reaches $30 per ton in 2015 or 2020.

-- If any funds are raised from the safety valve mechanism, they could be devoted to further emissions reductions -- additional tax cuts for families, for carbon-reducing investments by businesses or families, tax cuts for R&D, Federal investments in R&D or energy-efficiency, or for investments in carbon-reducing efforts in other countries.

5-Year review process

- The Clean Air Act requires EPA to undertake a regular 5-year review of air quality

standards, and other statutes require similar reviews. Similarly, every five years, a commission -- which builds on the implementation commission above -- would review progress on emissions reductions, and how the economy was responding. It would then make recommendations to the President and Congress about how to adjust the policy stance toward climate change.

- The commission to report on domestic implementation (mentioned above) would be the first of these commissions. The first report would thus occur in 1999 or 12 months following the treaty. The second report would be in 2004, and the third in 2009. The third commission report would be able to evaluate the operation of the domestic permit system after four years of experience (since the permit system will begin in 2005).

SUPPORTERS

Gene Sperling and Katie McGinty constructed this compromise plan, as requested by Erskine. They worked closely with Todd Stern in developing a package that the three of them support with one difference. Gene supports a 1990 by 2020 timetable, while Katie supports the 1990 by 2015 timetable.

Gene feels that the 2020 date is important for three reasons:

1. It boosts the credibility of the relatively low price ceiling in the plan, by allowing more time for the economy to adjust before the timetable binds and thus raising the probability that the safety valve would not have to be invoked;

2. It attenuates corporate and union opposition to the plan; and

3. It allows us some room to bargain from at the international negotiations in Kyoto and beyond.

Katie feels that the 2015 date is important for three reasons:

1. Your announcement of any date after 2015 would pose unacceptable risks of immediately cratering the Kyoto negotiations.

2. With any date later than 2015, there is little or no chance that we will be able to convince the international community to accept other components of our position (e.g., joint implementation, Annex I international trading, the safety valve, and our developing country stance).

3. A 2015 timetable offers at least some possibility of support from moderate environmental groups -- especially if we also commit to some reductions, even small ones, from 1990 levels by 2020.

Secretary Pena and Secretary Slater both support the package. Todd Stern supports it with a 1990 by 2015 timetable.

Dan Tarullo supports a hybrid of Package 1 and Package 2. As in Package 1, he supports starting the domestic implementation package immediately upon agreeing to a treaty, not in 2005. He also believes strongly in auctioning permits or some other mechanism of raising revenue, rather than grandfathering permits. But he believes that we can commit to 1990 levels by 2020, with the explicit acknowledgment that the uncertainties of technological development and diffusion, as well as consumer behavior. He favors a reassessment in 2007 to see if the targets and timetables need to be adjusted.

Your economic team urges that if you choose this option, you should choose the 2020 timetable and emphasize that you will *not* use command-and-control regulations to avoid invoking the safety valve. They would also urge a careful analysis of the best level for the trigger price.

NOTES

The fundamental strategy here is four-fold:

- First, we will focus our entire policy efforts up to 2005 on tax cuts, R&D efforts, Federal energy efficiency improvements, and the other components of the policy package listed in Section III of the memo.

- Second, the permit system would start in 2005 -- so that the debate over energy price increases explicitly pertain only to 2005 and beyond. At the same time, environmental groups will appreciate that the permit system begins within the next 10 years.

- Third, the plan puts a ceiling on the permit price to limit the economic downside and stunt opposition attacks about the economic costs involved.

- Finally, the plan still gives the nation a goal of reaching 1990 emission levels by 2015 or 2020 -- a goal that is subject to a cost cap, but is more binding than the non-binding aim agreed at Rio.

The main problem with this option is that it may be harshly criticized as promising more than the implementation plan can deliver. Current models almost uniformly suggest that we would not be able to meet our target and timetable at a price below $30 -- i.e., that we could not avoid triggering the safety valve. To put the point another way, this approach will limit the permit price to $10 to $30 per ton ($15 to $45 billion year). But economic models almost uniformly suggest that permit prices would have to be substantially higher to achieve 1990 emissions levels in 2015 or 2020. Therefore we could be attacked on our credibility -- that our plan did not contain enough restraint to meet its stated emissions reduction goal.

Those who support this option believe that the answer to the credibility argument is not a fight over economic models. Rather, they argue that in the face of incredible uncertainty over events twenty years away, it is best to put forward a sound -- even if highly optimistic -- plan for the nation. In particular, we should not unnecessarily impose economic hardship when technological breakthroughs, new scientific understandings or successful international trading could lower costs. If we take on the economic model debate directly, we will almost certainly lose. The best tact is to emphasize the uncertainty, and to note that future administrations and Congresses will assess new information every 5 years and make appropriate adjustments. We could get some outside validation for our emphasis on uncertainty from those who believe that international trading is possible, from those who believe that economic models tend to exaggerate the costs of meeting environmental goals, and from those who believe that technological development and diffusion could respond strongly to even a limited price signal. The safety valve idea could also receive outside validation: similar ideas have been embraced by Resources for the Future and Brookings, although they may not agree with our trigger price.

Another key aspect of defending this plan is to emphasize that we are not supporting using command-and-control measures if the ceiling price does not produce the full reductions needed to hit the emissions target. Specifically, when asked about whether setting an optimistic target with the ceiling price would mean that higher energy taxes or command-and-control regulations in the future, we should state that we are against such measures and that we would assume that future Congresses would also oppose such measures. Without this guarantee, opponents may feel threatened instead of comforted by our reasonable ceiling. Furthermore, we would point out that such scenarios would not take place for a decade, and that we would not expect future Congresses to support such command and control alternatives as well.

With this posture, we would be arguing that we are committed to reaching 1990 levels by 2015 or 2020 -- but not at any cost. We would not expect future administrations or Congresses to allow the costs of complying with the treaty to become extreme or excessive. We would also note that the 5-year reviews would allow us to adjust our policy stance as more information becomes available. Finally, it is important to note that we would still taking real steps to reduce emissions even if the safety valve *is* triggered. Indeed, the *policy steps* under this approach if the safety valve were triggered are equivalent to those proposed under Plan 3. Even with the cap, the cost to polluting would be higher than today, and thus we would divert emissions from the business-as-usual path. We would also start the emissions trading program by the relatively early date of 2005, which should help to address some of the concerns environmental groups may have with this approach.

PROS

- Seeks to hit a middle ground -- still proclaims a target and timetable, but only at reasonable economic cost. With a target of 1990 by 2015 or 2020 -- tempered by the safety valve, but still stronger than our Rio commitment -- we would have a chance of remaining "in the game" in the international and environmental communities. By limiting the economic costs, we could avoid undue disruption to the economy and stunt potential attacks.

- Permit system starts in 2005, so that we begin to deflect from business-as-usual path within a decade. The early start date would also help utilities to integrate their planning for reductions of NOX (under EPA's recent clean air rule) and carbon emissions.

- Consistent with our language of "binding but *realistic*" and "reducing emissions while we grow the economy."

- Starting with only tax cuts and R&D for 7 years, and not beginning the permit system until 2005, *may* make it harder for the Administration to be demagogued on tax increases.

CONS

- Risks splitting the loaf and pleasing no one:

  -- Business groups may still demagogue the plan, arguing for example that $20 per ton is approximately the same size as the BTU tax proposed in 1993. If we decide that the plan would be revenue-neutral, we could respond with that point, and note that it would not become effective for several years.

  -- Business groups could also charge that the combination of a relatively tight target and timetable with a low trigger price would imply that command-and-control regulations would be used to fill the gap. We could respond by emphasizing our commitment to market-based solutions.

  -- Many environmental groups will oppose, arguing that the 2015 or 2020 date is too late and that the safety valve undermines our environmental commitment. We could respond that on their optimistic predictions about new technologies, the safety valve would not be needed. We could also respond that our policy is a politically realistic way of addressing the climate change problem. Some more moderate groups may support the package, especially in light of the 2005 start for the permit system and if the package includes further reductions beyond 2015 or 2020. Although environmental groups are calling for reductions below 1990 levels by 2010, a relevant threshold for many of them is reductions below 1990 levels at least by 2020.

- Mainstream models almost uniformly suggest that without worldwide international trading, there is little likelihood that we could avoid triggering the safety valve at $30 per ton. Some of your advisers could be forced to admit that the overwhelming weight of conventional economic analysis suggests that the safety valve would be triggered.

- Will seriously complicate international negotiations. In combination, the 2015 or 2020 date, our domestic cost cap and our insistence that developing countries do more will be perceived as lack of U.S. leadership.

PACKAGE 3

OVERALL STRATEGY

- This package is similar to Package 2 in containing a safety valve, but it involves steeper emissions reductions and higher economic costs than under Package 2. In this sense, it conforms most closely to the first two constraints noted in the first section above (environmental and international). It involves less dramatic reductions than those proposed by the EU or Japan, but has some chance of being accepted internationally. Despite provisions that cap the permit price at about $50 per ton, this package would likely be strongly opposed by much of the U.S. business community. And as above, the cost cap comes with a real risk: it implies that we could fail to reduce emissions to 1990 levels by 2010 or 2015.

TARGET AND TIMETABLE

- 1990 levels by 2010 with safety valve *or* 1990 levels by 2015 with safety valve
- Further reductions at a later date.
- The permit price would be capped at roughly $50 per ton by allowing the U.S. Government to sell an unlimited number of additional permits at that price.
- Require adequate provisions for international emissions trading, joint implementation and banking.

DEVELOPING COUNTRIES

- Two-step approach as outlined above. Kyoto Mandate for negotiations, with a goal for them to be completed by 1999.

DOMESTIC IMPLEMENTATION

- Domestic permit trading system, with a safety valve that ensures a ceiling of about $50 on the permit price.
- Common components plan. Emphasize tax cuts and R&D in near term to build corporate support.

SUPPORTERS

Carol Browner, Secretary Babbitt, and Brian Atwood support the plan -- but only with the 1990 by 2010 timetable.

Jim Steinberg supports this package, emphasizing the importance of a credible trigger price (one set high enough that it could be defended as a reasonable estimate of the cost of meeting the target).

Jack Gibbons supports this approach, but emphasizes the importance of a significant reduction in the 2020-2030 timeframe linked to a long-term stabilization goal.

Strobe Talbott supports this general approach. He could also be supportive of Plan 2. Secretary Glickman supports this package, but is also willing to support Plan 2.

PROS

- Kyoto agreement perhaps possible (especially if 1990 by 2010), although not guaranteed -- especially given the safety valve and our position with respect to developing countries.
- Some support from environmental groups (especially if 1990 by 2010), although some will consider the emissions reductions to be too weak and the safety valve to be problematic.
- Stronger start in addressing environmental problem limits need to depend on steep -- and arguably implausible -- emissions reductions in distant decades to reach environmental goals.

CONS

- The commitment would be attacked as the largest energy tax hike in history -- costing $75 billion per year. Despite the safety valve, many would charge that a commitment of this nature could have substantially adverse effects on the economy.
- Strong corporate opposition -- especially if 1990 by 2010 -- for not allowing enough time for the economy to adjust.
- Relative to the $30 ceiling in Plan 2, this plan would produce greater economic dislocation and more powerful ammunition for opponents that want to attack the economic costs of the plan.
- The ceiling poses many of the same tensions as in Plan 2. A $50 ceiling may prove inadequate to meet a target of 1990 by 2010.

CLOSE HOLD: PRELIMINARY
September 30, 1997

MEMORANDUM

FROM: Janet Yellen

SUBJECT: Targets and Timetables for Reducing Greenhouse Gas Emissions

This memo assesses the economic consequences for the U.S. economy of a program to attain 1990 CO_2 emissions levels by 2010. In comparison to a more gradual target and timetable, such a program would impose enormous costs on the economy while yielding almost no environmental benefit. Attainment of 1990 emissions levels by 2010 would require a change in energy prices (or the equivalent) considerably in excess of what occurred in the oil shocks of the 1970s. However, the memo also has a positive message: It argues that a more back-loaded approach that delays attainment of 1990 levels of emissions until 2040 would impose much lower economic costs (by a factor of between 3 and 10) while capturing nearly as much environmental benefit as the more aggressive approach. Either path, to be credible, would require an earl-government imposed increase in the price of carbon emissions.

The economic costs of 1990 by 2010

• In the absence of any scheme for international permits trading, "1990 by 2010" would entail a greater reduction in energy use than was achieved during the decade of the oil shocks, and would impose correspondingly greater damage on the economy. Accomplishing this objective would require a tax (or its economic equivalent) on carbon emissions of much more than $100 per ton. This would translate into increases much more than 25 cents per gallon on the price of gasoline, and a tripling of coal prices.

• An *idealized* system of international permit trading among Annex I countries would cut the required price of permits in half. Such a system would entail paying Russia and Eastern European countries to reduce emissions in place of us. Joint implementation with non-Annex I countries could further reduce the required price of permits in the United States.

• However, both international permit trading and joint implementation incur severe difficulties of both enforcement and monitoring. For example, every country in the system would be tempted to allow its firms to fraudulently sell their emissions rights into the international market, garner the resulting revenue, and exceed their allowed level of emissions.

• The high costs of "1990 by 2010" stems from three primary causes. First, the increase in energy prices needed to attain such a goal results in a large stagflationary shock. Second, that program would force a large fraction of the capital stock to be scrapped prematurely -- that is before it had served out its intended lifetime. Third, it would forgo the opportunity to wait for the development of carbon-lean technologies.

• The costs to the domestic economy also depend importantly on the method of domestic implementation. The above estimates are derived under the assumption that an efficient

mechanism is used--either a tax on carbon emissions, or a system of tradeable permits that are distributed by auction. Any alternative mechanism (such as performance standards or other forms of "command and control") would multiply the costs to the economy.

The environmental benefits of 1990 by 2010

• The environmental benefits of an aggressive program of emissions abatement are minuscule. *Regardless of whether an aggressive or delayed program of emissions reduction is adopted, a significant amount of global warming will occur over the next century--but there is almost no difference in warming with the adoption of a more aggressive policy.* In comparison to aggressive policies of emissions reduction, a delayed program would result in an increase in global mean temperatures that is uniformly less than .05 degrees Celsius. This difference is only three percent of the change in average temperature that is already fated even with the most aggressive intervention.

> ***Thus, "1990 by 2010" would impose severe economic costs while yielding little environmental benefit.***

A more efficient alternative

• There is a better alternative available to the Administration. A program designed to return carbon emissions to 1990 levels by 2040 is both economically and environmentally responsible and realistic. This program would require the United States to initiate meaningful actions now to create effective incentives to reduce carbon emissions over the next century. *Such incentives must entail an early increase in the price of carbon emissions along with a credible commitment to further emissions price increases over time.*

Such a program would attain nearly all of the environmental benefits of its more aggressive cousin, while imposing much lower economic costs.

> →Global average atmospheric temperature under the less aggressive approach would *not be noticeably different.*
>
> →Economic costs would be lower under the less aggressive approach, by a factor of between 3 and 10.

I. Introduction

The Framework Convention on Climate Change signed at the 1992 earth summit in Rio de Janeiro called for carbon dioxide emissions in 2000 at 1990 levels. Most countries, including the United States, are unlikely to achieve these emission reductions. But the Rio approach remains historically important, and most quantitative proposals that have been advanced in the run up to Kyoto can be understood as variants of the Rio target and timetable. In particular, a proposal to "stabilize CO_2 emissions at 1990 levels by 2010" (and variants thereof, including a more stringent proposal by several EU countries to stabilize at 10% below 1990 levels by 2010) has received considerable attention.

This memo assesses the consequences for the U.S. economy of a program to attain 1990 CO_2 emissions levels by 2010. It compares the costs and cost effectiveness of this baseline proposal with those of alternative targets and timetables that entail a less rapid initial reduction in CO_2 emission levels. The conclusions described here rely on the substantial body of economic analysis that has been conducted by researchers worldwide, including the Intergovernmental Panel on Climate Change (IPCC), and Administration economists.

II. 1990 by 2010: The Scope of the Task

To appreciate the ambitiousness of a program to curb U.S. emissions levels to 1990 by 2010 it is necessary to recognize that such a target involves a cutback of about 27 percent in energy use in 2010 relative to baseline. As of 1996, energy related carbon emissions were already 9 percent above 1990 levels. Growth in the economy through the end of the next decade would further raise carbon emissions. Even under an optimistic assumption concerning the pace of improvement of energy efficiency (0.9 percent per year), under constant relative energy prices, there would be further increases in carbon emissions by 2010 of about 18 percent if we continue with business as usual. The net required reductions to achieve 1990 emissions in 2010 thus amount to about 27 percent.

Comparison with the Oil Shocks. Increases in energy efficiency of this magnitude are considerably greater than those that were achieved during the 1970s and early 1980s. Figure 1 shows aggregate energy use in the United States and the relative price of energy over the period 1960 to 1990. During the oil-shock decade--1972 to 1982--energy use was virtually constant in absolute terms, while GDP grew in real terms at about 2.25 percent per year. Over this period, the relative price of energy more than doubled: it rose about 150 percent. This historical experience, and other empirical analysis, suggests that energy use does respond to changes in the price of energy, but the responsiveness (the price elasticity of demand for energy) over periods as short as a decade is low--no higher than 0.2. In contrast to the oil shock period, the "1990 by 2010" program would entail an even larger emissions cutback. To meet the 1990 by 2010 goal it would not be sufficient just to keep emissions constant between now and 2010: a further, roughly 10 percent rollback in emissions would be needed to offset the expansion that has already occurred since 1990. Thus, we would need to accomplish a reduction in energy use considerably

larger than what occurred over a decade in which the relative price of energy more than doubled. This suggests that energy prices would likely have to rise by more than 150% to attain 1990 emissions by 2010.

Model results. Numerous economic/energy models have been used to estimate the impact of a 1990 by 2010 program on energy prices. These models arrive at the same conclusion as was generated above using no model whatsoever--that a program to achieve 1990 emissions by 2010 would entail at least a doubling of energy prices. A broad range of models place the carbon permit price required to achieve 1990 emissions by 2010 in the range of $80 to $200 per ton. If fully passed through to energy prices, a permit price of $100 per ton, for example, entails nearly a doubling of energy prices. The impact on the prices of different sources of energy are all large, but the effect on coal is particularly severe. The price of coal would more than triple, while the price of a barrel of petroleum would increase by about fifty percent. Gas at the pump would increase in price by about 26 cents. Relative to the BTU tax proposed by the Administration in 1993 a $100 implicit carbon tax is about 9 times as large. Thus, attaining a goal of 1990 by 2010 would entail very large economic consequences.

Evidence from International Comparisons. A final piece of evidence confirming the conclusion that a strong price signal over a long period of time is necessary to alter energy use comes from comparisons of energy usage between the United States and Europe. It should hardly be surprising that energy use per dollar of GDP is lower in Europe than the United States. Energy prices in Europe have long been substantially higher--roughly double U.S. energy prices. Moreover, major differences in living patterns between the United States and Europe result in higher European energy efficiency. In addition to the geographical "advantage", from an energy efficiency standpoint, of Europe's higher population density, resulting in lower transportation requirements, Europe has locked in place many long-run adaptations to high energy prices. Innovations in the design of housing and transportation systems and the configuration of residential areas have occurred in response to high energy prices. But in spite of its natural advantages and its long history of high energy prices, energy per dollar of GDP is only 44% lower in Europe than in the United States. This means that were the U.S. to become Europe--energywise per dollar of GDP--its energy savings, even in the long run, would be no greater than 44 percent. This U.S.-Europe comparison supports the conclusions drawn from the natural experiment of the oil shock: namely, a return to 1990 emissions will not occur in the absence of very major price measures over a long period of time.

The Role of Technology and the Scope for "No Regrets" Policies. According to the preceding assessment, a large price inducement is necessary to meet a 1990 by 2010 target. Your economic advisers agree on this conclusion. However several of your advisers are more optimistic about the chances of achieving a 1990 by 2010 target. They emphasize the current availability of "no regrets" (cost-saving) technologies that promise substantial opportunities for abatement. A recent report by the Department of Energy research laboratories, for example, catalogues emissions-savings technologies that, by their calculations, are currently "cost effective." If put in place now, such practices could allegedly reduce emissions by between 30 to

50 percent of the amount needed to reach a 1990 by 2010 target. Even so, the report finds that "aggressive" and "invigorated" government policies--including potentially costly and intrusive regulations and standards--as well as a $50 carbon tax would be necessary to reach the 1990 by 2010 target.

Your economic advisers agree that there now exist unused technological opportunities for emissions reduction, but question by what means, over what time frame, and at what expense government policies could change private behavior if such opportunities are currently underutilized. Engineering studies generally ignore the sometimes subtle disadvantages of available cost-saving technologies or overestimate their hypothetical returns. An example is illustrative: significant energy and cost savings could result if consumers replace incandescent bulbs with compact fluorescents. Over the long lifetime of such bulbs there would also be a substantial monetary gain. However, actual adoption of these light bulbs has been slow to date, possibly due to pure inertia, possibly because consumers dislike their color, or perhaps because they apply a high "discount rate" when valuing energy savings that accrue after the purchaser may have switched residence. Several recent studies have demonstrated that the actual returns to home improvement investments, such as attic insulation, often fall short of those predicted by engineering studies. Regardless of the reasons, if consumers have not adopted "no regrets" measures at a faster rate, it is likely that additional incentives will be necessary for them to change their minds. Rather than stressing the mere availability of alternative technologies, your economic advisers insist on realistic estimates of likely rates of adoption and diffusion and they stress the need for economic incentives--in the form of a higher implicit price for carbon emissions--to induce the adoption of emissions-savings technology. They point out too that the baseline energy demand estimates used to predict the price increase needed to attain a 1990 by 2010 target already assume substantial ongoing improvements in energy efficiency due to the diffusion of existing technologies and the development of new ones. Significant adoption of such technologies is necessary merely to meet this assumed baseline. Finally, it is important to note that the DOE labs study includes as part of its policy package to reach 1990 emissions by 2010 extensive regulations, including stringent CAFE and appliance standards and national building codes--command and control policies that your economic advisers would oppose--along with a $50 carbon tax.

To summarize, your economic advisers consider it unrealistic to predict a substantial increase in the pace of adoption of new emissions-savings technologies in the absence of a large increase in the price of carbon emissions--and hence of energy. Based in part on the evidence from the energy shocks of the 1970s, in part on international comparisons, and in part on model results, they are optimistic that such an increase in prices would bring forth a reduction in CO_2 emissions--with larger responses to a given price change likelier the longer the time period for response. The evidence is strong that a very large price increase will be necessary to attain emissions reductions of 20 to 30 percent over a period as short as a decade. *Moreover, other approaches that apparently do not involve large price increases (such as performance standards) will impose even higher costs on the American economy.*

III. Why are the costs of early emissions reductions so high?

The previous section argued that a "1990 by 2010" target would entail high carbon emissions prices and significant economic costs. This section shows that the 1990 by 2010 timepath for emissions reductions is so aggressive as to be inefficient--in the sense of raising substantially the total projected economic cost of reaching a given environmental goal. There are three major reasons why an aggressive takeoff in curtailing emissions raises overall costs: (1) it induces premature obsolescence of the capital stock because it does not allow adequate time for the capital stock to turn over naturally; (2) it provides insufficient lead time to develop and implement new technologies; (3) it causes a significant stagflationary short-term macroeconomic shock. Additionally, an aggressive timetable for emissions reductions does not allow time for the resolution of uncertainty and it does not take advantage of the time-value of money (resources not spent on emission reductions early on can be invested at a positive return which could purchase more emission reductions later).

The Role of Turnover of the Capital Stock. The most clear-cut and easily quantifiable reason for the high price tag associated with rapid emissions reductions relates to the need for premature replacement of plant and equipment in response to large increases in the price of carbon emissions. It is expensive enough to replace plants that are fully depreciated, but vastly more so if those plants are still in the prime of their productive lives. Within 20 to 40 years, much of our existing plant and equipment will be ready for replacement anyway; therefore building in greater carbon efficiency at that time will be relatively cheap. *It is important to emphasize that the case we are making here is not based on procrastinating for the sake of avoiding the problem; rather, it is based on simple principles of hard-headed business efficiency.*

The advantage of a slower emissions reduction timetable in avoiding the large costs associated with premature obsolescence of the capital stock can be illustrated by considering electrical power generation. The case of electricity generation is important in its own right since this industry is responsible for 88% of coal use and more than one third of all carbon dioxide emissions in the United States. But the principle concerning the costs of premature replacement applies broadly because reduced greenhouse gas emissions may entail the accelerated retrofitting of housing and commercial structures, the premature scrappage of vehicles and appliances, and the premature replacement of plant and equipment in energy intensive industries.

Figure 2 illustrates the effect of an accelerated retirement schedule for today's U.S. electric power generation capacity installed during the last 40 years. Imagine, to take an extreme case, that a timetable is adopted that necessitates replacing all power plants with less-polluting technology within ten years. This would require retiring 630 out of 670 gigawatts of generating capacity before the end of its normal life span, or 94 per cent of the total. If the timetable were extended so that all power plants instead had to be replaced within 20 years, the accelerated replacement of capacity would affect 450 gigawatts of capacity, or 67 per cent of the total.

Allowing this additional 10 years for turnover avoids the premature retirement of 27 per cent of existing electric power plant capacity. With a 30 years horizon, complete turnover would mean accelerated retirement of only 21 per cent of the total capacity and, with a 40 year timetable, there would be almost no additional costs due to premature obsolescence.[1, 2]

The Advantage of Waiting for Superior Technologies. The example of electric power generation also illustrates a second important reason why a slow takeoff in curbing greenhouse gas emissions is ultimately less costly: new technologies take a long time to develop. Waiting until these new technologies are available before making expensive emissions-saving investments offers the potential of both lower economic costs and higher environmental payoffs. Under a tight target and timetable with its associated high carbon emissions price, electric utilities will be forced to replace existing capacity in the very near future and to rely on currently available lean-carbon technologies, likely gas-turbine plants. If some delay can be factored in, however, they will be able to install more effective and less costly alternative technologies. A rapid timetable forces long-term investments to be made before superior technologies have been developed and refined.

Implication: The Need for a Credible, Long-Term Price Increase. The example of electricity generation illustrates two general principles. First, the responsiveness of both demand and supply are greater in the long run than in the short run. This means that, with a longer horizon, any given amount of abatement can be accomplished with a smaller increase in carbon emissions prices. Second, and perhaps yet more important for policy, any credible emissions reduction strategy must include both a price increase at the outset and also a clear commitment to maintain and likely increase prices further over time. Without such a commitment, the changes in behavior required to meet even a long-run target of emissions reduction will likely not occur. Consider a utility that today is drawing up its plans for a new power plant. That utility will choose among today's technologies, which vary in their costs and CO_2 emissions. In order to induce the utility to choose a more costly, lean-emissions technology today, it must be clear that CO_2 emissions will be costly enough over the 40 years or more lifetime of the plant to justify a more expensive investment option today. A large cumulative reduction in emissions can be achieved over the long term with only a modest carbon emissions price increase now, but only if the commitment to still higher prices in the future is credible and clear.

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[1]The distribution has been truncated at 40 years, the average lifespan of existing electric power plants. A few plants of yet older vintage are still in use.

[2]The same exercise can be performed for coal-fired power plants. These generators produce the most carbon per kilowatt hour of electricity and thus will have a high incidence of replacement even under a moderate abatement plan. If a complete change-over of coal plants were to be accomplished in 10 years, 96 per cent of total capacity would be retired early. If retirement occurred over 20 years, only 64 per cent would be retired early. Allowing an additional 10 years for turnover would avoid premature retirement of one-third of existing coal-fired plant capacity.

Stagflationary Macroeconomic Impact. From a macroeconomic perspective, increases in energy prices constitute an adverse "supply shock." Such developments are stagflationary--even if anticipated--because they raise both inflation and unemployment simultaneously, creating a painful macroeconomic dilemma. As noted above, a plan to attain 1990 emissions levels by 2010 would require a change in energy prices over the first decade of the 21st century at least comparable in magnitude to the two oil shocks of the 1970s. Those shocks are widely acknowledged to have had substantial adverse impacts on both unemployment and inflation. Similarly, the energy price increases required by a 1990 by 2010 program would raise inflation, lower real wages, and raise unemployment. Unemployment in the four years after the first oil shock averaged 7.2 percent in comparison to 5.0 percent in the four years prior; and unemployment rose further, to an average of 8.6 percent, in the four-year aftermath of the second oil shock. There remains debate about how much of this was due directly to the oil shocks, because there was a simultaneous decline in productivity growth and transfers of real income to OPEC producers. Although the increases in energy prices associated with a treaty to reduce greenhouse gases would be anticipated, rather than a surprise, we should nevertheless expect that the efforts of the Federal Reserve to contain inflation, coupled with likely efforts on the part of workers to recoup real wage losses will lead to a period of higher unemployment.

Furthermore, it is important to note that most model-based estimates of the costs of a program to attain 1990 emissions levels by 2010 assume that resources are fully employed, thereby ignoring these potential short-term effects. Such models therefore provide no assessment of the consequent increases in unemployment.

IV. Quantifying the Economic Costs of Slow versus Fast Take-off

The relative costs of slow versus fast takeoff timetables in curbing CO_2 emissions has recently been analyzed by the Stanford Energy Modeling Forum (EMF-14).[3] The Stanford group used six large-scale economic/energy models to compare the total projected cost of two alternative emissions reduction time paths--one "frontloaded", the second more "backloaded". *Importantly, both paths were designed eventually to stabilize atmospheric concentrations of CO_2 at double the pre-industrial level--550 ppmv.*[4] Although a high degree of uncertainty attaches to

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[3] To enable meaningful comparisons of results across models, the EMF has coordinated a series of projects in which a number of large scale energy models are used to estimate the impact of given, specified emission reduction scenarios under common standardized, benchmark assumptions concerning population and economic activity, discount rates, energy resource availability and prices and technology availability.

[4] All energy models make numerous simplifications and approximations in order to describe the energy sector globally and over the span of a century or more. In particular, all of the models assume full employment, thereby abstracting from the likely short-run macroeconomic costs of an emissions reduction program.

particular numerical estimates from individual models, the simulations nevertheless point to some robust qualitative conclusions. *The major conclusion to be drawn from this project is that an emission reductions path characterized by an aggressive initial phase is substantially more costly--3 to 10 times more costly--than a path with a slower takeoff but larger eventual reductions.*

To enable a comparison of the costs of slow and rapid takeoff strategies, the EMF investigators asked each of six modeling groups to simulate the economic impacts of two alternative strategies to attain stabilization of CO_2 concentrations at 550 ppmv. The first strategy (the WG-1 path) corresponds to an emissions pathway published in 1994 by Working Group 1 (WG-1) of the Intergovernmental Panel on Climate Change (IPCC). Using the Wigley model of the carbon cycle, the working group computed a set of global CO_2 emissions pathways consistent with stabilization of concentrations at 550 ppmv and several alternative concentration levels. The WG-1 path entails an immediate departure from the baseline or "business as usual" emission path. Subsequently, Wigley, Richels and Edmonds (WRE) published an alternative set of emission profiles to achieve the same concentration targets. In contrast to the WG-1 paths, the WRE emission path was constructed to follow the baseline or "business as usual" scenario in the early years with sharper reductions after this initial phase. Wigley, Richels and Edmonds hypothesized that their slower-takeoff emissions pathways would yield identical environmental objectives with substantially lower economic costs, for the reasons discussed above. The EMF-14 exercise validates this hypothesis.

The EMF-14 comparison project assessed the total costs to the OECD, the EEFSU (Eastern Europe and the former Soviet Union) and the non-Annex I countries of the WG-1 and WRE pathways to stabilization of CO_2 concentrations at 550 ppmv. The appropriate economic measure of total cost is the present discounted value of losses in future consumption relative to a "Business as Usual" scenario. Estimates of regional costs depend on the extent of burden sharing--namely, the assumed "division of labor"--between Annex-I and non-Annex I countries in controlling emissions as well as the extent of international emissions trading. Recall that, by the end of the next century--by 2100-- assuming "business as usual"--non Annex 1 countries will have more than 90 percent of CO_2 emissions. Thus, developing country participation is absolutely essential to achieving stabilization of concentrations. Consistent with the Berlin Mandate, the simulations assumed that the burden of emissions reduction would fall on Annex I countries exclusively during the early decades; that by 2030, non-Annex I countries would begin to participate; and by 2050, a full transition to targets based on equal per capita emission rights is assumed.

Figure 3 plots the OECD emission paths in the WG-1 and WRE scenarios. Under the WG-1 scenario, OECD emissions begin to decline immediately and continue to decline for roughly four decades. For example, OECD emissions fall 10 percent below initial levels ten years after implementation--corresponding closely to the requirement of a "1990 by 2010" timetable, which requires a reduction of 9 percent from current emissions in roughly a decade. In contrast, OECD emissions along the WRE path continue to rise for roughly two decades--corresponding

closely to a plan calling for emissions to peak around 2020--return to 1990 levels around 2040 and decline substantially further in subsequent decades.

Table 1 illustrates a robust conclusion that emerges from this exercise: fast takeoff in emission reduction greatly increases the costs. Table 1 shows the cost for both the aggressive (WG-1) and slow-paced (WRE) paths--both with and without idealized international trading of permits. In 10 out of 12 simulations--for six different models with and without permit trading--the costs on the slow-takeoff WRE path is less than a third of the cost on the corresponding fast take-off path. Taking account of the likely adverse short-run macroeconomic consequences of an aggressive path would further strengthen this conclusion.

Table 2 illustrates a second, robust conclusion from the EMF-14 exercise: a viable system of international permit trading would very much reduce OECD costs. With global permit trading, the sharp, early emission reductions required of OECD countries under the aggressive (WG-1) approach would be avoided through the purchase of emission permits from countries with lower abatement costs. The average reduction in cost is 56 percent.[5]

Finally, it is important to note that in most of the EMF models, policy actions to raise carbon emissions prices must be taken at the inception of the slow-paced (WRE) program and a commitment to increasing emissions prices over time is required to achieve additional emission reductions. Naturally, the required initial carbon emissions price is substantially lower, at the outset, under the slower-paced (WRE) than under the aggressive (WG-1) path. Thus, although the slower-paced emissions path initially approximates the business as usual baseline, credible incentives must be put into place immediately, and strengthened over time, to achieve the needed investments in carbon-efficient technologies.

V. The Environmental Consequences of Slow versus Fast Takeoff.

While the excess cost of a fast, compared to a gradual emissions reduction path is large, the difference in projected global temperatures over the next century between the fast and the slow paths is quite small, both in absolute amount and relative to temperature changes expected even if an aggressive policy path is adopted. Under "business as usual" assumptions, average

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[5] The computations in Table 2 verify that the slow paced (WRE) path, which permits emissions to depart relatively little from business as usual for several decades, is a substantially less costly than the alternative WG-1 path with its sharper immediate reductions. Since both paths are arbitrarily chosen to conform with the 550 ppmv concentration target, a natural question concerns the characteristics of an optimal or least-cost path for achieving this concentration target. An important recent study by Alan Manne and Richard Richels uses their MERGE model (included in the EMF-14 project) to compute the least cost path with 550-stabilization in 2100 and international permit trading. The optimal path, while not identical to the WRE path, is similar in character. This least-cost path peaks approximately three decades after the initiation of the program and declines thereafter.

global temperatures are expected to rise about 1 degree Celsius by 2050 and about 2½ degrees Celsius by 2100. An aggressive emission reduction path that stabilizes emissions at 1990 levels by 2010 and maintains emissions at the 1990 level thereafter would mitigate this temperature increase by roughly 0.1 degrees by 2050 and 0.2 degrees by 2100. In contrast, a more gradual emissions path that peaks around 2015, stabilizes emissions at 1990 levels by 2040, and holds emissions constant at 1990 levels thereafter yields virtually identical environmental benefits: the temperature difference between the aggressive and gradual paths diverges by no more than 0.05 degrees at any time over the next century. Similarly, the temperature differences along the aggressive WG-1 and less aggressive WRE paths--both designed ultimately to stabilize concentrations at 550 ppmv--differ by a maximum of 0.2 degrees over the next several centuries.[6]

The limited climatological impact of even an extremely aggressive emission reduction program measured in terms of temperature impacts during the next century reflects the extremely long lags involved in the underlying physical processes and the dependence of temperature on the total stock of carbon dioxide in the atmosphere, rather than the flow of emissions at a given time. Emissions reductions do matter to temperature, but only over an extremely long horizon. The cumulative nature of the process suggests that there is little effect on global temperature from a slow rather than from a fast abatement takeoff. The addition to the total stock of carbon from a slow rather than a fast start to abatement adds relatively little to the total atmospheric stock of CO_2 between now and 2100 for four separate reasons: the difference in carbon emissions between a slow and a fast start over the initial decades of abatement is only a small fraction of total emissions in that period; the stock of CO_2 in the atmosphere is itself the result of many decades of emissions; some of the CO_2 emissions of the early decades will have been re-absorbed; and the most serious build-up in CO_2 under business as usual occurs late in the next century, as a consequence of burgeoning emissions from non-Annex I countries.

Even the potential for a catastrophic environmental event, such as the melting of the West Antarctic ice sheet, a runaway greenhouse effect (e.g., from release of trapped methane with the melting of the permafrost), or a structural change in ocean currents such as the Gulf Stream, which the preceding abstracts from, does not fundamentally affect the basic trade-offs between the high costs of fast vs. slow takeoff paths. These factors do, however, add--perhaps greatly--to the urgency of adopting moderate long-term greenhouse gas concentration targets and a program involving an immediate, albeit moderate, increase in the price of CO_2 emissions.

VI. International Trading of Permits

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[6] If a model assumes that sulfur dioxide emissions decline with the decline in carbon dioxide emissions under climate policy (as predicted, given the extent of sulfur emissions associated with fossil fuel combustion, and incorporated in the IPCC's IS92 emissions projections), the WG-1 path will be *warmer* than the WRE path between 2000 and 2040. This result reflects the negative impact of sulfate aerosols on the greenhouse effect. Early and substantial cuts in fossil fuel combustion, while decreasing the carbon emissions that warm the atmosphere, also decrease the sulfate aerosols that cool the atmosphere.

As has already been noted, an effective system of international carbon emission permit trading among Annex I countries could substantially diminish the cost of a CO_2 abatement program. An Annex I trading system could, potentially, reduce the size of the carbon emissions price to attain a 1990 by 2010 goal by about 50%. Moreover, joint implementation projects with non-Annex I countries could, hypothetically, reduce this figure by half again.

Although international trading and joint implementation--so-called "where flexibility"--has enormous advantages in theory, your economic advisers are concerned that substantial barriers would stand in the way of implementing any workable analogue of such an idealized system--at least in the near term. Consequently, they stress that Annex I international permit trading and joint implementation between the U.S. and non-Annex I countries realistically can serve only a limited role in reducing the costs associated with meeting a "1990 by 2010" target.

A hypothetical example shows how an international trading system would work, and why it would reduce each participant country's abatement costs. Suppose, ideally, that every country adopts a domestic permit system to implement its Kyoto target. Absent international trading, the price of emissions permits would surely differ across countries, reflecting differing marginal costs of abatement internationally. With different permit prices in different national markets, profit-seeking traders would be motivated to buy permits in countries where they are cheap and resell them in countries where they are more expensive. Such arbitrage activities would create an international permit market, bringing permit prices into equality worldwide. This idealized system promotes global efficiency in achieving any worldwide abatement goal. Countries with permit prices below world levels have the incentive to reduce emissions more than they otherwise would in order to profit in the international permit market. Countries with high permit prices would have the incentive to purchase permits, thereby relaxing their Kyoto emissions constraints. The U.S. government could avoid any direct participation in such a system as long as it deems foreign-issued permits presented to the U.S. government by U.S. carbon-emitting entities as valid as those issued by the U.S. government itself.

The preceding description of how an international permit trading system would work provides an idealized picture of its possibilities. But the actual benefits of such a system are apt to fall short of this utopian portrayal in part because countries are not obliged to fulfill their Kyoto commitments via a domestic permit trading scheme; indeed, few Annex I countries have indicated an intention to do so. For example, consider a government that has decided to limit domestic emissions through regulatory controls. International permit sales that result in tighter domestic constraints could well be politically unpopular so that a government would hesitate before selling its emission rights to the United States. Similarly, international permit sales by a country that is meeting its Kyoto obligations through domestic carbon or energy taxes would necessitate a hike in those taxes. In either case, international trading would involve government to government negotiations, and difficult political decisions. In contrast, in the idealized system, trades result from profit oriented transactions among individuals, mediated through the market.

Monitoring and enforcement issues are also likely to be paramount in insuring the

workability of international trading. If domestic enforcement is effective in all countries, so that, in the aggregate, consumers and firms in each country actually limit their emissions to the national permit levels, international permit sales by private agents in the country actually translate into lower domestic emissions. But consider the difficulties that can occur with imperfect enforcement. If the government of a country--country X--finds it difficult either to measure domestic emissions or to enforce the purchase of permits by domestic emitters, then reductions in X's emissions may be insufficient to reach the Kyoto target. Those firms or individuals in X that are lucky enough to have been assigned the rights to X's permits will be able to sell them, at a quick profit, on the international market. With imperfect enforcement, international sales, without corresponding domestic emissions reductions, could emanate from countries with the weakest systems of enforcement. To prevent such "paper trades", which profit some participants and increase emissions, many countries, including the United States, will want controls to ensure the integrity of international permits. Buyers, too, will want clear concrete guarantees of the validity of permits so as to be sure they are not being passed counterfeit goods. These controls and guarantees will surely inhibit the efficiency of the market and render some--possibly much--of the estimated savings illusory. In fact, most of the benefits projected from the international sale of permits come from inducing emissions reductions from countries in Eastern Europe and the former Soviet Union--countries with particularly weak tax collection and enforcement mechanisms. Without these countries in the scheme the gains from international trading of permits will be very small.

Joint implementation with non-Annex I countries also has the potential to reduce the U.S. burden of attaining any given timetable. Under this type of approach, U.S. businesses could receive credit for the construction of nuclear, oil, or natural gas electricity generation plants in China if it were confidently expected that China would instead have constructed coal-fired plants with much higher CO_2 emissions. Certification of such credits might be overseen by an international agency to ensure that the projects were emissions-replacing. Such a project-by-project system is likely the most that is feasible in the absence of quantitative targets. Your economics advisers have concerns about even this level of endeavor due to the inherent difficulty in establishing that a particular set of projects has actually reduced a country's emissions, absent a reference path enabling a clear quantitative comparison. For example, the construction of a nuclear power plant in place of a coal-powered plant in China could indirectly raise CO_2 emissions elsewhere in the Chinese economy--partially offsetting the direct CO_2 reducing effect of the project--if the reduced demand for coal lowers its domestic price and encourages greater use elsewhere in the Chinese economy. A project-oriented approach to joint implementation will, in effect, constitute a limited form of international trading with high transaction costs. As a result, it will probably capture only a small fraction of the total benefits of full international trading. In contrast, model results concerning the benefits of joint implementation treat it as equivalent to full international trading.

VII. Recycling of Revenues

The ultimate economic cost of an emission abatement program depends upon how the

revenues realized from carbon taxes or auctioned permits are used. It has been estimated that the efficiency loss from collecting an extra dollar of tax revenue amounts to around 30 cents. If the revenues from a carbon tax or auctioned permits are used to reduce inefficient taxes inhibiting work or investment, the resulting welfare gains would partially offset the micro-efficiency losses from energy curtailment. According to some estimates, GDP would actually increase if the revenues were used to reduce taxes on capital. The simple lesson is that the costs of emission abatement may be greatly reduced if the revenues from the taxes levied can be put to good use.

So far we have approached the recycling of revenues from the standpoint of microeconomic efficiency. There is also the potential for using the revenues to abate the macroeconomic consequences of the emissions program. The oil shocks are believed by many economists to have resulted in increased unemployment because workers resisted the fall in real wages that was associated with the inflationary impact of higher energy prices. Increased wage demands added inflationary pressures to the economy that could only be suppressed by tighter monetary policy. Thus it might be argued that the effects of the real wage shock on inflation and unemployment could be diminished by lowering payroll or other worker taxes to offset the real wage losses from higher energy prices.

But England's experience points to the need for caution in assessing the potential for revenue recycling to allay the macroeconomic consequences of the rising energy costs. In 1979, immediately after her election, Margaret Thatcher increased the VAT tax and simultaneously decreased the income tax. These two policy changes had offsetting effects on real after tax incomes, and therefore might have been expected to have had no effect on wage bargaining. However, the increase in the VAT tax resulted in an immediately noticeable increase in the CPI. A wage-price spiral ensued as workers attempted to maintain their pre-tax real wages.

VIII. Policy Implications

The foregoing arguments point to the attractiveness, from both an economic and environmental standpoint, of a U.S. policy to raise the price of carbon emissions--either through a carbon tax or a system of auctioned permits--by a moderate amount--for example, between $5 and $25 per ton of carbon--in the near term, with further increases scheduled over the longer term. Under this program, U.S. emissions would continue to rise for at least a decade before declining to current, then 1990 levels and below. Such a program would be a significant policy action consistent with a strong U.S. commitment to attaining the ultimate objective of the Framework Convention--namely to stabilize atmospheric concentrations of CO_2 and hence global temperatures.

A program involving gradual increases in the relative price of carbon emissions over time would avoid the substantial macroeconomic consequences of a 1990 by 2010 program. The energy price increases associated with the more moderate program would have a modest impact on family income that could be offset by compensating cuts in other taxes.

Figure 1: Energy Prices and Changes in Energy Use

OPEC price hikes lowered energy use substantially

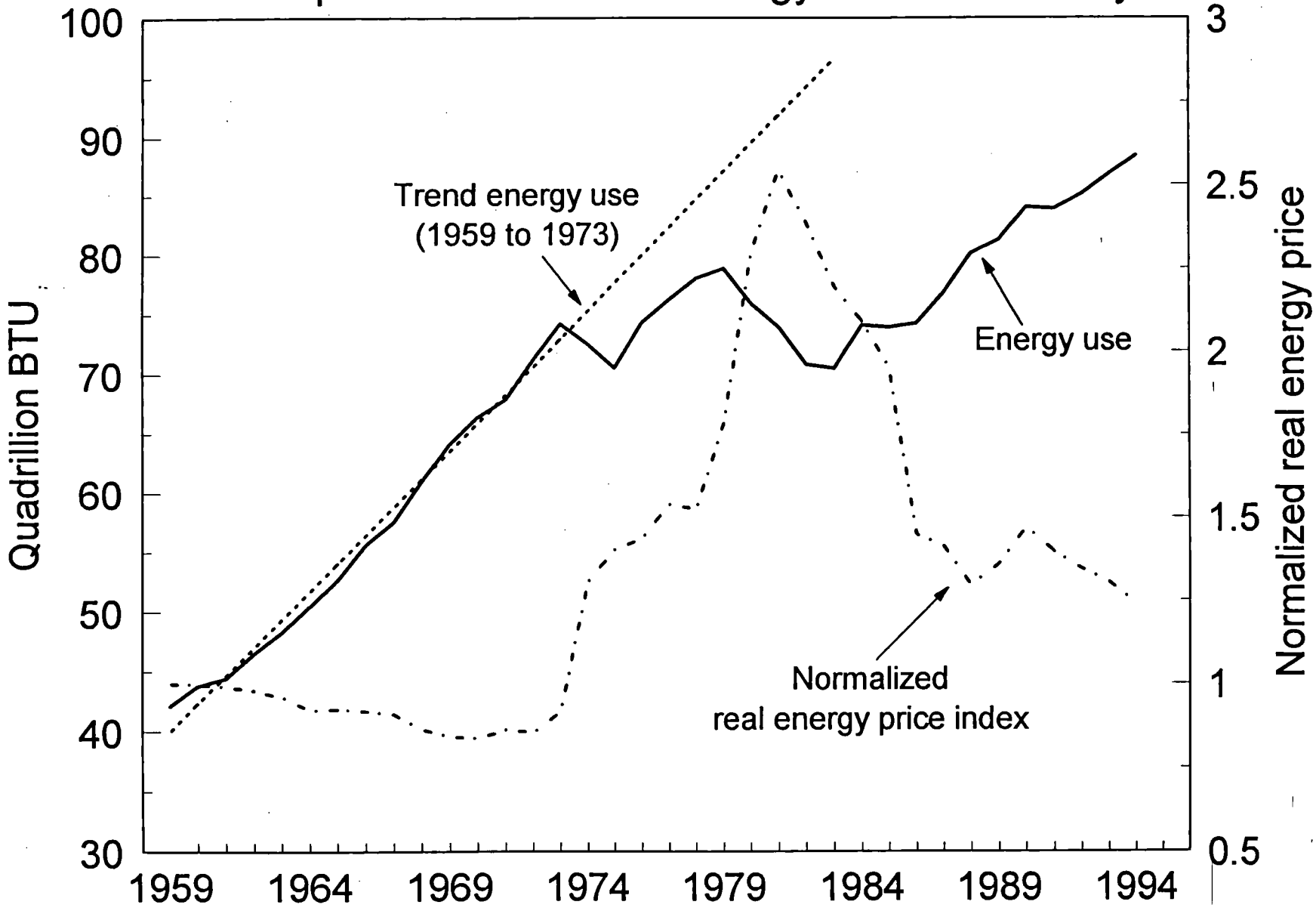
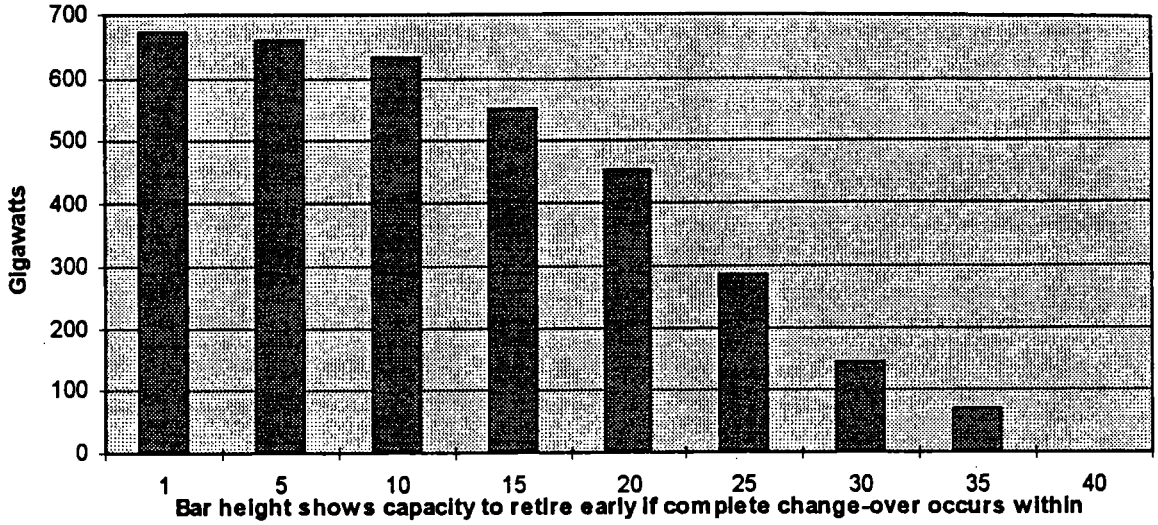


Figure 2: Accelerated Retirement of Electric Power Plant Capacity



Bar height shows capacity to retire early if complete change-over occurs within number of years indicated on the axis. Normal life span of a generator is 40 years.

The Effects of Emissions Pathway on Consumption Losses by OECD Countries, No International Permit Trading (trillions of 1990 U.S. dollars)

Model	WRE	WG1	WRE/WG1
CETA	1.83	5.94	0.31
CPBRIVM	0.64	3.25	0.20
FUND	9.82	11.71	0.84
MERGE	0.85	6.12	0.14
MiniCAM	1.58	6.51	0.24
SGM	1.84	6.17	0.30
		Average:	0.34

The Effects of Emissions Pathway on Consumption Losses by OECD Countries, International Permit Trading (trillions of 1990 U.S. dollars)

Model	WRE	WG1	WRE/WG1
CETA	1.86	4.03	0.46
CPBRIVM	0.17	0.99	0.17
FUND	1.47	4.97	0.30
MERGE	0.60	3.24	0.19
MiniCAM	1.54	3.44	0.16
SGM	0.13	1.48	0.086
		Average:	0.23
		Average (Trading + No Trading):	0.28

Table 1

The Effects of International Permit Trading on Consumption Losses by OECD Countries, WRE Emissions Pathway to 550 ppmv Stabilization (trillions of 1990 U.S. dollars)

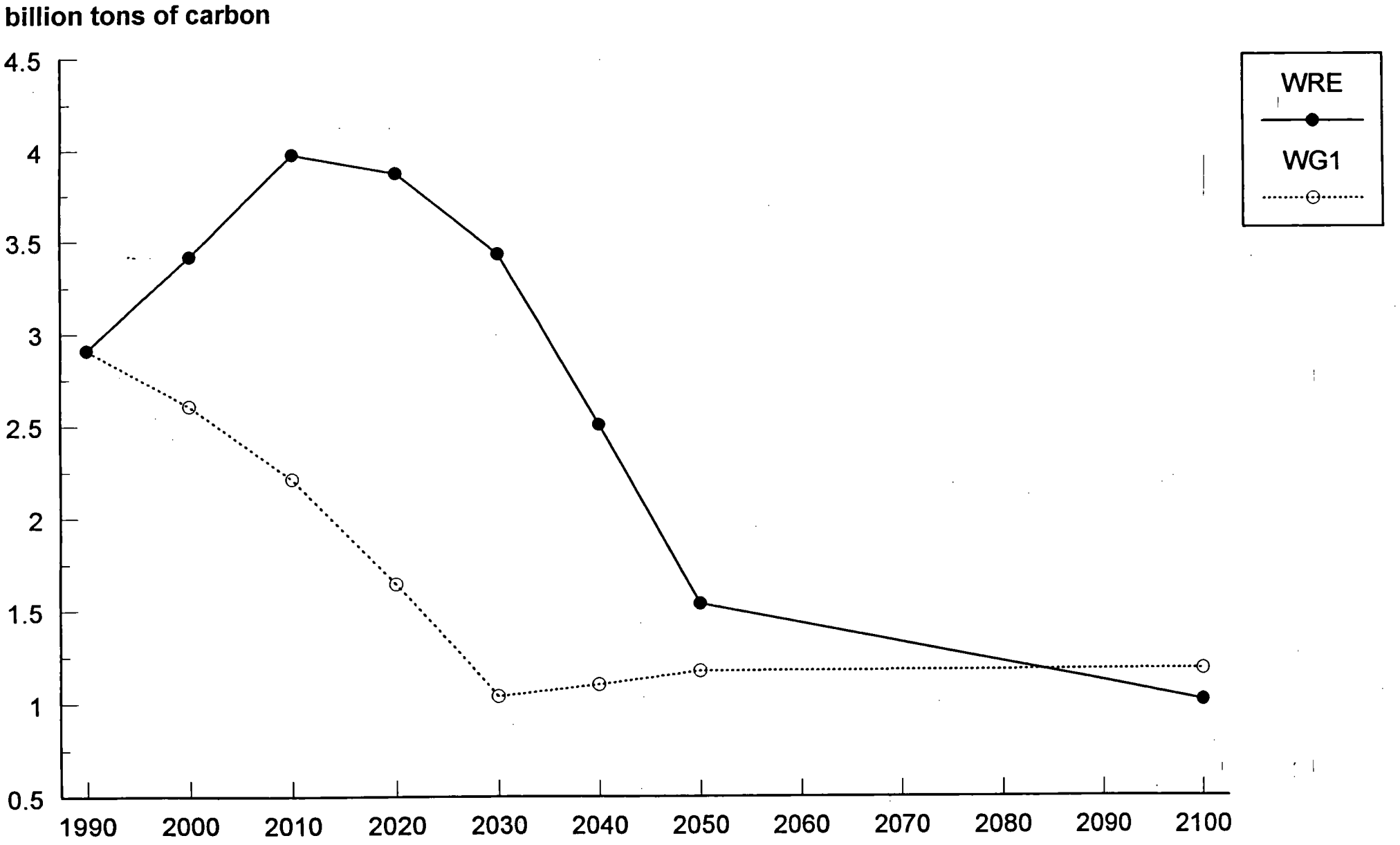
Model	Trading	No Trading	Trading/No Trading
CETA	1.86	1.83	1.02
CPBRIVM	0.17	0.64	0.27
FUND	1.47	9.82	0.15
MERGE	0.60	0.85	0.71
MiniCAM	0.54	1.58	0.34
SGM	0.13	1.84	0.07
		Average:	0.43

The Effects of International Permit Trading on Consumption Losses by OECD Countries, WG1 Emissions Pathway to 550 ppmv Stabilization (trillions of 1990 U.S. dollars)

Model	WRE	WG1	WRE/WG1
CETA	4.03	5.94	0.68
CPBRIVM	0.99	3.25	0.30
FUND	4.97	11.71	042
MERGE	3.24	6.12	0.53
MiniCAM	3.44	6.51	0.53
SGM	1.48	6.17	0.24
		Average:	0.45
		Average (Trading + No Trading):	0.44

Table 2

Figure 3: WRE and WG-1 Emissions Pathways for OECD to Stabilize Concentrations at 550 ppmv



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United States Department of State

Washington, D. C. 20520

Desk

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INFORMATION MEMORANDUM

S/S

July 15, 1997

UNCLASSIFIED

TO: G - Mr. Wirth

FROM: OES - Eileen Claussen

SUBJECT: My Thoughts on Climate Change

I thought it might be useful to lay out my thoughts on where things stand on the climate change issue internationally and domestically before I leave the Department. I will also make some suggestions on strategies to pursue in the months ahead.

INTERNATIONAL STATUS

We are at a virtual standstill in the international negotiations. There are nine large issues on the table, and an enormous amount of posturing on all sides. The United States lost a great deal of credibility in recent months as a result of our failure to propose specific targets or even to give an indication of what we might be able to accept.

1. Targets and Timetables

You know of the EU's proposal for a 15% reduction below 1990 levels in 2010. The EU also has a 2005 target (of 7.5% below 1990 levels) on the table. At the present time, there is no movement by others on a target. The U.S. has no target (although we have said that the EU targets are not possible for us), and neither does Japan, Canada, or others in Annex I. We have also been explicit about not accepting a target date of 2005, since it would be unlikely that we could ratify a treaty, obtain implementing legislation and promulgate the rules and regulations that would be required in time for a 2005 date. This issue is complicated by the EU position that it will not discuss other parts of the U.S. proposal until we put a target on the table.

2. The EU Bubble

The EU target is based on the presumption that the EU is allowed to "bubble" its emissions; in other words, the EU, taken as a whole, will meet its overall target but individual countries may have different targets (i.e. Portugal may increase 40%, Germany may decrease 15% etc.). This is viewed as blatantly unfair by Japan, Australia, the U.S. and others. It is, in essence, a system of differentiated targets with internal trading within the EU. We have said that there are really three choices for how to deal with the EU. First, the EU could have one target, and be one party to the Convention, just like any other single country. Alternatively, it could have each EU member agree to the same target (the one we all agree to), and then the EU could trade emissions within itself so that each country was satisfied. This would be acceptable as long as every other country could also engage in trading. Finally, there is the EU proposal itself, where each country would agree to a different target, but that only the EU as a whole would have to meet the internationally agreed target. This last option, particularly if emissions trading is not allowed for all countries, is completely unacceptable. It is likely that the EU will suggest that they maintain their position on the bubble, but agree to emissions trading for everyone in Annex I in exchange.

3. Emissions Trading

We have put forward a proposal for emissions trading within Annex I, that is, among all countries that have binding targets. This proposal has received some support from Australia, Canada and New Zealand. It is viewed with suspicion by Japan, although they are unlikely to oppose it. The Russians are very supportive of this idea, since they would be the country most likely to have emissions to spare. This is the case because their emissions dropped substantially below 1990 levels during the early 1990s, and their economy remains in disarray. The EU claims it is too complicated to be agreed in Kyoto, and will not discuss it further until other targets are on the table. I suspect that the EU will eventually agree to this proposal although other issues will be raised. We have already heard comments to the effect that the purchase of Russian emission credits will not benefit the environment, allowing us, in effect, to purchase existing reductions rather than do our own. This is true, but is also an argument that could be used with the Germans, since their target is only possible because of the parallel situation in eastern Germany. It is possible that

emissions trading may end up by being limited in scope, allowing a country only to trade a portion of its emissions.

4. Joint Implementation

The U.S. has traditionally been a strong supporter of joint implementation, but has been unable to gain many supporters for its proposal internationally. At the present time, we are supported by the Central American governments, Canada, Australia, New ~~New~~ Zealand, Norway and possibly Peru. The EU has raised objections, at least for this round of the negotiations, and the Japanese appear ambivalent. The developing countries, with the exception of those listed above, remain opposed. Developing countries are now engaged with us in an experimental joint implementation stage (called activities implemented jointly) where no credits are assigned. They claim first, that they want the experimental phase to finish and be evaluated before reaching further agreement; second, that technology transfer is required by the Convention, and therefore should not involve the transfer of emissions credits; and finally, that if they are eventually going to be subject to targets, they would like cheap reduction options available to them, not to those who participate in joint implementation rather than taking reductions in their own countries. Other complicating factors have also been raised, including the difficulties of establishing a suitable baseline for a given project, how to determine what is truly "additional" about the project's emissions reductions, and how to divide those reduction credits among different countries.

5. Policies and Measures

The Berlin Mandate discusses both targets and "policies and measures." The EU has been a strong supporter of harmonized and mandatory policies and measures, which could include everything from energy taxes to harmonized refrigerator efficiency standards. The Japanese seem perfectly willing to support the EU here, and the Canadians are ready to follow suit. Only the U.S. remains so strongly opposed to such measures, arguing that each country is fundamentally different, and that each country should have the freedom to decide on which policies and measures to use to implement its target. The compromise here may be a list of measures that individual countries could consider, although this will not be a compromise that will be reached easily.

6. Differentiation

Japan, Australia and Norway have argued that their circumstances are sufficiently different (Japan because it is so energy efficient, Australia and Norway because they are enormous fuel exporters), that there should not be a uniform target, but rather differentiated targets based on a set of criteria. This view is made more persuasive given the way in which the EU proposes to operate (i.e. differentiating within the EU). Strong opposition comes from the EU (which refuses to acknowledge its hypocrisy) and the U.S. We have argued against differentiation on the grounds that there is no consensus among any countries on a scheme that might be used, and also that, in light of the lack of support, it would not be possible to reach a conclusion in December in Kyoto. As a practical matter, we would fare poorly in any scheme - we are the largest emitter, we are among the most energy intensive (i.e. energy used per unit of GDP), and we are the largest per capita emitter, too. But it is not clear whether the countries who support this approach will simply "give it up" in Kyoto.

7. Compensation

The OPEC countries, who are not supportive of any agreement, have raised the issue of compensation. They believe that if a climate change treaty reduces oil imports from their countries, they should be compensated. While it would seem that this is a complete non-starter, other developing countries seem to be rallying to their side, and the EU has been acting like they think some compromise is possible here, at least in terms of an analysis on what our actions might do to their economies. While this proposal as drafted is unlikely to be successful, we are the most vociferous opposition.

8. Developing Country Actions

We have put forward a set of proposals that would apply to all developing countries, essentially "advancing" their existing commitments. In our text, we require that they take a series of actions, measure the effects of those actions, and report on what they have accomplished. While there are likely to be some changes to our language, the EU is generally supportive of our suggestions. I suspect that what the developing countries accept will be dependent on the target that developed countries negotiate.

9. Evolution

This is the most difficult and the most important of the U.S. proposals. We have argued that developing countries must agree in Kyoto to a subsequent negotiation in which they will assume binding targets and in which we will agree on a mechanism that allows for the "graduation" of countries from developing country status (and targets) to developed country status (and targets). We have no support for this concept, except for Canada, Australia and New Zealand. The EU believes it is too strong (and maybe, if weakened, could be part of a Kyoto mandate), the Japanese believe it could derail a successful conclusion in Kyoto, and the developing countries seem unready to accept it, even in cases where they understand its importance in solving the problem. We will have no chance of treaty ratification without such an agreement. In fact, Senate views on a treaty (represented by the Byrd amendment) would require more than the Administration has proposed -- including the acceptance of new commitments by the developing world. Such new commitments are clearly impossible under the Berlin mandate.

DOMESTIC STATUS

The domestic situation we face is extremely difficult. Whatever momentum we may have had coming from the July 1996 meeting in Geneva has dissipated, and if we are to succeed, we must work hard to rebuild domestic support for our approach and probable proposed target.

1. Industry

The industries that are most likely to be negatively affected by any climate change regime are very well organized and well funded. They have argued that significant cuts will cripple them, that developed country targets in the absence of developing country targets will disadvantage the U.S., and that the Administration is going to agree to a protocol without sufficient dialogue and support in the United States. Our failure to release the economic analysis we have done bolsters the first and last of these points, although if the data were released, the arguments would persist. On developing countries, their stance is designed to derail the negotiations, since the

Berlin Mandate explicitly precludes new commitments for developing countries. These industries also claim that there is no consensus on the science. They are, for the most part, members of the Global Climate Coalition, and include the coal industry, most of the oil industry, the railroads, and most of the electric utility industry.

There are two other industry constituencies that are important. The first of these is the group that would stand to gain from any climate change protocol, namely the renewable and solar energy industries, as well as those that promote the use of gas. They are not well organized, and have been a very weak voice supporting the Administration. Their group is the Business Council for a Sustainable Energy Future. Enron is the most influential member.

The third group is the International Climate Change Partnership. Most members are multinationals, and range from Carrier Corporation to British Petroleum to Dupont. These companies agree that the science is compelling, and that the framework we presented internationally (binding targets, flexibility, and developing country commitments) is a good one. However, they are disenchanted by our failure to share the economic analysis, and to further engage on the level of a target. The support of these companies is vital. But in order to it, their confidence needs to be rebuilt.

2. The Environmental Community

This community is also split on this issue. All environmental NGOs are concerned about the kind of target that the U.S. will propose. They have all supported targets beginning in 2005 (which the Administration has said is too early), and levels of reduction close to or resembling the EU. Some groups support trading and joint implementation (EDF in particular), while other have insisted on increased auto efficiency standards (the Sierra Club). If our target is too modest and does not go beyond stabilization, we will be heavily criticized by all.

3. The Congress

The most telling example of where we are in the Congress is the Byrd Resolution. This resolution, drafted by the coal industry, was a personal project of Senator Byrd, and now has more than 60 signatures. It stipulates that if developed countries have binding targets agreed in Kyoto, so must the developing world. Although this idea has

not been tested in the House, it is likely that we would see a similar line up. The reality is that there are too few Hill supporters of action on climate change to deal with this issue. The Administration has not engaged the Congress over the past six months, and we see little support emerging based on NGO lobbying. This has left the field completely open to the naysayers, and the result is pretty clear.

4. Domestic Implementation of a Treaty

Treaty will require advice and consent of the Senate. It will also require Congressional passage of implementing legislation and the promulgation of rules and regulations by the Executive Branch. Even if the ratification hurdle is passed, developing and passing implementing legislation will be extremely difficult. Like The Clean Air Act, there will be different regional and sectoral
impacts from efforts to reduce greenhouse gases. Decisions on how to distribute the burden between the transportation sector, the utility sector, and the household and commercial sector will have to be made. Legislators will have to focus on what to do with the coal industry and coal miners, the industry and labor group that will be most affected. Finally, we will have to look at different implementing mechanisms. The notion that a domestic "cap and trade" program will be all that we need is short-sighted. While such a system will work well for utilities (1/3 of our carbon dioxide emissions), it is not clear how the system can be made to work for transportation, or for the other greenhouse gases (methane, nitrous oxide, etc.) that we will have to regulate.

THOUGHTS FOR A STRATEGY

The task facing the Administration and the international community is enormous, given the timetable for decision, the difficulty of the issues to be decided, and the politics associated with those issues. But certain items must be faced immediately:

1. Building a Domestic Base

Nothing will substitute for an earnest dialogue, including a discussion of possible and realistic targets, timetables and impacts of those targets and timetables. This must be conducted at all levels, and with all

constituencies. It will only work if we are open, and share the results of our analyses, whether it is our economic analysis, or our analysis of long-term pathways leading to different atmospheric concentrations of greenhouse gases. The President must hold some meetings with selected CEOs (perhaps through the Business Roundtable) who are engaged in this issue, as well as with some Members of Congress. Others will also have to be heavily engaged. We will need to listen, as well as to share information and ideas. The only time frame that works is for this to occur over the summer.

Some groups will never be satisfied with a solution, since they wish only for there to be no solution. But there should be some members of all communities who could unite behind a realistic proposal. In particular, we need to build a core group from the Business Council, the ICCP, and those parts of EEI that are most forward looking. It may be possible to move the auto companies if they are assured that domestic implementation will not fall on them in the form of CAFE standards. Some oil companies, particularly those with heavy investment in alternative energy sources may also be willing to engage.

We will also have to try to see if there can be common ground between the Administration and organized labor. This will not be an easy task. The Mineworkers have been strong and vocal on this issue, and it is not clear that their views can be reconciled with ours. However, there are others within the AFL-CIO who are more positive (including the Steelworkers and the Oil, Chemical and Atomic Workers), and we should attempt to work with all of them together.

Similarly, we will have to work closely with those members of the environmental community who are prepared to accept a reasonable solution. EDF, NRDC and WWF are obvious candidates. But even with those who are unlikely to be sympathetic, a good dialogue that covers what is possible and what is not might blunt some of the expected criticism.

If the outreach effort culminates in a White House Conference, it is critical that
everything be programmed well enough in advance to assure a positive result. A White House Conference that does not result in a shared consensus on the need for action, combined with an acceptance of the principles that will form the basis of our negotiating position would not be helpful.

2. Making our Way Through the International Maze

The end game, of course, is the international negotiation. Even if we are successful in building some support domestically, the critical question is whether a deal can be struck in Kyoto. Key players include the EU, Japan, China, Brazil, India and the OPEC countries. We will need to engage all of these countries (or groups of countries) separately from the negotiating fora. A meeting at a high level with the EU and Japan could be useful after the October negotiating session. It must be kept small, and should, in essence, be an attempt to see if a deal is possible. High level visits to Saudi Arabia, India, Brazil and China are also important, and should be conducted before November. Again, these should be designed to assess whether a deal could be reached in December.

No matter how good the preparation, reaching a satisfactory conclusion in Kyoto will be extremely difficult. It is worth some time and effort to determine what follow-on process would be desirable if a deal is not achieved. The key will be keeping the issue alive. Those who oppose any agreement should not come away from Kyoto thinking that they were victorious. Tough questions that we will need to face if no agreement is possible include: if the stumbling block is developing country actions, do we need a change of mandate? If the stumbling block is the strength of the reduction commitment, can we put forward a package that cuts more deeply, but over the long term? And if that is the solution, what interim steps can be agreed? If the issue is the flexibility provisions, particularly joint implementation, are there different options for working with developing countries that could be introduced? Finally, we will need to decide what the best timetable is for an agreement. Certainly, it would be best to reach an agreement in Kyoto. It is early in the Administration's second term, and bold steps are easier the farther they are from an election year. But if the projected schedule is closer to the year 2000, is that something we can live with?

cc:

CEQ - KMcGinty
White House - TStern
NEC - DTarullo