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Climate Treaty and National Security
FOR INTERNAL USE ONLY -- November 1998

- **Where do DoD's GHG emissions come from?**
 - 58% of emissions are from operations & training, 42% are from facilities and commercial-type vehicles. Jet fuel is about 45% of DoD's total energy use.
 - DoD uses HFCs in aircraft and weapons air conditioning systems, PFCs in certain aircraft radar systems and SF6 in ground control radar.
 - DoD's total energy use is about 72% of US federal agency total. Federal agency energy use is almost 2% of US total.
- **Why did Administration want national security protections?**
 - Ensure no nation would hesitate to join multilateral humanitarian, peacekeeping or other operations due to potential of exceeding emissions budget.
 - Ensure no disincentives to allies making fuel available overseas (for unilateral or multilateral needs).
 - Ensure readiness of forces.
- **What protects national security?**
 - Internationally
 - Kyoto Protocol Decision 2.4/CP3: Bunker fuels (sold to ships or aircraft engaged in international transport) do not count in a Party's national totals but are reported separately.
 - Kyoto Protocol Decision 2.5/CP3: Emissions from multilateral operations pursuant to UN Charter are not included in national totals but reported separately. Other overseas emissions can be divided among countries involved by agreement. Absent an agreement, these emissions would be reported by the nation in which they occur.
 - Results of these Kyoto decisions are not limited to the Protocol as they are decisions of the Parties to the Convention.
 - Domestically
 - The Administration has determined that domestic measures to promote reductions in emissions of GHGs shall not impair or adversely affect military operations and training."
- **How do relevant DoD emissions count toward the national GHG allowance?**
 - International bunker fuels – (Addressed in Kyoto Protocol, per above.) These are reported separately from national totals and do not count toward compliance. Parties are to work through ICAO and IMO to limit or reduce them (Kyoto Protocol Article 2.2).
 - Domestic operations and training – (Addressed in Administration policy.) These would be included in national totals.
 - Domestic buildings and commercial-type vehicles (42% of DoD emissions) – Same as private sector.
- **What GHG reductions has DoD achieved since the 1990 baseline year?**
 - 25% energy use reduction through improved energy management and base closure. Includes over 17% reduction in facility energy consumption per square foot.

The Pentagon's Newest Enemy: Hot Air

By FRANK J. GAFFNEY JR.

One powerful voice is curiously absent from the recent round of White House conferences and media extravaganzas on global warming: the Pentagon's. That's strange, since the U.S. military would be hit particularly hard by the reductions in greenhouse gas emissions that President Clinton has in mind.

Just how serious the effect will be was made clear by a Sept. 5 memo from Deputy Undersecretary of Defense for Environmental Security Sherri Goodman, which was reprinted recently by Defense Environment Alert. Writing to senior Pentagon leadership, Ms. Goodman warned that a 10% reduction in military fuel use—one of the contingencies that military planners expect would be required by the proposed treaty on global warming to be signed in December in Kyoto, Japan—would result in “unacceptable impacts to national security.”

Ms. Goodman's memo begins by underscoring the immense quantity of fossil fuels used by the nation's armed forces: “Overall, DoD [the Department of Defense] uses 1.4% of the energy used within the United States,” she wrote. The Pentagon's gross energy consumption totals “about 24 million metric tons of carbon equivalent of greenhouse gas emissions.” Her memo then offers examples of the damage the Kyoto treaty would do to U.S. military readiness. A 10% reduction in fuel use, Ms. Goodman wrote, would:

- “downgrade [the Army's] unit readiness and require up to six additional weeks to prepare to deploy. Strategic deployment schedules would be missed, placing operations at risk. Furthermore a 10% reduction in training hours for flight crews could reduce their readiness status, requiring

four-to-six weeks of additional training to deploy and will jeopardize crew safety.” In addition, the Army would lose 328,000 miles per year from its tank training exercises.

- “cut 2,000 steaming days per year from [the Navy's] training and operations for deployed ships. This would impact the National Security Strategy . . . result[ing] in some ships being deployed at a less acceptable readiness rate. Naval aviation (Navy and Marines) would also be adversely impacted. . . . The readiness of Marine Corps air-ground task forces would also be significantly affected.”

- “result in the loss of over 210,000 [Air Force] flying hours per year. This would reduce Air Force readiness to the point it would be incapable of meeting all of the requirements of the National Military Strategy. Fighter and bomber crews would be unable to maintain full combat readiness. This means that many advanced capabilities would be lost.”

As if all this weren't bad enough, Ms. Goodman's memo also states that her “analysis assumes DoD's fuel needs are relatively stable and predictable. This means assuming that a major crisis requiring the use of military forces that will increase fuel use will not occur.” That's a dangerous assumption that no security planner should ever have to make.

For all these reasons, Ms. Goodman attached to her memo a proposed “national security waiver” to the Kyoto treaty. This waiver, she wrote, “should address military tactical and strategic systems used in training to support readiness or in support of national security, humanitarian activities, peace keeping, peace enforcement and United Nations actions.” That seems reasonable.

Yet the Pentagon won't say whether this waiver recommendation is its official position. It is clear, however, that this issue seems not to be getting the sort of attention one would expect from the Pentagon leadership, given the stakes. At a Washington conference this month, the chief of staff of the Army, senior civilian and military strategic planners and the chairman of the National Defense Panel all confessed that they were unaware of what—if anything—is being done to protect U.S. military readiness as part of the Clinton administration's environmental decision-making. If the Pentagon is not going to look after its operational requirements, we can be sure that no one else in the Clinton administration will.

Last month, the Joint Chiefs of Staff courageously told President Clinton that they could not support a ban on antipersonnel land mines, a politically popular initiative to which the president was personally committed. Not long after, Mr. Clinton announced: “As commander in chief, I will not send our soldiers to defend the freedom of our people and the freedom of others without doing everything we can to make them as secure as possible. . . . There is a line that I simply cannot cross, and that line is the safety and security of our men and women in uniform.”

The same line needs now to be drawn for Mr. Clinton with respect to the Kyoto climate treaty, which would seriously threaten the nation's security, as well as that of our men and women in uniform.

Mr. Gaffney held senior defense positions in the Reagan administration. He is currently director of the Center for Security Policy in Washington.

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The Population Implosion

By NICHOLAS EBERSTADT

Most of the news from this week's 23rd General Population Conference in Beijing has focused on the threat of overpopulation. But this danger may be a myth. Over the past several years, some of the world's best demographers have begun a dramatic reassessment of the world's demographic future. They are now seriously considering the possibility that the world's population will peak in our lifetimes, and then commence an indefinite decline.

The "depopulationist" scenario has been set out most recently in the United Nations Population Division's 1996 revision of its biennial compendium, "World Population Prospects"—the oldest, largest and most intensive of various contemporary attempts to outline likely future demographic trends, and a good starting point to outline the demographic revolution that may be in store.

Fertility Trends

All population "projections"—these are not predictions—are built on assumptions. The U.N.'s "low variant" model assumes that life expectancy at birth will rise in "more developed regions" to 81 years in 2050 from roughly 75 today. For the "less developed" regions, average longevity will reach 76 by 2050, vs. 64 today; in the "least developed countries" (mostly in sub-Saharan Africa), it is seen as rising to 72 from 52.

The most important assumptions in the "low variant" model concern future fertility trends. By the U.N.'s estimate, total fertility rates (lifetime births per woman) for the more developed regions have already fallen to about 1.5 from about 1.7 in the early 1990s, and, if this model were to prove accurate, would settle in another decade at about 1.4. For the less developed regions, the rate is thought to have averaged 3.3 in the early 1990s and fallen slightly since; the model projects its declining to about two in 2020 and 1.6 in 2050. For the "least developed countries," where the estimated total fertility rate is estimated to have been over five this decade, it is posited to drop below four by 2010, below three by 2020 and below two by 2035.

With these assumptions about the future—none of them implausible on their face—global depopulation would commence in a little over four decades. Between 2040 and 2050, the world's population would fall by about 85 million. From then on, world population would shrink by roughly 25% with each successive generation. To put the matter another way, future world fertility patterns would be similar to those in the "more developed regions" today, where the "net reproduction rate" is already down to about 0.7 (meaning that the next generation, under present patterns of childbearing and survival, and not accounting for immigration, would be about 30% smaller than the current one).

The patterns that would result in an ultimate global population decline would also bring about a significant redistribution of world population. In 1995, the ratio of population between today's "less developed" and "more developed" regions stood

at about 4 to 1; in 2050, by these projections, it would be 7 to 1. The balance of population would shift dramatically, not only between countries but even between entire continents. In 1995, for example, the estimated populations of Europe (including Russia) and Africa were almost exactly equal. In 2050, by these projections, Africans would outnumber Europeans by more than 3 to 1.

These same demographic forces—longer lives and falling fertility—would also lead to a radical and inexorable aging of the population. Around 1900, the median age of the world's population was probably about 20; by 1995, it reached about 25 years. By 2050, in the "low variant" world, the median age would be over 42. In some countries, the population would be even older: Japan's median age would be 53; Germany's, 55; Italy's, 58.

As the chart nearby shows, while the number of children around the world would sharply decline, there would be a population boom among the elderly (or, at any rate, among those we would consider elderly today). In the less developed regions, there would be three times as many older people as young children; in the more developed regions, the ratio would be 8 to 1. In Italy, which serves in these projections as the extreme instance of demographic aging, barely 2% of the population in 2050 would be under five years old, but more than 40% would be 65 or older.

Such a gerontological drift raises basic questions about the health of the societies of this imagined future. Would a depopulating world be a world of wheelchairs—of increasingly infirm senior citizens whose escalating demands for medical services and care seriously burden the rest of society? Or would the revolution in longevity be accompanied by a revolution in health that effectively extends the scope for active, vigorous and productive existence?

On a whole, the evidence seems to argue that improvements in "disability-free" life expectancy can occur nearly as rapidly as improvements in life expectancy itself. At the same time, the quality of life for older people may at times hinge upon discrete, but expensive, medical treatments—interventions more available in rich countries than in poor ones.

Negative population growth would have major implications for government, especially for the nationwide, tax-financed, pay-as-you-go pension programs that are the central feature of the modern welfare state. In virtually all of today's industrial democracies, such programs were established in periods of relatively high fertility and relatively rapid population growth. With below-replacement fertility and increasing longevity, the arithmetic of these schemes changes unforgivingly. As the ratio of employees to retirees falls, such programs have only three options for preventing bankruptcy: reduce pension benefits, raise taxes or restrict eligibility.

One way to begin restructuring such programs is with later retirement ages, as populations make greater productive use of their extended active life spans. But depopulation would almost necessarily presuppose a change from pay-as-you-go financing to self-financing of retirement benefits by individuals over the course of their own lives. Though such a change could involve a full privatization of social

insurance, it is also possible to imagine the reformed pension systems operating under the aegis of government. But it is hard to see how self-financed pensions could lend themselves as readily to redistributive or other nonmarket objectives as the pay-as-you-go arrangements have done.

Finally, it is interesting to ponder how the demographic revolution to come will affect the family as most of us have experienced it. The U.N.'s projections imagine a world in which the only biological relatives for many people will be their ancestors.

Consider the possibilities for Italy, currently the country with the world's lowest fertility level. If Italy's current regimen is extended for two generations, almost three-fifths of the nation's children will have no siblings, cousins, aunts or uncles; they will have only parents, grandparents, and perhaps great-grandparents. Under those same assumptions, less than 5% of such a future Italy's children would have both siblings and cousins.

Social Atomization

Projecting the fertility rates for the entire European Union forward two generations only slightly alters the Italian scenario. In time, under "low variant" assumptions, families in the less developed regions would move in this direction. Within another generation or two, a family consisting of siblings, cousins, uncles and aunts would be anomalous throughout the entire world. For many if not most people, "family" would be understood as a unit that does not include any biological contemporaries. The nuclear family may have marked a radical departure from previous sorts of family arrangements. But, as we have seen, the nuclear family does not begin to approach the limits of social atomization that may await us in a depopulating world.

All this represents merely a sketch of a future whose social, political and economic outlines promise to break sharply with anything in recorded experience. Yet as opaque as these changes may appear today, we may yet manage to discern them very carefully. A good number of us could eventually experience them firsthand: In the U.N.'s "low variant" projections, in fact, half of the world's current inhabitants would still be alive at the time that global depopulation commences.

Mr. Eberstadt is a researcher with the American Enterprise Institute and the Harvard Center for Population and Development Studies. This article is adapted from the Autumn issue of The Public Interest.

Climate Treaty/National Security Exemption

1. Scope and Rationale (DoD)
2. Current Diplomatic Situation (State)
3. Legislative Developments (DoD)

DoD GCC
Nat. sec. exemptn.
Sit. rm.

10/30

Sen. Inhofe hearing. Thus war
Sen Arms Serv. Comm. Subm on readiness
DoD, State, LEA

(1)
peace
time
DoD 1.47. of US E cons.
of which half military ops & training
of which 20-30% peacetime military activities outside U.S.

(2)
military
operations.

GCC disincentive for allies to let troops be stationed there
& participate in PKOs
insuring fuel supplies, landq rts., etc. in other countries

Concerned about HFCs. Ships have a lot.
where do bunker fuels inventories count
Price of fuel was taken off the table.

Global warming measure helps investors check risk

By Leyla Boulton,
Environment Correspondent

A tool has been developed in Britain to help investors assess companies' contribution to climate change and their resulting exposure to financial risk.

A so-called global warming indicator enables companies to measure their output of carbon dioxide from fossil fuel consumption, whether in making and transporting products or heating offices.

The measure has been produced by Imperial College and National Provident Institution, the insurance company. They hope it will become an internationally accepted reporting requirement in company accounts.

Carbon dioxide is the most important greenhouse gas associated with global warming. The indicator's

sponsors argue that companies least able to curb their emissions could incur financial penalties.

"That companies should produce such an indicator is not simply a matter of corporate responsibility towards a chronic global issue, it is also a matter of providing shareholders with more adequate information about exposure to new costs," the proposal for the scheme says.

"Such costs, arising from taxes and changing market conditions, are likely to arise as counter measures to increased global warming take hold."

Developed countries meet in Kyoto, Japan, next month to negotiate their first legally binding reductions in greenhouse gas emissions. Many governments are expected to step up mea-

sures to discourage fossil fuel waste as well as to move away from carbon intensive fuels such as coal and promote renewable sources.

Some experts believe financial markets could become the most potent source of pressure for environmental improvements. Tessa Tennant, head of ethical investment at NPI, said the indicator would be particularly useful for differentiating between companies in the same sector.

Investors' emerging responsiveness to environmental considerations was illustrated on October 21 when shares in RJB Mining, the coal mining company, fell 23 per cent. Investors were reacting to a sell recommendation by Dresdner Kleinwort Benson, which said environmental measures would batter the

Global warming indicator

	Measure	Conversions*
<i>Energy related carbon dioxide emissions</i>		
Coal	Gigajoules	0.0995
Natural gas	Gigajoules	0.0594
Fuel oil	Gigajoules	0.0831
Electricity	Gigawatts/hour	0.653
<i>Transport related carbon dioxide emissions</i>		
Petrol	litres	0.00231
Diesel	litres	0.00258
LPG	litres	0.00163
Air	person/km	0.000254
Train	person/km	0.000076
Truck	tonne/km	0.001557
Train	tonne/km	0.000039
Inland Transport	tonne/km	0.000048

* Multiply consumption by this factor to obtain CO2 equivalent (tonnes)
** Based on UK electricity mix

Source: NPI

coal industry in spite of hopes the Labour government would prop it up.

The indicator scheme is being circulated to UK accountants and companies for review.

It is the latest attempt to link companies' financial and environmental performance. Last year, Business in the Environment, a UK non-profit organisation, tried to rank Britain's 100 biggest companies according to their

commitment to environmental management.

Companies' subsequent efforts to improve their ranking in this year's exercise reveal just how much influence even voluntary benchmarking schemes wield.

Once the indicator has been reviewed by some of its potential users, it will be available for any business to try out, initially on a voluntary basis.

Point, to make

- It's late. Time to raises problems might have been before Pres announced his policy

- Effect on P_{fuel}. Lots of things fluctuate in the economy & affect P_{oil} costs.
 ΔP_{gas} from oil (even season) expected to be in range of absolute yearly fluct-s

- Now P_{fuel}? Eg. P_{oil}
But becomes \$, under int. tradg.

- will reduce risk of ~~war in the~~ need to fight war in middle East

Before
POTUS
decision

After
POTUS
decision

"1990 by
2010 would
be:"

Lamy S

"costly"

"not costly"

Shewri
G.

"not costly"

"costly"

Don

11/10/97

Testimony recd.

if proposed protocols are signed

STAP
Sue B. H. H.
Don Reifsnider.

Dep's mty. to discuss net. sp.

BMC RECORD 2

Staffs of force
Arrangements.

SOPA Agreement

for untaxed price.

Ger. sells us (Don) fuel at

Kimble: Germans says will continue to do that

Climate Change:
Counting of National Security-Related Emissions

Question

- o Under the existing Convention and as contemplated under the new agreement, against whose budgets (if any) would the following activities be counted:
 - 1) U.S. military activities in U.S. territory;
 - 2) U.S. military peacetime deployments in places like Japan or Europe (or in non-Annex I countries);
 - 3) U.S. deployments in a theater of operation (e.g., Kuwait, Bosnia, etc.); and
 - 4) U.S. military activities on the high seas.

In this regard, are emissions counted in the place where the fuel was procured or where the missions actually occur? Are bunker fuels otherwise exempt from being counted (e.g., would emissions be counted against where the fuel was purchased or where the emissions occur?)?

Discussion

- o The 1992 Convention casts the emissions obligation in terms of a Party's limiting "its... emissions...of greenhouse gases." The emissions obligation in the new agreement is being drafted along similar lines.
- o In theory, "its" could refer to:
 - the emissions attributable to actors under the jurisdiction and control of a Party (which would include flag vessels and aircraft wherever they might emit);
 - the emissions emitted within the territory of the Party only;
 - the emissions attributable to fuels purchased within the territory of a Party;
 - some combination of the above.
- o As such, apart from the case where the U.S. military engages in activities in U.S. territory using fuels procured in the United States, it is unclear which national security-related emissions are to count against a particular Party's emissions budget.

as U.S. emissions all military activity
in U.S. territory, as well as fuel purchased
in the United States.

- o In its national communications under the 1992 Convention, the United States has counted ~~[what?]~~.
- o The "bunker fuels" issue has indeed been the subject of international discussion under the 1992 Convention. ~~[What positions do various countries have, including the United States?]~~
- o In the absence of clarifying the meaning of "its emissions," it would be difficult to judge against whom the emissions noted above would be counted.
- o One point should be noted in addition. The United States take the view that, in order to apply to a wartime situation, an international environmental agreement would have to provide so expressly. Under this view, emissions attributable to armed conflict might not be covered by the new agreement. On the other hand:
 - this would not address the other situations DOD is concerned about, e.g., peacekeeping, humanitarian operations, etc.
 - other countries, including Germany, do not agree with this position.

Defense Emissions Data

3 Nov 97

Overall DOD Emissions

Overall Emissions (FY 96, World-wide)

- a. US creates 20% of world total emissions [US creates approx 1,715 Million Metric Tons Carbon Equivalent (MMTCE)]
- b. Fed Gov't creates 1.9% of US total GHG emissions
- c. DOD creates 1.4% of US total GHG emissions (24 MMTCE)
- d. Operations and Training is 58% of DOD total (13.92 MMTCE)
- e. Operations and Training is 0.8% of US total (approx 14 MMTCE out of 1,715 MMTCE)

Carbon Tax Impacts

Emissions/fuel data associated with military activity:

- a. Operating expenses and fuel costs (\$M)

		<i>operations & maintenance</i> O & M		Fuels	
	FY96	FY97		FY96	FY97
	ACTUAL	ESTIMATE			
Total	\$82,546	\$76,082		\$2,955	\$2,951

* Does not include DHP, environmental and other misc O&M accounts

** Does not include fuel purchased in non-O&M accounts (e.g., RDT&E test ops)

- b. Based of FY 96 costs, fuels represents 3.5% of Services' O&M costs

c. Gross estimate of additional fuel costs for various carbon tax rates based on FY 96 fuel costs

Carbon Tax	TOTAL w/Tax	Increase due to Tax
10	\$3,014M	\$59M
25	\$3,132M	\$177M
50	\$3,309M	\$354M

6% Daily Fuel Use (Friendly Country)

[98-1]

Air bridge fuel (fueled in Friendly Country) during DESERT SHIELD/DESERT STORM from Aug 90 to Feb 91

Average fuel use equaled 2.68 Mgal/day which equaled 6% of that friendly countries daily expenditure rate

Yields average monthly demand of 80.4 Mgal

Yields 562.8 Mgals/7 month period

Conversion Table

Tons of carbon/unit fuel

Coal	Oil	Gasoline	Natural Gas
0.849	0.130	0.0027	0.018

Addition to price (dollars)

Carbon Tax	Coal per ton	Oil per barrel	Gasoline per gallon	Natural Gas per 1000 cubic feet
10	8.49	1.30	0.03	0.18
25	18.23	3.25	0.07	0.40
50	32.45	6.50	0.14	0.80
75	48.68	9.75	0.20	1.20
100	64.90	13.00	0.27	1.60
125	81.13	16.25	0.34	2.00
150	97.35	19.50	0.41	2.40
175	113.58	22.75	0.47	2.80
200	129.80	26.00	0.54	3.20
225	146.03	29.25	0.61	3.60
250	162.25	32.50	0.68	4.00

1994 base prices (DoE Annual Energy Review)

Coal	Oil	Gasoline	Natural Gas
per ton	per barrel	per gallon	per 1000 cubic feet
19.43	15.59	1.17	1.33

Percentage increase in price

Carbon Tax	Coal per ton	Oil per barrel	Gasoline per gallon	Natural Gas per 1000 cubic feet
10	33%	8%	2%	9%
25	84%	21%	6%	22%
50	167%	42%	12%	44%
75	251%	63%	17%	66%
100	334%	83%	23%	87%
125	418%	104%	29%	109%
150	501%	125%	35%	131%
175	585%	146%	40%	153%
200	668%	167%	46%	175%
225	752%	188%	52%	197%
250	835%	208%	58%	219%

Sources:

Poterba (1991) Global Warming Policy: A Public Finance Perspective, JEP, Fall, 1993, p. 52;
DoE 1994 Annual Energy Review;

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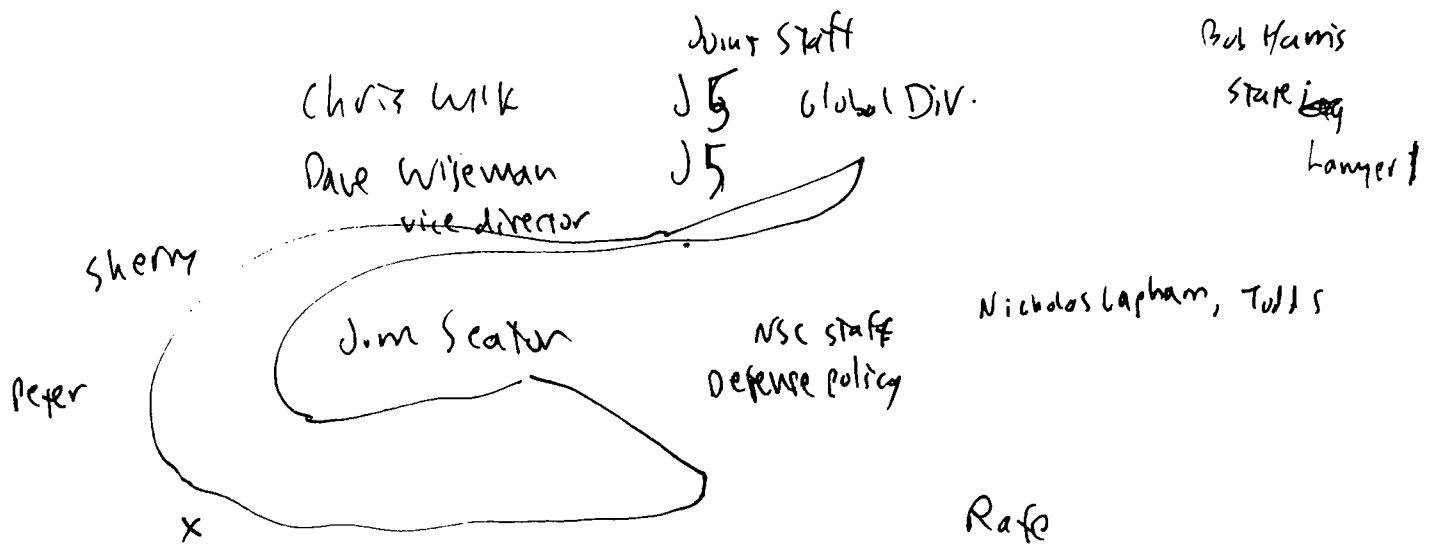
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10/30/97

Climate Treaty/National Security Exemption

1. Scope and Rationale (DoD)
2. Current Diplomatic Situation (State)
3. Legislative Developments (DoD)

Chris - ENVW security -



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07 NOV 1997

MEMORANDUM FOR SEE DISTRIBUTION

Subject: National Security Provision in Kyoto Protocol on Global Climate Change

Enclosed is for use at a Deputies Committee meeting to establish a U.S. Government position addressing military concerns in preparation for both the Kyoto Protocol of the United Nations Framework Convention on Climate Change and a Senate Armed Services Committee hearing. This Deputies Committee meeting needs to occur before my Senate Armed Services Committee hearing currently scheduled for 1:00 PM on November 12, 1997.

The discussion paper lays out the background, policy issues, current U.S. position, discussion, options and potential impacts on military readiness of a possible Global Climate Change Protocol. I would appreciate hearing your thoughts after you have read it, and look forward to the Deputies Committee meeting.

Sherri W. Goodman
Deputy Under Secretary of Defense
(Environmental Security)

Enclosure:
As stated

DISTRIBUTION:

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11/06/97 19:00 PM

DISCUSSION PAPER

Subject: National Security Provision in Kyoto Protocol on Global Climate Change

Purpose: To frame a discussion to address military concerns about the proposed Kyoto protocol on reducing greenhouse gas emissions. The resultant position should provide the framework for a domestic implementation policy and provide guidance to the negotiating team that will be in Kyoto, 1 to 10 Dec 97.

Background: The 1992 UN Framework Convention on Climate Change (FCCC) committed the US and other signatories to voluntary reductions in greenhouse gas (GHG) emissions. The FCCC has not succeeded and signatories are now negotiating an amendment mandating specific GHG emission reduction goals. These are to be formalized in the Kyoto Protocol in December 1997. The Protocol does not address national security and military activities.

The President's National Security Strategy of shaping the international environment is composed of three core objectives: "to enhance our security with effective diplomacy and with military forces that are ready to fight and win; to bolster America's economic prosperity; and to promote democracy abroad." Achieving these objectives dictates that the US sustain our active engagement abroad to promote regional security by preventing and reducing the wide range of diverse threats. The US will act in alliance or partnerships when our interests are shared by others, and unilaterally when demanded by compelling national interests. To achieve the NSS, both our domestic implementation strategy and the Protocol must protect national security.

On 30 September 1997 the Deputy Secretary of Defense sent letters to the Deputy Secretary of State and the Assistant to the President for Economic Policy stating that the proposed Protocol must protect national security by preserving the Nation's ability to conduct military operations with trained forces.

In the President's 22 October 1997 remarks on global climate change he noted that US efforts to reduce emissions over the next decade will be reviewed regularly to "see what works best for the environment, the economy, and **national security** (emphasis added)." DoD fully supports the three key elements of the President's framework for the Kyoto Protocol: to commit to the binding and realistic target of returning to 1990 GHG emission levels between 2008 and 2012; to embrace flexible mechanisms for meeting these limits; and to engage both industrialized and developing countries in meeting the challenge of climate change.

Uniformed members of OSD and the Joint Staff participated in the latest Protocol negotiations in Bonn. The negotiating team made the following verbal intervention to all delegations raising the issue of national security and military operations in the protocol and provided a written copy for the record.

Our delegation would appreciate the support of all members of this body in examining how we can protect world peace while preserving our planet through some kind of national security or national emergency provision. This Protocol must not create a conflict between our collective ability to preserve peace and our desire to reduce greenhouse gas emissions. We must pursue both goals. We believe we have an obligation to the world community, our individual nations, and ultimately to the men and women who serve in our military forces to carefully consider how we address military operations in this Protocol. We look forward to discussing this issue further in the preparations for Kyoto.

DoS demarched NATO allies and other selected nations, asking for their reaction to the concept of an NSP. Overall reaction thus far ranges from neutral to firmly supportive. A similar

solicitation will be made via the CINCs on a mil-to-mil level. OSD and Joint Staff representatives will be at the Tokyo ministerial talks and at the Kyoto Conference in December.

Policy Issues:

- Ensure US ability to execute the National Security Strategy with trained and ready forces whose range of operational options is not circumscribed by artificial and unintended consequences of emissions limitations.
- Answer questions and concerns regarding impacts on DoD's ability to execute the National Security Strategy given the undetermined nature of the Protocol and the US implementation

DOD Greenhouse Gas Emission Facts: DOD continues to reduce its energy use.

1. In 1990, the US reported greenhouse gas emissions of 1618 million metric tons carbon equivalent (MMTCE). For 1990, DOD estimates that its greenhouse gas emissions were 28 MMTCE, or about 1.7% of US emissions.

2. By 1996, US emissions grew to 1753 MMTCE, while DOD's emissions dropped to 24 MMTCE, or about 1.4% of US emissions (0.28% world-wide emissions), a reduction of 22%.

Discussion: The following points should be considered in selecting one of the listed options:

1. Mission requirements drive DOD's energy use and associated greenhouse gas emissions.
 - a. DOD's total emissions are divided into 2 categories: facilities and non-tactical vehicles; which accounts for 42% and; operations and training which accounts for 58%.
 - b. DOD achieves its current energy conservation goals through closely monitored energy consumption programs, many of which are driven by budget restrictions.
 - c. Despite surges in operational requirements, DOD currently provides sufficient ready forces to meet national security requirements, but does so by maintaining a delicate balance between ready and non-ready forces.
 - d. Any reduction in access to sufficient fossil fuels caused by emissions limitations could disrupt US military readiness and global access and ultimately contribute to mission failure.
 - e. Sending non-ready forces into any operation is not an option for US forces.
 - f. US military forces can expect to remain forward deployed in accordance with the National Military Strategy. Today the US military is based in nearly 40 countries; deployed in 70 countries; and involved in 11 multi-national exercises. Over the past decade, the US has responded to major regional conflict and conducted an array of major contingency operations that include: UN sanctions monitoring and enforcement (Northern and Southern Iraq); UN, NATO, and other multinational peacekeeping operations (Bosnia, Sinai, Peru-Ecuador, and Macedonia); disaster relief (Indonesia Forest Fires, Operation Sea Angel - Bangladesh); humanitarian assistance (Rwanda, Operation Provide Comfort); noncombatant evacuation operations (Sierra Leone, Liberia, and many others); maritime interception operations (Persian Gulf); migrant rescue and support (Haiti, Cuba); and deployments in support of democratic governments (Haiti).
 - g. DOD weapons systems and equipment are designed for combat performance and have a much longer life cycle than private sector airframes, vehicles, and equipment.

- h. We do not seek special treatment for areas where DoD is similar to the private sector - for facilities, non-tactical vehicles, and weapons system manufacturing.

2. Given the multinational characteristic of contingency operations, we should not establish an international system that creates a disincentive to countries where they are forced to choose between national security and meeting global climate change targets. Currently it is unclear how US emissions will be counted when our forces are based in a foreign country during peacetime or deployed during military operations. Under the Protocol, if emissions from fuel purchases are included in the selling country's national totals, the nation may be forced to choose between domestic economic growth and support of international military activities.

3. Airlift is key to US strategic mobility and is dependent on obtaining support from friendly governments in a crisis. How emissions from bunker fuels used in aviation and shipping are allocated may have an impact of the decisions of other governments. For example, during Desert Shield/Desert Storm as part of the air bridge, US forces purchased an average of 2.7 million gallons a day (563 million gallons over a seven month period) of fuel from Spain. This equates roughly to six percent of Spanish daily fuel consumption during that time period.

- a. For 1998, projected annual DoD carbon dioxide emissions from petroleum combustion in several countries are listed below. The figures represent the emissions from US-forces based in each country. The figures do not include facility energy. Host country 1994 annual carbon dioxide emissions from petroleum combustion are also shown.

Country	DoD Emissions	Total Country	DoD % of total
	MMTCE	MMTCE	
Germany	0.87	114.8	0.8%
Italy	0.16	73.4	0.2%
Japan	0.58	226.1	0.3%
Korea	0.52	74.0	0.7%

- d. b. Carbon dioxide emissions for several types of contingency operations are listed below. The figures do not include facility energy. For comparison, annual carbon dioxide emissions from fuel combustion in each country are shown.

Operation/Exercise	DoD Emissions	Total Country	DoD % of total
	MMTCE	MMTCE	
Desert Storm (Saudi Arabia)	4.91	44.2	11.1%
Restore Hope (Somalia)*	0.21	no data	-
Bright Star (Egypt)*	0.007	17.9	0.04%
Air Expeditionary Force (Jordan)*	0.017	3.26	0.5%

* Figures include all petroleum used in the exercise
(includes transportation to and from exercise site)

- c. Potential host nation restrictions on non-carbon based greenhouse gases (GHG) are also a major concern. For example, HFCs, which are GHGs, are used as cooling and fire protection agents in facilities, ships, submarines, and aircraft. HFCs will be used in weapon systems for 50-plus years and have a global warming potential one hundred times that of carbon dioxide. As such, some countries may ban the use or prohibit the import/export of HFCs (even in US weapon systems). The EU is currently considering new rules that would severely restrict the import and transport of CFCs and Halons. Examples of critical non-carbon based greenhouse gas uses are listed below:

(1) HFCs

HFC-125	V-22 (30 lbs per aircraft), F-22 (3800 lbs per aircraft)
HFC-227ea	Carriers (7400 lbs per ship), LPD-17 (3000 lbs)

- HFC-134a All services -- weapon system air conditioning systems
(For example: Navy -- 880,000 lbs installed, life 70+ years)
(2) PFC-116 Radar systems on Navy and AF aircraft
(3) SF₆ All ground-based radar control systems

4. Under the President's approach for implementing a climate change protocol domestically, a market-based permit system is envisioned that would include both domestic and international permit trading. The price impacts from a market-based permit system are difficult to estimate.

- a. For FY96, DOD's operations and maintenance budget was \$82.5 billion. Total energy expenses amounted to approximately \$5.6 billion. Of this, about \$3.0 billion was spent on operational fuels. The remaining \$2.6 billion purchased facility and non-tactical vehicle energy.
- b. The potential incremental costs that could result from a greenhouse gas permit systems are listed below.

Carbon Price (per ton)	Total costs with "tax"	Incremental cost
\$10	\$5.73B	\$143M
\$25	\$5.92B	\$334M
\$50	\$6.26B	\$671M

5. In considering how to address the potential impacts to DOD operations and training that may result from a new climate change protocol, individual issues can be addressed either in the protocol or in domestic implementation. Since decisions on the protocol must be made now, USG policy is needed for issues that can best be resolved internationally in the protocol or in subsequent meetings of the parties. The following matrix displays the key criteria for considering operations and training issues in US only (unilateral) and multilateral military operations.

	Unilateral	Multilateral
Operations	Protocol*	Protocol
Training	Protocol or US policy	Protocol

* Note: There are some operations that take place within the US that could be addressed in US policy.

Options and Potential Impacts:

1. **Total exemption for operations and training (international and domestic).** Achieved in Kyoto Protocol language

Impact:

- Preserves US ability to execute National Military Strategy by excluding operations and training from protocol requirements
- Maintains full readiness
- Emissions limitations would not be a disincentive for US and allied military commitments including basing, deployments, operations and training
- US readiness could remain independent of other nations' domestic implementation
- Compliance of other nations may be inconsistent and asymmetrical to US.

2. **Exempt international operations and training (unilateral and multilateral) in protocol language.** Domestic training and operations would be addressed in US domestic implementation policy

Impact:

- Emissions are less of a decision factor for international military commitments
- Emissions would not be a factor in host country decisions on basing, deployments, operations and training
- Allows host country to exclude foreign military emissions within host country
- Overseas operations and training - unilateral/multilateral - are exempted from protocol requirements
- US readiness overseas remains independent of other nations' domestic implementation policies
- Preserves US ability to fulfill international commitments
- Would not exempt domestic operations and training from protocol requirements

3. Exempt multilateral operations and training in the protocol language. Domestic training and operations and overseas unilateral operations and training would be addressed in US domestic implementation policy

Impact:

- Emissions are less of a decision factor for multilateral international military commitments
- Emissions would not be a factor in host country decisions on basing, and multilateral deployments, operations and training
- Allows host country to exclude foreign military emissions within host country when engaged in multilateral activities
- Overseas multilateral operations and training are exempted from protocol requirements
- US readiness overseas will be dependent on host nations' domestic implementation policies as they impact unilateral US activities
- Preserves US ability to fulfill multilateral international commitments
- Would not exempt domestic operations and training or unilateral overseas operations and training from protocol requirements

4. Exempt multilateral operations in the protocol language. All other training and operations would be addressed in US domestic implementation policy

Impact:

- Provides exemption for some exceptional circumstances - multilateral operations
- Impacts US ability to conduct unilateral operations
- Lack of a training exemption degrades allied interoperability and US capability to fulfill international commitments

5. No protocol exemption. Operations and training addressed in US domestic implementation only.

Impact:

- Emissions would be a decision factor for military commitments by US and other nations
- US operational capability and flexibility overseas would be dependent on other nations' domestic implementation policies

6. No relief in Protocol or in US implementation policy

Impact:

- Emissions could be a significant decision factor for military commitments by US and other nations
- US readiness would be dependent on US implementation policies as well as those of other nations
- Incremental costs of this option are not fully identifiable but could be expected to be relatively substantial when applied to a declining DoD resource base.

FAX

Date: 7 Nov 97Number of pages including cover sheet: 7

**To: Jeffrey Frankel
Todd Stern
Peter Orzag**

Phone:

Fax phone: 202 395-6958

202 456-2215

202 456-2223

CC:

**FROM: COL Kurt Kratz
Office of the
Deputy Under Secretary of Defense
(Environmental Security)**

Phone: (703) 697-1013

Fax phone: (703) 693-7011

REMARKS:☐

Urgent

☒

For your review

☐

Reply ASAP

☐

Please comment

Gentleman,
Ms Sherri Goodman asked me to forward a bcc to you.
Colonel Kurt Kratz



ACQUISITION AND
TECHNOLOGY

OFFICE OF THE UNDER SECRETARY OF DEFENSE

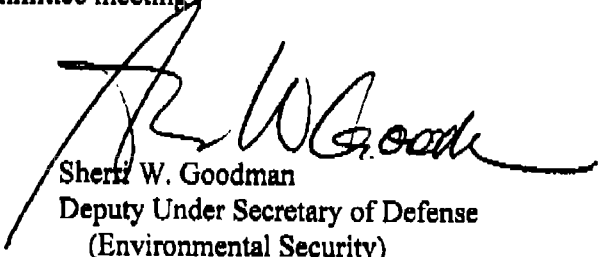
3000 DEFENSE PENTAGON
WASHINGTON, DC 20301-3000

Mr. David Sandalow
Council on Environmental Quality
Old Executive Office Building, Room 365
Washington, DC 20501

Dear Mr. Sandalow

Enclosed is the discussion paper I promised you for use at a Deputies Committee meeting to establish a U.S. Government position addressing military concerns in preparation for both the Kyoto Protocol of the United Nations Framework Convention on Climate Change and a Senate Armed Services Committee hearing. This Deputies Committee meeting needs to occur before my Senate Armed Services Committee hearing currently scheduled for 1:00 PM on November 12, 1997.

The discussion paper lays out the background, policy issues, current U.S. position, discussion, options and potential impacts on military readiness of a possible Global Climate Change Protocol. I would appreciate hearing your thoughts after you have read it, and look forward to the Deputies Committee meeting.


Sherri W. Goodman
Deputy Under Secretary of Defense
(Environmental Security)

Enclosure:
As stated

cc:
Mr. Rafe Pomerance
MG David Weisman

Environmental Security



Defending Our Future

DISCUSSION PAPER

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(For example: Navy -- 880,000 lbs installed, life 70+ years)
- (2) PFC-116 Radar systems on Navy and AF aircraft
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4. Under the President's approach for implementing a climate change protocol domestically, a market-based permit system is envisioned that would include both domestic and international permit trading. The price impacts from a market-based permit system are difficult to estimate.

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* Note: There are some operations that take place within the US that could be addressed in US policy.

Options and Potential Impacts:

1. **Total exemption for operations and training (international and domestic).** Achieved in Kyoto Protocol language

Impact:

- Preserves US ability to execute National Military Strategy by excluding operations and training from protocol requirements
- Maintains full readiness
- Emissions limitations would not be a disincentive for US and allied military commitments including basing, deployments, operations and training
- US readiness could remain independent of other nations' domestic implementation
- Compliance of other nations may be inconsistent and asymmetrical to US.

2. **Exempt international operations and training (unilateral and multilateral) in protocol language.** Domestic training and operations would be addressed in US domestic implementation policy

Impact:

- Emissions are less of a decision factor for international military commitments
- Emissions would not be a factor in host country decisions on basing, deployments, operations and training
- Allows host country to exclude foreign military emissions within host country
- Overseas operations and training - unilateral/multilateral - are exempted from protocol requirements
- US readiness overseas remains independent of other nations' domestic implementation policies
- Preserves US ability to fulfill international commitments
- Would not exempt domestic operations and training from protocol requirements

3. Exempt multilateral operations and training in the protocol language. Domestic training and operations and overseas unilateral operations and training would be addressed in US domestic implementation policy

Impact:

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- US readiness overseas will be dependent on host nations' domestic implementation policies as they impact unilateral US activities
- Preserves US ability to fulfill multilateral international commitments
- Would not exempt domestic operations and training or unilateral overseas operations and training from protocol requirements

4. Exempt multilateral operations in the protocol language. All other training and operations would be addressed in US domestic implementation policy

Impact:

- Provides exemption for some exceptional circumstances - multilateral operations
- Impacts US ability to conduct unilateral operations
- Lack of a training exemption degrades allied interoperability and US capability to fulfill international commitments

5. No protocol exemption. Operations and training addressed in US domestic implementation only.

Impact:

- Emissions would be a decision factor for military commitments by US and other nations
- US operational capability and flexibility overseas would be dependent on other nations' domestic implementation policies

6. No relief in Protocol or in US implementation policy

Impact:

- Emissions could be a significant decision factor for military commitments by US and other nations
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- Incremental costs of this option are not fully identifiable but could be expected to be relatively substantial when applied to a declining DoD resource base.

9/13/97 draft

FEDERAL GOVERNMENT LEADERSHIP on ENERGY AND CARBON EMISSIONS REDUCTIONS

The Federal Government has a record of accomplishment in improving energy efficiency and reducing carbon emissions in its own facilities and vehicles:

- Energy efficiency in federal buildings has improved so that energy use per gross square foot has declined 8% from 1990 to 1996
- When combined with federal government downsizing, total energy usage in buildings is down 15% in that same period
- Energy use in federal vehicles and equipment dropped 21% during that same period
- Overall, the federal government's total energy usage in 1996 was 18% below 1990 levels
- Carbon emissions from the federal government's energy usage has also declined by ...% from 1990 to 1996
- With an energy bill of over \$11 billion in 1990, the federal government brought that down to \$8 billion in 1995, saving taxpayers over \$3 billion per year

Now, the federal government could undertake a "[7] point plan" to continue this leadership over the next decade, to keep the government's energy use and carbon emissions below [1990 levels] by [2010].

Options for the actions that could be included in such a plan have been identified by an interagency working group and are in the process of being refined. A working draft is attached.

Proposals for Improving Federal Facility Energy Efficiency and reducing Carbon Emissions

The following ideas for Federal Energy Efficiency are split into "A" and "B" lists. The "A" list represents ideas that appear to have good potential as a Presidential initiative. The "B" list items are lower priority or not as fully developed. Those with a check in front of them have been written up in "one-pager" format and are attached. Those with an "r" in front had a one-pager, but it needs to be rewritten due to consolidation of proposals or a shift in focus.

"A" List

1. ✓ **Promote the use of ESPCs and disseminate guidelines for scoring.**
2. ✓ **Reinvent Federal Procurement**
 - **Training and Outreach:** Publish best practices guide on buying for the environment (FEMP/OFPP). Expand government-wide training on energy efficiency -- both buildings construction and energy-efficient products. Sponsor another "Buy Environmental" trade fair similar to the one held for recycled products in 1992.
 - **Practices and Procedures:** Establish FEE-led or OMB-led interagency implementation group, which would review management directives and edit, update, and consolidate Executive Orders on energy and the environment to the maximum extent practical. Use alternative contracting vehicles to acquire energy efficient and environmentally-preferable products. Specify purchase of products in the top 25 percent of class for energy efficiency or conforming to Energy Star standards whenever possible. Raise the visibility/placement of the Federal Environmental Executive -- move to CEQ -- and expand the FEE's role to include energy efficiency. (DOE, EPA)
3. r **PNGV-like programs for large engines (DOD).** medium and heavy diesels, managed by DOD/TACOM (Tank and Automotive Command), and turbines for aircraft, managed by NASA and DOD.
4. r **Sustainable design for Federal facilities.** This would include:
 - "Cool Communities" strategies (reflective roofs, additional trees, lighter-colored paving),
 - passive solar designs,
 - increased use of geothermal heat pumps,
 - increased use of and solar and renewable energy, and

- increased use of combined heat and power systems.
5. **Million Solar Roofs.** Federal facilities will participate in the Million Solar Roofs program
 6. **Consolidation, demolition, and recycling of excess military facilities (DOD).**
 7. ✓ **Allow ESPCs to be used for all facilities where Federal funds pay the energy bills even indirectly (i.e. public housing). (DOE)**
 8. **Continued downsizing of the Federal government**
 9. **Use popular National Park facilities as energy efficiency demonstration and education sites**
 10. **Executive Order for agencies to reduce carbon emissions**

“B” List

1. ✓ Restore some direct Federal funding for energy-efficiency projects (\$150-200 million).
2. Create a “Cool Roofs” initiative (a subset of Cool Communities type activities) for smaller government offices and residential facilities. (Big office buildings don’t have a large enough (roof area)/(building volume) ratio for this to make much difference) (EPA).
3. ✓ Improve coordination across many programs and agencies that have a significant impact on Federal energy expenditures: Weatherization, LIHEAP, housing subsidy program, Bureau of Indian Affairs. (DOE)
4. Increased use of combined heat and power at Federal facilities (EPA).
5. ✓ Support the use of State Grant funds to facilitate use of ESPCs and utility financing by State governments wherever possible. (The States can use the grant money for this purpose already, so there’s not much new here.) (DOE)
6. ✓ Create a FEMP “SWAT” team that would provide consulting on energy waste and would be paid from a fraction of the savings they deliver to the client agencies. (DOE)
7. ✓ Support an Energy Bank bill to provide a revolving fund for energy-efficiency investments in Federal facilities. (DOE)
8. ✓ Allow sale of electricity from any Federal facility that can support a cogeneration load. (DOE)
9. ✓ Support bulk (guaranteed) procurement of energy-efficient equipment to provide an incentive for manufacturers to begin production of advanced products. (DOE)
10. ✓ Allow ESPCs to be used for mobility energy (i.e. ships, planes, trucks). There are two interpretations for this. A tight definition just expands ESPC use to ships for “hotel load” energy use -- HVAC, laundry, lighting, etc. A broad definition would allow ESPC financing for retrofitted/new trucks and propulsion energy on ships and planes. (DOE)
11. ✓ “Green Power” Purchasing: include a requirement for some renewable energy in power purchase contracts.

"A" List Background Papers

These papers provide details about the initiatives on the "A" list -- i.e. those that are the best candidates for announcement as Presidential initiatives.

Initiative 1: Promote the use of ESPCs

Short Title: Promote the use of Energy Savings Performance Contracts (ESPCs) at Federal facilities.

Description: ESPCs allow Federal facilities to have energy efficiency improvements made and financed by private-sector contractors, with the investment repaid through payments based on the energy savings that are achieved. Such contracts are currently in use, but not yet widely. This initiative would promote the use of ESPCs and would provide specific guidance on scoring, desirable terms, etc. to ensure that agency procurement officials feel comfortable with the process and understand that it is approved by OMB.

- Agencies will have to score the full potential liability (total payments under the contract) as advance contract authority, but will only need to have appropriations in hand sufficient to cover the first year's payments.
- Because of long-term uncertainty over government downsizing and the potential for changes in facility usage, OMB recommends ESPC contingent liability periods of no more than 7 years. ESPCs with contingent liability periods extending more than 7 years should undergo a review by senior-level agency management.

Potential Benefits: Somewhere between \$3 billion to \$6 billion of investments are needed in Federal facilities to achieve the Administration's efficiency-improvement goals. It will be difficult or impossible to finance that through direct appropriations, so ESPCs will be needed as the major funding channel. The efforts are intended to reduce Federal energy consumption per square foot of non-industrial facilities by 30 percent by 2005, relative to a 1985 baseline. (We have already achieved about a 15 percent reduction.) This will translate into a savings of about \$500 million per year compared to current levels of energy spending.

Affected and Lead Agencies: OMB to issue guidance and encouragement to agencies. DOE and DOD to continue with multiple-award contracts ("super ESPCs") that will allow individual ESPC projects to be awarded with only "mini competitions."

Potential Problems and Costs: The government will be exposing itself to contingent termination-cost liabilities in the off chance that the government decides to close or dispose of a building where ESPC improvements have been made. The probability of this occurring in any given ESPC facility is judged to be sufficiently small that the policy as a whole is still very beneficial. Agencies will have to seriously consider the expected use of a facility over the life of a proposed ESPC, however.

Initiative 2: Reinvent Federal Procurement

When Federal energy managers are queried about problems or barriers to implementation, inevitably, they often identify procurement and policy constraints as major obstacles to accomplishing their job. The following management and procurement initiatives are recommendations to boost and highlight the Federal Government's role as a leader in responsible energy spending and make it easier and cheaper to get results.

- Develop a Best Practices Guide on Buying for the Environment to serve as a resource for agencies to use in establishing new programs for conserving energy and purchasing efficient quality products or services at the lowest cost but with the highest rate of return.
- Establish a high level interagency implementation group on "Federal Energy Consumption" headed by OMB to address policy concerns and assign initiatives for wide-spread implementation
- Encourage/Direct systematic reviews of agency building specifications and design, facility management and other management directives and training materials and eliminate existing biases that inhibit the purchases of energy-efficient products and services
- Expand and publicize available training initiatives on energy efficiency by subsuming and highlighting the importance of energy conservation issues in existing management training programs to make scarce training dollars go further.
- Consolidate Executive Orders...a single point of contact for implementation concerns, reporting, and coordination of the *five* White House awards programs established by them will facilitate implementation, information dissemination and get more exposure for results attained in the Federal agencies.
- Establish and make better use of contracting vehicles for green purchasing. By establishing more multiple award contracts (MACs) and GSA multiple award schedules (MAS) for energy products and services, and by modifying GSA Advantage (an on-line catalog) to highlight them, Federal agencies could procure energy efficient products and services faster and cheaper.
- Develop targeted monetary and non-monetary incentives to prompt both program and contracting personnel to acquire more energy efficient products and services, without undermining competition or value.

These recommendations and initiatives would go a long way in reinvigorating lagging federal implementation of energy conservation and environmental programs. Although consensus still needs to be reached on some details of the approaches, implementation could begin immediately

and possibly be accomplished within the next six months. High-level involvement and attention from OMB should prompt more aggressive action Government wide.

Initiative 3: PNGV-like programs for large engines

1. **Short Title:** Partnership for Next Generation Compression Ignition Engine
2. **Brief Description:** Establish consortium of medium/heavy diesel engine manufacturers and research organizations, to include commercial, academic and government laboratories, with the expressed purpose of accelerating technology transfer of advanced compression ignition engine technologies from research to manufacturing. The consortium shall function to (1) assure a strong competitive U.S. diesel engine and commercial heavy vehicle industrial base, (2) develop the most environmentally compliant and fuel efficient compression ignition engines that are technologically achievable and (3) integrate unique military engine performance / configuration requirements into commercial designs to ensure a common industrial base.
3. **Potential Benefits:** Coordination of non-competitive research related to diesel engine technologies will promote resource leveraging and more efficient applications of advanced technologies. Promoting direct interaction of manufacturing elements in advanced research planning and execution will accelerate technology adoption, thereby making fleets more fuel efficient and environmentally compliant in an accelerated time frame, while making research more relevant to customer needs. Government consortium sponsorship will enable greater influence over direction of technology R&D and allow DOD to buy and support future engines with minimal modifications, making both production and logistics considerations more cost effective.
4. **Affected and Lead Agencies:** Affected Agencies should include Department of Defense, Department of Transportation and Department of Energy. The lead agency should be Department of the Army, U.S. Army Tank-automotive and Armaments Command (TACOM), Tank Automotive Research, Development and Engineering Center (TARDEC), National Automotive Center (NAC).
5. **Potential Problems & Costs:** Problems include (1) Collaboration and sharing of advanced technologies amongst competitive medium/heavy engine and heavy vehicle manufacturers, (2) Integration of unique military engine requirements (i.e., power density, configurations, etc.) into commercial designs that are driven by market forces and (3) Uncertainties related to future fuel types and standards (e.g., uniformity).

Initiative 4: Sustainable design for Federal facilities

Short Title: Sustainable Design in Federal Construction

Brief Description: Sustainability applies to both individual building design and to entire community or campus/base designs.

- A sustainable building is designed to be energy efficient, easily maintained, and environmentally responsive. It is characterized as being thermally efficient, using renewable energy sources, restricting on-site water consumption, using recycled materials, minimizing waste products, avoiding contaminants, and providing clean indoor air conditions. It is also built as much as possible with recycled or recyclable materials. These objectives are typically realized by employing state-of-the-art and innovative building technologies that have been selected considering life-cycle costs.
- Sustainable development concepts for a Federal campus or military base include "cool community" initiatives, such as light-colored roofs and paving, the planting of additional trees, use of native plant species and low-chemical landscaping, and community systems such as district heating and cooling, environmentally-friendly water treatment, building layouts that minimize traffic and the need to drive, and possibly the use of innovative on-base/campus transportation systems.

Ongoing Activities: GSA is currently developing "green" design concepts. Using an actual courthouse project as a model, a panel of industry experts in sustainable design has developed recommendations for sustainable courthouse design. Currently, we are evaluating the costs and potential benefits of these recommendations in order to provide an economic basis for "green" design decisions. The recommendations and analysis will be used to revise the GSA Facilities Standards document. TVA has incorporated Sustainable Architecture in the holistic design of their Facilities Services Environmental Program that has resulted in: 81.5 % reduction in office waste to landfills; the purchase of 8M dollars worth of sustainable and recycled content building materials; 5,008 cubic meters of renovation waste diverted from landfills and the reduction of energy requirements by 22.7%.

Potential Benefits: Sustainable design should result in facilities that are life-cycle cost effective due to lower energy costs, offer lower maintenance costs, and result in less environmental degradation. Energy savings should be able to reach 30 percent relative to today's conventional practices. As Federal facilities generally have a life expectancy of over 50 years, these results have significant long term benefits to the Government and the country.

Affected and Lead Agencies: All agencies employing GSA design and construction services will benefit from sustainable design. Agencies that should take the lead and coordinate findings are those who have significant construction activity, including GSA, Department of Defense,

Department of Energy, Department of Veterans Affairs, Postal Service, Department of Interior, and Department of State.

Potential Problems and Costs: Sustainable design may have higher initial costs than conventional building construction, although on a life-cycle basis it should cost no more, and probably less. This will require a training and policy emphasis on life-cycle cost approaches to construction planning and budgeting. Effective commissioning practices, throughout the delivery process, must be offered to insure that expectations are realized, especially through Value Engineering and other design phase evaluation/selection practices.

Initiative 5: Federal Participation in Million Solar Roofs.

Short Title: Million Solar Roofs Program

Brief Description: On June 26 President Clinton announced the Million Solar Roofs Initiative. This Initiative will partner the Federal government with businesses and communities to install solar systems on one million roofs in the U.S. by 2010. The Department of Energy will lead the initiative to work with local partners to remove market barriers and strengthen demand for building applications of solar technologies. Agencies will be asked to lead by example and participate in local programs and maximize use of cost-effective solar technologies in Federal buildings.

The Federal sector is the largest single user of energy in the country and pays over \$3.8 billion annually to power and space condition 500,000 buildings. Within this building stock there is a potential to install large numbers of cost effective solar thermal and electric energy systems. These systems include photovoltaic systems, solar concentrating systems for heat and electric power, solar flat plate systems for hot water heating, solar air heating systems, and solar swimming pool heating systems. FEMP currently plans to fund the installation of the majority of these systems through a number of energy savings performance contracts targeted toward specific technologies. This will allow the private sector to finance and install these energy and cost saving systems and be reimbursed from the energy savings that they deliver to the facilities. Current FEMP contracting plans call for the following contracts to be put in place over the period from 1996 to 1998.

Solar Thermal Concentrating	\$30 million	Awarded
Photovoltaics	\$50 million	In process
Solar Air Heating	\$30 million	Award in FY 1998
Solar Thermal (flat plate, etc.)	\$50 million	Award in FY 1998
Solar Swimming Pool Heating	\$30 million	Award in FY 1998

In total these contracts will be valued at \$190 million. Additional contracts can be awarded where the contract value is exceeded for any given system.

In addition, FEMP intends to identify the most likely systems for repeat installation in Federal facilities and to provide packaged procurement specifications and catalogue listings so that agencies can buy the systems using available appropriations and purchase orders which include installation and checkout services. Combined with the ESPC purchasing above, the penetration of the solar systems should reach a total of 20,000 units in 2010. This is roughly the same percentage of the total 1,000,000 roof goal as the Federal energy use is to the national energy use, or 2%. It represents a larger percentage (4%) of Federal solar roofs delivered as a part of the

number of Federal roofs available when compared to the percentage (1.5%) of non-Federal solar roofs as part of the available roofs in the general population.

Potential Benefits: Reduce local emissions of CO₂, SO₂, NO_x and particulate matter. Increased local employment in solar deployment fields. Reduced energy costs, particularly in areas with high-utility rates or local incentives such as net-metering.

Affected & Lead Agencies: DOE, DOD, HUD, EPA, USDA, DOI, DOJ

Potential Problems and Costs: Contracting approval for periods over ten years.

Initiative 6: Consolidation, demolition, and recycling of excess military facilities

Initiative 7: Allow ESPCs to be used for all facilities where Federal funds pay the energy bills, even indirectly (i.e. public housing)

Short Title: Allow ESPC/FREE Savings to be used for all facilities where Federal money supports the energy bills even indirectly (i.e. public housing rent subsidy payments)

Brief Description: Current Federal mandates for agencies require only that they save energy in Federally-owned and leased facilities. Agencies have begun to adapt to the lack of appropriations and substituted ESPC to capture the existing energy savings in those Federal buildings. There are several Federally subsidized buildings where the owners have been encouraged to enter into ESPC contracts as a mechanism for cutting energy use and lowering the subsidy required. In general, this has met with limited success, in part, because the facilities have limited expertise in the contracting process. However, the use of Federal ESPC expertise and contracts in federally subsidized buildings could rapidly expand the energy and cost savings in those buildings.

Potential Benefits: Increase cost and energy savings could accrue to the taxpayers and better living conditions could be provided to the citizens of subsidized facilities.

Affected & Lead Agencies: DOE, HUD, HHS, SSA, BIA

Potential Problems and Costs: More complex business environment would drain existing senior resources from other Federal priorities for a short time. Legislative change required.

Initiative 8: Continued downsizing of the Federal government

Initiative 9: Use popular National Park facilities as energy efficiency demonstration and education sites

Initiative 10: Executive Order for agencies to reduce carbon emissions

"B" List Background Papers

These papers provide details about the initiatives on the "B" list -- i.e. those that are less likely candidates for announcement as Presidential initiatives but are still under consideration.

Initiative B1: Restore some direct Federal funding for energy-efficiency projects.

Short Title: Restore Some Direct Federal Funding for Energy-Efficiency Projects

Description: Until recently, the largest energy-using agencies (DOD, GSA, and DOE) received direct appropriations to fund energy-efficiency improvements at their own facilities, and DOE also received appropriations for a small fund to provide grants to smaller agencies that did not have a line-item for efficiency improvements. In FY95, the funding for these three agencies' efficiency programs totaled \$370 million (\$271m at DOD, \$46m at GSA, and \$7m for the FEMP Fund). In FY97 it is virtually zero, except for funding for a small office in DOD. This proposal would restore \$150-200 million (\$100-145m for DOD, \$35-40m for GSA, and \$15m for the FEMP Fund.)

Potential Benefits: Not all efficiency improvements can or should be financed by ESPCs. In fact, the return to the government is larger if we fund some of the projects directly. In addition, the presence of some direct funding will leverage the ESPC possibilities and will raise the visibility and influence of efficiency programs within all agencies.

Affected and Lead Agencies: OMB the lead on including the funding in agency requests; affected agencies are DOD, GSA, and DOE.

Potential Problems and Costs: Cost: \$150-200 million. Congress has cut such direct funding before -- it will require high-level support as a real priority to get such funding restored in the future.

Initiative B2: Create a “Cool Roofs” initiative for smaller government offices and residential facilities. (EPA).

Could be considered as included in Initiative 4 on the A List -- Sustainable development.

Initiative B3: Improve coordination across many programs and agencies that have a significant impact on Federal energy expenditures. (DOE)

Short Title: Improve coordination across many programs and agencies that have a significant impact on Federal expenditures for energy; Weatherization, LIHEAP, Housing subsidy payment, Bureau of Indian Affairs.

Brief Description: Currently several different Federal agencies pay costs of energy in a variety of different programs. These expenditures include itemized energy cost payments as well as non-itemized payments in the form of housing allowances, rent subsidies, and other expenses. In the aggregate, the amount the Federal government is spending on energy is far in excess of the \$8 billion per year that is tracked as direct energy spending by the agencies. The only authority that FEMP has to address energy expenditures is for the Government owned or leased buildings. Agencies that are responsible for the various indirect payments do not generally apply the same directed energy management strategies that have recently been successful in Federal facilities to the non-Federally owned buildings despite the fact that the Federal government spending is affected by energy consumption in those buildings.

This program would expand the use of Federal government contracts to help bring energy savings to the Federal subsidized facilities. A combination of transferring lessons learned and application of private financing would be used to lower the indirect payments to the facilities in accordance with the energy cost reductions delivered.

Potential Benefits: This has the potential of lowering Federal payment requirements across several agencies while providing a similar or better quality of life for the poor who are most affected by energy use and the fluctuations in energy use.

Affected & Lead Agencies: DOE, HUD, BIA, HHS

Potential Problems and Costs: The diversity of the Federal subsidy programs will make the coordination activities daunting, but the most important for subsidized housing can easily be identified. New contracts will need to be negotiated that will allow the Federal agencies to recover the savings based on savings delivered to the subsidized facilities. Legislation will be required.

Initiative B4: Increased use of combined heat and power at Federal facilities (EPA).

Initiative B5: Support the use of State Grant funds to facilitate use of ESPCs and utility financing by State governments. (DOE)

Short Title: Support the use of State Grant funding programs to increase use of ESPC and utility financing wherever possible.

Brief Description: Currently State grant funding for energy management is dependent on appropriations and many State energy offices are completely dependant on this source of funding for the bulk of their activities. The alternative approach is to follow the model proposed and implemented by FEMP for using funds generated from the savings that FEMP helps implement to pay back the cost of the initial FEMP investment. This requires a high leveraging of funding with private sector energy management funds from such sources as Energy Service Companies, utilities, or bond funding placed by the states. The State Energy Offices would then become the center for managing these highly leveraged funding sources and could rapidly expand the use of energy efficiency and renewable energy in state and local facilities. This will speed the reduction of fossil fuel use well beyond the reduction that would be possible if only the annual Federal appropriations were used.

Potential Benefits: Rapidly increases the rate at which state and local governments capture the necessary funds to implement energy saving projects. Some States have begun to implement these types of programs with DOE funding.

Affected & Lead Agencies: DOE State programs and Federal Energy Management Program

Potential Problems and Costs: Most states will need both education on benefits of this approach and the mechanics of the self-financing process from those that have already implemented it, FEMP and some State Energy Offices. State legislatures may need education on changes to legislation.

Initiative B6: Create a FEMP "SWAT" team that would provide consulting on energy waste and would be paid from a fraction of the savings they deliver to the client agencies. (DOE)

Short Title: Create an energy 'SWAT' team to attack energy waste and to be paid from a fraction of the savings they deliver to the agency. Growth of the organization would only be in accordance with their performance in saving energy and dollars. (See FEMP 98 budget)

Brief Description: Currently agencies have small energy management staffs that are generally assigned to specific regions of their departments. This proposal would create a self funded team that would be charged with providing assistance to any and all Federal agencies on a fee for service basis with the fee being paid when the agencies start to reap the savings from the project. The only thing that this organization could spend the savings on would be to generate additional savings.

Potential Benefits: This would alleviate the constant problem of insufficient up front funding to spend on 'non-mission' priorities such as energy. The use of private financing for the projects would eliminate the need for appropriations and would speed the generation of energy savings in Federal operations.

Affected & Lead Agencies: DOE (in process), DOD (Army possible)

Potential Problems and Costs: Legislation is required in some cases but most agencies have the authority to proceed with this approach but merely need to behave more entrepreneurially than in the past.

Initiative B7: Support an Energy Bank bill to provide a revolving fund for energy-efficiency investments in Federal facilities. (DOE)

Short Title: Support the Energy Bank Bill to provide a revolving fund for energy efficiency in Federal facilities

Brief Description: The Energy Bank Bill would create a revolving fund for energy management funding.

Potential Benefits: The bill will not solve all funding problems but will provide at least a base level of funding that would not be as easily subject to the annual appropriations shortfalls and competing budget requirements. Stable funding would ensure both continuing energy saving projects and help to maintain the human infrastructure that is essential to completing both appropriated and privately financed projects.

Affected & Lead Agencies: All agencies. DOE has been proposed as the lead agency for managing the fund.

Potential Problems and Costs: The current version proposes to have agencies provide a percentage of their energy expenditures to seed the fund. Agencies are reluctant to provide the funds under those conditions. Other suggestions propose an energy bond issue or similar Treasury borrowing process to capitalize the fund.

Initiative B8: Allow sale of electricity from any Federal facility that can support a cogeneration load. (DOE)

Short Title: Allow sale of electricity from any Federal facility that can support a cogen load.

Brief Description: Several Federal facilities have large thermal loads for building heating or process activities. This energy need is often met by simply burning fossil fuels to generate heat. The sites often do not generate electricity from the fossil fuel use because they are not allowed to sell the excess electricity off of the Federal facility into the marketplace.

A more efficient way to generate this heat would be to use the fossil fuel to generate electricity and use the waste heat from the process to supply the thermal load. This cogeneration process requires less fossil fuel use to provide the same amount of useful energy.

Potential Benefits: Lower costs of operation could be achieved by allowing the electricity sold on the market to be a credit toward the facilities fuel bill. Lower energy use would result from comparable thermal loads and lower environmental emissions would result from the same quantity of energy used.

Affected & Lead Agencies: DOE, DOD, Coast Guard, VA, GSA, others

Potential Problems and Costs: This will require a change in legislation to allow excess cogenerated electricity to be sold into the marketplace consistent with the demands of the existing thermal load at the Federal site.

Initiative B9: Guarantee procurement of specific energy-efficient equipment as an incentive to begin manufacturing

Short Title: Support bulk procurement of energy efficient equipment to draw innovative efficient equipment into the market (e.g. DLA a-lamp purchase)

Brief Description: There are many products which can be built and sold in large quantity but have been delayed in their entry into the marketplace by lack of an existing market. In recent years, the Defense Logistics Agency proposed to guarantee the procurement of an energy efficient light bulb (the A-lamp) which would cost more initially but would save money over its operating life. DLA was prepared to guarantee a certain purchase level to begin large-scale production at a worthwhile price.

This approach would identify those energy saving technologies which could be widely deployed in the market place but have failed to reach cost effective production merely because the market development was holding back the cost cutting from lost economies of scale. Several technologies would be reviewed and the best would be selected for the start of a demand pull purchasing strategy. The combined buying power of the Federal sector would be leveraged by additional ordering from state and other large institutional buyers. The subsidizing of non-cost effective products across the program is not envisioned, although subsidies in early years with guaranteed additional saving to balance the subsidy in later years is an option.

Potential Benefits: Speeds the introduction of additional energy efficient products into the market while cutting Federal costs.

Affected & Lead Agencies: DOE, GSA possible, DOD/DLA possible

Potential Problems and Costs: This process requires a commitment to buy products that will involve a large aggregation of demand across several Federal and non-Federal organizations.

Initiative B10: Allow ESPCs to be used for mobility energy (i.e. ships, planes, trucks). (DOD)

Short Title: Allow ESPC to be used for mobility energy (ships, planes, trucks, etc.)

Brief Description: Building energy is only about 1/2 of the total energy cost within the Federal sector. Mobility energy is roughly equal in cost to building energy use. Techniques to improve the efficiency of mobility energy use are limited compared to building energy efficiency methods. For example, ESPC authority only extends to building energy reductions. The extension of this authority to reduce energy use in mobile equipment would greatly expand the amount of energy and cost savings that could be delivered to the taxpayers. The initiative can be constructed to either apply only to "hotel loads" on mobile platforms (HVAC, lighting, laundry, etc.) or it could be applied to all energy use on the platform, including primary propulsion.

Potential Benefits: While energy and cost savings would accrue, the ability to improve mission performance of many mobile equipment is by far the greatest benefit. These improvements accrue largely to DOD and enhance the war fighting capability of the services with improvement in range, payload, capacity, endurance, and addition of redundant systems.

Affected & Lead Agencies: DOE, DOD, Transportation (USCG&FAA), NASA

Potential Problems and Costs: In some mobile equipment, tracking energy savings would be difficult if the savings were simply shifted to additional steaming hours or flying hours. There is no cost benefit provided by current accounting practices for the improved readiness this might provide. Legislative change would be required.

Initiative B11: "Green Power" Purchase Requirement

Short Title: Electricity Purchase Portfolio Standard

Brief Description: Encourage the use of electricity generating sources that are beneficial to climate change in any electricity purchase for a Federal facility. As a minimum the amount of renewable energy that is purchased through any electricity purchase contract should be in the same proportion as that specified by the State Public Utility Commission as a proportion of all electric power produced by renewable sources. Individual facilities should procure, as their first option for supply, additional percentages of electricity from renewable sources where it is the most economical energy source over the life cycle of the facility. In coordination with the purchase of renewable energy supplies, agencies and facilities should incorporate efficiency savings mechanisms in the portfolio of options and allow the use of cost savings from efficiency services to further reduce energy load on the system and thereby reduce the expense of the renewable energy system purchased.

Potential Benefits: No increased cost to the Government for delivered fossil energy reductions and expanded renewable energy delivery. Government minimum renewable energy use will be driven by state mandates for their portfolio mix of energy sources.

Affected & Lead Agencies: All agencies will see fossil energy use decline. GSA and DOD are the principle contracting organizations.

Potential Problems and Costs: Has the potential to set possible cost savings aside from efficiency measures to be used in whole, or in part, to cover possible increases in electricity costs. However, adherence to Federal life-cycle costing standards would minimize any potential to increase cost of power delivered above the minimum required by State portfolio standards.