

CARROLL LOUIS WILSON
MC 29 BOX 41, F.1722

Summit Meeting, Venice, 1980

OK

February 17, 1978

T. F. Bradshaw

D. Sternlight

Proposed Summit Meeting

I MAJOR RECOMMENDATION

We believe that one of the major problems facing industrial democracies over the next five to ten years is the possibility that a combination of inadequate energy policies and unexpected events (such as bad luck in oil exploration) may lead to large energy supply-demand imbalances by the early 1980's, resulting in another substantial jump in the real price of oil.

Our analysis has shown, for example, that a jump to about \$17.00 in the real price of oil in 1982 would lead to a severe recession comparable to the 1974-75 recession. Our analysis also shows that there is only a slight effect on the industrialized economies in the case of, for example, a 2.75 percent per year real oil price increase over a ten-year period from 1982 to 1992.

Therefore, we believe any broad initiatives must include a significant commitment to develop a policy between the Summit countries and OPEC that would lead to scheduled, gradual, oil price rises over the period 1980-1990 to avoid the likelihood of a sharp oil price jump.

We believe that such an agreement could be formal or informal. It might be triggered over the next two years or so as events unfold and lead to the perceptions that oil supply/demand imbalances are a real possibility.

II COMMENTS ON TOPICS SUGGESTED BY SOLOMON

Given the major constraint that a summit initiative involving additional budget expenditures must wait to fiscal year 1980 or beyond, we have the following comments:

1. Energy Production

Coal is a major transition fuel over the next 20 years - impediments to coal expansion in the near term are not transportation bottlenecks but are institutional obstacles to increasing demand and assuring access to long-term supply. National policies that provide a clear stimulus to coal demand and overcome institutional delays would facilitate the transition to coal.

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Assuring potential coal buyers among the Summit participants that the United States would not restrict coal exports would help. Recent studies show that, given assured demand in the form of firm long-term contracts and the resolution of policy-related obstacles, the production and transportation infrastructure can be expanded without major difficulty over the next 5 to 20 years. However, obstacles to coal slurry pipelines should be resolved quickly.

Another important focus is the marine transportation facilities required for expanded international coal trade. A significant stimulus to port development and shipping systems for coal could facilitate the growth of international coal trade and investments in coal-related transportation systems.

Given the regulatory climate in the United States, one feasible and realistic energy production initiative could be institutional support for and rapid diffusion of new energy production technologies. However, coal gasification and other synthetic fuel technologies will not be developed on a commercial scale without resolution of policy concerns, such as possible FERC jurisdiction over product prices.

One major United States initiative that could have a significant positive impact without requiring new budgeting expenditures would be to resolve the various policy concerns that are currently delaying exploration and development of conventional oil and gas. These concerns include Continental Shelf leasing policy, oil pricing policy, and natural gas price regulation.

2. Conservation

Federal grants to state and local entities for electrically powered transportation systems may be counterproductive to lower energy demand due to electric generation and transmission losses, although they do have important environmental benefits. Such incentives, if considered, should include the assurance that the additional electricity required will be from new coal fired or nuclear plants. New mass transit systems must also be carefully evaluated in terms of their long-term economic viability.

III SUMMARY

In response to Mr. Solomon's questions:

A Summit energy initiative among major energy-consuming nations is very desirable. The main issue ought to be the development of relations between the Summit countries and OPEC that would avoid the possibility of sharp economic declines and a "bidding

Mr. T. F. Bradshaw
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contest" for oil supplies, should strong oil price pressures appear in 1980's.

We believe that a spontaneous investment response would occur when uncertainties over oil supplies and prices are cleared up. However, today's uncertainties are mainly caused by the current process of developing domestic energy proposals and the uncertain legislative outcome. As a result, we do not believe a Summit agreement can effectively treat this situation.

The programs outlined in Solomon's draft, by themselves, do not seem to be appropriate to a significant economic stimulus, although a sharper focus on coal and coal-related investments could be a part of a significant stimulus package. Current developments related to coal policy are increasing uncertainties and reducing confidence significantly. The programs discussed earlier could reverse this trend.

The Summit energy measures that would most enhance investor confidence throughout the industrialized economies would be those that give some assurance that a sharp oil price dislocation and subsequent major recession would not occur, even if there should be significant oil supply/demand imbalances in the future. Additionally, those policy actions that would act to avoid potential oil supply constraints by increasing domestic supply or enhancing conservation would help to defer future pressure on oil prices.

EDG:mec

TRAVEL VOUCHER

DEPARTMENT, BUREAU, OR ESTABLISHMENT Treasury/OASIA		VOUCHER NO.
PAYEE'S NAME Carroll Wilson		SCHEDULE NO.
MAILING ADDRESS (Including ZIP Code) E40-159, MIT 77 Massachusetts Avenue Cambridge, MA 02139		PAID BY
OFFICIAL DUTY STATION	RESIDENCE	
FOR TRAVEL AND OTHER EXPENSES FROM (DATE)	TO (DATE)	TRAVEL ADVANCE Outstanding \$
APPLICABLE TRAVEL AUTHORIZATION(S) NO. DATE		Amount to be applied
None		Balance to remain outstanding \$
		CHECK NO.
		CASH PAYMENT OF \$
		RECEIVED (DATE)
		(Signature of Payee)

TRANSPORTATION REQUESTS ISSUED

TRANSPORTATION REQUEST NUMBER	AGENT'S VALUATION OF TICKET	INITIALS OF CARRIER ISSUING TICKET	MODE, CLASS OF SERVICE, AND ACCOMMODATIONS *	DATE ISSUED	POINTS OF TRAVEL	
					FROM-	TO-

** Certified correct. Payment or credit has not been received.

March 3/78 (Date)

Carroll Wilson (Signature of Payee)

AMOUNT CLAIMED	Dollars	Cts
→	190	50

Approved. Long distance telephone calls are certified as necessary in the interest of the Government.

(Date) (Signature of Approving Officer)

NEXT PREVIOUS VOUCHER PAID UNDER SAME TRAVEL AUTHORITY
VOUCHER NO. D.O. SYMBOL DATE (MONTH-YEAR)

Certified correct and proper for payment:

(Date) (Authorized Certifying Officer)

DIFFERENCES:	
Total verified correct for charge to appropriation (s) (initials)	
Applied to travel advance (appropriation symbol)	

NET TO TRAVELER →

ACCOUNTING CLASSIFICATION

* Abbreviations for Pullman accommodations: MR, master room; DR, drawing room; CP, compartment; BR, bedroom; DSR, duplex single room; RM, roomette; DRM, duplex roomette; SOS, single occupancy section; LB, lower berth; UB, upper berth; LB-UB, lower and upper berth; S, seat.
** FRAUDULENT CLAIM—Falsification of an item in an expense account works a forfeiture of the claim (28 U.S.C. 2514) and may result in a fine of not more than \$10,000 or imprisonment for not more than 5 years or both (18 U.S.C. 287; id. 1001).
***If long distance telephone calls are included, the approving officer must have been authorized in writing by the head of the department or agency to so certify (31 U.S.C. 680a).

Expenses
Professor Carroll L. Wilson
February 16-17, 1978
Washington, D.C./Treasury

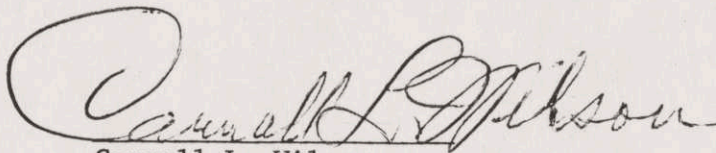
Airticket (attached) \$113.00

February 16

Subway/Boston	5.50
Taxi/Boston	6.50
Taxi/Washington	9.00
Taxi/Washington	8.50

February 17

Hotel & 2 breakfasts (Potter) (Cosmos Club)	24.50
Taxi/Washington	6.50
Taxi/Providence to Seekonk, Mass. (Wilson home / no receipt)	<u>22.00</u>
	190.50


Carroll L. Wilson

MARCH 3, 1978
Date

Expenses
Professor Carroll L. Wilson
February 16-17, 1978
Washington, D.C./Treasury

Airticket (attached) \$113.00

February 16

Subway/Boston	50.00
Taxi/Boston	6.50
Taxi/Washington	9.00
Taxi/Washington	8.50

February 17

Hotel & 2 breakfasts (Potter (Cosmos Club)	24.50
Taxi/Washington	6.50
Taxi/Providence to Sherborn Sherborn, Mass. (Wilson home / no receipt)	<u>22.00</u>
	190.50

Carroll L. Wilson

Date



THE UNDER SECRETARY OF THE TREASURY
FOR MONETARY AFFAIRS

WASHINGTON, D.C. 20220

February 23, 1978

Professor Carroll Wilson
E40-159
MIT
77 Massachusetts Avenue
Cambridge, MA 02139

Dear Dr. Wilson:

To get the process going to reimburse you for your recent trip to Washington, I need the following items to make out the Travel Voucher which is enclosed.

- (1) Your signature on the voucher where the red "X" is located.
- (2) Your airline ticket stubs.
- (3) Any other expenses you incurred, i.e., taxi fares to and from the airport, etc. (If any taxi fare is over \$15, I need a receipt or certification of payment)

If you could please send these items to me in the enclosed envelope, I will take care of the rest.

Thank you.

Sincerely,

Terry L. Brown
Secretary for
Richard W. Fisher

Enclosures



THE UNDER SECRETARY OF THE TREASURY
FOR MONETARY AFFAIRS

WASHINGTON, D.C. 20220

JAN 31 1978

JAN 26 1978

Dear Professor Wilson:

I was pleased to hear from Dick Fisher that you would be willing to serve on a panel of consultants which will assist me in reviewing some potential energy initiatives for the upcoming Summit meeting. The other members of the panel are Thorton Bradshaw and F. Gerard Adams.

As you know, a Summit is planned for Bonn in the latter half of the summer. While efforts to formulate an agenda for that meeting are only now just beginning, it seems inevitable that the global energy situation and what to do about it will be a key discussion item. Accordingly, we are exploring ways to make these discussions constructive and innovative. Specifically, we are exploring the feasibility of a Summit initiative that would serve the dual purpose of reducing energy dependence on imports of Summit countries and stimulating badly needed investment and GNP growth at the same time, along the lines suggested in the attached memo.

I would like to meet with you and Messrs. Bradshaw and Adams sometime in mid-February to discuss this energy induced stimulus concept and how to approach it.

Fisher will be contacting you shortly to brief you further and arrange for a mutually convenient meeting time. In the meantime, I would appreciate your treating this matter confidentially.

Sincerely,

Anthony M. Solomon

Attachment

Professor Carroll Wilson
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MIT
77 Massachusetts Avenue
Cambridge, MA 02139

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The global energy problem would be a logical focal point for an initiative to modernize and expand the capital stock of the Summit countries. The large change in the relative price of energy that occurred in late 1973 has clearly altered the production function of the global economy so as to render obsolete a considerable part of the existing capital stock. And too, uncertainties regarding energy pricing and policy have retarded adjustment. A deliberate Summit initiative designed to serve the dual purpose of reducing Summit countries' oil import dependence and stimulating GNP growth, based on clear guidelines on energy policy and general investment incentives, could help overcome these uncertainties and facilitate the adjustment needed to get the Summit economies back to a balanced and adequate growth path. Given the heightened public awareness of the energy problem a well conceived and articulated program of this type could capture public imagination and be saleable to the domestic constituencies of the Summit participants.

To be saleable to the Summit participants themselves, such an initiative would have to be constructed so as to have a near-immediate impact on the sluggish global economy. This need for immediacy places a constraint on the types of programs that might be proposed. For example, for the United States there are limits to what could be instituted for immediate effect. On the whole, largely because our FY79 budget is pretty well locked up, anything that could be done in terms of commitments to additional budget expenditures (including "tax expenditures") would likely have to wait until fiscal year 1980 and beyond. Except for announcement effects, such programs would not impact on the economy until sometime late in CY79 at the earliest, and not on energy production until after that. Thus, while there might be possibilities for significant announcements affecting subsequent budgets, measures which could be accomplished within FY79 fall into the following major areas:

- (1) encouragement of energy production, conventional and non-conventional;
- (2) conservation;
- (3) research and development.

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Within these areas, the U.S. contribution to a Summit initiative might encompass the following:

(1) Energy Production

Most programs that would both affect economic activity and promote increases in energy production in the short-term lie in the area of conventional energy, i.e., oil, coal and gas production. Aside from price policies constrained by political concerns, the major possibilities lie in the area of simplifying or reducing regulatory bottlenecks, improving logistics, and stimulating private expenditures via tax subsidies and loan guarantees.

Oil and Gas

The major initiatives in the oil and gas area involve stimulating the application of existing technology for enhanced recovery as well as further work on advanced recovery technology of the sort that appears to have short term pay-off possibilities.

Coal

In part, stimulating coal production depends upon assurance of adequate demand. Thus, provision of incentives for conversion from oil and gas to coal usage, or at least removal of impediments, are important. These could be multilateralized, perhaps coupled with provision of assured access to U.S. coal supplies for foreign customers.

Coal Gasification

Industry has ten major commercial coal gasification plants (250 million cubic feet per day or more per plant) in an advance planning stage. Construction of at least one of these could start as early as 1978, with a price tag of \$1 billion or more. This and additional plants could provide both considerable additional energy output and significant increased demand for labor and construction materials. Among the questions holding up construction are pricing decisions, assurances of some type of loan guarantees and possible environmental problems.

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Some type of loan guarantee was included in the bill vetoed by the President because of the Clinch River project. However, the Administration continues to support loan guarantees for such purposes.

Transportation

Improvement of transportation systems for both the oil/gas and coal areas would have an immediate and large effect on economic activity and would eliminate a major bottleneck on the actual use of available supplies. The largest benefits are in the area of coal transportation, and would involve improvement as well as construction of rail facilities and rolling stock. In addition, such a railroad program could do much to reduce the current opposition of rail interests to the construction of coal slurry pipelines. A coal slurry pipeline program could have a significant favorable impact on the steel industry.

(2) Conservation

In this area, the National Energy Program (NEP) is strong and we could cite most of the elements under it. In addition, we might consider incentive programs for either the construction or sale of passenger cars powered by diesel and electrical engines. Of course, the whole area of stimulation and/or subsidization of public transportation has been neglected in the NEP. There would be considerable scope for Federal grants (heretically even from the Highway Trust Fund) to state and local entities, in particular for electrically powered systems (light rail and subway). The economic impact of such programs, on both employment and equipment expenditures, in particular on steel usage, would be high.

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(3) Research and Development

A public commitment by the seven Heads of State to increase both expenditures and cooperation in this area would have a considerable PR effect, however, short term GNP and employment effects would be modest. Anything in this area short of a cooperative Manhattan-type project would only pay-off in the very long-run. But, increases in R & D expenditures for commercialization would be particularly useful in those areas where technologies are sufficiently advanced. Prospects appear good in solar energy, coal liquefaction and gasification in this respect.

Careful thought might even suggest cooperative ventures in the nuclear area which would be consistent with non-proliferation objectives.

Questions

- is a Summit energy initiative desirable?
- to what extent could we expect a spontaneous investment response if and when uncertainties over energy pricing and policy are cleared up?
- would the types of programs outlined above produce a significant stimulus effect or are they too limited in scope? would they buttress confidence?
- what specific Summit energy measures would most effectively and immediately stimulate growth and enhance investor confidence while reducing oil import dependence?

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ACTION
 BRIEFING
 INFORMATION

Inter-Office Memorandum

Date: February 16, 1978

For: Helen Junz

From: Philip K. Verleger, Jr. *PV*

Subject: Energy Budget

The attached tables provide published and unpublished details of the energy budget. Table 1 provides a summary of budget outlays for 1977 through 1979. Table 2 provides a comparison of the current services budget with the budget request. (It indicates that no new gross initiatives are planned for 1979). The following tables provide indications of present spending plans on energy.

OMB has separately provided the following statement on major supply initiatives (coal technologies, solar technology and fusion).

Coal Technologies: DOE now has a major demonstration plant underway in high BTU coal gasification and is proposing in the FY 1979 budget the initiation of a solvent refined coal demonstration plant (total cost \$500 million) which will produce clean boiler fuel from coal. Because of the magnitude of the financial commitment a demonstration plant represents, it is unwise to propose "crash" demonstrations unless there is some assurance that the technology being demonstrated will eventually meet or exceed environmental standards or significantly reduce the costs of a particular technology.

In reviewing demonstration plants in the context of the FY 1979 budget it was determined (1) that our present needs for synthetic replacements for oil and gas can very well be met with the demonstrations

PV

	Initiator	Reviewer	Reviewer	Reviewer	Reviewer
Surname		COMIEZ			
Initials/Date					

started in prior years or proposed for initiation in FY 1979 and (2) that additional research and design must be conducted on some promising new combustion and conversion technologies to assure that they can achieve the needed environmental and economic advantages over other technologies prior to committing large expenditures for them.

Solar Technologies: Outlay increases from \$184 million in FY 1978 to \$226 million in FY 1979 are provided for increased research including a major pilot plant to produce electricity from solar generated steam and demonstration of select applications of photovoltaics. In addition, the NEP calls for tax expenditures to increase by over \$100 million in FY 1979 to encourage further the rapid growth of the commercial solar heating industry. Additional demonstrations now, beyond these proposed activities, are not necessary to achieve this Administration's solar energy objectives.

Fusion Power: A major tokamac experimental facility (total cost over \$230 million) and a mirror fusion facility (total cost \$94 million) will be continued in the fusion program. It is crucial to obtain more experimental data from ongoing facilities, from the design of this major demonstration project and from investigations of a variety of new approaches to the fusion problem, prior to committing to even larger more costly projects for this technology which cannot make any contributions to our energy problem until sometime after 2000.

Table 1

Energy Budget
Energy Supply
Estimated Budget Outlays

(millions of dollars)

	<u>1978</u>	<u>1979</u>	<u>1980</u>
	(Fiscal Year)		
Research & Development & Demonstration			
Nuclear Fision	935	828	815
Nuclear Waste Management	126	163	184
Fossil	582	689	1110
Inexhaustible & Renewable	663	792	925
Environmental	329	327	328
Supporting Technology	170	218	235
Total Research & Development	<u>2005</u>	<u>3017</u>	<u>3597</u>
Uranium Enrichment	1301	1383	1752
Uranium Enrichment Revenues	-966	-1209	-1250
Proposed Legislation		-163	-169
Petroleum Reserves	488	512	284
Petroleum Reserve Receipts	-492	-553	-551
Power Marketing	1314	1430	1739
Other Offsetting Receipts	<u>-260</u>	<u>-304</u>	<u>-303</u>
Total	4190	4113	5099

Philip K. Verleger, Jr.
February 15, 1978
566-5063

Table 2

U.S. Energy Budget - Current Services vs 1979
Proposal

	<u>1979 Current</u>	<u>1979* Request</u>	<u>Comment</u>
Energy Supply			
DOE Operations	3,469	3,436	
Petroleum Reserves	210	186	
Petroleum Reserves Receipts	-553	-553	
Power Marketing	145	152	
Other Offsetting Receipts	-340	-304	
Other Energy Supply	<u>96</u>	<u>115</u>	
	3,063	3,082	
Energy Conservation	484	1,010	
Emergency Preparedness	2,486	4,255	SPRO
Energy Information			
Policy & Regulation	917	1,006	
Reduction for Offsetting Receipts	<u>-95</u>	<u>-95</u>	
Total	6,885	9,208	

* Excludes two items shown in table A-13 of Special Analysis A which require legislative authority that has already denied by Congress.

Philip K. Verleger, Jr.
February 15, 1978
566-5063

Energy Conservation

(outlays in millions)

	<u>FY 77</u>	<u>FY 78</u>	<u>FY 79</u>
Conservation Programs	143	602	1402
Conservation Tax Credits	<u>0</u>	<u>426</u>	<u>1106</u>
Total	143	1028	2508

Budget highlights for 1979

- \$548 million (188% increase) in outlays for state grants
- \$324 million in outlays (33% increase) to develop more efficient technologies for consuming sectors of transportation industry and building

Philip K. Verleger
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566-5063

Solar Development

	Outlays in Millions		
	77	78	79
Federal Programs	189	324	366
Tax Incentives	<u>0</u>	<u>1</u>	<u>101</u>
	189	325	467

Budget Highlights

I. Near Term

- Phase out of demonstration program in favor of tax credits. (Tax credits will lead to 2-1/2 million solar heated homes by 1985)
- Installation of solar heat in federal buildings.

II. Long Term

- Acceleration of methods to produce electricity (both central station and decentralized)
- photovoltaic
- Further work on wind systems

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February 15, 1978
566-5063

Fossil Energy Development

(outlays in millions)

	<u>1977</u> <u>Actual</u>	<u>1978</u> <u>Est.</u>	<u>1978</u> <u>Est.</u>
Coal	388	495	588
Petroleum	43	60	71
Gas	<u>21</u>	<u>27</u>	<u>30</u>
	452	582	689

Budget Highlights

- 20% increase for research on advanced fossil energy processes (methanol)
- initiation of a solvent refined coal demonstration plant (\$500 million)
- coal utilization (\$209 Budget Outlays in 79) for coal utilization (fluidized bed, scrubbers and coal slaves). Also including research on advanced technologies
- Coal conversion (\$316 Budget Outlays in 79) in gassification and liquification) including
 - a. demonstration of economic and environmental acceptability for low BTU industrial use and high BTU pipeline use)
 - b. research on clean gas produced insitu from coal, and
 - c. intitiation of a solvent refined plant
- coal mining (\$6.3 million)
- petroleum - advanced recovery and shale oil.

Philip K. Verleger, Jr.
February 15, 1978
566-5063

Nuclear Fission

		Outlays	
	<u>77</u>	<u>78</u>	<u>79</u>
R & D	836	935	828
Waste Management	<u>67</u>	<u>126</u>	<u>163</u>
	893	1061	991

Highlights

Waste Disposal - Demonstrate a sound permanent disposal system (\$187 in authority)

Light Water Reactors - \$30 million Budget Authority Authority to improve productivity and safety margin of present reactors

Breeder Technology - \$367 Budget Authority for research on the LMFBR.

Alternative to the LMFBR - \$214 million on alternative advanced advocated systems which do not use separated plutonium.

Philip K. Verleger, Jr.
February 15, 1978
566-5-63



copy to: Caro / Wibner - Cosman Chab

ACTION BRIEFING INFORMATION

Inter-Office Memorandum

Date: January 27, 1978

For: Assistant Secretary Bergsten

From: Deputy Assistant Secretary Junz

Subject: The Possible Shape of "Phase Two" in the National Energy Program

This memo responds to your request for thoughts on where USG efforts, which will ultimately reduce the severe pressure on our payments position now exerted by our large oil imports, should go once the current energy legislation battle is resolved, one way or another.

The thoughts set out below proceed under the assumption that our overriding national objective in energy policy is to find means to assure our economy, and those of our trading partners, of the availability of the energy resources necessary to sustain a satisfactory rate of stable, non-inflationary growth. Coupled with this economic objective must be the political one of freeing our foreign policy and that of our Allies from the threat of energy supply interruptions.

Assuming that an energy bill is enacted based on the NEP, it will

- provide tax incentives for a variety of residential conservation measures,
- encourage a gradual increase in the efficiency of the US auto fleet (although it will do little or nothing to reduce the rate of growth of that fleet or its average usage),
- encourage some fuel switching from oil and gas to coal,
- contain several other measures which will tend to reduce energy use.

Initiator Reviewer Reviewer Reviewer Reviewer

Surname

ICE-SCHOTTA

Initials/Date

▶ CS / 1/27 ▶ / / / /

Although quite uncertain, best estimates are that this might reduce 1985 oil imports between 1.5 and 2 million barrels per day below what would likely otherwise be the case. In today's prices that would save between \$7 1/4 and \$10 billion in 1985.

The creation of the 1 billion barrel SPR should provide the divorcement of our immediate foreign policy actions from the constraints which an oil embargo might impose. The existence of the IEA Emergency Oil Sharing Program multi-lateralizes this, although this effect is dependent to some extent on oil storage programs of our IEA partners.

Valuable as it is, in stretching out world oil and gas supplies, conservation cannot realistically be expected to impact significantly on the ability of OPEC to administer oil prices to their economic and political advantage. It will still leave us negotiating from weakness when we discuss pricing, production, etc., and will still leave us vulnerable to OPEC oil prices as a political instrument.

Thus, the additional energy measures must take the direction of encouraging:

- expanded production of conventional oil and gas, both within the US and in every other area where potential reserves which can be produced economically at present and reasonably-anticipated oil prices exist,
- investment in development of synthetic liquid and gaseous hydrocarbons or close substitutes such as methanol,
- investment in development of new technology for more flexibly utilizing our enormous solid fuel resources directly, and
- intensified development of energy technologies such as solar power, fusion, wave motion, etc., which have the advantage of non-depletability as compared with most energy sources which can be economically utilized in our existing capital machinery.

It is also likely that additional measures will be necessary to:

- encourage investment in new plant and equipment to utilize new energy sources and new technologies,
- encourage a shift of our transport systems away from their excessive dependence on private autos and trucks and more toward mass transit and rail facilities.

The instruments which the USG will have available include tax incentives, subsidies, investment guarantees, and direct activity, e.g., a "Manhattan Project" approach.

In spite of the intense political emotions which it arouses, consideration should be given to the impact on conventional oil and gas production which decontrol might have. Here the initiatives must concentrate on the taxes necessary to extract unnecessary rents while, insofar as possible, eliminating the uncertainties which now may inhibit exploration and production investments in a rather major way.

Coal liquids and gases are now technically feasible, as is extraction of synthetic crude from shale. However, the technology has not yet been translated into even pilot commercial operations. And, the eventual economics, in competition with conventional oil and gas, even given some of the extremely gloomy projections for world oil prices in the mid 1980s, do not appear to be arousing the kind of investor interest without which these sources of supply cannot be developed. Because these technologies exist, tax credits, accelerated depreciation, or even investment guarantees appear most appropriate. The attractiveness of synfuels from coal and shale lies in the fact that they are directly and completely substitutable in all uses for natural gas and natural petroleum. Even the refinery modifications necessary to run an input stream of "shale oil" instead of Arabian Light are minimal. So, the retrofit investment which is so large an element if we drastically shift to solid coal as an energy source is missing. As an additional advantage, the environmental problems of burning these synfuels are dramatically lower than for coal.

To utilize solid coal on a considerably larger scale than at present (as does appear necessary), considerable expenditure will be necessary for treatment facilities to satisfy serious environmental problems, either before burning

or to control emissions. The use of solid coal also poses a serious transport problem, particularly in the case where Western coal is concerned. The Railroad Revitalization Act was not constructed with the coal transport requirements in mind. Coal slurry pipelines, particularly for utility feedstock movement, are very promising, but face legal challenge--very importantly from rail interests as well as Western environmentalists concerned over depletion of aquifers. The most appropriate instruments here appear to be tax incentives and investment guarantees.

Finally, for the category of what are now "exotic" energy technologies, but which may (like synthetic rubber) become the standard energy source, consideration should be given to mounting a "Manhattan Project". The payoff for the enormous managerial, entrepreneurial, and capital commitment necessary for movement from theory to commercial reality does not appear feasible for private capital and can only be undertaken, as for a Moonshot, by the USG. It would be beyond the scope of this memo to focus too closely on the target technology or the exact strategy to be used. But this approach needs to be considered seriously.

It may be worthwhile to consider an Energy Investment Bank to coordinate these energy investment incentive programs. R&D of the usual sort already appears lodged within DOE, but the type of expertise and orientation for the kind of investment programs I think will be required does not appear to exist there. It seems to be a Treasury function.

Whatever policy action is adopted, it is of overriding importance that regulatory bottlenecks to investment decision-making be removed. Government policies have been lacking in clarity and resolution of environmental questions, energy source substitution questions, etc. is necessary to allow rational decisions to be made with regard to choice to new equipment, location of plant and retrofit of existing equipment.

One final thought; all of these financial and tax incentives lend themselves readily to multilateralization and to international project cost/risk/benefit-sharing.

Workshop on Alternative Energy Strategies

Carroll L. Wilson, Director
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Cable: MIT WAES CAM

Revision - August 27, 1975

A STRATEGIC RESERVES PROJECT

THE CONCEPT

The creation of a Synthetic Fuels-from-Coal Production Capability as a Modern Form of Strategic Fuels Reserve for National Defense has been proposed by Dr. Jerome B. Wiesner, President of MIT.

OBJECTIVE OF THIS MEMORANDUM

To make a preliminary assessment of the feasibility of creating such a reserve for U.S. military fuel requirements based on our abundant domestic coal reserves. If such coal mining, transport and processing capability were to be developed by the Department of Defense, present reserves (Elk Hills and NPR-4 in Alaska) might be developed and released for other purposes.

TABLES 1 AND 2 AND FIGURE 1 - SOME ALTERNATIVE SYSTEMS FOR SYNTHETIC FUEL FROM COAL

In Table 1 and shown graphically in Figure 1 are comparisons of three process choices for a synthetic fuels-from-coal capability with estimated efficiencies, capital and product costs.

CHOICE #1 - Fischer-Tropsch process yielding refined liquid fuels as in the "Sasol" plant in South Africa which has been operating for 20 years producing 7,000 b/d.

CHOICE #2 - Fischer-Tropsch concept to produce synthetic natural gas - In an advanced stage of engineering design for large plants (250 Million CFD) -

Gas to be traded at the point of manufacture for equivalent fuels needed by the military at the point of use.

CHOICE #3 - Improved Coal Hydrogenation - In the first stage build 3 large pilot plants (2,000 b/d) to prove out key steps and to develop engineering basis for full scale; - in second stage build full scale plants.

COMMENT

Comparing in Table 1 and Figure 1 Choices #1, #2 and #3 using Illinois coal, major features are the following:

	<u>#1</u>	<u>#2</u>	<u>#3</u>
- <u>Yield</u> - Barrels per ton of coal input	1.5 b/t	1.9 b/t	2.3 b/t
- <u>Plant cost</u> \$/barrel daily output	\$37,000	\$25,000	\$18,500
- <u>Product cost</u> \$/barrel			
- Coal and operations	\$17.30	\$13.50	\$11.70
- Capital charges	<u>18.00</u>	<u>12.30</u>	<u>9.10</u>
Total cost	\$35.30/b	\$25.80/b	\$20.80/b

If private capital is to finance the syncrude plants (\$ billions raised in the public capital markets) the capital charges (18% of total investment) becomes an essential part of the product cost.

If DOD in creating such a reserve capability paid for the plants and arranged for their operation by contract, the out-of-pocket cost of synthetic fuels to DOD would be

\$13.50 to \$11.70/barrel (cases 2 and 3) compared with about \$14/b now paid by DOD for 300,000 b/d of jet fuel.

Table 2 is an estimate of costs and time to bring a 300,000 b/d capability into operation.

OTHER CHOICES

- IN-SITU COAL GASIFICATION may be another longer-range choice. Comparable estimates of efficiency, capital and product costs, and time to bring into production are not available to us.
- SHALE OIL either from underground mining or in-situ recovery is another set of choices for a strategic reserve synthetic fuels capability.
 - a) UNDERGROUND SHALE OIL OPERATION - FEA estimates in 1974 for a 50,000 b/d plant and mining operation were a capital investment of \$280 million (\$5,600/b/daily capacity) and shale oil selling prices of \$8.35/b and \$12.35/b for 14% and 21% rate of return. By October 1974 revised estimates as a result of detailed engineering design of a plant had increased the capital cost to \$800 million (\$16,000/b/d) and selling prices of \$13.80/b and \$20.40/b for 14% and 21% return.
 - b) IN-SITU SHALE OIL RECOVERY - FEA estimates in 1974 for capital investment ranged from \$280-380 million with rates of return and product costs comparable with the \$8.35 and \$12.35/b above. No revised estimates for in-situ projects are available because development has not reached the state of engineering design of a total project.

CONCLUSIONS

CHOOSING NUMBER 1 would be unavoidable if it were concluded that the nation faced a desperate national defense emergency now. It is wasteful of coal, inefficient and much more expensive than No. 2 and No. 3.

CHOOSING NUMBER 2 would be a move towards getting at the critical natural gas shortage (20% shortfall in relation to firm

requirements forecast by the Federal Power Commission for the year ending March, 1976); expanding coal production and transport by about 60 million tons per year or about 10% over current production; and building an engineering and construction capability for synthetic gaseous fuels which would be a very valuable foundation in the next step in making synthetic liquid fuels. In practice, it may be desirable to include several plants to produce methanol rather than methane; the technology and economics are very closely related and methanol as a liquid fuel has certain advantages, particularly for stationary power units.

CHOOSING NUMBER 3 would move us ahead towards a sound synthetic fuels production which will become more important each year as conventional oil and gas reserves are depleted. In the absence of major discoveries in the U.S. and Alaska, production of oil and gas in the U.S., which have already peaked, will continue to decline. Global production may also decline rather sharply before the end of the century if growth in demand continues, even at 5% per year. With current oil plus gas usage in the U.S. at 27 million barrels a day oil equivalent, we need to begin installation of an energy system to replace natural oil and gas. Our abundant coal reserves will allow us to do this.

RECOMMENDATIONS



1. That the concept of a strategic fuels reserve in the form of a going capability to produce synthetic fuels from U.S. coal be adopted.
2. That DOD embark upon a program to achieve an initial reserve capability of 300,000 b/d by taking the following actions:
 - a) Choice #2 - Fischer-Tropsch Synthetic Natural Gas - invite bids to supply the gas equivalent of 300,000 b/d for 20 years at agreed prices and to exchange synthetic natural gas at points of manufacture for liquid fuel products at points of useage by DOD.
 - b) Choice #3 - Improved Coal Hydrogenation - invite proposals for 3 pilot plants of about 2,000 b/d each and engineering of full-scale plants to proceed in

parallel as fast as possible, DOD to meet costs. Be prepared to invite bids for 200,000 b/d of liquid fuels capacity on terms similar to (a) above.

3. As an alternative, DOD might buy the plants, absorb the capital cost, and contract for operation of the plants. Under such a plan the capital charge in the cost/b of product would drop out and the out-of-pocket cost to DOD would be \$13.50/b for fuels in Choice #2 and \$11.70/b for fuels in Choice #3 using Illinois coal; and \$11.40/b in Choice #2 and \$10.00/b in Choice #3 using Western coal.
4. That DOD embark upon a program to achieve additional strategic reserve capacity of 200,000 b/d of shale oil through steps comparable with 2(a) and (b) above with an objective of securing half of the 200,000 b/d by in-situ recovery systems if further development and demonstration which DOD should finance indicates that in-situ systems are competitive on cost, water requirement and environmental impact.

Carroll L. Wilson
August 24, 1975

Figure 1 - SOME ALTERNATIVE SYSTEMS FOR SYNTHETIC FUEL FROM COAL

 - Illinois Coal
 $20 \times 10^6 \text{Btu/T}$
 - Western Coal
 $17 \times 10^6 \text{Btu/T}$

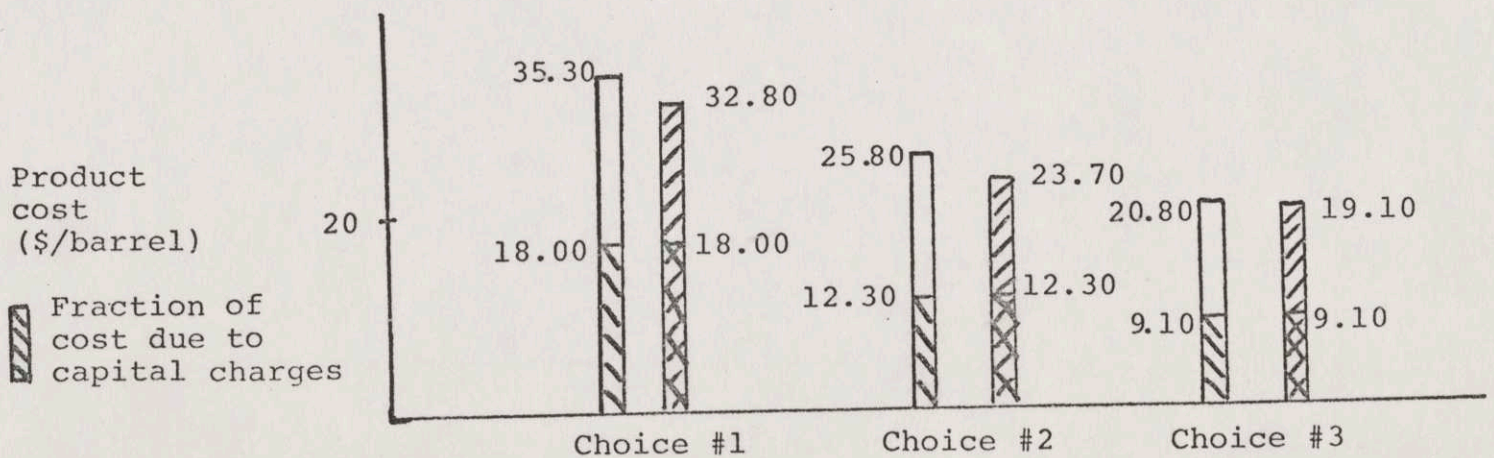
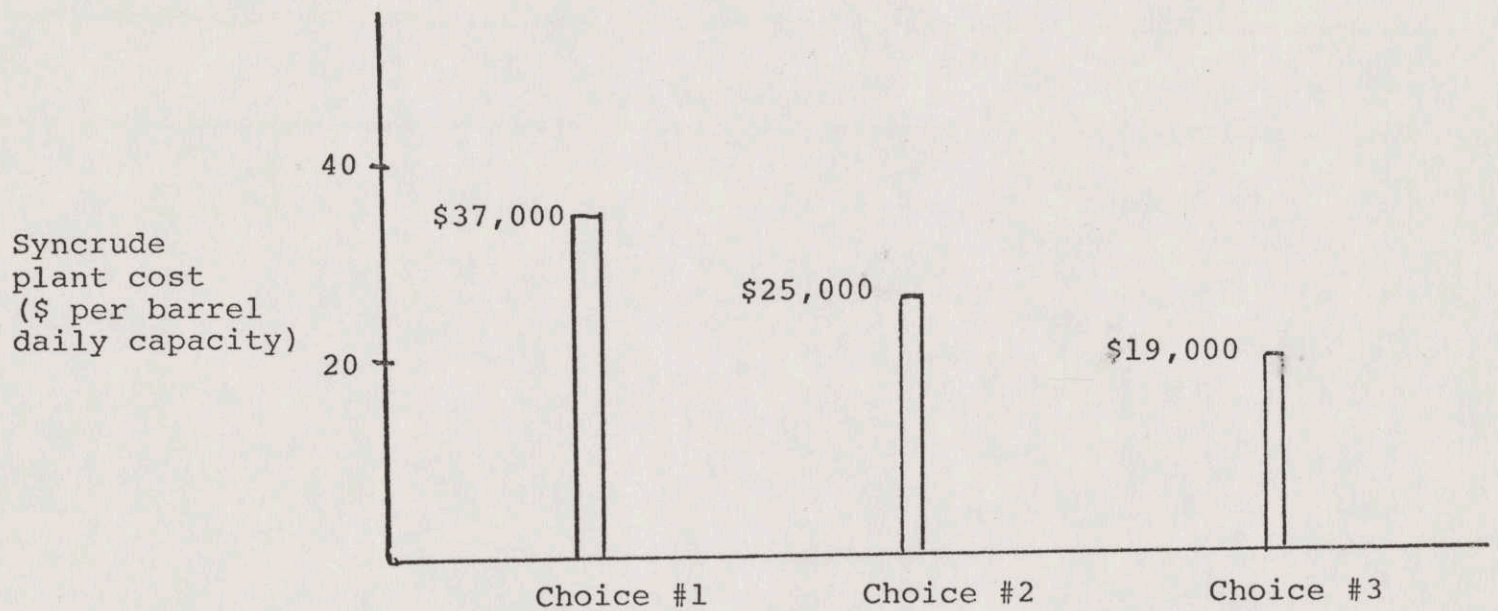
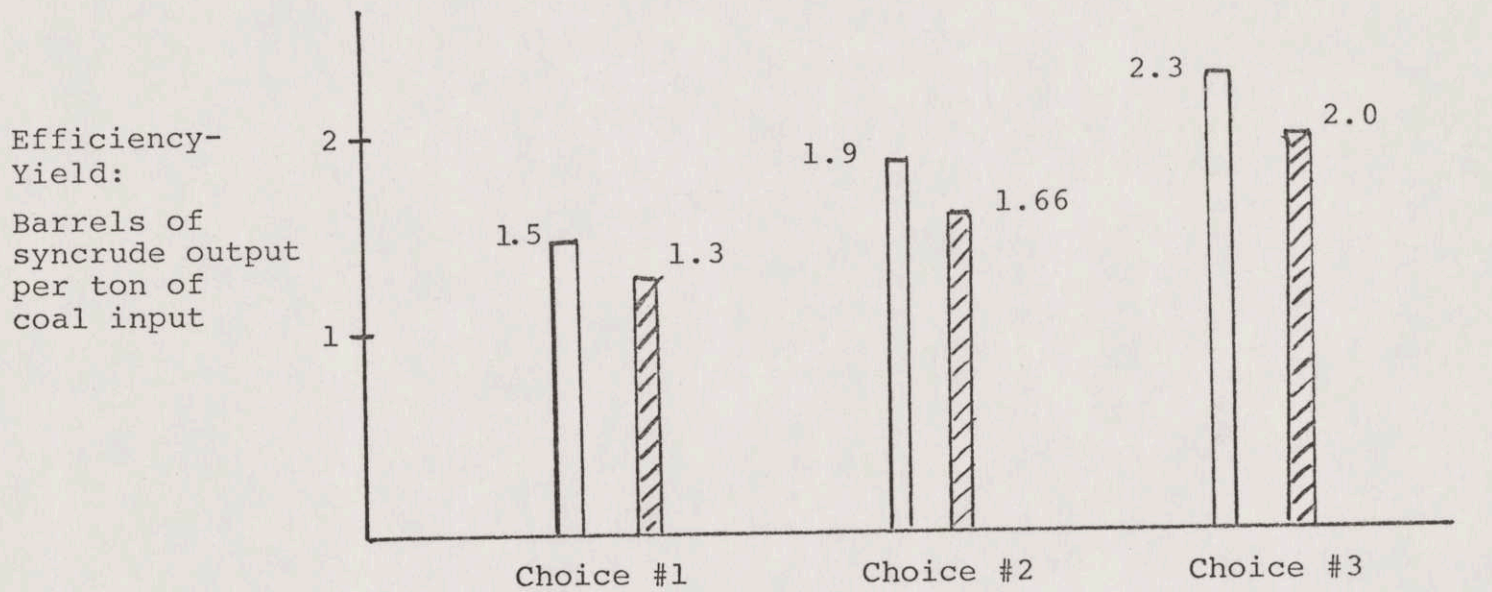


Table 1 - SOME ALTERNATE SYSTEMS FOR SYNTHETIC FUEL FROM COAL

	Choice #1: Fischer - Tropsch		Choice #2: F-T - Syngas ⁽³⁾		Choice #3 Improved Hydrogenation	
	<u>Ill.</u> ⁽¹⁾	<u>W.</u> ⁽²⁾	<u>Ill.</u>	<u>W.</u>	<u>Ill.</u>	<u>W.</u>
Overall thermal efficiency(%)	44	44	56	57	67	68
<u>Yield</u> (barrels/day of oil or oil equivalent in gas per ton of coal input)	1.5	1.3	1.9	1.66	2.3	2.0
<hr/>						
<u>Synthetic fuel plant investment</u> (\$ per barrel of daily capacity) ⁽⁴⁾	\$37,000	\$37,000	\$25,000	\$25,000	\$18,500	\$18,500
<hr/>						
<u>Cost of refined fuels</u> (\$ per barrel of output)						
<u>coal</u> - see (1) and (2)	\$13.30	\$10.80	\$10.50	\$ 8.40	\$ 8.70	\$ 7.00
<u>operating cost</u> (syndrude plants)	4.00	4.00	3.00	3.00	3.00	3.00
Subtotal	<u>17.30</u>	<u>14.80</u>	<u>13.50</u>	<u>11.40</u>	<u>11.70</u>	<u>10.00</u>
<u>Capital charges</u> ⁽⁵⁾	18.00	18.00	12.30	12.30	9.10	9.10
Total (\$ per barrel of refined fuels)	<u>\$35.30</u>	<u>\$32.80</u>	<u>\$25.80</u>	<u>\$23.70</u>	<u>\$20.80</u>	<u>\$19.10</u>

Footnotes and basis for yield and cost estimates appear on the attached page.

Footnotes for Table 1 - SOME ALTERNATE SYSTEMS FOR SYNTHETIC FUEL FROM COAL

Explanation of choices and assumptions

- (1) Illinois coal - 20 million Btu/ton - \$20/ton delivered
 - (2) Western coal - 17 million Btu/ton - \$14/ton delivered
 - (3) Synthetic natural gas (950 Btu/CF) to be traded for liquid fuels needed by DOD
 - (4) All cost estimates in 1975 constant dollars
 - (5) Capital charges at 18% of total investment
-

Differences in plant costs for Illinois and Western coals (because of different heat values, volumes, and characteristics) result in some differences in plant costs per barrel of output but these differences are relatively small and have been ignored in these calculations.

In Table 1, the estimate on coal costs are from a National Academy of Engineering Study in 1974. Efficiencies, capital and operating cost estimates are - for case #1 the estimates are based on recently published figures by Sasol of South Africa who operate the only commercial plant of this type; for case #2 from filings before the Federal Power Commission by the West Coast Transmission Company and the American Natural Gas Company; for case #3 from Eric Reichl, President of Conoco Coal Development Company and a leading authority on coal conversion. Most of the recent engineering estimates presented to the government or in public forums will be within + 25% of the figures used in this memorandum. This seems to be a close enough approximation for the purpose of assessing the concept of a Military Fuels Reserve in the form of a going synthetic fuels industry based on domestic coal.

Table 2 - SOME ALTERNATE SYSTEMS FOR SYNTHETIC FUEL FROM COAL

Coal requirements, syncrude plant investments and years to establish a 300,000 b/d output

	Choice #1: <u>Fischer - Tropsch</u>	Choice #2: <u>F-T - Syngas</u>	Choice #3: <u>Improved Hydrogenation</u>
<u>Coal requirement</u> (assuming 1/2 of production from syncrude plants using Ill. coal and 1/2 of production from plants using W. coal)	37 - Ill. 43 - W. -----	29 - Ill. 33 - W. -----	24 - Ill. 27 - W. -----
(million tons/year)	80 MT/yr	62 MT/yr	51 MT/yr
<u>Total syncrude plant investment (\$ billion)</u>	\$11.1 Billion	\$7.5 Billion	\$5.5 Billion
<u>Research, development and demonstration (\$ billion)</u>	0	0	\$0.75 Billion
<u>Time required to have full capacity operational (years)</u>	6-8 years	6-8 years	10-12 years

Note for Table 2

For an output of 300,000 b/d of refined fuels, the estimates from Table 1 yield the figures in Table 2. An output figure of 300,000 b/d is selected because it approximates the potential yield to the Government from Elk Hills (when fully developed), is about half of DOD current energy usage, and represents about 1% of current U.S. oil and gas usage (27 MB/DOE).

January 3, 1978

Mr. Richard Fisher
Secretary Salomon's Office
The Treasury
Washington, D. C.

Dear Dick:

In follow-up to our phone conversation I send you the following:

- A. WAES Report - Released May 16 in 15 national capitals of WAES Participants - 35 leaders from industry, government and research centers
 - Summary conclusion on back cover
 - Participants, Associates and Sponsors pp. xiii-xviii
 - Conclusions pp. 3-5
 - Executive Summary pp. 5-46
- B. Technical Volume Contents
MIT Press
- C. Shell Briefing Service Summary of Report
- D. Billion Ton World Steam Coal Trade - draft prospectus
 - Memo to Hafele (copies also to Sir Derek Ezra, Chairman, National Coal Board, Dr. Karl Bund, President of Ruhrkole and others)
 - Schematics
 - Outline

A next draft of D will be done this week and I'll send you a copy. I will be discussing this in London January 18-21 with NCB, Shell and BP, in Vienna with Hafele and others, in Italy, Norway, etc., returning here February 12. I also keep Waffy

Mr. Richard Fisher
Page 2
January 3, 1978

Hopkins, Deputy Head of IEA, fully informed especially in view of the March meeting of IEA Governing Council in Tokyo where coal will be on the agenda.

I'll be glad to help in any way I can on the things you outlined on the phone.

Sincerely,

Carroll L. Wilson

CLW:F

Enclosures



DEPARTMENT OF THE TREASURY

WASHINGTON, D.C. 20220

DEPUTY ASSISTANT SECRETARY

AUG 29 1977

Dear Mr. Wilson:

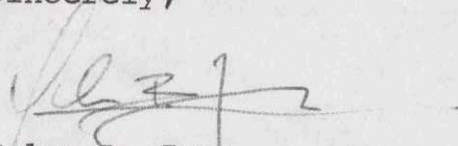
Thank you for your letter of August 18 and the materials on the WAES project you enclosed. The study of absorptive capacity of the OPEC to which you refer was jointly funded by the Departments of Treasury, State and Commerce. It is entitled MEDIUM TERM ABILITY OF OIL PRODUCING COUNTRIES TO ABSORB GOODS AND SERVICES and was prepared in March, 1976 by CACI, Inc. under Department of State Contract 1722-520061. Unfortunately, we do not have copies available for distribution, however, you may be able to secure a copy from

CACI, Inc. (Dr. Richard Hayes) p3 841-7800
1815 North Fort Meyer Drive
Arlington, Virginia 22209

or

Mr. E. Raymond Platig
Office of External Research
Bureau of Intelligence and Research
Department of State
Washington, D. C. 20520

Sincerely,


Helen B. Junz

Deputy Assistant Secretary for
Commodities and Natural Resources

Mr. Carroll L. Wilson, Director
Workshop on Alternative Energy Strategies
MIT, 1 Amherst Street
Cambridge, Massachusetts 02139

OPEC MARKET TO 1985
LEA. BOOKS - D.C. HATH

E40-159

August 18, 1977

Mr. Junz
The Office of the Deputy
Assistant Secretary
Treasury Department
Washington, D. C.

Dear Sir:

Mr. Monte Canfield of the General Accounting Office has told me of a study of the absorptive capacity of OPEC countries which has recently been done for the Treasury Department. I am writing to ask whether a copy of this might possibly be available.

I enclose a copy of a letter I wrote recently to Robert Roosa and others and a memo containing a very preliminary estimate of Saudi Arabian absorptive capacity.

I'm also enclosing a reprint of an article in the Technology Review concerning some of the important findings of the report on Global Energy Prospects 1985-2000.

I would appreciate any information you can tell me concerning this study which I gather was made by a consulting firm for the Treasury and whether a copy is available.

Sincerely,

Carroll L. Wilson

CLW:F

Enclosures

Text of the Declaration of the Venice Economic Summit Meeting

VENICE, June 23 (Reuters)—Following is the official text of the Declaration of the Venice Summit:

Introduction

[1] In this, our first meeting of the 1980's, the economic issues that have dominated our thoughts are the price and supply of energy and the implications for inflation and the level of economic activity in our own countries and for the world as a whole. Unless we can deal with the problems of energy, we cannot cope with other problems.

[2] Successive large increases in the price of oil, bearing no relation to market conditions and culminating in the recent decisions by some members of the Organization of Petroleum Exporting Countries at Algiers, have produced the reality of even higher inflation and the imminent threat of severe recession and unemployment in the industrialized countries. At the same time they have undermined and in some cases virtually destroyed the

prospects for growth in the developing countries. We believe that these consequences are increasingly coming to be appreciated by some of the oil exporting countries. The fact is that the industrialized countries of the free world, the oil-producing countries and the nonoil developing countries depend upon each other for the realization of their potential for economic development and prosperity. Each can overcome the obstacles to that development but only if all work together and with the interests of all in mind.

[3] In this spirit we have discussed the main problems that confront us in the coming decade. We are confident in the ability of our democratic societies, based on individual freedom and social solidarity, to meet these challenges. There are no quick or easy solutions. Sustained efforts are needed to achieve a better future.

Inflation

[4] The reduction of inflation is our immediate top priority and will benefit all nations. Inflation retards growth and harms all sectors of our societies. Determined fiscal and monetary restraint is required to break inflationary expectations. Continuing dialogue among the social partners is also needed for this purpose. We must retain effective international coordination to carry out this policy of restraint and also to guard against the threat of growing unemployment and worldwide recession.

[5] We are also committed to encouraging investment and innovation so as to increase productivity, to fostering the movement of resources from declining into expanding sectors so as to provide new job opportunities and to promoting

the most effective use of resources within and among countries. This will require shifting resources from government spending to the private sector and from consumption to investment and avoiding or carefully limiting actions that shelter particular industries or sectors from the rigors of adjustment. Measures of this kind may be economically and politically difficult in the short term, but they are essential to sustained noninflationary growth and to increasing employment, which is our major goal.

[6] In shaping economic policy, we need a better understanding of the long-term effects of global population growth, industrial expansion and economic development generally. A study of trends in these areas is in hand, and our representatives will keep these matters under review.

Energy

[7] We must break the existing link between economic growth and consumption of oil, and we mean to do so in this decade. This strategy requires conserving oil and substantially increasing production and use of alternative energy sources. To this end, maximum reliance should be placed on the price mechanism, and domestic prices for oil should take into account representative world prices. Market forces should be supplemented where appropriate by effective fiscal incentives and administrative measures. Energy investment will contribute substantially to economic growth and employment.

[8] We welcome the recent decisions of the European Community, the International Energy Agency and the Organization for Economic Cooperation and Development regarding the need for long-term structural changes to reduce oil consumption, continuing procedures to monitor progress, the possible use of oil ceilings to deal with tight market conditions and coordination of stock policies to mitigate the effect of market disruption. We note that the member countries of the I.E.A. have agreed that their energy policies should result in their collective 1985 net oil imports being substantially less than their existing 1985 group objective and that they will quantify the reduction as part of their continuing monitoring efforts. The potential for reduction has been estimated by the I.E.A. Secretariat, given existing uncertainties, at around 4 million barrels a day.

[9] To conserve oil in our countries: We are agreed that no new base-load, oil-fired generating capacity should be constructed save in exceptional circumstances, and the conversion of oil-fired capacity to other fuels should be accelerated.

[10] We will increase efforts, including fiscal incentives where necessary, to accelerate the substitution of oil in industry. We will encourage oil-saving investments in residential and commercial buildings, where necessary by financial incentives and by establishing insulation standards. We look to the public sector to set an example.

[11] In transportation, our objective is the introduction of increasingly fuel-efficient vehicles. The demand of consumers and competition among manufac-

urers are already leading in this direction. We will accelerate this progress, where appropriate, by arrangements or standards for improved automobile fuel efficiency, by gasoline pricing and taxation decisions, by research and development and by making public transport more attractive.

[12] We must rely on fuels other than oil to meet the energy needs of future economic growth. This will require early resolution and wide-ranging actions. Our potential to increase the supply and use of energy sources other than oil over the next 10 years is estimated at the equivalent of 15-20 million barrels daily of oil. We intend to make a coordinated and vigorous effort to realize this potential. To this end, we will seek a large increase in the use of coal and enhanced use of nuclear power in the medium term and a substantial increase in production of synthetic fuels, in solar energy and other sources of renewable energy over the longer term.

[13] We shall encourage the exploration and development of our indigenous hydrocarbon resources in order to secure maximum production on a long-term basis.

[14] Together we intend to double coal production and use by early 1990. We will encourage long-term commitments by coal producers and consumers. It will be necessary to improve infrastructures in both exporting and importing countries, as far as is economically justified, to insure the required supply and use of coal. We look forward to the recommendations of the international coal industry advisory board. They will be considered promptly. We are conscious of the environmental risks associated with increased coal production and combustion. We will do everything in our power to insure that increased use of fossil fuels, especially coal, does not damage the environment.

[15] We underline the vital contribution of nuclear power to a more secure energy



Venetian hostesses, aides and security officials accompanying President Carter and Prime Minister Pierre Elliott Trudeau to second session of meeting yesterday on San Giorgio Maggiore Island in Venice.

supply. The role of nuclear energy has to be increased if world energy needs are to be met. We shall, therefore, have to expand our nuclear generating capacity. We will continue to give the highest priority to insuring the health and safety of the public and to perfecting methods of dealing with spent fuels and disposal of nuclear waste. We reaffirm the importance of insuring the reliable supply of nuclear fuel and minimizing the risk of nuclear proliferation.

[16] A high-level group of representatives of our countries and of the E.E.C. commission will review periodically the results achieved in these fields.

[17] Our comprehensive energy strategy is designed to meet the requirements of the coming decade. We are convinced that it can reduce the demand for energy, particularly oil, without hampering economic growth. By carrying out this strategy we expect that, over the coming decade, the ratio between increases in collective energy consumption and economic growth of our countries will be reduced to about 0.6, that the share of oil in our total energy demand will be reduced from 53 percent now to about 40 percent by 1990 and that our collective consumption of oil in 1990 will be significantly below present levels so as to permit a balance between supply and demand at tolerable prices.

[18] We will actively support the recommendations of the international energy technology group, proposed at the Tokyo summit last year, for bringing new energy technologies into commercial use at the earliest feasible time. As far as national programs are concerned, we will by mid-1981 adopt a two-phased approach: first, listing the numbers and types of commercial scale plants to be constructed in each of our countries by the mid-1980's, and,

Relations With Developing Countries

[19] We are deeply concerned about the impact of the oil price increases on the developing countries that have to import oil. The increase in oil prices in the last two years has more than doubled the oil bill of these countries, which now amounts to over \$50 billion. This

will drive them into ever-increasing indebtedness and put at risk the whole basis of their economic growth and social progress unless something can be done to help them.

[20] We approach in a positive spirit the prospect of global negotiations in the

framework of the United Nations and the formulation of a new international development strategy. In particular, our object is to cooperate with the developing countries in energy conservation and development, expansion of exports, enhancement of human skills and the tackling of underlying food and population problems.

[21] A major international effort to help these countries increase their energy production is required. We believe that this view is gaining ground among oil-exporting countries. We ask the World

[22] We are deeply conscious that extreme poverty and chronic malnutrition afflict hundreds of millions of people of developing countries. The first requirement in these countries is to improve their ability to feed themselves and reduce their dependence on food imports. We are ready to join with them and the international agencies concerned in their comprehensive long-term strategies to increase food production and to help improve national as well as international research services. We will support and, where appropriate, supplement initiatives of the World Bank and of the Food and Agricultural Organization and to improve grain storage and food-handling facilities. We underline the importance of wider membership of the new aid convention and of an equitable replenishment of the International Fund for Agricultural Development.

[23] High priority should be given to efforts to cope with population growth and to existing United Nations and other programs for supporting these efforts.

[24] We strongly support the general capital increase of the World Bank, increases in the funding of the regional development banks and the sixth replenishment of the International Development Association. We would welcome an increase in the rate of lending of these institutions within the limits of their present replenishments, as needed to fulfill the programs described above. It is essential that all members, especially the major donors, provide their full contributions on the agreed schedule.

[25] We welcome the report of the Brandt commission. We shall carefully consider its recommendations.

[26] The democratic industrialized countries cannot alone carry the responsibility of aid and other different contributions to developing countries; it must be equitably shared by the oil-exporting countries and the industrialized Communist countries. The personal representatives are instructed to review aid policies and procedures and other contributions to developing countries and to report back their conclusions to the next summit.

[27] The situation created by large oil-generated payments imbalances, in particular those of oil-importing developing countries, requires a combination of determined actions by all countries to promote external adjustment and effective mechanisms for balance-of-payments financing. We look to the international capital market to continue to play the primary role in re-channeling the substantial oil surplus funds on the basis of sound lending standards. We support the work in progress by our monetary authorities and the Bank for International Settlements designed to improve the supervision and security of the international banking system. The private banks could usefully supplement these efforts.

[28] Private lending will need to be supplemented by an expanded role for international institutions, especially the International Monetary Fund. We are committed to implementing the agreed increase in the I.M.F. quotas and to supporting appropriate borrowing by the fund, if needed to meet financing requirements of its members. We en-

[29] We reaffirm our commitment to stability in the foreign exchange markets. We note that the European Monetary System has contributed to this end. We will continue close cooperation in exchange-market policies so as to avoid disorderly exchange-rate fluctuations. We will also cooperate with the I.M.F. to achieve more effective surveillance. We support continuing examination by the I.M.F. of arrangements to provide for a more balanced evolution of the world reserve system.

[30] We are resolved further to strengthen the open world trading system. We will resist pressures for protectionist actions, which can only be self-defeating and aggravate inflation.

[31] We endorse the positive conclusion of the multilateral trade negotiations and commit ourselves to early and effective implementation. We welcome the participation of some of our developing partners in the new nontariff codes and call upon others to participate. We also call for the full participation of as many countries as possible in strengthening the system of the General Agreement on Tariffs and Trade. We urge the more advanced of our developing partners gradually to open their markets over the coming decade.

[32] We reaffirm our determination to avoid a harmful export-credit race. To this end we shall work with the other participants to strengthen the international arrangement on export credits with a view to reaching a mutually acceptable solution covering all aspects of the arrangement by 1 December 1980. In particular we shall seek to bring its terms closer to current market conditions and reduce distortions in export competition, recognizing the differentiated treatment of developing countries in the arrangement.

[33] As a further step in strengthening the international trading system, we commit our governments to work in the United Nations toward an agreement to prohibit illicit payments to foreign government officials in international business transactions. If that effort falters, we will seek to conclude an agreement among our countries, but open to all, with the same objective.

[34] We reaffirm our determination to

Monetary Problems

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Conclusions

[34] The economic message from this Venice summit is clear. The key success in resolving the major economic challenges which the world faces is to achieve and maintain a balance between energy supply and demand at reasonable levels and at tolerable prices. The stability of the world economy, on which the prosperity of every individual country relies, depends upon all of the countries concerned, recog-



President Carter addressing the closing session of summit meeting in Venice. Flanking him were Prime Minister Margaret Thatcher of Britain and Prime

Minister Francesco Cossiga of Italy. In rear, at left, are Treasury Secretary G. William Miller and, next to him, Secretary of State Edmund S. Muskie.