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A REAPPRAISAL OF U.S. ENERGY POLICY

REPORT

OF THE

SUBCOMMITTEE ON CONSUMER ECONOMICS
SUBCOMMITTEE ON INTERNATIONAL ECONOMICS

AND

SUBCOMMITTEE ON PRIORITIES AND ECONOMY IN GOVERNMENT

OF THE

JOINT ECONOMIC COMMITTEE
CONGRESS OF THE UNITED STATES

TOGETHER WITH

SUPPLEMENTARY VIEWS

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LETTERS OF TRANSMITTAL

MARCH 1, 1974.

To the Members of the Joint Economic Committee:

Transmitted herewith for the use of the Joint Economic Committee and other Members of Congress is a report of the Subcommittees on Consumer Economics, International Economics, and Priorities and Economy in Government entitled "A Reappraisal of U.S. Energy Policy."

Sincerely,

WRIGHT PATMAN, *Chairman.*

FEBRUARY 28, 1974.

Hon. WRIGHT PATMAN,
Chairman, Joint Economic Committee, Congress of the United States, Washington, D.C.

DEAR MR. CHAIRMAN: Transmitted herewith is a report of the Subcommittees on Consumer Economics, International Economics, and Priorities and Economy in Government entitled "A Reappraisal of U.S. Energy Policy." It has been approved by a majority of members of these Subcommittees.

The Subcommittees wish to express their appreciation for the views they received from the Administration officials and the private experts who appeared before them as witnesses during the hearings preceding this report.

Sincerely,

WILLIAM PROXMIRE,
Chairman, Subcommittee on Priorities and Economy in Government.
HENRY S. REUSS,
Chairman, Subcommittee on International Economics.
HUBERT H. HUMPHREY,
Chairman, Subcommittee on Consumer Economics.

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A SUMMARY OF RECOMMENDATIONS[1 2 3]

1. Oil prices should be controlled and maintained at levels which would avoid excessive profits and at the same time provide adequate investment incentives. Present prices clearly exceed these levels and, therefore, should be rolled back, but they must be flexible to deal with changing economic conditions.
2. To provide for equity in the distribution of gasoline, Congress should forthwith provide authority for a transferable coupon rationing system or a rebatable tax. If the present supply situation for gasoline continues, the Administration should impose such a system in lieu of further producer price increases for gasoline. Coupon prices should be published to protect consumers against gouging.
3. The Federal Energy Office should monitor the effects of fuel cutbacks in various sectors of the economy and make adjustments in the mandatory oil allocation program as circumstances change. It should also develop more detailed contingency plans for allocating fuels among industries to minimize employment losses in the event that short supplies worsen.

   The FEO should actively seek consumer cooperation in monitoring the allocation and price control programs to eliminate violations of gasoline and diesel fuel price ceilings, widely reported in recent weeks, and to obtain compliance with requested space heating reductions in commercial buildings.
4. The Government should immediately institute a program of public service employment, and training and relocation benefits to offset unemployment in general which is aggravated by the fuel shortages, especially in the most severely affected regions.
5. Carpooling should be promoted energetically by public and private employers. Congress should approve funding for experiments and demonstration projects. The Civil Aeronautics Board should judiciously permit airline flight reductions on densely served routes, while preventing serious degradation of service to smaller communities.
6. Congress should act on reforms of transportation regulations to enhance competition and efficiency. Relaxed trucking regulations

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[1] Congressman Patman, Senator Sparkman, Congressman Bolling, Senator Fulbright, Senator Bentsen, and Senator Pearson each state: Because the pressure of other duties prevented us from participating fully in the subcommittee hearings and deliberations pertaining to this Report, we do not think it would be appropriate to take a position on the recommendations contained herein.

[2] Views of individual members are footnoted in the text.

[3] Senator Ribicoff states: The Report by the Subcommittees is a most commendable effort outlining many of the problems and suggested solutions to the current energy shortages. While I agree with its general thrust, given the broad scope and detailed nature of the Report, I cannot concur with all of its recommendations. In particular, I feel that the international portions of the Report are inadequate in protecting the United States against economic blackmail.

should eliminate restrictions on cargoes that may be carried, particularly on backhauls, and as a minimum, put an end to unnecessary roundabout routing.

7. Congress should authorize funding for mass transit systems in fiscal 1975 at the maximum rate of service improvement within the capacity of the equipment suppliers and the construction industry. Congress should forthwith release additional monies from the Highway Trust Fund for this purpose for fiscal 1975 rather than delaying until 1976, as existing statutes specify.

   To attract potential riders from their cars, consideration must immediately be given to the quality of service, in addition to its quantity and price.

8. Congress should provide the authority to phase in minimum standards for thermal efficiency in new buildings as a prerequisite for approval under any Federal subsidy or mortgage insurance program. States and localities should be encouraged to incorporate similar standards into building codes.

9. Utility rate structures that encourage energy use through quantity discounts should be phased out and replaced with rate schedules that promote conservation and fully reflect all social costs of providing service. Peak-load prices should be maintained.

10. Federal lands should be leased to oil companies primarily under a system of royalty bidding rather than the present system of one-time bonus bids.

11. To limit the excess profits which would otherwise be realized by producers at current and prospective prices of crude oil, the special tax benefits presently granted the oil industry should be removed or sharply reduced. In particular, (*a*) percentage depletion and current expensing of intangible drilling expenses should be disallowed on both foreign and domestic operations. (*b*) Incentives to domestic exploration can be provided, if necessary, through a direct drilling subsidy for exploratory wells. (*c*) All payments to foreign governments for the privilege of mineral extraction should be classified as royalties rather than as taxes. (*d*) The crediting of taxes paid one foreign government against U.S. taxes owed on income earned in another foreign country should be disallowed.

12. In order to obtain adequate information:

   A. An energy information library should be established within an appropriate Federal agency.

   B. The accuracy of the wholesale price statistics for petroleum products must be improved. Unless corporations producing petroleum products provide full and immediate cooperation with the requests of the Bureau of Labor Statistics, Congress should provide BLS with authority to require submission of corporate data with appropriate safeguards to prevent competitive injury. The BLS should begin immediate publication of the improved petroleum product price indices which it has already developed, while at the same time making every effort to improve the quality of this information further.

   C. Corporations relating to energy research, exploration and marketing should be required to submit to the Federal Govern-

ment periodic confidential reports by product line on their sales, costs, and profits.

D. Additional and more accurate data should be collected on inventories, shipments (including imports and exports), and sales of mineral fuels at all levels of production and distribution.

E. Energy-related data supplied to the Government by private corporations should be subject to government audit.

13. The capability for adequately gathering and analyzing information about the location, extent, and value of energy resources on Federal lands and on the Outer Continental Shelf should be established within an appropriate government agency. New lessees prospecting or exploring for energy resources in the public domain should be required to supply all information obtained to an appropriate government agency. The Government should be able to purchase other necessary data from private sources when it is considered economical to do so.

14. Although the present crisis situation may require extraordinary industry collaboration to assure efficient allocation of available petroleum supplies, no blanket antitrust exemption should be granted to the oil companies. Nor should company officials brought into the Government during the present crisis be exempt from conflict of interest provisions.

15. Enforcement of antitrust laws must be stiffened. Furthermore:

A. Congress should enact legislation to reduce vertical integration of the oil industry; at a minimum, it should require the divestiture of pipeline facilities by the major producers.

B. Congress should act to limit ownership of multiple energy resources (i.e., oil companies owning coal, oil shale, and geothermal power resources) to insure efficient resource development and the maintenance of effective competition among alternative energy supplies.

C. A government corporation should be created to develop and produce energy resources in the public domain. Among other purposes, it could provide a yardstick with which to measure the costs of private oil companies. This corporation should supplement and not replace the present system of leasing mineral rights to private persons.

16. To discourage further economic warfare, the United States should ask the Secretary General of the United Nations to serve notice on the Arab oil producers that their actions violate the U.N. Resolution 2625 (1970) limiting the use of economic and political pressure. They should be directed to bring their conduct into line with the above resolution.

17. While the United States should move decisively to develop its own domestic energy resources, it should simultaneously join other consuming nations in promoting research and the technological development of all forms of energy. The United States should exchange information on limiting energy demand and wherever possible, energy-saving technology.

The United States should remove its objections to lending by the international development banks to projects which will promote the exploration and development of energy resources.

18. The United States should continue to pursue vigorously a common consumer position to minimize the scramble for oil supplies and competitive price pressures. The United States should prepare in case of emergency to allocate resources from both domestic production and imports to other nations in exchange for their participation in a consumer bloc. The developing countries as well as the industrialized countries should be included in the effort to reach a common position.
19. In addition to attempting to achieve a negotiated settlement of the Mideast conflict, the United States in cooperation with other consuming nations should develop suitable incentives that will induce the Arab oil producers to continue to produce oil needed by the world economy. We should create productive uses for surplus Arab funds in the following ways: (*a*) Encourage investment by producer countries in the United States and in other industrial countries, including oil refining and distribution facilities as suitable industries; (*b*) encourage oil producers to purchase World Bank and regional development bank bonds; (*c*) assist development in producer countries through reimbursable technical assistance from the World Bank; and (*d*) liberalize trade policies affecting the importation of energy-intensive manufacturers (such as petrochemical products, other refined products, aluminum, etc.) into the rich country markets.
20. The United States should encourage the oil producing nations to assume an expanded role in the international development banks—particularly the concessional funds—commensurate with their new wealth.

INTRODUCTION

During 1973 the Joint Economic Committee considered various energy issues in three of its subcommittees. The Subcommittee on Consumer Economics held hearings throughout the year on supplies and allocation of gasoline and fuel oil and on the conservation of these fuels. The Subcommittee on International Economics probed the rising costs of oil imports occurring during the year and their financial ramifications, as well as the effects of the Arab oil embargo on the economy of the United States and the rest of the world. The Subcommittee on Priorities and Economy in Government investigated the need for the Government to gather more complete and accurate information for policymaking on the operations and the potential capacity of the oil industry. All of these hearings have been or soon will be published.

Because of the critical role of energy in American life and the rapid changes in conditions in energy markets, policies developed in the last few months to deal with the shortages and high prices must be continually reappraised. This report presents such an assessment by the three subcommittees mentioned above on the array of issues now confronting Congress, the Federal Energy Office, and the public—issues including fuel allocation and rationing, price controls, taxation, and longer run efforts for conservation and output expansion.

First, we review the situation as it stands today. Then our proposals for future policy are laid out.

I. THE FUEL SITUATION TODAY

In the fall of 1973 serious hardships from fuel shortages were widely foreseen for early 1974. However, conservation, warm weather, unexpected imports, and Federal policy governing the composition and allocation of refinery output have largely averted hardships due to physical shortages of heating and diesel fuel. Inventories of these products are at an unusually high level for this season, affording the Nation some leeway to begin to carry out needed adjustments for conserving oil and switching to more plentiful domestic fuels without befouling the environment.[1] Even so, wholesale fuel oil prices more than doubled in 1973, imposing heavy burdens on truckers as well as retail users. The cost of heating homes with oil has gone up by over $200 a year from last year's level for many households in the Northeast. For those in rural areas that heat with propane, the cost of home heating has risen even more dramatically. Increases in gasoline have added as much again for many families.

The design of policy has directed physical shortages largely to retail gasoline stations. A broad consensus exists in support of this policy, despite the fact that it certainly has not been without costs, the most publicized of which has been the lengthy waits in some areas to get to a pump. In addition to this consumer inconvenience, past and anticipated scarcities and price rises for gasoline have had devastating effects on incomes and employment in enterprises making, selling, and servicing automobiles and recreation vehicles and in those catering to their passengers. Jet fuel scarcities and price increases, moreover, have had a serious effect on the airlines.

Since its October 1973 low, unemployment has risen by more than 600,000; most of these persons were laid off. Unless auto sales recover substantially, many layoffs now regarded as temporary will become permanent. Job losses resulting directly from fuel scarcities are now being reflected in other sectors supplying components to those already cutting back output, and the resulting total drop in spending is having secondary effects on businesses supplying consumer goods and services. These effects up to now are heavily concentrated in Michigan and Ohio, although other States are also affected.

Even if supplies of fuel are allocated efficiently and shortages do not become worse, we will have to adjust to much higher prices. The average price of "new" and "old" domestic crude has risen by about 80 percent from the level of crude oil prices nine months ago. Prices of foreign crude have risen far more. Many customers who previously bought products on long-term contracts at wholesale prices now find themselves paying virtually the same prices as retail customers. Fuel oil prices and shortages affect the Northeast of the United States

[1] It must be noted that a portion of existing distillate fuel inventories may be needed to supplement deficient stocks of residual oil this winter to keep power plants running in the northeastern United States.

most severely, where the costs of electric power and many other goods and services will go up relatively more than in other parts of the country. Gasoline shortages also seem to be unevenly spread.

In the meantime the marketing structure of the industry has changed. Especially in the gasoline field, many independent gasoline marketers were eliminated in mid-1973, including some selling under major brand names. Total payroll employment at gas stations declined by 30,000 (5 percent) between May and August. Independent fuel oil and propane distributors have also been under intense competitive pressure.

Higher oil prices and marketing consolidations have raised oil company profits to extremely high levels. After-tax profits of 21 major companies for 1973 ran $9.3 billion which was 58 percent higher than 1972. Much higher profits are anticipated for 1974. A recent forecast estimated the industry's 1974 cash flow would *increase* by $16 billion, some of which would be taken in tax writeoffs, with the rest showing up as profits.[2]

Higher world oil prices have made imports even more costly than expensive domestic oil. The producers' cartel, the Organization of Petroleum Exporting Countries (OPEC), has effectively tripled world oil prices in the last year by limiting production below the level of burgeoning world demand. Despite the higher take of OPEC governments—in some cases more than 400 percent above a year ago—international oil companies have continued to realize enormous profits on their overseas operations.

Is the Shortage Real?

The discovery that fuel oil is now available, after the extraordinary price and profit increases that have taken place, has aroused suspicion that an artificial shortage has been used to exploit consumers. Public scrutiny of the frequent changes and ambiguities in the official estimates of the shortage have led to widespread recognition that available statistical information on the fuel industries is far from adequate for policymaking.

While we do not doubt that the current shortages have been exploited by some domestic and foreign fuel suppliers, we are convinced that there will continue to be a genuine stringency of energy supplies in the United States at least as long as the effects of the Arab oil embargo continue. This situation could extend even after the embargo is terminated if producer governments continue to limit production.

The sudden development of this stringency follows from the decline in U.S. crude oil production since 1970 and a more recent decline in natural gas output. Today's renewed attention to expanding U.S. production of various fuels hopefully will reverse this trend. Even if there were ample supplies of crude oil to all U.S. refineries, however, this country would have to rely for several years on rapidly growing imports of refined oil products to supplement its inadequate refinery capacity.

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[2] Walter Heller and George Perry, "U.S. Economic Outlook for 1974," National City Bank of Minneapolis Newsletter of January 8, 1974 (Minneapolis, Minnesota).

The Federal Energy Office (FEO), although only established in November 1973, has worked to assess the extent of the shortfall and to formulate a program to minimize disruption of production and jobs. The FEO in December projected a shortage of petroleum products under normal weather conditions of 2.7 million barrels a day (mb/d) assuming no leakage through the embargo and no conservation or other countermeasures. This estimate replaced an earlier one of 3.5 mb/d which did not incorporate the effects of the general economic slowdown or the rapid oil price increases that already were taking place. If a leakproof Arab embargo remained and U.S. consumption habits continued as before, the FEO projected shortages growing throughout 1974 to a level of 3.4 mb/d in the fourth quarter.

On the other hand, assuming implementation of basic conservation measures,[3] more efficient deliveries from inventories by oil companies and slightly higher imports than expected (0.5 mb/d), the overall shortfall could be eliminated during the first quarter, although some distillates might be needed to augment residual oil supplies. However, without a lifting of the embargo with enough time for new supplies to arrive, shortages would return in April and average about 0.8 mb/d for the second and third quarters, rising toward 1 mb/d in the fourth. Thus, further measures to balance supply and demand would become necessary. And at this writing, the above conservation or allocation measures would seem difficult to achieve.

The extent to which mandatory allocation and price controls remain necessary after the end of the embargo will depend, as indicated above, on the production rates adopted by the main producing countries and the resulting prices of imported oil. Although Project Independence should improve our capacity to produce energy domestically, continuation of a long-run conservation program will also be needed even after a return to normal market conditions to curb oil imports and restrain America's demands on the world's fuel resources and the upward pressure they exert on the prices of all fuels. The outlook for the world oil market will depend not only on the resolution of the Arab-Israeli conflict, but also on the ability of the consuming and producer nations to resolve underlying conflicts between them.

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[3] Conservation measures would be intended to save 2.37 mb/d in the first and fourth quarters (the heating season) and 1.75 mb/d in the middle two quarters. They include a 15 percent reduction in gasoline usage (0.9 mb/d); reductions of 6° in residential and 10° in commercial heating (0.5 mb/d); reduction of airline fuel usage to 95 percent of 1972 levels (0.2 mb/d); and various measures to save electricity and industrial feedstocks and to shift power plants to other fuels.

II. PRICE CONTROLS AND RATIONING

Some measures that would not be part of a longer term conservation program must be considered to bridge the fuel shortage during the present emergency. Among these are price controls, direct allocation, and rationing.

Price Controls [1]

Increased prices of gasoline, heating oil, and other oil products since May 1973 have been based almost entirely on the passthrough of higher crude oil prices. Our view is that crude prices now have risen more than enough.

The Cost of Living Council permitted the price of already flowing crude to rise from about $3.60 per barrel in May 1973 to $5.25 in December, a 45 percent increase. The cost of this production, however, has not changed significantly. Meanwhile, to stimulate new production, prices for new oil and certain categories of old production (about 30 percent of total output) were exempted from control altogether and they have risen to a range near $10 per barrel.[2] Thus the average price of domestic crude is now about $6.50—a level 80 percent higher than nine months ago.

The passthrough of higher crude oil prices (including foreign crude) has pushed up gasoline prices about 12 cents per gallon in the past year. Heating oil prices have risen by about the same amount. While higher prices play a role in allocating supplies, the prices of these fuels have reached levels that, together with other recent price increases, impose hardship on people of modest means.

As noted above, the cash flow of the oil companies is projected to balloon by roughly $16 billion in 1974 due mainly to the large price increases in crude oil late in 1973. After-tax profits may go as high as $20 billion or twice 1973 levels. The Department of Commerce reports industry investment intentions for 1974 at less than $10 billion. Although some large new projects are being announced, they will involve little, if any, spending in 1974. Thus an enormous surplus beyond investment needs is being generated. Moreover, oil companies need not rely on retained earnings to finance all investment, but like other industries, can utilize some borrowed funds.

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[1] With regard to this section and the recommendation herein regarding oil price controls, Congressmen Widnall, Conable, and Brown and Senator Percy state: We agree with the recommendation that all prices should be controlled and maintained at levels which would avoid excessive profits and at the same time provide adequate investment incentives. However, we believe that at present there has not been sufficient study in this area to permit Congress to set specific price levels which will enable us to achieve these two goals and that, therefore, the recommendations of the Majority with regard to specific price levels and price rollbacks are premature.

Congressman Blackburn does not wish to be associated with the above views or the recommendations contained in this Section of the Report.

[2] New oil is defined as output from any lease area in excess of 1972 levels.

The President has stated unequivocally that producers will not be allowed to reap excessive profits from the shortage. His proposed "emergency windfall profits tax," however, is estimated to collect only $3 billion annually; other changes in taxation of foreign oil proposed by the Administration would collect little revenue. Even reform of oil industry taxation by eliminating percentage depletion and deduction of intangible drilling expenses for *domestic* operations would collect only about $3 billion in revenue.

It is clear, therefore, that any serious intent to control excess oil profits must involve price rollbacks from current levels as well as tax reforms. This could be done without materially reducing the incentive to expand production. First, old oil which has been exempted from control in amounts equal to new production could be brought back under control. The price of old oil could then be rolled back, for instance, by $1 per barrel to the level of early December 1973. These two moves would reduce oil industry profits by about $3.8 billion on an annual basis. After a limited period to collect cost data, a new ceiling could be established based on cost plus a reasonable rate of return.

The price of new oil could also be placed under control at a level considerably below the present one. It would still be adequate to compensate investments in new production that may be made in 1974. If the price of new oil (and stripper oil) were reduced, for instance, to $7 per barrel, which has been estimated by the Administration to be the long-run market price, industry revenues could be cut another $2.7 billion annually, compared to today's prices for new oil.

Taken together these rollbacks in the prices of domestic oil would cut company revenues by about $6.5 billion for each full year of application without materially affecting output. Even if both tax reform and price rollbacks were made effective for the entire year, industry cash for 1974 would likely remain substantially above the already inflated 1973 levels.

Recommendation 1

Oil prices should be controlled and maintained at levels which would avoid excessive profits and at the same time provide adequate investment incentives. Present prices clearly exceed these levels and, therefore, should be rolled back, but they must be flexible to deal with changing economic conditions.[3]

Gasoline Rationing [4]

Continuation of price controls creates a need for some nonprice means of fuel allocation or rationing so long as supplies are not adequate at the stipulated price levels. Present circumstances and policies

[3] Senator Proxmire states: I heartily concur with the thrust of this recommendation. But the price establishment must be based on the facts. The FEO should immediately get the basic facts from the oil industry, audit them, and establish a price based on costs plus a return sufficient to induce exploration and production. Both Mr. Simon and Mr. Sawhill have testified in our hearings that prices are not now based on the facts. They are prices established by "seat-of-the-pants" methods, at best.

[4] With regard to this Section of the Report, Senator Percy and Congressmen Widnall, Conable, and Brown state: We agree with the recommendation in this section that the Congress grant authority to the Executive to establish a trans-

seem to imply increasing difficulty for consumers in getting gasoline unless the embargo is lifted. Already much gas and time are being spent in the search for more gas, and the prospects do not appear to be improving. Uncertainty about future gasoline supplies has sharply reduced new car purchases and appears to be exerting some drag on home buying.

On December 27, 1973, the Federal Energy Administrator announced the design of a rationing system to be prepared for implementation on or after March 1, 1974. The system would provide monthly coupon allotments to all drivers over 18. The allotment per driver would depend to some degree on locally available transportation alternatives. Coupons could be sold legally to provide an incentive to conserve fuel at all levels of consumption and also to accommodate greater-than-average individual needs (at increased cost). If the number of coupons exactly covered available retail supply, then the coupon price would increase the total price of gas to the market-clearing level. Without more accurate information than now exists on inventories and refinery output, however, it will be difficult for the Government to determine how many coupons to issue.

An increase in the gasoline tax with quarterly rebates would be equally as effective and equitable as a coupon rationing system, while avoiding the bother of exchanging coupons and the need to suppress coupon counterfeiting. If rebates to all drivers were uniform, for instance, a person consuming an average amount of gas would be fully compensated for the new tax; if he chose to drive less, he could easily spend his rebate on something else. Rebates could be differentiated, if desired, to improve equity among different groups of people. One problem with this option is choosing the right tax level to prevent run-outs at gas stations. Legislation would have to permit some executive discretion to vary the size of the tax analogous to authority needed under coupon rationing to set the number of coupons to be issued in any period.

If consumers' difficulties in obtaining gasoline become worse, a decision must be faced whether or not to impose one of these rationing systems. We believe that people will accept rationing if it is necessary. There is evidence that citizens have responded constructively in the main to the need for conservation. We believe that they would prefer a well-designed system of rationing or taxation over exploitative pricing by producers or a continuation of today's chaotic scramble with long waits for service. Recent adoption of allocation measures at

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ferable coupon rationing system for gasoline if the supply situation worsens substantially. However, we wish to make clear our view that a rationing system, in light of all the administrative and other difficulties which such a system would entail, should be imposed upon the American people only as a very last resort.

Congressman Brown also states: The problem currently is one of unequal distribution and inadequate supply. Our major effort should be an encouragement of an increase in the supply which will obviate rationing and have the added effect of holding the price down. If gas is so short as to require rationing, the price will surely go up anyway.

Congressman Blackburn does not wish to be associated with the views contained in this section of the Report. He states: The job of rationing gasoline, as with any scarce good, should be left to the marketplace and the forces of supply and demand. Therefore, in my view, price controls on gasoline should be eliminated immediately in order that the free market may make allocations of existing supplies efficiently.

State and local levels strongly suggests that the Federal Government is lagging in its response to a widely perceived public need for some form of rationing.

Recommendation 2

To provide for equity in the distribution of gasoline, Congress should forthwith provide authority for a transferable coupon rationing system or a rebatable tax. If the present supply situation for gasoline continues, the Administration should impose such a system in lieu of further producer price increases for gasoline. Coupon prices should be published to protect consumers against gouging.[5]

Mandatory Allocation of Other Oil Products[6]

The Federal Energy Office instituted regulations in December and January for mandatory allocation of products other than gasoline at the wholesale level in accordance with the Emergency Petroleum Allocation Act. The regulations give priority to essential users, such as food producers, fuel producers, health and public safety services, and mass transit; they specify cutbacks in distillate fuel of 10 percent from 1972 levels for industrial users, 15 percent for homeowners, and 25 percent for commercial establishments. FEO also allocates propane and butane along similar lines. In response to the pleas of the petrochemicals industry, FEO granted an exceptional allocation and special price flexibility in bidding for fuel. As yet, it is unclear how effective these regulations will be and what problems will arise from their implementation.

Underlying the present allocation system has been a presumption that private gasoline use could be cut substantially without seriously affecting employment. It is now becoming clear that all cutbacks will have some costs in the short run. Further tightening of gasoline supplies, with or without formal rationing, will increase the squeeze already affecting the automobile industry and related sectors and the communities that depend on them. An effort should be made to ease this pinch, if possible, through amending the mandatory oil allocation program to free up more fuel for gasoline. Additional cutbacks could be sustained by some commercial users either through greater conservation not affecting production or as a result of cuts in output due to a recession. A closer evaluation should be made to determine where fuel

[5] Senator Proxmire states: While coupon rationing, because of its appearance of equity and fairness, has a superficial attractiveness, it is my view that it will neither solve the problem nor relieve the aggravations and frustrations connected with the shortages. Instead of consumers having to wait in long lines for gasoline, it is probable that with coupon rationing, they will first have to wait in long lines for coupons and then wait in long lines for gasoline in circumstances where blackmarketing, chiseling, and cheating abound. I've changed my mind about it. I now think it can only add to the misery.

A rebatable tax has inherent problems too. Even a 30¢ tax may not limit demand because of the inelasticity of demand in this situation. The further difficulty of getting the debate fairly to those who deserve it makes this a very questionable and, in fact, impractical proposal.

[6] Senator Percy states: The crude oil allocation system among refiners has effectively reduced imports. Therefore, he supports the recent FEO proposals to decrease the amount of imported crude oil subject to sharing among refiners.

cuts will cause the least geographically concentrated job losses and end-user hardship.

Opinions differ on how serious production bottlenecks caused by fuel shortages may become. Walter Heller, in his testimony before the Subcommittee on International Economics, foresaw the problem to be relatively small after a period of indecision and adjustment. Many other forecasters agree with him. In its Annual Report, the Council of Economic Advisers concluded that declining demand would be a much more serious problem than production bottlenecks. Anne Carter, Professor of Economics at Brandeis University, in her testimony before the Subcommittee, was less optimistic. Without an intricate system of differential allocations to minimize inter-industry bottlenecks, she predicted unemployment rising to above 10 percent.

Recommendation 3

The FEO should monitor the effects of fuel cutbacks in various sectors of the economy and make adjustments in the mandatory oil allocation program as circumstances change.[7] It should also develop more detailed contingency plans for allocating fuels among industries to minimize employment losses in the event that short supplies worsen.

FEO should actively seek consumer cooperation in monitoring the allocation and price control programs to eliminate violations of gasoline and diesel fuel price ceilings, widely reported in recent weeks, and to obtain compliance with requested space heating reductions in commercial buildings.

Re-Employment Programs and Relief for Low-Income People[8]

Some action must be taken now to counteract the sizable unemployment that already has arisen due to fuel shortages coming on top of the economic slowdown. Further layoffs may be expected. The Administration has proposed some expansion of unemployment benefits. In general, we support these proposals. But this is not enough. New employment opportunities must be generated in fields that do not require heavy energy inputs. Proposals to stimulate private and public jobs, now before the Congress, deserve urgent consideration. The time to act is now.

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[7] Senator Proxmire states: It is my view that the success of a mandatory allocation program is highly questionable. It may even be unworkable.

[8] With regard to the public service employment recommendation in this section, Congressman Brown states: If the Federal Government is going to take new steps to reduce unemployment in general, and unemployment stemming from the energy shortages in particular, I recommend that such actions include new grant programs in the area of public works, distribution of grants to be related to the existence of complete project plans in various communities, the unemployment rate in those communities, and the contributions which the various projects would make in reducing unemployment. Energy unemployment and other unemployment should not be considered as two different forms of unemployment, because they have the same end effect. Programs to alleviate the effects of unemployment are called for, but there should be no "means" or "eligibility" test.

Recommendation 4

The Government should immediately institute a program of public service employment, and training and relocation benefits to offset unemployment in general which is aggravated by the fuel shortages, especially in the most severely affected regions.[9]

This program should not, however, be limited to persons whose unemployment is caused by fuel cutbacks. It should be open to all persons who after reasonable effort have been unable to find other employment. The economic slowdown, aggravated by fuel shortages, will make jobs harder in general to find.

If public service employment is to conserve energy, the role of new construction using many energy-intensive building materials should be limited. The program could be directed toward strengthening health services, public safety, environmental improvement, and renovation and maintenance of public facilities, among other things. Mass transit and energy conservation programs, which would yield long-term energy savings, are also possibilities.

High fuel prices constitute one more in a series of large increases in the costs of essential consumer goods and services which impose a heavy burden on low-income groups. As mentioned above, the price increases for fuel oil and gasoline may add as much as $400 to family budgets per year. Such increases cannot readily be absorbed into the budgets of lower income families, already badly strained by recent large increases in food prices.

There is an urgent need to provide these groups with assistance in adjusting to higher prices of petroleum products, as well as to other aspects of inflation and unemployment. Ideally this could be done through basic reforms of the tax system; one desirable reform might be reduction of the social security tax burden on lower income persons; an income tax credit is another. Such fundamental reform may be impossible to enact with sufficient speed to meet the immediate problem. In that case, temporary emergency tax reductions for lower income taxpayers, accompanied by equivalent cash payments to those with incomes too low to permit them full benefit of the tax reduction, might be considered.

The appropriate policy response should be made to the overall situation, not to the impact of the fuel shortage alone. The Joint Economic Committee is presently conducting its Annual Hearings on the President's Economic Report and will be reporting in detail on policies needed to counter the impact of recession and inflation on various groups. We, therefore, defer more specific recommendations of this type until the Committee's Annual Report.

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[9] Congressman Blackburn states: If there are to be more Federal programs aimed at reducing unemployment, I recommend that such programs concentrate heavily in the area of defense, which will both increase employment and contribute to our national security.

III. MEASURES TO CURB CONSUMPTION OVER THE LONGER RUN

As noted above, we believe that energy conservation is the order of the future, even after relaxation of the embargo. Some of the reasons for this are economic; some are political. In short, America's future financial health as well as the physical well-being of its citizens will be enhanced by more care in the use of energy.

Savings in Transportation

Transportation accounts for more than half of U.S. oil consumption. Much of the conservation, as contrasted to switching from oil and gas to coal or other fuels, must therefore occur in transport uses. Vehicles, and especially automobiles, need to be redesigned. Occupancy rates must increase. Passengers and freight must be switched from modes of transport with low fuel economy to other more efficient modes. A recent appraisal estimated that an orderly but determined transition could reduce 1985 needs for transportation fuels by nearly 15 percent (1.7 mb/d) from the level projected by the National Petroleum Council.[1]

Powerful economic forces finally have broken the resistance of the American automobile industry to smaller cars. Hearings before the Subcommittee on Consumer Economics indicated that conversion to steel-belted radial tires, now in progress, will also contribute some 10 percent to the fuel economy of vehicles outfitted with them. The design of overland trucks to reduce wind resistance can be an added factor in reducing fuel consumption at high speeds.

Rates of vehicle occupancy and efficiency of operation can be increased in all modes of transportation. A significant effort is now being made to promote commuter carpooling through information systems, special lanes, and special parking. A modest program for carpool demonstration projects has recently been approved in the Senate. In the past, a great many unused airline seats were transported for private competitive reasons on heavily traveled routes. This practice adds little to public convenience. Some progress is now being made toward weeding out excess flights; it is yet too early to evaluate the effects of the cutbacks.

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[1] James Spear Taylor, "Oil and Natural Gas: A Proposed Program for Reducing Projected Import Requirements With Goals To Be Reached by 1985," published by the author, Washington, D.C., 1973.

Recommendation 5

Carpooling should be promoted energetically by public and private employers. Congress should approve funding for experiments and demonstration projects. The Civil Aeronautics Board should judiciously permit airline flight reductions on densely served routes, while preventing serious degradation of service to smaller communities.

The time has come for reforms of public regulation of freight transportation that, among other things, would permit marked increases in the number of tons delivered per-vehicle mile logged by trucks.

Recommendation 6

Congress should act on reforms of transportation regulations to enhance competition and efficiency. Relaxed trucking regulations should eliminate restrictions on cargoes that may be carried, particularly on backhauls, and as a minimum, put an end to unnecessary roundabout routing.

Transfer of freight and passengers to more efficient transport modes can also save considerable fuel. The desired shift for freight is from truck to railroad for long hauls. Facilities for quick, efficient transloading at railheads, particularly for transferring piggyback trailers from road to rail and back, need to be improved. Increased use of railroad cars (i.e., eliminating the hoarding of empty cars and their use for storage) would permit rails to handle more traffic. The solution of this problem would require more storage facilities at ports, railheads, and other off-loading points. Expanded use of containerization must also be fostered.

The most important modal shift for passengers is the switch of urban travel from autos to mass transit. Because mass transit vehicles typically already are fully loaded during rush hours, the shift of commuters will require outlays for new equipment. Further traffic staggering can reduce the total outlays needed.

Some Federal funds have already been made available to improve mass transit services, but more will be required if improvements are to be made on the scale needed across the country. The 1975 budget includes $700 million in capital outlays for mass transit—an increase of $212 million—to be drawn from prior years' authorizations. The President has now proposed an additional $700 million for capital outlays or operating expenses that is not presently in the budget. These funds would be distributed in grants to municipalities on the basis of population size. While this proposal will make funds available to cities with no transit systems, it will not provide any real incentive for achieving greater usage. A flat subsidy per transit passenger trip might be a preferable way to encourage communities to target improvements to their residents' needs.[2]

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[2] Senator Proxmire states: The Subcommittee on Priorities and Economy in Government has spent countless hours detailing mindless Federal subsidies. This proposal, without thorough economic analysis, testimony, and critique is at best premature.

The President also proposes that all of the $1.1 billion in Highway Trust Funds slated for highways in urban and related areas be available for mass transit expenditures. This would be substantially more than the mere $200 million already released for bus purchases in fiscal 1975.

Recommendation 7

Congress should authorize funding for mass transit systems in fiscal 1975 at the maximum rate of service improvement within the capacity of the equipment suppliers and the construction industry. Congress should forthwith release additional monies from the Highway Trust Fund for this purpose for fiscal 1975 rather than delaying until 1976, as existing statutes specify.[3]

To attract potential riders from their cars, consideration must immediately be given to the quality of service, in addition to its quantity and price.[4]

Expansion of public transportation systems should also include careful examination of subsidies now given to automobile commuters, such as free parking. In the longer run, studies should be made of land use patterns so that the frequency of long commuting trips between home and work can be reduced.

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[3] Senator Humphrey adds the following comment: This conclusion should not be construed to reduce the urgent need to modernize our rural roads and to make major improvements in the quality of our rural transportation system as a whole.

[4] With regard to Federal funding for mass transit systems, Congressman Widnall states: While I have long supported appropriate Federal aid for mass transit systems, and support the general thrust of this recommendation, I wish to emphasize that what must be provided through mass transit systems is good service at a reasonable price to the maximum number of people. In this regard, I hope that the greatest possible attention will be given to developing innovative Federal programs in this area, avoiding the all-too-easy approach of merely pouring more and more money into programs, without regard to such potential dangers as giving subsidized operations unfair advantages over competitive unsubsidized systems and funding in large amounts over long periods systems or programs which can never be self-sustaining.

Congressman Conable states: Although I support this recommendation generally, I think that any future Federal assistance for mass transit should avoid the bias toward long-term, capital-intensive programs which has been present in past Federal efforts. I would hope that future Federal support would be aimed at programs which will achieve the maximum results in the short to medium term. Federal funding for such capital-intensive programs as subway systems should be de-emphasized, inasmuch as such systems take vast amounts of money and provide no service for a long time, as contrasted to improvements in bus service and routing, for example.

Congressman Brown states: Although I support this recommendation generally, I am opposed to the release of additional moneys from the Highway Trust Fund and believe that funding for mass transit should be separately appropriated. In addition, I prefer capital improvements to operating subsidies.

Congressman Blackburn states: Although I am not opposed to Federal assistance for capital improvements to mass transit systems, I am opposed to any operating subsidies, or continuing subsidies of any type, for such systems. I do not believe the Federal Government should be in the position of subsidizing an activity which may or may not be efficiently operated, with staggering commitments developing against the Federal Treasury.

Lowering Heating Requirements

Another important use of oil and gas is for space heating, which now accounts for about 20 percent of U.S. consumption. The Federal Energy Office has estimated that a 6° average reduction of winter indoor temperatures from 1972–73 levels would cut heating fuel use by 15 percent; a 10° reduction would save some 25 percent. In addition to lowering temperatures in buildings, however, the structures themselves must be improved to maintain heat more efficiently. In testimony before the Subcommittee on Consumer Economics, it was estimated that 20 percent of the fuel used for home heating could be saved through adequate insulation of existing houses. Additional savings could be made by using double windows and doors. Temperature moderation and structural improvements also would save fuel inputs for air conditioning in summer. They are therefore necessary regardless of climate.

Higher fuel prices are making home buyers more conscious of thermal efficiency in buildings. Nonetheless, price competition among builders provides a strong motivation to economize on components not visible to the untrained eye. Therefore, adequate insulation probably can be obtained only by upgrading building codes.

Construction standards, however, are regulated mainly by local government. At present the Federal Government regulates only federally financed or subsidized construction. The Nation as a whole now has a vital interest in fuel conservation by all practical means. Because new structures will replace existing ones only over a lengthy period, strong incentives also should be instituted to upgrade the temperature-holding properties of the latter.

Recommendation 8

Congress should provide the authority to phase in minimum standards for thermal efficiency in new buildings as a prerequisite for approval under any Federal subsidy or mortgage insurance program. States and localities should be encouraged to incorporate similar standards into building codes.

Curbing Demand for Gas and Electricity

Most recent attention has been focused on the scarcity of oil. Natural gas to the consumer, however, also is scarce. Electricity frequently is generated using oil or gas. In general, moreover, it would be unwise to design a conservation program for one or two fuels alone, because inter-fuel substitution in some uses will transmit the scarcity from one fuel market to others. Both a sound conservation policy and the need for equity among users of different types of energy require a comprehensive approach.

The technology of distributing gas and electricity does not readily permit enforcement of user quotas at the retail level. In the case of natural gas, trained personnel are needed to restart delivery safely after interruption. There is little alternative, therefore, to rationing these fuels through price increases or an excise tax. The present prices

of electricity and natural gas, both regulated, have not gone to scarcity levels like the price of oil.

Currently, utilities grant lower rates to large users. These concessions are of two kinds. First, low rates are accorded to industrial users because their steady year-round use requires less investment per unit of consumption than sharply peaked heating and air conditioning uses. Interruptible users require very little extra investment. Second, there are quantity discounts based on the time-honored theory that the per unit cost of service declines with larger volume. It is also suspected that there is additional price discrimination among users depending on their access to alternatives. For example, homeowners' rates may be higher than rates to industrial users by more than a reasonable quantity discount because homeowners are less able to switch to other fuels.

Clearly it is time to reconsider promotional forms of price discrimination. The theory of declining costs, moreover, is based largely on the economics of a single production unit; plants achieve their lowest unit costs when fully utilized, and large ones have lower unit costs than small ones. Declining costs, however, do not pertain to the economics of an integrated national gas or electric delivery system facing capacity constraints, when sites for new facilities are at a great premium and when primary fuel supplies are tight. Rate structures should, however, continue to reflect the economics of peak season and off-peak uses.

Some way also must be found to avoid utility rate increases to offset higher unit costs due to reduction in sales through conservation. If utilities succeed in obtaining such rate increases, then our conservation effort may be seriously jeopardized because consumers will be forced to pay the same amount for gas regardless of their consumption.

Recommendation 9

Utility rate structures that encourage energy use through quantity discounts should be phased out and replaced with rate schedules that promote conservation and fully reflect all social costs of providing service. Peak-load pricing should be maintained.

A sensible energy policy must consider the relationship among prices of various fuels that substitute for each other. In particular, natural gas is now priced at an average level per Btu that is about one-quarter that of the average price of oil; it is only two-thirds the price of coal per Btu. This price pattern, among other reasons, has led consumers to choose gas, where possible. The supply, meanwhile, has begun to decline and now cannot meet the demand. Increasingly, therefore, users who previously burned gas and others who would do so are obliged to turn to oil, aggravating oil shortages, including that of gasoline. To augment supplies, natural gas utilities are importing liquefied gas which costs far more per Btu than oil and may present a safety hazard.

We favor continued regulation of wellhead natural gas prices for the same reasons that we favor continued oil price controls, e.g., the transfer of income from consumers to producers in the absence of controls would be unacceptably large. However, future pricing policies for

various fuels should work to reduce the excessive price disparities that now exist. Part of this reduction presumably will come through a decline in the price of oil.[5] [6]

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[5] Senator Proxmire states: I agree it is important to emphasize that the disparities should be reduced by a fall in the price of oil, not merely a rise in the price of natural gas. Natural gas prices should be based on costs plus a fair return, period. They should not be based on some fuel equivalent level of coal or oil which would bring windfall returns to gas producers.

[6] With regard to this paragraph, Senators Javits, Percy, and Congressmen Widnall, Conable, Brown, and Blackburn state: In our opinion, this paragraph does not address itself to the basic problem regarding control of natural gas prices. Maintenance of artificially low natural gas prices by Federal regulation has placed us in a position of extremely inadequate natural gas supplies today. The difficult question to be determined for the future is what to do about the wellhead price of "new" natural gas, that is, whether to control the price at all, and, if so, at what level in order both to assure that adequate supplies will be forthcoming and to protect the American consumer from unreasonably large price increases.

IV. STIMULATING DOMESTIC PRODUCTION

While measures to curtail consumption and to allocate available petroleum supplies are essential to maintain economic growth in the present tight situation, a long-term solution will depend more on the basic conservation measures noted above and on stimulating greater domestic energy production.

In 1970 U.S. oil production peaked, and the decline since then in crude output and, more recently, in natural gas output has made the United States increasingly dependent on foreign supply. By the time of the embargo, imports had increased to nearly one-third of total oil consumption. This reversal of the production trend follows from the sustained decline in exploration and drilling in the United States for the last two decades due to the low cost and favorable tax treatment of extracting crude oil abroad.

Some measures have already been taken to increase domestic supplies in the next five years. The Alaska pipeline, approved by Congress in November 1973, will begin delivery of its two million barrels a day around 1977. Accelerated leasing of offshore lands by the Federal Government should begin to increase domestic production within three years. Leasing of shale oil tracts and the Outer Continental Shelf will probably take somewhat longer.

New domestic oil production must of course also be accompanied by added refining capacity. Because of the long lead time in construction, refineries must be begun now if they are to provide the needed capacity even for domestic production in the next several years.

A sizable expansion of coal production could be achieved in the relatively short term. Given satisfactory control of noxious emissions, coal could substitute for oil and gas to fuel some existing power plants and many of those now being built. It also could be substituted in some other industrial facilities. Possibilities for constraining oil and gas imports in this way are as great as those through economizing on end uses of fuel-intensive goods and services discussed above.

Any serious intention to move toward greater energy self-sufficiency in the next ten years must find satisfactory solutions to well-known objections to expanded coal use. Testimony before the Subcommittee on Consumer Economics and the Subcommittee on International Economics indicated that rapid progress is being made on technology to burn coal cleanly and that successful devices could be available by 1980. Improved mining and reclamation methods plus more adequate information on the location, shape, and quality of coal deposits on public lands would permit formulation of a coal development program that could minimize landscape disturbance and satisfy the Nation's needs.

The Role of Price

The paramount incentive to increase output is the price of new oil which was exempted from control in 1973. Free to rise to the price of

imports, this price is now in the range of $10 per barrel. We assume that world crude prices will decline somewhat from their present levels, and the price of new U.S. production would decline with them.

In the short run, most increases in production must come from conventional sources. For oil, this means that it must come from increased drilling—sometimes offshore or in remote areas—and from investment in secondary and tertiary extraction methods. Even somewhat lower prices for new oil than now prevail should be ample to stimulate much new activity in these fields. A cost of $7 a barrel appears to be at the high extreme of the range of cost estimates even for more exotic synthetic oil extraction techniques. Indeed, few investments in oil which cost more than $5 to $7 per barrel would seem to be justified by the long-term price prospects at this time. As mentioned above, there may be a need to set a temporary ceiling even on prices of this new oil. We believe that such temporary ceiling would not deter new productive investment.[1]

Present Federal Leasing System

Since April 1973, the Federal Government has moved to increase the number of leases sold for exploration on Federal lands and off the Gulf Coast. In January, the Interior Department opened bids for the first major shale tract. In the next three years, the Federal Government plans to begin selling leases for the Outer Continental Shelf for an area ten times that ever sold before.

The present system of so-called "bonus bidding" for oil and shale leases requires the successful bidder to pay the entire capital value of the lease at the outset. Profits then go to the developer. This system, with its initial high costs gives preference to large companies and even makes it necessary for blocs of these companies to bid on a single lease. It effectively prevents smaller companies from bidding independently. The apparent benefits of the bonus bidding system are that it yields large revenues for the Federal Government immediately and encourages rapid development of production in order for producers to recover the initial investment. However, it does not serve the public interest in permitting greater competition.

Recommendation 10

Federal lands should be leased to oil companies primarily under a system of royalty bidding rather than the present system of one-time bonus bids.

Under a royalty bidding system, companies would offer the Government bids of a share of the oil recovered—or a combination of cash and oil. Alternatively, tracts could be auctioned under a provision that some percentage of the value of production also go to the Government. The royalty bid to Government would be paid at least in part out of future production. In permitting a system of royalty bidding in addition to bonus bidding, independent producers would be able to participate in the development of vast Federal lands.

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[1] Congressmen Widnall, Conable, Brown, and Blackburn, and Senator Percy state: We do not believe that the evidence now available indicates some specific correct price at which there would be adequate incentives to stimulate new exploration for and production from new oil reserves.

Taxation of the Petroleum Industry [2]

The profits of the major oil companies are already at high levels. If crude oil prices remain at or above present levels, these profits will show an additional large rise. As discussed above, an effective price control program can limit the increase in profits, but it seems unrealistic to assume that price controls alone will be completely successful in controlling excess profits. Widespread concern about the mammoth transfer of income from oil consumers to domestic oil producers has led to a variety of tax proposals. The Administration has proposed an excise tax on crude oil, and various proposals for excess profits taxes have been introduced in the Congress.

The Administration's so-called "emergency windfall profits tax" is in fact an excise tax to be applied to that part of the price of crude oil above $4.75 per barrel. It is to be calculated on a per-barrel basis and not as a percentage of profits earned above an accepted level. Further, the base price exempt from taxation would rise gradually—reaching $7.00 per barrel within three years. This would provide an unwanted incentive for a three-year delay in bringing oil on the market. Because of the rate schedule, this tax would not generate much revenue except from oil priced above $7.00 per barrel. The Administration's proposed excise tax will not effectively deal with the issues of windfall profits, and therefore should be opposed.

Excess profits taxes also present difficulties. Conceptually such taxes are based on the widely accepted belief that transfers of income to producers in excess of the return required to cause goods to be produced are unnecessary and inequitable. In actual practice, administrative difficulties have made such taxes relatively ineffective. Determining an appropriate base on which to levy the tax is difficult. Furthermore, a conventional excess profits tax encourages business management to use accounting practices which reduce profits subject to tax and thereby limit its effectiveness. In the case of the oil industry, profits easily can be concealed through transfer to wholly owned shipping companies registered in other countries and to other foreign subsidiaries.

Even if an effective excess profits tax could be designed for the oil industry, the wisdom of imposing such a tax on an industry currently receiving several billion dollars each year in tax subsidies is questionable. Does it make sense for the Government first to give an industry large amounts of money through tax subsidies, and then to devise complicated new taxes to get the money back? The more logical first step would be to remove or reduce present tax subsidies.

Some tax revision has already been proposed by the Administration. It recommended that some yet-to-be determined portion of oil company payments to foreign governments be reclassified as royalties

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[2] With regard to this section and the recommendations therein concerning taxation of the petroleum industry, Senators Javits, Percy, and Congressmen Widnall, Conable, Brown, and Blackburn state: It is unquestionably clear that reexamination of the Federal tax structure as it applies to the petroleum industry is long overdue. Such reexamination is now going forward in the appropriate legislative committees of the Congress. We believe it premature for the Members of this Committee to support or reject any of the tax recommendations made in this section, before sufficient information is at hand to determine what effects any of these proposed tax changes would have on the incentive to explore for and develop new petroleum resources, especially domestic resources.

and that percentage depletion be disallowed for foreign operations only. While these steps are desirable, their revenue impact would be minimal. They represent only one small part of the tax revision which changed world market conditions require. We propose the tax revisions listed below. We are confident that they will leave the oil industry with ample capacity to earn sufficient profits to finance new investment and to attract new capital.

Recommendation 11

To limit the excess profits which would otherwise be realized by producers at current and prospective prices of crude oil, the special tax benefits presently granted the oil industry should be removed or sharply reduced. In particular, (*a*) percentage depletion and current expensing of intangible drilling expenses should be disallowed on both foreign and domestic operations.[3] (*b*) Incentives to domestic exploration can be provided, if necessary, through a direct drilling subsidy for exploratory wells.[4] (*c*) All payments to foreign governments for the privilege of mineral extraction should be classified as royalties rather than as taxes. (*d*) The crediting of taxes paid one foreign government against U.S. taxes owed on income earned in another foreign country should be disallowed.[5] [6]

Percentage Depletion

The tax code presently provides two alternative methods of recovering the acquisition cost of oil production property, "cost depletion" and "percentage depletion." Cost depletion is much like depreciation and cannot exceed the actual acquisition cost. Percentage depletion in fact bears no necessary relation to cost and can continue indefinitely. In practice, percentage depletion is almost always used.

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[3] Senator Humphrey wishes to add the following: While I have supported a reduction in the oil depletion allowance in the past, I believe that the prospects for continued high profits in the oil industry warrant serious consideration at this time of eliminating this allowance completely.

[4] Senator Proxmire states: I am opposed to recommendation 11(b). In the guise of incentives to drill, the industry has received a galaxy of special privileges, taxes and otherwise. What I want for this industry is genuine competition. The last thing we want is another "incentive to explore" by way of yet another subsidy.

[5] Senator Javits believes that all special tax benefits granted the oil industry should be carefully scrutinized with a view to eliminating all benefits that do not provide substantial incentives to domestic exploration and production.

[6] In regard to part (a), Congressman Brown states: Perhaps percentage depletion and current expensing of intangible drilling expenses should be disallowed on foreign investments as a means of discouraging investment there and encouraging investment in domestic sources. In regard to part (b), Congressman Brown states: I am in disagreement with the recommendation here. If the economic incentives of a free market are not enough, I prefer tax incentives to subsidies. In regard to part (c), Congressman Brown states: No matter how you classify the foreign payments, the question is how to deal with them and this must be studied carefully with reference to both the impact on our foreign trade relations and the impact on our Federal income and oil resources from both domestic and foreign areas.

When percentage depletion was originally adopted in 1926, the corporate tax rate was only 13.5 percent and the maximum rate on individual income was 25 percent. Even though the depletion rate has now been reduced from 27½ percent to 22 percent of gross income, the far higher corporate and individual income tax rates in effect today make the amount of tax subsidy greater than it was initially. The revenue loss due to the excess of percentage over cost depletion in calendar 1972 is estimated at $1.4 billion. As prices and gross income rise, so too will the value of percentage depletion. One recent estimate places the fiscal 1975 cost at $2.6 billion.[7]

Percentage depletion bears no relation to original investment cost, to producing life of the property, or to anticipated replacement cost. Indeed, it seems to be without economic rationale. Because the financial structure of the industry, however, is to some extent built around percentage depletion, immediate total abolition would be disruptive. Phase-out over three years would appear reasonable and also provide an incentive for extraction of oil now before the subsidy expires. Given the present record earnings in the industry, now is a favorable time to remove this outdated tax subsidy without causing undue hardship.

Current Expensing of Intangibles

Certain expenses of bringing a well into production, such as labor, materials, supplies, and repairs, are classified as intangible drilling expenses. The tax code allows these to be deducted from income in the year the costs are incurred rather than depreciated over time as are other investment costs. The deduction for intangibles may be taken in addition to the percentage depletion allowance. This provision for intangibles applies to the cost of drilling a *successful* well; the entire cost of a dry well may be deducted in the year incurred.

If current expensing of intangibles were eliminated, in conjunction with removing percentage depletion, the combined revenue gain from the two changes is estimated at about $3 billion in fiscal 1975. This roughly equals the estimated revenue from the proposed crude oil excise tax. Repeal of these two tax subsidies is by far the better method of obtaining this revenue.

Percentage depletion and the current expensing of intangibles are sometimes justified on the grounds that they are of particular value to small independent producers. In fact it is the large oil companies which benefit most from these provisions. The provision which limits percentage depletion to 50 percent of net income often prevents higher cost independent producers from taking full advantage of the depletion allowance. It may be that independent producers, who are heavily dependent on borrowed capital, would in the past have had difficulty obtaining this capital had it not been for such benefits. Current higher prices probably will attract adequate capital into oil and gas exploration without any special tax benefits. If not, a direct drilling subsidy for exploratory wells (as distinguished from far less risky development wells in proved fields) or other specifically targeted tax provi-

[7] These estimates are for oil and gas only. They do not include the revenue loss from percentage depletion on other minerals.

sions could encourage exploration and preserve the valuable competition independent producers provide. Such an approach would be far less costly and more effective than the existing tax provisions.

Tax Treatment of Payments to Foreign Governments

Payments of royalties to private owners of oil-bearing land in the United States are treated as business expenses and deducted from gross income. A large part of similar payments to foreign governments is presently classified as taxes and therefore taken as a credit against U.S. taxes. This assymetry of treatment creates an artificial inducement to investment abroad and reduces any incentive the oil companies might have to resist the increased royalty demands of foreign governments. For these reasons, reclassification of all payments required by foreign governments for the privilege of mineral extraction as royalties rather than taxes is highly desirable. This could be done by administrative ruling of the Internal Revenue Service, but action by Congress would be preferable to avoid possible legal challenge to a revised ruling.

While this reform is desirable, its immediate revenue impact would be minimal because the oil companies have excess tax credits to carry over from prior years. These credits can be applied only against income earned outside the United States. Under the "overall limitation" option, however, taxes paid one foreign country can be credited against income earned in another foreign country. For example, if credits for taxes paid to Saudi Arabia exceed the income earned in that country which is subject to U.S. tax, the excess can be credited against income earned on refinery operations in European or Caribbean countries. If the revisions of tax treatment of income earned abroad are to be meaningful, they should include abolition of the "overall limitation" option so that taxes paid in a particular country can be credited only against income earned in that country.

Obtaining Adequate Energy Information [8]

The lack of accurate, well-analyzed data regarding energy sources and uses has placed the United States Government in a ludicrous position. Even those officials directly charged with administering energy policy are unable to determine accurately the extent of the present fuel shortage or to estimate reliably its potential impact on the economy. Nor can they determine fuel production costs with anything approaching the degree of accuracy necessary to administer the price control

[8] With regard to this Section and the recommendations therein Congressmen Widnall, Conable, Blackburn, and Brown and Senator Percy state: Certainly we support the collection and use by the Federal Government of sufficient energy-related data to enable the government to make necessary policy decisions in this area. However, we feel that the language of this section goes too far. The right of private companies to protect what is clearly proprietary matter, the release of which would have an adverse business effect upon such companies, must be considered along with the Federal Government's need for information. In his testimony in mid-January before the Subcommittee on Priorities and Economy in Government of this committee, the Administrator of the Federal Energy Office, Mr. Simon, discussed the problem of improved energy statistics in detail. The Administration is preparing legislation addressed to improving Federal energy statistics for submission to the Congress. Until we have had an opportunity to examine that legislation carefully, we reserve judgment on the specific recommendations of this section of the Report.

program. The Government knows almost nothing about the extent of the vast mineral fuel resources contained on public lands. Tax policy formulation is hampered by the lack of analysis of existing special tax provisions for mineral fuel extraction and consequent ignorance of their impact.

The Administrator of the Federal Energy Office acknowledged this inadequacy of information in testimony before the Subcommittee on Priorities and Economy in Government on January 14, stating:

> Let me say right at the outset that there has never been in existence an adequate energy data system. . . . Today and in the years ahead we need better data on everything from reserves to refinery operations to inventories. . . . Data we can check, verify and cross-check.

The now widespread recognition of the need for improved data collection and analysis must be followed promptly by the policy measures necessary to meet this need. Our information needs are not limited to measurement of the current shortage, important though that is. Equally urgent is better information about future supply and demand. A thorough public examination of the financial structure of the fuels industry is also required. We recommend the specific steps listed below:

Recommendation 12

A. An energy information library should be established within an appropriate Federal agency.

All energy-related data collected either publicly or privately should be made available to this library. All data in the energy information library should promptly and conveniently be made available to the public, except where considerations of national security or reasonable competitive equity prohibit public disclosure. And even when individual company data are legitimately confidential, aggregated totals based on these data should be made public.

B. The accuracy of the wholesale price statistics for petroleum products must be improved. Unless corporations producing petroleum products provide full and immediate cooperation with the requests of the Bureau of Labor Statistics, Congress should provide BLS with authority to require submission of corporate data with appropriate safeguards to prevent competitive injury. The BLS should begin immediate publication of the improved petroleum product price indices which it has already developed, while at the same time making every effort to improve the quality of this information further.

The presently published wholesale price statistics for petroleum products are spot prices taken from trade publications. In recent months the spot price appears to have diverged widely from the average price of petroleum products sold under contract. The Wholesale Price Index may, therefore, be highly misleading. The BLS has attempted for several years to collect price data directly from oil companies and to develop a more accurate index. The oil companies have been reluctant to supply such data; about half of these companies have, to date, been totally unresponsive to the BLS requests.

Undoubtedly the statistical needs of the BLS would impose some additional accounting burden on the oil companies. However, BLS receives far better cooperation from other industries whose pricing practices are at least as complex. Unless the oil companies make an immediate good faith effort to meet fully BLS requests, BLS should be given legal authority to compel compliance.

BLS has been understandably reluctant to publish such data as has been developed since it is based on information submitted by only a fraction of the companies selected for the sample. Even so, available information would appear to be clearly superior to the spot prices currently being published. We believe BLS should begin immediate publication of revised petroleum product price indices while at the same time making every effort to rapidly expand and improve these indices.

C. Corporations relating to energy research, exploration and marketing should be required to submit to the Federal Government periodic confidential reports by product line on their sales, costs, and profits.

The Federal Trade Commission has proposed to collect this "line-of-business" information from U.S. corporations. This program should be instituted promptly. The need to obtain these data from the major oil companies is especially urgent.

Analysis of the financial operations of the oil companies is complicated by the various special tax provisions available to this industry, such as the use of percentage depletion. The conglomerate nature of the oil company operations, including, for example, the ownership of foreign flag shipping subsidiaries, also makes it difficult to identify cash flow and profits by product line. Clear and complete product line reporting by the major oil companies is essential to a proper understanding of the costs of fuel production and to the establishment of appropriate price and tax policies.

D. Additional and more accurate data should be collected on inventories, shipments (including imports and exports), and sales of mineral fuels at all levels of production and distribution.

The data presently available on inventories, sales, and shipments largely stop at the refinery level. In order to effectively administer the allocation program, it is necessary also to have accurate information on stocks in the hands of wholesalers and retailers. Data are needed on physical volume of inventories and sales as well as dollar value. Regional as well as national data are required in order that regional shortages can be anticipated and appropriate allocation measures adopted.

E. Energy-related data supplied to the Government by private corporations should be subject to government audit.

The Government must employ sufficient numbers of expert personnel to enable them to carry out a significant number of careful across-the-board audits. Administration proposals announced to date are inadequate.

Information on Energy Resources in the Public Domain [9]

The need for the Government to have better information about energy resources is nowhere more compelling than in the area of the government-owned lands and mineral rights. Despite the enormity of the energy resources thought to exist and their increasing importance, no inventory exists for resources on public lands, offshore, and on the Outer Continental Shelf. Production of oil and gas from Federal and Indian lands has now risen to approximately one-fifth of total domestic production. With the rapid acceleration in leasing of offshore and shale oil tracts and coal lands, production from Federal lands will become increasingly important.

The Government's knowledge of what is in the public domain is derived almost entirely from private sources. In the case of the Outer Continental Shelf, the Geological Survey, which issues exploratory permits to private companies, must buy back the information about energy resources under these leases from these companies at considerable cost. A similar situation exists regarding known coal deposits under Federal lands, but it is further complicated by the Government's failure to keep track of mineral rights retained wholly or partially when it has sold the land.

Basically, the Government does not have the capacity for identifying and evaluating its own resources or for analyzing fully data it obtains from others about reserves in the public domain. The Geological Survey, for example, lacks funds to buy all the information it needs from the private companies, much less enough trained personnel to analyze it. Without as much information on tracts to be leased as prospective purchasers possess, the Government is in a poor position to evaluate the bids. Furthermore, the Government cannot intelligently plan to meet future energy requirements in a timely fashion without full and comprehensive knowledge about energy resources of its own.

Recommendation 13

The capability for adequately gathering and analyzing information about the location, extent, and value of energy resources on Federal lands and on the Outer Continental Shelf should be established within an appropriate government agency. New lessees prospecting or exploring for energy resources in the public domain should be required to supply all information obtained to an appropriate government agency. The Government should be able to purchase other necessary data from private sources when it is considered economical to do so.

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[9] With regard to this section, Senators Javits and Percy, and Congressmen Widnall, Conable, Brown, and Blackburn state: We support the recommendations contained in this section as they relate to establishing a capability in the Federal Government to gather and analyze information about energy resources on Federal lands and the Outer Continental Shelf. However, we reserve judgment with regard to the other recommendations of this section, pending further study of the information which the Government would require from and/or purchase from private sources.

Protection of a Free, Competitive Market

Why has the oil industry failed to provide sufficient supply to meet the needs of the American market? Did the companies, both domestic and international, engineer the present supply crisis in order to force prices to rise?

The Federal Trade Commission in July 1973 released a study on competition in the petroleum industry which concluded that the structure and conduct of the major integrated petroleum companies have had anti-competitive effects.[10] These practices endanger the continued viability of independent refiners and gasoline marketers. In recent months it has become clearer than ever that present efforts to insure an acceptable degree of competition within the industry are not adequate.

The aggravation of shortages due to the Arab oil embargo has brought strong pressures to exempt the companies from antitrust prosecution to permit consultation among them in the distribution of limited supplies. In October the Foreign Petroleum Supply Committee, made up of major oil companies with overseas operations, was reactivated to ascertain the degree of actual supply shortages and to maximize delivery of imports. The Administration, in its proposed emergency energy bill, sought a further broad suspension of antitrust laws to permit greater leeway for the companies to work together in allocating scarce resources domestically. This broad exemption, however, was rejected.

In a time of acute shortage, there may be instances where regulations should be suspended in the public interest, but then only on a very selective and temporary basis.

Recommendation 14

Although the present crisis situation may require extraordinary industry collaboration to assure efficient allocation of available petroleum supplies, no blanket antitrust exemption should be granted to the oil companies. Nor should company officials brought into the Government during the present crisis be exempt from conflict of interest provisions.

In the longer term, the overall competitiveness of the oil industry must be reconsidered and specific attention given to additional ways to cope with the most serious problems arising out of the industry concentration.

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[10] *Investigation of the Petroleum Industry*, a study by the staff of the Federal Trade Commission, published by the Permanent Subcommittee on Investigations of the Committee on Government Operations, United States Senate, 93d Congress, 1st Session (GPO 98–2090), July 12, 1973.

Recommendation 15 [11]

Enforcement of antitrust laws must be stiffened. Furthermore:

A. Congress should enact legislation to reduce vertical integration of the oil industry; at a minimum, it should require the divestiture of pipeline facilities by the major producers.[12] [13]

B. Congress should act to limit ownership of multiple energy resources (i.e., oil companies owning coal, oil shale, and geothermal power resources) to insure efficient resource development and the maintenance of effective competition among alternative energy supplies.

C. A government corporation should be created to develop and produce energy resources in the public domain. Among other purposes, it could provide a yardstick with which to measure the costs of private oil companies. This corporation should supplement and not replace the present system of leasing mineral rights to private persons.[14]

At present, major oil companies own facilities from the wellhead to the gas pump. The pipelines in particular are for the most part owned by the few largest oil companies. By controlling transportation of crude oil to refineries and of products to distribution points,

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[11] With regard to this recommendation in general and the discussion which follows it, Senators Javits and Percy, and Congressmen Widnall, Conable, Brown, and Blackburn state: The appropriate time for a complete reexamination and overhaul of our Federal antitrust legislation and regulation has long since arrived. In our opinion that review and overhaul should proceed immediately, at which time the proposals contained in this recommendation could be considered as part of whatever reforms in this area are deemed necessary. Pending such study of the antitrust area, we take no position with regard to the specific recommendations.

[12] Senator Proxmire adds: It is my view that sufficient authority exists under existing laws for the Antitrust Division of the Justice Department and the Federal Trade Commission to act if only they have the will and the courage to do so.

We do not need more laws. We need the enforcement of existing laws to provide genuine competition in the U.S. economy. Waiting two years or more for new laws, which is the minimum time it would take, is a self-defeating proposition. The answer is to act and to act now.

[13] Congressman Blackburn states: A minimal action dealing solely with pipelines would do little to alleviate anticompetitive problems in the industry. Special consideration should be given to action that would deal primarily with "production and marketing", segments of the industry where barriers to entry as well as extreme corporate pressures act to reduce competition severely. Problems arising out of vertical integration are broader and much more complex than implied here.

[14] Congressman Blackburn states: I do not support part (c) of this recommendation.

these companies can regulate the access of the independent companies to the pipelines and to storage capacity near the pipelines, and ultimately to their markets. By controlling the pipelines, the major companies have been able to divide markets and raise prices. Pipelines at present are regulated as common carriers by the Interstate Commerce Commission; present regulation, however, does not adequately insure that access to pipelines is guaranteed.

With the rush to develop alternative resources, there has been a growing trend toward consolidated ownership of various energy resources. Oil companies have been acquiring coal deposits; by 1969 they already had leased or bought 30 percent of proven domestic coal reserves. The oil companies have also been the principal bidders on Federal leases for oil shale and geothermal sites. They also own substantial nuclear fuel capacity. The enormous profits which oil companies have realized in the last year enhance their ability to bid for these resources. Although oil and coal are not perfectly interchangeable, they do compete directly in many markets. Concentration of ownership of several energy resources would permit the companies to impede development of a single resource to maintain the profits return on another.

The Government has relied almost totally on private persons for the development and production of energy resources in the public domain. In view of the energy crisis and the prospects that it will be with us for some years, however, the Government needs to exercise a greater role with respect to its own resources. Such a Federal corporation would not replace leasing to private companies but rather supplement it. A corporation like the Tennessee Valley Authority could not only act to stimulate competition but could provide the public a reliable source of information on the economics of energy production by which to judge industry performance.

V. INTERNATIONAL OIL SITUATION

In October 1973, the Arab oil producing countries[1] announced an embargo on all shipments of oil to the United States and other "unfriendly" nations supporting Israel. This move was intended to regain Arab territories occupied by Israel since June 1967 and to "restore the right of self-determination" to the Palestinian people. Most Arab producers also embargoed shipments to The Netherlands and locations known to process oil for the United States (Bermuda, Netherlands Antilles, etc.). Although direct U.S. imports from Arab countries had averaged approximately 6 percent of oil consumption in the first half of 1973, estimates of product imports refined from Arab crude in the Caribbean, Europe, and Canada, plus increases expected in the second half, raised total U.S. dependence on Middle East oil to nearly 17 percent of petroleum consumption at the time of the embargo.

To support their oil embargo against the United States, the Arab oil producers announced immediate cutbacks in production from September 1973 levels by at least 5 percent, with additional 5 percent cutbacks to be made effective monthly for the duration of the embargo. By November, oil liftings had been reduced by 25 percent below September 1973 output (by approximately 4.7 million barrels a day).

The United Kingdom, France, India, Brazil, and Spain, and all Islamic importing countries were considered "friendly" because of their attitudes toward the Arabs and were to receive shipments equivalent to their average deliveries during January-June 1973, while other nonembargoed countries were to receive equal allotments of the remaining supplies. In December, the rest of the European Community (minus The Netherlands) was added to the list of "friendly" countries.

The effect of the embargo and production cutbacks has differed from initial expectations. Iran, Iraq, Nigeria, and Venezuela stepped up production, offsetting approximately 800,000 barrels a day of the total cutback. Although reports of substantial embargo leakages via third-country refineries are difficult to verify, it is clear that international oil companies have redistributed supplies from non-Arab fields to embargoed areas in an attempt to supply all customers proportionally. For example, Great Britain, which was to be almost fully supplied with Arab oil, found its November imports 18.9 percent below those for the previous month; imports from Nigeria and Iran were 35 percent below October levels.[2] Japan, expecting only a 10 percent cutback in its Arab oil supplies in December, found itself with an approximate 25 percent shortfall.[3] At the same time, refineries in Rotterdam have had plenty of oil to process, not only for transshipment, but for Holland as well. The United States also has not been as short of imports as initially forecast.

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[1] Saudi Arabia, Kuwait, Libya, Algeria, Egypt, Syria, Abu Dhabi, Bahrein, and Qatar (Iraq dissenting).

[2] British import figures reported in Platt's Oilgram, January 17, 1974.

[3] U.S.-Japan Trade Council Newsletter, December 18, 1973.

The effect of supply swapping has been to shift the burden of the Arab embargo and cutbacks away from the United States and onto other consuming nations. An equal percentage cutback in imports has a greater impact on the economies of the other industrial countries than on the United States because of the greater proportion of their total energy use met from oil imports and because of the relatively lower proportion of wasteful and luxurious energy consumption in their total use.

In December, the Arab producers deferred their 5 percent cutback, and in January they announced a 10 percent increase in production levels in response to the economic difficulties in Japan and Western Europe caused by supply shortages. These countries initially undertook stringent measures to curtail consumption; several European governments banned Sunday driving; Great Britain prepared to ration momentarily; France raised gasoline taxes sharply to curb private automobile use. More abundant supplies than expected and the success of conservation measures have eased the situation somewhat in Europe. Now Japan too plans to reduce the extent of its cutbacks to industrial and consumer use from 15 percent to 10 percent.

Response to the Embargo

The Arab producers' use of oil as a weapon has focused attention on the vulnerability of industrial nations to a disruption of oil supplies. The Arab producers provide more than half of all oil sold in export markets. By late 1973, even the United States had become increasingly dependent on them for imports. The present situation has brought home the need to reach a speedy negotiated settlement of the Arab-Israeli conflict to insure the access to vital supplies. U.S. diplomatic efforts, especially those of Secretary of State Kissinger, should be commended for getting agreement on a Sinai troop disengagement and laying the groundwork for further negotiations.

Impracticabilities of a Counterembargo

One immediate response to the embargo has been to propose a counterembargo of food and manufactured goods shipments to the Arab oil producers. Any such effort, however, would be futile without full multilateral cooperation. Although the United States has supplied sizable amounts of food to Algeria and Saudi Arabia in recent years, these countries would easily be able to meet these grain import needs—barely 2 percent of world supply—from other sources. In a tight market these oil producers would easily be able to pay whatever premium was necessary. Furthermore, the grain market is so decentralized that even a collective embargo would be difficult to enforce.

Even though the United States exports large amounts of manufactured goods to the producers—including advanced technical equipment—any embargo on the sale of these goods would be equally ineffective and only hurt U.S. manufacturers. Without the total cooperation of all other industrialized nations, the United States would only lose its modest share of Arab markets to its competitors anxiously seeking export sales to pay for the growing cost of oil imports. A case can be made for curtailing arms shipments to Saudi Arabia and Kuwait, but this too would only result in lower U.S. exports. Even if Europe did

not supply the sophisticated weaponry, the Soviet Union would probably gladly supply it.

It seems highly unlikely that any of the other industrialized countries would be willing to risk disruption of vital oil supplies to join in such a tenuous counterembargo. The members of the European Community were even unwilling to share oil supplies with The Netherlands for fear of jeopardizing their own remaining oil imports. The benefits, if any, could be only long term, while any further disruption of flow of oil could quickly become disastrous. Furthermore, while other industrial countries do not like such dependence on other nations, they are not entirely in agreement with the U.S. policies in support of the State of Israel.

Violations of International Law

It remains important, nevertheless, that the United States not sanction—through its own inaction—the Arab nations' use of oil as a weapon. By embargoing oil, the Arab producers have denied the United States access to critical raw materials in direct contravention of the General Agreement on Tariffs and Trade (GATT) and the spirit of all international trade agreements in the post-World War II period. Among the Arab oil producers, however, only Kuwait is a GATT signator at this time.

More significantly, the producer action directly violates specific bilateral trade agreements, such as the Saudi Arabian-U.S. treaty, by imposing on the U.S. *less* favored treatment than accorded others. Although the United States is not above reproach for its failure to adhere to international covenants, the United States must bring these violations to the attention of the offending government.

The United Nations is perhaps the most relevant forum for reprimanding Arab conduct for violating principles of free trade and international law. By withholding oil shipments in order to pressure the United States to change its foreign policy, the producers have directly violated Resolution 2625 of the 25th General Assembly (1970), which states that:

> No State may use or encourage economic, political, or any other type measures to coerce another State in order to obtain from it the subordination of its sovereign rights and to secure from it advantages of any kind.

All Arab oil producers, then members of the U.N., endorsed the above resolution. Furthermore, the Arab countries have repeatedly looked to the U.S. to arbitrate their own international difficulties.

Recommendation 16

To discourage further economic warfare, the United States should ask the Secretary General of the United Nations to serve notice on the Arab oil producers that their actions violate the U.N. Resolution 2625 (1970) limiting the use of economic and political pressure. They should be directed to bring their conduct into line with the above resolution.

Higher World Oil Prices

In recent weeks, the tremendous increases in world oil prices have almost completely overshadowed the Arab embargo. In October 1973, the six Persian Gulf producers announced new posted prices raising the average sale price of Persian Gulf oil from $2.37 to $3.65 a barrel.[4] This unilateral increase broke with the pattern of gradual, negotiated adjustments established by the 1971 Teheran Agreement and tied new posted prices for oil under long-term arrangements to market price levels.

Following the cutbacks in production levels in October and November, spot prices for crude skyrocketed. In November, Nigeria reported sales at $14.00 a barrel. In early December, Iran auctioned its crude at $16.00 and $17.00 a barrel. On December 23rd, the Persian Gulf producers, led by Iran, announced new posted prices of $11.65 a barrel, making the average sale price approximately $7.65 a barrel, or nearly double the October cost. Other OPEC members have fallen in line with large increases: Libya raised its posted prices from $8.93 to $15.77 a barrel: Nigeria from $8.51 to $14.00; Venezuela from $7.74 to $14.00; and Indonesia from $6.00 to $10.80. The latest posted price increases, raising the average cost of oil worldwide by more than 300 percent in six months, constituted a readjustment of contract prices to reflect new market demand.

The effect of these higher prices on consuming economies will be dramatic. The Organization for Economic Cooperation and Development (OECD) in its semi-annual *Economic Outlook*, published just before the price boosts of December 23rd, forecast that "the sharp rise in oil prices by the producing nations will not only make anti-inflationary policies more difficult, but will create awkward problems of balance of payments of many OECD member countries."

Rough projections of the December price increases produce more devastating figures. One international oil economist, Walter J. Levy, estimated that the United States, Japan, and Europe would have to pay $87 billion for 1974 oil imports assuring 1972 levels of consumption—an increase of $67 billion over their 1972 bill. The poor oil importing countries would have to pay an additional $6.7 billion over 1972 levels: these estimates would be higher if these countries were to import what they were forecast to need in 1974.

Surely at current prices, oil imports and consumption will fall. Neither the rich countries nor the poor will be able to pay so much for oil. Some new sources of energy, both oil and other resources, will be developed in the short term. Even after taking into account estimated supply and demand elasticities for oil, the implications of the new prices for international payments flows are staggering.

Some countries will be more easily able to bear the additional burden of imports than others. The United States, for example, would be in a relatively stronger position than its major industrial competitors because of its sizable domestic resources. Japan, on the other hand, would face a serious deficit or exchange rate pressure. Increased costs would raise oil imports from 13 percent to over 30 percent of total

[4] Posted price is an artificial price used to calculate royalties and taxes. The sale price is estimated cost of oil (F.O.B.); it includes royalties and taxes paid to producer government production costs and an average profit for each barrel.

imports. Of the European countries, Italy and the United Kingdom would probably be in the weakest position because of current trade deficits and low foreign exchange.

The higher prices may add as much as 2–3 percentage points to present inflation rates. At the same time, transfers of purchasing power to foreign oil producers have roughly the same effect as a tax increase in removing money from the domestic spending stream. Thus, high oil prices may intensify the recessionary pressures already building in Europe, as well as in the United States.

Sadly, it is the developing countries who are poor in natural resources who will suffer most. They have fewer resources to cushion the adjustment and less unessential energy consumption that can be cut back than the richer countries.

High prices will affect supplies not only of fuel, but also of products derived from petroleum. While curtailment of synthetics and plastics output may give a boost to the producers of various natural products. e.g., cotton, leather, rubber, palm oil, etc., shortages of fertilizer will have immediate consequences for world food supply. The new miracle grains, which have helped reduce poor countries' import needs, require heavy fertilizer use to produce high yields. The combined burden of fuel costs and product shortages on the poor countries will more than offset the benefits of all Western foreign aid to these countries.

Conflict of Producer-Consumer Interest

The sharp increase in the relative cost of oil has pointed up the underlying conflict between the interests of the producers and those of consumers. The high prices which pose such economic difficulties for the industrial world are the very hope for the producers to provide for their own development.

The producers wish to maximize returns on their diminishing resources and shift the terms of trade in their own favor. Few of the OPEC member countries are yet very rich; most are still relatively poor and faced with serious development problems. Some, like Nigeria and Indonesia (per capita incomes in 1972 of $151 and $85 respectively) will remain extremely poor for some time even with the higher revenues.

In an interview with the *New York Times*, the Shah of Iran said:

> Of course [the price of oil] is going to rise. Certainly! And how! You can spread the bad news and add that it comes from someone who knows what he's talking about. . . . There's no other solution. However, it's a solution you of the West have wished on yourselves. . . . You've increased the price of wheat you sell us by 300 percent. . . . You've sent petrochemical prices rocketing. . . . You buy our crude oil and sell it back to us, refined as petrochemicals, at a hundred times the price you've paid us. You make us pay more, scandalously more, for everything, and it's only fair that, from now on, you should pay more for oil. Let's say. . . . 10 times more.[5]

Ironically, higher oil prices will only mean more rampant world inflation, higher import costs for the producers and an added push to find

[5] Quoted in *Consumers Union*, February 1974, p. 124.

cheaper energy substitutes. There is the danger that higher prices may spark a worldwide recession and thus rebound against the producers.

What Consumers Can Do

One decisive way to break the present impasse would be to increase the supply of energy resources outside the control of OPEC and thus relieve the current pressure on prices. The tripling of world oil prices in less than half a year should by itself bring forth new supplies, both new production of fossil fuels and energy from less conventional sources. As already noted above, the United States has embarked on a program to stimulate both forms of energy. To the extent that the United States is able to move toward energy self-sufficiency by developing its own resources and carrying out effective conservation measures, it will make energy resources available at a lower price for the rest of the world. The United States must, however, concern itself directly with world oil prices because of its own continued import needs and because of the effects of the high prices on the rest of the consuming world.

Recommendation 17

While the United States should move decisively to develop its own domestic energy resources, it should simultaneously join other consuming nations in promoting research and the technological development of all forms of energy. The United States should exchange information on limiting energy demand and wherever possible, energy-saving technology.

The United States should remove its objections to lending by the international development banks to projects which will promote the exploration and development of energy resources.

In the fall of 1973, the United States signed agreements with its OECD partners to provide for sharing information on energy research. The United States should implement these agreements as rapidly as possible. To the extent that joint governmental research efforts would further increase the world supply of cheap energy resources, the United States should be prepared to cooperate fully with the other OECD members.

In these multilateral efforts, the United States should pay special attention to developing energy resources which would be available to all countries, such as solar energy. Development of energy resources in the poor countries, with the help of the World Bank and the regional development banks, would help these countries reduce their added import burden. In the past, Bank lending for such projects has been confined almost exclusively to hydroelectric projects. The United States opposed some energy loans—particularly for coal and oil—on the premise that private capital could develop these resources sufficiently.

While little can be done to develop alternative energy supplies immediately, the consuming world can moderate its demand by eliminating wasteful energy uses. A strong conservation program may in fact be the most effective bargaining tool in the short run. The ability of

the United States to cut demand below forecast levels has reduced the impact of the embargo on the U.S. economy. As U.S. consumption is by far the world's highest, many countries may resent pressure from this country to cut down on their energy uses. Slack, however, can be taken up in the energy use of other countries with only limited effect on their productive capacity. Lower consumption will affect oil prices in the same fashion as supply increases. The United States could benefit greatly by adopting the more efficient energy use practices of other countries, while sharing some of its own technological innovations.

Leverage With the Producers

Cooperation among the consumer countries is difficult because of the wide divergence of their interests. While the United States imports only about 11 percent of its total energy consumption and has announced a policy goal of total self-sufficiency by 1980, Japan and Western Europe depend heavily on oil imports to meet their total energy needs (89 percent and more than 70 percent of total consumption respectively). These countries, in fact, would have a much stronger basic interest in adequate world supplies and competitive prices than we do, but they are unable to look beyond the short run, despite the consequences of not doing so. Among the European countries, differing attitudes on how to deal with the producers have split the Community and have even kept it from formulating a tightly unified policy.

The lack of unity among consumers has led to an increasing number of bilateral government-to-government deals, with each consumer scrambling for his own supply and bidding up prices. The French have negotiated arms for oil with Saudi Arabia and Iraq, and nuclear plants for oil with Libya. Japan and Great Britain have under discussion deals involving exchange of technology and industrial goods for oil. Such arrangements are not new. For several years, France and Japan have sought direct links with producers to circumvent the Anglo-American dominated international oil companies. The producers have also indicated that they would like such bilateral agreements. In 1972, the Saudis sought a preferential arrangement with the United States, but the offer was rejected for fear of accelerating competition for raw material supplies. In the late 1960's, Iran had made overtures for a bilateral agreement with the United States.

Although the bilateral state trading agreements may seem to offer greater stability of supply and resolve payments problems in the short run, such agreements permit the producers to play one consumer off against the other to obtain higher prices than otherwise. The poorer countries will more and more be left out in the cold as they will have little to offer the producers in the way of technology. A common consumer bloc—even a loose umbrella-like group—would provide the only way to negotiate with OPEC for lower prices in the interests of all consumers. There may, of course, be the opposing danger that world agreement on prices may not permit prices to fall as far as they might in the future. Because of the urgent need to reduce prices immediately, we believe that this risk is worth taking.

To persuade the major industrial countries, heavily dependent on imports, to make a meaningful commitment to a consumer group, there

must ultimately be agreement by those having domestic production to share oil supplies in the event of retaliation. Principally, this means that the United Statees and energy-rich countries like Canada (and, eventually Britain and Norway) must prepare to contribute to any endangered economy from their domestic energy supplies, as well as from their imports. The United States did offer to supply The Netherlands when the other Common Market countries failed to move on an oil-sharing agreement and it appeared that The Netherlands would be drastically short. Although there may be serious reluctance in the United States to committing ourselves to share any of our resources, any meaningful consumer group could not be constructed without our participation.

The success of the Washington Conference of fourteen energy-consuming nations in February 1974 has significantly strengthened the possibility of meaningful consumer agreement, despite the isolated objections of the French. The principles of cooperation in the areas of emergency allocation of supplies, energy conservation, and future development which were endorsed in the joint communique, provide a strong basis for future discussions. Furthermore, the attention which this group gave to the interrelationship between international monetary issues and energy supply indicates a more realistic view of the complexity of the problem. Already joint understanding among consumers has moderated spot crude prices from their December high.

Recommendation 18

The United States should continue to pursue vigorously a common consumer position to minimize the scramble for oil supplies and competitive price pressures. The United States should prepare in case of emergency to allocate resources from both domestic production and its imports to other nations in exchange for their participation in a consumer bloc. The developing countries as well as the industrialized countries should be included in the effort to reach a common position.

Incentives for Producers To Meet World Demand

Even with a unified negotiating position on price, consumer nations face the problem of how to persuade producers to increase petroleum supplies in the short run to meet the basic needs of the consuming world. Despite its political motivations, the Arab oil embargo has highlighted the underlying economic question of whether it is in the interest of the producers to continue expanding production of oil to previously projected levels.

In discovering that they can limit production and increase revenues, the producers have gained new confidence. Some OPEC producers with rapidly growing import needs—like Algeria, Iran, Indonesia, Nigeria—will probably be requested to increase production as much as possible to get the greatest returns in the short run. The real problem lies with the key Arab producers—Saudi Arabia, Libya, Kuwait, and the Persian Gulf Sheikhdoms—that will not be able to spend all of their present revenue, even with vastly expanded development schemes. They have already accumulated huge foreign exchange reserves and face serious problems about how to invest them.

According to estimates by Levy, about one-half of the $89 billion in 1974 oil revenues (based on 1972 production levels) the OPEC members would earn would remain in "surplus" funds. This would be added to approximately $15 billion in official reserves held by oil producers at the end of 1973. These annual surpluses—concentrated in the hands of the key Arab producers mentioned above—can be expected to be even larger in future years. These governments will want to find investments with attractive interest rates, guarantees against devaluation, and security from political pressure to insure adequate income for further development when their oil resources are depleted. Presently large amounts of these funds are held in Eurocurrency deposits, portfolio investments, and in real estate in Europe and, to some extent, in the United States.

Consumers must seriously consider the very special problems which the producers face in adjusting to their new wealth.

Recommendation 19

In addition to attempting to achieve a negotiated settlement of the Mideast conflict, the United States in cooperation with other consuming nations should develop suitable incentives that will induce the Arab oil producers to continue to produce oil needed by the world economy.[6] We should create productive uses for surplus Arab funds in the following ways: (*a*) Encourage investment by producer countries in the United States and in other industrial countries, including oil refining and distribution facilities as suitable industries; (*b*) encourage oil producers to purchase World Bank and regional development bank bonds; (*c*) assist development in producer countries through reimbursable technical assistance from the World Bank, and (*d*) liberalize trade policies affecting the importation of energy-intensive manufacturers (such as petrochemical products, other refined products, aluminum, etc.) into the rich country markets.

Investment by the producers in downstream oil activities in the United States and other industrial nations would provide positive incentives for the producers to maintain oil supplies to these facilities. In 1972, Saudi Arabia officially offered the United States large investments as part of its request for a bilateral oil agreement. Iran has already signed a joint venture with Ashland Oil to build a refinery. Such investment would not only help meet the gigantic financial requirements forecast for energy development in the remaining years of this decade, but enhance the common interest between producers and consumers.

World Bank bonds provide an investment opportunity with satisfactory interest rates and security for producer funds. As they can be denominated in a producer's currency they should provide a greater value maintenance for the country concerned. At the same time, the

[6] Senator Proxmire states: I believe that under present excessive world prices, very little further price "incentive" is needed to entice the Arab oil producers to produce oil.

World Bank should consider the development of facilities to provide technical assistance on a wholly reimbursable basis to the oil rich developing countries. Development of their own economies is understandably their first priority and these countries could genuinely benefit from the international expertise brought together in the World Bank.

Special attention should also be given to the problems which new industries in the oil countries—especially energy-intensive, semi-finished manufacturers—will have in marketing their products in the rich countries. Only by permitting these industries to grow will producers be able to absorb more and more imports from rich countries. Although the required trade liberalization in certain areas will require some readjustment for labor, the actual numbers displaced should be relatively few compared with those gained in export industries.

The new wealth of the oil producers has raised a clamoring among the rest of the world for these countries to assume greater responsibility for the poorer countries. The World Bank family must be revamped to include a greater participation by the rich producer governments. If the bill for the Fourth Replenishment of the International Development Association, once rejected by the House of Representatives, is to be seriously reconsidered, as it needs to be, some effort must be made to begin this process.

Recommendation 20

The United States should encourage the oil producing nations to assume an expanded role in the international development banks—particularly the concessional funds—commensurate with their new wealth.

As these countries become more "flush" with extra foreign exchange, it is only right that they should contribute a greater share to the Bank and particularly to IDA and the special concessional funds which help the poorest countries. Greater participation in the international development banks would permit the oil producers to help soften the burden of the added oil costs on the poor countries. In exchange for increased participation, these countries should be given a greater role in management of these organizations.

SUPPLEMENTARY VIEWS OF SENATOR WILLIAM PROXMIRE

While I am in agreement with much or most of this report, the major tenor and thrust of my own views go beyond what is said here.

What I want to see in this industry is vigorous, rugged, competitive forces at work. That is not now the case. Restrictions, inefficiencies, and special privileges abound.

In the past, production has been limited by State regulatory agencies, especially the Texas Railroad Commission, in the guise of conservation. Imports have been restricted. A few big, vertically integrated companies essentially control production, marketing, refinery, and prices. Special tax privileges, in the guise of incentives to explore and produce, have brought great inefficiences to the industry. The industry's influence on political parties, political candidates, and the agencies of the Government itself has given it a special position unmatched by any other private group. Even the basic facts concerning the amount and value of oil resources on lands owned by the taxpayers of the United States are controlled by the oil companies. And the State Department, for years, has been little more than the handmaiden of the oil industry in its policies toward the Middle East.

What I recommend is this:

The Government must get the facts—through audits, hearings, and the examination of company books. In the short run, the price of both old and new oil should then be established by the FEO on the basis of the actual costs plus an amount which will allow for a fair return and incentives for drilling and exploration.

Meanwhile, in order that we can move to a free competitive market in oil, first the existing antitrust laws must be vigorously enforced to break up the vertical integration of the industry. We have the laws on the books. We do not need new laws. We need action.

Second, the special tax privileges, including percentage depletion, intangible drilling and development cost writeoffs, and the golden gimmick which allows oil companies to take "royalties" paid abroad as a tax credit instead of as deduction from costs, should be repealed. The only exception to a vigorous free enterprise program is the possible consideration of some incentives for small drillers who gross less than $5 million a year. They make up a very small part of the total industry but a large part of discovery and exploration.

Third, eliminate the remaining restrictions, restrictive agencies, legislation, and privileges, such as the Texas Railroad Commission, the Interstate Oil Compact, the special privileges provided by the Office of Oil and Gas of the Interior Department, and the oil companies' role as a super State Department, so that this industry is put on a footing equal with everyone else.

Some have proposed that we nationalize this industry. I am vigorously opposed to that. Here's why.

Even a casual glance at the Post Office Department and almost every other flirtation with nationalization indicates that it is both inept and inefficient.

Further, the problem with the oil industry is that it already exercises vast government power, almost akin to a nationalized industry. In this case, the major difference is that the industry runs the Government rather than the Government running the industry.

With the removal of both restrictive practices and special privileges, the oil companies should then compete in the market and be allowed to make whatever profits they can under a truly competitive system. Their profits then would be a true measure of their efficiency rather than their ability to control, restrict, and gain special privileges.

SUPPLEMENTARY VIEWS OF CONGRESSMAN WILLIAM S. MOORHEAD

Over the last 6 months, the public has begun to recognize the myriad of ways energy enters the workings of our social organism. Only very few of these ways have been analyzed by engineers, economists or ecologists, and few yet are regulated by one or the other agency of the Federal Government.

The public is now keenly aware that the energy issues are complex, that the prices will go up, that everybody is concerned, and that nobody is in charge. In fact, we are closer to chaos in this domain than we have ever been. In this hour of shortages, finger pointing, and confusion, what the public needs more than anything else is leadership.

Can Congress provide the leadership that industry and the Administration has so recklessly abandoned? I believe we can, in fact, we must. Because, to the man on the street, the little credibility that still remains in his view of the Great American Dream, resides in Congress.

Now, looking at the Report from this point of view, it is a good Report, because it is an honest Report and it makes credible recommendations. But if this Report has any merit beyond adding just another document to the many already on the shelves of the various congressional committees, it must be by the implementation of its 20 recommendations.

I recognize, of course, that many of these recommendations cannot be translated into action by Congress alone. Many have to be implemented by others. Conservation measures, for example, must be practiced by the public, must be used by designers, and must be incorporated into business management. But, there are many others where Congress ought to take prompt action, such as: Funding for mass transit, reliable energy data collection and dissemination, substitution of royalty bidding for the current bonus bidding on Federal land leases, creation of government corporations for development and production of energy resources in the public domain, to mention just a few.

The Report assesses current policies and makes recommendations for policy changes in the future. But, because the Report concentrates on oil and gas resources, and at the same time is very comprehensive, I find the omission of coal and nuclear resources particularly glaring. My comments regarding coal and nuclear resources are in no way a detraction from the significant value of the Report. These comments are offered in an attempt to round out the picture of our energy situation, primarily for the future reader and users of this excellent document.

The need for self-sufficiency in energy resources is not well understood. The degree of self-sufficiency will depend on conditions of national security and foreign supplies. In the meantime, at home, coal is by far our most abundant fossil fuel. Another domestic energy source is uranium that fuels our nuclear power reactors. It is a gen-

erally accepted forecast that coal and nuclear will, in years to come, account for an increasingly large portion of our national energy budget.

"Coal is the backbone of our fuel inventory, accounting for 73 percent of total recoverable fossil fuels. By contrast, oil and natural gas account for only 9 percent and oil shale for about 17 percent. (Joint Economic Committee Study, by W. N. Peach, Dec. 17, 1973.)

The technology of how to gasify and liquefy coal is now well in hand. What is necessary is to demonstrate the economics of the various processes, including byproduct utilization. Results will become available only when demonstration site plants have operated over a significant time period with native raw material. This effort needs considerably more funding than has heretofore been allocated, and may even require a Comsat-type semiprivate organization to manage the program.

Much research and development in coal technology has been done in the past by the Bureau of Mines and by the Office of Coal Research, also by various private companies and academic institutions. A central organization is necessary to pull all these efforts together and to coordinate the available research results with the conclusions reached in the demonstration phase. The proposed Energy Research and Development Administration (ERDA), as passed by the House last year, could well be this missing organization. Creation of ERDA is urgently needed.

We must also develop better methods to mine coal, with proper regard for the health and safety of the miners, and the quality of the environment. Much more effort, technical as well as financial, must be exerted in this direction. Again, ERDA could be the agency that could direct this effort.

Coal can become once more the dominant fuel in our economy, to move the wheels of industry and transport without incurring a balance of payment program. This drain on our economic life blood can only lead to devaluation, inflation and unemployment.

The most useful and desirable form of energy to the consumer is electric power. It is versatile, accessible, clean, and relatively cheap. Its popularity and versatility has created whole new industries that form the very foundations of our way of life. For example, electric light, telephone and telegraph, radio and television, heating and cooling of houses, factories, farms and offices, mass transit including elevators, and many others come to mind.

Electricity, of course, is not a primary source of energy, but can be produced from practically any primary source that becomes available, such as coal gas, synthetic oil, geothermal steam, or nuclear power, to name just a few. Because of the above mentioned advantages, I believe that electric power will continue its rate of growth in the face of higher prices, decreased economic growth rate, and the approaching zero population growth.

Nuclear power is an available domestic primary energy source, that we can count on to drive our electric generators, without polluting the air and diminishing limited oil and gas resources. The United States has invested billions of dollars to bring this war-born technology to a safe and economical state. The benefits from this investment can be reaped now, when we are hard pressed to meet our demand for fuels.

The first generation of light water reactors, with hundreds of years experience with safe operations on board of all types of naval vessels,

is now being connected into the various regional grids. Electric utilities, having recognized the advantages of nuclear power, its low fuel cost, cleanliness, and potential reliability of service, have increased their orders for nuclear power installations. From the present 5 percent, nuclear will increase to at least 20 percent of installed electric capacity by the year 1980.

At this stage of nuclear power, the government should phase out of the promotional role, and concentrate instead on the regulatory aspects, protecting the health and safety of the public, national security, and the quality of the environment. For this reason, ERDA proposes to split the AEC into two parts. The regulatory arm will become the Nuclear Energy Commission, while the remainder, including its various laboratories and production facilities, will become the operating arm of ERDA, with its enlarged mission encompassing all forms of energy.

"The United States is now self-sufficient in uranium and is likely to remain so far the indefinite future. It is expected that uranium will be adequate for the next 20 to 30 years at $15 a pound, and a pound of uranium can make as much electricity as 26 million pounds of coal." (Joint Economic Committee Study, by W. N. Peach, Dec. 17, 1973.)

I am bullish on nuclear power in full recognition of the environmental, safety, and public acceptance problems this industry still has to surmount. I am convinced that we have the talent and the know how to satisfy the requirements of the National Environmental Policy Act, the licensing provisions of the Atomic Energy Commission, and the economic incentives of the public utilities.

I have stressed the significance of coal and nuclear only because they are our most immediate sources of domestic energy. For the long run, we must look for clean and nondepletable resources, such as solar energy, wind-power, fusion, and geothermal energy. Again, ERDA would be the coordinating agency that will bring these domestic energy resources to fruition. We need a public agency because these free fuel forms have no spokesman, no vested interests looking out for their development in the interest of the people. In this connection, we must also consider the antitrust aspects that this Report so forcefully exhibits. In order to preserve competition, we must not allow energy companies, national or multinational, to integrate when further into all forms of energy conversions.

We are at the beginning of a phase in the history of the industrialized world, in which the understanding of all aspects of social metabolism is crucial.

We are now entering a period in which energy supply (like food) will become increasingly more important while energy demand (like consumption) must tend toward conservation.

This condition is bound to prevail well into the 1990's, or until such time as newly developed energy sources can be counted upon to fill the needs.

Unfortunately, the fact that energy cannot be recycled, an indisputable physical fact, has not even been mentioned. But it is this truth, known as the second law of thermodynamics, that will shape many of the hard choices to be made between the welfare of some and the environmental quality of others, between the risks to be taken by some for the benefits of others.

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