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[ca. 8/75]

MEMORANDUM

THE WHITE HOUSE  
WASHINGTON

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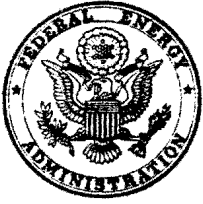
Price/Share

A. Action  
 B. Results  
 C. Need

A. Comp. Program  
 B. Difficult - 2/1  
 C. Drastic Alternatives  
 D. Injustices  
 E. Positive/Negative

D. Share  
 E. JOBS

TAB 1



FEDERAL ENERGY ADMINISTRATION  
WASHINGTON, D. C. 20461

OFFICE OF THE ADMINISTRATOR

MEMORANDUM FOR THE PRESIDENT

FROM : Frank G. Zarb

THROUGH: Rogers C. B. Morton

SUBJECT: Energy Resources Finance Corporation

BACKGROUND

Overview

As you directed, the Energy Resources Council (ERC) has prepared an analysis of alternative financing authorities for energy development. This memorandum does not request decisions; rather, it presents the major alternatives under discussion, and options for their implementation where appropriate.

In your January State of the Union Message you proposed several actions to augment domestic energy supply:

- Decontrol of oil prices, and deregulation of natural gas prices;
- The opening of the Elk Hills Naval Petroleum Reserve;
- Amendments to the Clean Air Act and the Energy Supply and Environmental Coordination Act to allow greater use of coal;
- An expanded OCS leasing policy;
- Acceleration of nuclear power through expedited licensing and siting, and other measures;
- Regulatory rate-making reforms to encourage the expansion of electric power;
- Expansion of the government's energy research and development program;



- A National Synthetic Fuels Commercialization Program with a goal of one million barrels per day oil equivalent of synthetic fuels capacity by 1985.

In general, there has been very little legislative progress by the Congress:

- The outcome of oil decontrol and natural gas deregulation is uncertain, at best.
- Elk Hills legislation has passed each House; production has not yet begun.
- Coal conversion program targets for 1977 have been reduced, due - in part - to the failure of Congress to extend legislative authority.
- In nuclear power, legislation has not been enacted; delays and uncertainties continue.

Although the legislative results to date are almost nonexistent it appears that there is an emerging national awareness of the need for increased domestic energy supply; in time, this awareness should induce the Congress to act more expeditiously. However, in addition to Congress' slow response, there are other major impediments to the development of energy supply:

- Financial constraints, which include the difficulty of financing capital intensive projects during periods of tight money, regulatory constraints on rates of return, and inadequate returns on some high risk energy projects.
- Regulatory constraints, which include permit, licensing, and siting delays.
- Environmental constraints, stemming from the Clean Air Act and the Water Quality Act, as well as land use restrictions.
- Uncertainty, regarding the future of both national energy policy and the price of oil.

- ° All of these constraints are inter-related; for example, regulatory delays on environmental standards have significant financial implications.

### ERFCO Proposal

The Domestic Council has proposed that an Energy Resources Finance Corporation (ERFCO) be established to assist in the financing of energy and energy-related projects to permit substantial acceleration and to expedite regulatory determinations affecting projects deemed to be of critical importance to the national goal of energy independence.

The financial resources of ERFCO in the Domestic Council proposal would consist of \$10 billion of capital stock, subscribed to by the Treasury, and borrowing authority of up to \$100 billion through a variety of debt instruments, with combined total resources of \$110 billion.

The Corporation would have a limited life, and all of its financial obligations would be self-liquidating.

Under the Domestic Council proposal, ERFCO would have authority to certify energy-related projects as being critical to the national goal of energy independence. Under such certification, every Federal department and agency would have a maximum of six months to make any administrative or regulatory determination, and - once made - this determination would be final.

### Precedent

A Federal role in initiating, financing, supporting or owning projects vital to the national interest is not unprecedented, or unique. In relatively recent times, the Federal Government has taken an activist role in such areas as electric power generation, through TVA and the nuclear power demonstration programs, the space program, and crash commercialization of new technologies such as synthetic rubber plants in World War II, and uranium enrichment.

It should be remembered, however, that these recent examples, and more remote ones such as homesteading and railroad development have to be balanced against government supported projects that have failed, sometimes dramatically and at great cost.

In assessing whether a more active government role is appropriate for energy supply development, it should be noted that the problem may be difficult for our free enterprise economy to resolve because the national interest may run counter to legitimate individual economic self-interest. To illustrate, the private sector may consider petroleum a more economically-suitable form of energy than unproven synthetic processes; yet from the national perspective, with dwindling domestic petroleum resources, we have concluded that future needs should be met by shifting the resource base to plentiful, renewable or secure fuels.

#### Capital Problems in the Energy Industries

In its Project Independence Report (PIR) prepared in late 1974, the FEA estimated that energy investment, assuming that domestic supply projects are accelerated, would total about \$600 billion (in 1975 dollars) over the next ten years. While this represents a very large investment outlay, our forecasts indicated that it was - in principle - within the capital formation potential of the economy and its energy sector in the aggregate. This sector's share of total fixed business investment has averaged approximately 23 percent since World War II; at the rates of total capital formation forecast in PIR over the next ten years, a 23 percent share of funds to the energy sector would cover the \$600 billion investment requirement for energy supply development.

Thus, in the aggregate energy supply and concomitant investment requirements would not strain the financial markets, and would probably be met. However, this would not be uniformly applicable across each individual energy sector; the oil and coal industries, for example, will probably be able to finance most of their investment requirements.

However, the electric utility industry and most new technologies may find financing more difficult; in particular, some electric utilities at present are not able to generate sufficient revenues and profits to attract the capital needed to build coal and nuclear plants. While the Administration has made several legislative proposals, none has been enacted.

The new and emerging energy technology applications raise financing and other problems even more severe than those of electric utilities. Most of these technologies are expensive: shale oil at about \$12 to \$16 per barrel; coal liquefaction at about \$18 to \$24 per barrel, and high Btu gas at about \$3 per mcf, or about \$18 per equivalent barrel of oil. With continued uncertainty over world oil prices, investors are understandably reluctant to commit upwards of \$1 billion to build a plant whose output will be priced at \$12 to \$18 per barrel of crude oil equivalent. Furthermore, the risk of commercializing any new technology is compounded by the uncertainty over special interest opposition, such as environmental and local community groups; this makes the energy investment and supply development processes all the more difficult.

In addition to investment requirements for supply development, there will be demands for capital to achieve higher efficiencies in the utilization of energy per unit of output. It is estimated that \$100 to \$200 billion might be required over the next ten years to yield industrial sector improvements of 20-25-percent. Possible investment areas include advanced heat utilization systems (e.g., expansion turbines), heat recovery equipment (e.g., energy parks), and commercialization of new conservation technologies (e.g., pressurized blast furnaces).

#### Capital Formation Problems

Beyond these possible sectoral difficulties, recent studies suggest to some analysts that there may be a long-term structural problem with respect to the adequacy of overall savings in the economy to meet aggregate capital requirements in the 1975-1985 period.

- o A recent New York Stock Exchange study estimates total savings potential from all domestic sources in the economy between 1975 and 1985 at slightly over \$4 trillion (current prices). Over the same period, capital demands are estimated to reach \$4.7 trillion, leaving a potential capital gap of over \$650 billion; however,
  - These estimates do not include an allowance for foreign capital inflows;
  - The predictions of a "gap" do not take into account the possibility of an automatic market adjustment which would increase capital supply.

- ° A recent Brookings Institution study shows that a balance between investment requirements and capital formation can be achieved only if the Federal budget shifts to a surplus by the late 1970's and remains in surplus through the early 1980's.
- ° Because of the direct relationship between savings and income, the 1974-1975 recession has reduced funds available for business investment during these years by 19 percent from the previous long-range economic forecasts which were used in the above two studies; this may also, however, have reduced the need for such investment.
- ° Furthermore, Federal Government debt held by the private sector is forecast to grow rapidly over the next two years, as the deficits rise to record levels; in FY 1975, it is estimated at \$44 billion, and in FY 1976 at \$60 to \$75 billion. Part of this impact will be absorbed by fewer new issues of corporate bonds, forecast to drop from \$36.7 billion in 1975 to \$18.3 billion in 1976.

Tab 2 provides a fuller discussion of the macroeconomic outlook, capital formation, energy sector requirements, and capital availability for energy development.

#### The Issue: Federal Level of Involvement

Several possible levels of Federal involvement should be considered. For some energy projects, no Federal involvement is necessary. Examples include the exploration, development, and production of conventional sources of oil and gas. With respect to some other projects, such as Western coal mine development, land use and environmental regulations at local, state, and Federal levels are the major cause of delay.

The issue should therefore be approached by asking:

- a) What is the goal for a given energy activity?
- b) What are the financial constraints to reaching that goal?
- c) What is the most appropriate mechanism for dealing with these constraints?

- d) Are there other kinds of constraints which cannot be overcome directly, but which could be eased through financial incentives?

As the questions are raised, the feasibility of various levels of Federal effort must be tempered by the following considerations:

- Aggregate capital formation problems could result in sector dislocations, as incentives for energy development shift funds from sectors such as housing, and state and local governments; ERFCO does not create any new capital, it seeks to attract it.
- PIR analysis indicated large capital investment needs; to the extent that the Federal Government does not misallocate funds, such efforts do not necessarily divert funds from other sectors of the economy.
- There are significant disparities within the energy sector, where some industries (oil and gas) will have sufficient genuine earnings to attract capital, others, such as electric utilities, are caught between rising needs for external capital and diminishing ability to attract the capital.
- There are potentially severe repercussions, legal, political and social, in altering the regulatory process at the Federal level, and possibly at other levels of government.

In this context, the remainder of this memorandum is divided into four sections which provide you with options on the four basic issues:

- What should be the degree and scope of Federal involvement, if any, through the ERFCO concept?
- If the Government is to be involved, what financial incentives should be used?
- What regulatory authorities, if any, should be used?
- Where should the entity be located within the Federal Government?

ISSUE I: WHAT SHOULD BE THE DEGREE AND SCOPE OF FEDERAL INVOLVEMENT, IF ANY, THROUGH THE ERFCO CONCEPT?

We have reviewed a number of possible options regarding ERFCO's scope. These are:

- No involvement
- Synthetic fuels technology commercialization
- All emerging energy technologies commercialization
- All above plus demonstration programs for conventional technologies; infrastructure
- All above plus all conventional technologies and resource constraints

Scope Option A: No involvement

Under this option, supplying the energy needs of the economy is largely left up to the private sector under existing patterns of ownership and financing. Current levels of investment in the domestic energy industry are in excess of \$25 billion annually without any special governmental assistance programs. Development of new energy technologies is supported by ERDA under the accelerated energy R&D program initiated in 1974 (\$11.5 billion for 1976-80). Special problems that might emerge in the energy industry that require Federal intervention are handled in the normal Executive Branch decision and program implementation process.

Pros:

- ~~Keeps Federal Government from intervening further into an area of traditional private responsibility.~~
- Will provide increased energy supplies at the lowest costs, since project risks will have to be offset by expected benefits before ventures are launched.
- Does not involve major commitment to marginal, high cost energy technologies, but allows R&D programs to develop and improve these technologies.
- Avoids interference in the capital markets that would set a further precedent for credit allocations and special programs for other worthy investment purposes (housing, state and local government, mass transit).
- Avoids setting up another bureaucracy to review proposed energy projects before financing them.

- Does not increase the Federal deficit.

Cons:

- Emerging energy technologies may stall in prototype or demonstration mode, if no major impetus is forthcoming.
- Does not appear to provide dramatic Presidential leadership.
- Fails to provide strong international posture of leadership in the International Energy Agency (IEA), NATO or other settings.
- Provides no mechanism to overcome non-financial problems which may not be directly resolvable.
- Results in increase in energy imports due to failure to develop higher cost domestic sources.

Scope Option B: Synthetic Fuels Technology Commercialization

The synthetic fuels covered could include:

- Synthetic gas from coal (pipeline and utility gas)
- Crude oil from shale, using both surface and in situ processes
- Synthetic crude oil from coal
- Synthetic gas and liquids from solid waste (biomass)

The major emphasis would be upon the construction of commercially-sized synthetic plants, moving technology out of its present R&D and pilot plant phases.

The Synthetic Fuels Commercialization Task Force has been assessing the level and scope of the program announced in your State of the Union Message, and has concluded that such a program could result in capacity ranging between 350,000 and one million barrels per day by 1985.

Under these circumstances, total Federal Government costs for the program, including an allowance for foregone tax collections, would range between a high of \$29 billion and a low of \$3 billion (undiscounted basis), depending mostly upon world energy and domestic coal price movements. The



best current estimate is that with world energy prices constant, the total project cost would amount to \$15 billion, of which the Federal Government would contribute, over the program life, \$5.4 billion through a price support mechanism. These figures are discussed in Tab 3, Synthetic Fuels Development.

Pros:

- Limits Federal costs and exposure, compared to larger-scope options.
- Concentrates Federal effort in energy area least likely to be developed by private enterprise.
- Limits administrative complexity.

Cons:

- Benefit/cost analysis shows that costs exceed probable benefits for even a 350,000 barrel per day program.
- Since only the more risky emerging technologies are included, expected costs of the program cannot be offset to any degree by revenues from less commercially-risky operations.
- Creates Federal financial exposure which does not now exist.
- A limited-scope program will not be viewed as a significant, "Manhattan Project-type" undertaking.
- Impact upon energy vulnerability by 1985 is modest: upper limit of 1 MMB/D means maximum displacement of only 8% of expected 1985 oil imports.
- Requires strip mining Western coal, and developing oil shale, thus inviting substantial environmental opposition.

Scope Option C: All Emerging Energy Technologies Commercialization

Under this concept, the scope of activity would build upon the synthetic fuels option described above and would be expanded to include other emerging energy technologies which are presently at or beyond the pilot plant phase, but short of full-scale commercial development. These emerging technologies could include:

- Geothermal energy for electricity and process heat.
- Production of energy from Devonian shale or tight gas formations.

- Solar energy applications where a demonstration program could reduce costs to market-breakthrough levels.

In addition, this option would include emerging energy conservation technologies whose risk characteristics are similar to those affecting energy supply development. Under this definition, activities such as heat recovery processes, energy storage units, and higher efficiency industrial applications would be included.

Total project costs including Federal Government participation and private sector contributions are estimated at \$32 billion, yielding a direct energy contribution of 2.2 MMB/D oil equivalent. Government outlays in the first decade of this program would be approximately \$12 billion, although this could vary considerably, depending upon the type of Federal financing mechanisms and project success. Estimated project costs and energy contribution are discussed in Tab 4, Table I.

Pros:

- Relatively narrow scope definition keeps a firm upper limit on Federal costs and exposure.
- "Emerging technology" limitation keeps Federal role to one of stimulating new technology.
- Provides broader incentives and resource base to bring new technology on line.

Cons:

- Scope limitation to emerging technologies and conservation means modest energy vulnerability impact within the ten-year timeframe, approximately 2 MMB/D, or 17% of 1985 oil imports.
- Limitation to emerging technologies means that any reduction in imports is achieved at higher cost than would be required with conventional technology.
- Significant Federal budgetary implications.

Scope Option D: All of the above, plus Conventional Energy Technologies on Demonstration Basis; Energy Supply Infrastructure

Under this option, the scope of activity would be expanded beyond emerging energy supply technologies and selected conservation technologies, to include the following areas:

- Application of new technology to improve the efficiency of conventional energy development; projects such as integrated coal mining, transportation, conversion, and reclamation projects might be supported under this concept.
- Application of new technology to accelerate significantly the development of conventional energy supply and conservation technologies; projects such as floating nuclear power plants, mass-production of insulation, or time-of-day meters might be supported under this concept.
- Supporting infrastructure to initiate or accelerate additional conventional energy development, such as logistics for delivering Alaskan natural gas to the lower 48 states; coal slurry pipelines; energy parks; or the construction of a nuclear power plant on a much-reduced timetable.

Because of this considerable expansion of the scope concept under this option, the appropriate size of energy supply development is difficult to define. Two versions under this option, "low effort" and a "high effort," are presented in Tab 4, merely to illustrate the types of projects, the estimated energy contribution, and the total project costs.

Under the "low effort" concept, direct energy contribution totals 2.7 million barrels per day; indirect energy contribution, i.e. infrastructure for processing or transporting, totals .5 million barrels per day; total project costs, direct and indirect, amount to \$51 billion (undiscounted 1975 dollars). These estimates include the costs and energy contribution from previous scope options.

Under the "high effort" concept, direct energy contribution does not rise; indirect energy contribution increases to 6.5 million barrels per day, and total project costs rise to \$63 billion.

It should be emphasized that these estimates are preliminary and intended to be illustrative, not definitive of the scope concept.

Pros:

- Unlike the emerging technology options, a substantial impact of Manhattan Project scope upon domestic energy supply within the next ten years would occur; total energy contribution may range between 3.2 and 9.2 MMB/D.

- Direct attack upon the major financial constraints on the energy supply problem.
- Potential for breakthrough in decision-making delays; demonstration effect of this momentum could accelerate decision-making in other jurisdictions.
- Management expertise and administration are available for a rapid large scale-up if original program is kept to moderate size.

Cons:

- Expanding beyond the emerging technology options will put the government into areas traditionally in the private sector.
- Involves potentially significant Federal outlays in the first decade, of almost \$20 billion.
- If Federal capital allocation decisions are inappropriate, would have adverse impact on capital markets and non-energy sectors;
- Acceleration of Federal decision-making raises legal, institutional and political issues.
- Decision-making in other jurisdictions will have to keep up with the Federal pace of activity, raising fundamental legal and political issues.

Scope Option E: All Emerging Energy Technologies; Infrastructure; Major Conventional Technologies; Resource Constraints

~~Under this option, the scope would include all previous option activities and would be expanded to include:~~

- Major conventional energy development and conservation technologies.
- An expanded concept of infrastructure programs, extended to areas such as railway roadbeds, oil pipelines, and other supply equipment.
- Addition of "resource constraints" as a program area, i.e., major types of raw material or equipment bottlenecks which may delay energy supply; for example, heavy steel plate, offshore exploratory drilling rigs, or steel pipe and tubing.

Activities, however, would not be extended into moderate risk sectors with sufficient cash flow to solve their capital problems with reasonable certainty.

The Federal financial commitment and the regulatory authorities would be along the lines discussed in the Domestic Council memorandum. The estimated energy contribution could be as high as 17.3 million barrels per day, at total project costs of \$124 billion; Federal outlays in the first decade could be as high as \$45 billion. These figures are discussed in Tab 4.

Pros:

- Significantly greater acceleration of energy supply to assure invulnerability by 1985 (3-5 MMB/D imports, with one year storage).
- Possible cartel-breaking stresses internationally, as U.S. demand for world trade oil drops sharply.
- Political benefits within International Energy Agency of credible accelerated supply development, and resulting pressure upon cartel.
- If domestic economic activity is lagging when program impact upon the economy becomes significant, program will provide stimulus with potentially advantageous effects on balance of payments and unemployment.
- Possible use of debt instruments might provide generally acceptable mechanism for drawing foreign investment capital into the economy.

Cons:

- With possible capital formation shortfall in the range of \$500 billion to \$1 trillion over the next ten years; if Federal capital allocation decisions are inappropriate the additional ERFCO burden may be unmanageable.
  - Federal outlays may require new revenue, hard to raise given the tax burden and rigidity of other budget commitments.

- The inflationary impact of this scope of effort could be high; many of the physical and economic constraints on supply cannot be quickly eased, perhaps even within the ten-year timeframe planned for this effort.
  - May divert large amounts of capital from other uses.
  - The boundary between public and private sectors could shift; whatever initial "self-destruct" objectives are set, a centralized Federal activity with more than 100 billion dollars, and the constituencies that would form around it, may make the enterprise extremely durable.
- 
- New administrative bottlenecks may be created within ERFCO. Also capital market uncertainty and private financing being delayed while decisions on ERFCO formation or eligibility are awaited may further delay conventional projects.

ISSUE II: IF THE GOVERNMENT IS TO BE INVOLVED, WHAT FINANCIAL INCENTIVES SHOULD BE USED?

For any effort to accelerate energy development projects ahead of the pace which the private sector would otherwise accept, a minimum set of financial risk-reduction mechanisms will be required. In deciding how to construct these incentives, the desired degree of government assistance must be determined. Whatever the means of assistance, it must be recognized that the principal effect is to shift some of the risk of uncertainty from investors to taxpayers. Tab 5 discusses current legislative authority for the proposed mechanisms.

The minimum set of financial incentives consists of:

- Loan guarantees
- Price level supports

Additional incentives of some type may be required to overcome major obstacles which would otherwise dictate a slow and cautious approach by the private sector. One such obstacle is the high allowance that has to be given to uncertainties of new technical processes in costing out investment decisions; another obstacle stems from the fact that the first few plants for an unproven process are the most expensive. As experience is gained, both of these obstacles tend to fade. A third major obstacle is the scale of the investment commitment to the net worth of the investor; energy projects such as the Arctic Gas Pipeline, private enrichment plants, and the like, raise this kind of problem.

The options below suggest two levels of involvement; although the options are presented as sets of mechanisms, the mechanisms are independent of one another and need not be viewed necessarily as a package.

Mechanism Option A

The minimum set provides guarantees with contingent funding; it does not provide any of the direct cash outlay needed to pay for new plants and equipment. An additional impetus could be provided by the granting of direct loans or the partial funding of new projects in return for a royalty

participation in future sales. The total group of risk reduction mechanisms under this option might be:

- Loan guarantees
- Price level supports
- Direct loans
- Royalty participation without Federal equity ownership

Pros:

- Direct loans would provide more immediate incentives.
- Adds flexibility.
- Provides upside opportunity for Federal Government.

Cons:

- Would take longer to implement because of the need for legislation.
- Requires larger and possibly faster capital outlays by government.

Mechanism Option B

The mechanisms in Option A provide funds to initiate projects, but they still leave the major, ultimate risk of the projects with the equity investors. If additional government support is deemed necessary to induce investment in some major projects, the Federal Government could consider direct equity investment.

Pros:

- Provides most flexibility.
- Highly visible sign of national determination.
- Might have widespread Congressional support.

Cons:

- May be viewed as excessive government role.
- Government may have to take direct management role.
- Increases risk that government action will induce unwarranted expansion of supplies.



ISSUE III: WHAT REGULATORY AUTHORITIES, IF ANY, SHOULD BE USED?

ERFCO, as proposed, would have special expediting powers. Hastening procedural and regulatory determinations affecting energy supply and utilization, at least at the Federal level, would be one of its assigned functions, and it would be staffed accordingly. The obvious dilemma lies in reconciling the goal of expedited treatment with the conflicting concerns which other governmental entities have been entrusted with protecting.

Regulatory Option A: Do nothing

Pros:

- Would not further alienate Congress in the ongoing effort to reduce environmental and regulatory constraints in energy and other areas.
- Since likelihood of obtaining broad expediting powers for ERFCO is very low, not proposing such authorities in the authorizing legislation would help chances of getting ERFCO.
- Proposing such authorities would put the Administration against a broad front of environmentalist, economic, and safety regulators.
- Energy projects are likely to be best dealt with on a case by case basis, rather than by dismantling existing regulatory protections.

Cons:

- Regulatory delays are at least as important as financing problems for domestic energy supplies; doing nothing here won't alleviate the problem.
- A few marginal changes to existing laws could have large impact (i.e., intermittent controls, auto emission standards).

Regulatory Option B: Persuasion

ERFCO would participate in hearings and other proceedings of Federal agencies, e.g., FPC and NRC, and appear and offer technical advice and data in local rate making, zoning and construction approval, and other proceedings. In addition, ERFCO would coordinate necessary regulatory compliance with the affected agencies, Federal, state and local.

Pros:

- Recognizes propriety of and the need for existing review and decision procedures.
- Assists in avoidance of regulatory duplications and delay by providing overview.
- Raises minimal political problems at the Federal level.
- Avoids political and constitutional legal problems with states and localities.

Cons:

- Probably insufficient to accelerate significantly regulatory proceedings; just another level of coordination.
- Would create additional burdens for petitioners, since they would probably find it necessary to clear with ERFCO before proceeding.

Regulatory Option C: Federal Intervention Authority

ERFCO would have the authorities listed in Regulatory Option B but with a greater range of powers. For example, with respect to its participation in regulatory proceedings, it would be granted the power to obtain expedited judicial review of agencies' decisions, and would have authority to issue written interrogatories to parties in designated regulatory proceedings. Other authorities such as those proposed in the Administration's Energy Facility Planning and Development Act of 1975, would be added. These would include an 18-month deadline for Federal decisions on energy facility construction, and the preparation of a consolidated environmental impact statement for each proposed facility.

Pros:

- Provides substantial assistance in expediting regulatory decisions.
- Avoids serious problems which would be created by centralized effort.
- Insures that existing regulatory requirements are handled by the responsible agency, while at the same time avoiding bottlenecks.

Cons:

- Could be seen as a peremptory effort to sidestep review provisions of other regulatory agencies; politically contentious.
- May fail, in practice, to strike the proper balance between energy needs and other national priorities.

Regulatory Option D: ERFCO Override Authority

Although a number of variations of this authority are feasible, depending on whether an override is to be immediate or delayed, and broad scoped or by exception, the basic purpose of the authority would be to allow ERFCO to override decisions made by Federal regulatory agencies.

Pros:

- Maximum impact in cutting through "red tape"; severity of the recourse can be varied by adjustments which limit override authority to specified instances, and only after failure of existing mechanisms to work properly.

Cons:

- Raises severest legal and political issues.
- Dubious efficacy unless coupled with state and local override authority, which presents serious constitutional and political problems.
- Probably transforms ERFCO concept from investment activity into super-regulatory body.
- Requisite degree of expertise and independence to function effectively may be unattainable.

ISSUE IV: IF THE GOVERNMENT IS TO BE INVOLVED, WHERE SHOULD THE ENTITY BE LOCATED WITHIN THE FEDERAL GOVERNMENT?

There are two interrelated issues here. First, how free-standing should the organization be. Secondly, as a consequence, how independent from the normal President/ERC/OMB process of setting priorities and approving projects should the organization be?

Organization Option A: Existing Agencies

Individual ERFCO projects would be situated throughout existing agencies, such as ERDA and FEA; activities would be reviewed through the normal legislative proposal and budget process, with OMB coordination and ERC review.

Pros:

- Consistent with established procedures for program, budget review and executive decision-making by the President.
- Consistent with the intent of the Congressional Budget Impoundment and Control Act which calls for review of appropriations and program authorization by the Congress each year.
- Provides greatest degree of flexibility to terminate or redirect program.
- A fairly sizable program could be launched without new legislation, thus depriving Congress of the opportunity to "Christmas-Tree" the program and force the President to veto a bill he has proposed as a major part of ~~his energy program.~~

Cons:

- Proposed projects may reflect existing bureaucratic tendencies and client interests of the agencies.
- May be unable to respond rapidly to Presidential initiatives.
- Projects are, by definition, scattered throughout the Government, hence the advantage of a single-minded massive effort is lost.



- Publicly it would still be viewed as a business-as-usual approach.
- New, high level people would not be attracted to the effort.

#### Organization Option B: Consolidated into Single Existing Agency

Under this option, ERFCO would be a single, discrete entity which would be fitted into the existing structure as, for example, the Federal National Mortgage Association links to the Department of Housing and Urban Development, where the Secretary has responsibility for the general direction of F.N.M.A.; or the Government National Mortgage Association, directed by the Assistant Secretary for Housing Production and Mortgage Credit. Such organizations could still have separate Presidents and Boards of Directors.

OMB budget review and ERC policy review would take place, as with any other Executive Branch agency.

#### Pros:

- The ERC is established by law and includes the President's top energy and economic advisors; it requires no new legislation, or officials who need congressional confirmation.
- The organization is most highly responsive to Presidential initiatives and direction.
- Could avoid problems of parochial agency views and special interest pressures; agencies could provide technical assistance.
- Could still get some of the focus and public understanding of a freestanding entity.

#### Cons:

- New legislation to implement programs would still be needed, and could be "Christmas-Treed".
- ERC is essentially a committee which may not be the best vehicle for making the decisions required under this program.
- Agency head who implements programs may resent taking directions from a committee, rather than the President.
- Locating ERFCO in an existing agency may be too confining for its activities, if a high scope option is selected.

Organization Option C: Freestanding Entity

If the scope of the activity is sizable, the organization to implement projects will require significant autonomy in making operating decisions, and in setting policies; beyond some scale of operation, therefore, it probably becomes necessary to set up ERFCO as a freestanding entity.

Pros:

- A semi-independent entity would provide a clear mandate and mission to increase energy supplies in a non-partisan atmosphere.
- Would allow directors of the corporation to devote full time attention to the task, with a full time staff.

Cons:

- Would require legislation, thus inviting congressional "Christmas-Treeing."
- Would likely require congressional confirmation and bipartisan representation on the board.
- Would be least amenable to Presidential direction and could quickly acquire a life of its own.

As an independent, freestanding new entity, the sub-issue of overall board supervision and policy direction emerges. This is discussed in Tab 6, where four sub-options are provided.

TAB 2

## CAPITAL AND ENERGY DEVELOPMENT

Economic Outlook: 1974

In late 1974 when the Project Independence Report (PIR) was prepared, FEA used forecasts of a macroeconomic environment between 1975 and 1985 with annual real growth in GNP of 4 percent, inflation falling to 4.5 percent by 1978, and stabilizing at that level, unemployment dropping below 5 percent by 1979, after a high of 5.9 percent in 1975, and Federal budget surpluses through FY-1983.

Business capital spending was expected to be extremely high between 1975 and 1985, rising from \$176.8 billion in 1975, to \$281.7 billion in 1980, and \$404.2 billion by 1985, with relatively higher growth rates between 1975 and 1980, lower growth rates between 1980 and 1985.

These forecasted investment requirements were not specific to the energy sector industries nor were they closely related to the suddenly higher costs of energy confronting the economy after the embargo. Rather, they resulted from the fact that investment spending in several capital-intensive industries had fallen behind the rest of the economy in the early 1970s. The main source for the investment requirement was in the "primary materials processing" sectors where basic industries such as iron and steel, other metals, and paper, were expected to increase investment spending between 1973 and 1980 by a factor of 2.5 (constant dollars), against an expected increase of 1.8 in all other industries.

Two other authoritative studies, also prepared and published in 1974, indicated the possibility of a capital formation problem in the economy. The New York Stock Exchange (NYSE) estimated total savings potential between 1974 and 1985, from all domestic sources, at \$4.032 trillion; over the same period, the NYSE anticipated capital demands of \$4.678 trillion, leaving a potential capital gap of \$646 billion, a figure appreciably higher than the estimated total cost of accelerated energy supply development under Project Independence.

The Brookings Institution study by James Duesenberry, of Harvard, and Barry Bosworth, of Berkeley, indicated that a balance between total savings and investment could be achieved, if the Federal budget ran a surplus averaging \$11 billion per year over the entire 1975-1985 interval.



The implication of these findings was that rapid economic recovery in 1975 would be essential in avoiding a capital formation problem, since the NYSE study indicated requirements in excess of demand, and the Brookings work pointed to the need for a Federal surplus, running at sustained, high levels, to meet investment needs through some form of recycling, e.g. a federal financing mechanism that would convert corporate debt and equity issues into Federal, or Federally-guaranteed obligations.

Economic Outlook: Revised

As the severity of the 1974-1975 recession has become clearer, macroeconomic forecasts have been modified, and now project more persistent unemployment, at or above 5 percent through 1980, inflation receding to 5 percent by 1980, and higher real GNP growth, at an annual rate of 4.67 percent between 1975 and 1985.

There are significant forecast changes in major GNP components; these are summarized in Exhibit 1 below.

Exhibit 1:  
GNP Components:  
Percent of GNP

	<u>Residential Construction</u>	<u>Inven- tories</u>	<u>Net Exports</u>	<u>Personal Consumption</u>	<u>Govern- ment</u>	<u>Total</u>
<u>Historical:</u>						
1955-65	4.7	.8	.09	63.8	20.0	90.3
1966-74	3.7	.9	.03	62.5	22.2	89.6
<u>1974 Forecast:</u>						
1974-85	3.5	.6	.01	61.4	22.9	88.5
<u>1975 Forecast:</u>						
1975-80	3.8	.3	.04	63.0	22.5	90.0
1975-85	4.0	.6	.05	62.3	22.2	89.2

One of the major changes from the 1974 forecast is an increase of almost 1 percent in personal consumption through 1985, and a sharper increase (1.6 percent) through 1980; another significant forecast change is the increase in residential construction. Both the consumption and residential construction increases portend a shift in national income away from savings.

Another major change in the forecasts has been the projection of Federal budgets, now estimated to be in deficit throughout the 1975-1985 period, as shown in Exhibit 2 below.

Exhibit 2:  
Federal Budget Deficits  
(Billions of Current Dollars)

	75	76	77	78	79	80	81	82	83	84	85
1974											
Forecast	.6	8.8	11.8	8.4	7.4	6.9	6.5	2.8	0	(.3)	(.7)
1975											
Forecast	(76.7)	(59.1)	(42.8)	(29.1)	(40.5)	(24.4)	(16.9)	(13.2)	(9.1)	(15.9)	(14.9)

Clearly, the deficits are high and persistent, and they represent a significant drain of capital otherwise available for business and energy investment.

Projected personal savings are expected to average 8.6 percent of disposable personal income (6 percent of GNP) during the 1975-1980 period; this level of savings is up significantly from historical levels, and is the highest observed peacetime savings rate of modern times; over the 1955-1974 period, for example, the personal savings rate average 6.5 percent. Exhibit 3 below, provides sector estimates of forecasted savings.

Exhibit 3:  
Savings and Investment;  
Percent of GNP

	<u>Private Gross Domestic Investment</u>	<u>Personal Savings</u>	<u>Business Savings</u>	<u>Government Savings</u>	<u>Other Saving</u>
<u>Historical:</u>					
1955-65	15.6	4.2	11.6	-2	
1966-73	15.0	4.8	10.9	-.4	-.3
<u>1974 Forecast:</u>					
1974-85	15.5	4.6	10.7	.4	-.2
<u>1975 Forecast:</u>					
1975-80	14.1	6.0	10.0	-2.5	.6
1975-85	15.1	6.9	9.2	-1.2	.2



Investment is reduced under these revised forecasts; Exhibit 4, below, shows the changes in the Business Fixed Investment accounts.

Exhibit 4:  
Business Fixed Investment;  
Percent of GNP

<u>Historical:</u>	<u>Total</u>	<u>Corporate Business</u>	<u>Other</u>
1955-65	9.7	6.8	2.9
1965-73	10.4	7.8	2.6
<u>1974 Forecast:</u>			
1974-85	11.5	9.1	2.4
<u>1975 Forecast:</u>			
1975-80	10.0	8.0	2.0
1975-85	10.5	8.5	2.0

It can be seen that there is a drop of one full percentage point, from 11.5 to 10.5 in the forecast of fixed investment; this decrease amounts to a cumulative \$166 billion (undiscounted) during 1975-1985, roughly 1.5 times the size of the maximum ERFCO option. In the near term, total fixed business investment is forecast to drop even more sharply by roughly 19% compared to 1974 short term forecasts.

Although this decline is caused in part by reduced business demand for new capital equipment, more fundamentally it also reflects constraints on capital availability as Federal borrowing crowds out other requirements. For example, between 1975 and 1976 new corporate long term debt obligations are forecast to drop from \$35.7 billion to \$18.3 billion, while Federal borrowing increases from \$10.8 billion (FY-1975) to \$59.5 billion (FY-1976).

In summary, several adverse new factors have emerged since the 1974 forecasts:

- Personal consumption and savings as a percentage of GNP are up;
- Forecasts of Federal surpluses have been revised to forecasts of significant and persistent deficits;
- Business fixed investment as a percentage of GNP is down;

- There is evidence of Federal crowding out of private borrowers.

The implication of this is diminished ability within the economy to generate additional amounts of investment capital, and diminished ability at the Federal level to recycle revenues as new sources of investment capital via the budget; in brief, the possibility of a capital formation constraint which, if it materialized, could hinder seriously energy supply development and energy invulnerability objectives.

### Capital Requirements for Energy

At the time of PIR, most of the estimates of capital requirements for energy supply development through 1985 were in the range of \$400-\$500 billion (1973 dollars); Table I presents four such estimates; Table II presents FEA's 1975 revisions, and shows the estimates in constant and current dollars.

It can be seen that many of the forecasts probably underestimate the scope of investments required for energy development:

- No allowance is made for energy conservation capital requirements, yet these may range between \$100 and \$200 billion.
- All forecasts appear to underestimate transportation requirements.
- There is considerable uncertainty in the electric transmission capital estimates; the general methodology is to assume a fixed increment of transmission per increment of generating capacity added; this may be too simplistic.

While these factors tend to result in understated requirements for capital, the changing situation in the electric utility sector pushes in the other direction. It appears that the recession and the impact of price increases upon customers have resulted in significantly lower demand for electricity.

Some of the most recent forecast revisions have lowered annual growth in demand from approximately 6.5 percent to under 5 percent; this reduction in demand translates into a decrease in cumulative capital requirements between 1975 and 1985 of approximately \$100 billion.



TABLE I

Comparison of Capital Requirements for Energy  
Cumulative 1973-1985  
 (Billions of 1973 dollars)

	<u>NPC</u> <u>(a)</u>	<u>NAE</u> <u>(b)</u>	<u>ADL</u> <u>(c)</u>	<u>FEA</u> <u>PIR</u> <u>(d)</u>
Oil and Gas (including refining)	133	149	122	98.4
Coal	8	18	6	11.9
Synthetic Fuels	10	19	6	.6
Nuclear	7	93	84	138.5
Electric Power Plants (excluding nuclear)	137	53	43	60.3
Electric Transmission	42	125	90	116.2
Transportation	43	--	43	25.5 (e)
Other	--	--	8	2.2
<b>Total</b>	<b>380</b>	<b>457</b>	<b>402</b>	<b>454</b>

(a) U.S. Energy Outlook, A Summary Report of the National Petroleum Council; Washington, D. C., December, 1972

(Average of four supply cases)

(b) U.S. Energy Prospects, An Engineering Viewpoint; National Academy of Engineering, Washington, D. C., 1974

(c) Arthur D. Little estimates based upon an energy conservation scenario

(d) FEA Project Independence Report

(e) Does not include investments required for tanker fleets, but does include \$5.5 billion targeted for Trans-Alaska Oil pipeline





TABLE II

Revised FEA Forecasts  
Capital Requirements for Energy  
(Billions of Current Dollars)

	<u>FEA</u> <u>PIR</u>	<u>Revised FEA</u> <u>Forecast</u>
Oil and Gas (including refining)	150.55	146.67
Coal	18.22	20.21
Synthetic Fuels	.92	--
Nuclear	212.04	123.12
Electric Power Plants (excluding nuclear)	92.32	74.62
Electric Transmission	177.90	127.44
Transportation	39.04	39.04
Other	3.37	--
Total	<u>694.36</u>	<u>531.09</u>

At present, however, there is considerable uncertainty as to the permanence of the 1974 pause in electricity consumption. Some analysts believe that the drop in consumption is a temporary phenomenon primarily attributable to embargo shock, recession, and unusually-favorable weather; under this hypothesis, demand will soon resume, probably short of the historical 6-7 percent annual rate but well-above the 4.5 percent rate. Under this scenario, pause and resumed high growth, an undetermined fraction of the \$100 billion capital decrease would have to be added back to utility sector requirements.

Capital requirements by sector are shown in Exhibit 5, below.

EXHIBIT 5

Comparison of Capital Requirements  
for Energy by Sector, 1975 to 1985

(Billions of 1973 Dollars)

	<u>Utils.</u>	<u>Mining</u>	<u>Petro. Ref.</u>	<u>Trans.</u>	<u>Non Energy</u>	<u>TOTAL</u>
FEA PIR	316	24	82	25.5	6	453.5
Revised FEA Forecast.	213	22	83	25.5	4	347.5

(Billions of Current Dollars)

FEA PIR	484	37	126	38.5	8	693.5
Revised FEA Forecast	326	34	127	38.5	6	531.5

The \$83 billion investment projection for petroleum refining might cause some confusion when compared to other forecasts which show much higher figures; the FEA methodology relies upon investment, calculated on a national income accounts basis.

Table III adjusts FEA's capital requirements for the oil and gas industry to reflect major categories of capital outlays that are expensed for tax purposes. These items include dry hole, intangible drilling and exploratory overhead costs, along with lease bonus payments. Many of the published forecasts of capital requirements have capitalized expenses which are deducted for tax and National Income Accounts purposes: this table is presented to offer a basis for comparison with other forecasts.

TABLE III

Estimates of Petroleum Industry Capital Requirements

(Billions of 1973 Dollars)

1975 - 1984

	<u>FEA Accelerated Supply Adjusted For Work- in-progress</u>
Oil & Gas (1)	90.00
Oil & Gas Capital Outlays That Are Expensed (2)	73.3
Transportation: Oil & Product P/L	11.9
Gas Transmission	5.5
Lease Bonus Payments	34.1
<b>TOTAL</b>	<u>\$214.8</u>

(1) Includes: Oil, Natural Gas, and Refinery Output Numbers.

(2) Includes: Dry hole, intangible drilling, and exploratory overhead costs.



## The Capital Pool for Energy Development

The requirement for incremental capital needs by the energy sector due to Project Independence is potentially of large enough scale to raise questions as to the economy's capacity to provide the funds. The basic approach to this question has been to project GNP to 1985 and to project the historical ratios of energy investment to GNP and business fixed investment in order to establish a baseline.

Energy investment in the post World War II period for coal, oil and gas, and the utilities sectors has averaged about 23% of total business fixed investment (see Exhibit 6). As indicated in the chart, the investment percentages vary widely, indicating the ability of the sector to absorb change. The extent to which Project Independence investment requirements exceed this 23% historic share of fixed business investment is an indication of the economy's ability to meet the incremental energy investment demands.

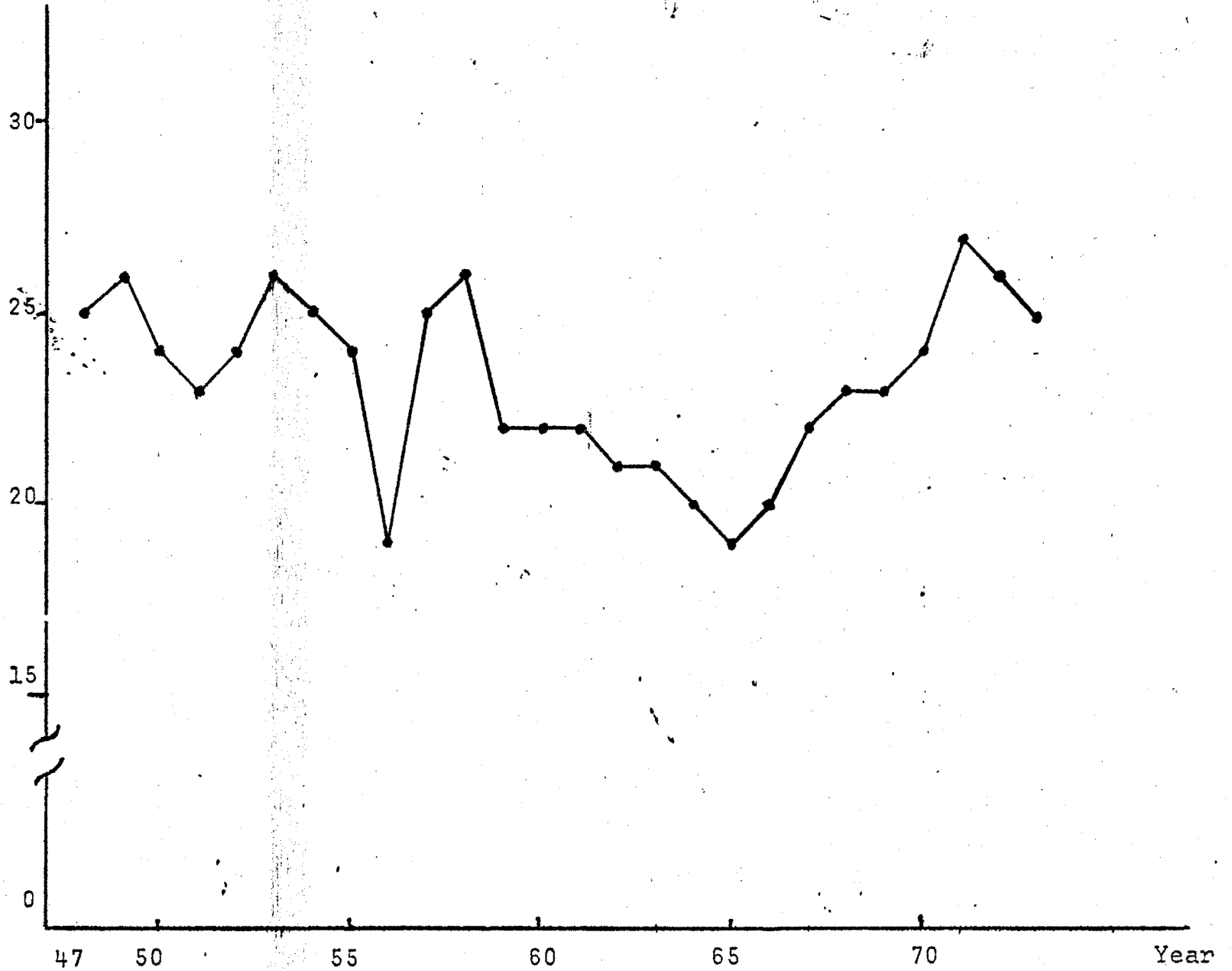
By summing 23% of projected business fixed investment for the years 1975 to 1985, an estimate is obtained of resources available for energy investment of \$435 billion in 1973 dollars. Two other long-range forecasts were used to see how dependent the size of this energy investment pool is on the specific assumptions of the economic forecast. The first projection, developed by George Perry of the Brookings Institution, assumes GNP growth averages 4.3% per year and results in an energy investment pool of \$421 billion. The second projection was developed by R. Kutscher of the Bureau of Labor Statistics. While this is a full employment forecast, Kutscher projects a slower growth in the size of the labor force, so the 4.3% real GNP growth falls to only 3.2% per year after 1980. However, higher investment and savings offset the decline in GNP. With Kutscher's assumptions, the energy investment pool is \$461 billion.

These estimates are close to the original PIR capital requirements estimates for energy, while the revised 1975 FEA estimates reflect the effects of the recession and lower the pool of capital to \$353 billion (at 23% of investment). Because of the revised estimates of lower electric utility growth, our estimated capital needs have fallen to \$347 billion; the pool of capital, therefore, to support investment in energy supply development appears adequate. However, this leaves almost no margin for additional capital needs for energy without placing stress on other sectors of the economy. As a result, Federal support for capital intensive new technologies may be both more desirable and more

difficult to achieve. Should the proposed Federal initiatives result in capital demands for the energy sector higher than the historical 23% of domestic business investment, a capital availability problem may arise. The resulting distortion of the capital allocation structure may require a readjustment of the different sectors of the economy, or an alternate change in the nation's system of capital allocation.

ENERGY'S ANNUAL SHARE OF BUSINESS INVESTMENT

PERCENT



TAB 3

SCOPE OPTION B: SYNTHETIC FUELS DEVELOPMENT

This tab describes a program to accelerate the development of synthetic fuels from coal, from oil shale, or from bio-conversion of waste material. By concentrating on liquid and gaseous fuels from coal and oil shale, the following goals could be achieved:

1. New sources of these fuels would be obtained from our most abundant energy resources (coal and oil shale) and used to supplement dwindling reserves of crude oil and natural gas, our least abundant energy resources;
2. Reliance on crude oil imports could be reduced, in some cases substantially.

A comprehensive report on a Synthetic Fuels Commercialization Program has been recently presented to the Energy Resources Council. This report includes in-depth analyses of several 1985 program levels - two of which have been selected to highlight the synthetic fuels option within the ERFCO concept. These two program levels are:

350,000 BPD of oil equivalent (Information Case)

1,000,000 BPD of oil equivalent (Nominal Case)

Incentives

The Synthetic Fuels Commercialization Task Force concluded that in the absence of adequate incentives from the Federal Government, the private sector would not proceed with a ~~synfuels commercialization program~~. Considerable attention was devoted to identifying the most appropriate incentives for each synfuel; the specific incentives selected are identified in Table 1 below, together with resultant production levels. It should be noted that the mix of fuels and processes shown in Table 1 is intended to be illustrative only; the final determination of fuel and process mix within each option has not been made.



TABLE 1

Fuel	Incentive	1985 Production	
		Information Case 350,000 BPD	Nominal Case 1,000,000 BPD
<u>Synthetic petroleum</u>	50% non-recourse loan guarantee plus price support		
Shale oil		100,000	300,000
Syncrude		50,000	100,000
<u>Synthetic natural gas (high Btu, pipeline quality)</u>	75% non-recourse loan guarantee	40,000	280,000
<u>Synthetic utility/ industrial fuels (unregulated)</u>			
Liquid and gaseous fuels	50% non-recourse loan guarantee plus price support	125,000	250,000
Biomass from wastes	75% non-recourse loan guarantee	35,000	70,000



Commercial size synfuels plants are very costly. For a 50,000 BPD plant, the construction costs are estimated to be about \$1 billion. The major obstacles to financing such a plant are as follows:

- o The funds required are frequently too large in relation to the assets of the companies who are in a position to build and operate them. Private sector investors need to be certain that, once started, the funds will be available to complete the plants, regardless of cost overruns.
- o No commercial size synfuels plants have been built in the U.S. Until the first commercial plants have been built and operated successfully, investors are reluctant to commit funds since they have other investment opportunities involving less risk.
- o With construction costs high in relation to plant capacity, the synfuels must sell at high prices (roughly, \$12 - \$18 per barrel of oil equivalent) in order to yield an acceptable return on investment. Since there is no guarantee that world oil prices will be that high, the investor needs some protection against lower world oil prices, including predatory pricing by the OPEC cartel.

To overcome these risks, the Task Force determined that both loan guarantees and price supports would be necessary as Federal incentives for commercializing synfuels to any significant extent. Particular types of investors, however, raise distinct problems: for example, in the case of regulated utilities, the rate structure set by the public utility commission may serve in lieu of a price support mechanism; however, loan guarantees may be irrelevant if the utility is at the limit of its debt: equity ratio.

#### Costs to Federal Government

To determine the cost of these programs to the Federal Government, several sets of assumptions were used for the prices of world oil and other fuels. The costs to the government under each of the scenarios are shown below, including foregone Federal income tax collections.





It should be noted that these cost estimates exclude the costs of defaults on guaranteed loans; for the 1,000,000 BPD program, the government's maximum exposure for loan guarantees totals \$6.3 billion, a peak level which is reached in 1984.

The "tax collections foregone" entries are based on the following rationale:

- o The amount of capital that might be invested in the synfuel industry could have been invested in any industry; that is, full utilization of U.S. capital resources is assumed until at least 1985.
- o This capital would have produced fiscal revenues for the government.
- o The level of these revenues foregone because of a synfuels program will be roughly the level postulated for hypothetical, non-incentive syn-fuel plants when all factors such as rate of return, debt structure, depreciation, and plant life are considered.

Case I - World Energy Price Constant

Program level	1 million BPD
World oil price per bbl.	\$ 7
Imported LNG <sup>1/</sup> price per mill. Btu	\$ 2.60
Domestic coal prices per ton	\$17

This case was selected to illustrate a high cost to the Government. It assumes that as the result of a weak cartel the world price of oil drops to and remains at \$7 per barrel but simultaneously the cost of domestic coal will rise and remain at \$17 per ton. This is a highly unlikely occurrence but was assumed to represent the maximum cost case. The costs to the Government were estimated to be as follows based on undiscounted 1975 dollars:

Net cost of price supports through the year 2004	\$20.4 bill.
Income tax collections foregone	<u>8.4</u>
Total cost to Government	<u>\$28.8</u>

<sup>1/</sup>  
Liquefied Natural Gas





Case II - No Changes in World Energy Prices

Program level	1 million BPD
World oil price per barrel	\$11
Imported LNG price per million. Btu	\$ 2.60
Domestic coal price per ton	\$11

This case was selected to represent no real changes in current world energy prices. The costs to the Government were estimated to be as follows based on undiscounted 1975 dollars:

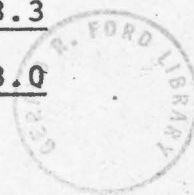
Net cost of price supports through the year 2004	\$ 5.4 billion
Income tax collections foregone	<u>8.3</u>
Total cost to Government	\$13.7

Case III and IV - World Energy Prices Increase

	<u>Case III</u>	<u>Case IV</u>
Program level	1 million BPD	
World oil price per barrel	\$11 at beginning increasing @ 6%/yr.	
Imported LNG price per million Btu	\$2.60 at beginning increasing @ 6%/yr.	
Domestic coal price per ton	\$17	\$11

These cases assume that world prices of crude oil and LNG will increase at the annual rate of 6% in real terms (constant dollars). By 1985 these prices would reach a level of \$18 per barrel of oil, and \$4.26 per million Btu of LNG; these results reflect what may occur if the OPEC cartel remains strong. The costs to the government were estimated to be as follows based on undiscounted 1975 dollars:

	<u>Case III</u>	<u>Case IV</u>
Net cost (benefit) of price supports through the year 2004	\$ (3.2) bill	\$ (5.3) bill
Income tax collections foregone	<u>8.4</u>	<u>8.3</u>
Total cost to Government	<u>\$ 5.2</u>	<u>\$ 3.0</u>



It can be seen that under Cases III and IV, the net cost of the program is a benefit (a negative cost) in the range of \$3.2-5.3 billion. This results from scenario assumptions where during the early years, with world oil prices lower than synfuels costs, the government would make price support payments to the plant owner; when world oil prices increase and exceed the price support level, the government retains the excess and ultimately derives a net cash benefit.)

All of these cost figures are measured in 1975 dollars; they are not discounted back to the present through a present value computation, hence they are dollar flows, "as spent" or "as received."

On a net present value basis (NPV), with a discount rate of 10 percent the cost to the government of the 1 million BPD program becomes \$2.1 billion for Case III, and \$1.5 billion for Case IV. These cases assume that whatever incentives are made available at the outset of the commercialization program will be made available throughout the program. Once the initial synfuels plants are up and operating successfully, it may be possible to reduce the incentives offered, particularly if world oil prices are high and trending higher while the cost of producing synfuels is constant.

### Conclusions

The general conclusions that can be drawn from this description of the 1 million BPD program level are as follows:

- o (Case I) If world oil prices fall from their present \$11 per barrel level to about \$7 per barrel and remain low for some time, and domestic coal increases to \$17 per ton, a 1 million barrel per day synthetic fuels program will require direct Government expenditures of approximately \$29 billion.
- o (Case II) If world energy prices and the price of domestic coal remain at about current levels, the cost of the 1 million barrel per day program will be approximately \$14 billion.
- o If world energy prices increase at a rate of approximately 6 percent per year (Cases III and IV) or if the world oil price rises to \$15 per barrel and remains constant (case not shown), the program will cost the Government either nothing or a modest amount since initial subsidy payments would be offset in later years by revenues to the government.



TAB 4

ENERGY CONTRIBUTION  
AND PROJECT COSTS:  
ESTIMATES

The Tables which follow in this Tab provide examples of projects that could be selected under Scope Options C, D, and E. Under Scope Option D, "low effort" and "high effort" cases are shown separately. Two points should be emphasized:

- These projects are meant to be illustrative, not definitive of the activities that could be supported; for example, while there is no mention of consumptive water projects, it is possible that under Scope Option 3 this kind of investment would be desirable, if not essential.
- The estimates of energy contribution and project costs are preliminary and subject to revision.

Scope Option C

Table I illustrates possible activities. Some additional points should be noted:

- The Synthetic Fuels Commercialization cost estimate includes \$5.4 billion of direct Federal support through a price support program; under different scenario assumptions about price, this cost could become an income of \$3.2 billion<sup>1/</sup> to the Federal Government.
- No allowance is made for foregone tax collections.
- No allowance is made for the potential cost of loan guarantees, in the event of default; peak Federal exposure under the Synthetic Fuels Commercialization Program could be as high as \$14.4 billion, for this scenario.

Scope Option D

Tables II and III illustrate "low effort" and "high effort" cases respectively.

1/

A \$3.2 billion income to the Government assumes oil prices rise at 6% per year and coal prices remain at \$17 per ton. Other assumptions lead to a range of from \$20.4 billion cost to \$5.3 billion income (undiscounted 1975 dollars).



If the Synthetic Fuels Commercialization Program analysis is assumed to be representative of the Federal Government's share of estimated total project costs, then it appears that the "low effort" case would involve the following costs to the Government:

- Federal outlays for price supports (undiscounted 1975 dollars) could range between \$5.4 billion and inflows of \$3.2 billion;
- Loan guarantee exposure could peak at \$22.3 billion;
- Foregone taxes through such devices as investment tax credits and accelerated depreciation could amount to \$2.8 billion.

Under the "high effort" case, there could be loan guarantee exposure of \$30.1 billion (instead of \$22.3); the other cost changes have not been estimated. Conceivably, they could hold almost steady.

#### Scope Option E

Table IV illustrates possible activities under this all-out concept. Estimating the Government's share of total project costs (\$124 billion) with the Synthetic Fuels methodology, it appears that:

- Federal outlays, including price supports, could range between \$20 and \$30 billion.
- Peak loan guarantee exposure could amount to \$52.7 billion.
- Loan guarantee exposure could peak at \$22.3 billion;
- Foregone taxes through such devices as investment tax credits and accelerated depreciation could amount to \$2.8 billion.



TABLE I

Scope Option C: All Emerging Energy Technologies

Activity	Energy Contribution <sup>(1)</sup> by 1985 (MMB/D)		Estimated Project Cost (1975 Dollars, Billions)
	Direct	Infra- structure	
Synthetic Fuels Commercialization <sup>(2)</sup>	1		\$ 15 <sup>(3)</sup>
Geothermal Electric and Non-electric	.4 <sup>(4)</sup> (10,000 Mwe)		6 (\$600/Kwe)
Solar Energy			
- Heating/Cooling	.3		9
Conservation			
- Advanced Heat Pumps <sup>(5)</sup>	.5		2
TOTAL	2.2	.0	\$ 32

## NOTES:

- (1) Energy contribution has been subdivided into two categories: those making a "direct" energy contribution, and those which will make an energy contribution through "infrastructure" investment.
- (2) ~~Synthetic Fuels Task Force Case II: no change in world energy prices or domestic coal prices.~~
- (3) Estimated Federal Government share of this total is \$5.4 billion liability (undiscounted) for price supports; no allowance is made for additional Federal liabilities such as defaults on loan guarantees, and for foregone Federal tax collections.
- (4) Plant availability estimated at 80%.
- (5) Incremental system cost over oil and gas systems.



TABLE II

Scope Option D:  
Add Demonstration and Infrastructure;  
Low Effort

Activity	Energy Contribution by 1985 (MMB/D)		Estimated Project Cost (1975 Dollars, Billions)
	Direct	Infra- structure	
◦ Scope Option C (All Emerging Energy Technologies)	2.2		32
Add:			
◦ More Solar Energy			
- Heating/Cooling,			
- Other	.4		8
◦ Infrastructure			
- Alaskan Gas Link		.5 (1 Tcf/Y)	8
◦ Demonstration	.13 (4 units @ 1200 Mwe each)		3
- Floating Nuclear Power Plants (1)			
TOTAL	2.7	.5	\$51

NOTES:

(1) Plant capacity factor of 60%.



TABLE III

Scope Option D:  
Add Demonstration and Infrastructure;  
High Effort

Activity	Energy Contribution by 1985 (MMB/D)		Estimated Project Cost (1975 Dollars, Billions)
	Direct	Infra- structure	
° Scope Options D (Low Effort)	2.7	.5	\$51
Add:			
° Infrastructure			
- Nuclear Enrichment and Reprocessing Plants (1)		5.4	7
° Infrastructure			
- Coal Slurry Pipelines) (2) /		.6	5
TOTAL	2.7	6.5	\$63

NOTES:

(1) Capacity to support 208 Gwe of nuclear capacity, with plant availability @ 60%.

(2) Two 1000 mile links, Wyoming-Arkansas and Colorado-Texas (Dallas); annual throughput 50 MMT.





TABLE IV

Scope Option E:  
Add Major Conventional

<u>Activity</u>	<u>Energy Contribution</u> by 1985 (MMB/D)		<u>Estimated Project</u> Cost (1975 Dollars, Billions)
	Direct	Infra- structure	
° Scope Options D (Low and High Effort)	2.7	6.5	63
Add:			
° Major Conventional			
- Frontier Areas Oil and Associated Gas (NPR-4; OCS)	3.5		26
° Major Conventional (1)			
- Nuclear Power Plants (30,000 Mwe)	.8		15
- Coal-Fired Plants (30,000 Mwe)	.8		10
° Infrastructure			
- Railroad Links for Coal		3	10
TOTAL	7.8	9.5	\$124.

NOTES:

- (1) Assumes inability of private sector to provide for this capacity, whose energy contribution is already assumed in baseline projections.



TAB 5

## ERFCO FINANCIAL INCENTIVES: EXISTING LEGISLATION

A.- Background

This section analyzes the extent to which existing legislation could be used to authorize each of the five financial incentive options listed in the ERFCO memorandum:

1. Price support programs.
2. Direct loans.
3. Loan guarantees.
4. Federal royalty payments.
5. Federal equity participation.

The following four acts appear to be particularly relevant for this purpose:

1. The Energy Reorganization Act of 1974 (ERA).
2. The Federal Nonnuclear Energy Research and Development Act of 1974 (FNERDA).
3. The Defense Production Act of 1950, as amended, (DPA).
4. The Strategic and Critical Materials Stock Piling Act of 1946, as amended, (SCMSPA).

A fifth act, the Federal Financing Bank Act of 1973, also warrants analysis as a general financing mechanism available to the Federal Government, although its scope and purpose are not directly related to energy affairs.

Other acts quite clearly could have considerable impact on stimulating (or inhibiting) implementation of incentives considered in the ERFCO memorandum, including, most obviously, the Internal Revenue Code. However, this section focuses on discussing major authorizing legislation.

Certain limitations inherent in this analysis should be noted at the outset:

- °This section is based on a previous study which focused on the development of synthetic fuels. A more complete statement of these findings is contained in Appendix C to the

report prepared by the Synthetic Fuels Commercialization Task Force and previously delivered to members of the Energy Resources Council.

- ° The most significant omissions relate to nuclear and solar development, as contained in legislation implemented by the Energy Research and Development Administration (ERDA).

## B. General Observations

Existing statutes contemplate a variety of financial incentives for spurring energy source development which may be useful in implementing portions of the ERFCO memorandum. But the statutory requirements and limitations affecting their utilization suggest that comprehensive new legislation would be necessary to authorize programs on the scale contemplated by the ERFCO memorandum (with the possible exception of Scope Option B, and Scope Option A which moots the problem).

These general observations are based on the following considerations:

- ° The primary existing specific authorization for Federal energy source promotion is the Federal Nonnuclear Energy Research and Development Act. The FNERDA, together with the Energy Reorganization Act of 1974, gives ERDA the authority, directly or in conjunction with private business, to engage in a variety of incentive research, development and demonstration programs, including those designed to illustrate and encourage commercial application. However, as the name of the Federal Nonnuclear Research and Development Act suggests, the Act does not contemplate support of a large

scale 'commercial' energy supply operation, and, furthermore, it provides for such close Congressional supervision of its authorized joint venture and price support programs that implementation of these incentives may, for practical purposes, almost amount to new authorizing legislation.

- The Defense Production Act contains broad authorizing language which could justify large scale energy supply development programs if such programs were deemed necessary to the national defense. Such a finding would appear to turn on the urgency and severity of the perceived threat to the national defense and the appropriateness of the proposed action as a response thereto.
- The Strategic and Critical Materials Stock Piling Act authorized GSA procurement of designated materials, and this mechanism could conceivably be used to induce new energy supplies. Here again, however, as with the Defense Production Act, the required national defense rationale raises serious questions.
- Finally, there is an obvious administrative advantage in having legislation tailored to the particular needs of a comprehensive new program, as opposed to relying on legislation essentially designed for other purposes.

C. Supporting Table Of Statutory Authorizing Provisions  
Relevant To Each ERFCO Financial Incentive



<u>Financial Incentives</u>	<u>Authority</u>	<u>Requirements</u>	<u>Limitations</u>
1. Price Supports	Section 7(a) (4) of the FNERDA	Must be pursuant to "objectives" of the Act.	Numerous, as specified in Section 7(c) and summarized in Part D below.
		Relates to "the products of demonstration plants or activities."	
	Section 303 of the DPA	Must be pursuant to "carrying out the objectives of this Act."	As specified in subsections (a), (b) and (c) and summarized in Part D below.
		Relates to purchases of "metals, minerals, and other materials, for Government use or resale."	
2. Direct Loans	Section 107(a) of the ERA	ERDA Administrator's determination that pertinent to additional knowledge in energy matters.	Authority is part of general statement of powers and is not well articulated.
	Section 7(a) (5) of the FNERDA	Must be pursuant to "objectives" of the Act.	None specified.
		Must be to "non-Federal entities conducting demonstrations of new technologies."	

Financial Incentives

Authority

Requirements

Limitations

Section 302 of the  
DPA

Must be "to expedite production...to aid in carrying out Government contracts for the procurement of materials...for the national defense."

As the President may deem necessary, except that financial assistance may be extended only to the extent that it is not otherwise available on "reasonable" terms.

3. Loan Guarantees

Section 301 of the  
DPA

Must be "to expedite production...under Government contracts ...for the national defense."

Terms and conditions as the President may prescribe.

4. Royalty Participation in consideration of Government Funding

Section 107(a) of the  
ERA

Arrangement must be deemed by the ERDA Administrator to be pertinent to additional knowledge in energy matters and "for the conduct of research and development activities."

Authority is part of general statement of powers and is not well articulated.

Section 7(a)(1) of the  
FNERDA

Must be pursuant to "objectives" of the Act.

Numerous, as specified in Section 7(b) of the Act and summarized in Part D below.

Relates to "joint Federal-industry experimental, demonstration, or commercial corporations."





Financial Incentives

Authority

Requirements

Limitations

Section 7(a)(2)  
of the FNERDA

Must be pursuant to  
"objectives" of the  
Act.

None specified, i.e.  
suggests that the very  
cumbersome limitations  
of Section 7(b) can be  
avoided by structuring  
as a mere "contractual  
arrangement" as distin-  
guished from a "joint  
Federal-industry  
corporation."

Section 8 of the  
FNERDA

Relates to "oppor-  
tunities to accelerate  
the commercial applica-  
tions of new energy  
technologies."

As specified in sub-  
sections (b)(c)(d),  
(e) and (f) and  
summarized in Part D  
below.

Relates to demonstra-  
tion projects.

5. Equity Participation  
in Consideration of  
Government Funding

Section 107(a) of  
the ERA

Arrangement must be  
deemed by the ERDA  
Administrator to be  
pertinent to addi-  
tional knowledge in  
energy matters and  
"for the conduct of  
research and develop-  
ment activities."

Authority is part of  
general statement of  
powers and is not well  
articulated.





Financial Incentives

Authority

Requirements

Limitations

Sections 7(a)(1) of  
the FNERDA

Must be pursuant to  
"objectives" of the  
Act.

Numerous, as specified  
in section 7(b) of the  
Act and summarized in  
Part D below.

Relates to "joint  
Federal-industry  
experimental, demon-  
stration, or commercial  
corporations."

Section 8 of the  
FNERDA

Relates to "oppor-  
tunities to accelerate  
the commercial applica-  
tions of new energy  
technologies."

As specified in sub-  
sections (b)(c)(d),  
(e) and (f) and  
summarized in Part D  
below.

Relates to demonstra-  
tion projects.



D. Supporting Summary Discussion of Applicable Statutes

1. The Energy Reorganization Act of 1974 (P.L. 93-438)

a. Purpose and Scope:

Title I establishes the Energy Research and Development Administration (ERDA) and grants ERDA and its Administrator broad powers and responsibilities in coordinating and promoting energy related research and development. Section 103 defines the research and development responsibilities of ERDA, e.g., exercising central responsibility for planning, coordination, and management of R&D programs respecting all energy sources [§103(1)]; encouraging and conducting R&D, including the demonstration of commercial feasibility and practical applications related to the development and use of energy [§103(2)]; and participating in and supporting cooperative R&D projects which may involve contributions by public or private persons or agencies of financial or other resources to the performance of the work [§103(5)].

b. Powers and Authority:

Section 107(a) of the Act specifies the powers available to the Administrator of ERDA. These include:

- making "arrangements (including contracts, agreements and loans) for the conduct of research and development activities with private or public institutions or persons, including participation in joint or cooperative projects of a research, developmental or experimental nature...";
- making payments; and
- taking such steps as he may deem necessary or appropriate to perform functions vested in ERDA by this or other laws.

Section 104(e) transfers certain functions of other agencies to ERDA and authorizes ERDA to exercise any authority available by law to such other agencies which may be necessary to perform the transferred functions. ERDA is thereby authorized to:

- exercise all functions of the Atomic Energy Commission (most notably those prescribed in the Atomic Energy Act of 1954) except as otherwise provided in the Act;

- exercise the functions of the National Science Foundation relating to solar heating and cooling development and geothermal power development;
- exercise the functions of the Environmental Protection Agency as they relate to research, development and demonstration of alternative automotive power systems;
- develop, through research, new and more efficient methods for utilizing coal;
- determine the commercial and economic practicality of utilizing lignite coal and peat for the production of fuel oil, gasoline substitutes and other commodities, and cooperate through agreements with other public and private entities to that end; and
- study the possibility for development of a commercially practicable method of converting coal into all-purpose fuels, and to erect such plants and acquire machinery as may be necessary to that end.

c. Relevance to ERFCO:

The Act grants to ERDA very broad authority in the energy research and development area. It is, however, very general in describing particular powers and the means of implementing programs designed to achieve the Act's stated purposes. Because of the Act's repeated references to R&D activity, it is not clear that it would support ERDA's sponsorship of a large scale commercialization effort.

2. The Federal Nonnuclear Energy Research and Development Act of 1974 (P.L. 93-577)

a. Purpose and Scope:

This Act provides specific guidance and authority for ERDA's programs to develop new fuel sources. Subsection 4(c) instructs the ERDA Administrator to:

- utilize the funds authorized pursuant to this Act to advance energy research and development by initiating and maintaining, through fund transfers, grants, or contracts, energy research, development and demonstration programs or activities utilizing

the facilities, capabilities, expertise, and experience of Federal agencies, national laboratories, universities, nonprofit organizations, industrial entities, and other non-Federal entities which are appropriate to each type of research, development, and demonstration activity;

Subsection 4(e) directs the Administrator to:

- initiate programs to design, construct and operate energy facilities of sufficient size to demonstrate the technical and economic feasibility of utilizing various forms of non-nuclear energy.

Subsection 5(b)(2) lists several criteria to be considered by the Administrator in choosing among R&D undertakings, including the necessity of Federal assistance, the amount of investment required and whether or not the profit potential is sufficient to attract private capital.

b. Powers and Authority:

Section 7 of the Act specifies the powers available to ERDA to provide Federal assistance to projects for development of new technologies. These include:

- joint Federal-industry experimental, demonstration or commercial corporations (however, use of this mechanism is subject to a number of stringent limitations, including; Congressional authorization of each corporation; a 90% limitation on Federal contributions; a single Congressional funding authorization; a nine person board of directors, five appointed by the President with the advice and consent of the Senate and four appointed by the President on the basis of recommendations received by him from non-Federal entities; a twelve year limit on Federal participation; turnover of patent rights to the Administrator; and limitations on use of the revenues received by the corporation);
- contractual arrangements with non-Federal participants;
- contracts for construction and operation of Federally-owned facilities;

- federal purchases or guaranteed prices of the products of demonstration plants (however, use of price supports is subject to certain limitations including: Congressional authorization of each price support program; competitive bids to determine the minimal amount of Federal price support needed; EPA oversight and a single Congressional funding authorization;
- Federal loans to non-Federal entities conducting demonstrations of new technologies, and
- incentives, such as financial awards, to individual inventors.

c. Relevance to ERFCO:

This Act, by virtue of its references to research, development "and demonstration" and its stated purpose of proving commercial "practical applications," exceeds the traditional "research and development" role. However, the language of the Act indicates that its purpose is fostering new knowledge, and it is doubtful that the incentive mechanisms provided thereby were intended to support mere duplication and extension of proven technologies. It should be noted that, although direct loans are authorized, the Act contains no explicit authorization for loan guarantees. This omission could presumably be cured by including loan guarantees as a specifically approved function in appropriations legislation enacted pursuant to the Act.

3. The Defense Production Act of 1950, as amended (P.L. 81-774, 50 App. U.S.C. §2061 et seq.).

a. Purpose and Scope:

The Act was designed to give the President the authority to effect adjustments in the economy necessary to divert materials and facilities from civilian to military use and to expand productive facilities for the purpose of developing and maintaining the Nation's military and economic strength. Adequate supplies of fuel clearly were a primary concern of the legislation. Although the "national defense" motivation for the Act is apparent and explicit, the definition of this phrase found in Section 702(d), is essentially circular, i.e. "the operations and activities of the armed forces, the Atomic Energy Commission, or any other Government Department or Agency directly or indirectly and substantially concerned with the national defense."

b. Powers and Authority:

The Act authorizes priorities and allocations (1) with respect to contracts or orders necessary or appropriate to promote the national defense, and (2) under certain circumstances authority to control the general distribution of scarce and critical materials essential to national defense. The Act also contains authority for the expansion of productive capacity and supply and exempts voluntary agreements by industry from the antitrust laws. The Defense Production Act authorities have been delegated to the Administrator of the Federal Energy Administration insofar as they relate to the production, conservation, use, control, distribution and allocation of energy.

The only finding which is necessary to enforce the priority performance of contracts or orders necessary or appropriate to promote the national defense is that the delegated agencies deem the contract or order necessary or appropriate to promote the national defense. If a properly placed directive is not honored, the Act provides for injunctive relief to guarantee such directive will be honored and criminal penalties for failure to honor such directive.

Control of the distribution of material in the civilian market is prohibited by the Act unless the President or his delegate finds (1) that such material is scarce and (2) that requirements of the national defense for such material cannot otherwise be met without creating a significant dislocation of the normal distribution of such material in the civilian market to such a degree as to create appreciable hardship. No such civilian allocation program is now in existence with respect to any material.

Three sections of the Act deal with financial incentives to encourage expansion of productive capacity and supply.

- Loan Guarantees (Section 301). The only finding required is that the action is taken in order to expedite production and delivery of materials or services under government contracts. The President may designate agencies engaged in procurement for the national defense to guarantee loans for the purpose of financing contracts in connection with the performance of any contract or other operation deemed by the guaranteeing agency to be necessary to expedite production and delivery of materials or services under government contracts for the national defense.

- Direct loans (Section 302). Findings required are that the action is to expedite production and delivery of material or services to aid in carrying out national defense contracts and that financing is not otherwise available on reasonable terms. The President may make loans on such terms and conditions as he deems necessary to businesses for expansion of capacity, development of technological processes, or production of essential materials, including the exploration, development and mining of strategic and critical metals and minerals.
  
- Price Supports (Section 303). Under this authority the government may make provision for the purchase of materials for use or resale. Purchases may be made at higher than the anticipated resale price if it is determined that supplies could not be effectively increased at lower prices or on terms more favorable to the government or are necessary to assure availability to the United States of overseas supplies. The President may also encourage exploration, development and mining of strategic and critical metals and minerals. In addition, if the President finds that ceiling prices will result in a decrease in supply from high cost sources or that a temporary increase in the cost of transportation threatens to impair maximum production or supply in any area, he may make provision for subsidy payments in such amounts and manner and on such terms and conditions as he determines to be necessary to insure continued supplies. In addition, the President may, in certain situations, make provision for the development of substitutes for critical and strategic materials.

c. Relevance to ERFCO:

At first impression the DPA seems to have some potential for spurring energy supply sources in that it contains three of the incentives considered in the ERFCO memorandum. There are, however, several qualifications to its utility. First and foremost is the requirement that the action be justifiable on a "national defense" basis. Second the "under government contracts" requirement for loan guarantees and direct loans suggests that the production thereby sponsored is for government consumption (which would not be the case in a commercialization project). Third, one may question the wisdom of using the DPA (which was drafted with defense production in mind) for a generalized energy effort.

4. The Strategic and Critical Materials Stock Piling Act of 1946, as amended (P.L. 79-520, 50 U.S.C. 98-98h).

a. Purpose and Scope:

The Act is designed to provide for the Federal government's acquisition and retention of stocks of strategic and critical materials, the supply of which is deficient or insufficiently developed for the Nation's industrial and military needs. The Act is specifically concerned with the vulnerability implicit in reliance on foreign sources and has, as stated purposes, the conservation and development of domestic sources.

b. Powers and Authority:

The Act authorizes the purchase and stockpiling (together with related activities) of specified strategic and critical materials. Most of the Act's powers were originally delegated to the Director of the Office of Emergency Preparedness, but have since been transferred to the Administrator of General Services (who has sole responsibility for determining which materials are to be maintained in the National Stockpile and for determining the quantity and quality thereof). He is assisted in these decisions by a group of interdepartmental advisory committees.

The General Services Administration is also responsible for acquiring materials for the stockpile and for storing, maintaining, and disposing of them when they become surplus. Surplus disposals must be expressly authorized by Congress except for materials which are surplus by reason of obsolescence for use in war.

The President is authorized to release materials from the stockpile whenever in his judgment such releases are required for purposes of common defense. Unlike disposals of surplus materials (other than obsolete materials), "common defense" releases require no Congressional approval.

c. Relevance to ERFCO:

Although procedures established pursuant to the Act contain elements of a price support program, it was not intended (and does not appear adaptable) to establish a generalized support program. The "defense" nexus and the restrictions on disposition of stockpiled materials suggest that using the Act as justification for a generalized price support program, particularly on the scale implicit in the ERFCO proposal, would be distortion of the legislation and highly suspect.



5. The Federal Financing Bank Act of 1973 (P.L. 93-224, 12 U.S.C. §2281 et seq.).

a. Purpose and Scope:

The Act was originally viewed primarily as a mechanism for coordinating the borrowing activities of different Federal entities, and it serves an important function in this area. However, it also apparently establishes a mechanism whereby funds generated by Treasury borrowings may be routed through the Bank to borrowers designated by a Federal agency. This procedure has reportedly been used to fund loans guaranteed by the Rural Electrification Administration and the Department of Housing and Urban Development. It has been suggested that this procedure circumvents the usual funding and appropriations process and constitutes "backdoor financing."

b. Powers and Authority:

The Act establishes the Federal Financing Bank and authorizes it to commit to buy (and buy) any obligation which is issued, sold or guaranteed by a Federal agency, 12 U.S.C. §2285(a). The Bank finances such purchases either by its own borrowings or, more commonly, borrowing from the Treasury. In instances where the Bank has, in effect, made a loan to a private borrower which is guaranteed by an agency, the Bank looks to the guaranteeing agency to service the loan inasmuch as it is not staffed to do so.

c. Relevance to ERFCO:

The possibility of using loans by the Bank as an incentive in promoting energy supply sources has not been carefully studied. Although not identified as a subsidy, the Bank's funding power might operate as such if, as indicated, it enabled approved private borrowers to borrow from the U.S. government at substantially less than private free market rates. Doing so raises policy questions as to whether or not the particular purpose warrants the favored-treatment implicit in direct government loans. Such Federal intervention is, perhaps, easier to justify in instances where the borrower's rate of return is regulated (such as a utility) than in instances where the profits financed by the borrowing are not regulated.

TAB 6

ERFCO: BOARD OF DIRECTORS

If ERFCO is established as an independent freestanding new entity, then the issue of board supervision and policy direction emerges. There are four major sub-options with respect to this issue:

Organization Sub-Option 1

Chief Executive Officer reporting directly to the President; non-voting Board of Directors representing ERC, ex officio, provides policy counsel and recommendations.

Pros:

- Maximum direct authority.

Cons:

- Policy coordination with other Federal agencies primarily through lateral contact.
- Scale of ERFCO effort and time pressures upon ERC members make for loose review participation.

Organization Sub-Option 2

Voting Board of Directors, chosen largely from ERC departments; Chief Executive Officer of ERFCO as voting board member.

Pros:

- Would provide full range of Federal energy policy representation, with voting authority.

Cons:

- Might be cumbersome in decision-making, since departmental viewpoints would probably dominate voting and decision-making.
- Exclusion of all but non-executive branch constituencies from direct decision-making might be controversial.

Organization Sub-Option 3

Voting board representing government, labor, management, consumers, and other special interest groups. This follows the model of various Presidential commissions and boards with "balanced" representation.

Pros:

- Might be the most politically feasible, since it provides for broad-spectrum participation.

Cons:

- Determining the ingredients and mix of "balanced" representation could be difficult.
- Decision-making may be hobbled by board deadlocks.

Organization Sub-Option 4

Chief Executive Officer (Chairman) reporting directly to the President. Vice Chairman and at least three other directors, also with voting privileges, appointed by the President. All should have national recognition and could represent certain constituencies.

ERFCO would have membership in the ERC for policy guidance and coordination. No project could be approved without certification by the ERC that it met national energy goals and that the proposed use of technology has a reasonable probability of success.

Pros:

- Direct authority for program operation.
- Decision-making can occur within the range of projects certified by FEA and ERDA.
- Draws upon other energy agencies in their areas of special competence.
- Board of Directors can provide balanced representation of major interest groups.

Cons:

- FEA and ERDA certifications might be difficult to obtain and could block or slow certain projects.
- ERFCO retains considerable independence in the final selection of projects.



**CSIS REPORT**

# **THE ENERGY INDEPENDENCE AUTHORITY**

**Edited by  
Francis X. Murray  
Director, National Energy Programs**

The following **REPORT**  
of the Georgetown University  
**Center for Strategic & International Studies**  
is for limited circulation and represents  
only the views of the individual(s) cited.

THE ENERGY INDEPENDENCE AUTHORITY

Edited by

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The Center for Strategic and International Studies

Georgetown University

Washington, D. C.

March, 1976

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Library of Congress Catalog Card Number: 76-12152

## FOREWORD

This is the second in a series of Seminar Reports to be issued by the Center for Strategic and International Studies (CSIS), Georgetown University, as part of the Federal Energy Staff Seminar Program.

These reports are intended to serve as a record of the seminar programs. As such, we hope they will identify the important issues, ideas, and information presented by the panelists. In addition, we believe these reports will record provocative issues and problems raised by the participants. A report such as this will provide those involved with an opportunity to analyze and weigh the positions and statements of both the panelists and their fellow participants more thoroughly. It will also provide, for those unable to attend a particular seminar program, the opportunity to review and study the proceedings.

These reports will be circulated to those attending the seminars, as well as to other persons either interested in specific topics or having an interest in the overall seminar program. We believe this will increase the number of people who can benefit from exposure to the ideas and debates which the programs have brought forward.

Other Seminar Reports are currently under preparation and should be available in the near future.



Regarding the content, these reports are not direct quotations of the panelists or the participants. Frequently changes have been made to clarify, abbreviate or complete ideas or statements or to provide overall continuity and flow in the report. Hopefully, none of the major ideas or points have been altered or deleted. Any misrepresentation is the responsibility of the editor and reflects a lack of understanding of the position being expounded. I sincerely trust such occasions have been kept to a minimum.

I would like to include a special note of thanks to those on the CSIS staff, and others, whose contributions have aided in the preparation of this report. In particular, the ability of Bernadette Arrowsmith, Donna Brodsky, Mary Cobb, and Sylvia Lowe to decipher tapes, to complete half-finished sentences and to edit technical jargon has been truly impressive. Their efforts have been deeply appreciated.

Francis X. Murray  
Director  
National Energy Programs

## INTRODUCTION

The United States continues to hold to Energy Independence as a primary objective of our energy policy and strategy. While this objective has been redefined several times, nevertheless, it still provides the key to understanding the direction of many of our energy programs as well as the new proposals being put forward.

If we, as a nation, are to limit our dependence on energy imports, and perhaps even reduce them below today's levels by the mid-1980's, then we must pursue a broad range of actions aimed at both dampening energy demand and increasing domestic energy supplies. All this can hopefully be accomplished with a minimum of interference, expense, and inconvenience to the individual and to our society as a whole. But, what is government's role? What stimulus should it provide? To what extent must it step in and act in place of private individuals and institutions?

These were the fundamental questions addressed by the panelists at the Federal Staff Seminar held by CSIS on November 5, 1975. If domestic energy supplies are to be increased and if new energy sources and technologies are to be encouraged, then how should we best go about the business of doing it? In response to this question, the Administration has proposed the creation of the Energy Independence Authority (EIA).

Three panelists were selected to discuss this administrative

program. Two of the panelists were influential in drafting and formulating the EIA proposal, and, as expected, were advocates. They were: Eric Zausner, Deputy Administrator of the Federal Energy Administration, and Peter Wallison, Special Counsel to the Vice President. In opposition to the proposal was William Johnson, Director of the Energy Policy Research Center at the George Washington University.

U. S. ENERGY POLICY

The Energy Independence Authority: Two Views

November 5, 1975

ERIC ZAUSNER, Deputy Administrator for the Federal Energy Administration

Now that I have the podium, I will not only describe the proposed Energy Independence Authority but also provide a little of the rationale as to why it is needed. Then, after Bill (William Johnson) has gone into a catatonic fit, I gather Peter Wallison will discuss more of the details on the proposal.

WILLIAM JOHNSON:

Since it is your time, I might add a catatonic fit is symptomatic of someone who sits in the corner and says nothing.

ERIC ZAUSNER:

That is what I was hoping for.

FRANK MURRAY:

I have a feeling I am in for a rough evening!

ERIC ZAUSNER: (Continuing)

As many of you probably know the broad outlines of the proposal, I will summarize it briefly. It is called the EIA, i.e., the Energy Independence Authority. It is to be a corporation with funding or authorization powers to make

commitments for up to \$100 billion in energy projects. Financial backing for the Authority would be provided by the federal government, namely the Treasury. This would be established by the purchase of \$25 billion of equity and by essentially guaranteeing the corporation's or the Authority's ability to raise \$75 billion worth of debt, either by directly floating that debt in the capital markets or by having the Treasury itself purchase that debt. The concept of the Authority is not that it would operate or own energy facilities but, rather that it would absorb the financial risk by providing equity participation, price guarantees, or some other form of guarantee of the debt of energy facilities to assure that they would be undertaken.

Furthermore, the types of projects that would be included do not represent the full range of energy investments that we expect over the next ten years. In fact, the corporation is very narrowly defined as to the types of projects it can finance and those it cannot. This definition restricts the areas which are likely to be financed or in some way receive federal assistance.

The areas that have been specifically prescribed for the corporation are: 1) emerging technologies, such as synthetic fuels and new forms of geothermal power; 2) other types of emerging technologies not yet in commercial and domestic use, both on the supply side and for energy conservation; 3) nuclear power and projects to support nuclear power, again only if these

projects can be financed by the private sector; and 4) projects which are so large or of such a unique institutional character that it is unlikely the private sector would undertake them. While it is a little hard to speculate on specific projects, I can give you a few examples of the kind which we have in mind for this latter category. One example would be uranium enrichment. Here it appears that the project is very large and so intimately tied up with federal regulatory procedures and regulatory requirements that some form of federal assistance is required or the project will not go forward unless the federal government wants to build it directly. Similarly, some of the new pipelines we are talking about for oil and gas may or may not be able to get financing. Some kinds of energy parks, a new concept which may involve a large number of different kinds of facilities, may or may not be able to get financing because of the long lead time and the uncertainties as to whether they can ever be put together.

The key question, of course, is why provide government guarantees? To answer that I think you have to step back a little. If we are going to have a program which reverses our growing dependence on foreign oil, then we must provide for increasing domestic supplies in both the short term and in the long run. Ultimately we are going to see domestic sources of oil and gas again dwindle at some point in the future, perhaps in the mid- or late-1980's. In good measure this depends on what we find in the frontier areas about which we know very little

today. To assure these supplies we are going to need several major projects. These will provide assurances that in the next ten years we will develop the new technologies to a point where they are commercially viable. Then in the post 1985 period these technologies can, in fact, expand and take the place of dwindling traditional oil and gas supplies. The realities are that while we have numerous technologies available, few, if any, are going forward in the sense of building large-scale commercial operations. Therefore the purpose of this authority is to absorb enough of the financial risks so that these facilities are begun and that by 1985 at least, we have a fledgling domestic industry. We would then be at the point where the technologies should be proven in commercial operations. They can then expand and replace the growing oil and gas gap which ultimately has to develop. This is the purpose behind the Energy Independence Authority.

I would like to make one other general point, and that is that people are very concerned about the Authority because it is a new and "unwarranted" intrusion in the private sector. The question is, what is going to happen without it? I would postulate only two alternatives: 1) we are not going to get these new technologies commercialized, built, and in operation, which I think is a very poor outlook; or 2) because of our desire to develop them and the reluctance of the private sector to take them on, we are going to see a growing federal involvement in the direct operation and ownership in the

facilities rather than in their financial assistance. It is easy to foresee a course where, if the industry does not develop and use synthetic fuels technology, the next step is to have the federal government build several large plants itself. The step after that is to have a TVA-type of operation and build even more. So, in my mind, we have somewhat of a "Hobson's Choice" between federal ownership and no development. What we are trying to do with the EIA is strike a middle ground, encouraging the private sector's expertise in the operation and running of the facilities and having the government absorb the minimum amount of risk needed to make the project viable.

WILLIAM JOHNSON, Director of the Energy Policy Research Center  
at the George Washington University

While the proposed Energy Independence Authority is supposed to expedite energy self-sufficiency, in my view it may actually discourage this goal. It will probably provide support for programs that have questionable economic bases while slighting those that have good economic bases. In the process it will create still another federal energy agency that will interfere with private markets and industry activity, substituting bureaucratic for industry judgment. The Energy Independence Authority would also disrupt capital markets, not only for energy but for other industries as well and, perhaps more seriously, would allow politics and political machinations to enter into energy investment decisions far more than they affect such decisions today.

I am going to consider each of these allegations or charges one by one.

First, the Energy Independence Authority (EIA) will probably encourage investments in projects that have questionable economics. EIA is supposed to focus on methods of producing energy that cannot get financing by private means. One of the things that bothers me about the EIA is that there is an implicit assumption that the market makes bad judgments; that the projects are still worthwhile even though the market happens to say "No". In fact, I think there are many projects that may not get financing at current rates of interest simply

because they are not economically attractive. They are too new, not out of the R&D stage, or have not proven themselves to potential investors. There is no guarantee in the EIA framework that the Energy Independence Authority will not support these projects.

We have a problem with EIA in that projects would no longer be subject to those efficiency standards which would condition various projects going into the capital markets, with the most profitable alternatives being chosen first. In practice this would probably mean a shift away from various conventional to relatively unconventional sources of energy. A good example might be shale oil which is, in my judgment, a marginal source of oil. We may put capital into the development of the OCS (Outer Continental Shelf), or secondary or tertiary recovery because of government reallocation of capital resources.

The EIA is supposed to supplement private funds and go into conventional, financeable types of projects but, in fact, it may replace these funds. Various government agencies also have had a history of backing questionable technologies. For some reason various agencies become addicted to a particular technology and push these technologies despite substantial objections from people outside. Some good examples are: the Environmental Protection Agency with stack gas cleaning and the catalytic converter; the Atomic Energy Commission's advocacy

of the breeder reactor, and the Federal Energy Administration's project independence which supported building new homes that are electrically heated. All these technologies, if you will, were subject to substantial controversy. I think that there could be similar controversy, depending on what EIA happens to choose, where you may indeed see monumental blunders in the misallocation of resources. We may see billions of dollars for uranium enrichment but not one cent for, let us say, deep drilling on the outer continental shelf.

I think there is no guarantee that the Energy Independence Authority will not push projects that are still in the R&D state; that is, still in research and development. Such projects are prohibited in Section 304 of the bill, but these are only words. There is a fuzzy line between R&D and commercial development. I do not think that the fuzzy line can be adequately determined by the officials of the EIA. The Energy Independence Authority has felt the need to offset delays and other disincentives created by the government's own regulatory policies. One of the things that has been stated in its behalf is that it will accelerate projects that have been slowed by environmental policies, or other regulatory controls. This is not necessarily true of all alternative sources of energy, but I think it does illustrate a certain absurdity of government policy. On one hand the government may be slowing down energy growth by its various regulatory policies while at the same time -- through the Energy Independence Authority, it is

attempting to speed up their growth. It is like driving with one foot on the brake and the other foot on the accelerator. I think it would be better to revise the regulatory policies that deter energy growth and, beyond that, have the government decide what it really wants to do. Does it want to encourage energy growth or does it want to control that growth?

There is, as I indicated earlier, an implicit assumption in the Energy Independence Authority that the price incentive and the capital market have failed, especially in the case of very large projects. In fact, the capital market is one of the most efficient markets that we have in the United States. Recently it has managed to finance large-scale projects such as the Alaskan pipeline, which, by the way, happens to be highly economic. Drilling for oil has responded very sharply to price incentives and I suspect that capital will also be sufficient for other energy projects that pass the test of economics required by the existing capital market.

As I indicated earlier, I think you will see the Energy Independence Authority lavishing capital funds on a number of projects that are very marginal. Certainly there will be an incentive for a number of people who want to obtain federal support to plead poverty, instead of trying to fund their projects through the capital market. This will be particularly prevalent if there is a substantial subsidy involved.

Let me ask this question: can past experience with government decision-making give us much confidence in the

Energy Independence Authority's ability to make the right choice? I think the answer is a categorical "No!" In the first place, there has been a deep suspicion of expertise in government, particularly in the Congress, and with most FEA officials who have any experience in the industry. These people are often regarded with a great deal of mistrust and, in some cases, harrassment. As a result many of the FEA officials presently in high positions simply are not qualified for the job. I was, incidentally, manifestly unqualified for the job when I was in FEA. I still have not figured out why I was there, but I am not alone.

There will be the same situation at the Energy Independence Authority; many people will not understand industry well enough to be able to judge whether or not a particular technology or process is economically viable. Let us look at some examples. I think FEA does provide a good indication as to how the EIA might be run. In early 1974 there was thought to be a residual fuel oil shortage. This scare was based on faulty data regarding residual fuel oil stocks. In response, FEA pressured the oil industry to maximize production of distillate which, it was thought, could be used as a substitute for residual fuel oil even though the oil industry had distillate coming out of its ears and no place to store it. Had industry followed FEA's dictum, it would have resulted in a more severe gasoline shortage, certainly longer gasoline lines and possible gasoline rationing. The industry did the right thing. It

followed its own judgment rather than FEA's judgment and really got the administration off the hook. During the embargo, the then Federal Energy Office (FEO) estimates were just too high, and FEA created gasoline lines with its price and allocation controls. You may not have been aware of it. I became aware of it only half way through the embargo. The lines tended to be concentrated toward the end of the month. To some extent the lines and the unnecessary inconvenience created for the public were a construction of FEA's or FEO's controls. There are other examples that would be humorous if the stakes were not so high. In one of the crude oil allocation programs, a fictitious refiner appeared and got an allocation. We first learned of this when the people from the industry came in and said, "Who are they?" No one at FEA knew that this was not a bona fide company. The other example: I remember getting a call from a friend of mine at the American Petroleum Institute who told me they had received a call from an FEO employee asking the technical definition of the unit of weight used in the oil industry called the Platz Oilgram. Now I think you all know that the Platz Oilgram is an industry newsletter.

These are not passing problems. These rules are continuing. I believe FEA failed to track completely the gasoline crisis as it emerged earlier this year, reflected in the rapid drop in stocks. We have had a gross overestimation of this winter's natural gas shortage. At first I believe it was estimated at

three trillion cubic feet. This was subsequently lowered to 1.6 trillion cubic feet. The President became excited and we came within a whisker of overreacting; we nearly extended natural gas controls into the intrastate market. I think this would have been a disastrous decision. I just recently heard that the FEA prepared a regulation requiring gasoline and diesel oil dealers to post the lead content of diesel oil as well as gasoline, only to learn later that diesel oil does not contain lead. I think the record speaks for itself. I do not think the Energy Independence Authority would do any better.

Let me make three final points.

First, the EIA would disrupt the capital market. There is no reason to assume that the private market is inefficient. The market is open to anyone who can convince investors that he has an attractive project. It is a highly competitive market. The Energy Independence Authority may not be able to increase capital flow to energy industries. It may actually shift capital to the higher-risk projects. This would probably drive interest rates up, but as economists have found for years, this does not usually result in any significant increase in savings. What it probably would do is to deprive marginal investments of capital, not necessarily in energy but perhaps in housing and other activities. Federal, state and local governments are taking over half the net investable resources in the United States. EIA would add to this burden, not insignificantly. And I have no doubt that it would be followed

by demands from other parties unable to get financing who would want to have similar treatment. The results would be a gradual extension of government control over the allocation of capital. This represents what I would call unplanned planning.

This raises the second point: if you are going to go into planning, then what is the plan? It should not depend on which groups happen to come in and get their projects approved. This would result in a topsy-turvy form of allocation and create enormous political pressures on the Energy Independence Authority, despite its seeming separation from the government. If subsidies were provided, such pressures would be even greater. We would have created, I think, an unhealthy commonality of interests between certain political and business groups in our country. It already exists in the massive system of controls and regulations which we have had since the oil import program and perhaps even before. Favorite companies get certain special privileges. For those of you who do not know it, without question the most effective lobby in the United States is, in my judgment, the New England oil interests, not those in Texas. Also the most effective Congressional energy lobby is the New England Congressional caucus. I have no doubt that New England would demand its share, which would be three times that of anybody else. Congressmen love solar energy above all and I have no doubt that every Congressman would want solar energy projects, of



course in his district or at least in his state.

My third and final point in closing: why is the Energy Independence Authority being pursued? Why is it being proposed? The basic reason, I suspect, is to cover up the emptiness of federal energy policy. When politicians do not have solutions, they create organizations to find solutions. But, even more important, organizations they can point to as something they have done to solve the problem. I think the nation's experience in the last several years, partly with the FEA and the repeated reorganization of the Federal Energy establishment, does illustrate a more general pattern of bureaucratic and political behavior. The way to appear to solve a problem is to organize -- or to reorganize. Governments, it often seems, measure success in terms of the new organizations they create. As one observer has noted, and I am quoting, "We tend to meet any new situation by reorganizing and a wonderful method it can be for creating the illusion of progress while producing confusion, inefficiency, and demoralization." This was said, incidentally, not by William Simon or Rogers Morton or Frank Zarb, but by Gaius Petronius Arbiter, a confidant of Nero Caesar during the first century A.D. I think the public should bear in mind the words of Petronius as it weighs Senator Stevenson's proposal or Senator Jackson's National Energy Mobilization Board and President Ford's Energy Independence Authority; when politicians lack substantive

policy proposals, they reorganize. More often than not, they offer the public new organizations that will, in one way or another, ostensibly solve the problem. And, more often than not, these new organizations will create a lot of motion and little direction. Unfortunately, they may also cause even greater problems than those they are designed to correct. To sum it up -- do not be taken in by a phony solution to a phony problem.

PETER WALLISON, Special Counsel to the Vice President

I have just a few remarks to make in reference to the last thing that Bill said which was, as I recall, "don't accept a phony solution to a phony problem." I would like to talk for a minute about just what the problem really is. Failure to understand the problem may be part of the difficulty in understanding why the EIA is being proposed. I am sure you all know that the country has become increasingly dependent on imported oil. This in turn has had considerable impact on our policies abroad and our actions throughout the world. If we become increasingly dependent on imported oil, (because as the production of oil in the United States continues to fall and the production of other forms of energy also falls) then two effects will become clear. First, we will become increasingly subject to pressures from abroad in a foreign policy sense, and, secondly, we will be sending abroad a great deal of money that is not always returned to our economy.

The EIA was developed with both of these problems in mind. Both are serious, but by far the more serious issue involves the national security implications of growing dependence on unreliable supplies for a vital resource, one that is essential to an advanced economy. This was the issue which confronted the President and his advisors. It took the form of a question, how can we stimulate the production of energy from domestic sources with the least possible impact on the private sector?

They decided on the proposed EIA.

Now it is very easy to criticize the EIA on two grounds; the first is theoretical and the second somewhat more practical. The market is, of course, the most efficient allocator of capital. There is no question about that and certainly President Ford has taken other steps which indicate that he believes this completely. However, if you do have a system of developing energy in the United States, how do you direct capital into that area most efficiently, if indeed, you can do it at all? When the legislation was designed initially, and as it was presented to Congress, it contained two principal criteria for funding energy projects. The first condition is that the project must contribute significantly to energy independence. This means that it must be designed to produce energy in substantial amounts and not as a research and development project. This also eliminates pilot projects. Only undertakings that actually contribute significantly to the production, transportation, or transmission of energy which cannot otherwise be funded by the private sector will be eligible. Although the private sector is, of course, an efficient allocator of capital, it does so on the basis of profit. The profit motive does not take into account questions of the security of supply. When EIA was proposed, it was designed to take account of the vulnerability of supply by encouraging the allocation of capital into areas which will increase supply.

The Administration recognized that although there were regulations for expanding energy production in the United States, by and large this production was not increasing at a rate rapid enough to offset the importation of oil; even when this oil was priced at \$12 or \$13 a barrel. As long as the growth in imports continued, we would become increasingly dependent on foreign oil. Therefore, it was essential to increase energy production in the United States.

The second criterion that was stressed in the legislation was that for any project to receive consideration, it must be unable to raise funds from the private sector. The board of directors of this corporation, who would manage the corporation, would be people who are familiar with investments. Presumably they would be investment bankers or others who have had experience in the field. When a project was brought to them for the purpose of securing funding, they would have the opportunity at that point to decide whether it was a project which could be funded otherwise. If it was not a project which could be privately funded, the reason could well be that the risk was excessively high. This leads us to the question of risk. The government would certainly be taking some risk that the private sector was unwilling to take by itself. In some cases it might not be clear that the projects would be able to produce energy at a price which was competitive. This does not necessarily mean that the projects could never be competitive, only that they had not at that

time been commercially proven. In some instances the projects represent technologies which may have just emerged from the area of research and development. In any event, an element of risk exists which the private sector will not assume. The government would assume that risk. This action would not be for the purpose of assisting or bailing out the private sector, but the assumption of this risk by the government would help provide for the nation's security. That is the motive behind the program.

I thought that after outlining the overall program I would address some of the other questions, such as the disruption of the capital market. There has been a lot of talk that the EIA is intended to create capital. It will not, and people who are arguing in favor of EIA have never claimed that it will. The EIA will allocate capital only. This means that there will be a certain amount of distortion in the capital market. What is distortion? Any subsidy provides a distortion. The capital market's attraction for municipal bond provides an example of such a distortion. The question is not whether there is distortion; the question is whether such distortion makes sense as a matter of public policy. When dealing with issues such as the stability of the economy, the question of national security, or the freedom of action of the United States abroad, it might indeed make very good public policy to distort the market slightly by allocating capital into the energy area and away from some of the other

areas. Unfortunately, some areas may end up being deprived of capital. In areas where capital investment is of critical importance, the production of a resource such as energy, it makes sense to create a program which would allocate the capital into these areas. We do this now for housing and municipal bonds.

The question of deciding which R&D program is commercially feasible is another difficult area. There is no chart that will show you what is and what is not an R&D program. There is likewise no chart to determine which projects are for commercialization at a given moment and which ones are suitable for such commercialization. To assume that private industry has any better means for making this kind of decision than government is as much a fantasy as to assume that the government agency is omniscient, which it is not. These are very tough judgmental questions and a government agency which approaches these decisions properly will do so on as sound a basis as would a private enterprise. This is in no way to imply that government should run the energy business. Nevertheless when important questions regarding the stimulation of energy production become related to the important issues of economic health and national security, then the government should be involved and may have to take certain risks. There will be some losses here and hopefully there will also be some gains. But the EIA is intended over its lifetime to be managed as would a portfolio or an investment bank. It

will have some losses but over its entire life, it should also produce profit. Perhaps not a large profit, but nonetheless a profit for the people of the United States in addition to the benefits of providing secure energy sources and increasing the production of energy in the United States.

Let me deal with just one other point. Many of the opponents of this legislation have stated that the EIA will, in effect, cause interest rates to rise, i.e., it will drive interest rates up. Whenever the United States enters the capital market, it takes funds away from other organizations which are also looking for funds. I believe the real issue is whether private industry competes for capital now or competes for energy ten years hence. If you view energy as a key resource, which I believe it is, then it must be given some priority in the capital market. If a businessman is faced with the choice of not having capital to expand his plant or not having energy to operate it, I believe he will choose energy and forgo plant expansion. It is this kind of threat that could arise as a result of an embargo or perhaps pressure on sea lanes ten years from now or even earlier. These potential threats represent the kinds of risk which the government probably ought to take because they are directly in line with the government's ordinary responsibility to promote the national security of the United States.

QUESTIONS AND ANSWERS

QUESTION: I would like to address the first part of my question to Mr. Zausner and the second part to Mr. Johnson. First, there are pipeline projects under consideration in this country with capital requirements that range anywhere from \$1 million all the way up to the Arctic project in the neighborhood of \$10 billion. Up until now, private industry has said they cannot handle the Arctic pipeline. They will need assistance with the financing. But, looking further down the line, there are projects for \$9 billion, \$8 billion, \$2 billion, \$1 billion, \$500 million and so on. Who draws the line? Who will say this project is viable for the private sector and this other project is not?

A: WILLIAM JOHNSON: I just wonder to what extent the people from Arctic gas are saying they cannot do it simply because they know they might very well be able to obtain government funding. This type of thing happened repeatedly when I was at the Federal Energy Agency and the Treasury Department. There was a constant stream of people coming in who were looking for government participation in one way or another. In the case of natural gas, the economics are quite compelling. The only thing that may discourage the building of the Arctic pipeline is the price control over natural gas. The producers in the Arctic are producing the gas and there is nothing they can do with it, economically speaking, except reinject it

into the ground. In the Arctic area I strongly suspect that if you had a reasonably free market, the producers would find a way of financing the pipeline.

QUESTION: It is possible, Mr. Johnson, except that there are two competing projects to bring the Alaskan gas down to the lower 48, which is a very important item. It is a very significant amount of energy. A pipeline can be constructed, and it must be done and done in a timely manner. The two proposals are the El Paso project and the Arctic project. Both companies claim they will need some type of government sponsorship. I think the mood of Congress is to give such sponsorship. I think there are a few other projects requiring large amounts of dollars that would also be viewed favorably by Congress. So the second part of my question which I will address to you, Mr. Johnson, is are we to do these things piecemeal, one at a time, a few billion here, a few billion there -- or do we address the problem more logically and as part of one big package?

WILLIAM JOHNSON: My guess is that of necessity you are going to end up doing these projects piecemeal. Different projects are going to be proposed at different points in time. The Energy Independence Authority is presumably going to have a fixed guarantee authority to allocate and it will probably have some sort of a plan as it comes into existence for this allocation. Therefore, it could be extremely

difficult for the EIA to do anything but follow a piecemeal program for allocating capital. That is similar to the way the market behaves. The capital market does not have a broad master plan that it uses to decide how it will distribute resources, nor when it is going to give them out. The interest rate in the capital market does adjust itself as the supply and demand for investable funds change. I do not think that is going to be the case for the EIA. They are going to have to develop some sort of master plan that will take the place of market price fluctuations.

ERIC ZAUSNER: There are several problems with the piecemeal approach, but political problems would appear to be the most difficult. You can reach a decision where you begin to trade projects; for example, I will support the pipeline but you have to vote for the project on the West Coast. If in fact it is possible to define a generic category of projects which have serious financial problems, and which are in diverse energy sectors, then we might be able to limit requests to these types of projects. In this manner we could address the projects as they came up, rather than face the terrible political problems of taking them six at a time. This might avoid trying to approve a pipeline guarantee project along with a synthetic fuel proposal as the Congress is now considering. They do not want to know if it is \$6 billion or \$7 billion, they only want to know if it is going to be in

West Virginia. In this way the authority could concentrate on those areas where the problems are believed to be most pressing. Then the maximum number of checks and balances and criteria can be developed, recognizing that there are always grey areas, and we can take action on the important projects as they come up.

WILLIAM JOHNSON: In addressing the question, it is still my guess that it probably will end up as piecemeal policy whether it is desirable or not. My reaction is that it is probably not desirable, but there are arguments on both sides. The beauty about the capital market is that when a lot of people come into the market at one time the interest rates go up. You can have a piecemeal policy that works in a relatively free capital market, but not under a government allocation system. It will be the first comer who gets the gravy; furthermore, you are right about political considerations. You can bet that the Senators from West Virginia will be very judicious in watching what happens to coal in their state.

QUESTION: I have a question for Mr. Wallison or Mr. Zausner. Given that the prime justification for EIA is the opportunity cost of another embargo, has the government quantified the value of not having an embargo given the probabilities of embargo or the costs of an embargo? Did they perhaps set the \$100 billion by this method?

ERIC ZAUSNER: First I would like to say it is not just a matter of not having a comprehensive national energy policy. You know that is one manifestation, and it has a high cost. Frankly, it is very hard to estimate this cost. We have looked back at the 1973 embargo and tried to estimate the impact. One can come up with very large numbers or with small numbers. William Johnson will probably place most of the blame on the federal government and not on the loss of oil, but nonetheless it is very difficult to quantify the impact of the embargo.

I would add that there is also a cost of being wrong in the sense that we would have no options in the long term other than switching to very different fuel sources from those we now have. The government has made a massive commitment, about \$10 or \$15 billion, to develop new technologies up to the point where they can be demonstrated in government laboratories. The question is how do we get those technologies transferred to the private sector and really have the private sector end up using them. In that sense, it is worth the additional cost of something like a \$100 billion corporation to prove them out. The other thing to keep in mind is that it does not cost \$100 billion. In fact, the money that changes hands will be nowhere near \$100 billion, which is total financial commitment. Let me give you an example: a shale oil plant, on the basis of recent estimates, might produce oil at \$12 a barrel. This is slightly higher than today's oil prices.

Under these conditions the key to shale oil financing may be a price guarantee. In other words if the federal government would guarantee a \$12 per barrel price for 100,000 barrels a day of shale oil production for ten years, then private investors might be willing to bid. People will bid if they are sure they can obtain minimum price over the life of the plant. If that price turns out to be \$12 a barrel for ten or twelve years at a rate of 100,000 barrels a day, that is a commitment totaling hundreds of millions of dollars, but obviously nothing like \$100 million will ever be lost or even change hands. In fact, should world prices rise, there will never be a penny that changes hands. Conversely even if world prices dropped to \$10 or \$9 or \$8, the maximum loss of money that the EIA would have to expend would be the difference between the price guarantee and the actual price. Therefore, the amount of the cost of a \$100 billion program might be on the order of magnitude of less than \$100 million. I think this would be well worth it, not just as a defense against an embargo, but also it would bring a group of new industries to the point where within ten years they can make a significant energy contribution.

QUESTION: Am I correct in interpreting then, that although we know the costs are less than \$100 million and they may only be \$100 million, we do not know that the cost of this project is less than the benefits?

ERIC ZAUSNER: I am an advocate of cost-benefit studies, but you can talk a problem to death and the reality is, there is no real way to quantify everything and determine the exact dollar cost for the benefits received. I think it is obviously a value judgment.

PETER WALLISON: It is difficult to place a value on the effects during the 1973 embargo. What is the cost in terms of the impact on the social fabric? What about the cost of the stress between groups when you have a shortage of a commodity on which society is totally dependent?

I find it hard to put a dollar value on such things.

WILLIAM JOHNSON: One brief comment. I think the implied assumption in some of the comments by Peter Wallison is that somehow we ought to avoid all the costs of another embargo or any other energy supply disruption. That, in order to avoid these costs, we have to subscribe to the Energy Independence Authority. In fact, I would argue there are many alternatives that might be taken. I would even prefer a re-imposition of quotas. I think if your concern is to protect the United States against imports, than rather than getting into the business of allocating capital, I would prefer a more expeditious back door means of deregulating prices where the prices are presently under regulation. These are the things that FEA can do that FEA is not doing.

ERIC ZAUSNER: Let me make just one clarifying point. The EIA is not an alternative to another energy program. We are proposing major changes in the Clean Air Act to allow greater use of coal. You know the regulatory problem as well as I do. We would like regulatory rate reform in the utilities. I can go down the list of things, most of which I know you agree with because you have also supported them and worked on their formulation. In spite of this, even if we achieve them all, I think there still remains a problem. This is the problem that we have tried to deal with here and to deal with such a problem, something like an EIA has to be put forward, even with all those other things being done.

WILLIAM JOHNSON: What I am saying is that the way it was put before by Mr. Zausner and Mr. Wallison is very much the way it was put by Professor Harold Hill in "The Music Man", including all 76 trombones: if you do not have this, the world is going to come to an end. I think there are other policy options that are available and to say that the alternative of not going along with the EIA could be a horrible new environmental crisis is a scare tactic.

QUESTION: It has been my understanding that the goal of energy independence by 1985 has been abandoned. As I read EIA, it revives that goal very strongly, the idea of total energy independence by 1985. Would you care to comment?



ERIC ZAUSNER: There is always a problem with semantics. In a word, energy independence is a typical government phrase, but what it means is changing over time. Energy independence started off quite honestly being something wholly unrealistic, namely, zero imports by 1980. The way President Ford described energy independence and it stayed until now, 1980 is an unrealistic time frame in which to talk about energy independence. 1985 is possibly early unless we could make a major impact on the trends that are now in process. Our objective for 1985 ought not to be zero imports. That is patently ridiculous. It is too expensive, and we probably could not get there even if we wanted to. Furthermore, it just is not necessary. The present concept of energy independence is to have ourselves in a position where we are buffered from future embargoes or supply insecurity. In other words, to keep our imports at a level where, even if they were cut off, either the impact would not be very great or we could take other measures to ameliorate the effect. The level of imports we would like to see by 1985 might be in the range of from 3 to 5 or 6 million barrels a day. Now that is not very different from where we are now. But tremendously different from the 12 or 15 or even 20 million barrels a day we might be importing in 1985 if all the current policies and trends continue. So it is a very big job to go from where we might be with no program, to 5 million barrels a day or 15 per cent of consumption, whatever people think is the logical number. It is not the

old zero-imports number. That goal has not been changed by proposing an extra piece to try and fit the puzzle together to solve the problem.

QUESTION: This proposal is designed to achieve freedom of action in foreign policy? Maybe it would cost the average American less and make him happier if we altered our foreign policy rather than spending all this money for energy independence.

ERIC ZAUSNER: Of course there is the low-cost option, as it is euphemistically referred to. But the reality is that it is not just a question of foreign policy. This is one element. Domestic economic impact separate from that is the second element and this can be quite significant. The third point, and I keep coming back to this, is that we are in a very tough ten-year period right now. Over the next ten years, we have to find a way to sustain ourselves on the energy we now know how to use, because the new technology is not going to be available before then. I am sure you are aware of that. Therefore, we have got to use oil and gas and coal and conventional nuclear power over the next ten years. We also know that in the 20 or 30 years after that, if we are not on completely different sources of energy to a very large degree, we are not going to have an adequate domestic supply. This is independent of how much the Arabs might choose to give us.

In that sense, we have to help the transition to the technology which we are not now using and it is going to take some mechanism for risk-sharing to get those new technologies transferred. EIA is one way, and I personally think a good way, to make sure that transfer occurs.

QUESTION: Are you saying that terrible domestic things are going to happen if we do not have energy supplies?

ERIC ZAUSNER: Our economy is going to require many, many more quadrillion BTUs than it does today by the 1990s or the year 2000. It is not a question of what is going to happen if we do not get the energy. You have got to have enough energy for the economy to grow to meet people's needs. Whether you are for zero growth or not, it is clear that in the 1990s and beyond, we are going to be using much greater levels of energy and that our conventional oil and gas sources will dwindle.

WILLIAM JOHNSON: But those are exactly the scare tactics of Professor Harold Hill and his 76 trombones, saying we are not going to have any energy. I think that is polemical. Clearly we are going to have energy in a relatively free market. The market will clear and there will be no difference between supply and demand. If we allow the markets to work, whether capital or energy markets, they will work and we will have energy. I think this comment by Mr. Zausner reflects a total lack of appreciation as to how the free market mechanism does work. It works reasonably effectively.

ERIC ZAUSNER: One of these days the invisible hand of the market is going to reach out and throttle an economist.

WILLIAM JOHNSON: I am more concerned that the all too visible hand of government will throttle me.

QUESTION: I will not put you on the spot, Mr. Johnson, but you referred to this free market enterprise system. It appears to me that the major oil producers, the multinationals, are not only vertically entrenched from oil well to gas tank but they are also moving out to many other energy areas such as coal, nuclear fission and solar energy. They are capturing any small firm that appears to be promising and they seem to dominate the capital market in more than just the energy sector. I am not altogether comfortable with the EIA concept, but it does provide a strong alternative in terms of providing a capital market other than the 20 major oil companies. What do we have now? In which direction are we going?

WILLIAM JOHNSON: Let me discuss two of your points. I have just completed a paper for the National Science Foundation which I hope will soon be available. It looks at the question of just how competitive the oil industry is. No matter how you view it, the argument that it is anti-competitive or non-competitive is greatly exaggerated for the domestic industry. I am not talking about OPEC or the multinationals. However, for domestic industry, the oil industry is reasonably

competitive. It is one of the least concentrated industries. The argument that vertical integration is causing problems breaks down when each and every segment of the industry is non-concentrated and relatively competitive. There are arguments to the effect that one segment of the industry, namely production, subsidizes other sections, such as marketing, and this causes problems for independent marketers. Yet this flies in the face of the fact that the independent marketers have gained an increased in their market share almost steadily over the last ten years.

As for their presence in the capital market, it is generally true that larger companies, as a rule, do not have to enter the capital markets. I don't know whether this is the case with the oil industry; I strongly suspect it is. These large companies utilize self-finance methods for expansion. The capital markets, relatively speaking, tend to serve smaller companies who do not have such assets available to them. The entry of the Energy Independence Authority into the formal institutionalized capital market competing with other sources for available funds, I would suspect, might have an anti-competitive effect. This might tend to dry up funds for the smaller, not the larger, companies.

QUESTION: I would like to make a comment rather than ask a question. Let us put this EIA in perspective. The amount of money involved is \$100 billion over ten years; that is \$10 billion

a year on an average that can be committed. The EIA will probably be paid back at some point in time on most of the projects, if not all. But place this \$10 billion per year in the perspective of "over-runs in our national budget" or the size of the Defense Department budget, which I think this year is something like \$118 billion. The problem is that people have estimated anywhere from \$600 billion to \$800 billion will be needed for energy production over the next ten years. The EIA proposal is \$100 billion and I do not think it is a panacea, but it is a step. So far we have not taken one step in real concrete policy. Every time we have tried, you watch the same act, the Christmas tree that everybody hangs on and nobody could pass. I think maybe we have to learn to take one step at a time with energy legislation.

WILLIAM JOHNSON: I would like to comment on that. Investment in the United States is roughly \$200 billion per year. About \$100 billion of this amount is used for financing the federal deficit; about \$10 to \$15 billion of that goes to financing state and local government deficits. That leaves something on the order of about \$85 to \$90 billion for new investment by industry. Now EIA is going to have a definitive lifetime of about seven years. It will take time to organize and get going and it will take time at the end to shut down the operation. I believe it is more appropriate to divide a

hundred million by seven, which gives you \$14 billion out of a total industry amount available for new industry investment of something like \$80 to \$90 billion. You are talking about a fairly significant chunk of money that will be available.

ERIC ZAUSNER: It is just not going to work that way; let me explain why. First, we expect a major portion of EIA activity will be in the area of price guarantees. This is not something that would affect capital markets directly. It could be a very large dollar guarantee with no impact on equity or financing. Second, even in the seven year period we are talking about commitments, not financing. Let me give you the difference, by use of an example. Suppose the project is a \$10 billion Arctic gas or oil pipeline and financing is begun in 1981. The project will have to go into the capital market over the ten years after 1981. When you look at the span of time over which EIA projects will be in the capital market, even though the commitments are collapsed into seven years, the impact in the capital market is likely to be over at least 15 years. When financing a big project, you are going to require a billion dollars (e.g., a nuclear power plant), you do not obtain the whole billion dollars the first day you make the commitment and then have the funds sit idle. In fact, you have a time schedule of financing which extends over quite a long period of time. I would argue that the effective time period in which you would actually be intruding in the capital market is more like 15 than 7 years. In addition,

a good portion of that EIA program, somewhere around 25% to 30%, will be price guarantees with no impact whatsoever in traditional debt or equity instruments in the market. When you consider these facts, I believe it is not a very large impact, given that very large impact which was mentioned.

WILLIAM JOHNSON: The fact is that even if you divide my \$14 billion figure by ten, I think you are still having a fairly significant impact on the market. Energy does not account for the major part of all private investment in the United States.

ERIC ZAUSNER: Energy does represent the largest single requirement for private capital.

WILLIAM JOHNSON: While that may be true, I think another point must be kept in mind. Energy is not the only industry that is saying it needs special privileges. The government is crowding out other private demands for investment funds from the capital market. There are special loan guarantees for raising and proposals for such special guarantees in a number of other industries. It is becoming a favorite game and I strongly suspect if these guarantees are given to the energy industry, then before long they will be given to 4, or 5, or 7 other industries. As I said before, you end up with a haphazard form of capital allocation or with national planning that is haphazard, random, and depends on who gets there first.

ERIC ZAUSNER: I would just like to make one comment. When talking about capital allocation, there is a tendency to assume that the private sector will make all the right judgments and select all the right projects. This further assumes that you really have a free market, and that you do not presently have large amounts of capital misallocation. If you do have those problems in these areas, it is then assumed that you can sweep them away and the market will correct itself. Let's be realistic. No one is going to get rid of "Fanny Mae" (Federal National Mortgage Association); no one is going to get rid of tax-free municipals; and it does not seem likely that anyone is going to get rid of the deficit. In other words, when you look at the pieces, the capital market may indeed be tight, and it may be that we do not have the option of talking about free capital markets. Obviously you do not want to encumber the market to death. But the reality is that all those guarantees on mortgages and all of the other things are here to stay.

The regulatory problems also make for risks which are very large for the private sector and they are not going away. Nobody can eliminate the problems facing the Nuclear Regulatory Commission with respect to safety and the licensing time for nuclear power and it is likely to get worse. Nobody is really seriously talking about removing the need for procedures or removing all the best available technology requirements for air and water pollution control. People

are talking about adding new regulations such as land-use siting criteria, facility siting planning, and a host of things which none of us can foresee but which are sure to come about. The realities are that the economy does not work in a free market; not in a free capital market, not in a free market in terms of energy production and use, or of transportation, or of environmental, or of occupational health safety. The list is unending and it is not going to change. So the reality is that instead of talking the problem to death, we have to proceed within the existing constraints. These are not going to go away. We must find a very practical way of doing the things the economy needs and needs badly. Not because the lights are going to go out, but because it is a good public policy. We must be able to facilitate the transfer from conventional oil and gas to a set of new technologies. If we wait six years and try it, I contend that the costs are going to be significantly higher than would be the case if we get the private sector involved now.

(Due to a prior commitment, Mr. Zausner was required to leave at this time.)

QUESTION: As the bill is presently written, it is authorized to finance conventional power plants. Isn't there a serious risk that you could delay the production of energy by virtue of the utilities getting in line at EIA to get money to finance their projects? In such a process, because there

are many different levels of balance sheets and many different utility rate commissions, we may well end up subsidizing the non-responsive rate commission and in the process delay those projects that would normally be funded.

PETER WALLISON: The first criterion that any utility applying for financial assistance has to meet before the project can be funded is that it must enter a tripartite agreement with the regulatory body which provides for a rate sufficient to pay out the investment. This condition was put in specifically to avoid the possibility of an incumbent regulator in any state turning its regulated industry over to the federal government to fund. If this restriction remains in the legislation, it will, I think, provide a very effective check against just the kinds of problems you are pointing out.

WILLIAM JOHNSON: Two points: first, that is one of the more controversial provisions of the bill, and there is some question as to whether it will stay if the bill is to be passed by the Congress. Besides, the rates would still have to increase to cover the cost of repaying the investment, the loans that have been guaranteed by the Energy Independence Authority. I think the basic underlying problem is still there. The utility regulatory procedures in the United States are inadequate and there is a basic need for reform. Whether the EIA involvement would steer reform in the right direction or would actually divert energy away from the

needed reform I think is an open question. My guess is that it might even drive us away from utility reform.

QUESTION: With regard to the way the EIA is controlled, as I understand it in the current revision, five members, including the chairman, would be appointed by the President. Once appointed, their authority would be without oversight from the Congress or from the President. Residing in those five individuals would be the authority for the expenditure of \$100 billion.

PETER WALLISON: There is a provision in the legislation which provides that at the end of each year, the corporation must have an audit in which the amount of any losses that the corporation has suffered, actual losses or losses for which reserves are carried on the balance sheet, would have to be accounted for. The legislation provides that if the losses of the corporation exceed the equity of the corporation in a given year, no further commitments can be made. The equity of the corporation will be sought from Congress incrementally. For example, you would go to Congress in the first year for a billion dollars or two billion and if losses in the second and third year have totalled \$2 billion, the EIA would have to return to the Congress in order to get additional equity before it could make any additional commitments. In other words, Congress has this control over the Authority's actions, this power to allocate and appropriate equity.

The only thing the corporation would receive at the outset is the \$75 billion bond authority plus a certain appropriation for whatever amount might be chosen at the time the corporation goes up for its first appropriation. The bill does provide a certain control.

QUESTION: Is that a revision from the first draft, the idea of coming up for increment?

PETER WALLISON: That particular provision appeared probably two months before the proposal was first publicized.

QUESTION: Someone said a little earlier that it appears that solar energy does not need the EIA. That would lead me to believe that the EIA must be only for environmentally harmful sources of energy. All the discussion I have heard this evening seems to accept this as a foregone conclusion. What we want to do is build pipelines in the Arctic and squeeze oil out of rocks. Did it ever occur to anyone in the Executive that maybe Americans would prefer to use a lot less fossil fuel? The moral thing to do might be to keep some of these fossils in the ground for future generations.

PETER WALLISON: Obviously there is a question shaping up as to whether we have growth or no growth. I think this Administration believes that in order to provide for a better life for all Americans, we have to have growth. Of course, it is it is entirely understandable that some people might say,

let's leave everything in the ground, let's not grow. But I find most of the people who are saying that are people who are already well off. The people who are not so well fixed are not so anxious for no growth.

WILLIAM JOHNSON: You raised a very relevant point; at least your question leads up to it. One way to achieve energy independence is to increase production; another way is to reduce demand. Reductions in demand take a certain amount of investment as well. Will the Energy Independence Authority have the authority to finance the production of new technology that reduces energy demand?

PETER WALLISON: The guarantee authority could be used for conservation, which would be the same kind of project.

WILLIAM JOHNSON: My suspicion, however, is that it would be mostly in new production rather than conservation. I agree with your point and think it is well taken; something like oil shale is a very questionable process. It requires enormous amounts of water and at least some methods require substantial destruction of the surface of the earth. Oil shale presents a very real solid disposal problem. Are we, as a government, going to encourage a technology that may well be an environmental abomination? As I have said, you have the government operating almost as if it were driving a car with one foot on the accelerator and the other foot on

the brake. We may end up neutralizing our various policies.

PETER WALLISON: There may be ways to produce oil from shale without the kinds of environmental problems which you suggested. For example, the in-situ process which has been tested by at least one company may produce oil underground without the environmental difficulties. The legislation here does provide for funds when it is necessary for the production of energy to protect the environment. I just do not understand why it would be all right for private industry to do this, and yet when there are some risks the government ought not to support them. I took your comments before, Mr. Johnson, to mean that the government ought to stay out of this area because private industry can indeed produce oil from shale; the same environmental consequences will follow whether private industry does it or the government does it. The question is whether the oil is necessary. EIA would be the instrument to insure that the oil is produced based on the judgment that it is necessary.

WILLIAM JOHNSON: Again I come back to the point I made before. You are making the assumption that because private industry is not developing something, such as the in-situ process for extracting oil shale, it reflects a failure of the marketplace. I think the marketplace has probably worked very well indeed. The technology, as in many of these technologies, is relatively new; it has not been fully developed commercially; the in-situ method that you talked about still has major environmental

problems associated with possible disruption of watersheds and demands for more water, and there is still the problem of the disposal of waste shale. In this process, however, it is notably not as great as with more conventional developments of oil shale. The point that I am making is that just because it is not being done does not indicate that somehow it has to be done. It may not be developed for very good reasons. The market may be sending us a signal which we ought to heed. I think the presumption you are making is that because these developments, these new processes, are not being applied commercially that somehow this is wrong and the government has to step in and do it.

PETER WALLISON: I can cite many examples, such as when investment was not going into the housing field for a variety of reasons and it was adjudged to be good governmental policy to encourage the entry of new funds into housing. Initially one has to make the judgment as to whether it is a good idea to encourage investment in the energy field; if you believe it is a good idea, then you have to search for alternative methods of achieving this. You suggested that there were a variety of alternatives better than the EIA. Certainly a number of these were considered and I would welcome hearing some of your alternatives but initially I wanted to make the point that the judgment was made that it was important to have additional energy. That is the key decision. Then the question is, how do you



attain it? The EIA was thought to be, for a variety of reasons, the most effective way to do it with a minimum of undesirable side effects, although anyone in this Administration would acknowledge that government activities are not the best way to achieve most things.

WILLIAM JOHNSON: You asked what some of the alternatives are; I can give you a number of them. In the area of price controls for oil, there must be 20 things that FEA could have done long ago. In fact when I was there I proposed some that would effectively deregulate oil, all oil. One very nice technique would simply be to exempt secondary and tertiary recovery. You do not have to go to Congress for this authority. I think that going there reflected bad judgment by the Administration. You cannot define secondary recovery very easily. One method is water flooding. I think a smart oil man would effectively be able to get around the controls very easily by recovering his oil through water flooding of one sort or another.

There are other things that can be done. One is to lessen the so-called non-productive cost pass-through provisions which have helped to make refining extremely uneconomical. It has always been a problem in the oil industry. It is terrible at the present time because of FEA's price controls.

If we can change these types of provisions, I think that would send the capital to the right place, to the people

who would be using it. As a result, I am sure, we would see development of different energy sources.

The only problem I foresee is where regulations are imposed by regulatory bodies that are presumably not on the side of energy independence. One of these bodies may be the Federal Power Commission, although I doubt it. The FPC now has a proposal that effectively would allow any industries or possibly other users that are cut off to go into the intrastate market and buy natural gas at the intrastate market price. This is effective deregulation of natural gas and may be challenged in the courts.

The other regulatory bodies that may not cooperate are various state utility commissions. In this case, I would let the states stew in their own juices. If the state regulatory body is going to be so parsimonious that it is not going to allow price increases and thereby creates a shortage of electricity, then let it pay the price which will be shortages of electricity in various local communities. There is some evidence that local regulatory bodies are in fact now allowing their utilities to take various steps, like passing on higher costs of fuels used to generate electricity.

PETER WALLISON: The point of the EIA legislation is that it was adjudged by the Administration to be the most effective way to achieve increases in energy supply, in conjunction with the other proposals that the President had already made. Once

we begin to consider whether additional domestic energy supplies are necessary, then, I believe, you get to the nub of the question. When people think about the alternative ways of doing this, the EIA will be finally recognized to be the most effective and the most politically feasible.

QUESTION: For the past several years I have heard about an energy crisis, a missile crisis, and a store of other crises. Now we have a proposed EIA. Isn't this a subsidy, a diversion? And what about taxes? Isn't this proposal going to cost us all some additional taxes?

WILLIAM JOHNSON: Unfortunately we already have ample evidence of what such monstrosities as the EIA can mean to the taxpayers. Ultimately I suspect the U.S. taxpayer is going to have to pay for this. There has been the assumption all along that EIA is going to be paid back. But what about defaults? Surely there are going to be defaults.

There have been a number of instances where operations of a similar type have gotten themselves into very great controversy and scandal, e.g., the RFC (Reconstruction Finance Corporation). Several years ago it was a good case in point. Due to the fact that a number of people who were given loans defaulted, the taxpayers ended up having to foot the bill. With EIA I think there is the same likelihood. Basically you have a subsidy in industry who are favorably placed and upon whom, for some reason, the Energy Independence Authority has smiled.

If it were not a subsidy, why would they be there?

The problem with this is that it does not get reflected in prices. Because it does not get reflected in prices the wrong signals are generated by the marketplace. Let's discuss one problem that may occur with the Energy Independence Authority which I did not mention earlier. Basically this proposal ends up subsidizing capital, which is one of the inputs that goes into the production of energy. As a consequence we are likely to lean toward capital-intensive methods of producing energy in the United States. You might very well have industry that would utilize more expensive technologies with greater front-end investment than would normally be the case. I believe we create distortions when we start subsidizing investment through the taxpayers and through the tax system.

QUESTION: This has begun to ring a familiar bell. I come from AMTRAK and we have the feeling that we have been through a bit of this. It had not rung the bell quite so solidly until Mr. Zausner said that when you get a billion dollars, you do not draw it down the first day. Well, you do, because the government will permit you to draw it down. Then you turn around and loan it out to help you pay the horrendous cost of borrowing money. You even draw down your daily income and sell it tonight so that by tomorrow it has made a little profit because you are pressed so hard by the price of money. AMTRAK started with \$40 million. Everybody

figures that was all it took to get the railroad going. We paid more this year in interest than \$40 million. Here we are talking about an authority with a nest egg of \$25 billion and loans of \$75 billion. We think they will not be using these funds, but they will. Furthermore, we say they are going to be independent. The Authority, it is said, will be free of the Congress, it can choose the programs it wants. Based on our own experience, and we have been in the business five years, we have yet to choose one single route for a new train. The Congress has chosen them. Now are you going to change that? Just because you do not have to answer for a whole year? When you go back the next year and ask for the authority for the next couple of billion dollars, the Congress will say, Sure, if you do it this way. I don't think the beast is going to change. We live in this political system, and we have seen it. When people ask us what is AMTRAK, we say a publicly-sponsored corporation, privately incorporated in the District of Columbia with access to public funds operating on private property. Now try to run that.

#### SUMMARY AND COMMENTS

In a sense, the Administration proposal is highly pragmatic and would appear to go against the grain of its general philosophical bent, in that the proposed program is a step toward more government involvement, while many of the more noteworthy government programs have been aimed at reducing the government's role. This apparent philosophical dichotomy stems from the major premise upon which the EIA and, in fact, the objective of energy independence itself is based; namely, it is necessary to insure national security and national economic well-being. Traditionally, matters involving national security and international relations (economic or other) have been reserved for the Federal Government; therefore, what might at first appear philosophically alien to this administration has at least some logical grounding in the more traditional view.

Leaving aside the philosophical discussion, in the final analysis, the key test of any government program is: will it work? In answering this question, I believe we find the central point of contention among the panelists. Those supporting the EIA contend that this proposal is essential to stimulate the application of new technologies, that it will work, and work well; and that it will produce a minimum amount of disruption in the private sector. They further contend

that the EIA may have its faults but there are no other reasonable alternatives available and that we have already talked too long and acted too little. The opposition attacks the proposal as politically unworkable, disruptive of free markets, a burden to the taxpayers, and likely to have a detrimental effect on the direction our technology and energy supply system will take in the long run.

Within 10 or 15 years our need for new energy supplies from the traditional sources as well as from new technologies may be critical. That developing these supplies will be a time-consuming process is recognized by almost everyone who has taken more than a cursory look. The decisions which we make today may commit us to an energy course of action for years or even decades. On the other hand failure to reach any decision will also be binding in the sense that it will delay and close off alternatives for the future. Furthermore, indecision provides an ambiguous signal to the private sector which often translates into caution and inaction. Whatever decision we make, we must make it thoughtfully because of its long-term binding implications, yet quickly to allay indecision and permit the orderly development of our energy system. This is a tall order.

The lines are drawn, the arguments are persuasive. But, if we are to increase our energy supplies, and this goal was accepted by both sides of the discussion, how then should we go about it?