

I. Executive Summary

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The National Energy Plan's assessment of the world energy crisis is accurate. The problems are complex and serious and there is little time for fashioning new policies to respond to them. If the United States acts now, it may be able to reassert control over its energy future and prevent serious economic, social, and environmental impacts. To postpone decisions to raise energy prices and reduce energy waste is to risk losing that control, which could mean severe hardships for all Americans within the next 10 years. The level of U.S. oil imports is the pressure gauge that will measure how well American policies are succeeding. If imports can be held close to the goals of the Plan, the United States and the rest of the world may well manage a relatively smooth and peaceful transition to sustainable energy resources. If not, the transition may be neither smooth nor peaceful.

The National Energy Plan correctly acknowledges that energy problems exist on so many levels and in so many time frames that they must be addressed on a national scale. National security, economic stability, and other national interests are at stake. Decisions on energy must be made in consultation with State and local governments and with public and private interest groups, but the policies should reflect national concerns.

The National Energy Plan is a comprehensive and generally consistent set of policies that provides a coherent framework within which Congress can address all energy policy issues in detail. However, the actions proposed in the Plan may not be strong enough to prevent oil imports from reaching levels that could threaten national security

and economic stability. The Plan's domestic oil, natural gas, and coal production targets represent the upper limits of capacity and are not likely to be achieved. Clarification of the uranium supply question is essential to an orderly expansion of nuclear power based on light water reactors. To achieve these levels of supply, the United States would have to reconcile the Nation's environmental goals with the Plan's supply goals.

The plan's central theme—promoting energy conservation primarily by moving energy prices toward replacement costs—is crucial to national energy policy. However, the Plan's overall conservation goals are modest although the picture is different for each category of energy use. The fact that goals may be reached easily in one sector should not be taken as a signal that conservation efforts may be relaxed or ignored in another. The projections for energy use in industry do not reflect the full potential for energy savings that would occur in that sector if the trend of the past 25 years continues. The goals in transportation may not be met unless transportation is addressed as a total system. Stronger measures could produce even greater savings in the residential and commercial sector than the Plan seeks to achieve, although the Plan's overall demand targets probably will be met. Because of the likelihood of supply shortfalls, stronger conservation goals may be necessary.

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On the whole, the impact of the Plan on the economy and employment will be minor; the consequences of failure to achieve the Plan's goals will be far more severe. The Plan's proposals for returning revenues from its proposed energy taxes should assure financial equity for most low-income families. It probably will be necessary to expand the Plan to develop special programs to help regions where the impacts of high energy prices, new regulations, or accelerated energy production are particularly severe.

Talent, flexibility, and public support could be diminished or lost if the States are not given more responsibility for shaping and implementing policy than the Plan proposes. If State governments are partners rather than observers, it will be easier to enlist both the skills of State officials and the broad public support the Plan needs in order to succeed.

Before a National Energy Plan is enacted, it should focus in detail on programs that must be started at once to provide adequate energy sources for the years after 1985. For example, the Plan does not address the transition from a petroleum base to a new liquid-fuel base such as methanol produced from plant life. In its present form, the Plan does not address the question of whether planned changes in U.S. energy patterns between now and 1985 will strengthen or weaken the base on which longer range development will take place. After a National Energy plan is enacted, it must be monitored carefully both by Congress and the executive branch. Adjustments will be necessary to coordinate energy policy with other national policies and goals such as materials supply, employment, and air and water quality.

Panel Findings

Panel members who analyzed the National Energy Plan over a period of 5 weeks agreed that the goals are valid and the Plan is sound in principle. They agreed with the Plan's premise that the energy problem is serious enough to call forth strong new energy policies. ' As the Plan states:

In developing public policy toward the energy crisis, all three possibilities—the most likely case, the optimistic case, and the pessimistic case—should be considered. It would be foolhardy to base public policy on the most optimistic possibility. Even if the future should prove to be brighter than now appears likely, steps taken to curb demand and increase use of abundant resources would still have been justified to meet the immediate need to reduce vulnerability.

Each panel concluded its analysis by emphasizing that the Plan as presented to Congress provides a framework within which Congress can work toward a comprehensive set of energy policies. There was agreement that new national policies are required to carry the United States through a transition period in which it would acknowledge that cheap and abundant supplies of energy are no longer available. During that transition period, programs would be pursued to build a base for long-range reliance on sustainable resources.

The separate panel findings on supply and demand raise doubts about whether the supply targets for oil, gas, coal, and electricity can be met. These shortfalls, if they occur, could only be offset by:

- the degree by which the Plan's implied target of a 4.3-percent annual increase in the gross national product is not

¹See appendix 1

achieved and the degree to which energy demand would thus be reduced;

- an increase of oil imports to the extent that oil is available at acceptable prices, which would breach one of the Plan's most important goals; or
- an increase in supply or decrease in demand through voluntary measures or changes by the Congress or the executive branch in legislation or regulation.

The major findings of the panels, by category, are:

Supply Impacts

The levels of domestic supply projected by the Plan represent the upper limits of capacity, and supplies of all fuels are likely to fall below the Plan's production targets. For oil and natural gas, production problems are most likely to occur because of laws and regulations that may delay necessary exploration and development, particularly on the Outer Continental Shelf (OCS). Bottlenecks in production of new boilers and pollution-control devices, coupled with shortages of capital and manpower and gaps in the transportation system, could delay coal production. If delays do occur, oil production could fall short of the Plan's objectives by as much as 1 million to 1.5 million barrels per day. Natural gas production could fall short by the equivalent of up to 1 million to 1.5 million barrels a day. Coal production could miss the Plan's target by up to 200 million tons per year. Nuclear power generation could fall short by as much as 15 percent.

The Plan acknowledges that there will be conflicts between environmental protection

and increased energy production, but it does not face the possibility squarely and provide mechanisms for resolving conflicts between the two. Between one-fourth and one-third of the 10.6 million barrels of domestic oil which the Plan anticipates will be produced each day in 1985 still has not been discovered. At least 1 million more barrels a day must be produced from frontier areas such as Alaska or the Outer Continental Shelf by that time to achieve the Plan's goals. Proposed new OCS laws could add to the existing lead times of 4 to 6 years or more for exploring and developing fields off the U.S. coastline. The Plan leaves unresolved the likely conflict between a doubling of the use of coal in the United States and the goals of the Clean Air Act. For example, delays in producing and installing pollution-control equipment on new utility powerplants and smaller industrial coal-fired boilers could lead to delays in achieving the Plan's goals for coal production or delays in achieving the Nation's air quality goals.

Although the Plan proposes moving energy prices toward "the true replacement cost of energy," its proposals would continue to hold the price of natural gas below the Btu equivalent of other energy resources. This could prolong a distortion of energy consumption patterns by continuing to make gas a clean-burning premium fuel more attractive than alternative fuels.

The Plan's oil and natural gas price policies may provide enough funds to support accelerated exploration and development in the next few years, but some mechanism should be included in the Plan

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to adjust prices if more capital is needed in the long term. Increasing supplies of domestic oil and natural gas are crucial to the success of the Plan and the U.S. economy. Errors in judgment on pricing policies could cause shortfalls over the next 10 years. It is not possible at this point to be certain that the Plan's pricing policies will sustain a flow of funds adequate for developing some 3 million new barrels of oil a day in 1985 and an equivalent amount of new natural gas. For that reason, it seems prudent to devise some procedure as part of the Plan for assuring that investment capital is available to U.S. oil and gas companies and for adjusting price policies as necessary in the next several years.

Although there could be slippage in the construction schedule that could cause production of electricity from nuclear powerplants to fall 15-percent short of the Plan's goal, the midterm future of the industry is in even more doubt. Rising costs, licensing delays, and slippage in construction schedules have caused the nuclear industry to place a de facto moratorium on orders for new plants after 1985 because the risks are greater than utilities are willing to take at this time. Nuclear generation of electricity can be virtually freed from uranium resource constraints, but the technologies presently envisaged for achieving that freedom (plutonium breeders and plutonium recycle) increase the opportunities for proliferation of nuclear weapons among nations and terrorists. Alternate reactor systems may be possible that would generate economical power, substantially stretch out uranium resources, and reduce proliferation risks. However, nuclear dependence on nonbreeder reactors over the long run could lead to energy constraints,

especially if the more pessimistic estimates of uranium resources prove to be correct.

Demand Impacts

The Plan's treatment of transportation energy conservation focuses too narrowly on the automobile. The Plan's goal of a 10-percent reduction in gasoline consumption by automobiles and trucks by 1985 probably is too optimistic, but there is not enough information in the Plan itself to support a judgment either way. Consumption of gasoline by automobiles alone can probably be reduced by more than 10 percent, largely through the energy-efficiency standards for new cars that are established in the Energy Policy and Conservation Act of 1975. However, increased use of fuel for trucks could partially offset reductions in automobile consumption by enough so that the Plan's goals would not be met,

Although the Plan's 1985 goal of insulating 90 percent of all homes is too optimistic, its proposals will help reduce the growth rate of residential-commercial energy demand, and the overall building projections of the Plan probably will be achieved. The Plan focuses too directly on one- and two-family dwellings, and does not propose strong enough measures to achieve the large potential energy savings from existing commercial (including multifamily buildings) and industrial buildings.

The Plan's regulations and tax/price incentives designed to encourage industrial use of coal may have unintended consequences. Expanded use of coal by industry will be impeded by the need for new coal-handling facilities, new furnaces and boilers, and pollution-control equipment. Because of the uncertainties associated with coal

supplies, difficulties in converting direct heat equipment to coal, and delays in availability of pollution-control devices, industries may choose to switch to electricity rather than coal for some uses (although not to produce steam), pushing the burden of coal conversion onto the utility companies. The proposed oil and natural gas user tax, which is designed to accelerate a conversion to coal, could put U.S. petrochemical manufacturers at a worldwide competitive disadvantage. The projection of coal use in 1985 also is subject to question because it is based on an industrial energy demand growth rate about twice the 1950 to 1976 rate. If historical trends continue, the Plan's projected industrial energy demand by 1985 would be too high by the equivalent of 200 million tons of coal.

The proposed schedule for converting utility boilers from natural gas can be met, but there are circumstances that could upset this timetable. In particular, the concentration of natural gas boilers in the Southwest intensifies the capital acquisition problem to a point that unexpected demand growth in that area probably would preclude the attainment of the conversion goal. In addition, if conversion to oil on a temporary basis is prohibited, it is doubtful that both environmental and conversion goals can be met within the time period.

The tax credits proposed by the Plan for cogeneration, conversion, and conservation in industry will probably accelerate investment decisions in these areas by no more than a few months. The gap in the expected rate-of-return between conservation investments and investments made to increase

production is not significantly closed by the proposed tax credits. It is doubtful that any acceleration of utility boiler conversion, beyond the schedule established by previous legislation, will result from the proposed coal conversion tax credit because the existing schedules do not allow much flexibility. Limiting the items that qualify for tax credits in industry and buildings probably will discourage innovation in energy conservation technologies. The home insulation tax credit may not increase the rate of investment in home insulation much beyond that already likely to result from high heating costs, so that any benefits might be outweighed by the reduction in tax revenues.

Societal Impacts

The National Energy Plan will cause a slight reduction in the rate of economic growth and contribute to a modest increase in the rate of inflation in the near term. The Plan is not expected to have a significant effect on employment. The consequences for the economy, inflation, and employment may be far worse in the long run if new energy policies are not adopted.

The chances for success of new national energy policies will improve if State and local governments are involved as partners in shaping and implementing the policies. Principles of federalism alone would argue for a strong role for States, regions, and communities in the National Energy Plan. A growing number of States have created organizations whose staffs know the energy problems in their regions in detail and are capable of dealing with them. The gravity of the energy crisis makes it essential that new policies have broad public support, which is

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more likely to develop if States and communities have more flexibility than the Plan seems to propose for resolving inequities and making and enforcing day-to-day decisions.

It is unlikely that the strong measures necessary to meet the environmental goals of the Plan are compatible with a substantial increase in the use of coal on the schedule proposed in the plan. A deliberate choice between increased use of coal- and air-quality goals probably will have to be made in the short run, at least in some regions. Emphasis on immediate accelerated use of coal may preclude the use of coal technologies that are less damaging to the environment and delay development and introduction of cleaner nonfossil technologies. Even if air quality could be protected in the coal conversion program, there are other adverse impacts of increased coal production and use, such as increased levels of carbon dioxide that are not addressed in the Plan,

A sustained commitment should be made now to a wide range of incentives for private development and deployment of solar and other alternative energy technologies. It should be possible in the long run to develop renewable and sustainable energy resources that have a relatively benign effect on the environment. But the speed with which such resources are developed will depend on the commitments that are made now to research and development. The Plan does not commit the United States to the full range of incentives that are available for accelerating development of new technologies, including subsidies for private research,

One phase of the formulation of the National Energy Plan was an effort to involve large numbers of private citizens in developing its proposals, but the Plan does not include specific programs for extending that involvement to future actions. Public participation in shaping and implementing energy policy may be the key to the success of such policy. To be effective, public participation should be well-informed, particularly in highly technical areas. A program of financial support to encourage informed public participation might contribute to a smooth transition in U.S. energy policy.

The Plan does not examine the consequences of its short-term energy strategies and tactics for energy development programs that must be put in place for the years after 1985. The Plan proposed fundamental changes in the patterns of energy supply and demand in a relatively short period of time. While it is not likely that actions taken during the next 9 years will be irreversible, any new national energy policy should address the question of whether changes between now and 1985 will strengthen or weaken the base on which long-range development will take place.