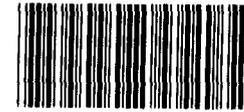


**GAO**

**Testimony**



144316

*For Release  
on Delivery  
Expected at  
10:00 a.m. EDT  
Monday  
July 8, 1991*

**Full Disclosure of National Energy  
Strategy Analyses Needed to Enhance  
Strategy's Credibility**

*Statement of*  
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*Before the*  
Subcommittee on Regulation, Business  
Opportunities, and Energy  
Committee on Small Business  
House of Representatives



Mr. Chairman and Members of the Subcommittee:

We appreciate the opportunity to appear before you today to discuss the results of our review of the process the administration employed to develop its National Energy Strategy (NES), the analytical support for the policy proposals it sets forth, and factors that will influence its potential success.

At the outset, let me emphasize GAO's view that developing a national consensus on energy policy is both an enormous and important task. The administration deserves credit for undertaking the effort to build such a consensus. The NES, published on February 20, 1991, set forth the administration's long-range blueprint for a more efficient, secure, and environmentally safe energy future for the United States and its allies by defining policy tools that it believes will substantially diversify U.S. sources of energy supplies and offer more flexibility and efficiency in the way energy is transformed and used. The administration has indicated that the package of policy measures contained in the NES is preferable to alternative packages that it examined in the course of developing the NES; the administration's goal is to implement these policies.

In summary, the administration has not published analyses of alternative packages of policy options that it examined in developing the NES, such as those analyzed at the request of the Economic Policy Council (EPC). Publication of these analyses could enhance the strategy's credibility and provide the Congress with information needed to consider the merits of various energy policy proposals, including the NES. In addition to not disclosing all of its relevant analyses, we found the following:

- In developing the NES, there was less public participation than the Department of Energy (DOE) originally intended. For example, a draft of the strategy was never circulated outside

of the administration for review and comment despite DOE's stated intention to do so.

- The administration included the estimated impacts of the Clean Air Act Amendments of 1990 in projecting the overall impacts of the NES and, as a result, energy and environmental benefits from implementing the NES are unclear and may be overstated.
- A key macroeconomic assumption used in the NES analysis, namely, rate of growth in gross national product (GNP), is significantly higher than projected by the Council of Economic Advisers in its most recent report to the President. According to DOE analysts, this assumption, along with world oil price, drives much of the NES analysis.
- The administration's approach of depending to a large extent on research and development (R&D) and the dissemination of information on energy-efficient technologies may not be as effective as projected if current low oil prices continue.
- The models DOE used in performing the NES analyses are imprecise because of the complicated nature of the problems addressed, and this inherent imprecision is magnified when forecasting over the 40-year horizon in the NES. Further, in commenting on DOE's NES modeling, the National Academy of Sciences emphasized that certain assumptions, including assumptions about future technological choice, to a great extent drive the results of these models.

Disclosure of all relevant NES analyses would provide the Congress with better information to judge the relative merits of various energy policy proposals, including the NES. In addition, such disclosure would help answer questions about the quality of the analyses supporting the NES.

THE LATTER STAGES OF THE NES  
DEVELOPMENT PROCESS WERE CLOSED  
TO PUBLIC REVIEW

While the NES process began with an unprecedented level of public participation and input, its latter stages were less open. For example, when initiating the development of the NES, the President directed the Secretary of Energy to build the national consensus necessary to support the strategy. The Secretary in turn stated his intent to complete a first draft of the NES by April 1990 and held a series of 18 public hearings throughout the country to obtain public input to the strategy. Instead of publishing a draft of the strategy in April 1990, DOE published the NES Interim Report, a compilation of public comments made during these hearings that gave little indication as to the specific policy direction the administration was going to take.

DOE later allowed some industry and other interest groups, public citizens, and GAO to review, under DOE supervision, summary versions of the options under consideration by the administration for inclusion in the final NES. (GAO was provided copies of these option summaries after the final NES was published.) The option summaries generally included a brief background discussion, a section describing the net economic benefits of implementing the option, a section laying out the pros and cons of implementing the option, and a description of the actions necessary to implement the option. However, the NES option summaries did not contain enough information on the analyses behind the options and were not linked by any unifying framework outlining how various options would contribute to the NES objectives. Our review of the summaries did not disclose a systematic attempt to lay out or identify the key assumptions or logic behind each analysis. Consequently, we agree with the industry and interest groups that reviewed the option summaries that these documents do not provide enough information for thorough review of the strategy.

The NES process also involved the Cabinet-level EPC, whose members reviewed and recommended options for inclusion in the NES. We were told by DOE that the President made the final choice regarding the options to be included in the final NES report. We can shed no further light on this stage of the NES process because officials in the Executive Office of the President and DOE are reluctant to discuss this subject in any detail with GAO. For example, we do not know what evaluation criteria the administration used to select or reject individual policy options during this phase of the process. In addition, we were told by DOE that it estimated the impacts of alternative packages of options for possible inclusion in the NES for the EPC, but have not been allowed to see these analyses.

Although the administration published the NES on February 20, 1991, DOE is only now, some 4 months later, beginning to publish some of the supporting analyses. DOE officials are uncertain how much longer it will take before all analyses planned for release are published. DOE says that time constraints have caused delays in publication. In our view, the process would have been better served if DOE had published its entire analysis with the NES.

#### FURTHER ANALYTICAL JUSTIFICATION FOR THE NES IS NEEDED

The NES sets forth the administration's preferred set of energy policy proposals. Neither the NES nor any of the supporting analyses published to date directly compare the NES package of proposals with any other set of comprehensive proposals or variations on the NES, such as those contemplated by the EPC. Such a comparative analysis is a fundamental aspect of sound policy analysis. It provides policymakers with information to judge whether the proposed package of options best achieves energy policy goals. In the absence of a clearly superior package of options, it allows policymakers to make more informed decisions by shedding light on important tradeoffs between goals.

Several officials told us that the EPC requested analyses of alternative packages of options. For example, we were told that the EPC asked for an analysis of a package that added a gasoline tax to the core group of consensus options. Further, DOE is now providing some analysis of alternative policies to the Congress on request. Given these developments, it is unclear why the administration has not published its analysis of alternative packages. Doing so would shed further light on the analytical basis for the package of policies it proposed while highlighting differences in impacts between the administration's proposal and various alternatives being debated by the Congress.

Additionally, this comparison of alternatives is fundamental to cost-benefit analysis, and, in fact, the NES Executive Summary states that ". . . government intervention must be justified by rigorous cost-benefit analysis . . ." However, DOE has not published rigorous cost-benefit analyses supporting the administration's decision not to include two somewhat controversial measures of government intervention, namely, increased Corporate Average Fuel Economy standards and energy taxes, in the final NES. DOE says that yet to be published technical annexes will include cost-benefit analyses of policy proposals included in the NES. However, key DOE analysts in its Office of Policy, Planning, and Analysis told us that these analyses will contain very little of what they would term rigorous cost-benefit analysis.

TREATING THE 1990 CLEAN AIR ACT  
AMENDMENTS AS A NES PROPOSAL  
IS QUESTIONABLE

The NES report does not provide sufficient data to allow policymakers to clearly discern the projected energy and environmental impacts from NES' newly proposed initiatives because it includes in these estimates the projected impacts of implementing the Clean Air Act Amendments of 1990. The amendments

were signed into law in November 1990 while the NES report was issued on February 20, 1991.

In analyzing the effects of the NES, DOE compared a baseline forecast of the nation's energy future, called the "Current Policy Base case," with the estimated impacts if the proposed strategy were added to the base case. This comparison yields the estimated incremental effects of implementing the strategy. DOE defines the base case as depicting an energy future based on no change to current energy policy and including existing laws and regulations. However, the Clean Air Act Amendments became law several months before the NES was issued. DOE explained that it took this approach because the amendments were enacted after DOE defined the Current Policy Base case for purposes of modeling in September 1990. DOE officials also told us that including the amendments as a strategy action was appropriate because they were an administration initiative. Because the impacts of the amendments are generally not reported separately, it is difficult to determine what impacts are attributable to the already enacted Clean Air Act Amendments and what additional impacts would result from adopting the new initiatives proposed in the NES. DOE has recently provided us with the data necessary to break out impacts attributable to the amendments and told us that it has provided similar analysis to the Congress on request.

MACROECONOMIC ASSUMPTIONS USED  
IN THE NES ARE OPTIMISTIC

A key macroeconomic assumption used in the NES, namely, rate of growth in GNP, is significantly higher than the GNP projections that the Council of Economic Advisers reported to the President in February 1990 and 1991 and used in the administration's fiscal year 1992 budget request. The NES assumes that the economy will grow at a 3.5-percent rate between 1990-95, 2.9-percent rate between 1995-

2005, and 2.6-percent between 2005-2010.<sup>1</sup> However, in its February 1991 report to the President, for example, the Council of Economic Advisers projected a 2.6-percent rate of growth in GNP between 1990-96. Interestingly, the Council also provided the growth projection used in the NES analysis. In addition, recent historical GNP growth rates have generally been lower. Further, Data Resources, Inc. (DRI), an economic consulting firm, expects future GNP growth to average around 2.3 percent.<sup>2</sup> We are attempting to meet with representatives of the Council to discuss this issue.

According to DOE analysts, the GNP growth rate is one of the assumptions that drove NES modeling results. For example, one might expect that the rate of growth in energy demand and the mix of energy types used to meet that demand would be influenced by GNP growth. In addition, higher economic growth will likely induce greater emissions of environmental pollutants.

Nevertheless, DOE states that the relative merits of the NES policies remain unchanged even if lower economic growth is assumed. For example, DOE's modeling results show that alternative rates of economic growth will have no impact on the relative importance of various energy types in the overall energy picture. These are not the results we would necessarily expect under a low economic growth scenario. For instance, electric utilities might place fewer orders for advanced light water reactors if future energy demand were expected to be lower because of lower growth. Decisions to invest in new electric generating capacity might be postponed and environmental problems from using fossil fuels might be less

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<sup>1</sup>GNP growth rates are adjusted for inflation.

<sup>2</sup>DRI's GNP growth forecast is consistent with the Energy Information Administration's 1991 Annual Energy Outlook reference case forecast of 2.1 percent between 1989 and 2010.

critical under a low-growth forecast. Under a low-growth scenario, it is likely that there would be less industrial and residential investment in energy efficient equipment. In addition, relatively less oil production is likely from advanced oil recovery R&D under a low-growth scenario. We would expect that such developments might affect the relative merits of various NES policies. We are continuing to review DOE's models in an effort to determine why it got the results it did and answer some of these questions regarding the implications of lower economic growth for the efficacy of NES actions.

Relatedly, DOE used a discount rate of 10 percent to determine the net present value of individual NES options. DOE has not published any analyses that show whether the relative merits of individual NES options change when other discount rates are used, although DOE officials told us that they performed sensitivity analysis for some options. DOE economists in the Office of Policy, Planning, and Analysis said that net economic benefits of NES actions are influenced by the discount rate used but added that they were constrained by the Office of Management and Budget to use a 10-percent discount rate. Furthermore, published NES supporting analysis claims that the strategy will have a significant positive impact on economic growth. DOE's Associate Deputy Under Secretary for Policy Analysis conceded, however, that the projected economic benefits from implementing the NES are not "significant" given the relative size of the economy and the uncertainty associated with the modeling results.

ENERGY EFFICIENCY GAINS UNCERTAIN  
UNDER LOW OIL PRICE SCENARIO

The NES Interim Report noted that "the loudest single message [resulting from the NES public dialogue] was to increase energy efficiency in every sector of energy use." Accordingly, the NES contains a variety of proposals aimed at increasing the efficiency of energy use. These proposals involve, to a large extent, the

development and adoption of energy-efficient technologies to reduce future energy consumption. However, these proposals may not succeed in improving energy efficiency if energy prices remain low.

The NES proposes to increase the nation's energy efficiency through increased government R&D funding and efforts to disseminate information on energy-efficient technologies. For example, the NES proposes increasing industry/government cost-shared R&D on advanced battery technologies for electric vehicles and information dissemination through increased distribution of the "Gas Mileage Guide."

However, the success of the NES proposals to improve energy efficiency will be influenced by the price of energy. Relatively low energy prices generate less urgency to identify and implement efficient alternatives. For example, sustained low gasoline prices may result in decreased demand for relatively fuel-efficient automobiles, increased vehicle miles traveled, and a consequent increase in fuel consumption and environmentally damaging emissions. In contrast, sustained higher prices would encourage the development and use of more efficient technologies. However, as part of the process of developing the NES, the administration considered and rejected policy measures (such as energy taxes) aimed at raising the price of energy. The administration's approach of depending on R&D and the dissemination of information on energy-efficient technologies may not be as effective as projected if current low oil prices continue.

#### MODELING RESULTS ARE OF LIMITED VALUE

The problems tackled by DOE in formulating its energy strategy are complex. As a result, the models used by DOE in conducting its analyses can only be so precise, particularly when used to forecast over a 40-year horizon. As a result, policymakers should

be aware that DOE analysts believe that their modeling can be counted on only for showing the direction and rough magnitude of changes in key variables that would result from proposed policy initiatives. Further, in commenting on DOE's modeling, the National Academy of Sciences emphasized that policymakers should recognize the important role of underlying assumptions, simplifications, and the input of the NES work groups in shaping the scenarios to be modeled. The Academy added that these considerations "to a great extent dictated the results of model runs." For example, DOE made important assumptions about the cost and performance of new energy technologies and the timing of their adoption and incorporated these assumptions in its models.

The NES projections show the implications of fully and successfully implementing the entire package of NES proposals. The importance of this can be seen in the NES projection that there will be approximately twice as much nuclear power capacity over the next 40 years. DOE analysts in its Office of Policy, Planning, and Analysis indicate, however, that this forecast is predicated on resolving several major obstacles to further development of nuclear power. These obstacles include public concerns about nuclear power plant safety and radioactive waste disposal, uncertainty in the licensing and regulatory processes, uncertainty about power plant performance, and concerns about economic and financial risk associated with the development of nuclear power plants. The NES modeling results assume in effect that these obstacles will be resolved.

## CONCLUSIONS

DOE should be credited for initiating and undertaking the enormous and difficult task of trying to develop a comprehensive National Energy Strategy. The complexity of the analytical dimension alone cannot be overemphasized. Added to that was the daunting challenge of coordinating and managing the public and

interagency input. On the other hand, we believe that the administration and DOE created appearances through both the NES process and analysis that may hurt the credibility of the package that was developed. The administration and DOE set very high expectations for the NES process--initially stating that the April 1990 report would be a draft strategy, for example--which might have been difficult to meet even under ideal circumstances. In addition, taking 4 months from the date the NES was issued to begin publishing the NES supporting analyses may have hindered informed congressional and public debate of the merits of the NES. Further, including the recently enacted Clean Air Act Amendments as a NES action without clearly breaking out all of the impacts of the amendments gave the appearance that the administration was overstating the environmental and energy benefits of the NES. Using GNP growth rate assumptions that seem high may also detract from the overall effort.

We believe that the administration should publish the analyses of alternative energy policy packages that we have been told the Economic Policy Council requested during its deliberations. In addition, DOE should publish revised summary data which clearly delineate those impacts attributable to new policy proposals and existing law, such as the Clean Air Act Amendments. We believe that disclosure of this existing data would shed further light on the analytical basis of the NES and provide congressional policymakers with information they need to thoroughly consider the merits and tradeoffs associated with the various energy policy proposals being considered by the Congress, including the NES.

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Mr. Chairman, this concludes my prepared statement. We would be pleased to respond to any questions you or members of the Subcommittee may have.