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STATEMENT OF HONORABLE FRANK ZARB

ADMINISTRATOR

FEDERAL ENERGY ADMINISTRATION

before the

Ad Hoc Subcommittee

of the

Joint Committee of Atomic Energy

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Introduction

Mr. Chairman and distinguished members of the subcommittee. I am pleased to appear before you today to discuss a subject that may well be crucial to the future well-being of this Nation. Specifically, I will address the question of future electricity growth projections, the role of breeder reactors in meeting the energy needs of the Nation, and the timing of the breeder introduction.

Electricity Demand Projections - Through 1985

I have already submitted to the Committee, in response to your written questions, the Federal Energy Administration (FEA) projections of total energy growth, and of electricity growth through the year 1985; I also included at your request some estimates, and I emphasize these were mostly educated guesses, at what the demand may be by the years 2000 and 2020. Even for the near-term (through 1985), there is disagreement among knowledgeable observers concerning the growth of demand for electricity.

On the one hand, we believe that a strong conservation program must be implemented generally aimed at all forms of energy consumption but focused as a first priority upon the energy sources running out the fastest: oil and natural gas. Escalating fuel prices and deliberate public policy will achieve this reduced consumption and a shift towards the more abundant fuels of coal and nuclear.

Thus, our Blueprint for Project Independence estimated that with strong conservation measures encouraged by increased prices of oil ($11/barrel), the growth rate of total energy demand could be reduced from 2.8% per year average to 2.1%.

But because greater use of coal and nuclear will shift demand towards electricity, the Blueprint projected an electrical demand growth rate of 5-1/2 to 6-1/2% per year--somewhat lower than the historical experience of 7 to 8% per year but much higher than the growth in total energy demand. A more recent estimate is that increases in electrical demand might be as low as 5% per year if the conservation measures which we advocate are adopted and effectively implemented.

I want to say two things about this projection. First, I hope it is achieved. Second, I believe those of us responsible for energy policy must consider the possibility of this lower growth rate not being achieved--we'd better be prepared with sufficient coal and nuclear capacity to meet a somewhat higher demand level. There are strong forces at work that could result in a future growth of electrical demand greater than 5% per year. These include a resurgence of economic growth, a

possible shift to electricity for home heating due to the decreasing supply of natural gas and concern over the future availability of oil. Increasingly, as we shift emphasis to our domestic resources of coal and uranium, this will mean an increase in the use of electricity. Even with the economic slow down of the past several months, there are some areas of the country showing signs of an increase in electrical demand, although it is too soon to tell whether this will be sustained. PEPCO reports a 6.6% increase for the first three months of 1975 compared to the same period in 1974 for the Washington, D.C. area. Another example is the Florida Power and Light Company, which reports a 5% increase for the first three months of 1975, again compared to the same period in 1974. While some of this growth might be only a recouping of last year's nearly stagnant demand pattern, some genuine growth and fuel shift toward electricity probably is occurring.

On the other hand, regions which are still suffering severely from the economic slump and reduced industrial production continue to show depressed electricity demand. An example is Duke Power in North Carolina, which reports a 3% decrease for the first three months of 1975 compared to 1974. Duke sells about 25% of its electricity to the textile industry, which is in a severe production cutback at the present time.

In summary, although we may anticipate an electrical growth rate of 5% through 1985, the prudent course would be to plan and provide the generating capability for a somewhat higher rate.

Electricity Demand Projections Beyond 1985

In response to the Committee's questions, I submitted some very rough estimates last week as to what the demand for electricity might be in the years 2000 and 2020. These projection are based on a brief analysis made in the Project Independence Blueprint and are some 25% to 50% lower than one of the base cases used by the Atomic Energy Commission (now the Energy Researc and Development Administration) in its Liquid Metal Fast Breeder Reactor (LMFBR) environmental impact statement.

Any projections of what might happen 25 to 45 years from now are highly speculative. We should not base an important, current energy decision on the breeder on such projections; and I would like to give you a few reasons why that is so.

FIRST, The current picture of domestic resources already points in the direction of greater dependence on uranium and coal, and the long-term use of uranium depends inevitably on the breeder

SECOND, the longer we wait to demonstrate the breeder the more it will cost;

THIRD, in the final analysis, the pace of industrial introduction of the breeder will be determined in the market place. But this will only occur if the breeder has been demonstrated; and

FOURTH, there is an urgent need to proceed now with the LMFBR demonstration plant in order to determine at the earliest possible date whether this particular breeder approach will prove dependable on a commercial scale.

The Need For The Breeder - The Resource Picture

Looking at our total energy picture, there is little question of our increasing dependence on nuclear power and the need for the breeder:

- Nuclear power now provides 8% of our electrical needs and is projected to provide about 30% by 1985 based on the 200 plants now operating or on order. Such a major element of the Nation's generating capacity must have an assured source of fuel.
- There are at present about 700,000 tons of uranium in proven reserves. An additional 2,500,000 tons of uranium resources are projected to be available, but are not proven.
- The 200 reactors already in operation, or on order, will use over their lifetime at least 1,300,000 tons of uranium, almost twice the amount of proven reserves.
- While I am hopeful that new uranium discoveries will be made to increase the base of proven reserves, the above facts clearly indicate that we need the breeder to preclude a uranium shortage.
- Without the breeder, electric utilities will not be able to assure themselves a source of fuel supply as a prerequis to ordering new plants, and we could thus be faced with a rapid decline of the nuclear industry. The public will be denied the benefits of additional low cost and environmenta

clean, nuclear generated electricity. Even with our most optimistic assumptions regarding both conservation and the increasing utilization of coal for electrical generation, we will not be able to meet the projected demand for electricity without nculear power. The consequences of inadequate electric power could be grave indeed for our economy.

The Cost of The Breeder Demonstration

Two basic types of questions have been raised regarding the costs of the breeder. First - there are questions regarding the very high initial investment by the Federal Government to demonstrate the operation of LMFBR plants. Second - there are more conjectural questions concerning the future point in time when electricity from the breeder will be sufficiently competitive with other sources of electricity to warrant commercial introduction.

On the first question, I understand that one of the reasons for cost increases in development programs is delay and schedule slippage. Delays in proceeding with the LMFBR demonstration program will only exacerbate these cost increases. In a letter dated April 23 to this Committee, Dr. Seamans, Administrator of ERDA, urged that the demonstration program not be delayed because of the very great difficulties associated with restarting a complex and widespread project of this nature. I agree. The best way to minimize the cost of this effort is to concentrate on construction and operation of the Clinch River

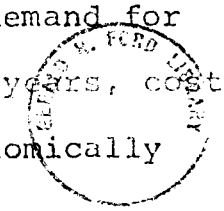
Breeder Reactor demonstration plant. In summary, I firmly believe that the longer we wait to demonstrate this breeder, the more the demonstration program will cost.

Future Costs of Breeder Generated Electricity

With regard to future costs of electricity from the breeder, I'm told that one of the major arguments against proceeding with the Shippingsport project in the early 1950's was that the cost of power would be too high relative to other alternatives. These arguments, of course, were unable to account for all of the technological and political events which followed. Had we listened to that argument, Shippingsport would never have been built, and citizens throughout the country would not now be enjoying the benefit of low-cost nuclear generated electricity (as compared to fossil-generated costs).

The point I'm making is that we cannot today predict with any accuracy exactly what year in the future (1990, 1995, or 2000) the costs of breeder generated electricity will be low enough to warrant industry investment in new breeder plants. The uncertainties are simply too great -- how much uranium will be discovered? At what cost of extraction and enrichment? How much coal will be available? And at what cost of extraction, transportation, and clean up? Will we indeed find all the oil that is projected to be available in the outer continental shelf and in the Alaskan Naval Petroleum Reserve?

The argument made by some is that because the demand for electricity may be lower than predicted in the out years, cost-benefit analysis shows that the breeder is not economically



competitive until, perhaps 4 to 12 years later than projected by ERDA. That may indeed turn out to be true. However, there are too many uncertainties involved to allow such a hypothetical situation to influence basic energy policy decisions. Let me give you just one example.

A key assumption made in suggesting that a delay of 4 to 12 years may be accommodated is the availability of low grade ores such as the Chattanooga shales--estimated to contain 13 million tons of uranium. The cost-benefit analyses recognize the higher extraction costs associated with these ores, but the entire Chattanooga shale option disappears if Government, either Federal or local, prohibits extraction of these ores for environmental reasons. Legislation being considered by the Congress to regulate the strip mining of coal illustrates the point. FEA estimates that the bill recently reported by the Congressional conference committee, if enacted, would prevent 53 percent of the Nation's 137 billion tons of coal in surface-minable reserves from ever being recovered.

This outright elimination of a resource base is often not recognized in cost-benefit analyses. But in today's world we must recognize such uncertainties and deal with them in making key energy decisions.

Other Breeder Technologies

Before concluding my statement on the breeder I would like to amplify the information I provided to the Committee last week concerning other breeder technologies. The basic purpose of the breeder is to conserve our nuclear fuel resources so they last

hopefully, well into the next century. I support demonstration of the LMFBR because it is one of the best uranium conservation concepts that we have. But we should not put all our eggs in one basket. We should continue development of other breeder concepts--which may not have quite the conservation value as the LMFBr, but can still go a long way toward extending our nuclear fuel resources into the next century. For example, the Light Water Breeder concept--currently being pursued by ERDA--should receive the continued support of this Committee. While it does not have the conservation potential of the LMFBR, it increases the uranium fuel utilization of our present water reactors by an order of magnitude.

Other Technologies

Some believe that if we have enough conservation and rapidly develop both direct solar conversion and fusion technologies, we can do without the breeder and fission reactors early in the next century. This is used as an argument to urge Congress to withdraw support for the LMFBR.

I do not agree that this option is available to us. Fusion would offer the advantage of a virtually limitless power supply. However, the scientific feasibility of nuclear fusion still awaits demonstration. Even after scientic demonstration, it would then have to be developed into a practical engineering technology.

In the longer term, direct solar conversion, like fusion, could provide a virtually inexhaustible source of energy. But to provide the potential for production of a major segment of our electrical needs, we will need to demonstrate the practicability on a commercial scale of conversion of solar energy to electricity. This too is a major technological undertaking.

For these reasons, there is a good probability that we will be dependent on coal and nuclear fission for the majority of our electricity well into the next century. Thank you.