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STATEMENT OF
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Before the
SENATE SELECT COMMITTEE ON SMALL BUSINESS
November 18, 1975

Introduction

Mr. Chairman and distinguished members of the Senate Select Small Business Committee, I appreciate the opportunity to discuss a national policy on solar energy and FEA's actions in this area.

I would first like to comment briefly on the overall energy situation now facing the Nation. Today, two years after the oil embargo, the U.S. depends on OPEC sources for over 60 percent of our total imports compared to 49 percent prior to the embargo. With our domestic oil production continuing to decline--despite a substantial increase in drilling activity--our expenditures on oil imports have grown from \$8.2 billion in 1973 to \$27 billion this year. Increasingly, our economic and social wellbeing is becoming vulnerable to disruption by foreign powers. Clearly, we need to move decisively to alter this trend.

The Administration continues to believe that our free enterprise system, with energy and other scarce materials allocated to the maximum extent possible by free market actions, is the most effective means of ensuring that energy is conserved and that new energy supplies are made available when



needed. This belief is particularly relevant to energy conservation and to the use of alternative energy sources, including solar energy.

As the true value of energy is reflected in the prices we pay for energy, we expect to find an accelerating interest in both conservation and the use of new energy sources. There is much that we in the Federal Government can do to lead the way in both of these areas.

Contribution of Solar Energy

As we look to the future, it seems probable that energy from the sun will play an important role in our energy picture.

The greatest impact from solar energy will likely occur after 1985, but solar energy could produce a useful oil equivalency before that date.

Of the solar technologies, solar hot water and space heating are the most developed, and broader commercialization should occur in the near future. Solar technologies--including heating and cooling, wind, ocean thermal, bioconversion, thermal electricity and photovoltaics (solar cells)--require either engineering refinement, research effort, or demonstration as to commercial feasibility. However, even with these technologies,



we should encourage acceleration of commercialization to the extent justified by their expected contribution.

On a life-cycle accounting basis, the use of solar water heaters and swimming pool heaters is economically justified today with proven systems in some parts of the U.S. where solar insolation is excellent and the cost of alternative energy sources is high. However, equipment is not readily available in the marketplace, and the initial cost of solar systems is still high. Mass production of solar equipment is just getting started, and there is a long way to go to achieve a developed industry infrastructure (i.e., architects, carpenters, builders, plumbers, roofers, glazers, etc.) to facilitate product distribution, installation, and servicing.

The FEA completed a survey of private firms that have manufactured and sold solar collectors in the first half of calendar year 1975. The purpose of the survey was to obtain descriptive statistics on economic activity in the solar heating and cooling area and to identify production growth rates in this fledgling industry. Results of an earlier survey covering calendar year 1974 were used for making baseline comparisons. In the first six months of 1975, the Nation's production and sales of medium temperature collectors for solar hot water and space heating units increased at about a 400 percent annual rate over 1974 figures. Low temperature solar collectors, used mostly to heat swimming pools, had a production increase

of 365 percent over the same period. The survey showed that the number of firms manufacturing medium temperature collectors jumped from 39 in 1974 to 69 in the first six months of 1975--most of these being small businesses. Production and sales of medium temperature collectors jumped from 136,000 square feet for all of 1974 to 276,000 square feet in the first half of 1975. The number of firms producing 10,000 or more square feet of collectors rose from one in 1974 to 15 in this latest survey.

These production figures--both for low and medium temperature collectors--represent substantial increases, albeit from a low base, and are the basis for a projected solar energy increment equivalent to about 600 barrels of oil per day for this calendar year.

Research, Development and Demonstration (RD&D)

The National Solar Energy RD&D Program is a most important part of our national policy on solar energy. As I noted earlier, additional research, engineering refinement, or demonstration of commercial feasibility is needed for a number of the solar technologies.

The RD&D program, administered by the Energy Research and Development Administration (ERDA), will be continually reviewed to identify those activities which are no longer appropriate candidates for Government support and for which industry is capable of taking the lead. The details of the

solar R,D&D Program are contained in two ERDA publications, (ERDA-23A and ERDA-49), copies of which I will leave with the Committee.

FEA Solar Energy Program

FEA has made substantial progress this year in several project areas to accelerate the commercialization of solar energy. These project areas include a revision of the Project Independence Report, Department of Defense (DOD) Energy Self-sufficiency Project, State/Local Study Program, accelerated standards for solar heating and cooling, and continuing development of a Solar Energy Government Buildings Project. I would like to spend a few moments describing each of these areas briefly.

Project Independence Revision

We are currently updating the Project Independence report, published originally one year ago. This revision will cover all the various energy sources and conservation measures. As part of this update, the Project Independence Evaluation System (PIES) computer models will, for the first time, include solar energy in both the demand and supply models. The dispersed solar usages (i.e., solar heating and cooling and dispersed photovoltaics) will be included on the demand side to reflect the potential savings in fossil fuels in residences and commercial facilities. Centralized solar usage will be included on the supply side to reflect the potential of wind energy, electricity

from biomass combustion, centralized photovoltaics, ocean thermal, and solar thermal energy sources. These estimates will then be integrated to show the potential energy contributions of the various solar technologies. We expect to complete this analysis in December.

DOD Energy Self-Sufficiency

This project, in which we are working cooperatively with DOD and ERDA, addresses the potential of DOD's remote facilities to provide an early market in which photovoltaic systems would be economically competitive. To ensure economic viability, DOD will be expected to pay the fair market price for these systems. Initial mass production with resulting price reductions should allow an even larger, less remote, and more competitive market to be supplied subsequently with photovoltaic cells. Photovoltaic technology is similar to the semiconductor technology, which has recently experienced significant price reductions as the result of mass production.

State/Local Programs

We have entered into two contracts to review and analyze current state efforts affecting solar energy, such as education programs, legislation, and building codes. The results are being assessed, and recommendations are being prepared for dissemination. This work is a joint effort with the National Science Foundation and the National Conference of State Legislators.

Accelerated Standards and Criteria for Solar Heating & Cooling

Commercial application of solar heating and cooling, by small or large companies, requires accelerated preparation of performance

criteria. Private homes are now being constructed, and others are on the drawing boards with solar systems. Standards are urgently needed to protect the consumer, to satisfy mortgage lenders and FHA mortgage insurance requirements, and to satisfy procurement officers.

We have been working with various Government and non-Government organizations to accelerate standards for solar heating and cooling. On April 28, 1975, we met with representatives of the American National Standards Institute (ANSI) and the American Society for Testing and Materials (ASTM), among other organizations. We presented to them the need to get industry involved in the area of developing standards for solar equipment. A subsequent meeting at FEA on June 16, 1975, with the National Bureau of Standards (NBS), the Department of Housing & Urban Development (HUD), ERDA, ANSI, ASTM, and other Government and non-Government organizations resulted in a two phased approach on such standards -- "Intermediate Minimum Property Standards" and long-range "consensus" standards.

The NBS and HUD have begun to prepare Intermediate Minimum Property Standards for solar hot water and space heating systems. When completed next spring, they can be applied to individual system installations so that solar-equipped residences may be covered by FHA mortgage insurance. These standards will be prepared by the Government primarily to meet the needs of Federal programs. A close working relationship will exist during this

effort with the various standards groups so that they can stay informed, offer advice, and integrate the Federal effort into the private sector's longer-range planning.

The Federal effort is no substitute for the "consensus" standards which will be broadly accepted and which will require time for negotiations and concurrence between the many sectors involved.

At some point in the standard-setting process, hard decisions will be made that temporarily jell standards, knowing that improvements may not be immediately recognized and sanctioned. We must not, however, discourage significant innovation; and we need to institutionalize quick-response procedures that will serve to update our standards and criteria.

Government Buildings Project

The Federal Government owns or leases approximately 450,000 buildings. These contain 2.8 billion square feet of habitable floor space, of which DOD owns over 80%. In addition, the United States Postal Service (USPS) has 36,000 buildings. Obviously the Federal Government, as a major user of energy in buildings, should lead the way in the use of cost-effective, energy-saving technology.



We have been working with the agencies most directly concerned, including DOD, GSA, ERDA, HUD, NBS, USPS, the Small Business Administration, and a number of others, to ensure that proven solar technology will be considered for use in Government buildings when it is cost-effective on a life-cycle cost basis. In doing so, it will be important to consider the full range of energy conservation technology, including such things as better building design and siting, the use of optimum insulation, and the use of heat pumps.

In June 1975 FEA entered into an interagency agreement with DOD to determine the DOD market potential for solar water heaters, and the results from this effort are expected to be available early next year.

Summary

The national policy on solar energy is comprised of 3 key elements:

- encouragement of a solar industry in the private sector on an economically sound basis in response to market forces, including a realistic price structure for oil and gas to reflect the true value of energy in our society.

- an aggressive RD&D program, with Government sponsorship where market forces provide insufficient incentive to the private sector and the potential benefits clearly justify Government involvement.

- Action by the Federal Government to encourage accelerated commercialization of proven solar technology (e.g., development of Intermediate Standards for FHA mortgage insurance and use of solar in Government buildings when cost-effective).

Realization of these goals will require that industry be encouraged to accomplish its own R&D, participate in joint projects with the Federal Government, and introduce new technologies when they appear to be commercially viable. The Federal programs will be continually reviewed to identify those activities which are no longer appropriate candidates for Government support and for which industry is capable of taking the lead.

In all aspects of implementing this policy, we must always keep in mind the necessity to ensure fairness and equity for all elements of the private sector, and I have small business in mind in particular. Small business, as you know, will play a vital role in the eventual wide-scale commercialization of several of the solar technologies.

Mr. Chairman, it has been a pleasure to appear before this Committee. I would be pleased to answer any questions.

