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REPORT BY THE U.S.



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General Accounting Office

The Solar In Federal Buildings Demonstration Program

This program was proposed in the National Energy Plan as a major initiative to demonstrate the Federal Government's leadership in promoting energy conservation and the use of renewable resources in its own buildings. However, because the Department of Energy has not developed a comprehensive strategy or assumed its mandated leadership responsibilities, this new program is being carried out in isolation from other conservation and solar efforts for Federal buildings. Further, DOE does not appear to be giving the program the support necessary to achieve its ambitious objectives.

This report includes recommendations for DOE to

- develop a comprehensive strategy and plan for guiding and integrating conservation and solar efforts for Federal buildings and
- implement a Federal buildings solar program on the scale envisioned by the National Energy Plan and the Congress.



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EMD-79-84
AUGUST 10, 1979



UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

ENERGY AND MINERALS
DIVISION

B-178205

The Honorable James R. Schlesinger
The Secretary of Energy *AGC00912*

Dear Mr. Secretary:

We have surveyed the efforts being made by the Department of Energy (DOE) to develop and implement the Solar in Federal Buildings Demonstration Program that was proposed by the President in the National Energy Plan (NEP) and enacted by the Congress as part of the National Energy Conservation Policy Act (NECPA). In this respect, on January 30, 1979, we sent you a letter in which we identified a number of issues and questions regarding this new program and its relationship to other Federal solar efforts. From our evaluation of your Department's response to that letter, our review of various documents that have become available since the date of our letter, and discussions with DOE officials, we believe that the major issues which we brought to your attention are still not being properly addressed by DOE.

The Solar in Federal Buildings Demonstration Program was proposed as a major initiative to demonstrate the Federal Government's leadership in promoting conservation and the use of renewable resources in its own buildings. *(see p. 4)* Its importance was recently underscored by the President in his June 20, 1979, message to the Congress where he stated that the Federal Government will strive to increase its use of solar energy. We are concerned, however, that the planning and management for this program is being carried out in isolation from other conservation and solar efforts for Federal buildings. The Department has not developed a comprehensive strategy or a meaningful plan to govern these efforts and to assure that they proceed in an integrated manner.

We are also concerned that *the* DOE does not appear to be fully committed to this new program even though it represents a significant commercialization effort. ~~We have observed that~~ basic management and staff support functions will be performed by the National Aeronautics and Space Administration (NASA) rather

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than DOE personnel. DOE has also not requested the full funding authorized by the Congress nor an extension of the program to the 3-year period originally proposed by the administration in the NEP. ~~We believe that~~ this lack of commitment is especially serious in view of the fact that the President has set a national goal for meeting 20 percent of the country's energy needs with solar and renewable resources by the end of the century.

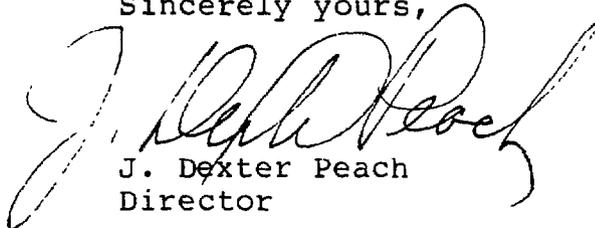
In our opinion, unless DOE accepts and works toward fulfilling its leadership role and responsibilities, the ambitious objectives for conservation and the use of renewable resources in Federal buildings will not be achieved. We are recommending, therefore, that DOE develop a comprehensive strategy to guide and integrate the conservation and solar efforts for Federal buildings. In the absence of such a strategy, we believe that DOE will be unable to ensure that Federal purchases of solar technology will have the impact necessary to support the solar industry, demonstrate the applicability of solar heating and cooling, and realize long term fossil energy savings.

Our findings and complete recommendations to you are discussed in detail in appendix I of this report. As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the Senate Committee on Governmental Affairs and the House Committee on Government Operations not later than 60 days after the date of the report, and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

We are sending copies of this report to the four committees mentioned above and to the Chairmen of energy-related congressional committees. We are also sending copies to the Director, Office of Management and Budget.

We appreciate the courtesy and cooperation extended to our staff during the survey and would appreciate being informed of the actions you take on our recommendations.

Sincerely yours,



J. Dexter Peach
Director

APPENDIX I

APPENDIX I

THE SOLAR IN FEDERAL BUILDINGS
DEMONSTRATION PROGRAM

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BACKGROUND

The National Energy Conservation Policy Act (Public Law 95-619), enacted on November 9, 1978, authorized up to \$100 million for the installation of solar heating and solar heating and cooling equipment in Federal buildings. The Department of Energy's (DOE's) budget request for fiscal year 1980 states that this program, in combination with other Federal efforts, is intended to:

"(1) lower production costs (and cost to the consumer) by increasing hardware volume and production capacity, (2) add to the knowledge and experience of solar designers, installers and Federal facility personnel, (3) introduce the Federal government into the solar market as a major consumer, (4) provide a significant amount of operating and maintenance information and data for subsequent Federal and private solar energy consumers, (5) provide maximum public visibility and stimulus in geographic areas and applications where a potential solar market is likely to exist."

The linkage between efforts to use solar technology in Federal buildings and those that are being made to conserve energy in existing buildings through retrofit projects and to make new Federal buildings more energy efficient has been articulated in the National Energy Plan (NEP), DOE congressional testimony, and the National Energy Conservation Policy Act (NECPA). The NEP, announced in April 1977, proposed the Solar in Federal Buildings Demonstration Program both with its initiatives for conservation and with those to promote the development and use of renewable resources. This new program would reduce the consumption of conventional fuels in Federal buildings and demonstrate the Federal Government's confidence in solar technology and the feasibility of widespread solar energy use.

In testimony for the May 1977 hearings of the Subcommittee on Public Buildings and Grounds, House Committee on Public Works and Transportation, DOE indicated that under the President's program for conservation in new and existing Federal buildings, the use of solar equipment is one measure which agencies could consider to achieve energy savings. However, because solar measures often entail substantial front-end investments to implement and may not be cost effective, particularly in existing buildings, it was not anticipated that

they would be incorporated in the energy conservation projects proposed by agencies in their own mission budgets. Consequently, a separate effort to fund the Federal use of solar technologies (the Solar in Federal Buildings Demonstration Program) was proposed in the National Energy Plan.

The legislative integration of conservation and solar energy strategies in Federal buildings is provided by Title V of NECPA. Title V, Part 3, Section 542, states as policy that

"* * *the Federal Government has the opportunity and responsibility* * *to further develop, demonstrate, and promote the use of energy conservation, solar heating and cooling, and other renewable energy sources in Federal buildings."

In his June 20, 1979, message on solar energy that was sent to the Congress, the President outlined a strategy for accelerating the use of solar and other renewable resources. The President set a national goal of meeting 20 percent of the country's energy with solar and renewable resources by the end of this century. The Solar in Federal Buildings Program was cited as demonstrating the Federal Government's confidence in solar systems and setting an example for other energy users. Under this program, the President expects that an estimated 350 solar systems will be placed in Federal buildings and facilities by the end of fiscal year 1980.

LACK OF A COMPREHENSIVE STRATEGY
AND PLAN FOR CONSERVATION AND SOLAR
EFFORTS IN FEDERAL BUILDINGS

The Department has developed neither a comprehensive strategy nor a meaningful plan to guide conservation and solar energy efforts in Federal buildings. The purpose and objectives of the Solar in Federal Buildings Demonstration Program appear to overlap those of other programs and efforts which promote the use of solar heating and cooling equipment in Federal buildings. Further, DOE is not fully embracing its mandated leadership and coordination responsibilities to prevent this program from being implemented in isolation from other conservation and solar efforts for Federal buildings. In addition, DOE's March 1979 draft of the 10-year plan for energy conservation in Federal buildings, and its proposed rules for life cycle cost analyses and preliminary energy audits, give limited and somewhat conflicting guidance to agencies on the use of solar technology.

Overlapping authority between
DOE's two solar heating and cooling
demonstration programs

The lack of a comprehensive strategy for solar efforts in Federal buildings is illustrated by the existence of two overlapping demonstration programs within DOE. Although both programs are located in the Office of Solar Applications under the Assistant Secretary for Conservation and Solar Applications, there appears to be little internal coordination between the two efforts. Moreover, we believe that DOE's response to the questions we previously raised did not present a clear distinction between the demonstration program being carried out under the Solar Heating and Cooling Demonstration Act of 1974 and the Solar in Federal Buildings Demonstration Program authorized by NECPA.

Our letter pointed out a number of areas of overlap between the two solar demonstration programs. For example, we indicated that the purposes of the acts establishing the two programs were similar and that both would demonstrate the commercial application of solar heating and cooling equipment. We also noted that both programs could be used to fund solar projects in Federal buildings. In addition, the Department of Defense has both a specific and continuing role under the Solar Heating and Cooling Demonstration Program and a potential future role under the Solar in Federal Buildings Demonstration Program. It was also not clear to us whether different technology will be the basis for distinguishing between the projects funded under the two programs or whether both programs will fund projects which use the same type of equipment.

DOE's response indicates that the distinction between the two programs is based on differences in the objectives to be achieved and the technology to be demonstrated. It states that the Solar in Federal Buildings Demonstration Program is aimed at accelerating the commercialization of solar heating and cooling; whereas, the intent of the Solar Heating and Cooling Demonstration Program is to demonstrate and assess the technical and market feasibility of solar heating and cooling. A review of the legislation for these programs indicates to us, however, that the purposes of both programs are to demonstrate the applications of solar heating and cooling systems and to provide support to the solar industry. In fact, the Congress states in the Solar Heating and Cooling Demonstration Act that the "commercial application

of solar heating and combined solar heating and cooling technologies can be expedited by early commercial demonstration under practical conditions."

With respect to the technology that is to be demonstrated, DOE's comments indicate that the intent of the Solar in Federal Buildings Demonstration Program is to place only technically proven and commercially available solar equipment in Federal buildings. DOE states that, as a result, solar hot water and heating systems will be "emphasized" in the Solar in Federal Buildings Demonstration Program; whereas, only passive systems will be emphasized in the Solar Heating and Cooling Demonstration Program because of the differences in system experience and available design techniques. In addition, solar cooling will not be "significantly applied" in the new program until solar cooling technology and related system costs can be improved or changed. Combined solar heating and cooling systems will get "minimum participation" in both demonstration programs.

We believe that DOE's explanation of the type of technology to be demonstrated under the Solar in Federal Buildings Demonstration Program is not consistent with the law and the rules that DOE proposed for the program. NECPA provides for the Program to demonstrate innovative and diverse applications of both solar heating and solar heating and cooling technology to a variety of types of Federal buildings. The proposed rules for the NECPA program, which appeared in the Federal Register on April 2, 1979, define an innovative and diverse application to be "an active or passive solar energy system in combination with a feasible, new or underutilized energy conservation technology or other renewable energy system * * *." Since the proposed rules state that preference for project funding under the Solar in Federal Buildings Demonstration Program will be given to an "innovative and diverse application" and NECPA provides for the demonstration of both active and passive solar heating and solar heating and cooling systems, we see little difference between the types of projects which could be demonstrated under the two programs.

In our view, there is little legislative distinction between the two programs. In fact, DOE has funded Federal residential and building projects under the Solar Heating and Cooling Demonstration Program, and the Congress has not rescinded this authority. Nevertheless, DOE has apparently decided that only private sector projects will now be funded under this program and only Federal sector projects will be funded under the

new program. We were advised that no new Federal projects have been funded since the announcement of the NEP, proposing a separate Federal buildings solar program, in April 1977. We believe that DOE could have implemented an expanded solar program for Federal buildings more readily under the existing Solar Heating and Cooling Demonstration Program, using the procedures already operational.

As a result of the rulemaking requirement for the Solar in Federal Buildings Demonstration Program imposed by the National Energy Conservation and Policy Act, we understand that Federal solar demonstration projects cannot be funded again until September 1979, almost a year after NECPA was enacted. Thus, rather than facilitate support to the solar industry and provide for uninterrupted demonstrations of solar heating and cooling equipment in Federal buildings, the proposal for a Federal buildings solar program, separate from the existing Solar Heating and Cooling Demonstration Program, will have significantly delayed the funding of solar projects for Federal facilities.

Leadership and coordination responsibilities need to be fulfilled

DOE's leadership role for conservation and solar projects in Federal buildings and facilities is mandated by legislation and Executive Orders. The Energy Policy and Conservation Act (Public Law 94-163), enacted on December 22, 1975, requires the development and implementation of a 10-year plan for energy conservation in buildings owned or leased by the Federal Government. Executive Orders 11912 and 12003 assigned the responsibility for developing and implementing the 10-year plan to DOE. Further, under the mandate provided by the Department of Energy Organization Act, DOE is responsible for developing policies and plans for the commercialization of solar energy and for providing overall coordination of Federal solar energy commercialization activities.

The National Energy Plan called for the growth of energy demand to be restrained through conservation and improved energy efficiency and the vigorous expansion of the use of nonconventional sources of energy. The Solar in Federal Buildings Demonstration Program was proposed as a major initiative for conservation and the use of renewable resources. The NEP also underscored the need for DOE to carry out energy policy in a coherent and effective manner through a "unified organization that would coordinate and manage energy conservation, supply development * * * and research, development, and demonstration."

In addition to authorizing the Solar in Federal Buildings Demonstration Program, the National Energy Conservation Policy Act provides for the integration and use of energy conservation measures and solar technology in Federal buildings. Under this act, each Federal agency is required to conduct preliminary energy audits in order to improve the energy efficiency of existing buildings. DOE is required to report to the Congress on the results of these audits and the agencies' plans to retrofit their buildings.

These legislative and executive actions clearly imply strong leadership responsibilities with respect to energy conservation and the application of solar technology in Federal buildings and facilities. However, based on discussions with DOE staff, DOE's response to our letter, and our review of the many conservation and solar programs for Federal buildings, we believe that DOE is not fully embracing these responsibilities and that the Solar in Federal Buildings Demonstration Program will be implemented in isolation from other conservation and solar efforts for Federal buildings.

In the reports which we have issued on the Federal Energy Management Program, we have pointed out that DOE has consistently refused to undertake the role of leader and manager for Federal energy conservation efforts. Further, our January 30, 1979, letter stated that there appears to be a large number of solar projects being implemented in Federal buildings without DOE's leadership, participation, or funding control, and the potential existed for even greater numbers in the future. We pointed out that DOE's failure to develop a comprehensive strategy and assume a leadership role for Federal solar activities has been criticized by the August 1978 "Status Report on the Solar Domestic Policy Review," in congressional testimony, and by congressional committees.

In addition, the response memorandum to the President, on the "Domestic Policy Review of Solar Energy," dated February 1979, states that the Federal effort for the use of solar technology in its own buildings still lacks overall coordination. The memorandum states that at present, there is no effort to assure that purchases of solar equipment are made in a systematic manner, so that experience in one Federal facility can benefit another and that these purchases will have a maximum impact in supporting the solar industry. The response memorandum also indicates that the lack of an overall Federal policy with regard to the use of solar technology in Federal buildings is one factor that has prevented the Federal Government from moving aggressively in this area.

DOE's response to our letter indicates an attitude of abdication rather than of vigorous pursuit of its leadership and coordination responsibilities. DOE seems to believe that it does not have any responsibility to coordinate efforts to use solar energy systems in Federal buildings or to serve as the centralized focal point for solar activities in the Federal Government. DOE's response does not acknowledge any responsibility to: (1) coordinate its efforts for Federal buildings under its two solar demonstration programs with the solar projects funded by other Federal agencies, (2) collect and disseminate data on non-DOE-funded solar heating and cooling projects for Federal buildings and facilities, or (3) provide technical guidance to Federal agencies to assist them in their efforts to use solar heating and cooling equipment on non-DOE-funded construction and retrofit projects.

We believe that DOE's abdication of its leadership responsibilities for solar projects in Federal buildings is serious because of the large number of projects which have been or will be funded without DOE participation. According to the "Domestic Policy Review of Solar Energy," 12 agencies have installed solar energy systems on their buildings and facilities. Of the approximately \$157 million allocated to 475 solar projects, 75 percent of the funds has come from agency mission budgets and only 25 percent from DOE demonstration programs. It is also anticipated that the Department of Defense will make significant non-DOE-funded purchases of solar equipment of approximately \$100 million a year under the Military Construction Authorization Act for 1979 (Public Law 95-356). 1/

In the absence of a comprehensive program strategy and plan that is properly developed and coordinated by DOE, there is no way to ensure that Federal purchases of solar technology will have the impact necessary to support the solar industry, demonstrate the applicability of solar systems, and realize long term fossil energy savings. As discussed below, we believe that the Solar in Federal Buildings Demonstration Program should be part of a total Federal buildings effort and should not be developed and implemented without coordination with other conservation and solar projects funded from the mission budgets of individual agencies.

1/Public Law 95-356 mandates that DOD use solar energy systems on all new family housing and on 25 percent (based on the estimated dollar value of the construction cost) of all other new facilities, where demonstrated to be cost effective.

Solar projects should be
integrated with conservation
efforts for Federal buildings

The NEP and NECPA provide for the linkage between conservation and solar applications in Federal buildings. Further, in his June 20, 1979, message on solar energy, the President stated that sound conservation practices go hand in hand with a strong solar and renewable resource policy. We have found no indication, however, that DOE is taking action to assure that Federal solar energy projects will be integrated with other conservation efforts. Program activities within DOE to promote energy conservation are separate from those to demonstrate the use of solar energy in Federal buildings. Although these programs are located under the Assistant Secretary for Conservation and Solar Applications, no effective coordination exists. The offices responsible for conservation in Federal buildings are not working closely with the offices responsible for the promotion of solar energy.

Moreover, the March 1979 draft of the 10-year plan for energy conservation in Federal buildings, required by Section 381 of the Energy Policy and Conservation Act, does not present the use of solar technology as a viable conservation option. The draft plan indicates that one strategy for achieving energy savings in Federal buildings is the substitution of renewable resources (principally active solar collector retrofit projects) for conventional fuels. However, the draft plan requires that agencies only consider the use of solar devices and seems to unduly emphasize that present solar collector costs and efficiencies make all but hot water heating prohibitive from the life cycle cost criterion for retrofit projects for existing buildings. The draft plan does not recognize that a special funding mechanism, the Solar in Federal Buildings Demonstration Program, is in existence and could possibly be used to fund the solar costs above the cost effectiveness limitations.

In addition, the draft Federal 10-year Buildings Plan requires agencies to include in their plans only those conservation improvements which are cost effective in accordance with the Office of Management and Budget (OMB) Circular No. A-94 and the life cycle cost methods to be established by DOE under NECPA. NECPA requires that all new Federal buildings be life cycle cost effective and that agencies select those retrofit projects which will minimize the life cycle costs of existing buildings. Concern has been expressed, however, that DOE's proposed rules for life cycle cost

analysis, issued on April 30, 1979, will make it difficult for agencies to fund solar projects from their own construction budgets and, therefore, readily use solar technology as a conservation measure.

In accordance with OMB Circular A-94, DOE's rules for life cycle cost analysis include an annual discount rate of 10 percent for evaluating both energy saving retrofit investments and new building designs. This discount rate represents an estimate of the average rate of return on private investment before taxes. In developing energy cost data for the life cycle cost analysis under the proposed rules, agencies are to use base year energy prices and projected energy price escalation rates which reflect average retail prices rather than the replacement costs of producing and delivering additional supplies of energy.

Statements by officials from DOE and the Office of Technology Assessment at the January 1979 hearings of the Subcommittee on Energy and Power, House Committee on Interstate and Foreign Commerce, indicate that the use of OMB investment criteria and market energy prices in performing life cycle cost analyses presents problems in promoting the use of solar technology as a conservation option. In addition, the Solar Domestic Policy Review recommended to the President that the OMB criteria be revised to include replacement cost pricing and a lower discount rate. This recommendation was based on the premise that OMB Circular A-94 inherently discriminates against systems with high initial costs and long paybacks, such as solar energy systems, by requiring the use of a 10 percent discount rate. Moreover, the DOE rules are not consistent with the administration's views on this matter as evidenced by the fact sheet accompanying the President's recent solar energy message. The fact sheet stated that DOE is developing cost effectiveness criteria which reflect replacement costs of energy and the full national benefits of conservation and solar investments.

DOE's proposed rules for preliminary energy audits of Federal buildings, issued on April 26, 1979, also appear to contradict the intent of NECPA to promote retrofit projects which include energy conservation measures and solar technology. Moreover, the rules, as presently drafted, will not fulfill the President's expectations that these audits will identify the extent to which the Federal Government can use solar equipment beyond applications already underway. The rules limit the data required to be collected for buildings with 30,000 or more gross square feet in such a way as to effectively

preclude agencies from being able to determine the appropriateness of installing renewable energy systems in these buildings. On the other hand, the rules require that more extensive data be collected for buildings with less than 30,000 gross square feet in order that agencies will be able to identify conservation retrofit projects which include solar technology.

We believe that the data requirements should be consistent for all buildings, regardless of size, in order to maximize the impact of the energy audits. This would also assist in the identification of potential projects for funding under the Solar in Federal Buildings Demonstration Program.

In our view, conservation and solar efforts for Federal buildings are not proceeding in an integrated manner. In spite of the intent of NECPA and recent statements by the administration, it appears that DOE has taken or has proposed actions which will continue to make the coordination of conservation and solar activities for Federal buildings very difficult and will discriminate against the use of solar technology as a conservation measure, without a special long term program or funding mechanism. Moreover, because of its concern over this lack of effective coordination, the House Committee on Interstate and Foreign Commerce has proposed legislation which requires DOE to develop and implement a program for coordinating the various conservation and solar activities relating to Federal buildings.

FAILURE OF DOE TO FULLY
SUPPORT THE SOLAR IN FEDERAL
BUILDINGS DEMONSTRATION PROGRAM

Not only is DOE failing to develop the Solar in Federal Buildings Demonstration Program in the context of a larger, more comprehensive Federal buildings effort, but we believe it is also not giving this program its full support. DOE is relying on external resources, NASA, to manage a major solar commercialization program rather than developing an in-house capability and the technical expertise to develop and implement future programs. Further, DOE has not requested the full funding authorized by the Congress under NECPA nor an extension of the program to the 3-year period originally proposed by the President.

Use of NASA to perform basic management and staff support functions

As stated in our letter, GAO and congressional committee reports have previously expressed serious concerns over DOE's management of the Federal residential projects funded under the Solar Heating and Cooling Demonstration Program. These concerns underscore the need to develop and implement an effective system of planning, oversight, and control for the new Solar in Federal Buildings Demonstration Program. At the time of our letter, we understood that only two persons had been assigned to develop and implement this program. Thus, we questioned DOE's ability to manage a \$100-million program involving many Federal agencies with such limited staff resources.

DOE's response states that it is planning to increase the staffing level to 10 during fiscal year 1980 as the program becomes fully operational. This staff will be responsible for formulating the regulations governing this program; for soliciting, evaluating, and selecting proposals; and for overseeing the monitoring of the performance of installed systems.

DOE also advised us, however, that it has designated the NASA/Marshall Space Flight Center (NASA/MSFC) as the technical project managers for the Solar in Federal Buildings Demonstration Program because of their previous experience under the Solar Heating and Cooling Demonstration Program. NASA/MSFC will be responsible for performing the technical review for each project; ensuring that the established costs, scheduling, and technical performance for each project are met; summarizing and evaluating operation and maintenance data; and providing technical assistance to Federal agencies personnel.

Our review of the draft management plan between DOE and NASA indicates that NASA/MSFC will be providing much more than technical project management for this program. The February 26, 1979, version of this plan lists 15 tasks to be performed by NASA/MSFC at a cost of \$700,000 for 12 staff years in fiscal year 1979 and \$1,175,000 for 17 staff years in fiscal year 1980. Besides the functions cited in DOE's response, NASA/MSFC will also provide overall project management, coordination, and implementation; develop evaluation criteria consistent with NECPA guidelines; evaluate project proposals and recommend meritorious projects for DOE selection; prepare and negotiate interagency agreements for and in the name of DOE; and evaluate projects and manage resources.

(See appendix II). The plan further indicates that NASA/MSFC will transfer funds to individual agencies for projects that have been authorized.

The number of staff to be assigned to this program is still not clear to us. According to DOE's response and the draft management plan, there may be as many as 27 persons--10 from DOE and 17 from NASA/MSFC--assigned to this program during fiscal year 1980. This leads us to believe that the tasks to be performed by NASA/MSFC will overlap or conflict with DOE's responsibility for this program. Moreover, we are concerned that DOE is relying on external resources to manage a major solar commercialization program rather than developing an in-house capability and the technical expertise to develop and implement future programs. We believe that it is important to remember that the Congress specifically designated the Secretary of Energy, not the Administrator of NASA, to develop and carry out the Solar in Federal Buildings Demonstration Program. Further, in our view, the extensive use of NASA/MSFC to perform basic management and staff support functions will dilute DOE's ability to retain essential control over the program and to assure that the program is being carried out effectively. It will also make the needed coordination between this program and other conservation and solar efforts for Federal buildings unduly difficult.

Failure to request total amount of
funding authorized by the Congress and
full 3-year program intended by NEP

Although NECPA authorizes \$100 million for the Solar in Federal Buildings Demonstration Program until the end of fiscal year 1980, DOE has only requested total program funding of \$69.2 million. This is almost \$31 million less than what the administration originally requested and the Congress approved to show confidence in, and support of, the solar industry. Moreover, such a reduced funding level is not in concert with the President's recent statement that the Federal Government will strive to increase its use of solar energy and thereby set an example for other energy users.

Both the administration and the Congress intended for this program to last at least 3 years. However, because of the unforeseen time lapse between the submission of the NEP legislation and its enactment by the Congress, the program as now authorized will only have a 2-year lifespan. DOE has failed to rectify this legislative oversight by requesting an extension of the program to a 3-year period. This has

apparently caused some confusion even within DOE since, as recently as January 1979, in testimony before the Subcommittee on Energy and Power, House Committee on Interstate and Foreign Commerce, the Assistant Secretary for Conservation and Solar Applications stated that this was a 3-year program.

Although DOE states in its fiscal year 1980 budget submission that a funding level of \$69.2 million will achieve the objectives of the program, the February 1979 "Domestic Policy Review of Solar Energy" and the President's recent solar energy message indicate that a larger, more visible program may be needed to have an impact on private sector decisions to use solar energy. The Domestic Policy Review also indicates that a greatly expanded Federal program for purchasing solar equipment would be required to achieve the NEP goal for reducing the consumption of conventional fuels in Federal buildings.

From our review of the administration's original expectations for this program and the findings of the Domestic Policy Review, we can only conclude that DOE has unilaterally decided to limit the scope of this major commercialization and conservation effort. We believe the full \$100-million funding authority should be requested and effectively used to develop and implement a Federal buildings solar program which will be consistent with, and supportive of, the President's recently announced national solar goals.

CONCLUSIONS AND RECOMMENDATIONS

The President proposed in his National Energy Plan that the Federal Government demonstrate its confidence in solar technology by undertaking a 3-year program of up to \$100 million for the installation of solar equipment in Federal buildings. The purpose of the Solar in Federal Buildings Demonstration Program was to give the Federal Government a leadership role in reducing the consumption of conventional fuels and demonstrating the feasibility of widespread solar energy use. The importance of this program was underscored by the President in his recent solar energy messages wherein he stated that the Federal Government will strive to increase its use of solar energy.

We believe that the manner in which DOE is proceeding with the development of this program will severely restrain the impact that was intended for the program in both the Federal and private sectors. This program is not part of a comprehensive strategy and plan to promote the use of conservation measures

and solar technology in Federal buildings. It appears to us that the planning and management for this program is being carried out in isolation from other Federal buildings efforts. In spite of clear legislative and executive mandates, DOE has not embraced or even acknowledged its leadership and coordination responsibilities for providing a coherent framework for all conservation and solar projects in Federal buildings. In our view, DOE has taken or proposed actions which will make the integration of conservation and solar efforts very difficult.

Not only is DOE failing to develop the Solar in Federal Buildings Demonstration Program in the context of a larger, more comprehensive Federal buildings effort, but it is also not giving this program its full support. We must question whether DOE even believes that the ambitious objectives of the program can be achieved at this time. Although this program represents a major solar commercialization effort, DOE has not requested the full funding authorized by the Congress under NECPA nor an extension of the program to the 3-year period originally proposed by the administration. Further, basic management and staff support functions will be performed by NASA rather than DOE personnel.

We believe that the purpose and objectives of the Solar in Federal Buildings Demonstration Program overlap those of other programs and efforts which promote conservation and the use of solar technology in Federal buildings. We have noted that congressional committees and the Domestic Policy Review of Solar Energy have expressed concerns regarding the need for better coordination and more effective management of Federal conservation and solar efforts. These problem areas could be further exacerbated if this new solar program is not adequately planned, coordinated, and controlled.

Accordingly, we recommend that the Department of Energy:

- Assume and carry out its mandated leadership and coordination responsibilities by developing a comprehensive strategy and plan to guide and integrate conservation and solar efforts for Federal buildings. This strategy should be articulated both within the 10-year Federal Buildings Plan and any national plan emanating from the Domestic Policy Review and the President's recent message on solar energy.

- Within the framework of the 10-year Federal Buildings Plan, establish a mechanism to coordinate all conservation and solar efforts for Federal buildings.
- Revise the proposed rules for preliminary energy audits of Federal buildings to require that consistent data be collected for all buildings, regardless of size, in order to enable agencies to identify appropriate conservation retrofit projects which include solar technology.
- Reevaluate the extensive use of NASA to provide basic management and staff support to the Solar in Federal Buildings Demonstration Program.
- Implement a Federal buildings solar program on the scale envisioned by the President and the Congress. This would entail requesting an extension of the program to a 3-year period and the full \$100-million budgetary authority approved by the Congress.
- Review and resolve the life cycle cost effectiveness problems that have been identified as a major impediment to the use of solar technology in Federal buildings. This should include an assessment of the impact that OMB Circular A-94 has on the funding of solar projects and, if appropriate, a request for an exemption from using this criteria in the evaluation of solar projects.

PROPOSED TASKS TO BE PERFORMEDBY NASA/MARSHALL SPACEFLIGHT CENTER

1. Provide overall project management, coordination, and implementation.
2. Assist DOE in the preparation of the Notice of Proposed Rulemaking.
3. Develop evaluation criteria consistent with the guidelines established by the National Energy Conservation Policy Act.
4. Evaluate project proposals.
5. Recommend meritorious projects for DOE selection.
6. Prepare debriefing reports on projects not selected by DOE.
7. Prepare and negotiate Interagency Agreements for and in the name of DOE.
8. Provide technical assistance to Federal agencies.
9. Assist in problem resolution.
10. Document problems and resolutions.
11. Gather and evaluate operation and maintenance data.
12. Monitor status at the project level.
13. Report project and funding status.
14. Evaluate projects.
15. Manage resources.

Source: Management Plan for MSFC Participation in the Demonstration of Solar Heating and Cooling in Federal Buildings Program (SHC-2019), February 26, 1979.

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