

11593

Information Related to Responsibilities of the Secretary of the Interior Section 3, Executive Order 11593

Office of Archeology and Historic Preservation
Heritage Conservation and Recreation Service

Special Energy Issue

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NATIONAL CONSERVATION ADVISORY COUNCIL REPRINT

Statement on The Control of Environmental Conditions for Preservation of Cultural Property in Situations of Energy Shortage

INTRODUCTION

The National Conservation Advisory Council (NCAC) was established in 1973 to study the needs for preserving the Nation's buildings, fine and decorative art collections, archeological materials, books, documents, photographs, and other cultural property. The following statement has been prepared to alert responsible officials to the special requirements of environmental control in institutions charged with the preservation of cultural patrimony. An increased understanding of these concerns, particularly by persons responsible for the allocation of energy resources, hopefully will advance our common goal and mutual responsibility: the preservation of the Nation's artistic and historic collections for posterity.

In cooperation with the energy committees of the American Association of Museums, the Association of Art Museum Directors and Energy Coordinator of the National Endowment for the

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ENERGY CONSERVATION STATEMENT

Chris Therral Delaporte
Director

Historic preservation and energy conservation are closely allied national objectives. Confronting the reality that traditional energy sources are not inexhaustible, we are becoming increasingly aware that many historic buildings, by virtue of their physical attributes, have inherent energy-saving potential that can be maximized through rehabilitation and adaptive reuse.

Numerous factors, including the condition of a building, the projected use, the quality of its original construction, and the setting, influence the nature and objectives of each preservation undertaking. Preservationists today acknowledge this complexity and are fully prepared to balance preservation practices with energy conservation objectives for the public benefit.

We must apply our creative

efforts to ensure that preservation projects are not only planned but are accomplished so that they result in the most conservative use of conventional energy supplies, and the broadest possible application of energy-saving techniques and alternate energy sources.

This special edition of 11593 and the *Preservation Briefs* enclosed, published as the Nation observes Sun Day, are devoted to energy conservation in historic resources. The articles illustrate the programs and sources of information that reflect the attention being given to this issue. This publication is one way the Office of Archeology and Historic Preservation, a major unit of the new Heritage Conservation and Recreation Service, seeks to emphasize its commitment to energy conservation.

JOINT PROJECT IN CLAREMONT, NEW HAMPSHIRE

by T. Allan Comp
Senior Historian
Historic American Engineering Record

Last summer, HAER administered four projects that studied the potential for the adaptive use of historic industrial buildings within the standards set by the Secretary of the Interior and the preservation components of the Tax Reform Act of 1976 (see 11593 Supplement, October 1977). For 1978, HAER will again field four teams and one will benefit from the cooperative support and direction of TPS.

Claremont, New Hampshire, already famous for the first



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Arts, NCAC will continue its efforts to explore ways in which the conditions required for maximum safety of the materials of America's cultural history can be maintained with a minimum expenditure of energy.

STATEMENT

The first, and ultimately the major, responsibility of museums, libraries, archives, and historic buildings is the preservation of the cultural and historical materials entrusted to their care. To minimize the damage or complete loss of rare and irreplaceable items, these institutions must control the environmental conditions within their buildings—temperature, humidity, and atmospheric pollutants. Careful consideration of the need to control the environment is part of the trustees' and administrators' responsibilities in order to fulfill their explicit obligation to preserve the Nation's cultural patrimony.

The relationship between environment and deterioration has long been recognized and documented by museum and archival authorities. Uncontrolled changes in humidity and temperature have been identified as two of the main causes of the destruction of cultural property. Large or rapid fluctuations in temperature or relative humidity can result in cracking, splitting, and warping of a wide variety of materials. Levels of relative humidity much over 65 percent, if extended for a day or more, can result in the growth of mold. Thus, the maintenance of both humidity and temperature within prescribed limits is essential to avoid serious and irreversible damage.

The maintenance of proper temperature and humidity involves the use of humidifiers and dehumidifiers, heating and cooling systems. Atmospheric pollutants, both chemical and particulate, present additional hazards to preservation; to eliminate these, scrubbers and filters are used. All these protective systems require energy for operation.



The heavy masonry walls of many of the public buildings constructed in the late 19th century improve the structures' thermal performance. Old Post Office and Clock Tower, Washington, DC.

The maintenance of stable environmental conditions is of such importance that most newly constructed museum and archival buildings include environmental control systems that must operate continuously. Because of costs and problems of installation, many historic houses and older buildings still have only partial systems. Nevertheless, change in the temperature and humidity in any of these institutions results in damage to their buildings and collections.

A matter of particular concern is the possibility of interruption of energy services with little or no advance notice. Such an event carries with it the danger that the sudden changes in environmental conditions will result in extensive damage to collections and buildings. The effects of temperature and humidity changes on cultural property described herein apply equally to the contents of museums and to the buildings within which they are exhibited; for example, in historic structures built without modern vapor barriers, temperature or humidity changes may cause the dew point to be reached within walls with resulting condensation and wood rot.

Taking into account the above factors, the NCAC endorses the following guidelines in situations of energy shortage:

1. Institutions responsible for the preservation of cultural patrimony must be given special consideration when energy priorities are established.
2. The primary need is to maintain humidity and temperature as steady as possible—sudden changes can be disastrous. When major changes in temperature and humidity unavoidably occur, special efforts must be made to control the rate of change so that it will only take place gradually over a period of at least one week. To a degree, damage can be reduced if advance notification can be made; this is the very minimum precaution that must be taken in emergency situations.
3. Widely recognized environmental standards for the year-round conditions needed to avoid damage to collections in modern museums and archives are 50 percent relative humidity (± 5 percent) and temperature of 65°F. ($\pm 5^\circ$).

Photo: Mary Randlett

Should it become absolutely impossible to maintain accepted environmental standards, every effort must be made to maintain relative humidity within a range of not less than 40 percent (winter) or more than 60 percent (summer). Temperatures should be kept within a range of not less than 55°F. (winter) or more than 80°F. (summer). Variations and fluctuations in environmental conditions beyond these limits will cause irreversible damage to collections.

4. Certain classes of materials—for example, microfilm, motion picture film, and other photographic negative materials—require special levels of temperature and humidity other than those described above. The central staff responsible for the care of collections must convey any unusual requirements to persons concerned with the allocation and control of energy resources.
5. Because most institutions have collections of varied materials requiring different environmental standards, it is not appropriate to consolidate such collections in one area during situations of energy shortage.

FURTHER INFORMATION

In these times of diminishing fuel and power resources, the Nation's cultural institutions will continue to explore various means to reduce their overall energy demands without endangering their collections. To assist these organizations with short- and long-range plans for conservation of energy, a number of manuals and resource books on the subject of energy management are available. The American Association of Museums (AAM) is preparing an advisory review of these manuals, with special reference to the needs of museums, for release early in 1978. It is strongly urged that such sources be consulted for further information.

Inquiries concerning AAM should be directed to Robert A. Matthai, Chairman, AAM Energy Committee, American Museum of Natural History, New York, NY 10024.

Claremont Project from page 1

National Register Multiple Resource District in the US, is working to add its historic industrial buildings to the district and is developing ways to encourage the adaptive use of these buildings. In energy-short New England, historic preservation and energy conservation must go hand-in-hand. Any complete plan for the impressive brick mill buildings that line the Sugar River in central Claremont must include plans for weatherization and for alternative sources of energy.

Realizing this need, HAER and TPS agreed to cooperate in funding and directing a Claremont project. In addition to the HAER recording and feasibility studies, TPS will specifically study energy conservation in historic industrial buildings. They will develop alternatives for window treatments in a rehabilitation and weatherization plan, study methods of installing mechanical systems without damaging the historic integrity of the structures, and consider

alternative sources of energy. The latter will include the use of solar and hydroelectric power compatible with the Secretary's "Standards for Rehabilitation."

The Claremont HAER team will contain two basic elements. A recording team will prepare historical reports, measured drawings, and professional photographs of all sites. A planning-feasibility team will assess local and regional market needs to determine feasible uses for the buildings and develop ways to meet those needs as part of a total approach to local and historic district planning and zoning. The team's preservation architect will then determine how those economically feasible uses can be installed in the existing buildings in full compliance with the Secretary's "Standards for Rehabilitation." Finally, the team will work to integrate the rehabilitation proposals with parallel recreational and neighborhood conservation efforts. The HAER goal in its 1978 studies

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ENERGY CONSERVATION IN HISTORIC BUILDINGS

Federal Funding Sources

by Donna Williams
Program Assistant
National Register

Photo: Jack E. Boucher



Skylights provide a source of natural light and heat. National Portrait Gallery, Washington, DC.

The increasing consciousness of our vanishing energy supplies and alternative energy systems has increased the need and the ability to conserve energy in all structures, including historic ones. While many historic buildings have characteristics that provide for efficient use of energy, often modern techniques can increase the building's overall energy performance. Because of the recent demand for energy conservation in historic structures, funding programs have developed. Several existing federal programs, listed below, fund weatherization or the development or application of alternative energy technologies. President Carter's energy proposals, now pending in Congress, may create some new programs for energy conservation or cause reorganization of existing programs; however, the future of specific energy proposals is not clear at this time.

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DEPARTMENT OF ENERGY

Community Planning and Design Program funds projects and research to promote the management and application of energy conservation techniques in localities. Funds are available to communities for energy master planning, the development of tools and models to provide for consideration of energy conservation in local comprehensive planning, and the design of site and neighborhood energy conservation measures. Project proposals are solicited in a "request for proposals" published by DOE (most recent one appeared in March 1978). Sometimes independent proposals that meet the program goals are funded. For more information write Jacob Kaminsky, Building and Community Systems, Office of the Assistant Secretary for Conservation and Solar Applications, Department of Energy, 20 Massachusetts Ave. NW, Washington, DC 20545.

Solar Applications Demonstration Projects solicits proposals for projects in program opportunity notices published annually in the *Commerce Business Daily*. (The next Opportunity Notice is expected in October 1978.) Demonstrations must include the use of solar energy technology in non-residential structures, although projects including both residential and commercial structures will be considered. Projects are judged on the basis of technical feasibility, cost effectiveness, energy savings and other benefits provided. In exceptional cases, unsolicited projects submitted in the form of concept papers (about 3 pages) that are of special interest to the program may be funded independently. For more information write the Solar Applications Branch, Mail Stop 2221C, Department of Energy, Washington, DC 20545.

State Energy Conservation Program requires each state to submit a series of Energy Conservation Plans that outline its efforts to conserve energy. Federal funds are available to the states



Land's End Plantation, Stonewall vicinity, LA.

for preparation and implementation of the plans that often involve public information and education programs. In addition, the states may develop mechanisms for funding energy demonstration or weatherization programs. For program details contact your state energy office.

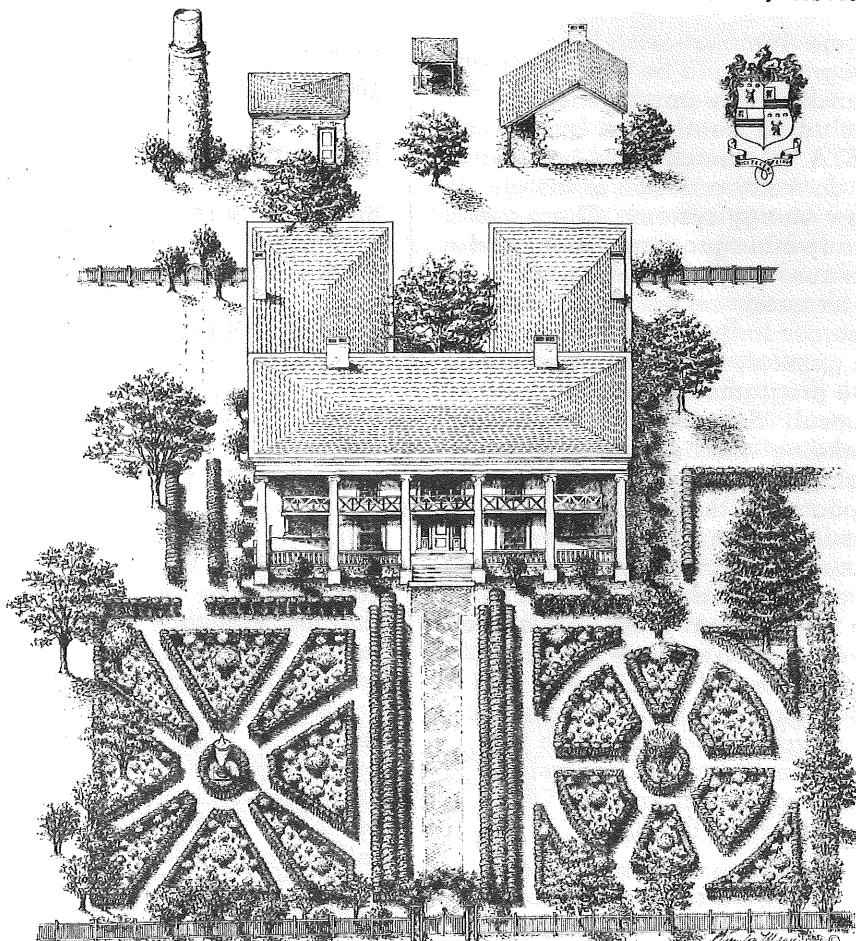
Weatherization Assistance for Low-Income Persons is a federal program that apportions funds to the states based on a formula that considers its climate and number of low-income dwellings. States will allocate their funds to community action agencies (established under the Economic Opportunity Act of 1964) or other qualified entities to provide weatherization assistance to low-income persons. If states do not apply, local agencies may apply directly to DOE. The FY 78 appropriation is \$65 million. This program provides up to \$400 for the purchase of weatherization materials for any one dwelling unit; these funds cannot be used

for labor costs. For more information write the Weatherization Assistance Program, Department of Energy, Washington, DC 20545.

DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

Under Title III of the Older Americans Act the Administration on Aging provides funds to meet the energy needs of senior citizens, including paying fuel bills, supplying transportation and providing home weatherization improvements. Allocations of federal funds are made to the states, who submit a general description of how the funds will be used. Funds are often passed directly to local agencies. For more information contact the local agency on aging or the Administration on Aging, 330 Independence Ave. SW, Washington, DC 20201.

Under Title XX of the Social



In the South, exterior balconies, porches, wide roof overhangs, and shade trees were used to help minimize heat gain from the summer sun. Valley View (plan illustrated in *Garden History of Georgia*), Cartersville, GA.

conservation projects in FY 79 has not yet been determined. For more information write the EDA Regional Office or EDA, Department of Commerce, Washington, DC 20230.

COMMUNITY SERVICES ADMINISTRATION

Emergency Energy Conservation Program provides grants to local community action agencies, State Economic Opportunity offices and other nonprofit organizations serving low-income persons for weatherization programs, development of alternative energy sources, application of energy technology to the needs of low-income persons, and energy research and demonstration projects. The FY 78 appropriation for these programs is \$65 million. At least 30% of the project cost must be matched with non-federal funds. For more information write the Community Services Administration, Washington, DC 20506.

DEPARTMENT OF THE INTERIOR

Historic Preservation Grants-in-Aid provide matching financial assistance to states and territories for the acquisition and development of properties listed in the National Register. Weatherization, energy conservation measures, and the development of alternative energy sources such as solar energy or wind power are acceptable project costs. Such projects are selected by the State Historic Preservation Officer and must follow the Secretary of the Interior's Standards for Rehabilitation. For further information write to the appropriate State Historic Preservation Officer.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

The Solar Energy Demonstration Program funds demonstration projects involving the use of solar energy techniques in residential or multi-use properties and areas. Periodic requests for grant applications are published in the *Commerce Business Daily*, and proposals submitted in response are judged competitively. The next

Security Act funds are allocated to states on the basis of population for local social welfare programs. State welfare departments can initiate a range of social service programs, and may utilize these funds to finance basic home energy conservation measures. Funds are administered by the department of social services in each state.

DEPARTMENT OF AGRICULTURE

Rural Housing Weatherization Loan Program of the Farmers Home Administration (FmHA) provides loans through rural utility cooperatives. Loans for as much as \$1500 may be used to purchase and install such items as insulation, siding, caulking material, and storm windows and doors. The cooperatives process the loan applications; FmHA determines applicants' eligibility and approves the loans. Weatherization improvements must meet FmHA thermal

standards for existing housing, or meet standards set by the utility, whichever are stronger. For more information write the county office of FmHA, or Farmers Home Administration, Department of Agriculture, Washington, DC 20250.

DEPARTMENT OF COMMERCE

Under the Economic Development Administration's (EDA) *Public Works Impact Program* (PWIP), funding is available for weatherization and other energy conservation measures in publicly owned structures, such as county courthouses and police and fire stations. Most of the \$20 million available for FY 78 has been obligated. Under the ongoing PWIP, certain projects involving energy conservation projects that create a reasonable amount of employment for a significant period of time may be funded. Specific funding for energy

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announcement is expected during the summer of 1978. About \$8 million is available for the FY 78 program. For more information write the Solar Energy Group, Policy Development and Research, Department of Housing and Urban Development, Washington, DC 20410.

GENERAL FUNDING PROGRAMS

In addition to the programs listed above that are specifically for energy conservation purposes, a number of other federal funding programs can be used for energy conservation. For example:

The Architecture, Planning and Design Program (formerly *Architecture and Environmental Arts*) under the National Endowment for the Arts, is planning to develop a special subcategory of the Liveable Cities program that would fund planning costs of interesting or innovative energy conservation projects, especially those involving historic buildings. Currently, although no special category has been established, energy conservation projects may be funded under either Liveable Cities, Design and Communication, and Cultural Facilities Research and Design programs. Guidelines for the FY 79 program should be available in the late spring of 1978. More information is available from the National Endowment for the Arts, Mail Stop 503, Washington, DC 20506.

Two ACTION programs—*VISTA (Volunteers in Service to America)* and *RSVP (Retired Senior Volunteer Program)*—have been used to assist local weatherization and energy conservation projects. Through these programs volunteers provide the labor necessary for local projects. For information on either program write the ACTION State Program Office in your state or ACTION, 806 Connecticut Ave. NW, Washington, DC 20525.

Similarly, HUD's *Community Development Block Grant Program* could be used to establish a weatherization program for low-income housing; a number of *Farmers*

Home Administration loan programs could be used for various home improvements, including weatherization; or *CETA* volunteers could be used to do weatherization or install new energy systems. There are many other programs that could be used as well. For more information on federal funding sources for preservation projects in general, including some of the programs mentioned above, consult "Sources of Preservation Funding" published in the February 1977 issue of *11593* and updated in the December 1977 issue. Information on federal sources of funding for preservation can also be found in the *National Trust for Historic Preservation's Guide to Federal Programs and Supplement*, and the *Catalog of Federal Domestic Assistance*, available from the Superintendent of Documents, US Government Printing Office, Washington, DC 20402.

Lois Snyderman of the National Trust for Historic Preservation assisted in preparing this article.



Numerous fireplaces and solariums often provided heat for large mansions like this. American Swedish Institute, Minneapolis, MN.

ENERGY CONSERVATION IN HISTORIC BUILDINGS

Information Sources

by Donna Williams
Program Assistant
National Register

Owners and users of historic structures often have a special interest in energy conservation because it is important for them to use energy conservation techniques that will not structurally damage the building or interfere with the integrity of the building's design. These considerations as well as the fact that many historic structures have energy-saving characteristics related to their design, construction or materials, have led to a number of research efforts on energy conservation in historic structures. Information on the subject is available from the following groups.

The Technical Preservation Services Division of OAHF has

Photo: Kemmerdiener

prepared two articles on energy conservation for 11593 (June 1977 and October 1977) and their research in the area has led to publication of a technical Preservation Briefs which is enclosed with this issue. Planned research projects will result in other preservation briefs on subjects such as "Window Treatments in Historic Buildings", "Artificial Siding for Historic Buildings; Some Technical Considerations", "Mechanical Equipment in Historic Buildings" and "Alternative Life-Safety Systems for Historic Structures."

The Advisory Council on Historic Preservation recently contracted with a firm to study various energy aspects of historic buildings to determine their energy efficiency as compared with new structures. The study will include consideration of a building's energy use and alternative energy systems, and the amount of energy already expended in a building on construction and manufacture of materials. A comparison of the energy efficiency of new construction as compared with rehabilitation is also planned.

As a result of meetings among the Advisory Council, OAHF, the National Trust for Historic Preservation and the National Endowment for the Arts, it has been determined that a master plan for research in the field of energy conservation in older buildings is needed to ensure that research and publications of these organizations are complementary, to build on existing research, and to avoid duplication. There is a study underway to develop a strategy for research, educational efforts and planning in this field.

The General Services Administration is responsible for most federal buildings, and therefore has a great interest in factors affecting energy consumption in existing buildings. They have sponsored basic research and are now preparing case studies on both new and historic buildings. For more information write the Chief, Environment and Energy Branch, Public Buildings Service, General

Services Administration, Washington, DC 20405.

The Energy Committee of the American Association of Museums has developed materials on energy conservation methods for museums; held workshops on energy conservation; provided technical information to various organizations; and encouraged federal, state and local governments to adopt energy conservation policies that will not have adverse effects on museums or their collections in times of fuel shortages or other crises. More information on their efforts is available from Robert A. Matthai, Chairman, AAM Energy Committee, American Museum of Natural History, New York, NY 10024.

The Energy Extension Service of the Department of Energy has a 10-state pilot program to disseminate information on energy conservation techniques and on the implementation of projects. A variety of public information and education techniques are used to disseminate information, including existing mechanisms, such as the Department of Agriculture Cooperative Extension Service offices. States included in the pilot project—Alabama, Connecticut, Michigan, New Mexico, Pennsylvania, Tennessee, Texas, Washington, Wisconsin, and Wyoming—each received \$1.1 million to implement the program. Other states will receive \$30,000 to prepare for participation in the program starting in 1979. For more information write Energy Extension Service, Department of Energy, Room 5110, Washington, DC 20545.

General information on energy conservation techniques, materials and issues is available from a number of organizations including the following:

National Energy Information Center (202/566-9820) answers general questions and gives referrals.

NASA Lewis Research Center (216/433-4000) answers questions

on all aspects of energy conservation.

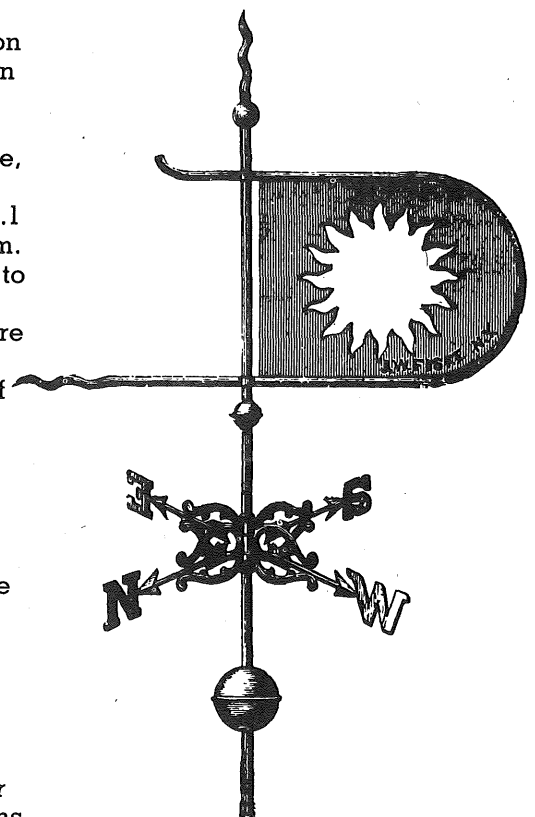
Denver Public Library's Conservation Library (303/837-5994; call collect) serves a 10-state Rocky Plains Region as a referral service on energy and environmental questions.

Energy Hot Line (516/686-7744) serves New York, New Jersey and Connecticut on all questions about energy and conservation.

Energy Information Center (415/556-7328) serves San Francisco and neighboring areas with information on alternative energy technology, especially solar energy.

Center for Energy and Mineral Resources in Texas (713/845-8025) is a state program that responds to general and specific energy questions, maintains a mailing list, and publishes a newsletter.

National Solar Heating and Cooling Information Center (800/523-2929; in PA call 800/462-4983) answers general questions, researches specific subjects, provides references, maintains a mailing list and publishes a newsletter.

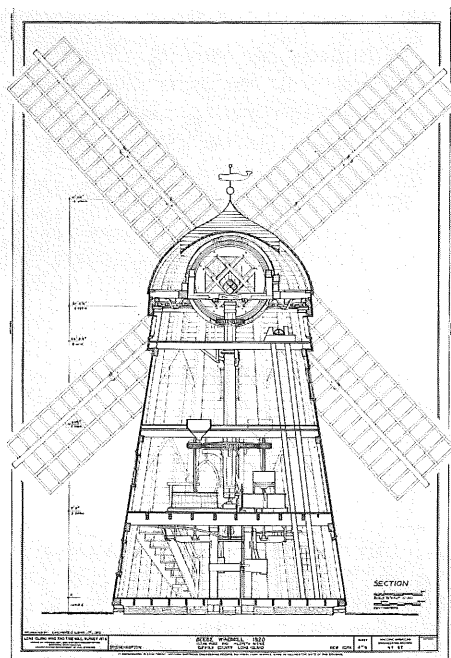


The weathervane is reproduced from J. W. Fiske 1893 by permission of Wallace-Homestead Books, Des Moines, Iowa.

is to provide perspectives on the ways communities may benefit from—and encourage such district rehabilitation projects.

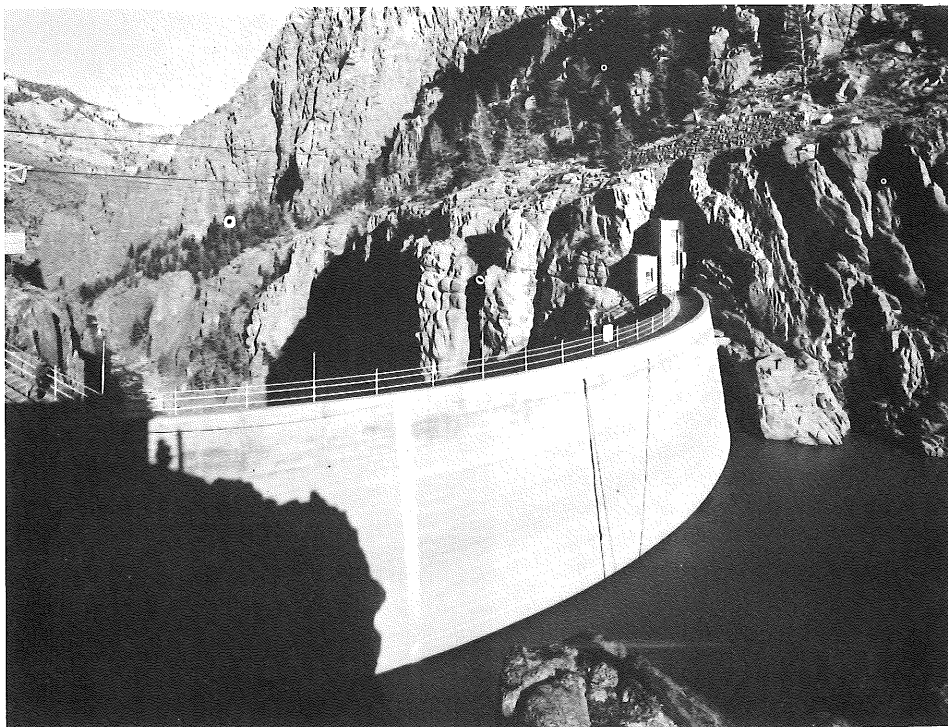
HAER and TPS see immense potential for this pilot study. It will allow both offices to improve their expertise and to explore areas for future cooperation. Because the project studies an entire district, the results will benefit preservation planning for Claremont and for hundreds of communities with similar historic industrial-commercial districts.

The 1977 HAER studies—soon to be published—clearly demonstrate the incentives provided by the Tax Reform Act of 1976 for rehabilitating historic industrial buildings. Those studies also began to uncover the impressive benefits, both economic and social, that can be realized by revitalizing underutilized historic industrial areas. It is increasingly clear that historic industrial districts offer a unique sense of community identity, impressive and flexible spaces for a variety of new uses, and the overall potential necessary to interest the private sector. By making energy conservation one of its goals, the HAER-TPS Claremont project will expand the scope of preservation concern and provide some basic data needed to integrate the interests of historic preservation and energy conservation.



This windmill once provided the energy to grind flour for the town of Bridgehampton. Beebe Windmill, Bridgehampton, NY.

Photo: Jack E. Boucher



The power plants of Buffalo Bill Dam near Cody, WY, supply the area with 10,000 kilowatts of power.