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01 Jan 1978

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Marlow, H. LeRoy, "Disseminating Energy Information and Technical Assistance to Clientele Groups" (1978). *UMR-MEC Conference on Energy / UMR-DNR Conference on Energy*. 355, pp. 96-106.
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DISSEMINATING ENERGY INFORMATION AND TECHNICAL ASSISTANCE TO CLIENTELE GROUPS

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Abstract

In Pennsylvania an established statewide technical information network known as PENNTAP (Pennsylvania Technical Assistance Program) has been expanded as part of the federal Energy Extension Services pilot program. This program is providing energy conservation assistance to two clientele groups - municipalities and small businesses. The operation of a successful technology transfer program is an activity which is being considered by many organizations and this presentation will discuss the philosophy, operational procedures, problems and successes of the PENNTAP/EES program.

INTRODUCTION

In 1965 many of the small businessmen of Pennsylvania were concerned about the fact that much effort was being exerted to get a man to the moon while apparently little was being done to provide the benefits of technology to them. The Pennsylvania State University, in cooperation with the Governor's Science Advisory Committee and the Bureau of Scientific and Technological Development of the Pennsylvania Department of Commerce, created an experimental program known as PENNTAP - Pennsylvania Technical Assistance Program. The creation of this program was based on the hypothesis that if existing scientific and technical information could be transferred to, and applied by, the small business community then economic benefits would result. The experiment proved successful and a practical operating network was established.

In 1970, with financial support from the National Science Foundation and the Pennsylvania Science and Engineering Foundation, the clientele being served was expanded to include all public and private organizations in the Commonwealth.

In 1977 when Pennsylvania was selected to be one of the ten pilot states in the new Department of Energy, Energy Extension Service, PENNTAP was selected to be the delivery mechanism for the statewide operation.

This paper will emphasize that aspect of the PENNTAP program.

During the past 13 years PENNTAP has developed, tested and demonstrated the ingredients that are necessary in any successful information dissemination network. It has shown that through the use of change agents, providing person-to-person assistance, existing problems can be solved and economic benefits generated. The solution is not necessarily to generate more information, but to better use the knowledge that already exists.

Before a detailed presentation of the system used to disseminate energy conservation information is made, it would be well to review the total Energy Extension Service Program as it is operating in Pennsylvania.

Governor's Energy Council

At the time of the oil embargo it became evident that the Commonwealth of Pennsylvania needed a single energy coordinating agency. This need was met by the creation of the Governor's Energy Council (GEC) with Lt. Governor Ernest Kline appointed as Chairman and William Harral as Executive Director in charge of the day-to-day operations. Currently the GEC has a small permanent staff and relies on

others to help carry out Council programs. Ninety percent of the operating budget comes from the federal government.

The Council is composed of the heads of state agencies (those who are developers and users of energy), representatives from the academic community and consumers. Their role is policy formulation, coordination and implementation. Although a comprehensive energy plan for the Commonwealth has been discussed, a state plan has not been developed yet because of the lack of a national plan. When a federal plan is implemented a state plan will be created. In the meantime, the Council has elected to place greater emphasis on coal revitalization and to institute programs which meet specific, existing needs in the areas of energy conservation, use of solar energy, etc.

The management of the Pennsylvania Energy Extension Service is a part of the overall responsibilities of this Council.

Pennsylvania's Energy Extension Service

This program has been operational since September, 1977, and it makes use of existing agencies in order to avoid excessive administrative costs.

Let us first look at the overall organization of the Pennsylvania Energy Extension Service (Figure 1).

Mr. William Harral is the Manager of the program with The Center for the Study of Environmental Policy providing staff support. The two primary implementation strategies are the geographic intensive and the state-wide responsive programs.

The primary goal is to achieve immediate reduction in energy consumption by improving the operating efficiency of the two target audiences - local government and small businesses.

Local government includes townships, municipalities, counties, school districts, and operating authorities, including hospitals.

Small businesses include those establishments with fewer than 250 employees.

The services which are offered are:

- .. Personalized, face-to-face consultation in response to specific requests;
- .. Stimulation of requests for service through organized awareness activities;
- .. Distribution of specific materials in response to consultations;
- .. Workshops on techniques and technologies that have broad application for the target audiences;
- .. Institutional analysis of energy consumption of selected hospitals.

Geographic Intensive Program

The geographic intensive community development program, a service of the College of Human Development - The Pennsylvania State University, provides an intensive treatment of local governments in the conservation of energy. The expected results of such treatment are:

1. a reduction of Btu's by these local governments;
2. the development and implementation of energy conservation policies and programs with community-wide impact;
3. the evolution of strategies which can be used by other local governments to address their energy conservation needs as consumers and their responsibilities as community leaders in energy conservation.

The service has been implemented in six geographic regions in a variety of governmental settings representative of the ways that local governments are chartered and organized within the Commonwealth. All categories of local governments are involved in the intensive treatment (counties, cities, townships, boroughs, school districts and authorities) as well as prevalent intergovernmental arrangements designed to address area-wide problems and opportunities (councils of governments, multi-county planning and development districts, and metropolitan planning agencies).

The strategies employed in providing an intensive energy conservation treatment of local governments are:

1. multi-disciplinary, interagency task forces;
2. an on-line project team to work with local officials in identifying and developing responses to energy conservation needs and opportunities;
3. an in-depth process of community conservation which works through a sequence of events designed to provide the local governments involved with:
 - (a) a better understanding of their role in energy conservation;

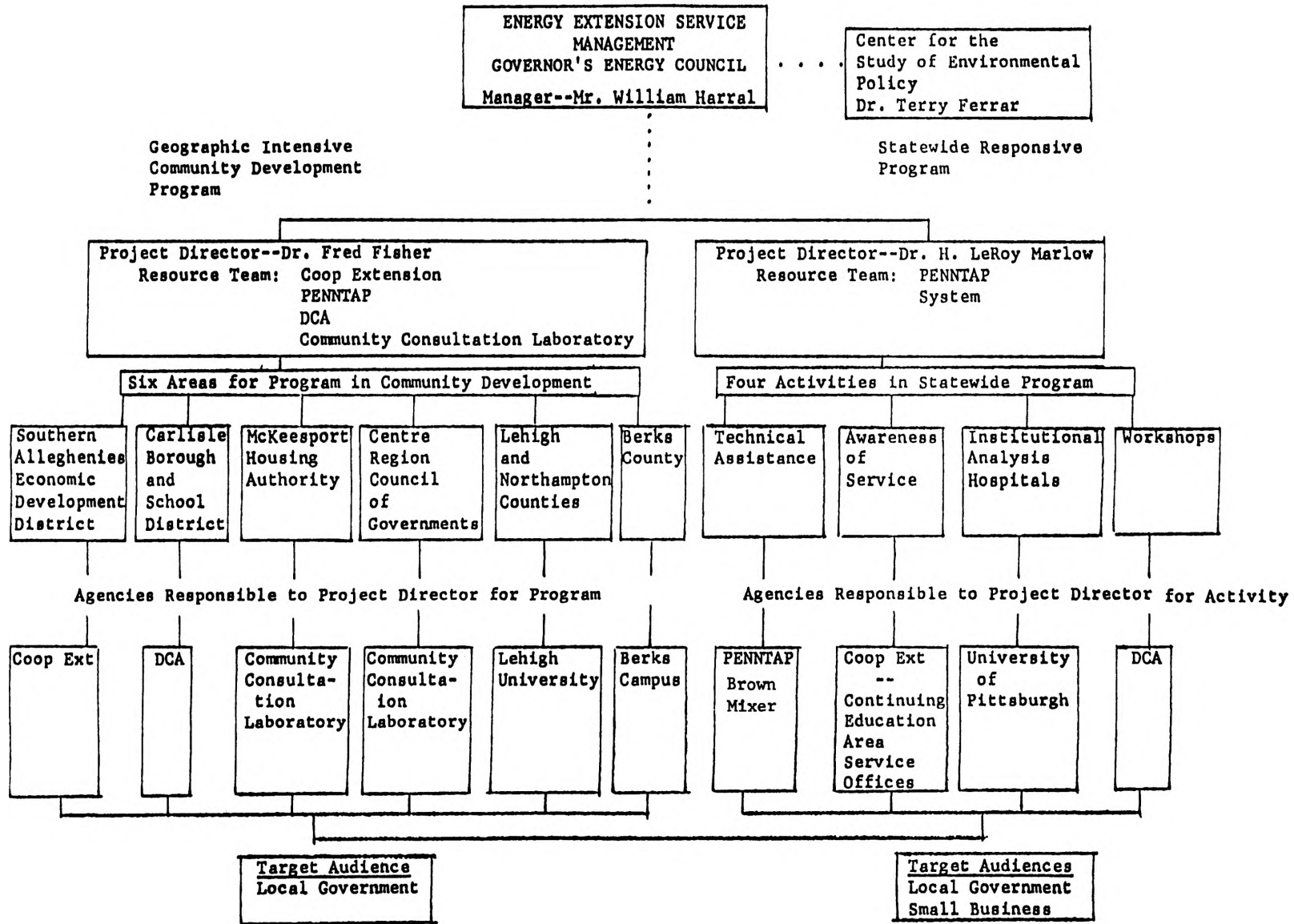


Figure 1

- (b) the identification of alternative courses of action available to them in developing a comprehensive program; and
- (c) the implementation and evaluation of a program of energy conservation within these agencies as energy consumers and within the community.

In summary, the geographic intensive program provides for a select number of representative local governments, interdisciplinary and interagency resources to conduct an in-depth investigation of energy conservation opportunities within their agencies and assist them in the implementation of immediate and long-range policies and programs geared to reduce energy consumption within their organizations and the communities they represent.

Statewide Responsive Program

The statewide responsive program provides service to the entire Commonwealth and may be divided into four separate but related activities.

1. Hospital Institutional Analysis

This Energy Management Program is intended to study the energy conservation needs of Western Pennsylvania hospitals and provide advice on how to attain maximum efficiency in energy usage.

This activity is a joint effort of the Energy Analysis and Diagnostic Center of the University of Pittsburgh and the Hospital Council of Western Pennsylvania.

The program will make it possible for hospitals to voluntarily avail themselves of a broad base of long-range services including an individualized assessment of the hospital's energy needs and recommendations for energy conservation, and access to quality engineering services to implement those recommendations. An ongoing education program is planned through energy-related seminars, specialized training courses and cooperative programs with schools.

Participating hospitals will be kept abreast of legislative development on energy codes and regulations and the energy program will enable the Hospital Council to assist member hospitals in their efforts toward more favorable rate or

supply status with utility companies.

A computer based Energy Information System (EIS) for all hospitals in the western part of the state is set up to provide guidance and manpower in carrying out the energy audits; to provide and maintain the computer programs for simulation, data storages and acquisition; and to provide computer services for these activities. The Energy Management Program will give Western Pennsylvania hospitals an opportunity to save up to 10 percent in the first year and further savings of 25 to 35 percent could be realized in subsequent years.

This particular feature of the Energy Management Program is a welcome benefit for hospitals at a time when cost containment is a high priority item in the administration of quality health care. It is anticipated that this special activity might soon be offered statewide because of its promising potential.

2. Energy Conservation Workshops

Workshops to provide information on energy techniques and technologies that have general application for local governments and small businesses are being conducted statewide.

The workshop series is being held at numerous locations throughout the state by the Department of Community Affairs in association with PENNTAP. The sessions are focusing on introducing and explaining proven techniques and technologies that can conserve energy for the target audiences. After the workshops, PENNTAP Technical Specialists and DCA representatives will follow-up on an individual basis to assure further assistance in applying the information that was presented. An evaluation is also made immediately following each workshop to measure its effectiveness in transferring technical information.

Topics of some of the workshops are: "Energy Conservation in Municipal Buildings," "Retro-fitting, Weatherization and Rehabilitation," "Street Lighting," "Energy Audits," "Life Cycle Costing," and "Municipal Cost Analysis." Other workshop topics will be selected to meet specific needs discerned

from feedback from the users.

3. Awareness Emphasis

No matter how good a delivery system is it will be totally ineffective if the potential users do not know of its existence. To promote the PENNTAP delivery system and its involvement in the Energy Extension Service a number of activities have been undertaken.

The 46 Continuing Education Representatives and the 100 Cooperative Extension Specialists explain the availability of this service through personal contact, group presentation and the distribution of literature.

In addition, a sound slide program and a table-top display have been prepared for group presentations. Mass media is also utilized - newspapers, T.V. and radio - for spot announcements and success stories. The Sound of Progress Radio program, heard on 117 stations, five days a week, is a brief five minute presentation to share some bits of technical information and to attract the interest of potential users.

4. PENNTAP - The Pennsylvania Technical Assistance Program

This statewide delivery system is the heart of one effort to transfer and apply energy saving technology and, therefore, will be emphasized during this conference presentation.

The network to provide technical information on a wide range of subjects was designed as a non-duplicating service to business, industry, municipalities, governmental units, school districts, health organizations and individual entrepreneurs.

PENNTAP's operational goal is to help in this transfer and application of technical information so that it will have economic benefits for the users.

In responding to calls for assistance and through participation in a number of special activities,

PENNTAP's successes included technology transfers which brought about considerable savings in the use of and cost of energy.

When the federal Energy Extension Service was created PENNTAP's delivery system and expertise were tapped as the logical base for coordinating the program. For this additional responsibility, PENNTAP/EES is charged with delivery of energy conservation information to two clientele groups - municipalities and small businesses.

This presentation at the UMR-DNR Conference concentrates on the methods used in Pennsylvania to disseminate special information, to provide person-to-person exchange of knowledge, to overcome obstacles, to analyze selected case studies and to evaluate results. In essence, PENNTAP/EES strives to help all Pennsylvanians conserve energy and offers a specialized and personal service to those who express a need for help.

PENNTAP/EES conducts no research but is interested in seeing that the results of research are made available to those organizations that can use such data to achieve economic or energy savings.

To fulfill its purpose of bringing current scientific and technical information to those who can use it, PENNTAP/EES operates in two ways - ACTIVE and REACTIVE. Through its ACTIVE MODE PENNTAP/EES locates new technological developments and transfers them to Pennsylvanians who can benefit from their application. PENNTAP/EES uses the REACTIVE MODE to answer questions and solve problems that clients bring to them.

ACTIVE MODE Of Operation

Frequently PENNTAP/EES personnel become aware of new scientific and technical developments that could be used to advantage by Pennsylvanians. Often such information comes from large government organizations. Through its direct liaison with many federal laboratories, PENNTAP has been able to actively seek out stockpiles of scientific data which might otherwise lie dormant and unavailable to potential users.

PENNTAP ACTIVE MODE

Personalized Face-to-Face Consultation Process

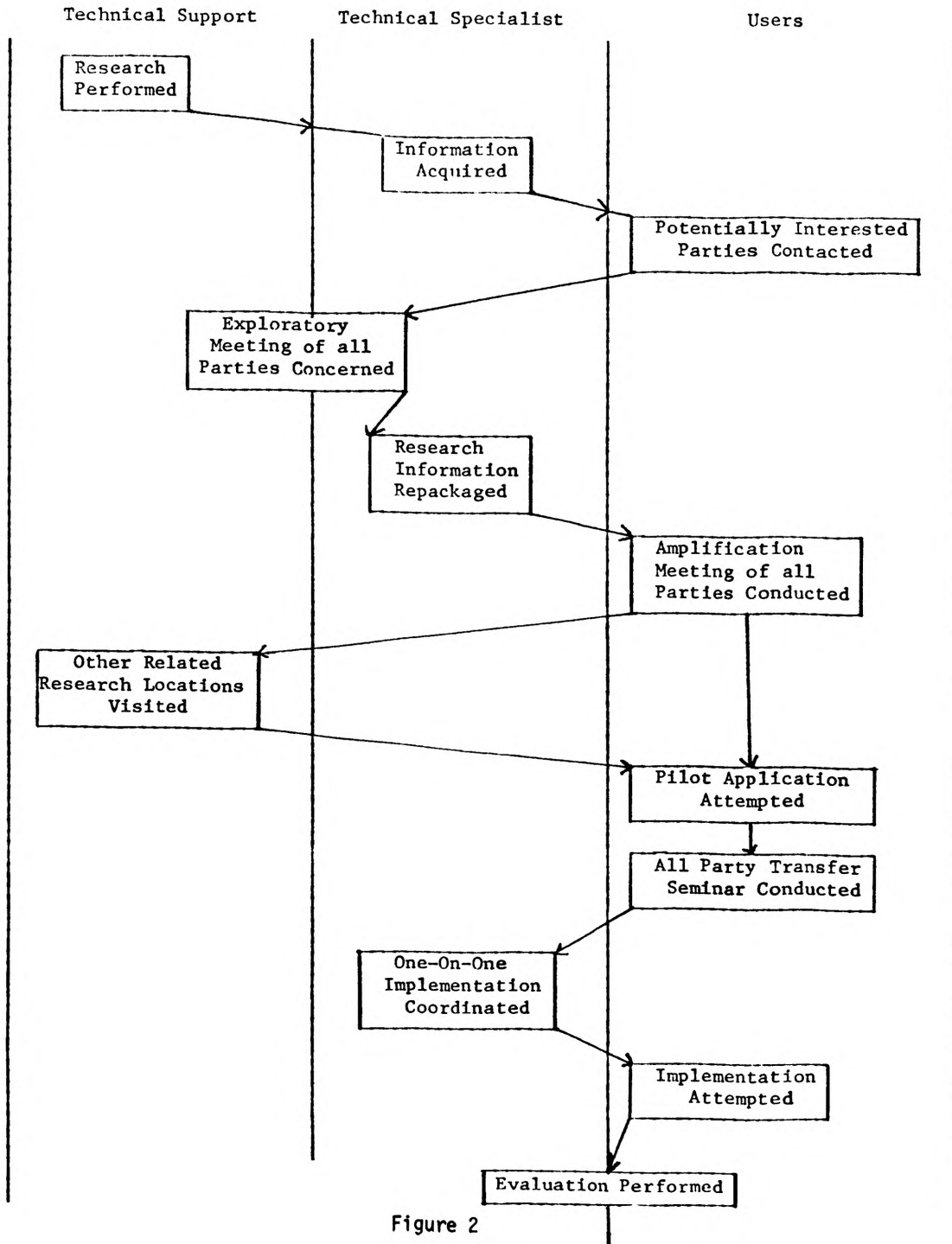
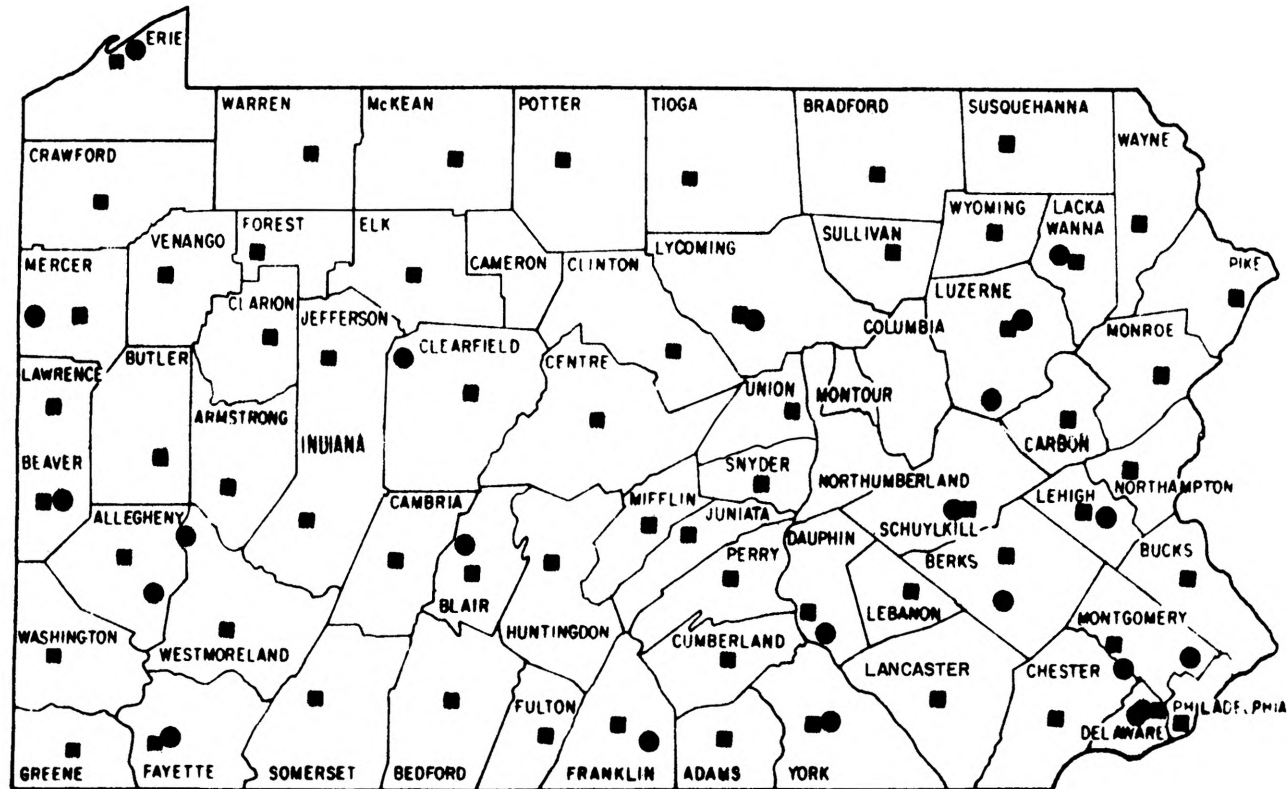


Figure 2

PENNSYLVANIA ENERGY EXTENSION SERVICE RECEIVING STATIONS



- CONTINUING EDUCATION OFFICE
- COOPERATIVE EXTENSION OFFICE

Figure 3

Upon learning of a useful technology, PENNTAP/EES contacts the institutions that might benefit from its use. The technology and its relevance to these institutions are explained, and PENNTAP/EES plans a visit for interested persons to the federal laboratory or other facilities involved. At this time the actual operation can be observed and questions can be asked of those who are using the program.

Following this on-site visit, operating manuals and other pertinent literature are obtained by PENNTAP/EES for perusal by the potential users of the technology. Personnel who have developed and worked with the technology are brought to talk to the potential users, and if necessary, additional on-site trips are planned. An attempt is made to maximize the amount of person-to-person exchange between the potential users and those who are experienced with the technology. Potential users are given every opportunity to familiarize themselves with the technology.

One or more organizations are selected for a pilot study involving a trial use of the new technology. PENNTAP/EES assists the pilot institutions in adapting the technology to their needs; this interpretation and explanation is essential if the information is to be beneficially applied.

Other interested companies or organizations are informed of the results of the pilot study when it is completed. PENNTAP/EES then provides the information necessary to enable them to adapt the technology to their operations if they so desire.

Figure 2 presents a pictorial summary of this "ACTIVE" Mode of operations.

REACTIVE MODE Of Operation

The heart of the PENNTAP/EES operation is the person-to-person service that the Technical Specialists provide to clients who call for help. Responses are tailored to individual needs, and every attempt is made to transfer the most current, comprehensive information as rapidly as possible in terms that the clients can understand.

PENNTAP's REACTIVE MODE involves the entire network of 24 Penn State Continuing Education offices and 67 Agricultural County Extension offices located throughout the Commonwealth (Figure 3). They serve as local receiving stations; a potential client may call or write to any of these offices to request PENNTAP/EES assistance. The caller need not discuss technical matters at this time; he or she simply leaves his or her telephone number.

The inquiry is forwarded at once by telephone to the main PENNTAP/EES office at University Park. A Technical Specialist returns the call, usually the same day that the initial inquiry is made.

After learning the nature of the problem, the calling specialist determines the type of assistance that is needed and he takes the necessary steps to provide it.

PENNTAP's response may be in the form of printed material, it may involve an on-the-spot visit by one of the Technical Specialists, or the caller may be provided the assistance of a consultant, manufacturer, or government agency. Each case is dealt with individually so that PENNTAP/EES can provide the best possible assistance for each client. Figure 4 graphically describes the processes of personalized, face-to-face consultation for individual users in small business and local government of the statewide program of the Pennsylvania Energy Extension Service.

The Technical Specialists provide individualized service to PENNTAP/EES clients. It is this human factor that makes this technology transfer work. Printed materials alone, even expertly prepared, cannot stimulate interpersonal relations, define a problem, answer related questions, involve consulting authorities, provide follow-through on a problem, or relate to other agencies. The Technical Specialist can and does.

The specialists travel extensively throughout Pennsylvania to assist in the definition and investigation of problem areas; to obtain information for solutions to problems; and to translate, interpret, and disseminate scientific and

PENNTAP REACTIVE MODE
Personalized Face-to-Face Consultation Process

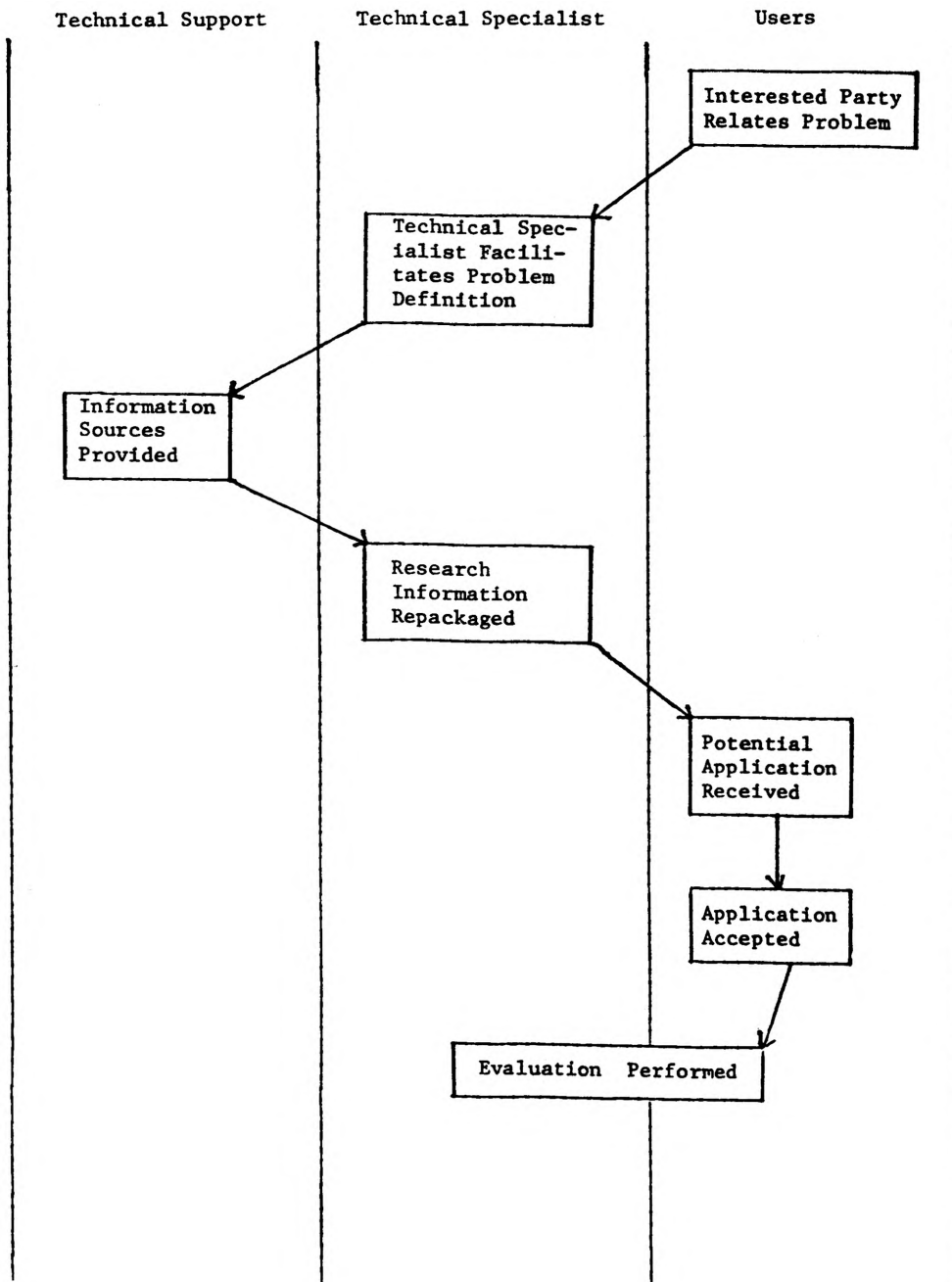


Figure 4

technical information for practical application.

Each specialist works closely with the departments within the academic college and cooperates in interdisciplinary activities to assure that the information transferred is current, valid, and of the most benefit to the user. PENNTAP/EES is also a pipeline to other experts in many fields throughout the state and nation, seeking the information that enables Pennsylvanians to solve existing problems and prevent future difficulties

From over a decade of experience PENNTAP has learned that the existence of knowledge does not assure its use and that even the delivery of the knowledge does not guarantee its successful implementation. Often the potential user needs interpretation of technical information in order to utilize it effectively. This type of technology transfer is best accomplished on a person-to-person basis, and PENNTAP provides this kind of individualized service.

PENNTAP's Library Information System is an integral part of the REACTIVE MODE, tapping sources of technical information throughout the state and nation. Through the Library Information System the resources of The Pennsylvania State University library, interlibrary loan, government depositories, professional libraries, and special libraries are made readily available to PENNTAP/EES clients. Other specialists work in conjunction with the technical librarian, interpreting the data that he obtains for clients.

Follow-Up and Evaluation

While it is still too early to document many of the benefits of the Pennsylvania Energy Extension Service, our early experiences indicate that dollars and energy can be saved when technology is properly transferred.

I can share with you a few examples, from PENNTAP/EES records, which may be typical of the benefits that can be expected. A small company manufacturing lace products reduced its overall energy consumption 14 1/2 percent in one year's work with an energy conservation program. The

company is continuing to implement PENNTAP's suggestions and will no doubt further reduce its overall consumption in the future.

An oil refinery reduced its energy consumption 2 percent and has set a goal of 20 percent reduction. Even the 2 percent is something, though, when one considers that they spend \$100,000 per month on electricity alone. The company's energy engineer claims that PENNTAP gave him ". . . a regular post-doctoral course in energy conservation."

Among school districts, some impressive energy savings have already been realized and the districts are still working to improve their records. One district has cut its consumption of electricity 27 percent and of oil and natural gas 28 percent. Another district reduced its overall energy consumption 18 percent during one year, and a third district reduced its electrical consumption 42 percent and its use of oil and natural gas 33 percent. In all of these districts PENNTAP/EES has suggested the implementation of preventive maintenance practices along with the use of energy conservation measures and building modifications.

A Centre County builder came to PENNTAP/EES for information on urea formaldehyde insulation to use in new homes. That contact led to the start of a separate insulation business.

After receiving the information and using the urea formaldehyde insulation in the homes he had under construction, the builder found his company was realizing a "savings in material cost of 20 percent over comparable products" and that manpower savings on "labor for installation was cut by half the time." He commented that "the application of the information resulted in the electric company and the oil companies saving energy for other users.

With all his information and evidence of application, the builder branched out into a special insulation business.

In the growing numbers of inquiries from around the state, there are numerous questions about

hydro-electric power sources. They range from the small builder who wondered about harnessing the energy of a small stream running through his development, to the city of Allentown asking about the possibilities when a new dam is built on the Bethlehem River. For each case, PENNTAP/EES responds with appropriate and sufficient information for weighing pros and cons.

A small borough suspected operating inefficiencies in a sewage sludge incinerator. The cool-off period was felt to be too short, thereby causing a heat loss in the re-firing process. PENNTAP/EES specialists' suggestions were followed and eventually it was discovered that refractory insulation and firebrick lining were not adequate.

PENNTAP/EES specialists have been conducting special workshops around the state for the direct purpose of influencing energy conservation in school districts and municipalities. Sessions are scheduled for small groups of custodial and maintenance staffs to increase the effect of information on preventive maintenance and calibration of energy control instruments.

Evaluation returns indicate "excellent" and "very useful" reactions from those attending.

In Summary then the Pennsylvania Energy Extension Service has utilized many existing organizations to disseminate, interpret and assist in the application of known energy saving information. The Commonwealth of Pennsylvania has put into being a dissemination system that is responsive to the needs of its users and has the potential to achieve its stated objectives.

BIOGRAPHICAL SKETCH

Dr. H. LeRoy Marlow is Director of the Pennsylvania Technical Assistance Program (PENNTAP); Professor and Head of Management Development Services at The Pennsylvania State University.

As Director of PENNTAP he is responsible for the statewide technical information network which disseminates information to business, industry, municipalities, health organizations and governmental agencies. He is also Project Director for the statewide activities for the Pennsylvania Energy Extension Service.

As Head, of Management Development Services, Dr. Marlow is responsible for 15 full-time and 100 part-time faculty members of The Pennsylvania State University who conduct conferences, courses, and workshops for all levels of management in industrial plants, hospitals, business organizations, and governmental agencies throughout the Commonwealth.