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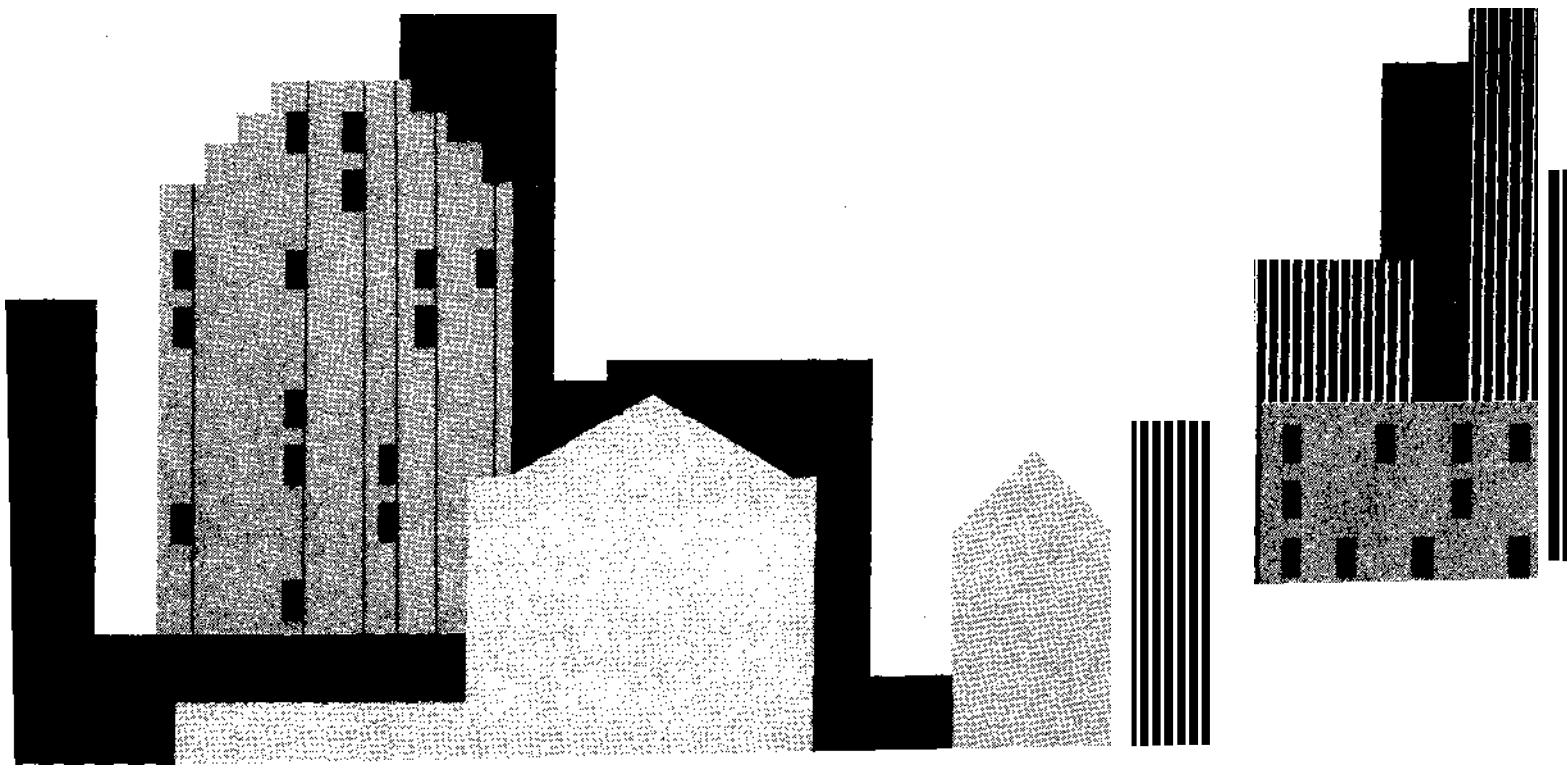
Office of Environment and Energy  
Energy Division

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# Energy in Housing and Community Development

**The Hidden Link:  
Energy and Economic Development**

**Phase I: Strategic Planning  
A Guidebook for Local Governments April 1987**



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## Public Technology, Inc,

Public Technology, Inc. is the cooperative research, development and technology transfer organization of North American cities and counties. PTI helps local governments increase efficiency, reduce costs, and improve services through exchanging proven methods and techniques that support advanced management practices and the adaptation of new technology to meet local government needs.


A nonprofit, public interest organization with offices in Washington, DC and Southern California, PTI serves as the technical arm of the International City Management Association and the National League of Cities. It was formed in 1971 by the major associations of state and local governments.

In 1974, 28 of the largest cities and 9 of the largest urban counties in the United States joined with PTI to form the Urban Consortium for Technology Initiatives. The Urban Consortium works through focused Task Forces to pursue solutions to pressing problems that are of common interest to major urban centers. Since 1974, the Consortium has expanded its membership to 43 large cities and counties. The Energy Task Force of the Urban Consortium is a leading national force in identifying energy problems that confront local governments, and in supporting the development of in-house capabilities to address these problems.

PTI's Board of Directors consists of the Executive Directors of the International City Management Association and the National League of Cities, plus city managers and elected officials from across the United States. The Urban Consortium and the Energy Task Force are chaired by key staff from Consortium member jurisdictions.

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**THE HIDDEN LINK:  
ENERGY AND ECONOMIC DEVELOPMENT  
Phase I: Strategic Planning**

**A Guidebook for Local Government**

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The United States Department of Housing and Urban Development (USHUD) has for several years been examining the relationship between energy costs and community and economic development in cities across the U.S. USHUD is especially concerned about that relationship in terms of the impact of energy costs on community development activities, such as rehabilitation of low and moderate income housing and the revitalization of urban central business districts. Congress has found that the primary objective of the Department's community development program -- the development of viable urban communities with opportunities for sufficient housing and employment -- has been undermined by rising energy costs. Congress therefore amended Title I of the Housing and Community Development Act of 1974 so that Community Development Block Grant (CDBG) funds could be used to support a wide variety of energy conservation activities:

c)... the Federal assistance provided in this title is for the support of community development activities which are directed toward the following specific objectives - (including)

... the conservation of the Nation's scarce energy resources, improvement of energy efficiency, and the provision of alternative and renewable energy sources of supply.

Energy activities that can be supported by CDBG funds include design features and improvements that promote energy efficiency in public works, neighborhood facilities and utilities; power generation and distribution facilities using renewable resources; energy improvements to cogeneration facilities; energy efficient rehabilitation; grants to non-profit agencies for energy conservation activities; and comprehensive community-wide energy strategy planning (which the Conference Committee reporting out the energy amendments "strongly recommended" as a precursor to other energy activities). Even though these energy activities are eligible for CDBG support, however, communities have not yet realized the full potential in using CDBG for their financing.

The Energy Task Force of the Urban Consortium is a group of 19 officials representing the largest cities and counties in the U.S. The main objective of the Energy Task Force is to apply advanced management practices and technology to resolve pressing urban energy problems. Since 1980, the Energy Task Force has conducted over 100 projects in individual cities and counties, examining problems ranging from energy conservation in water treatment plants to on-site cogeneration for office buildings. One particular interest of the Energy Task Force has been the linkage of energy management and economic development at the local level. Several previous Energy Task Force projects, in fact, have begun examinations of how the reduction of energy costs in the residential, commercial and industrial sectors can improve the local economy.

USHUD saw an opportunity in the work of the Energy Task Force of the Urban Consortium to provide technical assistance to aid localities, both individually and

collectively, to more practically link management approaches for energy and community/economic development projects.

Results from individualized technical assistance were expected to improve site-specific approaches, while collective results from this effort would also define a planning process and model for how energy activities can be incorporated into any locality's community and economic development activities. Results from both the individual projects and the collective methods are presented in this guidebook.

The work described and presented in this guidebook combines USHUD's interest in providing technical assistance to mitigate the impact of still high energy costs on community and economic development with the Energy Task Force's city and county activities to support innovative approaches for community energy management.

## ACKNOWLEDGMENTS

This guidebook is a product of a cooperative effort between the United States Department of Housing and Urban Development (USHUD), the United States Department of Energy (USDOE), the Energy Task Force of the Urban Consortium, and Public Technology, Inc. (PTI). The guidebook is one element of a larger project to define effective energy strategies for community and economic development which included intensive technical assistance and research tasks.

The project was supported financially by USHUD's Energy Division, Office of Environment and Energy, under a cooperative agreement with USDOE through the Urban Consortium Energy Task Force. The staff of PTI conducted and coordinated project activities under the terms of this cooperative agreement. Staff from six local governments funded by USDOE through the Energy Task Force program were participants in this project and their experiences were integrated into this guidebook. They are: Chicago, Illinois; Columbus, Ohio; Hennepin County, Minnesota; San Antonio, Texas; San Francisco, California; and St. Louis, Missouri. The interests and goals of USHUD, USDOE, the Energy Task Force, and PTI coincided on this project, which examined the linkage of energy management and community/economic development: all four organizations were interested in further exploring that linkage and developing an aid for local officials to apply it on a local level.

There were many persons who participated in this project, and without whose support this project would not have been possible. We would like to acknowledge the following persons for their support and participation:

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As a special note, Robin Miller of the Alliance to Save Energy and Steven Siegel of the Defense Department performed major work on Chapter 3, Public/Private Financing Options. Their efforts in improving and adding to the chapter in many ways was greatly appreciated.





## EXECUTIVE SUMMARY

Local community and economic development agencies have used a multitude of tools to keep their local economies growing and healthy. These tools include targeted grants and loans, tax incentives for new development, and information clearinghouses, among many others. Few cities or counties, however, have tried to use one very important tool to improve the local economy: energy management.

Every year, millions of dollars are being exported out of U.S. cities and counties to pay for energy. This "Hidden Link" between energy and local economic vitality has very real effects. In 1984, New York City found that its industrial and commercial businesses spent over 3 billion dollars for energy. A study in Hartford, Connecticut, found that low-income residents *were* spending one-half of their income to pay for oil to heat their homes; dollars that were leaving the state to pay out-of-state suppliers of oil. In both of these cases, energy dollars, if spent locally instead of being exported, would have been re-spent several times over for goods and services that strengthen, rather than drain, the local economy.

This guidebook underscores the direct relationship between energy and community/economic development for cities and counties. It identifies ways that energy management can be used to support community/economic development goals and presents a strategic planning guide to use in identifying and implementing linkages. Additionally, it discusses how several innovative financing sources as well as USHUD's -Community Development Block Grants (CDBG) and Urban Development Action Grants (UDAG) can *be* used to support those linkages.

The guidebook includes the experiences of six local governments: Chicago, Illinois; Columbus, Ohio; Hennepin County, Minnesota; St. Louis, Missouri; San Antonio, Texas; and San Francisco, California. Each of these local governments is conducting innovative projects to increase energy efficiency in their residential and commercial sectors. Residential shared savings, district heating, and small energy business development are a few of the techniques they are using to achieve their goals. PTI worked closely with these six governments to identify energy/community development linkages and to provide technical assistance to strengthen their projects. To highlight a few linkages, Chicago is using energy management as a means to prevent abandonment of moderate and low-income housing, and St. Louis is using superinsulated housing as a means to stabilize the residential population. A complete description of Chicago's and St. Louis' projects, as well as the projects of the other four local governments listed above, are included as case studies in this guidebook.

To assist other local governments, the guidebook presents a strategic planning process which cities and counties can use to identify linkages and implement projects that employ energy management strategies to support community and economic development goals. Using the experiences of the six participating local governments, this strategic process is outlined in six basic steps to guide local government staff in selecting key areas in which to develop appropriate programs.

As a key supporting element, several innovative public/private financing options were examined. Traditional financing options, such as general obligation bonds and bank loans, were purposely not examined, since much has already been published

about these more conventional approaches. The less traditional financing approaches treated in this guidebook include venture capital, pension funds, UDAG paybacks and CDBG funds, bank-affiliated community development corporation loans, utility subsidies, and corporate social investments. For each of these financing sources, the guidebook presents a description of how it operates, its potential for use in energy projects, and means of accessing the financing source.

With the information in this guidebook, communities can look more closely at the energy use in their residential, commercial, and industrial sectors, and determine how that use is affecting residential development, business and industrial activity, and the general wealth of the local economy. The guidebook can be used to identify areas where projects integrating energy management and community/economic development would *be* appropriately identified and implemented.

Phase II of this project, which will be conducted in 1987, will focus specifically on the public/private financing options contained in Chapter 3 of this Guidebook. In expanding upon several of the potential sources listed in that chapter, results from Phase II will provide clear guidance for their appropriate use. As was the case for this project, Phase II will build heavily on the experience of four local governments with related local projects underway during 1987.

### Guidebook Organization

This guidebook is organized in four major chapters:

Chanter 1 -- examines the linkages between energy management and economic development on national and local levels. It discusses the multiplier effect of energy conservation and the effects of energy costs on the residential, commercial, and industrial sectors. A discussion of other insidious effects of energy costs, such as building abandonment, is also included.

Chanter 2 -- contains an adapted strategic planning process to use in the linkage of energy management and community/economic development. Six steps including 1) Building a Consensus and Working Team; 2) Conducting the Environmental Scan; 3) Selecting Key Linkages; 4) Conducting an Internal Analysis and Identifying Resources; 5) Developing Goals, Objectives, and Strategies; and 6) Developing an Action Plan and Implementation Steps. Many of the steps are illustrated with case studies.

Chan ter 3 -- presents a preliminary analysis of public/private financing options matched with the energy projects of the six participating local governments. A description and discussion of applicability is included for each financing option.

Chanter 4 -- contains a description of each participating jurisdiction's project, how each used a strategic planning step and examined public/private financing options, and a few notes on the technical assistance provided during the course of the project.

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## • CHAPTER 1

### ENERGY AND COMMUNITY/ECONOMIC DEVELOPMENT GOALS

*The Congress finds and declares that the Nation's cities, towns, and smaller urban communities face critical social, economic, and environmental problems arising in significant measure from .... increasing energy costs which have seriously undermined the quality and overall effectiveness of local community and housing development activities.*

"Findings" from Title I of the "Housing and Community Development Act of 1974," as amended (P.L. 93-393).

### DEFINING THE LINKAGE

It is highly unusual to find a city or county in the U.S. today that does not have a long agenda of community and economic development goals. For example, many local governments would like to attract and retain new business and industry; promote entrepreneurship activities; rehabilitate the urban housing stock and provide affordable housing to low and moderate income residents; stabilize the residential and commercial sectors within city or county limits; and generally increase the economic wealth of the community. A formidable array of tools, such as federal, state and local grants, tax incentive and rebate programs, land development programs, and employment and training programs, have been created to achieve these goals. Yet how many city and county development officials have considered using energy management as a supporting tool? Few cities or counties link energy and community and economic development functions in a meaningful manner.

In most local governments, the community and economic development staff operates separately from the energy management staff. There is little attempt to recognize the dependencies between energy and housing, energy and industrial development, energy and commercial development, and energy and the general wealth of the community. Yet these dependencies do exist, and officials who fail to examine them and fail to devise strategies to strengthen the connections in a supportive fashion, will be missing an important opportunity to maximize the effectiveness of their community and economic development activities.

#### **National Linkages**

**What** is the connection between energy and economic development? On a macro-economic level, it has long been acknowledged that the cost of energy (such as oil, natural gas, electricity, etc.) clearly has an effect on the national economy. Dollars leaving the national economy are being exported to other countries, thus aggravating the balance of payments, and not recirculating to create greater wealth in the

U.S. But what about on a local level? Is a local economy affected by the high energy bills of its residential, commercial and industrial sectors? The answer is a resounding and emphatic "Yes".

The effects include:

- local dollars that are being exported out of the locality instead of recirculating locally
- commercial establishments that are being lost due to high energy costs
- housing stock that is decreasing because of high energy costs
- public assistance costs that are increasing because of high energy bills

The following paragraphs will discuss some of the linkages in greater depth. **The**

### **Multiplier Effect**

Many of the same economic principles that apply to the national economy also apply to a local economy. A high percentage of the dollars spent on energy in a city or county is exported to out-of-state suppliers. Various state and local governments around the country, such as the states of Nebraska, Pennsylvania, Minnesota, Wisconsin, and the cities of New York, St. Louis, and Ann Arbor have been working on formulas to determine the economic impact of energy costs on their respective economies. The Nebraska Energy Office estimated that for every dollar spent on energy by the residential, commercial, and industrial sectors, 80 cents will leave the state to pay for that energy. For typical consumer purchases, only 34 cents of every dollar leaves the state economy. The dollars that are spent on typical consumer purchases (rather than energy costs) have a "multiplier" effect: a dollar spent on consumer goods will be spent again and again, increasing the demand for the local economy's goods and services.<sup>1</sup> A 1980 study conducted in Minnesota by the Minnesota Department of Energy and Economic Development (formerly the Minnesota Energy Agency) determined that a dollar spent on electricity, petroleum products or natural gas has a net local multiplier effect of \$1.69, \$0.55, or \$0.59 respectively. A dollar spent on home energy conservation has a net economic effect of \$2.21<sup>2</sup>. Ann Arbor, Michigan found that for each dollar spent on energy efficiency, the multiplier effect is at least \$2.00.<sup>3</sup> New York City has determined that for typical consumer purchases in that city the multiplier is \$2.50.<sup>4</sup>

### **Direct Impacts of Energy Costs**

High energy costs also affect the residential, commercial, and industrial sectors in a more direct way than the indirect effect of a "multiplier." A problem for many older urban areas is that much of the housing was built before 1950 and lacks energy efficient features. In Buffalo, New York, 86% of the housing was built before 1940<sup>6</sup>; in St. Louis, 60% of the housing was built before 1940<sup>6</sup>; and in Portland, Oregon, 67% of the housing was built before 1950.<sup>7</sup> Much of the housing in urban areas is occupied by low-income persons who cannot afford to weatherize it or finance other energy efficiency retrofits. If the housing is renter-occupied, the owner may have no incentive to make it more energy efficient. Because low-income persons cannot afford to weatherize their older urban housing, they end up spend-

ing a greater percentage of their income on fuel. USDOE estimates that persons making \$35,000 or greater pay 3% of their income for heat; those making \$10,000 - \$15,000 pay 7%; and those making less than \$5,000 pay 22%<sup>8</sup>. This percentage is even greater for low-income persons in certain parts of the country. A Hartford, CT, study estimated that many of the city's elderly, single-family homeowners spent more than half of their total income for oil.<sup>9</sup>

The commercial sector is also impacted by high energy costs. According to USDOE, 35% of commercial buildings in the U.S were built before 1946,<sup>10</sup> and most of these buildings are not energy efficient. Rental multi-family buildings are the oldest: 71% were constructed before 1946.<sup>11</sup> Although for many businesses, energy costs may only be 3% - 5% of total costs, in some cities, that percent is a crucial margin to maintain the business's viability. In New York City, where businesses pay the highest energy costs in the nation, 60% of area retail and wholesale establishments consider energy costs to have a severe impact on their operations.<sup>12</sup> Many real estate organizations have cited high electricity costs as an obstacle to new development in New York City.<sup>13</sup>

The industrial sector, although it has undertaken a comprehensive energy reduction program in recent years, is still affected by high energy costs. The Conference Board, in a recent survey of 290 companies, found that 1/4 of the companies had energy costs which exceeded 10% of their sales.<sup>14</sup> The survey also found that energy is one of the fastest growing cost components of the corporate budget, and that many companies no longer bury these costs in overhead.<sup>18</sup> In many industries, energy conservation is being factored into basic business strategies and long-range planning.<sup>16</sup>

### **Other Effects**

Other effects of high energy costs often go undetected. For example, cities and counties may be entirely unaware of the impact of high energy costs on business location decisions and business expansion plans. In a 1985 study by Alexander Grant and Co.,<sup>17</sup> those making decisions about new plant location rated energy costs the most important factor, higher than local taxes, extent of unionization, and presence of a skilled labor force in those decisions. Additionally, many small industries often carefully consider energy costs in expansion and diversification plans, and may decide not to expand based on a prediction of high energy costs, a decision which greatly affects a locality, but is not well publicized.

A second effect of high energy costs is the increased public assistance costs needed to pay for fuel bills. Many cities and states have to divert money from other projects to support fuel assistance programs for low-income persons. As one example, in San Antonio, over 2 million dollars of the 14% gross revenue from its utility goes to public assistance to subsidize energy costs of low income residents with relatively little attention to improve energy efficiency of their homes. In addition, many states are using their share of Exxon oil overcharge funds (distributed to the states based on a recent court decision) to pay for fuel costs for low-income residents - funds which could have been be used for other longer-term investments had fuel costs been lower for residents.

Finally, energy costs impact the availability of multi-family housing in some states. Some of the larger northeastern and midwestern cities are experiencing a high rate

of building abandonment by owners of multi-family housing. One reason, the most important in some areas, is the cost of energy. Many of the building owners operate on a very small profit margin and an exceptionally high heating bill for one season may cause the building owner to go into debt and be forced to abandon the building. In Chicago, 600 buildings are abandoned each year because building owners can no longer operate them profitably.<sup>18</sup> This greatly reduces the availability of low and moderate income housing in the city and adds blight to already burdened communities.

## USING THE STRATEGIC PLANNING PROCESS TO ESTABLISH A LINKAGE

How can local governments identify the linkages between energy management and community and economic development, and then determine ways that the two programs can be integrated to support each other? One approach that can be effectively used is a strategic planning process - a proven process used by the private sector for many years to keep their companies on the right track. By using the strategic planning process a locality can identify appropriate long-range goals for combined energy/economic development programs and determine how to get support for those programs.

### **What is Strategic Planning?**

*Strategic planning is a systematic way for an agency or department to select key programs for implementation based on a strong grasp of outside (or environmental) influences and available resources. It is a creative process that leads to the identification and the accomplishment of the best possible actions. Differing from conventional long-range planning and goal-setting, the strategic planning process focuses strongly on environmental scanning (or reviewing outside events) and on carefully narrowing down all possible choices to a few strategic actions that can be implemented. It is not comprehensive; it is selective and defines the best choices based on how well they match with outside events and whether the funds and manpower are available to put them into action.*

Many cities and counties such as New York City, Dallas, San Francisco, and Portland have used a strategic planning approach in determining the course of action to take in developing programs to address energy/economic development needs. This guidebook will outline a strategic approach to use in determining how energy can be used to support community and economic development goals.

### **Steps in Strategic Planning**

To be rightly called "strategic planning," most observers agree that certain essential activities must be undertaken. These basic activities are adapted from the classic private sector strategic planning process and they include scanning the "environment," or looking at technological, economic, cultural, or political events which could affect goals; conducting an internal audit to determine strengths and weaknesses; and formulating goals and objectives to achieve selected targets. These basic activities have been used for over 20 years by Fortune 500 companies to determine markets, competition, and new products, and by non-profit and public sector agencies to keep abreast of clientele and to develop appropriate goals.



Strategic planning is an excellent process to use in developing goals and objectives for local government programs because it helps an agency or organization to adapt to its environment and provide services more effectively. It can be used to help determine what energy actions to take: the energy picture is rapidly changing and as local resources become increasingly scarce, energy actions will have to be tailored to achieve specific community and economic development goals.

The six steps outlined in this guidebook which have been adapted from the basic strategic planning process used by the private sector include:

- Building a Consensus and a Working Team
- Conducting an Environmental Scan
- Selecting Key Linkages
- Conducting an Internal Analysis and Identifying Resources
- Developing Goals, Objectives, and Strategies
- Developing an Action Plan and Implementation Steps

These six steps have been adapted as a self-help guidebook to the linkage of energy and community development. They have been developed so that local governments, on their own, can identify ways to logically link local programs to support each other. In the following chapter, each will be discussed in depth, with examples of how cities and counties have used these steps.



## CHAPTER 2

### USING THE STRATEGIC PROCESS

*Long range strategic planning involves looking at the threats and opportunities emerging in an organization's environment, evaluating the strengths and weaknesses of the organization, and finding the best match (between the organization and its environment).*

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### BACKGROUND

Strategic planning was initiated by the private sector in the early 1960's. The private sector used strategic planning to retain and expand market share and to identify directions for long-term development. For example, a company using strategic planning would analyze trends in its long-term markets, and examine its products to determine how well they fit into those markets. If it appeared that the targeted market was changing substantially, then the company would shift either its products to fit that market or focus on another market. Much diversification and repositioning has resulted from strategic planning in the private sector. In the early 1960's, a number of tobacco companies began to diversify into snack foods when the Surgeon General was planning to label cigarettes as harmful.<sup>19</sup> Recently, as a result of intensive environmental scanning, the life insurance industry was able to determine why their market was declining: the recent increase in two-earner families has made households feel more secure and less in need of insurance.<sup>20</sup>

Strategic planning has also been used by the non-profit and public sectors. The nonprofit sector has used strategic planning to evaluate organizational performance, set directions, and allocate resources.<sup>21</sup> An example of this can be seen in the decision of the Brooklyn Academy of Music to adapt to its environment by including ethnic offerings with classical programs, and by using ethnic communities to promote ticket sales by purchasing block tickets. The United Way has used modern marketing strategies to maintain relevance with its constituency. It attempts to appeal to workers of all incomes, and has started the Black United Way to market to the black community for its own community service organizations.<sup>22</sup>

Many local governments, such as Philadelphia and San Francisco, have developed strategic goals for their cities. These efforts have been major undertakings, with task forces representing all segments of society identifying long-range goals and strategies. Philadelphia's planning effort, entitled "Philadelphia: Past, Present and Future", involved nearly 1,000 citizens over a two year period. One of the important discoveries during the environmental scan was that although the decline in federal spending for social services would negatively impact Philadelphia, the increased federal spending on defense contracts could provide an opportunity for

San Francisco's strategic planning effort, initiated by the business community, involved city officials and some neighborhood leaders. Participants in the planning process were able to identify an important fact about San Francisco's economy during the environmental scan: local manufacturing was declining and the service, finance, and transportation industries were increasing. San Francisco decided to re-direct its focus to recruit more employers in these areas.<sup>23</sup>

## SUMMARY OF THE STRATEGIC PLANNING STEPS

The strategic planning process is an appropriate tool to use in integrating energy management with community and economic development programs. Strategic planning requires a unique thinking process, one in which outside events are examined in terms of how they affect internal programs, and internal programs are repositioned to better match with the outside world. In the case of energy management, many external events are affecting energy management, such as the drop in energy prices and the de-emphasis of the federal role in promoting energy efficiency. Strategic planning can be used to redefine the role and purpose of energy management at the local level: it can help local officials to see that energy management can be a powerful tool to use for improving the local economy.

Described in this chapter is a planning process which has been adapted from traditional private sector strategic planning and from PTI's Strategies for Cities and Counties: A Strategic Planning Guide for use in the linkage of energy management and economic development. The adapted strategic planning process, detailed in this chapter, will help local officials obtain an overview of developments in energy and economic development; define linkages between energy and community/economic development at the local level; and develop a plan to implement the most feasible and advantageous actions.

This chapter will also present examples from cities and counties that have used steps of the strategic planning process. These examples were drawn from the six local jurisdictions that were participants in the USHUD Energy Strategies project -- Chicago, Illinois; Columbus, Ohio; Hennepin County, Minnesota; St. Louis, Missouri; San Antonio, Texas; and San Francisco, California -- and from other localities that have implemented energy projects, such as New York City and Portland, Oregon. The following is a summary of basic steps that will be covered:

- 1) **Building a Consensus and a Working Team.** Before any strategic planning process is undertaken, it is essential to obtain top-level support. A concept plan for the strategic plan must be approved by the chief executive before any work can begin. Once the concept plan is approved, a working team composed of staff from the appropriate agencies, departments, utilities, and private sector should be established. This working team will provide direction for conducting the strategic planning effort.

- 2) **Conducting the Environmental Scan.** It is crucial to know relevant technological, economic and legislative/regulatory trends before trying to identify opportunities and linkages in the energy and economic development fields. New research on energy technologies is being conducted on a continuous basis, and to develop the best program, localities should be knowledgeable about the newest developments. New laws are also being continually passed which greatly affect energy management and the potential for financing projects. These need to be reviewed, or scanned, on a regular basis.
- 3) **Selecting Key Linkages.** Selecting key linkages between energy management and economic development from the environmental scan will provide a framework for identifying strengths and weaknesses in step 4. Key linkages can be "housing development and heating costs" or "industrial development and energy used in industrial processing." They will be drawn from the problem areas identified in the scan.
- 4) **Conducting an Internal Analysis and Identifying Resources.** An internal analysis will determine what the programmatic, financial, and management strengths and weaknesses are in the relevant functional areas and in the departments and agencies which may be implementing the strategic plan. An internal analysis will also identify what resources are available to support the project.
- 5) **Developing Goals, Objectives, and Strategies.** Based on the key issue/linkages identification and the internal analysis, the working team will want to define specifically what types of projects or further planning should be pursued.
- 6) **Developing an Action Plan and Implementation Steps.** The action plan is the written agreement on staff responsibilities, financial resources, and timetables. It should include implementation steps so that each strategy can be monitored.

The above steps are meant to be a flexible guide for local governments. Not every step needs to be done, as long as the three basic activities -- environmental scan, internal audit, and goal/action plan development -- are followed. They can be adapted to the desired range of effort and circumstances. A strategic planning effort can be as short or as long as desired. It can be a one-day session with several department heads, or it can be a year-long effort with participation from the private sector and other quasi-public agencies. The steps should be adapted to fit individual needs.

After the initial plan is developed, it is important to continuously monitor its implementation and update it according to changing events. The plan should be considered a "living" document, one that is adapted to remain relevant. That is why environmental scanning must be a continuous activity. One way to ensure that it will be updated is to include it in the budget. (This will be discussed in further depth later in this chapter).

The remaining sections of this chapter cover each of these six steps in further

## **STEP 1. BUILDING A CONSENSUS AND A WORKING TEAM**

### **Getting Started**

A **strategic** planning process can be initiated by staff in the Energy Management, Planning, Community or Economic Development Department; by the public utility; the Public Works Department; or the Mayor's office. In practice, any department in the local government that is interested in linking energy management and community/economic development functions in the city or county could potentially initiate the effort.

The organizer or initiator of the strategic planning effort should have a rough idea, or concept plan, for the general direction and scope of the strategic planning effort. It should include a mission for the plan as well. It may be simply a one-day intensive strategic planning session for department heads, or a one to three month effort to choose several energy/economic development projects. It may be a year-long process to incorporate energy management into several economic development programs and local government functions, with meetings several times during the course of the strategic planning effort. Outside professional assistance may be used, or the effort could use available in-house staff.

### **Obtaining Top-Level Support**

**No matter what the level** of strategic planning effort, obtaining top level support, which could be the mayor, city manager or county executive, is absolutely crucial before proceeding any further. The support and full approval of the chief executive officer will be especially necessary if the strategic planning is to be an interdepartmental effort. Asking department heads to participate in a planning effort may pose some risks, and unless the initiator of the strategic planning effort has a mandate from the top level of government, there may be reluctance from department heads to participate in such an effort. In presenting the concept plan to the chief executive, the plan initiator must have his/her arguments in line to support the strategic effort, as well as documentation of the benefits to the jurisdiction of the effort. New York City's Energy Office, for example, found that strategic research on energy/economic development needs of city businesses allowed identification of more effective means of providing services to commercial businesses.

If it is impossible to gain support from the top-level, either the effort must be scaled back considerably to focus on a single department, or the effort must be put on hold.

### **Identifying a "Product Champion"**

**Once top level support** is given, the next step (if it has not occurred previously) is to identify someone who will be responsible for carrying the strategic planning effort to completion. The person should be strongly committed to the project and be willing to face obstacles in getting it completed. This may be the initiator of the effort, an interested and willing staff person, a volunteer from an energy management organization in the community, or a member of the business community. Development of a product champion ensures that one person feels "ownership" of the plan. If no one person has a sense of ownership for the plan, it is unlikely that there will be any follow-through with the plan. The product champion not only provides

follow-through, but he/she also provides a link between the steps and a contact with the outside world. The public must be able to identify the plan with one individual, whether that be a representative from the public or private sector.

### **Developing a Working Team**

Since the strategic planning effort is attempting to link and coordinate programs in different departments it is essential that persons from both the energy management and community/economic development departments participate on a working team. The major stakeholders (as well as department heads) in energy management and community/economic development should be asked to participate in the process as team members. Potential team members should represent a variety of areas, including:

- Representatives from the Mayor's or City Manager's office
- Public utilities commission or staff
- Economic Development staff
- Community Development and Housing staff
- Energy Management staff
- Budget Department staff
- Planning and Zoning staff
- Public Works staff
- Representatives of neighborhood associations and community groups
- Representatives from the private sector, such as energy intensive industries, local commercial establishments (such as downtown building associations) and housing complex owners
- Other interested private sector representatives, such as Chamber of Commerce executives
- Academics from a local university
- Representatives of governmental planning organizations (city, county, regional planning and state departments)

Team members composed of some or all of the above will constitute the working group for the remainder of the project: they will decide upon the scope of the environmental scan, key issues/linkages, goals, objectives, strategies, and implementation plan. This group will be deciding how energy management can be used to support community and economic development. In addition, they should be able to



specify certain projects that could accomplish the goals developed during the strategic planning effort. They should be willing to commit resources from their



own departments to the project, and willing to meet once or several times, depending on the scope of the strategic planning effort.

## **EXHIBITS 1-3**

### **An Energy Commission in Chicago**

*The City of Chicago has a formal working group called the Mayor's Commission on Energy that examines energy issues of importance to Chicago. They meet on a regular basis to discuss a broad range of energy-related issues. Members on the Commission are from the City staff, the private sector, and the community. Their main function is to examine energy ideas and to set broad policy. An idea explored in 1985 included making local non-profit organizations called "Energy Centers" into self-sufficient businesses offering energy services to multi-family buildings. After some discussion, the Commission decided to pursue this idea and a small working group, consisting of city staff, the staff from a local technology group, and representatives from the Energy Centers met to discuss how to implement the idea. Nine months later, the Energy Centers have had a trial run in performing energy services on a for-profit basis, and a business feasibility study has been conducted on their efforts.*

### **Columbus's Project Team**

*Columbus, Ohio, for several years has been studying the feasibility of district heating in the downtown area. In the past, Columbus has received federal funding to study district heating in-depth. A formal District Heating Task Force, comprised of downtown business interests, political leaders, engineers, technical experts on district heating, representatives of government and planning organizations (city, county, regional, and state), consultants, and academicians was established to provide advice and assistance to the effort. They were appointed by the Mayor in 1985 and charged with determining whether district heating "made sense" in Columbus. As the district heating research became more focused on the downtown, an additional working group was formed of downtown commercial building owners, elected officials and engineers.*

### **San Antonio's Working Group**

*San Antonio's Budget and Research Department staff is undertaking a project to promote residential energy conservation in conjunction with neighborhood groups. The working group that discussed how to implement this project consisted of a public utility (electric and gas), municipal staff in the planning and neighborhood development and budget departments, state utility commission staff, energy analysts from Texas A & M, and representatives from various neighborhood associations, as well as project directors from local community public agencies.*

## STEP 2. ENVIRONMENTAL SCAN

An environmental scan involves tracking or following emerging issues and events in the outside world. Continuous environmental scanning is a means of remaining consistent or well adapted with the external environment, noticing relevant changes, and determining how they will affect proposed projects in a particular field. An environmental scan will aid a department in "repositioning" itself to better fit with its market, whatever that may be.

An environmental scan is important for the development of coordinated energy management and community/economic development projects because it ensures that key energy and economic development trends are examined before development and implementation of a project. For example, natural gas prices have declined by 24% between the first six months of 1984 and the first six months of 1986.<sup>24</sup> Interest rates on homes have also declined over the same period. These two facts would definitely impact a proposed residential energy conservation program based on natural gas prices and interest rates increasing or remaining stable.

One word of caution is in order, however, on projections. Projections by their nature are never going to be perfect as they are based on assumptions about the future. Projections can be fallible, and their use should be tempered by that fact. In addition, it must be noted that projections must be constantly updated to gauge their true impact on policies.

There are a variety of subjects that can be covered by a scan. They include social changes, technological changes, economic developments, and legislative/regulatory developments. For an environmental scan that examines the relationship between energy management and community/economic development, there are specific areas that should be examined, and these are:

### **Energy Developments**

**Sources, Prices and Consumption Patterns.** The projected prices of oil, gasoline, natural gas, electricity, and coal at the national, state, and local levels are important facts to examine. The forecasted rise or fall of these prices will impact the success of any energy/economic development project. Especially with the recent and unexpected drop in oil prices which has impacted every other energy price, it is crucial to obtain as accurate data on prices as possible.

For national projections, the U.S. Energy Information Administration publishes national projections in its Annual Energy Outlook. This is available for a small fee to the public. Prices by major fuels and sectors are listed. (All sources for the publications listed in this guidebook are contained in the Appendix.) A second source of information for energy prices are non-profit associations of fuel users such as, the American Gas Association and the National Coal Association. Both publish projected prices for their fuels and this information is available to the public. A third source of information would be public utility journals, such as "Public Power" and "Public Utilities Fortnightly."

Two private sources of projections are Data Resources, Inc. (DRI), in Lexington, Massachusetts, and Chase Econometrics in Cynwyd, Pennsylvania, which will provide projections for a fee. DRI publishes monthly, quarterly, and annual figures

on energy prices. DRI's Energy Review, a quarterly publication, contains annual forecasts by fuel, sector, and region. DRI also publishes quarterly forecast summaries and monthly forecasts of the energy supply by fuel source. Chase Econometrics publishes short-term and long-term forecasts (20 year) for all fuel sources. Although subscriptions to both DRI and Chase Econometrics are costly, public libraries should have their publications. For state projections, some state energy departments have developed state energy price projections. For example, the Minnesota Department of Energy and Economic Development develops quarterly and annual projections for all energy sources up until the year 2000. They are available upon request from the energy office. State utility commissions are another good source for state energy data. They have information filed by public utilities during rate cases and this information is available to the public upon request. For local energy price forecasts, the local utilities are the best place to turn. Utilities will often make their price forecasts known to the public. As was mentioned previously, their price forecasts will be contained in rate cases (which can be obtained from the state utility commissions), but often the utility will be willing to share short-term forecasts via telephone. It may also be possible to determine if the local utility (such as the natural gas company) has a long-term contract with suppliers. The provisions in the contract will be an indicator of price stability.

To have a clear idea of the consumption patterns in a local jurisdiction, a brief overview of energy usage and consumption patterns of the residential, commercial, and industrial sectors needs to be undertaken. This information can be compared to national and regional consumption patterns to determine how a local jurisdiction's consumption patterns fare against regional and national figures. Again, the utility is the best source for this information. In Portland, Oregon, one of the most important tasks of a major energy plan in the late 1970's was the establishment of baseline energy consumption data. Portland segregated data by energy sector (residential, commercial, industrial, transportation, land use and government) so that energy opportunities could be identified. They felt that the collection of such energy consumption data was necessary to justify policy alternatives. Some of their data sources included:

- Oregon Public Utilities Commission Reports
- Oregon Department of Energy Report
- Northwest Natural Gas Operating Area
- Bonneville Power Administration
- FEA, Region X
- Pacific Power and Light Operating Area
- Portland General Electric Operating Area
- Columbia Region Association of Governments

- The recent court decision ordering Exxon to make restitution in the sum of \$2.1 billion to the U.S. Treasury, which in turn distributed that money to the states for energy programs.
- Stripper well litigation in which \$1.3 billion in overcharge penalties may be distributed to the states for energy projects.
- Legislation passed August 18, 1986, which repeals the requirement that utilities provide free audits.

There are several sources of information on new regulations and laws. Energy User News contains a section entitled "Washington Scoreboard" which contains a summary of current energy legislation in Congress. The Environmental and Energy Study Institute, located in Washington, DC, publishes the Weekly Bulletin which contains summaries of legislation currently before Congress. The "Energy Conservation Digest", which contains updates on both regulatory and legislative updates, is published by the Editorial Resources Corporation. PASHA Publications, Inc. publishes an Energy Report which contains legislative developments and technological developments.

**New Technologies and Applied Research.** New energy technologies are constantly being developed, and old ones refined. One source of information on energy technologies is the Energy Task Force of the Urban Consortium. The Energy Task Force has supported city/county applied research to address urban energy problems since 1979, and has published over 100 reports on various energy technologies including such topics as thermal storage, heat pumps, sludge management, and cogeneration. These are available upon request from PTI.

The six cities and counties participating in the USHUD Energy Strategies project, upon which this guidebook is based, are examining a number of new technologies for applicability and feasibility. They include:

- superinsulated housing
- building balancing
- district heating
- furnace retrofits

Brief information on how each of these technologies has been applied in the six local jurisdictions is included in the case studies in Chapter 4 of this guidebook. Detailed project reports will be available through PTI from each local government in mid-1987.

Federal laboratories are another good source for information on new energy technologies. Three major federal laboratories -- Oak Ridge Laboratory in Oak Ridge, Tennessee, Argonne National Laboratory in Argonne, Illinois, and Lawrence

Berkeley Laboratory in Berkeley, California -- all have performed research on specific topics for the USDOE. A good place to start is USDOE Office of Scientific and Technical Information at Oak Ridge, Tennessee which contains an on-line data base of all energy projects performed for USDOE. Additionally, DOE has a hotline called National Appropriate Technology Assistance Service (NATAS) where engineers are available to answer questions on energy technology and financing. (Please see the appendix for their address and phone number.)

Several non-profit energy agencies in Washington, DC area have investigated ways of applying energy technologies. These agencies include: the Alliance to Save Energy, the Center for Renewable Energy and the Environment, the American Council for an Energy Efficient Economy, and the National Association of Homebuilders. Several publications worth reviewing include:

Energy User News - A good overall source of information on new energy technologies and strategies for saving energy.

Energy and Housing Report - Covers energy conservation in the home, energy consumption trends, and summaries of USDOE research.

Energy Report - A weekly review of energy policy, supply and technology.

### **Financial Trends**

It is important to be aware of financial trends and how they will impact energy and community/economic development projects. Interest rates, costs of financing, and tax policies will affect the success of an energy project. Here are a few of the financial trends to scan:

**Capital Formation.** This includes ease of access to both public and private capital for energy projects, debt ceilings, and joint ventures. For information on financing for development projects in general, the Government Finance Research Center of the Government Finance Officers Association, the Council for Urban Economic Development, and the Corporation for Enterprise Development are several non-profit research organizations in the Washington, DC area which publish information about a variety of financing tools including revolving loan funds, private investment, seed capital, and pension fund investments.

Specifically for energy and community development projects, one good source of information on capital formation is Innovative Financing for Energy Efficiency Improvements: Phase I Report by Martin Klepper. This book discusses several means of financing for energy projects, including energy service companies, utility financing, tax-exempt financing, bank financing, leasing, and joint venture financing. One note of caution in using this source, however, concerns the effect of the changing tax codes upon the financing sources listed. The sources described in this report may not be as advantageous to use today based on recent revisions in Federal tax laws.

A second source of information is USHUD's Energy Division. They have sponsored several energy publications which have examined financing of energy/economic development projects in depth. Included in this group are Energy and Economic Development: A Report on the Efforts of 10 Localities Selected to Document The Relationship Between Energy Strategies and Economic Development, 11/85, and Block Grant Energy Conservation, which presents the results of 10 energy/community development projects in cities across the U.S.

A third source of information on capital formation is The Urban Consortium Energy Task Force. The Energy Task Force has published several reports discussing capital formation for energy/community development projects. For example, in the report Financial Options for Neighborhood Energy Efficiency, 1982, Kansas City described how to obtain several other non-federal sources of funds, including utility, foundation, and corporate contributions for residential energy conservation.

Chapter 3 of this report discusses several more innovative sources of capital for energy projects, including venture capital, pension funds, and UDAG paybacks.

**Interest Rates and Tax Policy.** Since the ability to implement energy projects often depends on interest rates and the ability to obtain financing, the environmental scan should examine the projected rise or fall of interest rates. Interest rate projections can be obtained from financial institutions and financial publications such as the Wall Street Journal, and Business Week.

Since the deductibility of certain financing mechanisms is crucial to a "go no-go" decision on many projects, it is important to be aware of regulations concerning the tax status of various financing instruments. Congress is currently examining the tax treatment of many bonds used by local governments, and since large energy projects are often financed by bonding, the tax status of various bonds should be reviewed. An excellent source of information on tax policy and economic development is Nation's Cities Weekly, published by the National League of Cities. Other sources include the Government Finance Officers Association, the National Council for Urban Economic Development, and the Corporation for Enterprise Development.

**Chances and Uncertainties.** The working team, during its examination of financial trends during a scan, must be aware that there is a great deal of uncertainty and fluctuation in financing sources for energy/economic development projects. As government and tax policies change and as world events occur, these financing sources can be greatly impacted. As an example of one such change, funding for energy projects in the near future may come from court settlements (Exxon and stripper well decisions) as opposed to federal government programs. (Information on Exxon funds can be obtained by calling one's state energy office). This guidebook has not addressed many of the uncertainties in financing energy/economic development projects. However, many of these uncertainties will be addressed in Phase II of this project.

### **Energy Management/Community Development Trends**

National and local projects that address both energy management and community/economic development should be reviewed for the environmental scan. In housing, downtown development, and business development, many cities and counties have explored using energy as a means of supporting efforts in these areas. In an en-

The information gathered during the national scan can be considered "secondary data" developed by other cities and counties. The advantages to secondary data are that it is not costly and it is readily available. However, primary data developed previously by actually conducting a particular research project, can also be obtained. Although it may be more costly, a research project to collect primary data can give the strategic planning team exactly the data it wants.

Housing Development: National Trends. What kinds of energy efficient features are being added to new and rehabilitated single and multi-family homes across the country? How are they being financed? What have been the changes in the size of housing and housing energy codes? The scan should identify examples of activities by other cities and counties and should collect housing data from builders and constructors. A good source of information on new energy developments in housing is, again, the Urban Consortium Energy Task Force. Reports have been published by the Energy Task Force on several research projects which have applied residential energy technologies. The following are a few examples of the type of reports available on energy conservation in the residential sector:

- Conversion to Separate Electric Metering: Guidelines for Multifamily Buildings (Montgomery County), 1982
- Retrofitting of Residential Gas Heating Equipment with Flue Restricting and Input Reducing Components (Detroit), 1981
- Rehabilitation of Older Housing to Superinsulation Standards (Detroit), 1983
- Financial Options for Neighborhood Energy Efficiency (Kansas City), 1982
- Public Housing Energy Efficiency Through Private Financing (San Francisco), DG/82-302

Another good source of information on energy developments in housing trends is a USHUD publication entitled Recent Research Results. This is published by the Office of Policy Development and Research, and contains summaries of recent publications and initiatives by USHUD. A recent article entitled "Reducing Energy Costs in Multi-Family Housing" presented information on shared savings energy performance agreements in multi-family housing. The National Association of Homebuilders Research Center also has information on energy technologies being used in the residential sector.

Housing Development: Local Opportunities For Linkage. In addition to examining national research on energy management and housing developments, the scan should also identify several opportunities locally for energy to be used in housing development. An economic development goal could be to increase the affordability of housing, and energy efficiency may be a means of lowering housing costs to achieve that goal. By working with the banking community, a city or county may be able to encourage banks to qualify a greater number of homeowners who are

**Downtown Development: National Trends.** Communities across the U.S. are focusing on creating an environment in the downtown which has vitality, and where business and commerce can flourish. The scan should identify cities and counties in which energy management has played a role in creating a more attractive and flourishing downtown. District heating and cogeneration are two energy strategies that many cities and counties have explored as a means of revitalizing the inner urban area. As one example in Nashville, Tennessee, a district heating loop (powered by the resource recovery facility) heats 28 buildings in the downtown area. The thermal loop helped to stimulate downtown growth in the direction desired by the city. Most of the new construction in Nashville has occurred in direct proximity to the steam loop.<sup>25</sup> Columbus, Ohio is also looking at district heating as a means of encouraging downtown development. (Their district heating project is described in Chapter 4.)

Other cities have considered energy conservation programs for the downtown area. For example, San Francisco is determining ways to make commercial buildings more energy-efficient in the downtown area. New York City has examined the energy consumption patterns of retail and commercial businesses and has attempted to develop energy management programs for them.

Sources of information on what cities and counties are doing to manage energy use in the downtown area include:

- National League of Cities (NLC). The Conference of Local Energy Officials (CLEO), a task force of NLC, has published several reports on municipal energy projects. One comprehensive CLEO publication on energy projects is The Sun Hasn't Set On the Energy Crises...., a 1983 publication.
- US Conference of Mayors. This organization has been active in following developments in resource recovery and district heating and has published a great deal of case study information on district heating.
- USHUD's Energy Division. The USHUD's Energy Division is actively promoting district heating and has published several reports in how various cities are researching and implementing district heating. Each year, a district heating conference is held and a summary report of the proceedings is published. These summary reports include a great deal of information on district heating activities in cities around the country.

**Downtown Development: Local Opportunities for Linkage.** Most importantly during this scan, the opportunities for using energy management as a downtown development tool should be examined. This include opportunities for district heating and cooling, business energy conservation programs, and loans to commercial buildings for energy efficiency improvements, among others.



**Business Retention and Entrepreneurship: National Trends.** New emphasis is being placed on business retention and entrepreneurship as means of creating new jobs. In addition, new strategies of analyzing the community for appropriate high-growth firms exist. Energy management techniques for contributing to these efforts should be identified in the scan. For example, the New York City Energy Office is currently undertaking an energy program whereby Consolidated Edison, the metropolitan New York City utility, has instituted a special discount for firms located in the South Bronx and Brooklyn. Similarly, Georgia Power in Georgia has developed a program of information, technical assistance, marketing and publications for downtown areas in Georgia cities. Additionally, some cities such as Chicago have developed special energy programs for local energy-intensive industries.

One excellent source of information on energy programs that act as economic development strategies is a publication entitled Community Energy Management as an Economic Development Strategy. This publication contains proceedings from a national colloquium held October 14-16, 1984 in Lincoln, Nebraska and contains research and case studies on the use of energy management as an economic development tool.

The Energy Task Force reports also contain many good examples of energy projects that link energy management and business development, including a report on San Antonio's efforts to improve energy efficiency in new businesses through a combination of land use controls and development incentives, and Kansas City's investigation of a demonstration energy park for energy-intensive industries.

Other sources of information include the US Conference of Mayors, the National Association of Counties, and the American Public Power Association. These agencies have active energy departments and have published books with case studies of energy/economic development activities of local governments.

**Business Retention and Entrepreneurship: Local Opportunities for Linkage.** On a local level, it is important to identify opportunities that exist for using energy management to support goals such as business retention, attraction, and entrepreneurship. Once energy consumption data for the industrial and commercial sectors has been collected, it will be possible to determine where problems exist. Are energy-intensive industries using more energy than the regional or national averages? Do commercial sector businesses believe that energy is a problem for them? Local real estate associations and building owner associations may know how the commercial sector is responding to energy management issues. Several alternative schemes should be identified for the use of energy management. This information will be critical to the working team in the next step, Selection of Key Linkages.

### **STEP 3. SELECTION OF KEY LINKAGES**

The environmental scan provides the background information necessary to determine where there are opportunities for energy and community/economic development linkage. From the scan it should become apparent where there are key opportunities to use energy management to support housing, downtown development, or business development goals. The working team will note the energy management needs from the local consumption data, the available financing and tax-exemption

tools, and examples from other cities and counties on energy activities. With this information, the working team should be able to identify a few key linkages that could be pursued and developed into a project. Key linkages could be as broad as "energy management and energy-intensive industries," or "energy management and small-business development." The linkages identified should be critical ones and of key concern to the local jurisdiction. Selecting key linkages at this point will provide a necessary framework for the next step in which strengths and weaknesses are identified in the appropriate agencies or departments. Before conducting an "internal analysis" in Step 4, it is necessary to know the general functional areas where strengths and weaknesses will need to be identified.

## **EXHIBIT 4**

### **Key Linkages: Linking Energy Management and Small Businesses**

*Chicago's local businesses are essential to maintaining the viability and vitality of Chicago as a whole. Noting that small businesses had been seriously affected by spiralling energy costs, the City of Chicago conducted an Energy Management for Small Business program. The key linkage in this project was energy management and retention of small business. Co-sponsorship included one state agency, a university, an accounting and consulting firm, local utilities, local banks, chambers of commerce, and other public interest groups. Activities under the project included a training manual on small business energy conservation measures and a series of seminars for building owners and bankers on energy management in Chicago's buildings. Six seminars were conducted and approximately 300 businessmen attended and received manuals. In addition, eight buildings, six commercial structures and two manufacturing plants were audited.*

## **EXHIBIT 5**

### **Key Linkage: Energy Costs and the Commercial Sector**

*New York City found that their businesses pay the highest costs in the nation for energy and that 60% of the area's retail and wholesale establishments consider energy costs to have a severe impact on their operations. New York City developed a pilot business energy assistance service which provided assistance with utility bills and with energy management alternatives; energy conservation financing schemes which identified barriers and opportunities for financing; and a pilot energy conservation program in a CDBG commercial revitalization area. The key linkage in this project was energy management and small business development. Seminars on energy management needs of small businesses were held for economic development staff of local development corporations. Many of the staff attending the training sessions have embarked on merchant energy service programs of their own.*

## STEP 4. INTERNAL ANALYSIS: STRENGTHS AND WEAKNESSES

The working team, before developing any projects linking energy management and community/economic development, must have a good sense of both the strengths and weaknesses of the local energy management and community/economic development functions, especially in relation to the key linkages chosen in Step 3. All strengths and weaknesses are relative, and only have meaning in the context of particular strategies: certain projects activities will require strengths in certain technologies, programs, and staff. In the context of the linkages that have been identified by the working team in Step 3, questions should be asked regarding strengths and weakness in the following areas:

- current programs
- technical expertise
- financial resources
- personnel

For the program analysis, the working team should determine what kinds of energy management and community development programs are currently in effect. What are the strong programs and what are the weak ones? Again, in relation to the linkages chosen in Step 3, what would be the necessary technologies to carry out programs relating to those linkages, and are those technologies currently present in the energy management and community/economic development departments? What are the financial and personnel strengths in the departments or agencies that will be responsible for implementing the strategies outlined in Step 3? This analysis will tell the working team whether the department or agency is set up to handle the chosen linkages. The internal analysis will also reveal strengths that can help the working team develop specific action steps when developing the implementation plan.

## EXHIBIT 6

### **Finding Strengths and Weaknesses in Economic Development Programs**

*New York City's Energy Office decided that the energy needs of the City's commercial and industrial sectors needed to be addressed. Staff surveyed all of the city's programs which offered economic development services and tried to determine what kind of energy services they offered. They determined the number of requests for energy services each year received by the economic development programs. Included in this survey were local government, quasi-public and private economic development programs. They found that while economic development programs in New York City will offer loans and grants, reduce taxes, assemble land parcels, conduct promotional campaigns and provide employment training programs, few of these economic development services have the capability to offer energy programs to businesses in New York City. They recommended closer integration of energy efficiency considerations into these ongoing programs.*

## STEP 5. DEVELOP GOALS, OBJECTIVES, AND STRATEGIES

At this point, the working team should be prepared to develop specific goals, objectives, and strategies for a proposed energy/economic development program. The working team will have reviewed an environmental scan which should have surfaced opportunities and ideas; identified key linkages where energy management programs could be used to support community/economic development goals; and examined the internal strengths and weaknesses of appropriate departments and agencies.

Ideally, in the development of goals and objectives, the working team should match opportunities in the scan with strengths in the internal analysis. During Step 3 of the strategic planning process, Selection of Key Linkages, the working team should have narrowed down the range of opportunities in the scan to a few key project ideas whereby energy management could be used to support a community/economic development goal. Based on these key project ideas, goals stating what should be accomplished should be developed. The objectives supporting the goals should be measurable steps to reach the defined goals, and the strategies are mini-action plans to achieve the objectives. Under each energy strategy, costs, personnel, organizational resources, and the time frame should be detailed. Literature on strategic planning suggests that a free discussion of strategies is the best way to produce innovative ideas on strategies, with the understanding that they will be winnowed down to the most feasible ones.

If the working team is not prepared to develop a fully defined plan, then it might be appropriate to take the key linkages and plan for further examination of the possibilities inherent in them. This may require the establishment of an Energy/Economic Development Task Force or study committee.

One suggested method of developing goals, objectives, and strategies is to first list community/economic development goals and objectives, and then energy strategies that could be used to achieve those goals and objectives. For example, economic development goals and energy strategies could be developed in the following manner:

### EXHIBIT 7

#### Example of Energy Strategies for Economic Development

Community/Economic Development Goal #1: Increase job opportunities for county residents.

Energy Strategies:

1. *Assist non-profit neighborhood groups in expanding their ability to provide energy services by becoming for-profit businesses.*
2. *Assist builders in the construction of energy-efficient homes by providing on the job training to builders and their assistants.*

Community/Economic Development Goal #2: Lower housing costs for low and moderate income persons.

Energy Strategies:

1. Encourage the use of energy addendum financing, whereby homeowners with lower incomes qualify for energy efficient housing.
2. Develop a revolving loan for residential energy conservation measures.

In developing strategies, a list of all possible resources that could be used to support the strategies should be drawn up by the working team. The list could include such resources as:

Organizations: Local organizations, such as a regional planning agency, council of government, local economic development district, local economic development corporation, or a local downtown development association may be interested in participating in an energy management program for economic development. National organizations, such as the Energy Task Force, PTI, the National Association of Homebuilders or other organizations identified in the scan may be able to provide assistance or at least research they have conducted on the topics of interest.

Financial Resources: Local private financial resources may include banks, financiers, and developers. Local sources of venture capital, energy service company (or third party arrangements), and local pension fund investments should be considered as possible sources of financing.

State financing of energy management projects is another financial source to examine. The recent Exxon decision which distributed \$2.1 billion to states for energy projects and the upcoming stripper well decisions are two recent developments in state financing of energy projects.

Federal funding for energy management projects is currently very limited. One source to explore is the use of CDBG and UDAG to leverage additional private sector financing. USHUD is committed to addressing energy issues in community development and activities, and many cities and counties have been able to use CDBG funds for energy activities related to community development activities. One example of this can be seen in Piqua, Ohio, where local officials have used CDBG Small Cities funds to help finance district heating/cogeneration.<sup>26</sup> A primary benefit of this district heating/cogeneration project will be lowered energy costs for low and moderate income renters.

## EXHIBIT 8

### Energy Goals and Objectives in Portland, Oregon

*Portland, Oregon, with support from the USHUD in the 1970's, undertook a major energy planning effort which examined energy needs and methods to incorporate energy into all facets of Portland city government operations. The primary goal of the effort was "to use energy in the most efficient*

*manner in the City of Portland that will continue to provide ,Zor neighborhood stabilization and economic development within the City. ""*

*More specifically the project was to "provide usable, practical tools which can be used to evaluate the energy, social, economic, and lifestyle implications of energy conserving actions."<sup>28</sup> Strategies were examined in light of constraints to the project. These included the project cost, time frame, data restrictions, and the use of consultants.*

*Basic objectives included:*

- o To design a non-computer based information retrieval system which would contain information on all aspects of energy conservation.*
- o To establish a baseline energy consumption data base.*
- o To develop a plan of conservation choices for each sector (residential, commercial and industrial).*
- o To develop model city codes for energy conservation.*
- o To facilitate energy conservation in the capital improvements budgeting process, including energy efficiency alternatives in proposed capital projects.<sup>29</sup>*

## STEP 6. DEVELOP ACTION PLAN AND IMPLEMENTATION STEPS

The action plan is the written document that captures all of the understandings in writing during the development of the goals and strategies. It specifies work responsibilities, deadlines, and products. The staff of the department initiating the strategic effort could bear the responsibility for preparing the action plan.

Implementation may be handled by the initiating department or by another designated department or task force. In any case, the coalitions developed during the strategic planning steps should provide strong support for the implementation process. There are several elements that must be in place for successful implementation of a plan linking energy management and community/ economic development:

- o Top-level executive support is necessary for implementation.*
- o There must be allocation of dollar resources to the plan.*
- o A product champion must be designated who will carry the project through to completion.*

Chief executive support is necessary for implementation because the plan may require an investment of personnel, management support and time to achieve its goals and objectives. In addition, an allocation of dollar resources is one of the

surest ways to implement the strategic plan. If the strategic plan is in the budget, there will be no question of it not being addressed.

A month by month calendar listing all of the staff (or outside agency) responsibilities, products, and deadlines will be helpful in aiding implementation. If the calendar is published, there will be even greater incentive for implementation. The entity monitoring the plan should be willing to track time and resources spent and report on progress on each strategy.

## EXHIBIT 9

### Ensuring Success of the Strategic Plan


*A few words of wisdom can be gleaned from the private sector's experience with strategic planning. Authors in a recent article entitled "Uses and Misuses of Strategic Planning", Harvard Business Review (January-February, 1986), discussed workable solutions that chief executives and corporate planners developed in response to obstacles in implementing strategic plans. They include:*

- 1. Involve line managers (or those who will be implementing the strategies) in the development of strategic planning goals. Often, those who will be implementing plans are completely left out of the planning process and offer resistance in the implementation stages. Incorporate staff and make sure that staff understands strategic planning goals and strategies.*
- 2. Move beyond general goals. Have detailed action plans. Goals such as "Improve energy efficiency" will not be implemented unless there are clear, detailed steps in an action plan.*
- 3. Have a forum to list ideas. Ideas developed in a vacuum often will need tailoring before being implemented. Have a small group of city/county officials react to the strategic plan.*
- 4. Begin advocacy process. The strategic plan will not be implemented unless each strategy has an advocate who is committed to putting it in action.*
- 5. Manage the face-off. When the plan is presented before the governing body, it will meet with questions. Be prepared to answer questions and pave the way for the plan's acceptance.*
- 6. Integrate Plans and controls. The only way the plan will be implemented is if implementation is in the budget, meaning dollars have been committed to it.*

### MONITORING

Once the plan is in the implementation stages, environmental scanning must be done on a continuous basis to ensure that new technological or legislative developments are accounted for. The success of strategic planning is dependent on adapting to outside environmental changes, and a strategic plan that is rigidly adhered to will





have less chance of succeeding than one that is being continually repositioned to better match with external conditions.

The emphasis on continuous monitoring and updating of the plan cannot be stressed enough. The working team must assign this responsibility to a particular agency or the product champion may take on this responsibility. In either case, monitoring and a reporting-back system must be established or the plan will not be implemented. The whole process, environmental scanning, developing key linkages, etc., must be repeated on a timely basis for the plan to remain relevant.









## CHAPTER 3

### PUBLIC/PRIVATE FINANCING OPTIONS

*The recent surge of entrepreneurialism throughout the nation is lighting the path of America's urban progress and destiny. It is being sparked by the numerous community partnerships between the public and private sector in our cities.*


**Samuel R. Pierce, Jr**

Secretary

U.S. Department of Housing and Urban  
Development

Foreword to The Entrepreneurial  
American City

#### BACKGROUND



Public/private financing of energy/economic development projects is taking on a new importance for cities and counties in today's changing financial climate. As federal support through grants and loans is declining, and as revised tax laws are making many financing sources less attractive, cities and counties are finding that they must re-direct their focus to finding new private sources of funding for their activities.

The six participating cities and counties in this project identified public/private financing of energy/economic development projects as a major concern and of great interest to them. In many of the projects, public/private financing was a key component to make the project work and the development of private financing was necessary for the future implementation of the project. The need to identify new financing sources was one of the major themes running through each project. Therefore, as part of the technical assistance provided to the participants, seven new entrepreneurial financing sources were examined for applicability to energy/economic development projects. These were:

- Venture Capital
  - Pension Funds
  - Bank-affiliated Community Development Corporations
  - Community Development Block Grants
  - Urban Development Action Grant Paybacks
  - Utility Subsidies
  - Corporate Social Investment Funds
- 

For each of the above, a description, a discussion of applicability, case examples, and information on how to access the source are presented. This chapter purposely does not treat more conventional sources, such as bank loans, leasing, bonds, and city/county revenues. A great deal has already been published on these sources, and the purpose of this chapter is to explore potential, new sources of funds.

With the exception of utility subsidies the use of the above financing sources for energy/economic development projects often represents a new use of funds. This means that local governments must be prepared to: 1) devote time to identifying procedures for accessing each of these financing sources in their areas; 2) educate the decision-makers controlling these sources about the benefits of energy projects; and 3) be flexible in the design of financing arrangements for their energy projects.

There are other nonconventional financing sources, not discussed here, that local governments may want to investigate. Performance contracting, for example, is a relatively new method of financing energy conservation projects in buildings. Under this financing method, payments from a building owner to a contractor for the installation of conservation measures are based on the level of energy savings achieved. Community loan funds are another innovative source that a local government may want to explore. A community loan fund is a non-profit lending corporation with a board and a professional staff. It accepts deposits from individuals and corporations and re-lends them to support community development, including energy management. The Enterprise Foundation in Baltimore, Maryland uses this type of financing. Phase II of this project, scheduled for completion early in 1988, will focus specifically on further detail for these and other financing options.

## **SUMMARY OF FINANCING SOURCES**

Exhibit 10 summarizes information discussed in this chapter on energy/economic development projects that could be supported by the seven financing sources. The energy/economic development projects listed on the left side of the chart are prototypes of the six projects undertaken by the six local governments participating in the project described in this guidebook. In some instances, the financing source has already been used to support energy projects (most obviously utility subsidies). In other cases, the financing source may not have directly funded an energy/economic development project, but did support a similar investment, such as housing rehabilitation. Where appropriate, examples of projects that have been funded by the financing source are given in the text.

As shown in the Table, projects that require large up-front investments, such as district heating and cooling, are likely candidates for funding through pension funds and venture capital firms. Weatherization and educational projects, at the other end of the investment scale, are more appropriate for funding by utilities or Community Development Corporations.



**EXHIBIT 10**

**SUMMARY OF POTENTIAL FUNDING SOURCES FOR COMMUNITY ENERGY PROGRAMS**

**Potential Funding Sources**

<b>Program Types</b>	<b>Venture Capital</b>	<b>Pension Funds</b>	<b>Community Development Corps (Bank Affiliated)</b>	<b>Community Development Block Grants</b>	<b>Urban Development Action Grant Paybacks</b>	<b>Utilities</b>	<b>Corporate Social Investment Funds</b>
<b>Establish energy Management Services business</b>	x	x	x	x	x	x	x
<b>Support Small-scale energy conservation projects</b>			x	x	x	x	x
<b>Provide technical and financial assistance to owners/occupants of commercial and multifamily buildings (outreach)</b>				x	x	x	
<b>Support corporate investment and ownership of district heating and cooling</b>	x	x		x	x	x	

## **Venture Capital**

**Description.** Venture capital is a high risk investment in the future of a new company that is expected to provide a very high rate of return. The return expected by venture capitalists relates to the greater than normal risk associated with these investments. Venture capitalists typically require a financial return of six to ten times the initial investment over a period of five to seven years. In most instances, a venture capitalist invests in the equity of the company, owning between 25 and 50 percent of the firm's value.<sup>30</sup> Venture capitalists often actively participate in the operational and managerial functions of the company.

Venture capital is used principally to develop a product, fund its initial production, and establish its related business operations. Venture capitalism is based on investment in innovative and pioneering companies. It has resulted in the emergence and development of a wide variety of business opportunities, from new products and services (e.g., mini-computers) to entire industries (e.g., biotechnology).

Sources of venture capital can be classified into five categories, as discussed below.

### **1. Independent Venture Capital Firms**

**Independent venture** capital firms are the largest source of venture capital funds for new companies. They focus on very large investments and often are geared towards high-technology industries.

### **2. Small Business Investment Companies**

Small Business Investment Companies (SBIC) are licensed by the Small Business Administration, but are privately organized and managed. They are set up to borrow money from the federal government at lower interest rates than typically available in order to finance small businesses. SBIC recipients range from major firms associated with large financial corporations to small firms with a local perspective.

### **3. Corporate Venture Capital Subsidiaries**

Corporate venture capital subsidiaries are attached to large financial corporations that invest in businesses that serve a particular need of the parent company and possess nonconventional investment requirements such as later-stage financing.

### **4. Public Equity Capital Programs**

Public equity capital programs were recently developed by state governments that want to stimulate economic growth and development in certain areas like new, high technology industries, where other forms of capital are either inadequate or inappropriate. These venture capital funds can be publicly or privately operated.

### **5. Informal Investors**

Informal investors fill capital shortfalls for companies that are too small or too young to obtain funds from the organized venture capital market. These informal investors will often provide small amounts of funding for investors and start-up operations, typically in the range of \$20,000 to \$50,000. Venture capital clubs, organized by local Chambers of Commerce, provide an effective means of linking investors with entrepreneurs.-



**Potential for Energy Projects.** For the types of projects listed in Exhibit 10, the two most likely to be funded by venture capital are: 1) small energy management service businesses; and 2) district heating and cooling. These two have been selected because they are more likely to provide venture capitalists with the high rate of return they require. In most cases, the other projects listed in Exhibit 10 will not provide an acceptable return.

For energy management service projects, three types of venture capital appear most promising: Small Business Investment Companies (SBIC) funds; public equity capital programs; and informal investors. Organized independent venture capital firms, which seek investments on the order of \$250,000 to \$1 million, generally will not be interested in the relatively small-scale financial requirements of energy management service projects.

Venture capital has been used to finance shared savings and other forms of performance contracting. Energy projects that have been financially supported using venture capital funds include large scale conservation investment in the commercial sector.

District heating and cooling are relatively high risk/high return investments, and therefore conform with the type of projects desired by venture capitalists with larger financial resources. Since investments in district heating and cooling are relatively expensive, ranging from 2 to 50 million dollars, public equity programs and independent venture capital firms would probably be the most appropriate sources of **venture capital funds**.<sup>32</sup>

**Accessing Venture Capital and Information Sources.** Information on sources (and uses) of venture capital can be obtained through local and regional organizations, such as venture capital clubs, as well as from sources that cover the U.S. State governments that manage public equity financing programs can also serve a good source of venture capital for energy projects. Several national sources of venture capital information include journals such as Venture Capital Journal, Inc., Venture, and Private Placements (Newsletter).

**National Organizations:**

**National Venture Capital Association**  
1225 19th Street, NW  
Suite 750  
Washington, DC 20036  
(202) 659-5756

National Association of Small Business  
Investment Companies  
1156 15th Street, NW  
Suite 1101  
Washington, DC 20005  
(202) 833-8230

National Council for Urban  
Economic Development  
1730 K Street, NW  
Washington, DC 20006

### **Pension Funds**

**Description.** Pension funds are established to provide an income source to public and private sector employees and their beneficiaries upon retirement. They constitute the largest pool of capital in the United States. According to the journal Pensions and Investment Age, 1985 assets of the nation's 1000 largest public and private pension funds totalled 1.073 trillion dollars.<sup>33</sup>

Pension funds fall into one of three general categories:

- Public employee funds. Investment of the assets of these National funds are governed by state laws, which vary in terms of permissible investments. Public pensions are normally controlled by a board of trustees.
- Single employer corporate pension funds. The managers of these funds, generally the sponsor corporation, are regulated by a federal statute the Employee Retirement Income Security Act of 1975 (ERISA).<sup>4</sup>
- Multi-employer union pension funds. These funds are controlled by a board of trustees, appointed by union and management. The ERISA regulations also govern the investments of these private pension funds.

Public and private pension funds have traditionally invested their assets in government bonds and other securities that show relatively low risks, promise an acceptable rate of return, and pose no administrative burden on plan managers. However, public and private pension funds are gradually changing their investment patterns. Not only are managers looking for secure investments with acceptable rates of return, but some are also seeking to make investments that achieve specific objectives that benefit plan members. Job creation and local economic development are typical objectives that these pension funds are now pursuing.

Thirty states have taken actions to either broaden investment authority for their public pensions or target investments to achieve particular in-state goals, according to a 1982 survey by the National Conference of State Legislatures.<sup>35</sup> Similarly, private pension funds have successfully applied to the U.S. Department of Labor for exemptions from ERISA-prohibited transactions to allow financing of economic development projects.

The Government Finance Research Center surveyed public pension funds across the U.S. in 1983 and found that 15 percent of those surveyed have directed investments towards economic development.<sup>36</sup> Forms of economic development investments revealed by the survey included local housing investments, mortgages targeted to plan members, and funds for the revitalization of inner cities. The following are examples of small business development investments that have been made through public pension funds:

- o Small Business Administration Certificates. These certificates represent federal insured loans to small businesses. Pension funds purchase them from banks.
- o Venture Capital Limited Partnerships. These partnerships capital for promising young businesses, generally technology oriented companies. Pension funds are investing a small percentage of their assets in limited partnership venture capital pools.

Potential for Energy Projects. Pension funds, through economic development investments, are a potential source of funding for: 1) establishing small energy management service businesses, and 2) district heating and cooling projects. (See Exhibit 10.)

Investments can be made in small businesses through the purchase of Small Business Administration (SBA) participation certificates and through venture capital limited partnerships. SBA certificates are guaranteed by the federal government, meet the risk requirements of the funds and can be resold to meet liquidity requirements. Venture capital investments in small businesses, although a somewhat high risk investment, are being made by pension funds. The New York State Common retirement fund, for example, committed \$48 million to venture capital investments in 1984 /37

1984. Differing from the active role taken by venture capitalists, pension fund managers are like to invest in district heating and other large energy projects only as passive investors, i.e., without involvement in the operation of the project. Purchasing bonds and making secured loans are two possible ways that pension funds could invest in large energy projects. The Retirement System of Alabama, for example, loaned U.S. Steel Corporation \$75 million through a private placement for expansion of an Alabama facility.<sup>38</sup>

The financing of small energy service businesses and large scale energy projects through public and private pension funds could offer significant advantages to these funds. The small businesses could provide direct services to both employers (e.g., energy management for commercial or public buildings) and plan beneficiaries (e.g., weatherization of homes). Large energy projects, on the other hand, could provide jobs in construction-related industries, aiding beneficiaries of private pension funds that represent these industries.

Pension funds are unlikely to finance any of the other energy program options listed in Exhibit 10. The opportunities for profit would be too unpredictable for pension funds, and the total dollar amount of investment required for any of the other options would be too small to justify the time required to evaluate them. Finally, the economic development benefits that plan members would receive from these investments would be too indirect to elicit interest.

Accessing Pension Funds and Information Sources. The steps involved in approaching a public or private pension fund for investment in an energy project

will vary by the type of fund and the structure within each fund. Numerous parties, such as trustees, investment managers, and the fund attorney may be involved in reviewing and negotiating a project proposal. Because the process does vary and can be complex, the correct procedure should be identified before a proposal is presented.

Public pension funds, in most cases, publish some statement describing the investment objectives of the fund. State laws will also reveal what kinds of investments public pensions can make. Assuming the proposed project is permissible under the prevailing law and within the objectives of the fund, bond managers or the investment staff should then be contacted to determine the procedure for submitting a proposal to the fund.

Multi-employer union pension funds should be approached first through a trustee, attorney, investment manager or administrators. These individuals, generally not in-house employees of the union, can informally discuss procedures for funding economic development investments such as energy efficiency.

Single employer pension funds are generally controlled by financial officers in the corporate treasurer's office. These officials will determine whether a project meets the investment criteria of the fund. Of the three types of pension funds, single employer funds are the least likely to fund projects outside of their normal scope of investments.

For additional information contact: Government Finance Research Center Government Finance Officers Association 1750 K Street, N.W. Washington, DC 20001

### **Bank-Affiliated Community Development Corporations**

**Description.** A Community Development Corporation (CDC) is a bank holding company created to respond to the economic and housing needs of a community. It is formed primarily to enhance development in low-and-moderate income neighborhoods, with financing available to families as well as small businesses. A bank CDC is allowed to invest in projects that the Federal Reserve considers to be both in the public interest and directly related to banking. It can purchase, own, rehabilitate, construct, manage, and sell real property assets. CDCs are also capable of investing in equity or debt for financing development projects and local businesses. The types of investments that a CDC should make are expected to benefit low-to moderate-income groups without excessive risk.

According to the Community Affairs Coordinator at the Federal Reserve Board, there are 26 CDCs in the country that have been established through the Federal Reserve Board, only 20 of which are still active. For the most part, these CDCs were established solely to finance a particular project, and as that project is completed, the CDC is terminated. CDCs are also established by the Office of the Comptroller of the currency, which has established 16 CDCs that are still active.

Local governments across the nation are using CDCs to finance a wide variety of economic development needs covering a broad range of funding requirements. CDCs are used to finance large scale projects such as the development of multi-family rehabilitation units and the establishment of industrial parks in depressed areas, as well as smaller scale projects aimed at promoting small commercial business development and providing loans and grants to community organizations. In Chicago for example, CDCs contributed \$19 million towards the financing of a major multifamily rehabilitation project that furnished approximately 450 housing units to low- and moderate-income families. At the other end of the spectrum, a CDC was used to finance a single grocery store in a small shopping center in inner city Minneapolis.<sup>39</sup>

In addition to the above activities, CDCs often provide several other business-related services, including: 1) participating in joint venture investments with existing community redevelopment corporations; 2) providing technical assistance in terms of marketing, feasibility studies, and counseling; and 3) serving as a clearinghouse of information about the community and its development needs. Additionally, USHUD is sponsoring an initiative to promote the combined use of CDCs and Community Development Block Grants (CDBG). This effort involves the use of bank CDCs to leverage CDBG funds for community development. As a result of this initiative USHUD anticipates significant improvements in the economic welfare and housing conditions of depressed communities.

**Potential for Energy Projects.** Bank CDCs could be potential sources of funding for small energy management service firms and moderate and large scale conservation improvements in both the residential and commercial sectors (see Exhibit 10). Although these types of projects would generally be regarded as banking-related, to qualify for funding they should be shown to provide no undue risk to the bank CDC as determined by either the Federal Reserve or the Office of the Comptroller of the Currency. According to the Community Affairs Coordinator at the Federal Reserve, CDCs have not invested in energy projects to date.

Because they are designed to invest in real assets, CDCs would probably be inappropriate for outreach and educational programs. Also, CDCs would most likely be inappropriate for district heating and cooling projects which are still considered risky investments despite the fact that these technologies are commercially proven.

**Accessing CDCs and Information Sources.** To access CDCs in your area, contact the Community Affairs Officer at the Federal Reserve Bank in your district. The Division of Consumer and Community Affairs, Board of Governors of the Federal Reserve System and the Office of the Comptroller of the Currency, U.S. Department of Treasury are additional sources of information on CDCs. Both are located in Washington, DC.

### **Community Development Block Grants**

**Description.** The Community Development Block Grant (CDBG) Program was established by Congress with the passage of the Housing and Community Development Act of 1974. Title I of this Act directed USHUD to manage the CDBG Program with the primary objective of aiding "the development of viable urban communities, by providing decent housing and a suitable living environment and expanding economic opportunities, principally for persons of low and moderate in-

come." The CDBG Program finances a wide variety of projects, including acquiring and disposing of property, street improvements, water and sewer facilities, rehabilitation of private properties

USHUD is responsible for the administration of CDBG Program funds to entitlement cities (over 50,000 people) and urban counties. This includes determining the yearly entitlement allocations by formula, as well as ensuring that the use of funds complies with the eligible activities and standards established in the Act. To obtain CDBG Program funds, large cities must provide USHUD with a statement of community development objectives, projected use of funds, and certification that the funds will be applied consistent with the law.

As a result of the Omnibus Budget and Reconciliation Act of 1981, Title III, the primary responsibility for administering CDBG Program funds for small cities (with populations under 50,000) and non-urban counties was placed with state governments. As of 1985, 47 states assumed the management of their Small Cities CDBG, with several states creating a specific set-aside for economic development. For example, in 1984, Michigan set aside 57 percent of its Small City CDBG funds to develop industrial parks, improve downtown infrastructure and provide loans to needy businesses. In the case of Michigan, the maximum grant that a local government can obtain for economic development purposes is \$500,000, \$750,000 if two or more jurisdictions apply jointly.<sup>40</sup>

Also, as noted in the foreword to this guidebook, Title I of the Housing and Community Development Act was amended so that CDBG funds could be used specifically for energy efficiency activities. Several communities have taken advantage of the new provisions, as described below.

**Potential for Energy Projects.** The CDBG Program is a very attractive source of funds for investment in a wide variety of energy projects that promote community development. CDBG funds are already being used for the energy projects listed in Exhibit 10. For example, in Fitchburg, Massachusetts, a \$95,000 CDBG helped reimburse a self-help group of city resident and volunteers for their purchase of conservation material, such as caulking cord and duct tape, installed in the homes of over 3,000 low and moderate income families."

CDBG funds can also be leveraged to promote investment in energy efficiency. For example, St. Louis has established mandatory energy standards (in design and construction) for housing projects that use CDBG funds. Another case in which CDBG funds have been leveraged to increase energy efficiency is the City of Chicago, where \$5 million of CDBG money is used to support the Chicago Energy Savers Fund which provides services such as low-interest financing for multifamily housing energy conservation.

One of the principal reasons that CDBG financing is attractive for energy projects is that it can be (and has been) readily combined with other funding sources. For example, a \$100,000 Small Cities CDBG to Piqua, Ohio was combined with a DOE- funded feasibility study to provide district heating in low and moderate income housing.<sup>42</sup>

**Accessing the CDBG Program and Information Sources.** Information on the CDBG Program can be obtained from USHUD Field Offices and the Office of Community Planning and Development, USHUD. In particular, information on CDBG and energy projects is available from the Energy Division in the Office of Community Planning and Development, USHUD.

**Accessing the CDBG Program and Information Sources.** Information on the

**Urban Development Action Grant (UDAG) Paybacks**

**Description.** UDAG funds are available to carry out projects in support of a wide variety of economic activities that involve partnerships with the private sector. These activities may include actions such as clearance, site improvements, provision of infrastructure, and rehabilitation and construction of commercial, industrial, and mixed use developments.

UDAGs can be used for energy projects and are known to most community and economic development specialists and information is available from the same source as for CDBG. UDAG paybacks, however, are less often considered. They are repayments from the private sector to a local government for loans made through the Urban Development Action Grant (UDAG) program. UDAGs were established by Congress in 1977 to create new permanent jobs and to improve the financial condition of economically-distressed communities. UDAGs are provided to local governments, which can in turn provide loans (e.g., below market interest rates, long repayment terms) to the private sector. Recipients of the loans are required to repay the funds to the local government which is then able to reinvest the UDAG funds for further investment and economic development. Thus, the UDAG essentially operates as a revolving fund for local development that is stimulated by federal seed money.

According to a recent study conducted by USHUD, 94 percent of 1984 UDAG projects required a payback in the form of loan repayments, lease repayments, or equity participation; the remaining 6 percent were used directly by the local governments in the form of grants. The study also indicates that the average UDAG loan is for about 19 years, (with an average 2 year period from announcement of the UDAG preliminary approval before payment begins), and an average interest rate of approximately 5.7 percent. The average UDAG payback for small city projects is approximately \$650,000, while for large city projects, the payback averaged \$1.6

Approximately 57 percent of the UDAG repayments are planned to become loans to assist industrial or commercial enterprises. This includes 46 percent in loans for business expansion and 11 percent in loans for commercial rehabilitation.<sup>44</sup> Other uses include activities such as site improvements, public facilities, and housing rehabilitation and construction. Some examples of UDAG payback applications include the following:

- o South Bend, Indiana combines its UDAG paybacks with CDBG funds in a loan pool for commercial and industrial projects.
- o New York City, New York places its UDAG repayments into a loan pool for industrial and commercial projects.

## **Accessing the CDBG Program and Information Sources.** Information on the

- Dayton, Ohio places its UDAG repayments into an economic development loan pool and uses them for commercial and housing projects.

**Potential for Energy Projects.** UDAG paybacks could serve as an attractive source of funding for the following types of energy projects (see Exhibit 10):

- Small energy management service firm development.
- Moderate-and large-scale conservation improvements in the residential sector.
- Outreach and educational program implementation in the multi-family sector.

Local governments presently have considerable flexibility in how to use UDAG payback funds. However, UDAG payback funds are restricted to eligible activities defined under Title I of the Housing and Community Development Act of 1974, as amended. These activities include: housing and public facility improvements; real property acquisition, clearance and relocation; public services; administration and planning; and economic development. These activities can be jointly supported by funding from both UDAG paybacks and the CDBG program. Thus, UDAG paybacks can be used to support a wide variety of community investments, including those that are energy-related. For example, cities that are attempting to assist small energy service businesses and multi-family unit owners (including investment in district heating and cooling technologies in multi-family housing) could provide loans from an economic development pool made up of UDAG repayments. Other uses of UDAG paybacks could involve supplying the necessary funds to neighborhood groups wishing to undertake moderate and large-scale conservation improvements (which could receive CDBG income as well).

**Accessing UDAG Paybacks and Information Sources.** Additional information on UDAG paybacks can be obtained from the Office of Community Planning and Development, USHUD. In particular, this office maintains data on UDAG repayments through its Action Grant Information System File. In addition, Community Development Agencies in local communities will often have information on UDAG loan repayments.

### **Utility Subsidies**

**Description.** Publicly and privately owned electric utilities recognize that under some circumstances energy efficiency and demand management programs are cost-effective to promote to customers. These programs can delay the construction of new power plants, yielding significant savings to a utility and its customers. Like their electric counterparts, some gas utilities are also promoting conservation programs in order to: 1) maintain market share; 2) increase their share of the new home market; and 3) respond to pressure from the general public and public service commissions to help consumers in reducing their bills.

These gas and electric utilities were offering a variety of incentives to their residential, commercial and industrial customers to get them to change their consumption patterns. These incentives include direct loans, indirect loans through banks, rebates or discounts for purchasing energy efficiency equipment, and grants for installing conservation or load management equipment. Examples of specific financing programs sponsored by public and private utilities are provided below [45,46,47.]



#### Direct Loans

- A publicly owned electric utility in South Carolina offers a financing program directly to its residential customers for weatherization materials, solar measures, and insulation. Financing is available at an interest rate of seven percent.

#### Rebates or Incentives

- A privately owned electric utility in Maine offers rebates to business customers for installing efficient lighting and low-interest loans for other conservation measures.

#### Direct Installation

- A privately owned gas utility in Alabama trains disadvantaged youth to carry out a weatherization program for low income customers.

**Potential for Energy Projects.** There may be opportunities to obtain utility financial assistance for each of the five energy programs summarized in Exhibit 10. Electric utilities, because they can also benefit financially from energy efficiency programs by postponing capital investment for new generating facilities, are more likely candidates to support these programs than are gas utilities.

Small businesses could be supported by utilities which could use them as a delivery mechanism for conservation programs. Many electric and gas utilities use outside contractors to provide home energy audit services. These utilities may be willing to direct some contracting work to new energy management businesses. These new businesses could also receive similar indirect support through other utility programs, such as weatherization services for low income customers and administration of loan programs.

Large scale energy conservation projects, such as voluntary residential and commercial energy efficiency standards, are being promoted increasingly by electric utilities both to control load and market electricity sales. For example, Virginia Power promotes "Energy Saver" homes with high efficiency heat pumps through radio and newspaper advertisements and other means. Utilities like Virginia Power will certify to buyers of residential and commercial buildings that a structure meets certain standards and that energy bills will be lower than similar structures that do not meet the same standards. Housing and other groups can assist utilities in designing such programs.

**Accessing Utilities and Information Sources.** Electric and gas utilities, both public and private, generally publish an annual report or other documents which describe their conservation programs. The American Public Power Association, American Gas Association, and the Edison Electric Institute (all in Washington,

D.C.) also maintain extensive libraries with information on conservation programs.

For additional information contact:

American Gas Association  
1515 Wilson Boulevard  
Arlington, VA 22209

American Public Power Association  
2301 M Street  
Washington, D.C. 20037

Edison Electric Institute  
1111 19th Street  
Washington, D.C. 20006

### **Corporate Social Investment Funds**

**Description.** Most large companies today realize that their success is closely intertwined with the well-being of the communities in which they are located, as well as the nation as a whole. When communities are depressed because of a lack of jobs, inadequate health care and poor housing, the entire business community suffers. Businesses are pursuing "social investing" as one way of rebalancing or correcting some of the problems facing distressed local communities. Social investments are undertaken to achieve specific goals, such as low-income housing rehabilitation.

Social investments are rarely made as grants. They generally require a sound business venture that promises to generate a reasonable rate of return. Often, the social investments are in the form of loans made at below market interest rates for economic development programs in distressed areas.

According to the Center for Corporate Public Involvement, an organization that provides information on social investments made by insurance companies, some of the typical objectives that companies set for their social investments are:<sup>48</sup>

- Stabilizing and renewing urban and regional economies.
- Increasing the participation of minorities in the economic mainstream.
- Employing low-skilled labor.
- Conserving energy.
- Extending the economic life of housing.
- Investing in community-based enterprises.

Past social investments made by businesses indicate there are three areas which receive priority for funding. The first is small business development, especially for

- The likelihood that principal and interest will be repaid.
- The number of jobs created.
- The ability to leverage other sources of funding.

Examples of social investments that companies have made recently include:<sup>49</sup>

- A two million dollar loan fund for small businesses established by the Travellers Insurance Company in Hartford, Connecticut. Loans are made at low interest rates to firms that are unable to get conventional loans.
- The Newark Collaboration Group, an organization comprised of 186 leaders from business, government, communities, and other sectors, is distributing loans and other financing for low income housing, a new business incubation facility, and other economic development programs in New Jersey.

**Potential for Energy Projects.** There is strong potential for the use of corporate social investments for energy projects, primarily those that create jobs either through the development of new energy businesses or the initiation of energy retrofits of low and moderate income housing. Both are targeted activities for social investing by businesses such as life insurance companies, and both could provide a return on investment.

The Amoco Foundation, for example, recently gave a grant to a nonprofit organization in Chicago that will create jobs and rehabilitate low income apartment buildings. The organization will manage and conduct the complete rehabilitation of 150 apartments.

Because outreach and educational programs usually do not provide a financial return, and district heating and cooling is not normally considered as a welfare enhancing project, neither of these programs would likely serve as good candidates for corporate social investment.

**Accessing Corporate Social Investment Funds and Information Sources.** Corporations with social investment funds usually publish an Annual Report or other materials which describe their programs. Included in this information are program guidelines and procedures for applying to the corporation for funding. By combining the energy goals of a proposed program (e.g., minority business development) the chance of securing funding for a proposed project is greatly increased.

The magazine of the Center for Corporate Public Involvement, Response, is an excellent source of information on social investments. The Foundation Center, a nonprofit organization with offices in Washington, D.C., New York City, San Francisco, and Cleveland, can also provide information on corporations that have social investment funds, and guides on how to apply for funding.

For additional information contact:

The Foundation Center  
1001 Connecticut Avenue, NW  
Washington, D.C. 20036  
(202) 331-1400

Other addresses for the Foundation Center include:

79 Fifth Avenue  
New York, NY 10003  
(212) 620-4230

312 Sutter Street  
San Francisco, CA 94108  
(415) 397-0902

1442 Hanna Building  
1422 Euclid Avenue  
Cleveland, OH 44115  
(216) 861-1933

## CHAPTER 4

### CASE STUDIES

*Draw from others the lessons that may profit yourself.*

Terence (Publius Terentius Afer)  
The Lady of Andros

### BACKGROUND

Six local jurisdictions (Chicago, Illinois; Columbus, Ohio; Hennepin County, Minnesota; St. Louis, Missouri; San Antonio, Texas; and San Francisco, California), were funded by the Energy Task Force of the Urban Consortium to conduct energy projects that contained public/private financing elements and had a community/economic development focus. These six local jurisdictions received technical assistance through the USHUD project "Energy Strategies For Community and Economic Development," upon which this guidebook is based. These five cities and one county examined and implemented a variety of energy programs such as superinsulated housing, public/private financing of energy-efficient housing, district heating, and small energy business development. Yet each of these energy activities was part of a larger effort to achieve a particular goal. For example, in Columbus, district heating was seen as a means to direct and promote downtown and riverfront development.

Additionally, each of the local jurisdictions used some measure of strategic planning to achieve their goals, and several investigated using public/private financing as a means of supporting their projects. The purpose of presenting the case studies is three-fold:

- to illustrate how cities and counties can use energy strategies to support community and economic development goals;
- to illustrate how the strategic planning process can be used to identify appropriate integration of energy and economic development strategies; and
- to provide examples of how cities and counties can use public/private financing options, with special emphasis on consideration of CDBG/UDAG assistance.

The case studies have been arranged to highlight certain features of each local jurisdiction's project. Each case study presents the project's community/economic development goal and supporting energy strategy; a project summary and background; a strategic planning step conducted by the local jurisdiction; public/private financing options considered by the local jurisdiction; and results and future outlook for the project.

## CASE STUDIES

### **"Balancing Single Pipe Steam Heating Systems: An Opportunity For Energy Conservation In The Multi-Family Market" Chicago, Illinois**

*Community/Economic Development Goal: Stabilize the stock of multi-family housing in Chicago for low and moderate income residents. Prevent abandonment of Chicago's multi-family housing by increasing the multi-family building owner's margin of profit through reduced energy costs.*

*Create business opportunities and new jobs in the field of energy- efficiency services.*

*Create a business model that will strengthen a community organization's capability to deliver services.*

*Supporting Energy Strategy: Aid non-profit neighborhood groups in providing an energy service, building balancing, (a method to balance the heating in a building through modifications in vents and radiators), as a for-profit business to multi-family buildings, and develop a business model for self-sufficiency for non-profit neighborhood energy groups.*

**Project Description:** Single pipe steam (SPS) is the most common heating system in Chicago's multi-family housing stock, representing over 20,000 buildings. SPS systems were designed for long life with low maintenance, but not for energy efficiency. A major and almost universal cause of waste in these buildings is uneven heating between apartments. Opening windows to cool overheated apartments was part of the original design and normal operation. These higher temperatures also cause greater heat loss by conduction through the walls and ceiling.

Procedures for balancing the heat distribution in single pipe steam buildings have been successfully field tested in St. Paul/Minneapolis and Chicago. The results indicate that significant savings can be achieved through these procedures with a relatively low investment. The savings in space heating costs are estimated at 3 percent for each one degree reduction in overall building temperature. Commercial contractors remain reluctant, however, to offer balancing services because they perceive the procedures and products untested and market uncertain.

The City of Chicago, recognizing the importance of increased energy conservation in housing heated by single pipe steam systems, conducted a study to determine under what conditions "heat balancing" could be offered as a commercially marketable service. The first step was to establish a demonstration project in which community based, not-for-profit 'Energy Centers' applied balancing principles to a sample of multi-family buildings. These Energy Centers are the marketing arm of \$15 million residential energy loan program, the Energy Savers Fund, supported and administered by the City of Chicago and Peoples Gas Light and Coke Company. Energy center staff received technical training in a balancing process which simulated the small business experience. These procedures and their results were later refined and published in a training manual.

Technical data from the demonstration project was integrated into a market analysis conducted with the assistance of a small business consultant. The results were used to generate performance characteristics and development options for promoting heating balancing as commercial venture.

**Strategic Planning Step Illustrated:** *Environmental Scan.* The City of Chicago's Commission on energy is a public/private advisory body appointed by the Mayor to provide direction and assistance in developing long range energy policy. "Scanning" the environment for new solutions to energy problems is a continuous activity of the Commission. Various city task forces and neighborhood groups often take their ideas and concerns about energy to the Commission.

The heat balancing study grew out of a concern among Commission members that more work needed to be done to increase conservation activity in the multi-family market, particularly for those buildings which were ineligible for existing loan programs.

Chicago's Department of Planning, performing back-up scanning for the Commission, searched for a way to diversify the funding base of The Energy Savers Fund Community Energy Centers. The result was the integration of these two objectives in an evaluation of an Energy Center based commercial venture which provided lower cost and more accessible services to the multi-family housing market.

#### **Consideration of Public Financing Options:**

CDBG/UDAG Support. The Energy Savers Fund is a result of the successful leveraging of \$10 million in private funds from Peoples Gas Light and Coke Company with \$5 million in CDBG funds from the City of Chicago.

Private Support. Private financial support for this project came in the form of assistance from Peoples Gas Light and Coke Company.

**Project Results:** Initial findings from the consultant Charles Rial & Associates (CRA) determined that a stand-alone venture that offers balancing as its only service will not reach a broad enough market to support a break-even operation and therefore, does not represent a feasible venture opportunity. A more feasible approach would involve a joint-venture between an established heating/boiler contractor and a community based organization. A summary of the findings that led to this conclusion will follow.

- o Although balancing can be a low-cost, energy-saving alternative to a full-scale retrofit in overheated buildings, it is primarily a comfort improvement measure. With respect to the return on investment, the most receptive market for a balancing service is likely to be the owners of multi-family buildings with persistent overheating problems.

- o In general, the energy-conservation industry remains relatively unstructured with respect to conservation services. In contrast, the market is fairly well defined for energy-related products (weather stripping and insulation), which have been marketed successfully to do-it-yourself consumers through hardware and home-improvement stores. Energy conservation services, however, such as audits, boiler fine-tuning, and so on are still marketed indirectly as auxiliary services of more traditional HVAC and boiler repairs rather than as stand-alone services.

**Future Outlook:** Based on CRA's initial feasibility assessment, the proposed balancing venture could succeed if:

- 1) A joint-venture can be established between a contractor and a community organization with prior experience in building balancing and venture development; and
- 2) At least 70 balancing contracts representing break-even sales of \$200,000 (less than 1% of the total market potential) can be secured each year.

The most cost-effective way to determine if these conditions can be achieved is through a six-month, grant-funded trial period. During that time, contracts would have to be secured for 20 buildings to warrant further capitalization and continued operation.

**"District Heating Marketing: Organizational And Financial Strategies"**  
**Columbus, Ohio**

*Community/Economic Development Goals:*

- o *Attract and direct business development in the downtown/ river front area.*
- o *Increase the competitive advantage of urban with suburban locations for residential and commercial development.*
- o *Develop a business model of a "privatization" venture for local public and private sectors.*
- o *Increase the value of the building stock in the downtown and river front area.*
- o *Encourage investment in the infrastructure of the downtown and river front area.*

*Supporting Energy Strategy:*

*Create a private business, a development corporation, which will construct, own, and operate a district heating and cooling system.*



Project Description: Columbus has been experiencing a problem common to many cities across the U.S. since World War II, and that is a decentralization of housing, commercial, and industrial activity into outlying areas. The downtown is no longer the major center for manufacturing, wholesale trade, retail trade, and professional services. Manufacturing plants have moved to suburban locations where there is available land and freeway access. However, a recent positive trend has been the growth in the finance, insurance, and real estate sectors, as well as the transportation, communications and the utility sectors in the downtown. There is a renewed interest in the downtown area and a belief that there is potential for all types of development. There are new downtown parks, hotels, and office buildings, and several sites near the downtown riverfront are targeted for development. District heating is seen as a tool to promote and shape downtown development. By offering "cheap heat downtown," Columbus would like to be able to use district heating as a development incentive to counteract the attractiveness of suburban areas.

The City of Columbus has been examining the feasibility of establishing a district heating system in the downtown/riverfront area of the City for several years. During 1986, the City emphasized moving from a conceptual design of a district heating system toward implementation, a move which would require much more legal, engineering, and financial work and possibly the establishment of a development corporation to construct the system.

Several studies conducted by consultants for Columbus have identified potential district heat sources that exist in the downtown. In addition, the trash burning power plant (entitled the Municipal Electric Plant) in the downtown has been identified as a heat source. As proposed by the consultants, the district heating plan for the downtown would consist of the development of small "heat islands" which can be linked to a larger system. Several obstacles do exist to district heating, however. First, the Municipal Electric Plant has had several construction and operating cost overruns, which has made the public wary of large public investments; and second, the cost of natural gas (the major heat source for Columbus businesses) is very competitive, and the major utility, Columbia Gas of Ohio, could lower prices to selected large consumers if district heating was established. These two issues affect the economic feasibility of district heating.

Despite these obstacles, Columbus believes that district heating is a feasible option for the downtown area. The technology will work, as potential heat sources do exist in the downtown and elsewhere, and potential customers do exist or can be developed. In 1986, emphasis has shifted to system development rather than further assessment. The potential role of the City in district heating and the structure of an entity to develop and construct a district heating system has been analyzed in great depth. In addition, the City has received a proposal from two local developers in a joint venture to develop and market district heating in Columbus. The City has also received a joint proposal from the Danish engineering/development firm of Hans Jorgensen & Sons to carry out additional organizational, legal, financial, engineering and design work. It is possible that the latter firm may provide some venture capital for a development entity. The proposals are now under consideration by the City.

Strategic Planning Step Illustrated: *Environmental Scan.* In 1985, the USDOE provided support to Columbus for a feasibility study for district heating. The feasibility study examined two critical items that are essential elements to be ex-

amined in an environmental scan: potential market and competing fuel costs. Columbus carefully scanned the building market for district heating, particularly large downtown office buildings and buildings in future development projects. Boiler plants in these buildings were examined for their heating requirements, and future development plans were examined for potential heating needs. It was determined that there were sufficient buildings to support a district heating system. The scan of markets is a continuing process and Columbus is currently surveying potential district heating users -- building owners and operators -- to determine the level of interest in district heating and receptivity to a district heating system.

Success of a district heating system depends on the ability of the district heating system to deliver heat at a unit cost less than the unit cost of a conventional heating system. Economic analyses were performed using different "scenarios" of utility prices. Columbus planners had to estimate expected future utility prices. Columbus discovered that the local utility, Columbia Gas, might act as a broker to obtain cheaper gas (contract gas) if faced with competition from district heating. This information had to be integrated into the economic feasibility analysis, and will affect the decision to proceed with district heating.

#### **Consideration of Public/Private Financing Options:**

CDBG/UDAG Support. CDBG funding of the proposed district heating project was considered in the early phases of negotiation with the prospective developers. Ideally, if successful, Columbus would have used the CDBG to wholly or partially fund the City's financial commitment of \$250,000 which the developer had required for further technical, financial, and legal work on the district heating project. The additional work by the developers was considered by Columbus to be the same type of work which would have been conducted in a USHUD Phase II district heating study, and therefore appropriate for CDBG assistance. The option of funding this development phase with available CDBG monies was explored with local HUD officials. However, due to other pressures on CDBG funds, decision-makers from the City Council decided not to use CDBG funds for the district heating project.

Private Support. Columbus's district heating project is dependent on private financing for development and construction of the system. The role of the City in the district heating project will include some public involvement, but City officials do not want to assume further risk or indebtedness for a large-scale project. The City has been examining several alternative structures for the project, including non-profit, cooperative, quasi-public, and for-profit set-ups. The City would like an autonomous, private sector entity to construct and operate the system. It has been proposed that the City could possibly give a loan, grant, or other support to such an entity for further assistance in the process. However, substantial private investment will be necessary to carry forward additional engineering, financial, organizational, legal, and marketing work. The City has had to seriously consider the possibility of contracting with a development corporation especially established to create a district heating system.

**Project Results:** In summarizing the several assessments done in Columbus to this point, one might say that a potential market for district heating exists but has not yet been fully developed. Given the highly competitive market based on inexpensive natural gas in Columbus, it may well be said that if district heating concepts can be demonstrated to work there, they can work nearly anywhere in the U.S. under similar conditions. Such a demonstration was, in fact, the reason Columbus was chosen as the location of the 1983-84 study sponsored by the Danish Ministry of Energy, and why Columbus has continued to receive U.S. HUD/DOE funding, as well as support through the Urban Consortium Energy Task Force.

At this point, it appears that although district heating is technically feasible in Columbus, certain key political considerations must be addressed for the project to move forward. The primary result of the project to date is that an opportunity has been created to bring both public and private interests together in a cooperative effort beneficial to both sectors. This is an area of endeavor (sometimes referred to as "privatization") which, although much discussed in Columbus, remains for the most part unbroken ground. The question is not whether functions that have been or would be performed by the public sector can be turned over to the private sector, with no cost or risk to the public sector. Rather, the question is whether public and private sectors can successfully join together in a form of partnership that brings benefits to both, and in which each can agree on the degree of risk, cost, and profit that must be shared.

In this effort, the City of Columbus has approached the limits of its own resources in encouraging and coordinating further district heating development. Making extensive use of available Federal grants (USHUD and USDOE, including Urban Consortium Energy Task Force grants) and benefiting from additional feasibility studies funded by the Danish Ministry of Energy, the City of Columbus has attempted to fill a pathfinder role in pointing out opportunities for district heating investment. The City has so far been cautious about its own commitment to district heating investment while supporting and demonstrating opportunities for private development. This position on the part of City officials is unlikely to change without either substantial community support or private financing for district heating.

**Future Outlook:** If the City decides to contract with a development team responsible for organizing, designing, and marketing a district heating system, the City must determine what its own future influence should be in determining the organization, purposes, and service coverage of a district heating enterprise. A potential City role is of course dependent on a number of criteria -- the economic and financial viability of a proposed system; the potential market for City thermal production from its trash-burning power plant facility; anticipated market demand for district heating; and expected benefits to downtown development and redevelopment activities.

A remaining question at the end of this project was whether district heating could be used to support urban development and redevelopment in an environment where development is occurring at a rapid pace but without reference to an overall growth plan. Based on work in Columbus to date, the answer is probably yes -- but the evidence is inconclusive. District heating would seem to offer greater opportunities to a city in which the timing and scale of development is at least known with some certainty, and where a consensus exists that public/private investment in infrastruc-

ture can and should be used to attract development to particular areas. In Columbus such a consensus -- focused on the downtown -- is still in the incipient stage. It remains to be seen whether district heating can be perceived and utilized as an effective economic development tool.

**"Technology Transfer Of Residential Energy Programs In New Construction And Existing Housing" Hennepin County, Minnesota**

Community/Economic Development Goals:

- o *Provide market support for energy efficiency and higher quality new housing.*
- o *Increase the value of the local housing stock.*
- o *Increase consumer's discretionary capital and decrease public expenditures.*
- o *Retain local dollars in the community for business creation and expansion.*

Supporting Energy Strategies:

- o *Attract the interest of lenders and contractors in making investments in energy efficient housing.*
- o *Stimulate the interest of citizens in retrofitting "existing" housing using alternative financing approaches.*
- o *Provide management and technical assistance support to small, developing energy conservation businesses.*

**Project Description:** Hennepin County has more than 8000 heating degree days in its winters. As a result, residents need effective energy conservation measures in their homes, and reasonable methods for financing them. Planning staff at Hennepin County decided to investigate "shared savings" as one approach for financing energy improvements in single family homes. Shared savings occur when an energy service company (ESCO) finances and installs energy improvements in an owner's property and is compensated by receiving a predetermined share of the savings. In 1984 and 1985, Hennepin County established a cooperative and innovative program with a private sector energy service company in which energy improvements were made by the ESCo to existing homes and the ESCo was paid in relation to the energy savings that were produced by the improvements they installed. Over 800 homeowners agreed to participate in the program. The energy improvements made to the single-family homes in the program included weatherization and furnace and heating system modifications.

In 1986, the County decided to initiate an effort to promote increased energy efficiency in new construction to complement its shared savings program for existing homes. Hennepin County became interested in St. Louis's work in superinsulation in new construction and wanted to determine if the technology, construction standards,

financing, and marketing programs used in St. Louis would be applicable to Hennepin County's new residential construction. Hennepin County also provided information to St. Louis on shared savings programs for existing housing. Mutual visits and sharing of information on shared savings and superinsulation took place.

Unfortunately, Hennepin County discovered that superinsulation was not practical or feasible for the Hennepin County residential market. Local builders resisted incorporating superinsulation standards into their building programs because they felt the constructed homes would be difficult to market. In addition, Minnesota's Energy Codes for new construction are already at a high level and, if vigorously followed can produce a very energy efficient house. It became apparent that the key to residential energy efficiency in new construction might be improved building practices (to better meet the Minnesota Energy Code) rather than new materials or additional systems, as prescribed in superinsulation.

Based on its findings, Hennepin County decided to change the focus of its project to an examination of improved construction practices. Additionally, Hennepin County became interested in the idea of the "house as a system" in which the envelope, mechanical systems and occupants must all function together to achieve energy efficiency. This idea had been developed by a Canadian energy firm which the County had hired to evaluate the construction techniques of local builders. The Canadian company had spent several days with local builders discussing and observing current construction and marketing practices. (For a more complete description of the technical assistance provided, please see the technical assistance notes at the end of this chapter). The Canadian firm had proposed that an energy efficient house works as a system, and it is the effective interrelationship of the mechanical system, the envelope and the occupants that maximizes cost-effective energy efficiency.

Based on its findings that (1) construction techniques rather than building materials or mechanical systems may be the key, and (2) the mechanical system, the envelope and the occupant must work in coordination, Hennepin County restructured its projects to test various hypotheses for the variance between actual and expected consumption levels.

The revised goal of the project was to design and implement a demonstration project to test the energy efficiency of new single family houses constructed by approaching the house as a "system", and a comparable group of homes built using current techniques and to existing state energy standards. The revised research design consists of two control groups and one experimental group. Control group I will consist of a group of 25 previously constructed houses by the builders who are participating in the experimental group and Control group 2 will involve 25 houses constructed by other builders in the area. The houses in both control groups will be monitored for energy consumption levels and will be compared demographically. The houses in the experimental group will be constructed to Minnesota's state energy standards and may include additional energy conservation measures if they are cost effective. The crews who build these homes will be provided with technical training on the basis for and methods of installing the energy measures in the homes being constructed. The homes will be tested for infiltration rates, bypasses, and indoor air quality. The occupants will be trained on the most effective ways to use their homes to optimize energy efficiency.

The data collected from this demonstration project will be used to educate builders and to promote energy efficient and high quality new construction and to support incorporation of energy efficiency as a factor in the lender's loan qualification process. Cost effective attention to construction techniques, building materials, and mechanical systems may produce high quality homes that can then be made affordable for a larger portion of the potential home-buying market.

Work has begun on developing training guides and reviewing construction blueprints for the homes that will most likely be built by the participating builders.

**Strategic Planning Step Illustrated:** *Environmental Scan.* Planning staff in Hennepin County examined many external factors before choosing retrofit and new construction as the focal points for their energy conservation efforts. Before initiating the Residential Shared Savings Demonstration Project, Hennepin County staff examined both the commercial, public and multi-family areas for their potential as projects. Retrofit of existing residences was the highest priority in the community and the most appropriate project financially and administratively for Hennepin County's initial residential project.

Financing options for the residential retrofit program were investigated by the staff. Shared savings programs across the country were examined. Staff also investigated research performed on potential energy savings from alternative energy conservation measures by other states and by the USDOE. Other factors that could affect the project were also examined, such as projected energy prices, interest rates for mortgages, and the price of gasoline. (The price of gasoline directly affects the public's perception of the need to conserve energy). All of the "scanning" done before the project began pointed to a successful residential retrofit program using shared savings as the financing tool.

Scanning was also performed intensively during the investigation of St. Louis's superinsulation program. Hennepin County staff examined local, state, and national factors to determine if a superinsulation program for new construction would work in Hennepin County. The staff interviewed experts at the state and local level, read extensively and did a site visit to St. Louis in an effort to determine applicability. The results of the scan clearly indicated that it was necessary to redirect the project. The staff learned as a result of those activities that a new set of issues needed to be addressed, such as builder resistance, construction practices, and a low interest level on the part of lenders. In this process, staff looked at a number of alternative methods of accomplishing the project goal of energy efficiency in new construction and eventually selected the alternative of improving energy construction practices and implementing the "house as a system" concept. As a result of refining that alternative to better match with the housing environment in Hennepin County, a research design was developed which could provide the best resolution of the potential problems.

**Consideration of Public/Private Financing Options:**

CDBG/UDAG Support. Hennepin County staff attempted to use the CDBG to support energy efficient residential construction. They spent a great deal of time during the summer of 1986 trying to work with a currently funded CDBG project. In Hennepin County, the CDBG funds are provided to local municipalities in the county. One of the local

municipalities had received \$325,000 in CDBG funding to provide lot improvements for a development for low to moderate income families. The city had been unable to secure mortgage insurance for the planned development as the insurer was unwilling to underwrite a development that would be 50 percent low to moderate income. (In this particular case there were 21 lots and 11 houses which would have been sold to low to moderate income families.) One of the builders who was interested in Hennepin County's project was willing to buy the lots for the development and to build and market 50 percent to low and moderate income families. A great deal of time was spent in discussing this proposal with the city staff and trying to provide a method in which the city could follow through on their original plan. Unfortunately this effort was not successful. When the city was unable to procure the necessary underwriting, they decided to develop the proposed subdivision for middle income families. Because of community pressure to have more expensive houses in the area, the City Council decided to repay the CDBG funds and to issue an RFP for the development.

The two major problems were administration within the city and the timing of learning about the project. A major difficulty was linking CDBG funding with its restrictions to a less restrictive program with different goals. If county staff had been aware of the existence of the project six months earlier, they might have been able to work with City staff so that the City would have proceeded with the original CDBG proposal. In Hennepin County it is essential to consider CDBG in the initial planning rather than after the fact.

**Private Support. Hennepin County developed a cooperative and innovative effort with** the private sector to implement the residential shared savings program. The energy service company working with Hennepin County on this project invested more than \$350,000 in the project for the energy efficiency measures implemented in the rehabilitated existing homes.

**Project Results:** The results can be seen in two projects:

**Residential Shared Savings Demonstration Project.** Results from this program have been mixed. Saving levels of 35% were needed to make the project work financially for the energy service company, but saving levels of only 7-13% are being actually achieved. Natural gas prices have decreased by 12% in 1985 and 1986 and that will greatly impact the revenue outcomes for the ESCo. In addition, it became apparent that occupant life style, attitudes and behavior are an even greater factor in achieving energy savings than had been anticipated.

Hennepin County has continued to monitor and evaluate the Residential Shared Savings Demonstration Project. This activity involved collecting the monthly natural gas and electrical consumption figures on almost 800 homes in Hennepin County. Comparisons will be conducted of heating degree day adjusted figures for pre and post participation consumption. This analysis will be completed in 1987 and published in a special Energy Task Force report later that year.

Energy Efficiency in New Housing Demonstration Project. The intense environmental scan conducted in the beginning of the County's effort to improve the energy efficiency of new single family homes resulted in a major shift in focus and redesign of the project. It was clear that the dramatic and unexpected declines in the prices of major fuels that occurred in 1985 and 1986 and the shifting course of interest rates had changed the environment to such an extent that the original project based on a previously conducted needs assessment would be a failure. The revised design has received support from builders and the County is now proceeding with data collection activities for the control group and with the analysis of construction options for the demonstration homes. The emphasis is on containing the builders' costs while improving the energy efficiency of his products. Construction of the first group of demonstration houses will begin in the spring of 1987.

**Future Outlook:** Hennepin's project was the beginning of an ambitious and complex effort to transfer the expertise and technical knowledge of consultants experienced in the realities of energy efficient construction and its marketing to new home contractors building in the Twin Cities area. The education and solicitation of builders and subcontractors, focused on cost effective improvements that did not increase builder or homeowner costs and could be rigorously evaluated. With builders now committed to participation, data collection on control group houses has begun. Construction of the first homes using different materials and techniques is expected to begin in May 1987. Monitoring of consumption patterns will be conducted during 1987 and 1988 and surveys of home buyers and builders will be a major part of the next phase of the project's activities.

### **"Technology Transfer Of Residential Energy Programs In New Construction And Existing Housing" St. Louis, Missouri**

#### Community/Energy Development Goals:

- *Stabilize the residential population within City limits.*
- *Increase the affordability of urban housing by developing access to lower-cost financing.*
- *Create a "progressive" reputation of City which increases the City's competitive position in relation to the suburbs.*
- *Ensure both short and long-term property value increases of urban residential units.*

#### Supporting Energy Strategies:

- *Implement a full-scale superinsulated housing program for both new construction and rehabilitated housing.*
- *Integrate the superinsulated housing program into a \$16 million CDBG housing implementation program.*



- o *Share information on superinsulation of new housing with Hennepin County, Minnesota; obtain information on performance contracting for existing housing from Hennepin County.*

**Project Description:** St. Louis is experiencing many of the decentralizing trends of older urban cities, especially in the area of housing. As suburban housing holds a strong attraction to urban dwellers, the City is looking for ways to retain and attract the residential population. One way of counteracting that trend is to offer houses with special features within City limits. St. Louis has found one of those special features in "superinsulation", a means of insulating a house to a point whereby heating and cooling bills are greatly reduced. In fact, superinsulation is defined as the energy conservation measures required to reduce annual heating and cooling costs by 50%. The energy conservation measures required to achieve this performance on a single-family house in St. Louis are:

R-19 walls, R-40 ceiling, R-11 floor insulation, a furnace upgrade to either a recuperative gas furnace (81% efficient) or to a high efficiency heat pump (COP = 2.5 and SEER = 9.0), an air tightening package of caulking around windows and doors, and installing electrical outlet gaskets.

For several years, St. Louis has been implementing a superinsulation program for new construction. In 1984, the St. Louis Energy Management Program obtained the cooperation of the private sector in building seven new housing units with superinsulation, and adding superinsulation while rehabilitating 27 single and multi-family dwellings. In 1985, St. Louis examined a variety of approaches to finance energy-efficient construction to accelerate the use of superinsulation as standard construction practice in the St. Louis housing market. As a result of that examination, the City decided to promote the incorporation of energy improvements in conventionally financed projects and has adopted mandatory energy standards for housing projects utilizing Community Development Block Grant funds.

In 1986, St. Louis implemented a full-scale superinsulated housing program that integrated work from 1984 and 1985 into a \$16 million CDBG supported housing implementation program. Included in that program was an examination of energy efficiency retrofit programs for existing housing. St. Louis was especially interested in Hennepin County's Residential Shared Savings Demonstration Program and wanted to examine that program for applicability to St. Louis's housing sector.

St. Louis's superinsulation program centered on the implementation of mandatory energy improvements for developers to follow in order to receive City funding on rental and for-sale new and rehabilitated projects. St. Louis has incorporated energy standards into the CDBG housing program, and developers receiving CDBG funds must meet energy standards in their construction. Since 50-70% of new units are being built with CDBG funds, this regulation will substantially upgrade new and rehabilitated housing in St. Louis.

St. Louis has also continued to monitor the 27 superinsulated houses newly constructed or rehabilitated in 1984. They found that although heating bills have been lowered by the superinsulation, some of the residents have not been using the air-to-air heat exchangers (AAHE) properly. This improper use combined with several

Defective AAHE units, has interfered with accurate measurements of reduced energy usage. St. Louis has found that residents of superinsulated units need to be carefully informed about how to properly use energy features in the house to achieve maximum conservation levels. St. Louis has also developed a computer program to analyze performance of energy conservation measures.

Finally, St. Louis is in the process of outreach and marketing to local lenders on the advantages of "energy addendum" financing. This financing allows for a reduction in income to qualify for a given home loan if a house meets certain energy criteria. This underwriting procedure is available because in 1983, the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac) liberalized policy to recognize energy efficient housing. In a City like St. Louis, with a smaller proportion of the population at income levels sufficient to purchase housing, this liberalized financing route offers great promise. It is a means of qualifying homeowners with less income by allowing banks to tap into the more liberal underwriting guidelines offered by Fannie Mae and Freddie Mac. To market energy addendum financing to local lenders, St. Louis has sponsored a seminar for local bankers with Freddie Mac and Fannie Mae representatives as speakers.

**Strategic Planning Step Illustrated:** *Selection of Key Linkages.* St. Louis's Energy Management Program staff knew several years ago that they had to incorporate energy programs into the most effective and relevant programs in the City. As St. Louis's Community Development Agency in recent years has been undertaking a great deal of housing rehabilitation, it became apparent that housing was an appropriate area to integrate energy efficiency programs. The key linkages in this program were:

- o the use of energy efficiency as a means to stabilize the residential sector within city limits by making urban homes more attractive; and
- o the use of energy efficiency to make urban homes more affordable by lowering the financing costs.

A marketing program to highlight the fact that energy efficient houses are available only in the City will be carried out. This type of marketing campaign will give St. Louis a competitive edge in the ability to retain and attract residents.

**Consideration of Public/Private Financing Options:**

**CDBG/UDAG Support.** St. Louis has integrated energy standards into the CDBG housing program. Developers using CDBG funds must submit their plans to the City for building code review prior to funding and construction site inspection. Energy standards are incorporated into review processes.

**Private Support.** St. Louis had obtained the cooperation of several developers in 1984 to build superinsulated homes. With only a small amount of seed money, the developers agreed to build or substantially rehabilitate 27 dwellings with their own funds.

Other Support. St Louis has received "oil overcharge" funding for support of its residential energy conservation program and has approached the Missouri Housing Development Commission for additional financial assistance. The outcome of this latter request is still pending.

**Project Results:** The result of this project will be:

1. A demonstrated energy efficiency technique for lowering energy costs -- in both new and rehabilitated construction.
2. Major inroads in getting higher energy standards accepted by developers and large-scale production builders (as compared to "custom builders")
3. The incorporation of energy standards into the CDBG housing program.
4. Development of a program to encourage local lenders to use "energy addendum" financing to qualify more families for home purchase.
5. Groundwork for initiating a successful program to "retrofit" existing homes in St. Louis utilizing performance contracting.

**Future Outlook:** The future outlook for superinsulated housing is very promising in St. Louis. The Energy Management Program in St. Louis has recently received \$500,000 from the state to continue with a superinsulated housing program. St. Louis will be sponsoring the construction of 70 to 100 superinsulated housing units that will serve as "lead" projects, and that will be part of an intensive marketing program for superinsulated housing in St. Louis.

St. Louis's Energy Management Program is also working with Union Electric Company, the local utility, to develop a variety of individual energy retrofit items that would be appropriate for residential retrofit of existing housing. In addition, St. Louis has modelled a variety of subsidized funding sources to make loan pool money available to builders for retrofit of existing housing. Funding sources identified include 1) Exxon oil overcharge funds; 2) Missouri Housing Development Commission; and 3) utility programs. Financing packages could be developed out of any one or a combination of those sources.

**"Neighborhood Energy Efficiency And Reinvestment Program"**  
**San Antonio, Texas**

*Community/Economic Development Goals:*

- o Lower energy costs for low and moderate income persons in nine designated neighborhoods.*
- o Establish a neighborhood planning process to enable neighborhood organizations to develop outreach and service programs on an independent basis.*

Supportive Energy Strategy:

- o Develop and implement a neighborhood energy efficiency and reinvestment plan for neighborhood organizations that will encourage efficient energy usage in single family residential buildings.*
- o Utilize neighborhood associations in marketing and implementing energy efficiency measures.*

Project Description: During the past three years the City of San Antonio, through its municipally owned utility City Public Service, has implemented energy conservation programs for residential homes. The programs have included a rebate for the purchase of energy efficient air conditioners, low interest loans, home audits, and free weatherization kits. The impact of these programs is largely unknown since only limited analysis has been conducted on the energy savings resulting from these programs. In addition, residents were never surveyed regarding their energy needs or how they felt about the programs. An additional problem has been that the programs presently offered are generic and not necessarily developed for the City of San Antonio or for specific neighborhoods. Residents did not implement energy conservation programs, such as the weatherization kits, until many months after they received them or not at all. Reasons for not implementing kits included: (1) the kits weren't designed for their home; (2) the residents did not have the time and/or the knowledge to install the equipment; (3) residents didn't completely understand or believe in the benefits of installing the equipment in the kits.

The objective of this project was to work closely with neighborhood associations to match appropriate energy conservation measures directly to single-family residential homes. In 1985, San Antonio performed a computer analysis of various energy efficiency measures to determine which ones were most effective for the climate and weather conditions of San Antonio. This analysis was utilized to form the groundwork for evaluating efficient and cost-effective conservation programs for specific neighborhoods in 1986.

There were several tasks to achieve the goal of matching appropriate energy conservation measures to single-family homes. The initial tasks consisted of selecting the appropriate neighborhood associations to participate in the energy project; distributing a questionnaire survey to residents on preferred energy conservation measures; and finally, conducting a housing stock evaluation and analysis. A housing stock evaluation and analysis in nine neighborhoods was conducted, and an appropriate "best set" of energy conservation measures was ultimately developed for three of those neighborhoods. To perform the latter, census data and Residential Conservation Service audits were utilized, as well as computerized demand programs. Energy audits were conducted block-by-block in neighborhoods to determine the particular energy conservation problems for each neighborhood. The Texas A&M University Energy Extension Service assisted in conducting audits of selected homes.

To ensure that neighborhood associations would have the results of the research on energy conservation measures in a readily available format, San Antonio created a video-tape and guidebook "how-to" series on auditing and implementing energy efficiency measures in residential homes. (These materials were developed in conjunction with several other local non-profit agencies and neighborhood associations).

defective AAHE units, has interfered with accurate measurements of reduced

The tapes are available free upon request to neighborhood groups. Additionally, a series of seminars on residential energy conservation and energy services available from the city and other agencies were held throughout the city for local residents and neighborhood leaders. Finally, a self-help planning process whereby a neighborhood group could initiate and implement its own energy program was established. This latter step has required San Antonio to identify persons in each neighborhood association that could act as a neighborhood energy coordinator for residential energy programs. A package of information on energy conservation will be distributed to each neighborhood energy coordinator and residents. That package will contain information on why energy costs are a problem; examples of particular houses in that neighborhood and their energy problems; a list of approved ECM's for the houses in their neighborhood; and information on marketing an energy program. References to other sources of energy services and information will also be provided to the neighborhood leaders.

**Strategic Planning Step Illustrated:** *Develop Goals, Objectives, and Strategies.* San Antonio staff had clearly defined goals and objectives for their project. The following is a summary of what they wanted to accomplish. For example:

**GOAL**

*The purpose of the City of San Antonio's project is to develop and implement a neighborhood energy efficiency and reinvestment plan that will encourage efficient energy usage in neighborhood residential and commercial buildings and aid in establishing community "self-help" energy programs.*

**OBJECTIVES:**

*By working and relying on neighborhood associations, the project hopes to:*

- (1) apply specific energy conservation design measures directly to neighborhoods based on housing stock analysis;*
- (2) actively provide energy awareness information and training to the consumer/homeowner/rate payer; and*
- (3) expand and strengthen energy-related activities and promote citizen involvement in their neighborhoods. (San Antonio Year 7 Task Force proposal, 1985.)*

**Consideration of Public/Private Financing Options:**

**CDBG/UDAG Support.** After much consideration, it was decided not to use these financing sources as historically they have been used for major redevelopment projects and the community development department has not considered energy rehabilitation as an appropriate use of these funds. However, although CDBG and HDAG funds have not been used for energy efficient improvements, progress has been made in getting local CDBG funded agencies to review their retrofit programs for energy-efficiency.

Private Support. Private support is anticipated to be provided by local companies which can supply energy conservation materials, such as caulking and weatherstripping, to neighborhood associations. The neighborhood officials would then distribute the materials to homeowners in the neighborhood. Local companies have offered discounts to neighborhoods for energy conservation materials and San Antonio has decided to let the neighborhoods move forward on obtaining the discounts, with the city as a "facilitator".

**Project Results:** The result of these activities will include:

- Each neighborhood organization will have a list of the most appropriate energy efficiency measures for its particular residential structures.
- Each neighborhood organization will have a prototype marketing plan to market the appropriate energy conservation measures.
- "How-to" videotapes on residential energy conservation will be available free to the neighborhood groups.
- Energy conservation services offered by the utilities, the local Council of Government, by the City, and other groups, will be coordinated in a more efficient manner.
- A Coordinated Community Energy Retrofit and Assistance Program will be established among agencies.

As an added benefit from this project, San Antonio is examining how to incorporate energy efficiency standards into the City's Neighborhood Association Planning Process. An Energy Conservation Committee has just been established by the City Public Service. The progress made so far in collecting data for the neighborhood energy project has been presented to the Committee. No decisions have been reached by the Committee; however, there has been much discussion of new building codes addressing energy conservation.

**Future Outlook:** The usage of private assistance and funding will grow in San Antonio for energy conservation programs. The neighborhoods are pleased with the home energy guidelines and many residents have viewed the Cable-TV series on "Energy and Housing". Eventually, for all 9 neighborhoods, San Antonio will develop neighborhood energy guidelines. Also, within the next year there may be revisions to the building code which require greater energy efficiency in new buildings. Community support is growing and the City Public Service is beginning to re-examine their energy conservation programs and evaluation process. Although funding and direction from the City is diminishing, there are several spin-off effects which will continue independently of the City of San Antonio. They include:

- A cable-TV series on energy conservation measures. A local cable TV company and other local agencies have offered financial assistance to continue it.

defective AAHE units, has interfered with accurate measurements of reduced

- The City's Neighborhood Planning Process Handbook now has a section on energy conservation.
- Private sector involvement with the neighborhood organizations in providing energy conservation is moving forward.

**"Commercial Building Retrofit Program" San Francisco, California**

Community/Economic Development Goals:

- *Reduce the impact of energy costs on local business.*
- *Keep local dollars in the community to be recirculated rather than being exported out of the City to pay for heating and cooling of commercial buildings.*

Supporting Energy Strategies:

- *Develop an educational and marketing program on commercial building retrofit to educate downtown building owners about the benefits of commercial building energy efficiency.*
- *Develop a prototypical commercial building energy conservation ordinance.*

Project Description: The period from 1965 to 1981 was one of unprecedented growth in San Francisco's downtown area. Office building construction alone more than doubled, growing from 26 million sq. ft. to 55 million sq. ft. Most of this construction took place, or was approved, prior to the introduction of California's Non-Residential Building Energy Standards (known as Title 24) which came into effect in 1978. Much of San Francisco's downtown commercial building stock, therefore, was designed for an era of cheap energy. Unfortunately, the energy profligate buildings which resulted from the attitudes common during this period are still prevalent. They are now consuming unacceptable quantities of very expensive energy and absorbing financial resources that would be better spent in more productive areas of San Francisco's economy.

To date, most of the buildings which have benefited from serious retrofit conservation efforts have been both owner-occupied and at the high quality end of the real estate market. However, in the case of the remaining 85 percent of San Francisco's downtown commercial office buildings which are rented, the situation is very different. In these buildings, owners typically pass energy costs on to tenants either directly or indirectly through the lease agreement; hence the owners receive no financial benefits from conservation investments in their buildings. The tenant meanwhile, sees little incentive for investing his capital in someone else's building. Inevitably, this has meant that the potential benefits of conservation are not being realized in a large majority of buildings in the commercial sector. Therefore, if the commercial building stock is to be reached on any large scale, retrofit programs and

incentives have to be tailored to the individual needs of the various user groups. The program attempted to do this in three ways:

- Through the provision of education and informational materials which show the benefits of commercial building energy retrofit, give a technical approach to how it may be done and describe actual examples of buildings where energy retrofits have been successfully implemented.
- Through the use of economic incentives.
- Through the use of legislation.

Before accomplishing the above three tasks, San Francisco staff had to examine the issues influencing commercial building energy retrofit in San Francisco.

The influences they examined included:

Market Influences: the cost of energy relative to the total cost of commercial office space; the cost of energy purchases made outside the city and the effect of these on the city's economy; the long term influence of short term reductions in energy costs.

Financial Incentives: the effect of excess electricity generating capacity on utility supported financial incentives; the possibility of revolving fund or other financial support for retrofit being provided using PVEA (Petroleum Violation Escrow Account) funds.

Institutional Impediments: the master metering of commercial buildings and the consequent lack of incentives for conservation; the use of computerized building monitoring as metering systems; landlord/tenant leases and the energy cost "pass-through"; current governmental anti-regulation bias and retrofit ordinance development; the development of ordinance implementation procedures.

Education: the development of appropriate educational/informational materials for building owners and tenants; retrofit "success" stories and testimonials for retrofit; appropriate means of informing building owners and managers on the benefits of retrofit.

Building Energy Use: effective energy conservation measures and conservation strategies for San Francisco commercial buildings; by building type and in total; the multiplier effect and the financial benefits of energy retrofits to the city economy.

Each of these factors was crucial to understanding why retrofit was not being undertaken, and how energy efficiency programs should be designed to counter-act obstacles in marketing and financing energy retrofit programs.

In developing educational materials, San Francisco has incorporated many of the above factors into appropriate materials for three user groups: owner/occupants, landlord, and tenants. Each of those groups has a different interest in energy



retrofit, and each of these interests had to be addressed accordingly. The owner/occupants need information on appropriate energy conservation materials and access to capital. Landlords need information on how they can benefit from energy conservation measures and energy efficient buildings. The tenants need information on how savings can benefit them

Research that was conducted for the educational materials included the examination of appropriate energy conservation measures for existing commercial buildings, case studies of buildings that have successfully incorporated energy retrofit strategies; potential funding sources and incentive programs; testimonials from building owners on the benefits and risk in conservation investment; and a review of the legal and other issues involved in tenant energy retrofit investments.

Issues that had to be decided for a prototypical energy efficiency ordinance included determining the types of commercial buildings that the ordinance should regulate; enforcement procedures; assignment of financial responsibilities for carrying out energy efficiency; implementation and other procedures. San Francisco has hired a consultant to develop the language for the ordinance.

**Strategic Plannine Step Illustrated:** *Building a Consensus.* San Francisco is in the process of developing an ordinance to promote commercial energy efficiency, and for the passage of that ordinance to occur, a strong consensus will need to be developed. In building that consensus, San Francisco has had to gather supporting data on the importance and need for commercial building energy efficiency in the downtown area. Included in that supporting evidence will be the dollar value of energy saved through commercial energy retrofit, the number of dollars that are currently being exported to Canada and the Southwest to pay for energy, and the economic multiplier effect of energy dollars retained in the community through energy efficiency. Staff have been working with the Mayor's Energy Management Committee to develop support for the ordinance.

**Consideration of Public/Private Financing Options:**

CDBG/UDAG Support. San Francisco has not attempted to incorporate CDBG or UDAG funds into its commercial building retrofit project. CDBG and UDAG funds have never been used before in San Francisco for energy efficiency projects of this type. CDBG funding of energy related projects has hitherto been confined to weatherization work in housing rehabilitation projects. There are, therefore, no precedents or procedures established for their use in the present project. A considerable amount of time and effort will need to be invested in order to employ funds in this way for the first time, especially if the use of funds for energy related projects requires the withdrawal of funding from existing non-energy programs.

San Francisco's objective for the future will be to locate a project with the following characteristics:

- o Where public and private joint funding is involved.
- o Where there is sufficient lead time for the development of potential uses for CDBG and UDAG funding, prior to their al-

location to other City programs. (The situation is further complicated by the different start dates used by the various funding agencies.)

- o Where low and/or moderate income housing is involved.
- o Where the project may encourage the development and growth of new energy related small business.
- o Where new, large scale construction is involved.

At least four out of the five conditions listed above apply to a project which San Francisco is implementing with the Energy Task Force in 1987. San Francisco is hopeful that it will be able to link this project to CDBG or UDAG funding.

Private Financing Support. During the introduction of an equivalent residential energy conservation ordinance, utility sponsored financial incentives were made available to qualifying building owners. These reduced the burden of compliance, and their existence eased passage of the legislation. Electric utility sponsored incentives however, may not be as supportive for new conservation programs. PG and E's present position of excess generating capacity, coupled with depressed prices for natural gas and oil, are changing the emphasis of their community directed programs from conservation incentives to incentives for private sector load management programs. These programs help the utility obtain the most efficient use of its generating capacity. In hopes of replacing utility support with some other alternative source of financial assistance to building owners considering retrofits, San Francisco will also be investigating the possibility of some type of revolving fund support using PVEA funds.

Project Results: The results on the project will include:

- o Technical material on the recommended energy conservation measures for commercial building retrofit in San Francisco.
- o Case studies of buildings that have successfully incorporated energy retrofit strategies.
- o A draft commercial building energy conservation ordinance together with supporting material and policy recommendations.

Future Outlook: The future outlook for the project has three major components:

- o The final development of the educational/informational material into a form which can easily be distributed to the owners and managers of commercial buildings.
- o The adoption of the ordinance by City government and the development of the final code language by the City Attorney.

- o If the ordinance is adopted, then this will also require the development of ordinance implementation materials and procedures.

The completion of the above project components is not part of the present Energy Task Force project and will be separately funded.

## **NOTES ON TECHNICAL ASSISTANCE**

As a key element of the "Energy Strategies" project, PTI provided individualized technical assistance to each of the six participating local governments. The technical assistance was supported financially by USHUD and was structured by each city or county specifically to fit its particular needs. In several of the cases, the technical assistance consisted of personalized assistance provided in one or two days by a consultant skilled in a particular area, such as financing, district heating, or building construction practices. In other cases, the technical assistance was provided in a workshop, and in one case by research performed by PTI. Following is a discussion of the assistance provided to each local government, and the impact that it had upon that locality's project.

### **Chicago, Illinois**

Technical Assistance. The financial services and marketing firm of Charles Rial and Associates reviewed a business feasibility assessment of "building balancing" performed previously by the City of Chicago's Planning Department. The firm analyzed the market potential of building balancing of multi-family buildings as a stand-alone commercial venture. The consultants found that although there is tremendous market potential for building balancing in terms of the number of poorly heated multi-family buildings in Chicago, that building balancing as an independent commercial venture is not advisable for a number of reasons, including:

- o Market of building owners/managers is difficult to penetrate.
- o There are no absolute guarantees of how much energy building balancing can actually save.

The consulting firm suggested that instead of trying to survive independently, that building balancing be included as a joint venture with a well-established furnace contractor. In that way, balancing can obtain legitimacy in the eyes of the building owner and a portion of the risk in start-up is offset by the existing revenue generating activities of the licensed contractor.

Impact. The recommendations made by Charles Rial and Associates have helped Chicago to re-formulate their approach to developing the new business venture of building balancing. Chicago staff are now looking at a partnership approach with a private heating contractor versus having the Energy Centers perform building balancing on their own as an independent business. The technical assistance provided by Charles Rial and Associates have given Chicago a different perspective on the type of business structure necessary to penetrate the multi-family market for balancing services. Their recommendations have been incorporated into the final report of Chicago's project, and will serve as the basis of initial discussions

with traditional heating contractors to offer building balancing as a joint service with heating services.

### **Columbus, Ohio**

Technical Assistance. Technical assistance was provided to Columbus on its district heating project by William Mahlum of St. Paul, Minnesota, and David Gatton of Development Initiatives, Inc. and the U.S. Conference of Mayors. Mr. Mahlum had been instrumental in developing St. Paul's district heating project, and Mr. Gatton had done a great deal of research on district heating for the U.S. Conference of Mayors. In a one day period, Mr. Mahlum and Mr. Gatton spent time with the City's Strategic Planning staff and with certain key decision-makers, including a prominent city councilman, and several administrative and city services department heads. They presented a broad overview of the economic development potential of district heating, citing the developments in Nashville, Trenton, Hartford, and St. Paul. They noted that many cities had used CDBG or UDAG funds to finance the start-up of their systems. The consultants also answered questions on the appropriateness of city financial involvement, effects on competing utility, rates, and non-profit ownership.

Impact. During the technical assistance visit, the consultants had impressed a key supporter of district heating, (a Councilmember) with the benefits of district heating. The Councilmember has since taken a leadership role on promoting district heating. Additionally, the Director of the Public Utilities Department has expressed interest in financing additional technical, legal, and financial feasibility work to move district heating further along. Finally, the consultants made several key suggestions concerning the district heating proposal put forth by the Danish firm to Columbus which are being carefully considered by the Columbus Planning Staff.

### **Hennepin County, Minnesota**

Technical Assistance. Enerplan, Inc. of Toronto, Canada spent two and one-half days with Hennepin County Planning Staff and local builders. Enerplan's area of expertise is in construction technology, marketing, and urban development. In on-site visits to homes in the process of being constructed, they assessed the building techniques of local builders, their ability to initiate new techniques, and the type of training needed by builders. Enerplan also introduced Hennepin County staff to the concept of viewing "The House as a System." In this concept, a house can only be energy efficient if the envelope, mechanical systems, and occupants all function together. Interactions between the three components determine energy efficiency.

Impact. Enerplan's ideas and suggestions had a major impact on Hennepin County's project. Hennepin County staff had arrived at the realization that super-insulation as practiced in St. Louis would not be appropriate for Hennepin County, and the visit by Enerplan was fortuitous in helping to redirect Hennepin's project. Enerplan's "House as a System" concept became integrated into Hennepin's project. In addition, Enerplan assisted in formulating a new research design and identifying specific tasks that needed to be accomplished.

defective AAHE units, has interfered with accurate measurements of reduced

### **St. Louis. Missouri**

Technical Assistance. One of the goals of St. Louis's project is to disseminate information about energy addendum financing whereby banks allow a reduction in income to qualify for a given home loan if the home meets energy-efficient criteria (due to underwriting by Fannie Mae and Freddie Mac.) St. Louis held a workshop seminar for local bankers and had speakers present from the Fannie Mae office in Houston.

Impact. The impact of the technical assistance has been substantial on the banking community of St. Louis. Many of the bankers learned about, and will most likely use, energy addendum financing for homeowners. To encourage that practice, St. Louis plans to use 5 of the 70-100 newly constructed superinsulated units as case examples of the use of energy addendum financing. St. Louis identified several banks at the workshop that were especially interested in energy addendum financing and will work with them on the 5 case examples mentioned previously to develop financing using Freddie Mac or Fannie Mae.

### **San Antonio. Texas**

Technical Assistance. The City of San Antonio's Office of Public Utilities conducted a one day "Home Energy Efficiency and Reinvestment" Seminar for neighborhood leaders and residents. Guest speakers included Robert Miller, Planning Supervisor for Hennepin County, Minnesota, and Bob Batho, American Institute of Architects, Houston, Texas. Speakers were also present from local public and private agencies. The goals of the seminar were to 1) increase knowledge of energy conservation practices; 2) educate neighborhoods on the economic benefits of energy efficiency; 3) demonstrate how neighborhoods can develop their own energy programs; and 4) promote public relations between the City and local neighborhoods.

Impact. The majority of the participants were presidents from neighborhood associations representing over 10 neighborhoods. The presidents expressed great interest in the topics of the seminar, and have relayed much of the information to their own respective associations. The Office of Public Utilities has received a number of phone requests for more information since the workshop. In addition, the seminars provided an opportunity for the City staff to better learn the needs of the neighborhood associations.

In addition, since that initial seminar, two more one-half day seminars have been held. A result of the seminars has improved coordination between the city's energy programs and the energy activities of various agencies such as the Alamo Area Council of Governments. A spring workshop will be held to promote home exterior painting coupled with weatherization.

### **San Francisco. California**

Technical Assistance. San Francisco's Bureau of Energy Conservation needed information on ways to counteract the disincentives to energy efficiency between landlords and tenants in commercial buildings. PTI undertook this request as a specific research task. PTI provided San Francisco with a list of contacts knowledgeable on the topic and articles on promoting energy conservation in com-

mercial buildings. San Francisco was also interested in how commercial building energy efficiency affects the local economy. Again, **PTI** provided contacts and articles on this topic, including research performed by other state governments.

Impact. The materials provided to San Francisco discussing the impact of energy efficiency on the local economy will be used to provide strong arguments for promoting greater energy efficiency in the commercial sector. San Francisco has developed a model energy efficiency ordinance for the commercial sector and is examining the energy efficiency elements of a new development and the materials provided to San Francisco will assist in developing support for action in these areas.

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<sup>43</sup> Office of Program Analysis and Education, Community Planning and Development, UDAG Program Paybacks, (September 1984) **pp** 4,5.

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<sup>45</sup> Public Power, (Washington: American Public Power Association, Volume 43, Number 6, November 1985).

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<sup>47</sup>American Gas Association Monthly, (Washington: American Gas Association, August 1986). p. 28.

<sup>48</sup>**Center** for Corporate Public Involvement, Understanding Social Investment. (Washington, D.C. 1985).

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Report. 1980.





## APPENDIX

### Resource Guide for Chapter 2: Environmental Scan

#### Energy Development

##### Annual Energy Outlook

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Additional copies of this report, *The Hidden Link: Energy and Economic Development -- Phase I: Strategic Planning*, as well as more detailed individual project reports from each of the participating local governments on the project team are available from:

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Phase II of this project, to focus more specifically on financing and financial management options, began early in 1987 and is scheduled for completion in Spring, 1988. Please contact PTI's Research Center staff in Washington, DC, for more information on the status of Phase II, or to request additional information on other activities of PTI, the Urban Consortium, and the Energy Task Force.

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