UTILITIES AND INDUSTRIES:

New Partnerships for Rural Development

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The Northeast-Midwest Institute

The Aspen Institute

State Policy Program

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Executive Summary

Utilities are becoming actively involved in the economic development process and serving as catalysts for technology transfer. In partnerships with local and state officials, utilities offer hope to small towns and rural areas that are least able to muster the resources to cope with economic change.

This book and the policy workshop that preceded it provide a rationale for utilities to stimulate economic development activities. The book outlines a process for designing and implementing cooperative relationship between utilities, state governments and industry to improve competitiveness, increase the pace of technological modernization, enhance efficiency, reduce wastes, and stimulate economic growth. It also suggests ways to strengthen ties between utilities and state economic development officials to support a utility-based, energy efficiency-economic development strategy. Several factors have converged to make such partnerships fit existing needs in communities of all sizes:

- U.S. industry's dominance in international and domestic markets has eroded and will continue to erode because of a loss of technological leadership to foreign firms;
- The current level of federal and state support of the manufacturing sector is negligible compared to the amounts of financing and technical assistance other countries invest; and
- Utility demand-side management (DSM) programs targeted to manufacturing industries, despite their potential, have lagged behind residential and commercial programs.

Many domestic firms have not modernized at the same rate as their international counterparts. The problem is particularly severe in rural areas that are remote and have small populations, and thus usually have less easy access to specialized skills and information. As a result, industrial

extension is particularly important for rural areas, especially for small and medium-sized firms.

Utility-business-state economic development partnerships offer benefits to several parties. For industry, working with utilities will provide a mechanism to build a long-term strategy linking energy efficiency and business competitiveness. This type of partnership can allow firms to lower their operating costs and shift capital savings to other uses.

Such partnerships also provide economic development agencies and officials with new tools for packaging and promoting economic development projects. They can be valuable as a business expansion or retention incentive or to spark industrial modernization. Moreover, the program might be linked with existing technology transfer efforts, helping finance facilities needed to commercialize new products or modernize manufacturing processes. As a result, new investment would be stimulated, jobs saved or created, and industrial competitiveness enhanced.

Utilities, moreover, benefit because they have an important stake in the economic vibrancy of their service areas. By participating in an industrial energy efficiency program, a power company can help preserve its existing industrial and commercial base. By making energy use more efficient, it also stands to shave peak demand, resulting in lower wholesale prices on the power purchased from suppliers and lower retail rates for customers. Finally, reduced energy consumption can lessen the need for some utilities to undertake costly expansion programs to increase their generation capacity.

This book proposes state-based programs that have utilities become active partners encouraging modernization of industrial process technologies. Through working groups of state economic development and energy officials, regulators, utility executives, industrialists and consumer advocates, a utility-business-state partnership would offer a three-pronged assessment that examines the energy efficiency, productivity and waste reduction potential of industrial customers. The proposed partnership also would provide financial assistance for firms to invest in the process technologies recommended by the assessment.

The suggested partnership incorporates three goals: to enhance productivity and competitiveness; to reduce the waste stream and minimize environmental effects; and to make industrial plants more energy efficient per unit of production.

Chapter 1 outlines the reasons for framing such a partnership strategy, considers the importance of manufacturing competitiveness, and examines various activities that utilities undertake to encourage business attraction, retention, expansion, and start-up. This chapter also examines arguments raised against such utility-led initiatives. Chapter 2 outlines the steps that partners would take to plan and implement a statewide utility-based program that supports economic development and manufacturing modernization. In large part, this strategy emerged from productive discussions of a working group convened in September 1991 by the Northeast-Midwest Institute to consider industrial efficiency/productivity program options. Chapter 3 discusses existing state and federal economic development resources that can help promote these partnerships. Finally, Chapter 4 summarizes the state of utility-industry partnerships today.

Throughout the book, 15 examples of state programs have been highlighted. They illustrate the various aspects of partnerships and identify initiatives that could serve as building blocks to enhance utility-business partnerships designed to increase manufacturers' productivity and competitiveness. This is not a comprehensive list but a sample that shows a wide range of activities and how the needs and opportunities of different locations, company sizes, and industrial sectors might be addressed.

Chapter 1. Bringing New Energy to Rural Development Partnerships

Identifying New Economic Development Partners

Economic development is the driving public policy issue in nearly every state and is a key concern in most small towns. States and communities have made great strides recently in crafting effective programs that help existing companies modernize and expand. In an era of shrinking state and federal dollars, however, these state and local initiatives need to bring new partners into the economic development process.

Utilities, including both electric and gas companies, can serve as critical partners to increase the efficiency and productivity of local firms

Utilities, including both electric and gas companies, can serve as critical partners to increase the efficiency and productivity of local firms. Pilot programs have shown that businesses, benefiting from utility assessments and financing, increase their competitiveness by purchasing energy-efficient and technologically-advanced equipment. Utilities actively and directly involved in the economic development process also have catalyzed the introduction of more modern technologies to existing industrial operations.

An active partnership between utilities and businesses, nurtured and supported by public agencies and nonprofit organizations such as universities, holds particular appeal for small towns and rural areas that often lack the technical and financial resources to address the technology-related needs of the small manufacturers that are essential to the nation's economic base. Small manufacturers are most in need of proven, off-the-shelf automated technologies that could raise productivity, improve product quality, and respond to changing market conditions.

Utilities want to play a more direct role in economic development and explore how they can collaborate more actively with local development agencies. However, many

are reticent to embark on a new course of action. This book seeks to explain how utilities can engage in an effective economic development partnership.

The proposed efficiency-productivity partnership among utilities, industry and the public sector builds on a recent trend toward demand-side management (DSM) energy-efficiency strategies. Rather than focus solely on their supply side by building new power plants, utilities and state regulators have increasingly realized the benefits of adjusting their consumers' demand for electricity. While many states have pursued such demand-side management programs for their commercial and residential cus-tomers, most have ignored the industrial sector. Yet the reasons to target energy-efficiency efforts to industry are compelling: industrial firms consume more than 40 percent of U.S. electricity, and investments in retooling manufacturing operations with energy-efficient and productive equipment could help spur economic revitalization.

This book uses the DSM concept as the foundation for a utility-based economic development partnership to help companies in all industrial sectors advance their technological position. It also should prove valuable to other participants, including state and local agencies responsible for energy and economic development; technical assistance providers such as universities, community colleges, and small business development centers; and the businesses themselves. Partnerships can help all of these players move toward the common goals of improving industrial competitiveness, increasing the pace of technological modernization, curtailing wastes, strengthening the economic base, and stimulating growth. The result would be a new role for utilities as catalysts in the economic development process.

Utilities also can fill a niche by enhancing the technology transfer process

Utilities also can fill a niche by enhancing the technology transfer process and supporting industrial modernization efforts through partnerships with manufacturers. They can provide needed technical and financial assistance to the industrial sector under a broad-based program to increase energy efficiency. As the case studies

later in this chapter suggest, such a program can have important economic development effects, particularly for small operations in rural areas that face significant barriers to modernization.

This first chapter sets the stage for later discussion of a process to design and implement such a partnership program. It includes a brief discussion of the challenges facing those trying to promote small town economic development, as well as analysis of manufacturing competitiveness and technology transfer issues that contribute to those challenges. Chapter 1 also examines industrial DSM programs, which can serve as the building blocks for utility efforts to help strengthen the local economic base while encouraging energy-efficiency activities. It includes a review of current technical assistance and financial activities that utilities support to attract or retain businesses or to encourage the formation of new enterprises.

Promoting Small Town Economic Development

The rural sector of society has played a key role in the development of the nation and its economy, but only recently have its economic needs been viewed comprehensively. In a 1991 study, the U.S. Office of Technology Assessment (OTA) concluded that "rural areas are showing a loss of economic vitality, a relative decline in income (and) high unemployment."[1] The economic competitiveness of many small communities is diminishing as markets become international in scope. Labor force participation rates in small towns increasingly lag behind those in urban areas. Moreover, investment capital is harder to secure for manufacturing modernization.

These circumstances have caused considerable economic dislocation and distress. While the continuing shift of industrial production has affected urban and rural areas alike, its impact has been greatest on the nation's non-metropolitan areas dependent solely on manufacturing. Small towns and rural areas, where fully 20 per-

cent of the nation's manufacturing force lives and works, often cannot cope with the changes brought by industrial restructuring.

Development Challenges Facing Small Towns. What is this *economic development* that is proving increasingly elusive for rural America? The term has been defined differently over the years, but increasingly it serves as a multipurpose buzzword in the political lexicon synonymous with "jobs," signaling various economic and social issues. In practice, economic development is essentially the process by which individuals and organizations make decisions to invest in an area. Through innovations and adaptations, these investors increase their capacity to create wealth. The results are new, expanded, or retained industrial, commercial, or service enterprises, and new or retained jobs. Across the country, federal and state agencies and local governments of all sizes are becoming more involved in meeting the challenges posed by economic change and by domestic and foreign competition.

Economic development is essentially the process by which individuals and organizations make decisions to invest in an area

South Dakota Energy Conservation Low Interest Loan Program

The Low Interest Loan Program provides South Dakota businesses with an affordable way to install energy-conservation measures by working with financial institutions to base repayments on realized energy savings. The state has channelled a sizable amount of funds—$4 million—to this effort, which in practice has benefitted mostly rural communities.

The governor's Office of Energy Policy makes loans at 3 percent interest for energy-conservation improvements with a payback period of ten years or less. Loans are available to retrofit existing buildings (not for maintenance or remodeling expenses). Businesses applying for loans pay for the planned measures with the projected savings from the improvements. The payback period is calculated by dividing the cost of the measure by the value of the anticipated energy savings.

In this way, businesses avoid the initial cost of the improvements and pay their usual energy costs, which are divided between the loan

program and their utility. When the payback period is over, the energy savings become true capital. Commercial buildings, city, county, and state-owned buildings, and private residences all are eligible to receive low-interest loans. Applicants must own the building in which improvements are planned.

Program managers have approved a variety of projects for loans, including replacement of outdated or inefficient heating and cooling systems; insulation; replacement of existing lighting with more efficient systems; and replacement of motors in heating, ventilating, and air-conditioning systems.

The program processes the loans and provides all engineering analysis for improvement measures with an estimated cost of less than $25,000. Projects costing more than $25,000 are handled either by an engineer or an architect certified by the office. Applicants to the program must pass a credit check and provide a mechanics lien and a secondary mortgage for security on the loan.

The energy policy office began a related program in 1989. The South Dakota Main Street Program—targeted to small town commercial districts—supports the redevelopment and revitalization of rural commercial business districts. The office granted $217,000 for an architectural consultant to help communities plan physical improvements to main street buildings to use energy efficiently while preserving their historic value. Businesses visited by the architectural consultant have proven a valuable source of candidates for the Energy Conservation Loan Program.

The Energy Office has loaned more than $2 million: $500,000 to commercial building owners and $1.5 million to state universities, institutions, and correctional facilities. More than 60 residential applications have been processed. Interest in the program continues to increase.

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Economic development is a process that needs the efforts of private and the public sectors to achieve its greatest potential. While the basic elements of economic development—particularly the availability of labor, capital, appropriate technology, infrastructure and support services—are the same for all areas, the basic characteristics of small towns and large cities differ. Several important variations influence what development strategy is adopted and the nature of effective public-private partnerships.

- ***First,*** the growth or decline of business and population has a greater relative impact in small towns. For example, the expansion of a factory to include a new product line and 100 new jobs would have virtually no impact on day-to-day service demands in a large city. Such an investment, however, could add several percentage points to the employed work force level in a rural community. At the same time, this growth could strain the ability of the town to provide utility hook-ups, fire protection, and other community services. Conversely, the loss of a 100-employee plant has a much more severe impact on the economic well-being of a small town than a large metropolitan area.

- ***Second,*** many small towns are dominated by one or two industries, whether agriculture, manufacturing, mining, or something else. This dependence makes them especially vulnerable to downturns caused by factors ranging from changing technology to bad weather. Unlike larger cities, small towns often do not have the breadth in their economic bases to help cushion the effect of problems confronting specific industries. Consequently, development policies aimed at technological modernization and competitiveness often take on greater importance in small communities.

- ***Third,*** the smaller populations and scattered residence patterns in rural areas make delivery of basic services more difficult. The logistics and mechanisms for providing public services in urban areas

produce economies of scale impossible for rural communities to duplicate.

- ***Fourth,*** rural communities often lack the capacity—enough trained staff, locally generated development capital and technical resources, and sufficient access to outside resources—to take advantage of public-assistance programs and private development opportunities. In fact, the need to build local capacity is the most pressing development issue in many rural areas. While metropolitan jurisdictions are able to staff large departments with technical and financial specialists capable of serving specific constituencies, most small towns must depend on a few generalists and unpaid volunteers. Moreover, small towns' handicaps are not limited to public-sector capacity; often they include limited access to capital and state-of-the-art research facilities.

Federal investment in economic development activities has declined sharply since 1980

Cuts in Public Programs. Federal investment in economic development activities has declined sharply since 1980. Federal aid to states for employment and training has fallen nearly 50 percent, economic and community development funds by 35 percent, and direct small business assistance more than 80 percent. The demise of the general revenue sharing program in 1986 means that more than half of the communities with fewer than 10,000 residents no longer receive any federal community development assistance.

During the 1980s, every state began economic development programs designed to encourage business retention, and finance expansions and start-ups. Many of these programs were aimed at the manufacturing sector, including several innovative technology transfer initiatives. The Office of Technology Assessment estimated that by 1990, states were investing as much as $500 million annually into more than 250 technology-related programs—research parks, business incubators, R&D dissemination networks, venture capital, centers of excellence, research consortia, and industrial-extension services.

North Carolina Energy Management Technical Assistance Program

The Energy Management Technology and Technical Assistance Pro-gram provides education and assistance to industry, local government, and institutional facilities in energy-conservation technology and its applications. North Carolina has made about $500,000 available for this initiative. The program consists of workshops, on-site facility surveys, and demonstrations of energy-conservation technology. It was created for managers and maintenance personnel directly involved in energy consumption. In 1992 the program won the Environmental Protection Agency Administrator's Award for Pollution Prevention. The program has four major components, each addressing a number of specific issues.

The first concerns the fundamentals of energy management. This *fundamentals* series is designed for those employees who have a direct hand in energy conservation, primarily the operating and maintenance personnel. The series of workshops, held in five locations in the state, undertakes at least three meetings on each of the following topics, for a total of 25 workshops or more.

- **Preventive maintenance:** set-up and guidelines of a preventive maintenance program; available computer software; potential savings.
- **Heating, ventilation and air conditioning (HVAC):** information on system testing, adjusting and balancing; distribution of maintenance checklist; quick, low-cost solutions are emphasized.
- **Air compressors:** compressor operation and maintenance, problem areas from source to point of use, energy-saving preventive-maintenance procedures.
- **Chillers and cooling towers:** basics of operation; relation of tower and chiller performance to energy consumption; control and maintenance.
- **Efficient lighting:** various sources and efficiencies; retrofits for conservation; reduction of energy use and calculation of cost and savings.

- **Efficient motors:** selection and use of variable-speed electronic drives; economics of retrofitting compared to rewinding failed motors.

- **Steam traps:** trouble shooting, testing, repair; present costs of lost steam; conduct of a steam-trap survey; "hands-on" training session.

A second program component concentrates on technical assistance activities. In conjunction with these workshops, surveys are performed on site, providing technical assistance for energy-efficiency improvements. Those interested in receiving this service must send representatives to the appropriate fundamentals workshop. Eighteen facilities chosen from those attending the workshop will get help in preventive maintenance, HVAC systems, air compressors, chillers, and lighting. A separate program handles steam trap surveys.

The third component is a preventive maintenance pilot. One test site selected from the 18 receiving help will be developed as a case study. Performance and maintenance data will be compiled along with the development of inventory-control procedures. The advanced energy management series is the fourth part. A series of advanced workshops reaches engineers and employees in more technical positions to promote underused and unused technologies plus those recommended by the Association of Energy Engineers. More advanced and technical versions of the preventive maintenance, HVAC energy-conservation and HVAC-control strategies workshops are offered. Staff also has designed new workshops including a Certified Energy Manager refresher course, International Concepts of Energy Management, Energy Impact of Industrial Automation, and Alternatives to Cogeneration.

The Energy Management Program won an award from the Environmental Protection Agency in 1992 for its pollution prevention activities. The "Administrator's Award" is given to those programs saving the most energy, and thus avoiding pollution, as measured by EPA's greenhouse model.

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Now many state development programs have been curtailed or eliminated because of budget pressures and competing demands for funds as state after state confronts its own fiscal crisis. According to the National Conference of State Legislatures (NCSL), 30 states expect revenue shortages in 1992 and more than half anticipate higher-than-projected spending because of rising unemployment and related public assistance costs.[2] Expected budget cuts will put further pressure on resources earmarked for economic development.

These fiscal trends have increased government reliance on public-private partnerships for economic development. State monies are channeled frequently to financial and technical assistance initiatives directly linked to private activity. They are included in programs that leverage private investment and are used to seed larger projects in which private concerns play an increasingly dominant role.

Rural Development—A National Concern. The consequences of economic decline in small towns, while isolated individually, reach beyond the county courthouse to affect the economic base of the whole nation. The extent to which these areas deal with, and take advantage of, the changing economic situation ultimately will affect the nation as a whole. In *Rural America at the Crossroads*, the Office of Technology Assessment concluded that:

> Economic development in rural areas will not only affect national economic performance, it will also help determine how well the United States fares in an increasingly competitive, global economy.[3]

Small towns and rural areas struggle individually to overcome their economic problems by designing and implementing practical development strategies

Since 1970, the nation's balance-of-trade position has eroded steadily while those of our major competitors continued to improve. Much of the competition involves primary manufactured goods and low-technology industries, the very sectors OTA mentions in which rural areas traditionally have specialized. Small towns and rural areas struggle individually to overcome their economic problems by designing and implementing practical development strategies. These efforts can contribute to an

overall improvement in the national economy if they lead to more efficient and productive industrial operations.

Manufacturing and Competitiveness

Only a few years ago, the United States was the unquestioned leader in manufacturing, turning out a huge variety of goods and services for domestic and international markets, while "made in Japan" was lingering slang for shoddy merchandise. Today, three-quarters of all goods made in this country are subject to competition from foreign firms using technologies as sophisticated, and sometimes more advanced. Foreign-made products are often more in demand than U.S. goods, even within these borders.

Collectively, the response to these changes by corporate America—Fortune 500 as well as mom-and-pop operations—has reshaped the nation's economic landscape. Many large companies have scaled back, eliminated jobs, closed marginal plants, and invested in new production technology. Some have moved their low-skill, mass-production operations to other countries; others have retooled and now produce specialized products for smaller market niches.

Yet many small companies have formed since the 1982 recession, generating virtually all new jobs found in the economy. Small enterprises comprise a significant component of U.S. manufacturing capability, with the federal government classifying approximately 350,000 manufacturers with less than 500 workers as "small."

Many small companies have formed since the 1982 recession, generating virtually all new jobs found in the economy

Despite this turmoil and change, many communities continue to rely on a strong manufacturing sector. Although some economists argue that the U.S. economy is primarily service-oriented, manufacturing remains a critical component—especially in small cities with few opportunities to diversify into service-sector activities. Manufactured products used in the delivery of services, such as computers, plus the service of manufactured items, make up a substantial share of this "service

economy." Manufacturing has consistently generated about 22 percent of the U.S. gross national product (GNP) throughout the 1980s.[4]

A Weakened Economic Base. "American manufacturing has never been in more trouble than it is now," according to the OTA report, *Making Things Better: Competing in Manufacturing*. The authors conclude that the Japanese are beating U.S. firms by designing better products, making them more reliable, and controlling their costs.

> The weaknesses in U.S. manufacturing technology must be cured if the Nation is to enjoy rising living standards together with a strong, stable position in international trade. . . . There is no single solution, but all the signs point in one direction: U.S. manufacturing technology must improve—in everything from product design to manufacturing process development and refinement. For industrial nations, technology is the key to competitive success.[5]

The Japanese edge rests primarily on technology. Broadly defined, manufacturing technology covers not only the generation of new products but also know-how in using equipment, organizing work, and managing people to make the products. U.S. firms have fallen down in recent years in the manufacturing process. The American system, including universities and industrial laboratories, still excels at making technical discoveries and inventing new products. But foreign companies, especially in Japan, have beaten U.S. firms repeatedly in getting new, improved versions of many products to market while keeping costs down and quality high.

Japanese firms have invested more heavily in technological improvements than their American counterparts for many years. Foreign firms, moreover, are more patient in their expectations for a return on this investment. Patience is truly a virtue in terms of enhancing competitiveness. Researchers, inventors, and product designers often must wait for years for their efforts to pay off. Unlike Japan, Germany, and rapidly developing Asian nations, the financial climate in the United States discourages such long-term investments.

Japan has an extensive national network of free, technology extension services for small and mid-sized firms. The U.S. government supports only a handful of recently created Manufacturing Technology Centers. Large Japanese corporations support their small and mid-size supplier companies in ways that U.S. industries do not. A recent Japanese government survey indicated that 45 percent of the nation's small and medium-sized businesses received technical assistance from mentor companies, 37 percent obtained information, 28 percent used loaned or leased equipment, and 24 percent received employee training.[6]

Japan has an extensive national network of free, technology extension services for small and mid-sized firms

Furthermore, Japan backs its technical assistance capability with significant financial support to carry out projects that advance manufacturing technology. In 1988, the Japanese government provided more than $27 billion in low-cost direct loans to such firms, as well as $56 billion in loan guarantees.[7] More technical and financial assistance is available to them from Japan's local governments.

In contrast, the U.S. government makes only about $80 million in direct loans to businesses through small programs targeted to disadvantaged individuals. In 1991, the Small Business Administration provided $3.5 billion in federal guarantees for loans made by private lenders. A few states have industrial-extension services, funded at about $25 to $40 million annually. Given the recent recession and financial crisis in many state governments, however, many of these programs have been severely curtailed or eliminated. Even the combined resources of state and federal industrial-extension programs reach less than 2 percent of the small manufacturing firms each year.[8] For many small manufacturing firms, as a result, exposure to new technologies is haphazard at best or simply beyond their technical and financial means.

An important aspect of technology transfer actually is deployment—bringing existing technologies to existing companies

Technology Transfer. This has come to mean bringing new products or processes to market through new companies established just for that purpose—in other words, launching the next Apple Computer. In fact, an important aspect of technology transfer actually is deployment—bringing existing technologies to existing companies. The

goals of this expanded definition are to make these enterprises more efficient and competitive operationally and to help them establish new product lines.

In practical terms, new technologies introduced to a company could be as basic as a new piece of equipment that performs a new function, improves the way a task is carried out, or enhances product quality and performance. New technology applications might be a new way of doing something, such as using a computer software program. While major technological breakthroughs are highly visible, most applications of new technology result in small improvements over existing procedures.

The transfer of technology serves two purposes: to place new products and processes in the marketplace through either existing companies or new ones tied to particular technologies; and to bring new or under-used technologies to existing companies in ways that make them more efficient, productive, or competitive. The resources needed for these advances must be culled from a variety of sources, private as well as public. Creative new partnerships are needed.

Arkansas Broiler Research Verification Program

As the leading producer of broiler chickens in the nation, Arkansas is conserving energy by improving broiler-production efficiency through research and testing. It has devoted nearly $1 million to this effort. Poultry production employs about 60,000 people in Arkansas with an annual payroll of $730 million. The state energy office identified three areas for improvement: broiler-housing insulation, broiler-production heating and ventilation systems, and bird stress-reduction systems.

To determine the most cost-effective broiler-production system, four houses were constructed. The University of Arkansas Cooperative Extension Service operates two houses to determine the most energy efficient. Researchers also monitor houses under *normal conditions* in northwest Arkansas and River Valley to compare to the experimental models. Researchers will choose a new house and a house at least ten years old to approximate facility deterioration in the field.

Testing will run for three years to avoid the effects of a particularly mild or severe growing season. To isolate each component of overall energy costs, monitoring is a key element of the program. Researchers record temperature and humidity readings at the outside, inlet, and exit points of the production process and electricity used by the lights, fans, and water. These statistics help identify the most cost-effective production process. Following the three-year test period, the experimental broiler houses will be used to test other variables in the production process, such as feeders, waterers, and light-control systems.

The test sites run by the Extension Service also will provide the opportunity for research in related areas of poultry production. Disposal processes such as incineration, burial, or chemical disposal will be tested on birds that die in the facility. Manure output from the sites may be used for fertilizer production.

The state provided funds for this program in July 1988, including $621,000 for design and construction of the broiler houses and systems, $92,000 for personnel costs, and $12,000 for the publication of the final report due in January 1993.

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Waste Reduction and Technology Improvements. While small and medium-sized firms struggle with the current economic downturn and the long-term decline in competitiveness, they also are required to meet increasingly stringent and costly environmental regulations. The Environmental Protection Agency (EPA) estimates that $115 billion is spent annually on compliance with environmental regulations; by the year 2000, this spending will exceed $150 billion, or 2 to 3 percent of GNP.[9]

However, these huge outlays are no guarantee of overall environmental improvement. Efforts to control pollution often move it from one environmental media to another. For example, most air emissions captured by

scrubbers becomes solid waste disposed on the land. Likewise, wastewater treatment plants remove hazardous chemicals from industrial and urban discharges, but produce a toxic sludge that must be discarded.

Companies are finding that reducing the amount of pollution produced is cost-effective and environmentally preferable

Faced with these challenges, companies are finding that reducing the amount of pollution produced is cost-effective and environmentally preferable. Waste reduction means cutting the generation, emission, or discharge of waste at the source.

Waste is a sign of inefficiency, of raw materials used poorly. Reducing or eliminating waste can be achieved in one of three ways: process changes, product reformulation and material substitutions, or improved management and maintenance.

The benefits of waste reduction can be substantial. Companies can save on the costs of handling, transporting, and disposing of toxic wastes as well as lowering the expenses of raw materials. For example, the 3M Company has reported savings of over $292 million from 1975 to 1985 as a result of a waste-reduction program. A USS Chemical plant in Haverhill, Ohio, saved nearly $200,000 annually through recovery of cumene formerly discharged into the atmosphere.[10] Other advantages may include lower company liability insurance premiums because less harmful materials mean fewer risks. Plant workers may receive greater protection from dangerous materials, cutting sick days, injuries, and medical costs.

States also benefit from waste reduction by avoiding the costly and difficult process of siting new treatment and disposal facilities. Several have developed publicity for good industry programs, technical and financial assistance, and tax and regulatory incentives. Although the programs have shown some success, budgets and staff are small; many are run out of bureaus created for other purposes where managers have other priorities. Federal waste reduction grants are available to the states; however, only $6 million was appropriated in fiscal 1992.

Wisconsin Renewable Energy Assistance Program

The Renewable Energy Assistance Program provides grants for private firms, municipalities, nonprofit organizations, and state agencies to improve their waste-to-energy and recycling options. The program aims to reduce amounts of fuel used, increase the competitiveness of state businesses, and improve the environment. The state has approved $3 million for this initiative.

The Wisconsin Energy Bureau (WEB) began the Waste-to-Energy Evaluation and Technical Assistance Grant Program in cooperation with the Department of Natural Resources's Bureau of Solid Waste and the state Public Service Commission in 1987. It offered grants of up to $50,000 for pilot projects and studies involving waste-to-energy applications. Recycling grants, waste-to-energy grants, and waste-wood energy system grants are included in the updated program. Applicants must provide a 50 percent minimum financial match to receive a grant. Applications for grants are judged on the following criteria:

- Quality and completeness of the project plan;
- Qualifications of personnel and consultants;
- Scope of project development from first feasibility study to final implementation;
- Identification and documentation of sources of waste, markets for the energy, and/or products recovered from them;
- Expected economic benefits from the project; and
- Quantity of waste flow affected.

WEB awards waste-wood energy grants to those projects with payback periods of ten years or less on a first-come, first-served basis. Overall, 104 grants were awarded in all six regions of Wisconsin. Forty-three grants went to waste-to-energy projects, 35 to recycling, and 26 to wood-energy projects. Fifty percent of the grants went to private businesses, 25 percent to municipalities, 11.5 percent to counties, and the remaining 13.5 percent to a variety of other applicants. Over 90 percent of the grants were less than $50,000; the typical grant was less than $20,000.

Program managers have surveyed participants, discovering that:

- 68 percent reported jobs created by grant projects, with 11 percent creating 11 jobs or more;
- 92 percent of grant recipients made reports that brought technical know-how to others;
- 50 percent of the recipients would not have pursued the project without grant funds due to uncertainty about project potential, future market prices, or lack of investment capital; and
- 72 percent acquired additional funding using the grant money as leverage, thus creating greater benefits than the value of the grant alone.

Program managers calculate that the Renewable Energy Assistance Program has saved Wisconsin 13 trillion BTUs per year. Recently, applications to the program have exceeded program funding; only 38 percent actually received funds. Program conferences have brought interested parties together to learn about the methods and technologies supported by the program, and how to apply them.

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Although examples of cost savings from waste reduction are well documented and technologies are available, relatively few firms have explored the potential so far. Ignorance of available opportunities and lack of know-how are the main impediments. In its report on waste reduction, the Office of Technology Assessment stated, "To a significant extent, waste reduction may be blocked by individual attitudes based on limited information and experience, rather than on lack of technology."[11] Many company managers are not aware that waste reduction is possible, and plant officials often are so oriented toward

complying with regulatory deadlines and requirements that they may not think about seeking waste- and money-saving alternatives. Moreover many companies lack the capital to make the initial investment.

The cost of treating industrial wastes will continue to rise unless firms move aggressively to minimize their waste streams making sure that materials are carefully managed—reused if possible, not spilled or wasted, and stored in containers which don't leak. Yet not enough firms appreciate the opportunities available to cut environmental compliance costs. A utility-state partnership can help correct this problem by incorporating waste reduction as an additional component of its productivity-efficiency program.

A utility-state partnership can help correct this problem by incorporating waste reduction

Utilities and Industrial Energy Efficiency

DSM Programs. Public utility commissions, hoping to avoid the cost of building new power plants, increasingly have directed utilities to reduce energy demand. Commissions across the country have adopted "least cost planning" which requires utilities to consider energy efficiency on par with new power-plant construction. *Demand-side management* has become a code word for an amalgam of activities that seek to control the costs of providing power. State commissions and a few legislatures have started to require utilities to pursue DSM strategies in an attempt to modify customer consumption patterns.

Industry consumes approximately 35 percent of U.S. electricity and 42 percent of natural gas. Industrial DSM projects hold substantial potential to cut energy expenses and improve the viability of industrial customers, and subsequently the financial health of the utility. Yet despite the potential benefits, DSM programs targeted to the industrial sector have lagged behind those for residential and commercial customers.

The few industrial energy efficiency programs that do exist focus mainly on lighting, heating/cooling equipment, building shell improvements, and in some cases on more

Process equipment and manufacturing configuration account for a whopping 90 percent of an industrial firm's overall energy use

efficient motors. Although reductions in energy usage are predictable in these areas, process equipment and manufacturing configuration account for a whopping 90 percent of an industrial firm's overall energy use. The proposed utility-state partnerships, therefore, concentrate on initiatives to stimulate the efficiency of industrial process technologies. Since manufacturers will consider investments that increase their productivity long before they'll invest in energy efficiency, the partnerships seek to link economic development and energy efficiency.

Although conservationists hail United States progress in industrial energy efficiency since the 1973 oil embargo, few acknowledge that much of the gain resulted from the loss of energy-intensive industry rather than improvements in energy efficiency per unit of output. Robert C. Marlay, a former official at the U.S. Department of Energy, writing in *Science,*[12] concluded that industrial use of energy changed markedly after 1973. Higher energy prices did improve energy efficiency, but they also slowed industrial growth and shifted the composition of industrial output away from large energy-using industry. Marlay found that a combination of slower growth and adjusted industry mix accounted for about two-thirds of the industrial sector's reduced growth in energy demand. Clearly, this is not the kind of energy efficiency improvement that should be pursued.

Only a few utilities have aggressively promoted industrial DSM projects. And most of those emphasize energy use rather than productivity improvements that could enhance the economic vitality of manufacturers based in a utility's service territory. Below are short descriptions of several utility DSM programs:

Wisconsin Electric Power is recognized as a utility leader in DSM. The power company has sponsored efficiency programs for its industrial and agricultural customers since 1987, when its focus was on saving electricity and meeting environmental concerns. The program's contribution to economic development became clear as participating manufacturers cited productivity gains, increased profitability, and new employment, as

well as energy savings. Wisconsin Electric offers various types of rebates to its industrial customers for energy-efficiency investments, paying up to half the cost depending on the size and type of project. For manufacturers, the utility also will cover up to half the cost of a professional assessment of energy-saving changes.

Central Maine Power, which began its industrial DSM program in 1987, has saved 140 million kilowatt-hours of electricity and avoided the need for 31 megawatts of peak demand annually. Under its Power Partners program, Central Maine solicits DSM proposals from energy service companies, industries, and others that can save energy. These offers then compete against suggestions from conventional power generators. Central Maine's need for generating capacity, rather than its desire for regional economic development, determines the size of the Power Partners program. Because the economic slowdown has dampened electricity demand throughout New England, the utility does not anticipate issuing new requests for proposals in the foreseeable future.

Pennsylvania Power and Light Company spent approximately $1 million on its DSM programs during 1991; about one-third of that amount was devoted to the industrial sector. Unlike many utilities wanting to refrain from building new power plants, PP&L, with excess capacity, seeks to augment its total electricity sales. The power company's Environmental and Energy-Efficiency Improvements programs promotes industrial electrotech-nologies, including high-intensity discharge lighting, in-dustrial heat pumps, freeze concentration, thermal storage, infrared drying, and electric materials handling systems.

New England Electric System introduced its Energy Initiative Program in the summer of 1989 to its industrial customers jointly with energy service companies, firms that contract to manage and reduce the energy consumption of businesses. NEES pays up to $650 per avoided kilowatt of lighting demand and up to $2,000 per avoided kilowatt of custom-process demand, substantially above the subsidies provided by other utilities.

Lower kilowatt-hour-per-throughput is considered the hallmark of a successful project

Bonneville Power Administration, which sells low-cost federal hydropower wholesale to western utilities and to some aluminum smelters directly, encourages conservation through its Energy Savings Plan. The program provides subsidized energy assessments to industrial customers as well as acquisition payments that tend to equal 80 percent of the project cost. BPA has no problem with increased production leading to greater electricity demand; lower kilowatt-hour-per-throughput is considered the hallmark of a successful project.

Utility-Industry Programs. Utilities are, theoretically, in a good position to promote economic development initiatives by encouraging production-process efficiency. They can acquire funds for investment at lower rates than most small manufacturers. They often maintain close contacts with their customers. Their investment policies are regulated by public institutions. In particular, if utilities can make investments that save money relative to building new energy-supply facilities, customers in their service territory would be better off. A variety of regulatory procedures can make those investments profitable for both utility and customer, as well as for the community as a whole.

The most promising investments on the manufacturer's side of the meter are those that improve the production process while also saving energy. These multipurpose efforts lower energy costs, improve product quality, reduce maintenance, and cut the waste stream.

California Business Energy Advocates

The Business Energy Advocates (BEA) program helps companies with energy-efficiency and cost-cutting measures to increase their profitability and competitiveness. The state has earmarked $1.6 million for this effort. The California Energy Extension Service (CEES) started the energy advocates program in response to problems it encountered convincing businesses to implement energy-conservation measures. Although companies expressed interest in saving money through improved efficiency, conservation was not a priority.

CEES staff divided California into eight zones to address regional business interests specifically. Each zone has an advocate office to serve small towns as well as large cities, which allows advocates to be close and accessible to company managers. The program provides information for interested parties through mailings, articles in local business journals, and meetings. Advocates hold workshops in every county to discuss specific energy-saving products and systems and their performance.

The BEA workshop supports a variety of energy audits, performed by BEA or utilities. They range from a ten-minute lighting review to a ten-hour comprehensive examination. After identifying energy-saving measures, BEA helps with implementation. The staff schedules visits to examine conservation techniques used at other firms, mediates with landlords over questions about building structure, and helps track the savings from implemented measures. BEA also helps remedy financing difficulties hindering projects.

To make the conservation measures recommended by BEA more affordable, CEES and the Department of Commerce offer businesses a special low-interest loan program. Loans at 5 percent interest are available to install energy-efficient equipment and to improve energy management. Loans are based on a payback of ten years or less, which companies cover with money saved by the efficiency measures. The state provided over $7.6 million for the program, which operates as a revolving loan fund to expand the impact of the original allocation.

A variety of businesses have taken advantage of BEA's services. Greenhouse operators, supermarkets, farmers, bakers, industrial and manufacturing firms have used the information and funding offered by local advocates. BEA has issued 75 loans averaging $67,000 each. Loans ranged from $5,000 to the maximum $150,000. The average payback period in energy savings is four and one-half to five years. The most popular improvements are small-scale cogeneration, HVAC, and high-efficiency lighting. Several of these projects have leveraged more funding from utility rebates and hazardous-waste loans.

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As an example of this multipurpose approach, consider the automobile stamping plant that achieved a 50 percent savings in electricity by putting the equivalent of a big tire as a cushion for the lower dye. The cushion is inflatable and leak-proof rather than the conventional operation, which is a piston-type arrangement that leaks after a few months. The company was interested in eliminating production system down time. When the pistons leaked, the production line had to be shut down until crews were able to repair the system and get it operating again. This procedure could take a few shifts, causing tremendous losses. Moreover, the product is more uniform using the tire because the cushioning is always the same.

Another example is the utility that worked with a steel company wanting to install a new furnace. Worried about the flicker impact on its system, the utility provided an outside expert who recommended a DC arc furnace, which is frequently used in Europe. In addition to the 6 to 9 percent energy savings, the quality of the product was much higher and operation and maintenance costs were reduced per ton of fabricated metal. The utility put $2.5 million toward the $4.5 million project, and the regulatory commission allowed the utility to count its entire investment as a recoverable DSM expense since it saved energy compared to the alternative technology.

In addition to the 6 to 9 percent energy savings, the quality of the product was much higher

Utilities are beginning to explore such direct investments that link economic development and energy efficiency. Later segments of this book demonstrate the numerous options available to power companies, industrialists, and state officials.

Utilities and Economic Development

Utilities have long supported economic development initiatives since their finances depend upon the fiscal fortunes of their service territories. Most follow the traditional "smokestack chasing" model of industrial recruitment, offering low incentive rates to attract new business. Many approach economic development in a passive way

by preparing videos or printing brochures for others to use in community marketing efforts. Few utilities actually undertake an active effort to invest directly in business modernization or to help firms improve their cash-flow positions by managing energy needs and costs.

Although traditional utility economic development efforts do not match the active role proposed in this report, these efforts can help preserve an area's economic base and enhance its resistance to recession. Moreover, they demonstrate the breadth of interest among utilities in economic development and the willingness of power companies to experiment with more direct approaches. As the following examples suggest, utilities now help with a variety of business-attraction and business-retention activities, which could serve as important building blocks for the type of proposed efficiency/productivity initiative.

Utilities now help with a variety of business-attraction and business-retention activities

The ***Arizona Public Service Company*** formed the Rural Arizona Growth Corporation to help public officials with economic development planning. The corporation maps out development and marketing strategies to promote growth in small towns. No state agency fills this role. The company also sponsors "Rural Arizona Showcases" to bring rural leaders to Phoenix to meet with developers, brokers, lenders, and other private-sector participants in the economic development process.

Utah Power organizes strategic planning sessions, mostly in small communities. Participants evaluate community assets, barriers to investment, and job creation, plus prepare action plans to stimulate activity. The utility helps convene periodic follow-up meetings to implement the plan and monitor progress. In New Mexico, the ***Socorro Electric Cooperative*** in Socorro and the ***Kit Carson Electric Cooperative*** in Taos have undertaken similar efforts in their service territories. The ***United Power Association*** in Elk River, Minnesota, helps small town officials find financial resources when prospective businesses are identified.

Montana-Dakota Utilities, which serves much of Montana, North Dakota, South Dakota, and Wyoming,

provides a broad range of economic development services to businesses and local governments. They include technical assistance and financial support for development organizations and programs, production of local booster slide and video presentations, and help with community work on business prospects.

New Jersey's PSE&G has compiled an extensive computer database of available commercial and industrial sites. It includes information on available power hookups, computer capabilities, and structural characteristics of existing facilities. The utility's site-finder service links available space to prospective users. It also includes data on labor supply, taxes, transportation, educational and recreational facilities, building costs, available housing, and other factors that influence site choice. PSE&G also works with New Jersey Bell on two initiatives: a pioneering business-retention program that emphasizes traditional manufacturing and commercial companies; and a project to offer access to information technology for new or expanding New Jersey companies.

The ***Alabama Power Company*** operates a sophisticated computer-information network with an interactive video system that contains information on Alabama communities. The company can make customized presentations for visiting business prospects on anything from a small office building to a large mixed-use project. It can provide demographic studies on any area of the state, as well as graphic displays to illustrate a number of variables.

As economic development policymakers and practitioners have come to realize, maintenance of the local economic base depends on encouraging existing companies to stay in place. The following examples attest to the ability of utilities to offer technical assistance that is trusted by local businesses, as well as to link manufacturers with technology centers at state universities, federal research labs, and other facilities.

Arkansas Power and Light (AP&L) operates a multimillion dollar Training Resource Center that offers more than 150 courses ranging from process and instrumenta-

tion control to industrial welding to advanced electronics and high technology. The curriculum is pegged to students' skill level and emphasizes hands-on training with models, simulators, and industrial equipment. In addition, AP&L has started offering customized training services to meet specific business needs.

Oklahoma's state-wide association of electric cooperatives has worked with Oklahoma State University and two private, nonprofit development organizations to produce an *Oklahoma Economic Development Manual* targeted to small-town officials. The manual begins with an inventory of local services and facilities, provides information on state and federal program resources, and takes the user on a step-by-step tour of the economic development process. The manual was introduced to individual cooperative managers at a special seminar.

Business assistance is another means by which utilities can help communities in their service territories, especially small towns. ***Entenergy Corporation,*** formerly Middle South Utilities, runs a series of business skills workshops in which experts from different fields provide practical information to help small-business owners launch, improve, or expand their operations. Sessions include preparing a business plan and obtaining private financing. Entenergy also has sponsored special workshops on advanced manufacturing technologies, robotics, and automation strategies for manufacturers.

Madison Gas and Electric (MGE) in Wisconsin has committed $400,000 over three years to finance and operate an innovation center affiliated with the University of Wisconsin that targets small, technology-based commercial enterprises, provides fledgling entrepreneurs with below-market rentals and support services during their formative period. The new partnership will offer office and laboratory space and equipment, on-site clerical support, access to university technical experts, and management assistance to technology-based, start-up enterprises. Income from the center that MGE receives over costs will be given to the University of Wisconsin Research Park for more research and promotional activities.

Utilities are helping local businesses identify suppliers, markets, and sources of financial assistance

In these instances, utilities are helping local businesses identify suppliers, markets, and sources of financial assistance. These services can be a godsend to communities, especially small towns, that simply do not have the staff to take on such tasks.

Some utilities have plunged into other types of commercial, industrial, and real estate activities as well. A few have created holding companies to separate real estate ventures from public service activities. (Depending on their corporate structure, nature of the activities, and the jurisdictions within their service territory, power companies may be limited in this regard by federal regulations.) Others are taking a direct role in business attraction and retention programs by developing land and facilities.

Wisconsin Electric Power, for example, helped assemble a 1,200-acre industrial park near Kenosha as a way to dispose of land it acquired during the 1970s as a buffer zone for a planned coal-burning facility that was never built. Two Illinois utilities recently established subsidiaries that make investments directly related to economic development projects: ***Central Illinois Light Company,*** through CILCORP, and ***Iowa-Illinois Gas and Electric,*** through its Iowa-Illinois Energy Company. Franklin Land and Resources, a subsidiary of ***El Paso Electric Company,*** is involved in historic preservation real estate projects to revitalize downtown El Paso.

As evidence mounts that a significant proportion of new jobs stem from business expansions and start-ups, utilities have begun to examine ways to encourage new economic activity within their service territories. Utilities can—and increasingly are—playing an important part in this area of economic development.

More and more, utility officials are considering offers of direct financial assistance. ***Brooklyn Union Gas*** has capitalized a revolving loan fund that makes low- or no-interest loans of $25,000 or more to small companies to encourage job creation and reuse, and the rehabilitation of land and facilities. These loans can be used for a variety of business-related activities, including site acquisition,

site development, architectural design and other building-related costs, facility construction, or purchase of equipment and machinery.

The utility recently expanded its Cinderella Program, another economic development initiative it supports. Cinderella provides low or no-interest loans for newly constructed or renovated industrial and commercial facilities that use high-efficiency equipment. To complement these efforts, Brooklyn Union recently budgeted $300,000 over the next three years to increase the technical assistance services and energy-efficiency analyses offered through its Energy Management Program.

The ***Iowa-Illinois Gas and Electric Company*** began an Economic Development Assistance Fund (EDAF) program in 1986 with $750,000, which it doubled to $1.5 million in mid-1989. EDAF makes investments, grants, loans, and loan guarantees for development-related projects that create new businesses or promote expansion of existing operations. By 1991 eight ventures had received EDAF financial support, six in the form of loans.

The ***United Power Association*** in Minnesota, with its 15-member rural electric cooperatives, offers a flexible economic development loan program. Interest rates are negotiable but generally match those of other lenders. The loan term varies according to project type, use of funds, and cash-flow needs. Eligible companies may borrow up to $200,000 for activities including land and building acquisition or improvements, building construction or renovation, machinery and equipment, working capital, and inventory purchase. Utility participation can reach 50 percent of project costs; borrowers must invest a minimum of 10 percent. Since the program was launched in April 1990, United Power has made five loans and is processing 12 other applications.

The ***Basin Electric Power Cooperative*** in North Dakota encouraged the development of a new energy-efficiency product and helped a small firm in its service territory produce it. The utility was seeking a company to provide electric thermal storage (ETS) heaters, essentially

a home heating unit containing ceramic brick that could be electrically heated during off-peak hours. The utility worked with the University of North Dakota to come up with a formula for the brick that would employ local mineral resources rather than the imported material commonly used. Steffes and Son Manufacturing Company, a small custom workshop operation in Dickinson, joined the effort. With grants from the utility, the Western Area Power Administration, and the state energy office, Steffes successfully developed the ETS unit. Basin Electric also helped with field testing through its member cooperatives. Today, Steffes is producing 30 ETS units a day. This new product line created 35 jobs.

The *Teamwork Arkansas* economic development strategy adopted by ***Arkansas Power and Light*** (AP&L) features matching grants that communities may tap to help finance infrastructure improvements, industrial site development, tourist development activities, and project feasibility studies. In 1989, these grants helped more than 50 jurisdictions, providing up to 50 percent of project costs. Grant applications are made by local organizations such as chambers of commerce or development committees.

Louisiana Seafood Processing Program

Louisiana's seafood processing program provides educational programs, demonstrations, and audits for seafood and aquaculture processors to improve energy efficiency and economic performance. The state has provided nearly $250,000 for this effort, one of the few involved solely with food processing.

The Louisiana Cooperative Extension Service and the Louisiana Sea Grant College Program sponsors the energy-conservation program for the seafood industry, which is made up of five main sub-units: first-level energy audits, result demonstrations, workshops, agent training, and educational publications. Each of the sub-units address different issues.

- Energy audits point to inefficiencies that could be improved through easily applicable, low-cost technologies. On-site audits require one to two days to complete. A variety of seafood industry

facilities are audited, including crab, crawfish, and shrimp-processing plants.

- Two processing plants were chosen from those audited for closer analysis. Demonstrations will take place at these plants, selected by location, size, representation of the particular industry, and the operator's willingness to comply with recommendations. Sites will be monitored for at least one month prior to and one month following the recommendations. Results will be discussed at a meeting for all processors.

- Workshops will capitalize on the experiences and knowledge gained from the audits and demonstrations. They will be held four parts of the state. The workshops will be publicized through newsletters, agent contacts, and direct mail.

- The Louisiana Cooperative Extension Service will sponsor training sessions for marine advisory agents stressing energy efficiency and conservation. Agents will visit the sites. This training will lead to long-term benefits through the continuous contact between agents and processors.

- Two publications will be developed and produced for the processors. The first covers energy conservation and self-audit procedures for crab and crawfish packing plants. The second targets producers in the shrimp and fish industries. At least 1,000 copies will be made of each publication.

Monthly reports are issued detailing the progress and accomplishments of the program. Participants in the workshops and the energy audit program are asked to complete questionnaires surveying their plans to use the information and procedures discussed in the workshops and audits. Advisory agents will visit 10 percent of the workshop participants and 50 percent of the audit participants to measure progress and estimate program effectiveness.

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During its first two years, the project supported more than 80 plant expansions, creating thousands of new jobs

AP&L has committed $10 million to the Teamwork Arkansas initiative, which also features seven technical assistance components. During its first two years, the project supported more than 80 plant expansions, creating thousands of new jobs.

Rural electric cooperatives in North Dakota, North Carolina, and Pennsylvania are developing small business incubators. The ***El Paso Electric Company*** in Texas has established a program to prevent companies from leaving their service area—essentially by buying them. Recently El Paso Electric contributed $10 million to create the Rio Bravo Industrial Corporation to help develop existing industry as well as bring (by purchase, if necessary) new companies to the utility's service area. Rio Bravo seeks firms that use a lot of electricity and have the potential to create many jobs.

New Types of Utility-Industry Partnerships

Public-private partnerships are the cornerstone of many local economic development strategies. As state and local leaders seek to expand such cooperative ventures, they must bring other sectors into the process. Utilities are a logical choice since they have useful resources and much self-interest in the surrounding economic base. In rural areas with little development capacity to tap, utility involvement can influence a community's ability to survive.

As the last chapter demonstrated, many utilities have programs or departments responsible for economic development activities, but power companies have the potential to become more actively involved in emerging local development strategies, helping companies in their service areas become and stay more competitive and technologically modern. Specifically, utilities can join a partnership with public agencies, nonprofit organizations, financial institutions, and private enterprises to promote economic development directly. By linking energy efficiency and competitiveness strategies, they can lower businesses' operating costs and upgrade their process technologies.

The energy-efficiency concept may seem, at first glance, contrary to the best interest of utilities, many of which do not want to reduce sales. However, power companies stand to gain by engaging in this partnership. Overseeing an energy-efficiency effort allows them to implement better load-management policies, which can help forestall the costs of constructing new generating capacity or buying power from other producers. Moreover, in making their client companies more competitive, utilities help guarantee that vibrant firms remain in their service territories, possibly expand production, and continue to be viable consumers of power.

The energy-efficiency concept may seem, at first glance, contrary to the best interest of utilities

Consider the example of ***Wisconsin Electric Power.*** As part of its *Bright Ideas for Business* program, the utility purchases major energy-efficient equipment for its industrial customers who repay the loans over three to five years, largely from the energy expenses saved by the new equipment. Wisconsin Electric also offers rebates of up to 50 percent to industrial customers for energy-efficiency initiatives. The utility's biggest project involves a Milwaukee steel maker, Charter Manufacturing. The utility paid $750,000 of the $1.5-million cost of installing a new melting system. The new technology lowers Charter's energy costs by $10 a ton. Other projects include a wood-waste generation system and an energy retrofit at a dairy operation. Many small manufacturers have taken advantage of Wisconsin Electric's energy-consumption evaluations and reduced their cash outlays to pay utility bills.

Some state public utility commissions and the legislatures of Iowa and Minnesota now compel utilities to pursue demand-side management strategies. Iowa, for example, passed legislation requiring utilities to devote 2 percent of their annual revenues to DSM activities. Efforts by utilities to modify customer-consumption patterns are primarily a way to avoid the need for costly new generation capability, but more efficient use of energy promises cost reductions per unit of output, as well as environmental benefits, increased competitiveness and a stronger, more vibrant industrial base.

Utility Jitters. With memories of nuclear power-plant cost overruns and falling bond ratings fresh in their minds, many utility executives are adverse to taking risks. While the best interests of power companies lay in establishing process-oriented efficiency programs for their manufacturing customers, utility officials worry about promoting efficiency at the expense of sales, customer reaction to the initiative, lack of access to appropriate assessors, and the magnitude of investment that might be needed to fulfill a pledge of financial support.

In many states, regulatory incentives still favor investments in production facilities rather than efficiency

Most utility managers have spent their careers in a regulatory climate in which power companies profit by their ability to expand electricity and natural gas sales and build new capacity. The concept of a utility funding or promoting services and equipment that actually cuts sales remains foreign and highly suspect. In many states, regulatory incentives still favor investments in production facilities rather than efficiency. Even in states with strong incentives for efficiency investments, utilities remain cautious because the regulators usually guarantee no adjustment for lost revenues.

An energy-efficiency program that targets the production process of manufacturers forces utilities to tailor their initiatives to the needs of each industry. Unlike simple residential and commercial programs that can be implemented by utility employees, a process-oriented industrial program must rely on highly specialized expertise. Many

Massachusetts Energy Advisor Service

The Energy Advisor Service (EAS) seeks to eliminate energy waste in manufacturing processes to improve the competitiveness and growth potential of the state's firms. The service has received $920,000 to carry out this mission. The state Division of Energy Resources (DOER) developed the Energy Advisor Service in 1984. EAS hired engineers from private firms for their technical expertise in manufacturing processes and energy efficiency. Engineers conduct on-site energy audits and provide manufacturers with specific customized energy-saving recommendations.

EAS suggests varied efficiency-improvement measures ranging from refining and updating an industrial process to preparing feasibility studies for cogeneration possibilities. DOER subsidizes 80 percent of the energy-audit costs; the client company pays only $100 per day. EAS findings are presented orally to company officials responsible for implementing EAS recommendations.

In 1988 the Department of Public Utilities established incentives to encourage utilities to invest in energy conservation. Utilities also were directed to use least-cost planning methods. As a result, DOER modified EAS to combine technical analysis with utility-conservation incentives and implement projects that meet individual utility criteria. The participating utility pays from 20 to 70 percent of the cost of an audit. One utility has implemented 17 million kilowatt hours of improvements under this arrangement.

The Kraft General Foods ice cream plant in Framingham offers a prime example of the effect of state and utility cooperation on economic development. DOER and Boston Edison Company formed a cooperative service for industry, which combines EAS technical analysis with the utility financial incentives. EAS engineers identified $3 million in efficiency improvements at the Kraft plant including the installation of a new ammonia refrigeration system, a gas-fired deffost system, high-efficiency motors, and new efficient lighting systems. Boston Edison Company energy-conservation incentives financed the projects. Kraft paid $300,000 (its approximate annual savings); Boston Edison rebated $2.7 million over two years. The joint effort of the EAS, Kraft, and Boston Edison has achieved the following savings: energy consumption in the plant was reduced by one-third; the annual electric bill was cut by $300,000; and the new productivity safeguards 250 industrial jobs.

EAS has identified energy-conservation projects totaling over $102 million that saved $51 million in energy costs for 375 clients since 1984. These companies averaged $137,000 of savings recommendations with a payback of just over two years.

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utilities hesitate to invest the time and energy required to locate trained assessors capable of evaluating different types of manufacturing operations. Still others don't know how to locate the necessary expertise.

Ironically, public utility commissions wanting overall energy savings may reject substantial utility investment in industrial process efficiency because firms could cut energy use per unit of output, improve competitive position, expand markets, and produce more goods—and thus increase energy demand. Yet the same commission usually has economic development provisions such as reduced rates for new operations. Often the commission will support the utility-state-business partnership once it recognizes that the program effectively achieves both energy efficiency and economic development.

Large industrial users of electricity have formed a national lobbying organization, the Electricity Consumers Resource Council (ELCON), that also questions least-cost planning and demand-side management. The group claims that the nation's large manufacturing operations already have achieved all possible energy efficiency, but energy experts who have toured these facilities have seen many cost-effective opportunities to enhance efficiency and productivity. ELCON also mistakenly assumes that its members' fiercest competitors in producing steel, paper, chemicals, and motor vehicles—which ELCON claims would be unfairly subsidized by DSM programs—are other U.S. companies rather than foreign firms.

Demand-side management and technology transfer could foster higher quality products and services from small suppliers

To the benefit of large manufacturers, demand-side management and technology transfer could foster higher quality products and services from small suppliers. Moreover, all electricity consumers would benefit from long-term savings from enhanced efficiency. Still, ELCON's opposition cannot be ignored because its large member industries hold great political clout and legal resources.

Rural Partners. Three small rural public utilities have worked with the Northeast-Midwest Institute and adopted a variation of the proposed utility-industry partnership program; in fact, the concept promoted in this report has

evolved from their successes. Their experiences and results show the potential impact that process technology-economic development initiatives could have in small towns and rural areas if carried out on a larger scale. Descriptions of the three programs follow.

Osage Municipal Utilities in Osage, Iowa, combined state oil-overcharge funds and company resources to strengthen area businesses and help them expand, as well as encourage new companies to begin operations in its rural north-central Iowa service area. Through its High Energy-Efficiency Loan Program (HELP), the utility involves itself directly in business-retention and expansion strategies. Osage promotes energy conservation which lowers business energy costs per unit of output. It also subsidizes loans to businesses that gain more energy efficiency by adopting new technological processes or modernizing facilities.

Osage promotes energy conservation which lowers business energy costs per unit of output

By offering HELP, the utility embarked on a pioneering effort to show the importance of energy efficiency in economic development strategies. The program has four objectives:

- Keep existing businesses in the area by integrating energy efficiency and related financial incentives;
- Encourage expansion of existing businesses by helping them finance installation of energy-efficient facilities and equipment;
- Promote new business start-ups and improve the local economic climate by reducing energy costs; and
- Make future energy demand easier to achieve, thereby keeping rates low and enhancing other economic development efforts.

HELP offers two services for industrial and commercial firms: free energy efficiency audits and an interest-subsidy loan program to make the improvements or investments identified by the audits. The process begins with a *walk through* energy analysis of a facility conducted by an energy-efficiency expert, who identifies the

range of potential savings in both structure and equipment. If the potential exists for significant reduction in energy use and the firm is interested in making the necessary investments, the auditor undertakes a second, in-depth examination.

This assessment defines specific energy-efficiency options available, their estimated cost, savings, and payback period—the amount of time needed for the energy savings from the improvement to equal its cost. The efficiency expert also makes recommendations for new construction after reviewing plans for the building and equipment; suggestions might include additional or alternative plant designs or variations in equipment. The utility pays half the cost of the energy audits, which have averaged about $400 for walk-throughs and $2,000 for in-depth analyses. Oil-overcharge funds cover remaining costs.

Industrial and commercial firms generally are eligible for interest-rate reductions averaging five percentage points below the local market rate for eligible investments

Companies choosing to make the recommended investments are eligible to take part in the second part of the HELP program, in which they receive interest subsidies to lower the cost of capital needed to undertake the energy-saving improvements. Industrial and commercial firms generally are eligible for interest-rate reductions averaging five percentage points below the local market rate for eligible investments. In specific cases, the program may cover all interest costs for the first two years of the loan to make the investments more attractive. The utility pays half the amount of the loan subsidy; oil-overcharge funds earmarked by the state provide the balance.

The utility kept the program design broad and simple. In order to reduce its exposure to financial risk, it encourages private investment with an interest subsidy. Program officials streamlined administrative procedures by having participating banks underwrite and service the loans. The utility sets payment schedules for the interest subsidies.

Initial results are promising. Fox River Mills, a knitting mill and Osage's largest employer, undertook a $2 million plant renovation and production-line reorganization in 1989 following recommendations of the utility's energy-efficiency audit and a subsequent productivity evaluation.

The company was receiving overtures from another state to relocate, but the mill owners went ahead with the improvements, lowering the amount of energy needed to turn out a dozen pair of socks (their production benchmark) from 48 cents to 30 cents—a 37 percent cut.

Yet Fox River Mills increased its overall energy use by 60 percent the first year after the improvements as a result of increased plant productivity. Mill owners have been able to reduce wholesale prices while increasing sales and profits; they reinvested the profits in the company to help pay for a plant expansion. These efforts created more than 50 new jobs, a major boost for a town of less than 4,000 people and a grand achievement for the "dying" U.S. textile industry.

Another company incorporating the results of a HELP assessment, A-Z Drying, rebuilt its insecticide dryer system and has since cut its energy use in half for equivalent productivity. Innovative uses of waste heat in the town bakery, energy efficiencies at the knitting mill, and other innovations were featured on "Good Morning America" and other major television network broadcasts. These success stories demonstrate the role of the utility's HELP in creating incentives for companies to remain economically competitive and supporting community economic development in the Osage area.

The ***Northwestern Pennsylvania Rural Electric Cooperative*** (REC) set as one of its major goals "to strengthen the cooperative's support of economic development in the communities it serves." The utility has defined a creative and substantive role in its predominantly rural service area, and it has established several financial and technical assistance programs that—although small in terms of dollars—have had a large impact.

Utility officials visit commercial and industrial companies to introduce their development programs and learn what they need to promote business activity. Northwestern Pennsylvania REC's program is one of the most comprehensive and ambitious of any small utility in the nation. The most important components are outlined below.

The center's engineers do a preliminary walk-through assessment to gauge the potential for significant energy-saving improvements

The co-op's Northwestern Energy-Economic Development (NEED) program, launched in January 1990, provides free energy surveys and interest-rate buydowns to commercial and industrial establishments in the utility's service area. The Northwestern Pennsylvania Energy Center in Erie conducts the energy surveys with the utility. The center's engineers do a preliminary walk-through assessment to gauge the potential for significant energy-saving improvements and undertake a detailed follow-up survey if necessary. They make specific recommendations, for example, about revamping motor loading or changing lighting or heating systems.

If company managers decide to recommend changes that require financing, they arrange the most advantageous terms possible with a commercial lender. After evaluating the projected energy savings from the investment, Northwestern REC offers to buy down the interest rate on a loan from three to five percentage points, depending on the project.

In October 1990, the utility and the Energy Center made $20,000 available for grants to help business owners finance energy-efficiency projects recommended in the NEED surveys. The grants pay for as much as 50 percent of the improvements or $2,000, whichever is less. A local auto body shop was one of the first to use this program. The business has outgrown its original two-car garage site, and the owner plans to build a new 1,800 square-foot shop. The utility, through NEED, suggested certain insulation and construction for the new facility. The owner intends to use the NEED interest buydown and grant funds to make the suggested modifications to the building.

Pennsylvania's rural Somerset County has suffered the loss of several major manufacturing and mining operations in recent years; its unemployment rate hovers at 9 percent. The ***Somerset Rural Electric Cooperative*** (REC) has lost 48 percent of its commercial and industrial sales since 1983. In the long run, the utility sees taking a direct role in economic development as a way to increase economic activity in the Somerset area and to help rebuild some of its lost sales.

The Somerset REC has developed a program to encourage economic development activity through energy-efficiency improvements and investments. Nearly identical to the NEED program available in the Northwestern Pennsylvania service territory and the HELP program offered in Osage, the Somerset Energy-Efficiency Economic Development (SEED) program provides assessments and financial incentives to key businesses in the utility's service area. SEED was designed to contribute to the area's business-retention and expansion strategy.

Poorbaugh Lumber Company was one of the first industrial customers to take advantage of energy-efficiency audits and financial help offered by the SEED program. Based on the energy audit, Poorbaugh replaced its chipper and debarker. The new equipment, in addition to saving $4,250 per year in energy costs, also cut maintenance expenses and improved the quality of the products. According to the company's president, the energy study was of significant help in developing future plans for Poorbaugh.

In mid-1990, Poorbaugh undertook a $2.9 million modernization project that included the construction of a new lumber mill, the renovation of the old mill (including improvements to electric, heat, light, and boiler systems), and the installation of more than $800,000 worth of new equipment. Poorbaugh plans to diversify into hard-wood veneer production; previously, it had only carried out a rough-cut lumber operation. The veneer production industry is less than a decade old in this country, but demand for quality veneers is growing steadily. The company has identified markets worldwide for this product.

These three pilot projects—Osage Municipal Utility, Northwestern Pennsylvania Rural Electric Cooperative, and Somerset Rural Electric Cooperative—demonstrate the potential of utilities as key partners in the economic development process. The initial success of small rural power companies offering assessments and financing to their business customers spurred state officials in Iowa, Pennsylvania and Ohio to consider statewide efficiency-economic development projects. The following chapter outlines a strategy for expanding these utility-specific models to the state level.

Chapter 2. Developing and Implementing a State Program

Strategy for Implementing a State Program

Working groups in Pennsylvania, Iowa, and Ohio are designing statewide efficiency-productivity programs that provide multiple benefits to industrial customers—increased product quality, enhanced productivity, lower environmental compliance costs, and lower energy costs. Although the tactics and key players will vary from state to state, this chapter presents a general strategy, as well as key issues that must be addressed, to creating an industrial efficiency initiative.

In traditional demand-side management initiatives, the objective usually involves only more efficient use of electricity to reduce a utility's peak demand and avoid the construction of new generation capacity. The working groups in Pennsylvania, Iowa, and Ohio have suggested a broader focus for industrial efficiency efforts: to enhance productivity and competitiveness; to reduce the waste stream and minimize environmental effects; and to make plants more energy efficient per unit of production. Because this three-pronged approach expands beyond the utility's natural interest in energy, the state has a key role in the industrial efficiency partnership.

If energy savings was the only goal of a program, the loss of manufacturing operations would be considered a positive outcome. When companies cannot compete and shut down, the fixed costs of providing energy service shift to fewer customers, and utility rates go up. Employees who lose jobs will have difficulty paying personal energy bills. The loss of industry can precipitate a downward spiral in a local area that few would argue is desirable. Thus a statewide partnership program must adopt objectives that include more than saving energy.

A statewide partnership program must adopt objectives that include more than saving energy

A diverse advisory group should tailor the industrial DSM-economic development program to state needs. Participants would include energy and economic development officials, regulators, utility executives, industrialists, bankers, consumers, and legislators.

After drafting an initial design, the advisory group should develop an outreach plan. Care must be taken to balance representation from gas and electric power companies as well as manufacturers diverse in size and energy intensity.

The plan should be revised to reflect the concerns expressed during review sessions with utility, industry and consumer representatives. Finalization of the plan should lead to a press conference at which elected officials and participants publicize the new program.

The state advisory group should continue to deal with implementation issues and obstacles. Attention should be paid to publicizing the program to the greatest extent possible through the media. Moreover, the program periodically should be reviewed and revised to make it more effective.

Rhode Island Energy Management Service

The Energy Management Service (EMS) helps Rhode Island's industrial firms with low-cost energy audits that suggest ways to improve the energy efficiency of their production processes and industrial structures. The state has provided $625,000 for the program. The Governor's Office of Housing, Energy, and Intergovernmental Relations operates the Energy Management Service, which offers businesses help in saving energy, in production processes, and in equipment maintenance and operation. EMS was established to help companies involved in manufacturing or other production activities rather than offices, computer centers, or distribution facilities.

Officials of interested companies complete a plant-information form to give program staff an understanding of the business, its level of activity, and how much energy it consumes. They also must provide copies of all utility bills from the past year.

The program operates in two stages. First, energy specialists from Rhode Islanders Saving Energy (RISE), a nonprofit enterprise funded by and working with utilities and the governor's office, visit the facility and perform a preliminary efficiency audit. RISE staff examine lighting, HVAC, production-line motors, and building envelope. They submit a report to the state office that includes a recommendation on whether the facility is process-oriented enough to participate in the next phase of the program and receive an in-depth audit.

EMS officials hire one of three contracted professional engineering firms to conduct second-stage energy-efficiency audits. These firms are limited to 32 hours of work on the follow-up assessment for any one business. This work includes reviewing the RISE assessment and recommendations; conducting their own four- to five-hour efficiency audit of the facility and its production processes; and suggesting specific energy-conservation measures. The most common suggestions are strategies for waste heat recovery and installation of motors with variable-speed drives.

After the engineering firm has submitted its final report to the governor's office, representatives of RISE, EMS, and the engineering firm meet with company officials to discuss the audit and its recommendations. Companies are charged only $250 for this service. EMS has coordinated 140 audits thus far, all for businesses with more than 100 employees. State officials are beginning to encourage smaller companies with as few as 50 employees to participate.

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Devising a Partnership Plan Tailored to Industry

The few utilities that focus on industrial energy efficiency tend to concentrate on lighting, heating and air conditioning, insulation, and occasionally motors. Few focus on the manufacturing process and its attendant technologies, which account for about 90 percent of the energy used in the industrial sector.

Outmoded technology is the primary cause of U.S. industry's lack of competitiveness

According to the Office of Technology Assessment report *Making Things Better,* outmoded technology is the primary cause of U.S. industry's lack of competitiveness. Manufacturers need technical and financial assistance to maintain their peak productivity since technologies evolve constantly and competitiveness is a quality that either improves or erodes.

To help maintain industrial competitiveness, state and local officials can create a long-term, stable partnership with utilities to promote efficiency, productivity and waste minimization. Specific components of this partnership will vary from state to state, but in the proposed plan the utility—often in conjunction with other private or public sources—helps pay for industrial assessments and subsidizes the financing of recommended energy-efficiency improvements.

Properly structured and targeted, this type of partnership can become a key element in a community's economic development and revitalization strategy, with benefits for sponsoring utilities, business participants, and the state. Achieving the effort's potential depends on the willingness of participants to take certain steps. Figure 1 illustrates the structure and interrelationships of the partnership.

Utilities must:

- Guide the development of the program and its activities;
- Commit financial resources for broad-based industrial assessments and for implementation of recommended energy-efficiency improvements;
- Use staff to help devise program design and implementation details; and
- Help publicize the program and provide information on changes in energy consumption needed to document its effectiveness.

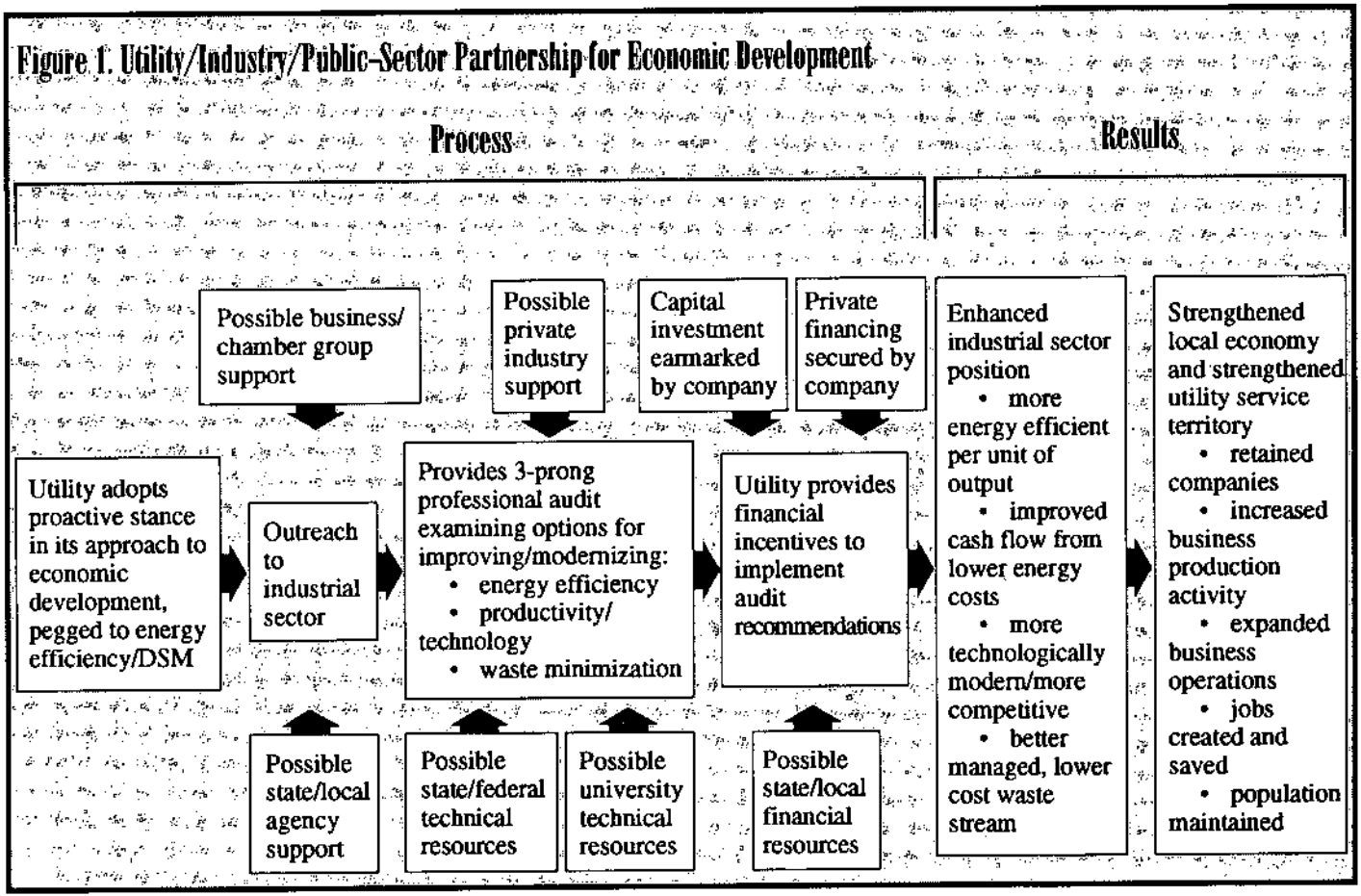
Figure 1. Utility/Industry/Public-Sector Partnership for Economic Development
Process
Results
Possible business/ chamber group support
Possible private industry support
Capital investment earmarked by company
Private financing secured by company
Enhanced industrial sector position
• more energy efficient per unit of output
• improved cash flow from lower energy costs
• more technologically modern/more competitive
• better managed, lower cost waste stream
Strengthened local economy and strengthened utility service territory
• retained companies
• increased business production activity
• expanded business operations
• jobs created and saved
• population maintained
Utility adopts proactive stance in its approach to economic development, pegged to energy efficiency/DSM
Outreach to industrial sector
Provides 3-prong professional audit examining options for improving/modernizing:
• energy efficiency
• productivity/ technology
• waste minimization
Utility provides financial incentives to implement audit recommendations
Possible state/local agency support
Possible state/federal technical resources
Possible university technical resources
Possible state/local financial resources

Businesses must:

- Prepare realistic plans for future activities that improve their competitive position;
- Give professional assessors access to facilities and equipment;
- Carry out the technology and energy-efficiency improvements recommended by the assessors; and
- Secure financing to help cover the costs of these improvements.

State officials must:

- Provide utilities with a fair return on their investments in this efficiency/productivity program;
- Identify and/or provide technical assistance to participating businesses and utilities;
- Link state, federal, and university technology transfer resources to the effort;
- Help businesses identify sources of private funding to implement the recommended efficiency/productivity measures;
- Publicize the program among existing local companies, emerging enterprises, and outside business prospects; and
- Involve the utility as an equal partner in the local economic development process.

Government officials, utility executives and business owners must consider several factors when developing the overall plan. The following sections review options for efficiency/productivity assessments, financing, regulations, and program administration.

Assessment. Utilities can enhance their DSM efforts, improve the local economy, and enrich their own customer base by providing companies with broad-based

assessments that emphasize efficiency, productivity, and waste reduction. Because small and mid-sized companies usually lack personnel with the time to acquire necessary knowledge of technological innovations, an assessment program is essential. Even most large manufacturers are not technologically up-to-date since they tend to put priority on product and market development rather than process technologies.

The design of an assessment is crucial to its effect

The design of an assessment is crucial to its effect. Utilities have significant experience with energy audits, in which trained technicians review a building's insulation and lighting. The proposed approach calls for an expanded approach, an assessment that reviews the efficiency and productivity of process technologies, the potential to reduce wastes, as well as energy efficiency.

Each utility will tailor the assessment based on the industrial customer's priorities. If the local business is concerned primarily with environmental problems, the first assessment should highlight that aspect. If it wants help cutting energy costs per unit of output, that aspect should be given priority. The assessor, however, should suggest other opportunities for cost savings at the same time.

The assessors must be knowledgeable professionals to ensure that suggestions will be accurate and reflect the state of the art in that industry. In some cases, teams of professionals with different types of technical expertise will be needed to evaluate waste streams, energy usage, productivity, and quality control improvements.

Utility personnel generally are not capable of these multi-pronged assessments. By hiring contractors, the utility can obtain the needed expertise as well as distance itself from the assessment, making the audit more credible to the firm. Outside advice also may allay the concern of business owners about the assessors' recommendations of technology using one energy form over another.

The utility should try to share the costs of detailed assessments. Although local firms are not likely to pay for professional audits on their own and probably would not

know where to find a good assessor, they should pay part of the assessment cost to ensure that business owners take the assessment seriously and commit themselves to the process. With a shared approach, the firm is more likely to follow through with the recommendations.

Selling the audit presents some challenges for the utility. Some industrialists may not permit assessors into their plants to evaluate production processes because of concerns about proprietary rights and confidentiality. Yet several utilities, including Wisconsin Electric, have overcome this problem by signing nondisclosure agreements with participating companies. Successful marketing of assessments depends on the utility's history of cooperation with industrial customers. If the power company regularly calls on its manufacturers and has developed a working relationship, its suggestion of a three-pronged assessment will be welcomed and trusted.

Wisconsin Electric has one of the most successful industrial DSM programs. It uses energy-service companies,

Illinois Small Business Energy Management Program

The Illinois Energy Management Program helps small businesses reduce energy waste in order to improve competitiveness and profitability. The state has provided $5 million for this initiative.

The Department of Commerce and Community Affairs (DCCA) and the Department of Energy and Natural Resources are working together to provide technical and financial assistance to small business owners. The technical assistance wing of the Energy Management Program is operated by DCCA. Efficiency experts from its Small Business Assistance Bureau provide interested businesses with free walk-through energy audits. They recommend conservation measures such as low-cost and no-cost ways to reduce energy costs from 5 to 25 percent annually. The average audit is completed in one to two hours.

More than 3,500 small businesses in Illinois have taken advantage of this service. The Small Business Energy Management Program has provided audits since 1983. It set up the Energy Conservation Interest

Writedown Grant Program as a separate component to provide financial help to small businesses. The program will prepay up to 100 percent of the interest costs on a conventional small business loan approved by an Illinois lending institution.

Loans must be designated for energy-conservation projects carried out in existing structures. The maximum amount of interest subsidized by the program is $20,000. The individual businesses pay any remaining interest. New construction does not qualify for loans. To qualify for an interest writedown, a business must complete an application and certify that it does the following:

- Operates a for-profit, non-farm commercial, or industrial small business;
- Has a net worth less than $6 million and average after-tax profits of less than $2 million in the last two years;
- Does not operate in a home, residential, or apartment building;
- Provides DCCA with copies of all energy bills for the 24 months following the completion of the energy-conservation project;
- Certifies that the project applied for is a retrofit or replacement of an existing structure and/or its equipment;
- Completes the project within six months of approval; and
- Agrees to allow DCCA or its representatives to inspect the facilities and improvements at any time before, during, or after a project is approved and to conduct a free energy audit if DCCA determines that one is necessary prior to the start of the project.

The Energy Conservation Interest Writedown Grant Program has approved 425 grants to small businesses in Illinois. These grants represent $3.7 million of the $5 million available.

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rather than in-house staff, to conduct its assessments for four different industrial segments of the utility's customer base. Selecting these professionals took six months of screening. The utility co-funds the assessments, believing that a company will value the service more if it pays a portion. Audit costs range from as little as a few thousand to $20,000. Although the utility participates only in energy-related rather than the broad-based assessments, the energy-service company or other assessor can and frequently does perform additional work with the industrial firm.

The utility co-funds the assessments, believing that a company will value the service more if it pays a portion

Wisconsin Electric credits much of its success with large industrial customers to working with a high-level person in the firm—a vice-president or above—who can make a commitment to the overall process. At the same time, a utility sales manager who knows the technology approaches the plant manager. Through the assessment, this utility team creates a two- to four-year plan with a phased approach that the company can afford. The utility often brings in an energy-service company that it has precertified to deliver design, installation, and operation services.

Financial Incentive Options. The availability of affordable financing to implement the energy and technology improvements recommended in the industrial assessments ultimately determines whether the utility-state-business partnership flourishes. Many regions of the country are experiencing shortages of investment capital. The situation is particularly severe for small businesses, especially manufacturers. In rural areas, small-town bankers tend to have little knowledge of new technologies or production processes and thus are often unwilling to lend.

Small-town bankers tend to have little knowledge of new technologies or production processes

In order to advance the competitiveness of companies in their service territories, utilities can help finance energy efficiency and technology improvements, leveraging considerable private investment at little cost to the power company. Four types of financial assistance programs seem especially relevant for utilities to adapt for their own initiatives, since they are probably the easiest to administer and the most palatable in terms of cost. Table 1 summarizes their key features.

Table 1. Characteristics of Financial Assistance Programs

Type of Program	Terms of Assistance	Purpose	Effect on Targeting
Grants/Rebates	Money is given outright for specific purpose; no repayment expected.	Ensures access to capital	Allows greatest targeting flexibility and control, as grantor sets conditions for recipients.
Loans	Money is loaned for specific purpose; repayment expected. May offer no or low interest terms.	Improves access to capital and/or reduces cost of capital.	Allows targeting flexibility, with careful program planning.
Loan Guarantees	Pledge to cover private loans; makes business more attractive to banks by reducing default risk.	Reduces lenders risk.	Difficult, as utility likely will not decide who receives loan that is guaranteed. Must have explicit eligibility criteria.
Interest Subsidies	Lower interest rates, because of subsidy or incentives to private lenders.	Reduces capital costs.	Does not help firms on the credit margin. Required outcomes (i.e., firms retained) can be stipulated.

Utilities can use ***grants and rebates*** to provide direct cash support for desired projects. They are the easiest form of financial support to offer, and they can be used to influence specific types of investment behavior unfettered by the need to meet the underwriting standards of private lenders. Utilities, however, should recognize that grants or rebates are usually the most costly financing approach.

Grants or rebates are usually the most costly financing approach

To achieve the maximum effectiveness, utilities should administer grant or rebate programs themselves—screening applications and monitoring projects. In this way, they have direct control over how funds are spent. Such contributions might leverage more resources when other potential participants recognize that the utility is in charge of the decision-making process.

Loan programs can be structured in a variety of ways. One of the most popular is the revolving loan fund (RLF), a pool of money often compiled from several sources, including public funds, private contributions, repayments of loans made through other public programs, and investments from private institutions. To avoid credit underwriting, utilities could provide capital to a bank or community development organization to administer as a local fund.

Recycling of the original pool of money provides the program with a continuing source of funds

RLFs have the advantages of flexibility and simplicity. For example, a program targeted to technology enhancements would make investments in facility reorganization or production line modernization. As the loans are repaid, the money is made available to other firms; in essence, it revolves for new uses. Recycling of the original pool of money provides the program with a continuing source of funds.

In some situations, utility partnership programs could make subordinated or secondary loans, which might serve as companion funds to financing that the company secures from a private lender. Companion loans lower the amount of capital that private financiers must invest in a single project. They can cover specialty equipment

Tennessee Small Business Energy Loan Program

The Small Business Energy Loan Program was designed to locate and aid small businesses that meet the eligibility criteria for low-interest loans. Once identified, these business receive loans to install and incorporate approved energy-efficiency measures in existing facilities. Tennessee has earmarked $5 million for this effort.

Businesses are eligible for loans of up to $100,000 at 5 percent interest if they complete an application and meet the following criteria. They must: be a small business with fewer than 500 employees; have annual gross sales of less than $3.5 million; be a unit of a county or local government; be classified as a not-for-profit or tax-exempt group or organization by the IRS; use, own, or occupy the structure into which the efficiency measures will be installed; and be capable of pledging collateral, paying off the loan, and remaining financially sound.

Program activities focus on business structures or facilities. A business receives a loan if the structure needing improvement is at least one year old, located in the state, and complies with certain technical real estate provisions. If the structure is rented, work will proceed only with the landlord's consent. No improvements are made to structures listed on the National Register of Historic Places without the written approval of the Tennessee Historical Commission.

To be eligible, the planned structural improvements must be included in a list of measures approved by the program:

- Weatherization: insulation, storm windows, or doors;
- Climate-control systems: control systems, air conditioners and heaters, distribution systems;
- Alternative systems: solar heating, cogeneration, energy-recovery systems; and
- Any other documented system with proven energy savings.

The program staff at the Energy Division reviews and evaluates the completed application and sends the applicant notification of acceptance or rejection.

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or industrial-modernization efforts that private lenders would hesitate to finance. This blended financing can make an otherwise unaffordable deal economically viable. It also lowers the amount of utility-supported participation needed for the project to occur.

Administration costs of loan programs vary. Some private financial institutions may be willing to administer utility-sponsored programs. If not, utilities will have to assign staff with adequate financial-analysis expertise to ensure a sound program and control the risk of default. This expertise is important because applications often come from companies whose proposals are deemed too risky by commercial lenders.

Typically, the cost of processing the loan application can run from several hundred to $1,000 per application—whether the loan is approved or not. Few savings are realized by contracting this task out to a private firm. In addition to the cost of credit analysis, program resources must cover expenses related to loan servicing, receipt of repayments, and project monitoring.

Since loan guarantees lower the risk of lending, they increase the availability of capital and often reduce the cost of borrowing

Loan guarantees help minimize the risks that often make private financial institutions hesitant to lend to small businesses. They are based on a pledge to cover most or all of the outstanding balance of a loan made by a private lending institution in the event the borrower defaults. Since loan guarantees lower the risk of lending, they increase the availability of capital and often reduce the cost of borrowing. Loan guarantees are usually offered by state or federal agencies, not by private entities.

In establishing a guarantee program, utilities would have to establish a reserve account or earmark funds to repay defaulted loans. Standard practice in state and federal programs calls for a reserve of 10 to 20 percent of the outstanding loan balance during the early stages. The exact amount depends on the expected level of risk built into the program design and the portion of the loan the guarantor pledges to redeem. Most programs guarantee 75 to 95 percent of the loan amount. Once a track record is established, the amount of the reserve can be adjusted.

Administrative procedures are the same for virtually all guarantee programs: a private financial institution evaluates the credit worthiness of the applicant and provides the loan funds; the guarantee entity assures repayment of a substantial portion of the loan.

Loan guarantees do not require as much staff expertise as direct loans because most or all of the loan processing, risk assessment, and credit analysis is performed by the private lender. Like public agencies, utility officials will want to define eligibility standards, an application review process, and procedures to follow in the event of default.

Because this type of incentive represents untested territory for utilities, state regulators may object to loan-guarantee components and loan-loss reserves in their financial plans. However, loan guarantees have the potential, if properly designed, to stretch available utility resources much further than direct loans or grants, and they can serve as an effective mechanism for involving private businesses and lenders.

Interest subsidies have emerged as an attractive alternative to direct loans or guarantees. Basically, this incentive encourages private financiers to make loans to businesses at terms the lender can accept and the borrower can afford. Interest subsidies—sometimes known as interest *buydowns*—make loans more affordable to business borrowers by reducing their carrying charges. In exchange for rates being several points below the prevailing market rate, the utility, as program sponsor, stipulates eligible uses or outcomes—such as the type or location of investment—for the proceeds of the subsidized loan. Interest-subsidy programs can be structured so that the utility providing the funds for the subsidy can stimulate economic activity with little actual cash outlay.

Interest subsidies can take several forms. One option is for the utility to pay banks a fixed number of interest-rate points, regardless of the terms of the loan. Another would have the power company cover any interest payments over a specified interest rate. A third would have the utility pay a fixed portion of the total interest payments.

Oklahoma Energy Loan Interest Subsidy Program

The Oklahoma Energy Loan Interest Subsidy Program encourages small businesses to invest in energy-saving improvements to existing structures by subsidizing loans made by private lenders. The state has provided $1.5 million for program activities.

The Energy Loan Interest Subsidy Program (ELISP) is a joint effort of the Community Bankers Association of Oklahoma (CBAO) and the Oklahoma Department of Commerce. It gives small businesses a 6 percent reduction in interest rate on loans if the money is used for accepted energy-conservation measures. The maximum subsidy is $30,000.

Lenders make all decisions regarding a borrower's credit background, collateral, and loan worthiness. A loan may be made for any purpose, but only that amount used for energy-saving improvements is subsidized. Loans are available on a first-come, first-served basis. To be eligible for a loan subsidy, a borrower must be considered a small business as defined by the Small Business Administration. Organizations defined by the Internal Revenue Service as nonprofit also are eligible. Subsidies are available for the following improvements:

- **Building envelopes:** insulation for ceilings, walls or foundations, window shading, caulking, and weather stripping;
- **HVAC:** heat recovery, flue dampers, time-controlled thermostats, variable-speed fan drives, high- efficiency and replacements burners;
- **Domestic hot water systems:** pipe and tank insulation, water-heater recovery, low-flow water systems, and recirculation controls;
- **Lighting systems:** low-watt incandescent bulbs, optical reflectors, low-watt fluorescents, and high-intensity discharge fixtures; and
- **Miscellaneous electrical systems.**

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The chief advantage of an interest-subsidy program is its ease of administration. Unlike loans or loan-guarantees, the utility partner can rely totally on private lenders to conduct credit analyses, assess risks, and make the loans. Utility officials can articulate their intentions on program targets in the agreement with participating lending institutions. The utility simply sends payment for its share of the interest carrying costs. However, interest subsidies neither improve a borrower's credit worthiness nor increase a company's access to capital. Loans are approved or disapproved based on a business's credit standing; the interest subsidy simply reduces the cost of capital to the borrower.

The chief advantage of an interest-subsidy program is its ease of administration

With any of these incentive options, utility officials have to decide whether to set a target size for their effort and whether to publicize it if set. If the program level is too low, it will not accommodate major plant expansions or location decisions of larger companies; both community development efforts and utility sales would suffer. On the other hand, a high program level might discourage smaller companies from seeking help.

In some cases, utilities can take the lead in identifying possible offsets, such as participating banks waiving origination fees or donating loan-servicing capacity. Power companies might use linked deposits or similar mechanisms to reduce interest rates, lowering levels of needed cash subsidies to participating firms. Other offsets might include having state agencies or university departments donate quality-assessment services.

Regulatory Issues. To establish successful industrial energy-efficiency programs, public utility commissions must define the scope of the program and clarify eligible expenses. While commissions need to provide a fair return on a utility's investments in the proposed assessment and financing, many energy experts argue that payments to enhance efficiency should be given the same treatment as traditional expenditures to construct power plants and power lines. Utilities, obviously, would be more enthusiastic about the industrial efficiency/productivity program if they were allowed a return (or profit) on their investments rather than a simple recovery of their costs.

Commissions must carefully consider the issue of subsidies between classes of customers

Commissions must carefully consider the issue of subsidies between classes of customers when establishing regulations and reviewing rate cases. Regulators recognize equity as a goal, and consumer advocates could argue that residential customers should not have to pay higher rates to fund industrial assessments and incentives to promote industrial energy efficiency. However, commissioners may recognize the efficiency/productivity approach as providing more benefits to the state than current and accepted utility economic development strategies, such as promotional rates offered to new industrial customers. A strong and viable industrial base conveys benefits not just to industry, but to all utility customers.

One regulatory approach would allow utilities to invest the same proportion of its DSM expenditures in industrial efficiency as industry contributes to utilities' total revenues. Thus, if a utility were to invest $100 million in DSM over three years and 40 percent of its load were industrial, it would spend $40 million on industrial programs. A few utilities invest a larger portion in their industrial customers. Wisconsin Electric, for example, spends two-thirds of its DSM money on local businesses. Some energy experts argue that disproportionate investment in the industrial sector is warranted given the public's economic development and environmental concerns.

Program Administration. Osage Municipal Utility, Northwestern Pennsylvania Rural Electric Cooperative, and Somerset Rural Electric Cooperative sought to keep program administration simple since the utilities and the towns they serve are small, with scarce community development staff capacity. In each case, the utility was designated as the coordinating point for information on the efficiency/productivity program; utilities contacted and offered businesses an energy-efficiency audit and a financing subsidy.

An efficiency/productivity program can be structured in a variety of ways. However, each program must initially define eligible participants and activities. The following sections review various options.

Nebraska Dollar and Energy-Saving Loan Program

The Dollar and Energy-Saving Loan Program offers low-cost financing alternatives for Nebraska's cities, businesses, farmers, and homeowners to encourage investment in energy-efficiency improvements that save electricity, fuel, and money. The program also helps people in emergency situations such as heating or air-conditioning failure, and those rebuilding following storms, floods, and other natural disasters. Nebraska has committed $10 million to the program, one of the largest such efforts in a predominantly rural state.

The Nebraska Energy Office, in conjunction with lending institutions, provides low-interest loans at 5 percent interest to Nebraska borrowers. Any citizen is eligible for a loan if the improvements are made to a structure in Nebraska and the institution financing the loan has a branch in the state.

The program allows the financing of various improvements. If a borrower is not sure which measures would prove most cost-effective, the Energy Office will have an audit performed by qualified personnel. Some audits are free; those more extensive may be financed with a no-interest loan from the Energy Office. To simplify the application process, program personnel drew up a list of improvements that qualify for loans. Eligible energy-efficient projects include door, window, and ceiling projects; heating, air-conditioning, and plumbing projects; lighting-efficiency projects; and efficient household appliances.

Interested borrowers contact the Energy Office, acquire and fill out the necessary forms, including projected costs and other needed specifics, and return them to the office. The borrower then contacts any participating lending institution (the Energy Office provides lists of the most convenient lenders), and secures a loan. The borrower must meet the lender's credit requirements. Upon approval, the loan application is reviewed by the Energy Office. In two to three weeks, the office has the lender notify the borrower that work may begin.

To encourage as many financial institutions as possible to join the program, the Energy Office created the following method of financing loans. The office buys a percentage of the loan made by a lending institution: 100 percent of loans less than $1,000, 60 percent of loans from $1,000 to $5,000, and 55 percent of loans above $5,000. Interest

repayments are returned to the Energy Office for relending, multiplying the value of the initial $10 million allocation. In case of loan default, the lender is allowed to collect its portion of the loan first. Program officials at the Energy Office handle all forms, paperwork, and marketing of the loans. To date, the Nebraska Energy Office has funded more than 1,500 loans for nearly 4,000 projects. The total cost of the improvement projects has reached almost $7.78 million.

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Defining Eligible Participants

While utilities should offer the program to all their industrial customers, they may want to identify key groups that will be important in program marketing. Such targeting efforts could emphasize one or more of the following factors:

- Company characteristics: Should firms meet certain size, sales volume, number of employees, level of energy usage, or length-of-time-operating requirements?
- Business location: Should they be located in specified industrial parks, targeted development districts, or local enterprise zones?
- Relative company need and willingness to participate: Which companies are most in need of capital for energy-related economic development or technology modernization investments, or least likely to expand or stay in business without some type of technical or financial help?

Utility managers must consider carefully which companies to target

Utility managers must consider carefully which companies to target in the initial offering and select prime candidates likely to represent significant opportunities and

respond positively to the program. Limiting the scope helps utilities control the level of resources needed.

Initially, the utility may want to target those particular industrial categories important to its load, those with possibilities for improvement, and those with more than one plant in its service area. This allows the utility to make multiple use of the process-oriented expertise it hires to perform the assessments.

No matter how the criteria are defined, utility executives as well as state and local officials and business owners should agree that this endeavor is not a risk-subsidy program. Rather, it should be a mechanism to bring utilities into the economic development process in a way that encourages access to capital, new applications of technology, and a better competitive position for business.

Defining Eligible Activities

Program managers must assess several factors in defining what investments are eligible for assistance under the partnership program. Variables exist for established firms as well as new business start-ups:

- Nature of the investment: Will permitted activities include structural rehabilitation, diversification into new product lines, production process modernization, working capital, or equipment acquisition?
- Extent of the activity: Should investments be comprehensive, incorporate new technology, or use existing technology in a new setting?
- Variations in eligibility based on specific industrial sector: Will eligibility be limited, for example, to manufacturing, food processing, etc.?
- Age of companies: Are they emerging firms or mature industries?
- Ineligible activities: Should companies be allowed to subsidize the cost of basic plant construction or acquire cogeneration equipment?

To set ground rules, for instance, the utility and its public-sector partners could state that a firm may participate in the program to buy more energy-efficient process equipment, introduce new technologies as part of an expansion process, or increase the energy efficiency of the building it currently occupies or plans to move into. At the outset of the program, the eligibility guidelines for program-supported investments should probably be broad and include structural changes to existing buildings that affect cash flow and economic competitiveness; new process equipment to replace or retrofit existing equipment; and new equipment for new product lines.

Partners may want to define or narrow eligible activities. They could, for instance, require a certain level of investment or improvement activity to be undertaken, evaluate the firm's financial capability, and define whole categories of activity, such as new construction, that would not be eligible.

Iowa Building Energy Management Program

The Building Energy Management Program makes loans to increase the energy efficiency of Iowa's public buildings, private and public schools, educational agencies, hospitals, and nonprofit organizations, and improve the environment by lowering waste-product emissions. The program enjoys a $2 million funding level.

The program is operated by the Iowa Department of Natural Resources (DNR). Funds allocated for this effort are used to leverage additional financing from other sources such as businesses and utilities. The program has four main components that target different areas.

Cities, counties, and local governments receive assistance through the Local Government Energy Bank Program. Acceptable projects include improvements to buildings, street lighting, water and wastewater-treatment plants—all of which improve the local economic development climate. Power-generating plants also qualify. The Iowa-based Northwest Investment Services helps provide financing. This program began as a pilot in fiscal 1990 when three local governments enrolled

for help. DNR expanded the program in fiscal 1991 to make services available to all cities and counties in the state.

DNR created a new program in 1990 to improve energy efficiency in Iowa's private colleges and universities. In conjunction with the Higher Education Loan Authority, DNR began energy-conservation efforts involving the Iowa Association of Independent Colleges and Universities and the Iowa College Foundation. Two other colleges conduct technical analysis to determine what improvements are possible. Accredited private schools also are part of DNR's energy-management efforts. Due to the small size of these schools and their particular financing needs, DNR works with each individually to create affordable financing for energy improvements.

Iowa's public school districts receive help through the School Energy Bank Program, which supports energy-saving improvements. All facilities in the program already have received energy audits, putting the program two years ahead of its original schedule. Two hundred and twelve jurisdictions participate with a total of 691 buildings involved. Program officials have scheduled engineering analyses for about half of these buildings. The program has provided more than $3.1 million in loans, which should produce $925,991 in annual savings over a five-year period.

The Iowa Facilities Improvement Corporation funds energy improvements for state agencies. Set up in 1986, the program has brought the Departments of Human Services, Corrections, and General Services more than $1 million in annual energy savings. These savings are used to fund other departments. The Department of Transportation received $1.3 million, the Department of the Blind received $64,000, and the Department of Public Safety $45,000. The Facilities Improvement Corporation outlined $35.5 million in energy-management improvements for the Board of Regents facilities. Program officials plan to implement these measures by fiscal 1994, with a projected annual savings of $7.2 million. These improvements will pay for themselves in less than five years.

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Chapter 3. Examining the Role of State and Federal Governments

State Economic Development Programs

Improving the economic base of communities throughout rural America requires the coordinated efforts of government, business, labor, and research and educational institutions. New companies and industries must be formed, capital sources uncovered, and new jobs created. Viable existing firms must be revived as well, so they can adapt and grow. This is a tall order in many areas with limited resources.

Increasingly, state governments are taking the lead in these activities. They have turned to public-private partnerships to help them carry out this redefined economic development role. Today, states bear the primary responsibility for encouraging the formation of these partnerships among key economic players and ensuring that local governments have the resources and support to achieve an advantageous economic development climate. States have assumed the needed role of catalyst and investor, carrying out programs to bring together various sectors and expertise—along with capital—to make the economic development process go forward. This role will continue. The states' challenge for the 1990s, however, is to proceed in the face of their own fiscal constraints and political changes.

Today, states bear the primary responsibility for encouraging the formation of these partnerships

States cannot legislate competitiveness, but they can establish a climate that encourages new technology applications, enhances productivity, and stimulates private investment in industrial retooling. To advance this objective, states are supporting more sophisticated technology transfer and deployment efforts, and devising complementary education, training, and targeted investment incentives to bolster private initiatives in this area.

State programs are as diverse as local conditions and needs. Every state has adopted a series of programs to

New Mexico Irrigation Efficiency Service Program

The Agricultural Energy Management Program sponsors services, education, and research to help farmers and ranchers reduce energy costs by improving irrigation efficiency. The state has earmarked nearly $250,000 for this program, which serves agricultural interests.

As one of New Mexico's largest industries, agriculture is a huge consumer of energy and water. It is estimated that 30 percent of farmers' costs are in irrigation. Due to rising energy costs, thousands of acres of cropland have been retired in New Mexico since 1974, causing severe damage to local economies. To promote efficiency and lower costs, New Mexico's Energy Conservation Management Division (ECMD) began the Agricultural Energy Management Program. The program has six areas of activity:

- **Irrigation pump efficiency tests.** ECMD measures well levels and gauges pump efficiency through flow rates. This is the longest standing energy-management service that ECMD offers. It has tested over 2,500 systems throughout the state over the last 15 years.
- **Irrigation system survey.** This survey reviews the entire irrigation system from aquifer to crop. Recommendations are made on portions of the system necessary for increased efficiency.
- **Surge irrigation valve loan program.** In 1988 ECMD field-tested new surge irrigation valves through the Black Range Resource Conservation and Development District. Energy savings and increased crop yields showed that the equipment paid for itself.
- **Irrigation scheduling networks.** Weather data and computer software are used to give farmers across the state a more accurate estimate of their irrigation needs.
- **Resource management.** In 1989 ECMD started a training program for agricultural producers. The goal of this project was to inform farmers of the hazards that high agricultural-energy inputs present to soil, water, and wildlife.
- **Sprinkler-adapted drip irrigation.** To address the growing need for energy and water conservation, a demonstration project

was set up to highlight new irrigation techniques and their potential savings.

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encourage economic development: business retention and modernization as well as start-up. Crafted to take advantage of specific economic assets and private-sector partners, these programs play an integral part in local and regional economic revitalization and growth strategies.

However, the partnership program outlined in the second chapter of this book represents new, largely uncharted territory for both utilities and public officials. It takes the partnership concept that states, companies and utilities have cautiously embraced one step further. Thus, launching this new effort will require interested parties to pursue a deliberate, well-planned approach.

New York Energy Investment Loan Program

The New York Energy Investment Loan Program (EILP) supports businesses by providing financial incentives for energy-conservation improvements. The state established the program with a one-time funding infusion of $2.7 million.

EILP provides financial help to businesses that cannot afford to install energy-conservation measures because of the large initial investment needed. Through leveraging of bank funds and incentives to private lenders, businesses may take out loans large enough to complete the improvements at a subsidized, affordable interest rate. The program allows interest subsidies on loans of $500,000 or less made by private lenders for energy-conservation improvements. A special provision allows subsidized loans of up to $1 million for on-site power-production projects.

EILP gives interest write-downs if borrowers meet the lender's credit standards and fall into one of these categories: employ 500 or less; have annual sales of less than $10 million; are defined as agribusiness; or own a multi-family housing complex.

Program officials set interest rates to reflect the changing market conditions. In mid-1992, for loans with terms of five years or less, the interest rate is 2.5 percent. Loans from five to ten years receive a 5.0 percent interest rate.

Applicants must submit completed forms, an energy audit, and estimates of the cost of energy-conservation improvements to be undertaken. Applications are reviewed by the Energy Office. Energy audits must be performed or sponsored by one of the following: other governmental agencies approved by the Energy Office; utilities; or licensed architects or engineers.

Improvements, alterations, or repairs to a building or its equipment that result in proven energy savings are eligible for EILP help. The payback period for most projects must be one to ten years and can extend to fifteen years for multi-family housing improvements. The program provides interest subsidies for the term of the loan, up to ten years maximum. Loan guarantees are available on up to 75 percent of the outstanding loan principal. They are distributed on a first-come, first-served basis throughout the state. However, the Energy Office will re-allocate guarantee authority if it believes a particular geographic region or building sector is over-represented.

By mid-1992, program officials had approved more than 700 applications with over 100 financial institutions representing banks of all sizes. Energy savings of $5.5 million are expected annually from the projects supported by the initial EILP subsidy of $10.6 million. Total savings from energy investments are expected to exceed the original outlay substantially.

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Proponents will have to explain the concept and justify its likely benefits to potential industrial-sector beneficiaries as well as to hesitant utility commission members and staff. In defining and carrying out this approach, advocates will need to build on the track record of prior partnership efforts that have brought utilities and others together, proven examples that have been well-received by those who will have to play an important role in the new endeavor.

Federal Economic Development Programs

The federal role in economic development remains an important one with Washington offering a wide variety of financial assistance programs—loans and loan guarantees, grants, and technical assistance—to help states, municipalities, and development organizations spur economic recovery and growth. The 1981 Economic Recovery Tax Act (ERTA) gave impetus to the use of federal tax breaks for economic development purposes.

Most federal development programs have had their funding sliced since 1980

Most federal development programs have had their funding sliced since 1980, some by more than 50 percent. Legislation passed in 1982, 1984, and 1986 modified many of the tax advantages contained in ERTA, eliminating the investment tax credit, scaling back tax-exempt bond financing, and restricting passive losses from real estate investments, including structural rehabilitations.

Yet even with less to give, federal programs serve as cornerstones of many state and community development activities. State and local activism is based largely on partnerships among business, supportive private organizations, the academic community, and all levels of government. The federal government is an essential partner in many of these endeavors.

Federal agencies and programs will continue to play an important role in technology modernization and energy efficiency-related development initiatives. Two programs in particular are well-suited to such projects: Community Development Block Grants and tax-exempt

industrial development bonds. In spite of program changes and limitations, they hold considerable potential for future efforts.

Community Development Block Grants. The Community Development Block Grant (CDBG) program is one of the best remaining that provides direct funding for business modernization and competitiveness activities. CDBG is the largest source of federal funds earmarked for small cities' community and economic development purposes, averaging $950 million annually since 1980. While much of these funds are targeted to housing, CDBGs can be used to rehabilitate privately owned buildings and sites, covering many labor, material, and construction costs. They also can pay for services such as entrepreneurial counseling, preparation of work specifications, loan processing, and site inspections. Thus CDBGs can be adapted to a new generation of industrial projects.

CDBG is the largest source of federal funds earmarked for small cities' community and economic development purposes

CDBG allows a range of activities supported by grants, loans, and loan guarantees. The program thus is highly versatile and able to stimulate private investments in targeted distressed areas such as those with a concentration of older business and manufacturing facilities. CDBG resources can spur the modernization of industrial plants if the effort fits the program's primary mission—to create new economic opportunities for low- and moderate-income persons.

Industrial Development Bonds. Bond financing for economic development usually means industrial development bonds (IDBs). Tax-exempt IDBs, authorized or issued by cities, public agencies, or development authorities, are targeted to manufacturing purposes. IDBs pay interest that is exempt from federal taxes for the bond buyer. This exemption reduces the yield that buyers demand which, in turn, lowers the cost of the capital borrowed through the bond issuance. As a result, IDBs offer below-market-rate financing to private enterprises and development corporations. In essence, IDBs are a form of interest subsidy with the government agreeing to forego some tax revenue to lower the interest rate required to attract investors.

IDB proceeds help private companies acquire buildings and equipment for an industrial project. Issued on behalf of private enterprises, they are commonly called private-purpose bonds. In legal parlance, they are *revenue bonds*, which means the company is responsible for repaying the debt. These bonds are payable from and secured by the revenues of the projects they finance. If the company defaults, the bondholders, not the local taxpayers, absorb the loss.

The popularity of IDBs stems from their versatility as a development finance tool

The popularity of IDBs stems from their versatility as a development finance tool. Numerous options are available in structuring an IDB. They can be issued for long or short terms and carry either a fixed or floating interest rate, usually one-quarter to one-third less than the prime. Private corporations use and back them with their own credit. The issuing jurisdiction bears little or no fiduciary risk in the transaction. IDBs have the advantage of giving small and inexperienced business borrowers access to securities markets they otherwise would not have.

Some jurisdictions use pooled or umbrella bond issuances to offer financing to smaller projects. These bonds usually are issued by states on behalf of a number of companies that individually would be too small to qualify for a normal bond program. Several small issues of $1 million or less are put together in one package. Under most umbrella or pooled IDB programs, eligible loans are bundled as a package and issued as part of one bond offering (typically a minimum of $8 to $10 million). Pooling reduces the risk to the bond purchasers and enables small businesses to raise needed funds. Currently, umbrella bond programs are operated in nearly half of the states.

The Tax Reform Act of 1986 made numerous changes in the treatment of IDBs that curtailed their use drastically. The act adopted lower annual volume caps to limit the dollar amount issued and increased state and local borrowing costs through new arbitrage and refunding restrictions. Tax reform also eliminated the federal tax exemption for small-issue IDBs except for manufacturing; even this exemption is due to expire on June 30, 1992, but Congress is expected to pass an extension.

Chapter 4. A Final Word

Utilities have long dedicated time and attention to economic development efforts, primarily to attract new industry into their service areas. But today, many power companies, particularly those that have sustained a loss of industry and a resulting economic blow to the surrounding community, recognize the importance of playing a more active role in economic development. This book has highlighted a number of innovative programs utilities have undertaken to shore up their economic bases.

This publication, moreover, has focused on one particularly promising strategy: forging a partnership between utilities and their industrial customers. This partnership builds on the concept of utilities helping local companies find and utilize the latest technologies in order to enhance efficiency and productivity. Building on existing state economic development and energy initiatives, utilities can provide assessments and financing to assist industries improve their production process. Utilities offer particular hope to small towns and rural areas that often lack the resources to cope with economic change.

Utilities offer particular hope to small towns and rural areas that often lack the resources to cope with economic change

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