Utility Interest in Economic Development: An Opportunity to Promote Efficient Energy Resource Use

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ABSTRACT

Economic development may be a field of common interest among utilities, community leaders and energy efficiency advocates. Many utilities seek ways to build and shape loads; community leaders struggle to retain or expand job opportunities, and energy efficiency advocates point out that energy efficient businesses can support more productive growth and employment than their inefficient competitors. This apparent commonality of interests among utilities, community leaders and energy efficiency advocates presents tremendous program opportunities which are nonetheless capable of backfiring.

This paper focuses on current utility perspectives on economic development, particularly in those regions where declines in agriculture and natural resource-based industries have severely pressured utilities to help maintain or developed the business base. The majority of these systems are in non-metro areas, and they tend to be consumer-owened (municipal or rural electric cooperative) utilities. The rural electric coops, particularly, have taken the lead in this field, advancing a complete National Rural Development legislative agenda as well as working locally. Various utility approaches, drawn from experience working through the Western Area Power Administration energy efficiency program and drown from industry-wide research, are reviewed. These approaches generally fall under categories of utility energy services, community assistance and integrated programs.

Issues center on the utilities' business and regulatory constraints in affecting energy efficiency through economic development. Also key is how a given utility perceives its relationship toward its competitors, and toward other rural coops, municipals and investor owned utilities. An understanding of these issues is prerequisite if energy efficiency is to be a factor in how utility actions and reactions affect local-- or national-- economic development.

UTILITY INTEREST IN ECONOMIC DEVELOPMENT: AN UNSASSURED OPPORTUNITY TO PROMOTE EFFICIENT ENERGY RESOURCE USE

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INTRODUCTION

In recent years, energy efficiency advocates, community leaders, and policy makers of investor- and consumer-owned utilities all have become increasingly interested in economic development; however, their interests do not necessarily coincide. Energy efficiency advocates tend to see economic development as a potential benefit and selling point for wise energy use. For example, their argument suggests that cost-effective energy efficiency improvements could save the U.S $220 billion per year, and redirect 10 percent of U.S. industrial investment capital from building new power plants toward more productive projects.[1] Community leaders may have little predisposition toward energy efficiency, but they might use any means available to increase local job opportunities and to build or maintain the local infrastructure. Access to affordable comfort, lights and power, whether provided through cheap energy supply or energy efficiency, is a recognized asset to any community.

The utility perspective on economic development tends to treat energy efficiency with distinct ambivalence. Many utilities are paying debt service already on unused capacity. Some are losing customers due to rural out-migration; others face competition from other utilities or co-generators.[2] These utilities become interested in economic development primarily as a survival tool, to build and shape utility loads. For them, energy efficiency has been generally viewed in the opposite light as economic development-- as a constraint on load growth. Opportunities exist for using energy efficiency as a marketing tool, creating attractive price and service options which promote economic development and consequential load growth. However, this requires careful examination of rates and services. Utilities must balance their response to community needs against the long term interests of the system and its customers.

This paper will review some approaches currently being used by utilities to encourage economic development in their service areas. Particularly, it will examine approaches which most effectively serve the joint interests of energy efficiency advocates, community leaders and utilities. Although investor-owned, municipal and rural electric utilities all provide economic development programs, this paper will focus on municipal and rural electric utilities; their generally non-metro nature puts these

systems in a unique position-- affected by the upheaval of rural America's economic base, and pivotal in creating local responses.

WHY FOCUS ON MUNICIPAL AND RURAL ELECTRIC UTILITIES?

While many investor-owned utilities feel a crucial need to encourage local economic development, they seldom are as vulnerable to local economic problems as are their non-metro, consumer-owned counterparts. Investor-owned utilities' economic development programs, including those at Arkansas Power and Light[3] and Georgia Power Company[4] , create strong models for coordination of incentive rates, technical assistance and advertising strategies. For example, besides offering such innovations as a "grace period" on demand charges for new industrial operations, AP&L has committed more than $10 million to "Teamwork Missouri," a joint promotional effort with other businesses, state and local governments. Georgia Power is involved in similar efforts. It also supports more than 100 field representatives-- most of them engineers-- to assist existing and potential commercial and industrial customers in designing and maintaining electric service. Smaller municipal and rural electric utilities could not hope to wield such resources. Further, these systems tend to be located in areas where there never have been a full complement of agencies and institutions ready to develop partnerships for business support.

Non-metro utilities, with their "jack of all trades" managers and volunteer boards, find themselves on the front line as their communities face a major economic transition. Agriculture, mining, oil, timber and rural manufacturing all declined throughout most of the last decade, and most of the lost jobs will not be coming back. In 1985-86, non-metro areas lost 632,000 persons due to out-migration.[5] Smaller cities and towns, comprising about 25% of the U.S. population, must offer new business and employment opportunities, or die, leaving, among other debris, indebted municipal and rural electric utilities.

The economic development efforts of these smaller, consumer-owned utilities are of interest not only because of this predicament. Also because of their public ownership or other close relationships with their communities, these utilities may take a broader perspective than many of their larger counterparts. They may or may not have integrated energy efficiency into their economic development activities, but the range of development strategies they have tested marks them as prime candidates for new, practical, cost-effective approaches.

INTEREST IN ECONOMIC DEVELOPMENT IS HIGH

One gauge of interest in economic development industry-wide is the level of state regulatory activity. A 1987 survey conducted by the National Regulatory Research Institute (NRRI), indicated that 26 states have adopted economic

development rates, to attract new or expanding businesses, and/or incentive rates, to retain customers through
off peak discounts and other demand-side options.[6] More than half of these adoptions had taken place in 1986, suggesting that interest is growing rapidly. Rate activity does not necessarily suggest the existence or success of coordinated program efforts, however.[7]

Another survey, by the National Rural Utilities Cooperative Finance Corporation (CFC) in 1986, focused on interest among the nation's approximately 1,000 rural electric systems.[8] It suggested interest in more broadly defined economic development acitivities among these systems. Nearly 60% of respondents reported some type of economic development activity, ranging from involvement with local service clubs, to working with banks in helping finance new ventures. Eighty-six percent of managers and directors interviewed said that rural electric coops should be involved in economic development, and 74% of their consumer/members agreed. Sentiments among municipal utilities run similarly high, with utility joint action agencies, from the Municipal Electric Authority of Georgia (serving 48 systems), to the Missouri Basin Municipal Power Agency (serving 57 systems) and other public power suppliers, such as the Lower Colorado River Authority, taking the lead. They provide support services ranging from computer clearinghouses to promote industrial siting, to commercial energy audits.

EMPHASIS ON DEVELOPMENT

Generally, there are two schools of thought on the appropriate role for utilities in economic development. Some utilities take the leadership role in local development, above and beyond their defined role as electric suppliers. Other utilities limit their involvement to energy-related issues, and tend to promote development from a strategic marketing (load shaping/load building) perspective.

Rural electric coops tend to support high profile leadership in economic development, including a proposed restructuring of the Rural Electrification Administration (REA). These coops argue that a streamlined, comprehensive effort, including financing rural public works projects, is necessary to guarantee quality lifestyle options in rural America-- as well as to preserve the market for existing generation. The National Rural Electric Cooperative Association (NRECA) proposal to restructure the REA and other rural development programs may not be resolved before 1989, but NRECA Director Bob Bergland has said he "sees that day coming" when power will be just one of many utility services offered by rural coops.[9] Currently, there are 150 rural development bills under Congressional consideration, and NRECA is heavily involved in this legislative activity.

Rural electric coops and other systems which take a broad view of their development role, initially have emphasized basic initiatives. In one, true bootstrap effort, the manager of a Four County Electric Power Association (a Mississippi coop) organized a meeting of 40 local leaders to strategize against a looming economic

death spiral. Broadly based programs spearheaded by the coop, ranging from fighting illiteracy to soliciting assistance for public works improvements, resulted in a 15% increase in employment in about two years' time.[10] Similarly, the Municipal Energy Agency of Georgia helps member systems to spot simple development opportunities--even organizing local clean-up campaigns. It also assists members through a variety of training and clearinghouse services, and a national advertising campaign. MEAG's traditionally depressed small cities now host about 30% of Georgia's new business and expansions, even though MEAG's economic development staff includes only one full-time professional.[11]

POSSIBLE CONFLICTS WITHIN THE DEVELOPMENT ROLE

Utilities involved in broadly based development efforts generally feel comfortable in their role, but conflicts may be apparent to the energy efficiency advocate. Gains in new business loads may be offset by negative impacts on load factors or long term capacity requirements. For example, the management of Garkane Power Association, in southern Utah, recently initiated plans to encourage new industrial customers to cogenerate or to seek alternative suppliers. Because its supply mix consists of low-priced Federal hydropower, supplemented with relatively expensive power from a generation and transmission cooperative, Garkane discovered that its net revenues increased when a 95% load factor industrial customer cut back its operations. Garkane faces the challenge of maintaining its residential customer base by helping to relieve local unemployment, while discouraging excessive growth.[12] In Sioux Center Iowa, the municipal utility has been recognized for its community concern and commitment to energy efficiency. This includes financing efforts to increase the energy efficiency of natural gas (competitor) fueled community facilities and support of a waste-to-energy project to manufacture small plant boiler fuel.[13] In these and many other examples, utilities probably could not pass any type of "least cost" test in justifying their efforts.

Also, from a true resource accounting perspective, the new business utilities bring to their communities often increases the local dollar drain. For example, fast food franchises drain an estimated two-thirds of their cash flow out of the local economy, yet utility-based economic developers regularly count new franchise establishments as local victories.[14]

Further, the application of economic development rates (discounted rates or demand charges offered to new or significantly expanded business accounts) is fraught with controversy. One consultant likened development rates to "an inventory clearance sale," which often precedes the need for more expensive new capacity.[15] In 1987, the Illinois Commerce Commission released a Policy Analysis Report suggesting that such rates <u>can</u> reduce short-term energy costs for participants, and eventually benefit all customers, by spreading fixed costs over a larger base and creating jobs and other economic benefits, provided certain safeguards are taken.[16] These safeguards include protecting reserve margins, setting discounted rates at a level that exceeds the utility's marginal cost of providing service under the incentive,

phasing out incentives over a five year period and (in the case of investor-owned systems) placing some risk with shareholders. Eliminating the "free riders" effect with such rates (to focus on customers who otherwise would not have relocated or expanded), is challenging, however. A research study completed for the Iowa Public Utilities Board indicated that utilities offering standard economic development incentives showed no greater success in increasing employment or utility revenues than did control group utilities. The study suggested that custom-designed incentives were effective, however.[17]

STICKING TO THE UTILITY BUSINESS

To avoid pitfalls of broadly based economic development activities, or due to state or local regulation, some utilities take a narrower path in working with local businesses. Commercial energy audits are offered as a customer service by hundreds of utilities nationwide. The Tennessee Valley Authority's (TVA) Existing Industries Program, credited with creating approximately 6,000 new jobs last year, mostly through small business expansions, provides TVA utilities' business customers with nearly 600 energy management surveys (audits) per year.[18]

Enhanced commercial audits and other utility energy services can serve both utility least-cost goals and community economic development goals. For example, a rural audit program which lowers irrigation pumping (and agricultural production) costs to southeastern Arizona farmers also provides the sponsoring coop with opportunities to install load control equipment.[19] The successful custom-designed economic development rate incentives suggested previously in this paper generally develop from on-site energy audits and discussions with business customers. In Estes Park, Colorado, an audit of a local ski operation, combined with negotiations over demand charges, has helped to keep the vitally important, but heavily indebted ski operation in business. The Estes Park strategy was modelled on special load management contracts and business services successfully offered by the Vermont Public Power Supply Authority for its 12 member systems.[20]

Some utilities have benefitted by marketing new electro-technologies and highly efficient electric energy alternatives to their customers. District heating and utility-based co-generation may serve to benefit both the new business customer and the utility. A study just completed for the City of Lakeland (Florida) Electric and Water Company suggests that a utility-based co-generation industrial site could support 5,500 jobs and produce $43-$75 million in taxable new business revenue annually.[21]

Occasionally, economic development is not a stated goal, but a definite by-product of utility "integrated resource," or least-cost program development. For example a recent study by the University of Oregon revealed that the $25 million residential weatherization program administered by the Eugene Water and Electric Board (EWEB) from 1982 to 1986 resulted in more than $52 million in net income to the community, and created an estimated 2,600 job-years of new employment.[22] EWEB does not officially sponsor economic development activities.

UTILITIES SEE LIMITATIONS IN EFFICIENCY-BASED EFFORTS

The theoretical models which count jobs created by utility energy efficiency programs are viewed as "voodoo economics" by many utility managers. There is a dramatic impact when a new business moves to town, and nearly as news-worthy an impact when an existing plant expands. However, jobs created through energy efficiency programs often are invisible. For example, while EWEB is estimated to have created 2,600 new job-years of employment, net unemployment in Eugene actually rose dramatically, due to national and local recessions.

In some cases, cost-effective options for economic development through energy efficiency seem too limited. If the utility's goals are primarily load-building, and its marginal costs are high relative to its competitors, the utility may feel stumped. For example, if rural coops in northern New Mexico were to offer off-peak interruptible rates to business customers, these rate still could not compete with natural gas, where available. Rural coops there might consider it a better to support any type of local development, which might create jobs and new, or stronger residential electric accounts.

Financing efficiency improvements is another crucial problem. For example, a study of irrigation energy efficiency improvements suggested that while reducing pump operating costs may be "a make-or-break factor in keeping farmers in business," pump efficiency improvements often are cost-prohibitive.[23] Some utilities now sponsor revolving loan funds or shared savings programs for agricultural and commercial energy efficiency improvements. However, no funds known to this author ever have been cost-justified primarily on the basis of projected economic development impacts.

NEW STRATEGIES

The ultimate challenge in utility economic development seems to be creating measurable, sustained results which meet energy efficiency criterion and which represent truly new development, rather than a mere redistribuition of jobs within one or more service territories. While all utilities (and particularly those in non-metro areas) may find economic development elusive, some new strategies show promise. A combination of broadly based development efforts and energy efficiency programs seems to provide a mix of visible benefits for the short term, as well as long term pay-offs. In fact, initial experimentation has resulted in fairly diverse and successful programs for many of the utilities cited above, including the Tennessee Valley Authority, several municipal joint action agencies and generation and transmission cooperatives (G&T's). Basin Electric Power Cooperative, based in North Dakota, is another outstanding example, which carries an energy efficiency theme through both its economic development and strategic marketing efforts. Basin's economic development training stresses looking at waste (waste heat, agricultural by-products, municipal waste) as a resource. Also, member coops are encouraged to offer direct employment in sales and service of energy end-use equipment and controls; these

generally are new jobs because private sector businesses previously have been discouraged in such low density markets. Also, Basin has been integral in establishing the first electric thermal storage (ETS) heater manufacturing firm in the U.S.[24]

Some efforts also are underway to rectify the sometimes conflicting interests of the electric utility with the community at-large. Osage (Iowa) Municipal Utilities, which provides both electric and gas service, has side-stepped the need to determine and finance appropriate incentives for every energy efficiency program it undertakes, by fully involving the community on a voluntary basis. It then returns program benefits equally to all customers. As a result, both gas and electric rates have decreased dramatically since 1979. Further, Osage reminds customers of the equivalent employment impacts of its efforts (39 permanent "jobs" in a city of 4,000), Osage customers seem convinced that energy efficiency and self-reliance works.[25] Granted, Osage represents a daring model, reliant upon public ownership and involvement in the utility system.

In Fremont, Nebraska, the process for bringing together utility and community interests in economic development has been developed around an innovative "goal programming" model.[26] Computer software, provided by the Nebraska Energy Office, helped rectify diverse interests on Fremont's Community Energy Task Force. A preliminary list of energy efficiency programs were evaluated against a list of goals, estimating net impacts, such as capital cost, average annual savings per installation, impact on utility peak demand and net gain in local jobs. This provides a means of quantifying elusive measures of both resource efficiency and economic development. The Fremont project, begun in 1983, has now moved beyond planning, to the implementation of strategies which now carry some weight as accepted local policy. The program methodology, developed by independent consultants, has recently been implemented in other midwestern towns as well.

IMPORTANT AND UNRESOLVED ISSUES

As utilities continue to seek appropriate roles in fostering economic development, some important and unresolved issues are suggested.

1. The public policy role implied by utility involvement in economic development may be a sword which cuts both ways. It can provide the community with resources-- from access to survey data and free desktop publishing, to major project funding-- which can be directed to meet shared goals. But a reliance on utility assistance also might create pressure, directing public policy inappropriately.

2. In particular, the utility is likely to be partial to its own energy source, even when it claims to be working for the good of the community as a whole. For example, from a resource efficiency perspective, alternatives to electric power might merit promotion. If this disrupts the electric utility's competitive position, is

it still a valid public policy? Consumer-owned systems may be more likely to justify contributing to broader community goals than may investor-owned utilities. Yet, all systems must be careful not to subsidize civic programs at the expense of their primary, electric business. The public must be kept aware of possible conflicts, and regulators must be prepared to see both sides.

3. From a broader resource efficiency perspective, many economic development strategies (some domestic relocations or recruitment of franchise operations, for example) do not make sense. Yet, alternative strategies which stress energy efficiency and community self-reliance often do not show readily measurable results. Improved methods for measuring the economic impacts of alternative strategies must be developed, and existing efforts must be better documented. Once developed, these tools must be carefully communicated for application by utilities and community leaders.

4. So long as utilities emphasize competition for a limited number of business relocations and major corporate expansions, utilities-- as an industry or an institution-- can have only limited positive impact on national economic growth. For example, in Georgia, an intense rivalry exists among investor-owned, municipal and rural electric utility economic development efforts. This rivalry is as likely to detract from one town's success as it is to add to another's. The potential for waste of Federal, state and local tax dollars, misapplied to shuttle the same jobs back and forth across the country, is alarming.

5. Although the customized approach to economic development rate design seems effective and fair, it requires an investment in time and technical expertise from the utility. Smaller utilities are unlikely to have the resources to support additional engineering staff-- especially staff which is well-skilled in applying the latest electro-technologies. The products of government and industry R&D may never find their way through the utility "delivery mechanism." Furthermore, smaller utilities may never serve enough commercial industrial accounts to cost-justify such staff. Skill-sharing among utilities might be explored. Government assistance for implementation also might be considered as the logical follow-through to research and development of applicable demand side management tools.

6. While national policy-makers continue to pay little attention, rural America is undergoing a massive demographic and economic transition, which will change the premises on which the three-part American utility industry was first established.

Originally, investor-owned utilities did not find it cost-effective to reach beyond urban areas. Municipal utilities formed to provide more cost-effective and customer-oriented service to small cities and towns. Rural electric coops formed to serve primarily farming regions. Now there is a movement in rural America (supported by the coops) to build a stable, diversified economic base.

With U.S. Department of Agriculture research indicating that rural America represents 25 percent of the nation's population and 38 percent of the it's poverty, this movement cannot be dismissed as a mere "special interest" initiative. Yet, the aggressive programs launched by coops sometimes threaten small municipals, many of which have suffered from the loss of agricultural support businesses, even before recognizing that they now must compete to retain and develop their non-agricultural customers as well. Also, investor-owned utilities, perceiving that the characteristic differences between public and private utility service territories have blurred, now push harder to eliminate tax exemptions, regulatory considerations and other benefits which consumer-owned systems have enjoyed. (This perception may be intensified by the fact that consumers in large, urban areas see municipalized electric service as an increasingly viable option.)

LOOKING TO THE FUTURE

Because electric utilities represent an institution as well as an industry within the U.S. economy, it should be no surprise that utilities might play dual roles during the transition now sweeping the U.S. economy. As businesses, they must respond to changes in their markets. This may be especially true in non-metro areas, with the departure of previously stable agricultural and commercial/industrial customers and a stagnant or dwindling residential base. Utilities must pursue careful planning to survive changes that generally were unexpected when current capactiy was being planned and built. Marketing for economic development, to retain some local businesses and to encourage relocations or start-ups, is a generally useful strategy. This paper has outlined some ways rural electric and smaller municipal utilities have pursued that strategy. A growing number of these utilities have found that promoting energy efficiency, through demand side management approaches, can bring the task of promoting economic development in line with other long term system goals, and maximize benefits to the system and its customers.

Further, utilities generally seem to have an appropriate, broader leadership role in economic development. Utilities represent a major institution in their communities, and bear heavily upon the shape of the national economy. All these systems, but perhaps especially consumer-owned systems, must consider the societal costs and benefits of the types of economic development they are promoting. For example, they may need to look at how promoting "home grown" business can keep more dollars circulating in the community than promoting subsidiary or franchise operations. They must look at the long term impacts of enticing new loads with short term rate incentives. They may need take responsibility for assisting in developing business infrastructure through efforts and investments that fall a bit outside the traditional utility role. For example, some rural electric coops have become involved in road building or development of fire protection. To the extent that they can do this and maintain financial integrity, this may be an appropriate role in developing relatively remote rural areas.

Regulatory control of utility involvement in economic development is a delicate matter. Regulators may assist in guiding utilities to pursue socially responsible development, but, as the track record for incentive rates indicates, hard and fast rules, broadly applied can be counter-productive. Utilities need to be encouraged to take a flexible, even personalized approach with business customers. Perhaps generally educating both the regulators and utility staffs on relevant issues can help. Where regulators take a relatively broad and long-term view of least cost planning criteria, they are already likely to provide sound guidance for economic development initiatives. Legislators addressing rural development issues might also consider the issues affecting electric utilities' involvement in economic development. Although some 150 rural development bills are currently under consideration by Congress, it is doubtful that many legislators understand why utilities are taking up the cause, or fighting hard against it.

Many rural electric and municipal systems are exempt from regulatory control. Might these systems be subject to regulation in their economic development efforts? While many public power advocates would undoubtedly fight the notion, this author believes that a reasonably fair system, taking into account the special characteristics of smaller, consumer owned systems, might be a long way in easing the transition as utilities redefine their markets and roles.

Those involved in energy efficiency may work to enhance a successful transition. A review of utility involvement in economic development to date suggests that utilities have generally underestimated the potential of energy efficient demand side management tools to affect economic development. For the most part, the research and development of these tools has been completed, but utilities have not implemented them. Rural electric and small municipal utilities often do not have access to new technologies or do not have technical staffs or available financing to take advantage of new technologies. The "lost opportunity cost" of energy inefficient economic development might be subject to its own "multiplier effect." Rural America is changing; whether it takes on the shape of a resource efficient ideal depends largely upon how much we pay attention. Certainly the marginal cost of implementation assistance from the Department of Energy and other government and industry agencies, relative to their R & D costs, represents a worthwhile investment. Educational programs, as well as possible assistance in developing skill-sharing networks, could result in a more energy efficient, as well as a generally more prosperous rural America.

[1]Rosenfeld, Arthur H. and Hafemeister, David, "Energy-efficient Buildings," *Scientific American*, April, 1988, Vol. 258, No. 4., pp. 78-85.

[2] Freudmann, Aviva, "Cut Price Electricity: Way Settling For 4 Cents Is Better Than Insisting On 6," *The Energy Daily*, Wednesday, January 28, 1987, pp. 3-4.

[3] Breeden, Kenneth R. and Metzler, Richard J., "The Evolution of an Industrial Marketing Program: The AP&L Story," *Public Utilities Fortnightly*, December 10, 1987, Vol. 120, No. 12, pp. 11-17.

[4] Paul, Bill, "Electric Utilities Push New Marketing Plans To Meet Competition," *The Wall Street Journal*, September 15, 1987.

[5] U.S. Department of Agriculture, Economic Research Service, *Rural Economic Development in the 1980's: Preparing for the Future*, ERS Staff Report (AGES870724), p. *v*.

[6] Pollard, William and Davis, Vivian W., "NRRI Report: New Rates Designed to Encourage Economic Development and Load Retention," *NRRI Quarterly Bulletin*, April, 1987, Vol. 8, No. 2,
pp. 227-240.

[7] The effectiveness of rate and program strategies are discussed subsequently in this paper.

[8] "Study Shows High Rural Electric Interest," *Ruralite*, February, 1988., pp 8-9. Also discussed in a speech at the Tennessee Electric Cooperative Association Public Relations Conference, Gatlinburg, Tennessee, April, 1987., Harenza, John J., "Your Cooperative's Role in Economic Development."

[9] "Co-ops Call for REA to Branch Out Into Rural Development Activities," *Electric Utility Week*, February 15, 1988., pp. 4-5.

[10] National Rural Electric Cooperative Association, *Rural America*, pre-publication copy of booklet to be released in Summer, 1988.

[11] Kunka, Jill "Shape Your Community," *Pubic Power*, September-October, 1987, Vol. 45, No. 5., pp. 10-17.

[12] Interview with Mike Peterson, Member Services Manager, Garkane Electric Association, June 3, 1988.

[13] Kunka, Jill "Shape Your Community," *Pubic Power*, September-October, 1987, Vol. 45, No. 5., pp. 10-17.

[14] de Moll, Lane, ed., "Community Economics," *Rainbook*, New York: 1977 (Schocken), p. 45.

[15] Freudmann, Aviva, "Cut Price Electricity: Why Settling For 4 Cents Is Better Than Insisting On 6," *The Energy Daily*, Wednesday, January 28, 1987, pp. 3-4.

[16] Illinois Commerce Commission, "The Impact of Economic Development/Incentive Uutility Rates on Illinois Businesses-- With Special Emphasis on the Small Business Perspective," January, 1987., 31 pp., with Appendixes.

[17] Ferguson, M. Dwayne, "Experimental Incentive Rates: A Comparison of Formula Versus Individualized Approaches," Iowa Department of Commerce, Bureau of Conservation, Auditing and Research, September, 1986., 18 pp.

[18] Interview with Hal Womble, TVA Existing Industries Program, April 19, 1988.

[19] Orozco, Ron, Sulphur Springs Valley Rural Electric Cooperative, "Technical Assistance in Energy Management-- An on-Farm Approach," proposal to the Arizona Energy Office., 1986.

[20] Kunka, Jill, *DEED Digest*, American Public Power Association, Winter, 1988, p. 3.

[21] PLANTEC Corp., "Analysis of Economic and Employment Benefits of the Sale of Steam, Coal or Excess Power Generation Capacity," for the City of Lakeland, Florida, July, 1987., 25 pp.

[22] "Conservation: Unsung Hero of Local Economies," *Public Power Weekly*, February 22, 1988, p. 8.

[23] Hagler, Bailly & Company, "Evaluating Mechanisms to Promote Improved Energy-Use Efficiency in Irrigated Agriculture," for the U.S. Department of Energy, Bonneville Power Administration, October, 1983. 21pp.

[24] National Rural Electric Cooperative Association, *Rural America*, pre-publication copy of booklet to be released in Summer, 1988.

[25] Birdsall, Weston D., "Economic Development Through Energy Conservation," speech presented to the Municipal Electric Utilities of Wisconsin, June, 1986.

[26] "Goal Programming Can Guide Decisions," Customer C&RE Technical Brief, Western Area Power Administration, (GPO 853-466).