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MINNESOTA STATE UNIVERSITY, MANKATO

COMMUNITY AGGREGATION IN GREATER MINNESOTA UNDER A RESTRUCTURED ELECTRIC SYSTEM

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Seeking Solutions for Greater Minnesota's Future

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PREFACE

A number of related activities were made possible by the initial funding that supported this project. These included:

> *Aggregation and Electric Utility Restructuring.* A Presentation made by Steven M. Hoffman at the Annual Meetings of the Minnesota Municipal Utilities Association. July, 1999.
>
> *Aggregation and Electric Utility Restructuring: Comments Submitted to the Legislative Electric Energy Taskforce.* 1999. By Steven M. Hoffman, Lola Schroenrich and Carl Nelson.

In addition to these reports, a study is now underway which will assess the change in the customer mix on a utility-by-utility basis. The study is being undertaken by Dr. Hoffman with assistance from members of the University of St. Thomas' Department of Geography.

The authors also wish to acknowledge the assistance of those noted throughout the report. Any errors or omissions are, of course, the responsibility of the authors.

EXECUTIVE SUMMARY

Proponents of electric utility deregulation generally argue that competition will yield considerable economic benefits to all segments of the consuming public, including residential and small-commercial businesses. Over a decade ago, Edward Tirello and Michael Worms estimated that there was as much as $3.43 billion in annual saving to be gained in consolidating and streamlining electric utility operations (quoted in Ridley, 1995). More recently, Maloney and McCormick have argued that residential bills could decrease by as much as 43% on the average under a restructured system (1997: 1).

Unfortunately, restructuring has yet to produce these sorts of results. Instead, in those places where competition has been legislated, residential consumers are experiencing substantial increases in certain charges and little in the way of general price decreases.

Should Minnesota's decision makers nonetheless decide that restructuring is in the state's best interests, the *aggregation* of residential and small business consumers into larger buying units, or the use of an institutional intermediary to act as a buying agent on behalf of its clients, members, or constituents, is an important public policy measure that can be used to address this situation. In the most general sense, aggregation is meant to more evenly distribute the benefits of restructuring across the spectrum of customer classes, and in particular, households and small businesses. This report focuses specifically on customers located in Greater or rural Minnesota and the institutions that they depend upon for service, mainly municipal utilities and rural electric cooperatives.

Not surprisingly, aggregation presents a number of complex and difficult issues. Among the most important of these is the sectoral makeup of the unit; the provisions for inclusion in the aggregated unit; the geographic basis of the unit; the activities of the aggregator; and the relationship of the aggregator to other elements of the electrical system.

There are a number of factors that are directly affecting the future of both the current electric system and the potential for aggregation in Greater Minnesota. These include the demographic transformation in Greater Minnesota and the consolidation of the state's agricultural economy; the structural transformation of the customer mix faced by both municipal and cooperative utilities; and trends toward the sharing of management/service services among existing systems.

The transition from a customer mix dominated by farm customers to one dependent upon non-farm residential customers is particularly important when considering aggregation policy. Those municipal utilities located in growth areas have benefited from the increase in non-farm residential customers. The same is true for cooperative utilities located in the rapidly growing areas of the Twin Cities. Utilities located in those areas of the state suffering from population losses are, however, on the losing end of the state's demographic transformation as they are steadily losing customers to age and migration.

The institutional form of the aggregator is another critical factor that must be considered in the development of a statewide aggregation policy. The options for Greater Minnesota are many and include existing public or non-profit institutions; variations on existing public or non-profit institutions; new public institutions such as a multi-unit district created under joint powers agreements; for-profit aggregators with no connection to existing municipal or cooperative utilities.

An equally important consideration is the size and scale of an aggregation unit and the affect on its' economic viability. First, the number and type of customers in the unit affects load diversity. Attaining a favorable load factor will be important in negotiating lower rates with energy providers in a restructured environment. In addition, information and transactions costs will grow with the number of customers brought into the unit. Potential customers have to be contacted and negotiations with individuals will have to occur. Suppliers will also incur metering and billing expenses. One question is whether there is some optimal scale, or perhaps a minimum efficient scale, for an aggregated buying unit.

On the basis of the information developed in this report, it is recommended that public policy be permissive with regard to aggregation. The formation of new energy marketing institutions is especially encouraged. These *public utility districts* could be geographically defined by the consolidation or cooperation of existing entities or wholly new jurisdictional boundaries could be defined by the "optimal size" of an aggregated unit, i.e., that geographic area best suited to strike the optimum deal with a pool of competitive suppliers.

It is also recommended that a robust system of local distribution entities be maintained. This recommendation follows from the belief that wholesale and rapid restructuring will produce largely negative consequences for much of Greater Minnesota. The economics that dominated electric service earlier in the past century still, to a great extent, dominate the industry at the beginning of the new century. Distant customers, whether on farms or in relatively isolated towns, are still costlier to serve than customers of equal size and load in a metropolitan area. Under a rationally performing competitive system, and in the absence of alternatives, these customers will be the last served and will be charged the highest rates.

I. INTRODUCTION

Proponents of electric utility deregulation generally argue that competition will yield considerable economic benefits to all segments of the consuming public, including residential and small-commercial businesses. Over a decade ago, Edward Tirello and Michael Worms estimated that there was as much as $3.43 billion in annual saving to be gained in consolidating and streamlining electric utility operations (quoted in Ridley, 1995). More recently, Maloney and McCormick have argued that (1997: 1):

> [T]he long run price decline in electricity would likely reduce residential consumer bills by as much as $30 per month, holding consumption constant at current levels. Based on the current bill of $69 per month, the decline is substantial, at least 43% on the average.

Unfortunately, restructuring has yet to produce these sorts of results. Instead, in those places where competition has been legislated, residential consumers are experiencing substantial increases in certain charges and little in the way of general price decreases.

The *aggregation* of residential and small business consumers into larger buying units, or the use of an institutional intermediary to act as a buying agent on behalf of its clients, members, or constituents, is an important public policy measure that can be used to remedy this situation. [1] In the most general sense, aggregation is meant to more evenly distribute the benefits of restructuring across the spectrum of customer classes, and in particular, households and small businesses. The report focuses specifically on customers located in Greater or rural Minnesota and the institutions that they depend upon for service, mainly municipal utilities and rural electric cooperatives.

II. ELECTRIC UTILITY RESTRUCTURING AND SMALL CUSTOMERS

Electric utilities face three broad customer segments: residential, commercial and industrial customers, all of which can be subdivided into more discreet classes of users, i.e., low-income versus middle-income households, large versus small industrials, and so on. The impact of restructuring relative to these various markets segments has been markedly different. While some evidence exists that large, mainly industrial customers are taking advantage of the opportunity for deal making, residential and small commercial customers are seeing little if any advantage. In fact, in at least some parts of the country, new residential charges are being proposed.

For a number of reasons, this is not a very surprising result, in that the ability to realize economic benefit depends upon either a competitive market to drive down general price levels or upon the ability of individual consumers to strike bargains advantageous to one's economic position. Neither of these conditions are being met.

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[1] The recommendations or observations contained in this report should not be taken as an endorsement of any current or proposed restructuring policy.

On the supply side of the electricity system, deregulation has produced a wave of mergers and acquisitions unprecedented since the days of the electric trusts, including in those states such as Minnesota that have failed to enact comprehensive restructuring legislation. Indeed, the merger of Northern States Power Company and New Century Energy of Denver Colorado and the creation of the Xcel Corporation will make the state home to the 10th largest investor owned utility in the country. The new company will serve portions of ten states, including Minnesota, Wisconsin, Iowa, South Dakota, Wyoming, Texas, Kansas, New Mexico, Arizona and Oklahoma.

In sum, efforts to generate competition through restructuring and deregulation have produced larger and fewer firms rather a vibrant system of newly competitive entrants. At the same time, residential consumers or small commercial businesses have failed to demonstrate any ability to effectively bargain with suppliers of electricity for reductions in price or changes in service that might increase economic welfare.

The absence of vigorous competition on the supply side, at least in the residential and small business market segment, is reinforced by the general tendency of consumers to resist switching electricity suppliers. As demonstrated by the work of both cognitive psychologists and behavioral economists only some of the mental shortcuts used to economize on information processing are "economically rational". In other words, many consumer decisions depart sharply from the classical assumptions of perfect rationality and utility-maximizing behavior. According to Thaler, for instance, "a certain degree of inertia is introduced into the consumer choice process since goods that are included in the individual's endowment will be more highly valued that those not held in the endowment" (quoted in Hewett, 1998: 2.17). At the same time, because consumers act to minimize regret, a loss occasioned by a positive action is treated as being greater than a loss caused by non-action. Together, these behavioral predispositions create a positive incentive *not* to act, particularly when the rewards for acting are perceived to be minimal. As stated by the New Jersey Division of the Ratepayer Advocate (1998):

> [T]o be sure, some fraction of residents or small-business owners will have the initiative to spend week-nights or week-ends performing spread-sheet analysis to sift through the competing claims energy marketers to save $100, or possibly $200 a year, but how many?

Given this tendency towards inertia, it is not surprising that marketers are finding the residential and small-business consumers a very unattractive market segment, in large part due to the enormous structural barriers faced by potential providers. In essence, overcoming the inertia requires significant investment in advertising and other persuasive efforts, with little guarantee that households will actually decide to switch providers. According to Eugene Coyle (2000: 75-76):

> To overcome inertia or the legislation that delivers customers to a default supplier free of cost, marketing campaigns are required to acquire customers. This marketing is very expensive, with estimates ranging as high as $600 for each electric account successfully acquired . . . Profits will not come from selling a customer 300 kWh or even 1,000 kWh a month.

The theoretical expectation of inertia has been matched by the reality of deregulation. Few residential customers have changed suppliers and marketers are increasingly fleeing residential and small-commercial market segments. As pointed out by Paul Fenn, deregulation was based upon an assumption that "the very act of allowing competition would deliver choice to consumers. Few questioned whether power suppliers would compete for any consumer's business" (1999: 3). Unfortunately, at least to date, few power marketers have been active in courting the residential and small business markets and those that initially were active in these markets have all but abandoned the effort. For instance, Enron Corporation announced that after signing up only 30,000 of California's residential customers (at a $333 per customer sign-up cost) that it was "virtually impossible to make money on small customers" (quoted in Fenn, 1999:3). Similarly, Working Assets, long presumed by deregulation advocates to be a major power residential and small-commercial marketer, indicated that it also would not be entering the California market (Fenn, 1999: 3).

The absence of effective marketing on the part of providers and the consumer tendency towards inertia have combined to produce little meaningful competitive activity in the residential sector. According to a recent study performed by Nancy Rader and Scott Hempling (2000: 20-21):

> Twenty months after California's retail markets were opened to competition . . . less than two percent of residential customers representing two percent of residential load had switched [providers] . . . In Massachusetts, 21 months after retail markets opened, very few residential customers had switched to a competitive supplier because few competitive providers were offering services to them . . . In Pennsylvania, after 12 months of competition . . . less than nine percent of residential customers representing less than nine percent of residential load had switched.

Instead of experiencing significant cost reductions associated with the predicted burst of competitive activity, consumers in California and elsewhere are being subject to a variety of new charges and costs. For instance (WSACAA Energy Project Newsletter, July-August, 1999):

- Nevada Power proposes to collect 100% of distribution rates and 100% of stranded costs in customer charges, with illustrative rates as high as $40 for apartment dwellers and $55 for single-family homeowners, depending upon the adopted revenue requirements. Users of 500 kWh per month could see 50% rate increases under these proposals;
- Sierra Pacific Power proposes more than doubling the residential customer charge to between $10 and $20;
- Atco Electric in Alberta proposes a residential customer charge of $21; and
- Pacific Gas and Electric is proposing a $5 residential customer charge.

In the absence of strong public policy measures designed to insure that the benefits of restructuring are delivered to residential and small-commercial customers it is

reasonable to expect a similar set of events to occur in Minnesota. One of the most important of these policy measures is "community aggregation."

III. WHAT IS AGGREGATION?WHAT IS AGGREGATION?WHAT IS AGGREGATION?

Aggregation is the use of an institutional intermediary to act as a buying agent on behalf of its clients, members, or constituents. While much of the discussion regarding aggregation assumes that municipalities are the most logical sort of residential aggregator, any entity can perform the aggregation function, including community groups and private entities, as well as county-, regional-, or national-level organizations (Peretz, 1998). According to the National Association of Regulatory Commissioners (NARUC website, 2000):

> [T]he vertically integrated investor owned utility, municipal utilities and rural electric cooperatives perform this function in today's power market. Other entities such as buyer cooperatives or brokers could perform this function in a restructured power market. This is opposed to a marketer which . . . represents different suppliers.

Not surprisingly, aggregation presents a number of complex and difficult issues. Among the most important of these is the sectoral makeup of the unit; the provisions for inclusion in the aggregated unit; the geographic basis of the unit; the activities of the aggregator; and the relationship of the aggregator to other elements of the electrical system.

Make-up of the Unit

Many commentators have tended to limit the discussions regarding aggregation to residential customers only. However, as pointed out by Peretz, "a group made up of entirely residential customers would be relatively unattractive for suppliers, because it presents an unbalanced load curve and does not require a steady supply of electricity at all hours" (1998: 2) In response to this problem, Peretz suggests that effective aggregation would require the participation of both residential and commercial customers.

Determining Participation in the Unit

A major problem facing aggregators is establishing the criteria for participation. In the case of a purely voluntary unit, i.e., a private entity soliciting participation, participation is entirely up to individual households or businesses. In this case, participation might be compared to a residential buying club (i.e., Sam's Club) where people are free to enter or exit at their discretion. Another model might be the "cooperative association" common to Minnesota. In this case, membership would again be voluntary but might require some sort of dues or participant fee in exchange for an agreed upon set of services. In both of these cases, participation is *non-geographic* in character. Instead, participation is

based upon affinity or some sort of common interest, including an interest in saving money through lower rates and/or bills, and participants have to positively affirm their participation in the unit.

A second model of aggregation is based upon *geographic* location. A municipality is perhaps the most commonly discussed basis for geographical aggregation, in that it can easily bring together all residential and/or small businesses customers located within the city's borders. However, as will be discussed later in this report, the appropriate entity may be any other governmental, or even non-governmental, body, including counties, an authorized franchise for-profit organization, a joint powers district, or even, as in the case of Montana, an entire state. Whatever the entity, participation can be determined in several ways (The New Jersey Division of the Ratepayer Advocate, 1998:3-4):

> *Binding Aggregation* The decision process leading to aggregation can take place in one of two ways. Citizens can, after discussion and education, vote in a binding referendum process or the authorized representative body, i.e., the city Council or County Board of Commissioners, can decide to aggregate the energy load of small commercial and residential consumers within its jurisdiction and select an energy provider (or providers) to serve that load. All residential and small consumers are automatically enrolled into the service of the selected provider for a fixed period.
>
> *Restricted Opt-Out* Following the referendum process under the binding option, consumers are automatically enrolled into a municipality's energy aggregation program, but individual consumers have the ability under certain conditions to opt out of the program and take service from another provider. The ability to switch providers can be restricted by the municipality to enable it to reduce risks and bargain effectively for those consumers who remain aggregated.
>
> *Unrestricted Opt-Out* Consumers are automatically enrolled into a municipality's energy aggregation program, but individual consumers have the unrestricted ability to opt out of the program and take service from another provider. The ability to switch providers cannot be limited in any way by the municipality.
>
> *Opt-In* The pool is open only to those consumers who affirmatively, and on their own initiative, elect to participate. This model does not reduce the potentially prohibitive marketing costs of alerting consumers to the existence of the aggregation program, persuading them of its benefits, and actually signing them up. Nor does it reduce the potentially prohibitive logistical difficulties and inherent risks of procuring an energy supply for a load of indeterminate size. It simply transfers these costs, difficulties, and risks to the aggregating municipality.

Within the full range of these models there exists a trade-off between the collective benefit that comes from assembling the largest and firmest pooled load and deference to individual choice and initiative.

Activities

It is also important to determine the activities to be assumed by the aggregator. The most elemental function of an aggregator is negotiating, on behalf of its participants, the terms and conditions of service under which service will be provided. However, as shown by Pam Marshall's and Roger Colton's recent report on aggregation and low-income consumers, the types of activities undertaken by aggregators can vary significantly (1998). According to Marshall and Colton, aggregators serve two basic functions: (1) socializing search costs, i.e., collecting, processing and disseminating information about the availability and cost of services and (2) minimizing risk. Within these broad categories of activities are more discreet functions, including such as identifying alternative sellers, collecting information from sellers, identifying service needs of buyers, and so on (Marshall and Colton, 1998: 29-31).[2]

IV. EXAMPLES OF AGGREGATION

Massachusetts, Ohio, Montana and California represent the various approaches to aggregation. Three basic models are represented by these different legislative efforts: local government aggregation with automatic enrollment; buying cooperatives that become the default service provider; and "opt-in" aggregation.

Massachusetts: Community Choice

Massachusetts' 1997 deregulation bill contained a "Community Choice" provision that enabled municipalities to aggregate their customers' loads. The law was the first in the country to specify the "opt-out" method of aggregation. The proposal received support from municipal organizations and consumer advocate organizations, but was opposed by smaller power suppliers. As described above, a city, town or county or a group of municipalities can choose to become aggregators through a public process involving public hearings and a vote by the town council. The plan can include provisions for obtaining a certain percentage of green power a request for proposal for energy suppliers to receive franchise rights for the municipality. The state Department of

[2] Marshall and Colton discuss the following types of potential activities: identifying alternative providers; collecting information from providers; identifying service needs of buyers; balancing price and service offerings; processing price information; acting to minimize adverse cost attributes; acting to mitigate transaction costs; negotiating strategic alliances; negotiating with sellers; pursuing service accountability; and providing a voice for the community served by the provider.

Telecommunications and Energy (DTE) must approve the plan and assure that the price is lower than the "standard offer." The price can also be the same as the standard offer if renewable energy is included in the mix. Whatever alternative is chosen, "universal access, reliability, and equitable treatment of all classes of customers" must be assured within the boundaries of the municipality. Upon approval, all customers with the municipality are automatically signed up for the plan; however, they may choose to opt-out of the plan within 180 days of the start date without penalty. Importantly, municipal aggregators are eligible to receive Demand Side Management (DSM) funds from a state-mandated system benefits charge assessed to their customers. Municipalities can also apply for additional monies from the Massachusetts Technology Park Corporation to support DSM programs. Municipal aggregators can also choose to extend the DSM systems benefits charge, which currently has a 5-year sunset clause.

Cape and Islands Self Reliance Compact, an organization deeply involved in passage of the original legislation, is probably the furthest along towards realizing community aggregation. They have cooperated with the Barnstable County Commissioners to form their own aggregation plan for a large part of Barnstable County, including the areas of Cape Cod and Martha's Vineyard, that includes 21 towns and two counties representing some 180,000 customers. The Compact recently signed an agreement with Select Energy, a Connecticut-based power marketer and unregulated subsidiary of Northeast Utilities. The negotiated price is lower than that offered by the local utility and includes opportunities for consumers to purchase energy efficiency products and services and "green power". Approval from the participating towns and counties is expected to be received shortly (*News Alert*, Public Citizen, March 30, 2000).

Ohio: Community Choice

A second state that has included provisions for aggregation is Ohio, which passed a bill in 1999. Under the bill, municipalities can become the default provider and aggregate customers under an "opt-out" plan. Modeled after the Massachusetts Community Choice provision, it received bipartisan support in the legislature, in spite of a strong lobbying effort against the bill by FirstEnergy (an investor owned utility in Northern Ohio, where electricity bills are 30-60 percent higher than the rest of the state). The influence of local governments, who supported the bill, was able to overcome this opposition.

The legislation is very similar to the Massachusetts bill, with a slightly different process for becoming an aggregator. In addition to passing a city council resolution, a referendum is held, and the proposal must receive a majority of the votes. Ohio also has a provision that allows customers to opt-out every two years without penalty. Due to the defeat of an Ohio Renewable Portfolio Standard (requiring a certain percentage of total generation to come from renewable energy), the community choice bill may represent one of the few ways under the current system to push for green power in the generation mix.

The first community to exercise a community choice option has been Parma, a Cleveland suburb of 88,000. The city "voted overwhelmingly for community choice" in a March 7, 2000 referendum (*News Alert*, Public Citizen, March 30, 2000).

Montana: Buying Cooperatives

In May 1999, Montana passed a bill (SB 406) which enables the formation of a statewide "buying cooperative" to become the default service provider. The cooperative was authorized largely because the existing utility serving most of Montana (Montana Power) indicated that they were not interested in serving the residential load. The buying cooperatives will be separate from the existing utility cooperatives, which have the option of opting out of offering retail choice to their customers under the 1997 restructuring bill (SB 390). The current legislation is only enabling legislation, and whether or not one or more cooperatives actually become the default provider will depend upon the outcome of administrative processes. A key factor affecting the outcome is the possibility that any proposed buying cooperatives would be eligible to buy below market-rate power from the federally owned Bonneville Power Administration.

Other features of the legislation include a limitation on sales by the cooperative to small customers (residential or small commercial - less than 100 kW) and serving as the default provider for these customers; a prohibition on electricity generation; and an exclusive involvement in electricity sales, potentially excluding the cooperative from offering DSM services.

California: "Opt-In" Aggregation

California's restructuring legislation (AB 1890) allows aggregation by "private market aggregators, cities, counties, special districts or on any other basis made available by market opportunities and agreeable by positive written declaration of individual customers." Unlike Massachusetts and Ohio, California has chosen an opt-in model of aggregation.

Dissatisfaction with the current law has prompted 12 cities and counties, representing 2 million residents, to pass a resolution asking the California legislature to amend the state's deregulation law to allow or community choice. According to Paul Fenn of the American Local Power Project, Southern California Edison and other power suppliers in California are viewing the aggregation proposals favorably, "realizing that aggregation is essential for a truly competitive market" (*News Alert*, Public Citizen, March 30, 2000).

Aggregation in Other States

Other states that have included some provisions for aggregation include (National Conference of State Legislators, 2000):

- *Maine (H-568)* When retail access begins, consumers may aggregate in any manner they choose. If a public entity serves as an aggregator, it

may not require consumers within its jurisdiction to purchase generation service from that entity;
- *Pennsylvania (H.B. 1509)* Permits PUC licensing of aggregators, brokers and marketers as suppliers of electric energy, including municipal corporations selling outside their municipal limits, to serve all customer classes;
- *Connecticut (H.B. 5005)* By 1/1/00, the DPUC was to propose standards and procedures to facilitate the aggregation of electricity loads and the aggregation of end use customers into buying groups;
- *Illinois (H.B. 362)* Groups of customers can aggregate power needs and purchase electricity at bulk rates. However, customers included in aggregation must have become eligible for choice; and
- *Nevada (A.B. 366)* Customers could begin obtaining aggregation services from an alternative seller no later than 12/31/99, unless the PUC determined that a different date was necessary to protect the public interest.

Other Examples of AggregationIV. OTHERS EXAMPLES OF AGGREGATIONIV. OTHERS EXAMPLES OF AGGREGATION

Even in states that have not opted for aggressive residential important pilot projects are underway. Among these projects are (Asmus, 1998; Marshall and Colton, 1998):

- The Vermont Energy Investment Corporation (VEIC) has designed a regional energy consumer cooperative. In addition to negotiating lower rates, the "consumerco" will provide energy efficiency services, loans for efficiency improvements, and combined billing for energy services;
- the Chicago Housing Authority will attempt to aggregate some 40,000 low-income customers that are clients to the Authority;[3]
- the Energy Coordinating Agency of Philadelphia has developed an RFP for electric service to residential customers in both Pittsburgh and Philadelphia; and
- Portland, Oregon has accumulated an impressive record of progressive energy policy since beginning to promote energy efficiency in the mid-1970s. In a unique twist that nevertheless suggests a strategy for green municipal aggregation in other locales, Portland will return a portion of the savings from aggregating various government electricity accounts to ratepayers, and use the remainder to fund new renewable energy projects.

[3] Aggregation for purposes of assuring service to low-income consumers brings with it a unique set of issues and problems. Marshall and Colton's report provides an outstanding overview of these concerns as well as a body of recommendations (1998).

V. RURAL MINNESOTA AND THE ELECTRICAL SUPPLY SYSTEM

Minnesota's electric utility industry is comprised of municipal utilities, cooperatives and investor-owned utilities (IOUs). The state's four IOUs, i.e., Interstate Power Company, Northern States Power (soon to become Xcel, Inc.), Minnesota Power and Otter Tail Power, serve the bulk of the state's population, and some 67% of the state's total electrical consumption. IOUs supplied almost 39,000 of the state's 58,000 GWh, compared to the 9,300 GWh supplied by cooperative utilities and 7,550 GWh on the part of municipal utilities. However**,** Greater Minnesota is served primarily by cooperative and municipal utilities.

Of the state's 815 municipalities, 126 are served by a municipal electric and 18 are served by a municipal gas utility. Combined, the municipal system serves approximately 250,000 residential customers, 35,000 commercial customers, and 2,100 industrial customers. Total population of municipal utility cities is approximately 685,000, the overwhelming being located in Greater Minnesota (see Figure 1).

By far the largest municipal utility is Rochester, which serves a city of 72,000 people. The next largest municipal, Moorhead, is less than half the size, with 32,300 population. Rochester, Moorhead, Austin, and Anoka are the only utilities with more than 10,000 customers. About 85% of Minnesota's municipal utilities have fewer than 5,000 customers; about 45% have fewer than 1,000 customers, and about 20% have fewer than 500 customers. The average municipal electric utility operates in a city of 4,672 people and has 2,485 customers. The median municipal electric utility operates in a city of approximately 2,150 and has approximately 1,150 customers. The smallest municipal electric is Whalan, with a population of 96.

The largest municipal gas utility is Duluth, which serves 22,290 gas customers in a city of 85,000. The next largest municipal gas utility is Austin, which serves 9,700 gas customers in a city of 21,900. The average gas utility serves in a city of 3,300. While no new municipal electric utility has formed since 1965, a number of municipal gas utilities have formed in recent years.

Municipal utilities are governed either by a local utility commission or by a city council. Governance in the 126 municipals is nearly evenly split between these two methods. Where municipal utilities are governed by a local utility commission, commissioners are generally appointed by the city council. In two cities - Blue Earth and Austin - commissioners are elected. Municipals are subject to all the state's laws regarding public bodies, including the Data Practices Act, Open Meeting Law, public bidding laws and the recently-enacted government ethics laws (MMUA Homepage, 2000).

The second major source of electric power for greater Minnesota are rural electric cooperatives (REC). There are 45 rural electric distribution cooperatives (RECs), with over 400 locally elected directors and 2,100 employees. The RECs receive power from 6 generation and transmission co-ops (G&Ts). The largest of the G&T cooperatives is the recently formed Great River Energy, created by the merger of United Power Association and Cooperative Power. Great River serves 29 of the states' distribution cooperatives,

including that area of the state which has experienced the greatest growth over the last several decades, the urban fringe of the Twin Cities metropolitan area.

Cooperative utilities serve 557,700 customer meters, or approximately 1.3 million people, over 80 to 90 percent of the geographic area of the state, with over 109,000 miles of distribution line, averaging 5 consumers per mile of line. About 95 percent of all cooperative consumers are farm and non-farm residential units. Utilities range in size from 2,000 to 81,500 consumers, with a median size of 6,500. RECs sold over 9 billion kwh, about 15 percent of the state's total kWh sold, with revenue of about $600 million (Minnesota Rural Electric Association homepage, 2000).

VI. FACTORS AFFECTING AGGREGATION IN RURAL MINNESOTA

There are a number of factors that are directly affecting the future of both the current electric system and the potential for aggregation in Greater Minnesota. These include the demographic transformation in Greater Minnesota and the consolidation of the state's agricultural economy; the structural transformation of the customer mix faced by both municipal and cooperative utilities; and trends toward the sharing of management/service services among existing systems.

Minnesota's rural economy has undergone significant change over the last several decades. The state has seen the number of farms decrease with a concomitant increase in the average farm size. This has also been accompanied by population loss in various portions of the state as towns dependent upon farming populations have lost consumers and their associated buying power. Much of this population has migrated to selected centers such as Rochester and St. Cloud as well as to the metropolitan hubs of the Twin Cities and Duluth. According to the State Demographer's Office (State of Minnesota, 2000, cited on website):

> Between 1960 and 1990, the populations of counties with large urban areas increased rapidly (especially near the Twin Cities, St. Cloud, and Rochester), while the populations of many rural counties (especially those in northwestern and southwestern Minnesota) showed a noticeable decline. This pattern is due to a number of factors, such as the economic recovery after World War II, rapid population growth due to the baby boom, and the increase in automobile ownership in the 1950s and 1960s which made the formation of suburban areas possible.

This pattern of consolidation and migration is reflected in the service trends of both municipal and cooperative utilities. As seen in Tables 1 and 2, both cooperative and municipal utilities serve substantially greater number of customers than several decades ago. In 1965, for instance, municipal utilities served approximately 193,000 customers as compared to 307,000 customers in 1997. The same level of growth is evident for

cooperative utilities. Thus, the approximately 248,000 customers served in 1965 had grown to almost 600,000 customers in 1997.

However, the structure of both markets has changed dramatically. While municipal utilities served almost 3,000 farm customers in 1965, today they serve just about half that number, despite the fact that they serve more than 100,000 additional customers than in 1965 (Table 1).

Evidence of consolidation is also reflected in the customer mix served by cooperative utilities (Table 2). From a peak of over 227,000 1977, cooperative utilities now serve only 165,000 farm customers, a number not seen for more than 30 years. [4]

The trend towards a customer base composed *primarily* of non-farm customers is also evident in Table 2. In 1965, cooperative served only 74,000 non-farm residential customers, or 30% of their total customer base. Thirty years later, this number jumped to over 65% of the total customer base. Similar growth has been experienced in the commercial sector, where the total number of customers has grown by more than 250%. Cooperatives have also lost a significant number of industrial accounts. Whereas they were serving almost 2,000 industrial customers in 1981, today they are serving about one-third of that number, or 774 industrial customers.

The erosion of the cooperative's farm base is also evident in terms of electric sales. Again, while total electric sales have increased since 1984, the mix of sales has changed dramatically. In 1984, cooperative utilities sold over $210 million worth of electricity to their farm customers, or just under 50% of their total sales. In 1997, this percentage had slipped to 32% of total sales. More importantly, the *absolute* volume of sales to farm customers had fallen by more than $33 million since its peak in 1989, or from $225 million in 1989 down to $191 in 1997, the lowest point since at least 1984 (Table 3).

The transition from a customer mix dominated by farm customers to one dependent upon non-farm residential customers has created an uneven set of effects. Those municipal utilities located in growth areas have benefited from the increase in non-farm residential customers. The same is true for cooperative utilities located in the rapidly growing areas of the Twin Cities. Utilities located in those areas of the state suffering from population losses are, however, on the losing end of the state's demographic transformation as they are steadily losing customers to age and migration. [5]

To some extent these trends are already affecting the way in which municipal and cooperative utilities are doing business. The already mentioned creation of Great River

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[4] A study is now underway that will assess the change in customer mix on a utility-by-utility basis. The research is a direct outcome of this report.

[5] The consolidation of the agricultural sector, in combination with restructuring, will pose an additional threat to cooperative utilities in that the larger farms will become more significant load centers, making them (either individually or collectively) attractive targets to alternative suppliers.

Energy is perhaps the best example of ever-larger generation and transmission cooperatives and, to a lesser extent, the same is true for distribution cooperatives. For instance, East Central Energy was created by the merger of East Central Electric and North Pine Energy and there is a general expectation that more mergers will soon occur. Cooperative systems are also now sharing management expertise in an effort to reduce administrative costs, with a single manager now serves as director of both the Runestone and Stearns system. Cost savings are also being achieved through joint efforts. For instance, municipal and cooperative utilities in Blooming Prairie, Owatonna, Waseca and Steele-Waseca have entered into a joint purchasing agreement with an expectation of significant economic benefit.

VII. INSTITUTIONAL OPTIONS

Another critical factor that must be considered in the development of a statewide aggregation policy is the institutional form of the aggregator. The options for Greater Minnesota are many and include:

- existing public or non-profit institutions, including:

  --existing municipal utilities with newly created aggregation (or energy marketing) units;
  --existing cooperative utilities with newly created aggregation (or energy marketing) units;
  --existing municipal authorities other than municipal utilities; or
  --other existing governmental entities such counties and/or townships;

- variations on existing public or non-profit institutions, including:

  --municipally franchised systems where the franchisee provides distribution service and the municipality provides electricity service through an aggregation program;
  --municipally franchised systems where the franchisee owns the distribution assets and also provides electricity services for the municipality's aggregation program (Ridley, 1995);
  --existing *distribution cooperatives* with a consolidated aggregation (or marketing) company;
  --existing *municipal utility systems* with a consolidated aggregation (or marketing); and
  --existing cooperative *and* municipal utility systems with a common marketing unit. In each of these latter two cases the participating distribution companies would own shares or take a share of earnings;

- new public institutions such as a multi-unit district created under joint powers agreements. Such a body could take the form of a *public utility district* geographically defined by the consolidation or cooperation of

existing entities or it could wholly new jurisdictional boundaries defined by the "optimal size" of an aggregated unit; and

- for-profit aggregators with no connection to existing municipal or cooperative utilities.

Each of these options carries with them a unique set of strengths and liabilities. Existing municipal utilities are, for instance, often said to be natural aggregators, in that they currently serve as the sole source of electricity for all residents of a geographic area, in this case, within the borders of the city. Indeed, much of the literature on aggregation is subsumed under the rubric of "municipal aggregation." Some in the policy community argue, however, that municipal utilities are likely to be potentially poor aggregators. Tim Woolf, who has worked extensively with the Cape Light Compact of Massachusetts, one of the most important examples of municipal aggregation, argues that (March, 1999):

> Municipal aggregators can be quite different from municipal utilities. Municipal utilities tend to have an institutional philosophy that is similar to the corporate philosophy of investor owned utilities: selling electricity and increasing revenues is the ultimate goal. In contrast, municipal aggregators can have a very different philosophy because their whole reason for being is different. Their fundamental objective is to obtain the best electricity services for their town—including low cost power, energy efficiency and renewable resources.

From this perspective, it might be argued that municipalities could serve as aggregators. However, as will be discussed in detail below, there is no inherent reason that the existing set of municipal boundaries contain sufficient populations to harness the economic efficiencies potentially available to aggregators. This same potential difficulty extends to any other existing institutional actor, including counties and townships. It is also the case that municipalities, counties, and or townships may not have the expertise required of an aggregator or that the towns' residents may not wish to pay for the acquisition of that expertise.

Critics have also raised objections about the apparent anti-competitive nature of the opt-out model of municipal (or government) aggregation. According to these critics requiring people to join a unit smacks of coercion or slamming. Such criticisms are largely unfounded in that the opt-out model requires the full exercise of democratic processes, something that cannot be said of many other municipal services such as police and fire protection. Further, as Rader and Hempling point out, without aggregation there will be no effective competition in that providers will not seek out the household and small business market. To the extent that restructuring will generate competition rather than unregulated monopolies or oligolopies, only aggregation will generate the incentives required for the development of multiple providers anxious to satisfy this demand (2000).

Finally, those who most enthusiastically embrace competition often argue that for-profit companies are the logical choice of aggregators. Yet, the same conditions that led to non-service in the early part of this century are likely to prevail as the century comes to a close. That is, "end-of-the-line" customers, as well as other low-profit sectors such as low-income households, are not likely to generate much interest on the part of the private, for-profit companies. These customers will continue to be costly to serve and difficult to aggregate (Gary Bye, personal interview).

VIII. THE ECONOMICS OF THE AGGREGATION DECISION

There are two principal dimensions along which the scale of an aggregation unit may affect its economic viability. First, the number and type of customers in the unit affects load diversity. Attaining a favorable load factor will be important in negotiating lower rates with energy providers in a restructured environment. In addition, information and transactions costs will grow with the number of customers brought into the unit. Potential customers have to be contacted and negotiations with individuals will have to occur. Suppliers will also incur metering and billing expenses. One question is whether there is some optimal scale, or perhaps a minimum efficient scale, for an aggregated buying unit.

These issues did not arise during the era of regulated, vertically integrated monopoly utilities. As the utility had an exclusive franchise within its service territory, all potential load diversity could be attained. In addition, since the monopoly had all the customers, there were substantial savings in marketing costs; the utility did not have to identify potential customers, negotiate with them, develop new "products" to keep them as customers, and so on. Only time will tell whether competition will result in efficiencies which will more than compensate providers for the costs that a competitive environment will bring.

Economies of Scale: Load Diversity

It is well understood that higher load factors are less expensive to supply. In states where some aggregation has been occurring, groups on the order of 2,000 to 4,000 residential and small commercial users have been getting discounts and serious looks from energy providers. Other indications from energy providers indicate that groups of this class of customers in the thousands (not tens or hundreds of thousands) achieve favorable economies.[6] The demand diversity that contributes to higher load factors is attained relatively quickly with aggregation. Further increases in size will likely improve the load factor marginally, but are not likely to be significant in negotiating a supply contract.

[6] Personal communication with Dr. Thomas Power, Professor and Chair, Department of Economics, University of Montana, who also works with the Montana Electric Buyers Cooperative (a legislatively authorized default provider for small customers).

Economies of Scale: Transactions Costs

The transactions costs of aggregation are the new breed of expenses introduced by restructuring of the industry. There do not appear to be scale economies in acquiring and maintaining a customer base, and this effort can be very expensive. This is the most obvious reason for the lack of interest private energy providers have shown in the market for small users. Basic functions such as metering and billing are nothing new, and these can be contracted to regional or national firms. It is actually acquiring the aggregated customer base that is the problem.

This explains the appeal of aggregating by other means. Aggregation might be undertaken through an already-established association, such as membership in a credit union. Or it might be through a process in which municipalities (or some other political entity) automatically enroll residents in an aggregated unit. This is where there is substantial potential for cost savings.

There are probably some modest transactional scale economies, as fewer supply contracts would have to be negotiated the larger the aggregation units are. However, as far as rates are concerned, once the group is into the thousands, further increases in size will probably have little impact.

IX. CONCLUSIONS AND RECOMMENDATIONS

It is clear that in the absence of effective public policy, households and small business customers can expect little benefit from the restructuring of the electric utility system. Aggregation represents one of the most promising of these public policy options. Indeed, without aggregation there is virtually no hope for effective competition to emerge on the supply side of the system.

Aggregation policy must take into account three principle factors: the goals and objectives of the policy; the philosophical orientation required for the effective implementation of aggregation; and the economics of aggregation.

> *Public Policy Goals* Aggregation can serve many goals. While obtaining the best possible price for the participants is clearly a very important goal, others important goals can also be achieved. For instance, aggregation can be instrumental in the accelerated development of renewable resources and the fullest possible implementation of demand side management programs. As demonstrated in Massachusetts, these demand-side objectives can easily be incorporated into any contract for services negotiated by the aggregator.
>
> *Philosophical Orientation* An aggregator can do much more than simply negotiate a price with a supplier. Indeed, rather than being primarily

interested in selling energy, the aggregator's primary goal is to sell energy services. This may mean reducing the volume of electricity being sold through the effective use of demand-side strategies, the use of distributed generation sources such as solar energy systems or small-scale wind resources, or assistance with building design and siting. These kinds of services will require an entirely different kind of corporate philosophy from that which dominates many utilities.

Aggregation may be used to achieve other socially desired goals, for instance, the accelerated development of renewable resources. Unlike so-called "green pricing" strategies, which requires a few individuals to pay a usually very high premium, aggregation would allow any marginal cost differences to be spread across a significant number of consumers. A contract could include a "renewable portfolio standard" which would specify that the energy supplied to the community include a guaranteed percentage of wind, solar, and/or other renewable resources. Given the increasing importance of wind resources in Greater Minnesota, this could have extremely positive economic benefits for the state's agricultural community.

Finding the Right Size A key assumption of this report is that aggregation depends, in part, upon finding the right-sized unit, i.e., a number of customers that can successfully negotiate a favorable deal among a competitive number of potential suppliers. In the case of Greater Minnesota, with its pockets of population loss and the consolidation of agricultural units, this "right sized unit" may not coincide with the geographic boundaries of any existing institution, including existing municipalities, municipal or cooperative utilities, or counties.

On the basis of these considerations, it is recommended that any restructuring legislation be permissive with regard to aggregation. The formation of new energy marketing institutions is especially encouraged. These *public utility districts* could be geographically defined by the consolidation or cooperation of existing entities or wholly new jurisdictional boundaries could be defined by the "optimal size" of an aggregated unit, i.e., that geographic area best suited to strike the optimum deal with a pool of competitive suppliers.[7]

It is also recommended that a robust system of local distribution entities be maintained. This recommendation follows from the belief that wholesale and rapid restructuring will produce largely negative consequences for much of Greater Minnesota. The economics that dominated electric service earlier in the past century still, to a great extent, dominate

[7] Expanding the size of the unit could also create a more favorable load balance, particularly if large loads are captured within the territory of the marketing entity. This will also prevent cherrypicking by other aggregators. This, of course, raises another important issue, namely, whether the new unit should aggressively seeks loads outside of a self- or legally-defined service territory.

the industry at the beginning of the new century. Distant customers, whether on farms or in relatively isolated towns, are still costlier to serve than customers of equal size and load in a metropolitan area. Under a rationally performing competitive system, and in the absence of alternatives, these customers will be the last served and will be charged the highest rates.

The forces of age and migration will, no doubt, continue to push municipal and cooperative utilities to look for cost savings through mergers and the sharing of management services. However, to expect that extremely large cost savings can be achieved through operational streamlining, i.e., the elimination of service centers and/or the consolidation of maintenance facilities into a single, centralized location, is to ignore the reality of serving customers at the "end-of-the-line" and to invite a significant decline in the quality of customer service.

The citizens of Greater Minnesota would be ill-served by public policy that serves to eliminate or threaten the existence of municipal and cooperative utilities. At the same, should restructuring occur, these institutions must realize the realities and threats posed by the new system. The willingness to explore joint activities on the marketing side, while insisting upon the necessity of locally-oriented distribution systems, would be a positive response to this new reality.

X. POSTSCRIPT: THE POLITICAL FUTURE OF RESTRUCTURING IN MINNESOTA

Speculating upon the political future of an issue such as electric utility restructuring is inherently risky. The forces driving the issue and the factors that ultimately shape any legislative outcome are far too numerous to be discussed in detail in this report. However, based upon numerous interviews and discussions with interested parties, it is possible to draw several conclusions regarding at least the immediate political future of restructuring. Chief among these conclusions is the likelihood of enacting comprehensive restructuring in the 2000-2002 legislative session is low.

First, recent months have seen the departure of the strong supporters for deregulation from the political scene. The failure of acting Commissioner Steve Minn to win confirmation from the Legislature eliminates the Ventura administration's most visible spokesperson on the issue. Second, the decision of Senator Steve Novak, former Chair of the Jobs, Energy and Community Development Committee, not to seek re-election, removes the strongest advocate of deregulation from the halls of the Legislature. The recent report by the Minnesota Department of Commerce urging restraint and caution also makes the chances for Administration-sponsored restructuring legislation unlikely (September 6, 2000).

Second, there appears to be little public outcry for deregulation, a perception confirmed by a number of studies conducted over the last two years (see Hoffman, 1998 and 1999). While a study by the Chamber of Commerce found that a large majority of surveyed households support the idea of competition in the sector, even in this study the demand

for choice was found to be very low relative to other factors such as maintaining the reliability of the supply system.

Also, few if any legislators report any degree of constituent interest in the issue or a general sense of dissatisfaction with the current system. Indeed, there appears to be an increasing number of policymakers asking not *how* restructuring should occur but *whether* restructuring should occur at all.

Third, many of the organizations most important to the debate have little if any enthusiasm for comprehensive restructuring legislation. Officials from the Association of Minnesota Counties have, for instance, expressed strong opposition to restructuring (Personal Interview, June 23, 2000). And while the League of Minnesota Cities (LMC) has not expressly opposed restructuring, they have expressed concern regarding the likely negative impacts on certain classes of consumers as well as certain regions of the state (LMC, Policy Statement, 2000). Finally, the Minnesota Rural Electric Association and the Minnesota Municipal Utilities Association have both expressed strong reservations about comprehensive restructuring (Personal Interviews, June, 2000).

One other important factor is the recent merger between Northern States Power Company and New Centuries Energy of Colorado. The company formed by this merger, Xcel, spans a service territory covering nearly one-quarter of the United States across ten states, with long-term power supply contracts stretching into the far reaches of Northern Manitoba. How Xcel deals with Minnesota consumers and regulators, as well as other elements of the electric supply system, i.e., municipal and cooperative utilities and other investor-owned utilities, is certainly one of the most critical, if unpredictable, factors facing the state's electricity system.

The uncertainty facing future restructuring legislation compounds the difficulty of assessing the future prospects for comprehensive aggregation policy. In general, none of the state's leading electricity institutions oppose the concept of aggregation. Instead, disagreement arises in the details of policy. For example, those entities that will potentially lose customers will oppose any sort of permissive opt-out provision, instead preferring that they be given the role of default provider. This likely includes cooperative utilities and existing investor owned utilities. On the other hand, the LMC policy statement expressly argues that "cities . . . must be given explicit authority to aggregate or municipalize provision of electricity" (Policy Statement, 2000). While this policy position will likely to be supported generally by the MMUA, there may be some disagreement that *all* of the existing municipal utilities are best suited to serve the role of aggregator. It may also be the case that when municipal utilities understand that they may not be chosen in a competitive bidding process, as is the case in the Cape and Islands Self Reliance Compact situation, their enthusiasm for preferentially assigning municipalities as the "default aggregator" may seriously erode. In sum, there is unlikely to be a general consensus regarding the exact nature of aggregation policy.

REFERENCES AND BIBLIOGRAPHY

American Local Power Project Website. 1998a. *In California, Monopoly Affiliates Cherry Pick Large Customers as Small Customers are Found "Unprofitable".*

_____. 1998b. *Massachusetts Community Choice Law to Give Cape Cod Towns $25 Million for Conservation.*

_____. 1998c. *Philadelphia Utility Monopoly "Owns" Customers as Municipality Tries Weak Aggregation.*

_____. 1997a. *Massachusetts Legislature Passes Nation's First Electric Deregulation Bill with "Community Choice" Intact.*

_____. 1997b. *Report Says "Automatic Aggregation" is Essential to Protect Consumers and the California's New Law Forbids It.*

Asmus, Peter. 1998. *Power to the People: How Local Governments Can Build Green Electricity Markets.* College Park, MD: The Renewable Energy Policy Project.

Chao, Hung-po and Hillard G. Huntington, eds. 1998. *Designing Competitive Electricity Markets.* Kluwer International.

Coyle, Eugene P. 2000. *Price Discrimination, Electronic Redlining, and Price Fixing in Deregulated Electric Power.* Washington, D.C.: American Public Power Association.

_____. 1997. *Green Pricing Won't Work.* American Local Power Project WebSite.

Downey, Margaret. 1996. *Community Franchise Study: An Option for Local Governments Facing the Challenge of Electric Utility Industry Restructuring.* Barnstable County, MA.:A Project of the Urban Consortium Energy Task Force of Public Technology, Inc.

Farhar, Barbara. 1996. *Energy and the Environment: the Public View.* College Park, MD: The Renewable Energy Policy Project.

Fenn, Paul. 1999. "Without Community Choice, No Consumer Choice." *Local Power News.* The website of the American Local Power Project.

Golove, William and Joseph H. Eto. 1996. *Market Barriers to Energy Efficiency: A Critical Reappraisal of the Rationale for Public Policies to Promote Energy Efficiency.* Berkeley, CA: Lawrence Berkeley National Laboratory.

Guinane, Kay. 1997. *Group Buying Power: Meaningful Choices for Energy Consumers. Washington, DC:* Environmental Action.

Harvard Electricity Policy Group. At ksgwww.harvard.edu/~hepg.

Hewett, Martha. 1998. *Achieving Energy Efficiency in a Restructured Utility Industry.* Minneapolis, MN: Center for Energy and the Environment.

Hoffman, Steven M. and Sandra Matisone. 1997. *Citizens Jury on Minnesota's Electricity Future.* Minneapolis, MN: Jefferson Center for New Democratic Processes.

Hoffman, Steven M. 1999. *The Energy-Efficiency/Renewable Energy Community and the Deregulation of the Electricity Sector: Attitudes and Perspectives.* Prepared for Minnesotans for an Energy-Efficient Economy. St. Paul, MN.

_____. *1998. Business and Citizen Attitudes Towards the Deregulation of the Electric Utility System.* Prepared for Prepared for Minnesotans for an Energy-Efficient Economy. St. Paul, MN.

Hunt, Sally and Graham Shuttleworth. 1996. *Competition and Choice in Electricity.* New York, NY: John Wiley & Sons.

Joskow, Paul. 1997 (Summer). "Restructuring, Competition, and Regulatory Reform in the U.S. Electricity Sector." *Journal of Economic Perspectives*.

Kagel, Jack and Mary Jo Murray. 1999. "Opportunities and Possibilities." *Minnesota Cities. (January/February).*

Maloney Michael T. and Robert E. McCormick with Raymond D. Sauer. 1997. *Consumer Choice, Consumer Value: An Analysis of Retail Competition in America's Electric Industry.* Prepared for Citizens for a Sound Economy Foundation. Washington, DC: Citizens for a Sound Economy Foundation.

Marshall, Pam and Roger D. Colton. 1998. *Aggregating Low Income Customers: Can Market-Based Solutions Fix Market-Based Problems?* St. Paul, MN: EnergyCENTS Coalition.

Minnesota Department of Commerce. September 6, 2000. *Keeping the Lights On: Securing Minnesota's Energy Future (draft report*). St. Paul, MN: Author.

_____. 2000. *The Minnesota Utility Data Book*. St. Paul, MN: Author.

New Jersey Division of the Ratepayer Advocate. 1998. *Preliminary Position Paper on Municipal Aggregation.* Newark, NJ: Author.

National Conference of State Legislators. 2000. *Comnparison of Selected Electric Industry Restructuring Legislation.* At www.ncsl.org/programs/ensr/compare.htm#aggre.

Paulos, Bentham. 1998. "Green Power in Perspective: Lessons from Green Marketing of Consumer Goods." *Electricity Journal*. [Obtained from Lexis-Nexis UNIVerse Online Services].

Peretz, Blosson, Esq. 1998. *Community Choice Means Competition, Not Slamming.* Newark, NJ: The New Jersey Division of the Ratepayer Advocate.

Rabago, Karl, Ryan Wiser and Jan Hamrin. 1998 (January). "The Green-e Program: An Opportunity for Consumers." *Electricity Journal.*

Rader, Nancy and Scott Hempling. 2000. *Promoting Competitive Electricity Markets Through Community Purchasing: The Role of Municipal Aggregation.* Washington, D.C.: American Public Power Association.

Ridley, Scott. 1998. *Community Choice and Municipal Aggregation*. American Local Power Project WebSite.

_____. 1995 (May). "Consumer-Based Franchises." *The Electricity Journal.* Reprinted at www.local.org.

Smeloff, Ed and Peter Asmes. 1997. *Reinventing Electric Utilities*. Washington, D.C.: Island Press.

State of Minnesota. 2000. *Minnesota's Changing Counties: The Next 30 Years.* St. Paul, MN: Author.

Stanford Energy Modeling Forum. At www.stanford.edu/group/EMF/index.html

Utility Consumers' Action Network. 1998. *Electric Retail Competition At the Starting Gate: Offering the Worst of What Competition Has to Offer Small Customers.* San Diego, CA: Author.

Wiser, Ryan and Steven Pickle. 1997. *Green Marketing, Renewables, and Free Riders: Increasing Customer Demand for a Public Good.* Berkeley, CA: Ernest Orlando Lawrence Berkeley National Laboratory.

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FIGURE 1

Location of Minnesota's Municipal Utilities

Source: *Minnesota Municipal Utilities Association Website*. July, 2000.

TABLE 1

Number of Electric Customers for Municipal Utilities

Year	Farm	Non-Farm Residential	Commercial	Industrial	Total
1965	2,848	160,885	27,040	2,300	193,073
1966	2,885	162,258	27,710	2,037	194,890
1967	2,886	165,529	28,149	2,044	198,608
1968	2,794	168,275	28,622	1,612	201,303
1969	2,861	171,191	28,285	1,875	204,212
1970	2,816	172,498	28,287	1,829	205,430
1971	3,240	175,877	28,890	1,803	209,810
1972	2,679	179,336	30,414	1,859	214,287
1973	2,804	183,767	30,501	1,546	218,618
1974	2,751	186,030	31,120	1,574	221,475
1975	2,741	192,071	30,807	1,503	227,123
1976	1,176	197,470	31,985	1,208	231,927
1977	1,271	202,477	32,359	1,377	237,484
1978	1,303	207,241	33,869	1,286	243,689
1979	1,324	212,852	34,179	1,158	249,513
1980	1,097	213,909	33,746	1,111	249,863
1981	1,108	216,677	34,620	1,163	253,568
1982	1,341	218,054	34,771	1,301	255,467
1983	1,317	221,670	34,897	1,404	259,288
1984	1,372	224,008	35,704	1,543	262,627
1985	1,314	226,008	35,932	1,551	264,805
1986	1,428	223,303	40,560	2,530	267,821
1987	1,466	230,924	36,230	1,580	270,200
1988	1,592	233,977	36,670	1,712	273,951
1989	1,588	236,949	37,413	1,786	277,738
1990	1,636	239,058	37,438	1,948	280,080
1991	816	242,620	37,368	1,664	282,468
1992	1,540	240,091	38,168	2,137	281,937
1993	3,628	240,403	38,578	1,894	284,499
1994	1,503	253,178	40,067	1,943	296,691
1995	1,541	257,077	40,026	1,968	300,612
1996	1,531	260,839	41,990	2,048	306,408
1997	1,531	263,103	40,657	2,093	307,383

Source: Minnesota Municipal Utility Data Book: Table 2.

TABLE 2

Number of Electric Customers for Cooperative Utilities

Year	Farm	Non-Farm Residential	Commercial	Industrial	Total
1965	159,424	73,667	14,403	497	247,991
1966	159,455	78,647	14,555	560	253,217
1967	161,400	80,886	15,138	594	258,018
1968	164,300	86,807	15,641	680	267,428
1969	166,741	91,890	14,218	704	273,553
1970	169,477	98,638	14,760	804	283,679
1971	172,487	106,291	15,319	861	294,958
1972	175,512	115,250	15,985	946	307,693
1973	179,475	123,780	16,516	1,011	320,782
1974	186,683	126,086	16,323	1,132	330,224
1975	191,235	132,547	17,274	1,239	342,295
1976	197,093	138,870	17,616	1,725	355,304
1977	227,390	122,558	17,846	1,427	369,221
1978	210,382	155,397	15,684	1,808	383,270
1979	205,797	170,926	16,793	1,566	395,082
1980	196,289	189,164	17,628	1,747	404,828
1981	195,677	198,501	18,147	1,988	414,313
1982	197,569	203,107	18,549	1,982	421,207
1983	198,731	210,087	19,367	1,690	429,875
1984	199,924	215,399	20,463	1,272	437,058
1985	200,170	223,644	21,607	1,256	446,677
1986	201,664	233,389	22,282	1,435	458,770
1987	202,725	244,405	23,306	1,219	471,655
1988	203,806	253,648	23,591	996	482,041
1989	209,822	259,124	24,233	1,046	494,225
1990	209,533	270,282	24,590	1,105	505,510
1991	184,694	299,541	28,816	951	514,002
1992	169,765	308,760	29,613	1,390	509,528
1993	161,521	335,390	30,426	1,247	528,584
1994	147,083	358,789	31,204	699	537,775
1995	158,373	371,121	33,094	723	563,311
1996	166,538	374,086	34,234	724	575,582
1997	165,478	385,524	36,117	774	587,893

Source: Minnesota Municipal Utility Data Book: Table 2.

TABLE 3
Electric Sales Revenue for Cooperative Utilities
(000's)

Year	Farm	Non-Farm Residential	Commercial	Industrial	Total
1984	210,781	128,567	48,928	35,715	423,991
1985	213,724	131,323	52,551	34,480	432,078
1986	214,988	137,223	56,345	33,589	442,145
1987	214,416	144,954	62,458	33,937	455,765
1988	222,219	162,697	77,217	32,587	494,720
1989	225,500	164,166	81,842	33,791	505,299
1990	219,750	174,661	83,194	35,912	513,518
1991	205,144	208,957	88,184	40,079	542,364
1992	188,393	187,884	86,127	41,610	504,014
1993	181,233	221,491	90,721	44,875	538,320
1994	178,644	245,366	93,880	42,452	560,342
1995	190,740	253,351	100,634	43,430	588,154
1996	197,823	256,263	106,434	44,613	605,133
1997	191,918	255,834	110,557	46,797	605,106

Source: Minnesota Municipal Utility Data Book: Table 3