

## **MSU Extension Publication Archive**

Archive copy of publication, do not use for current recommendations. Up-to-date information about many topics can be obtained from your local Extension office.

Small Electric Company Coordination: A Policy Option for Small Companies Facing Large Costs

Michigan State University Extension Service

Philip Favero, Agricultural Economics

Issued July 1978

4 pages

The PDF file was provided courtesy of the Michigan State University Library

**Scroll down to view the publication.**

# Small Electric Company Coordination:

## A Policy Option for Small Companies Facing Large Costs

By Philip Favero

Department of Agricultural Economics

### PROBLEM DEFINITION

Since 1973, the electric power industry in the U.S. has been subjected to very rapid cost escalation. Costs for fuels, plant construction and operation, and mandated environmental and safety functions have all greatly increased. As a result, retail rates for electricity have also risen rapidly, and real prices for electricity are likely to increase even more.<sup>1</sup>

Small producers of electric power, of which there are approximately fifty companies in Michigan, are particularly vulnerable to cost increases.<sup>2</sup> Small companies cannot capture the significant economies of size available in the power industry. The Federal Power Commission has stated: "Other things being equal, small plants cost more per kilowatt to build, burn more fuel per kilowatt hour, (and) cost more per kilowatt hour to operate. . ."<sup>3</sup> Moreover, individual small companies are likely to have: less political influence over public decisions; fewer options for plant site selections which reduce transport costs; and higher peak system demands relative to average system demands, thus requiring more reserve generating equipment.

Nevertheless, preservation of the financial viability of small electric companies has been advocated by several groups and for a variety of reasons. Some have argued that decentralization and dispersion of electric supply activities increase the reliability of services in response

to technical or social crises.<sup>4</sup> Having a variety of suppliers may: (1) create the opportunity for "yard stick" measures of comparative performance among organizations; (2) may increase, somewhat, the choice of suppliers for consumers; and (3) may place checks on the political and economic power of large electric companies.

### POLICY OPTIONS FOR SMALL ELECTRIC COMPANIES

#### Acquire New Technology or Energy Sources

Small electric company responses to rapid cost escalations could include several sets of policy options. New energy sources and new technologies may be used to avoid high cost fuels. Wind power, solid waste, wood, small scale solar, and other so-called "soft energy" sources have been advocated as a set of substitutes for highly priced oil. The alternative set of substitutes includes the so-called "hard energy" sources—coal, nuclear power, and, eventually, large-scale solar systems. Both the hard and soft energy alternatives involve complex issues, will affect basic elements of our society, and are fraught with uncertainty.

#### Promote Conservation or Load Management

Another set of policy options, strongly advocated by environmental and consumer interest groups, is the promotion of conservation or load management. These policies may be used to delay new construction, reduce reserve requirements, or, for those companies buying wholesale power, reduce demand charges.<sup>5</sup> Some

<sup>1</sup>Federal Energy Administration, *National Energy Outlook* (February 1976), Washington, D.C.

<sup>2</sup>"Small" must be arbitrarily defined. When the Federal Power Commission wrote its *National Power Survey* of 1964, it adopted the definition of a small utility as an electric company with annual electricity sales of less than 100,000,000 kilowatt hours (KWH). With the seven percent per annum growth rate which characterized the electric industry until recently, small would now be defined as annual sales of about 200,000,000 KWH or less. According to this definition, approximately fifty companies in Michigan would be classified as small. Of these fifty, about one-third are rural cooperatives, and the remainder are municipal utilities. Several investor owned utilities in Michigan have annual sales just above 200,000,000 KWH.

<sup>3</sup>*National Power Survey: A Report by the Federal Power Commission*, Parts 1 and 2, Washington, D.C.: U.S. Government Printing Office (October 1964), p. 272. The largest generating plants built during recent years have, however, exhibited diseconomies of size.

<sup>4</sup>Amory Lovins, "Resilience in Energy Strategy," *The New York Times* (July 24, 1977), p. E-17.

<sup>5</sup>Demand, as the term is used in the electric industry, refers to the rate at which electric energy is delivered to or by a system.

municipal electric companies have been successful, according to reports, in promoting conservation.<sup>6</sup> But it is still uncertain whether consumers can be convinced, through moral persuasion, to reduce consumption permanently. Load management through selective rate adjustments is based upon the theory of demand—as rates rise, quantity of electricity demanded is expected to decline. Experiments are now underway to determine the elasticity or responsiveness of percentage changes in quantity demanded to percentage changes in rates.<sup>7</sup>

### Establish New Relationships

A third set of policy options for small companies involves establishing new relationships with other companies. Wholesale purchase agreements or joint investment ventures by which small companies would contract with larger utilities may be considered. But these contractual arrangements would require that different electric companies, which have often had combative relations in the past, be willing to share mutual gains. It is uncertain whether large utilities will share economies of size, given small utilities have less to offer in return, or whether small companies would be willing to become dependent on the good will of old adversaries.

Another kind of potential new relationship for small companies involves coordinative agreements among small companies themselves. Such agreements have been discouraged in the past in Michigan by the physical separation of most small companies and by a perception among small companies that large utilities, which are located between small companies, would be unwilling to sell wheeling services.<sup>8</sup> Moreover, Michigan's municipal electric companies were discouraged by legal restrictions from entering into joint ventures with others.<sup>9</sup> But the purchase of wheeling services is now generally considered possible, and P.A. 448 of 1976 now allows for joint ventures and joint agencies by and among municipal companies.<sup>10</sup>

## EXPERIENCES IN SMALL COMPANY COORDINATION

### An Existing Power Pool

Several case experiences in Michigan provide information about coordination among small electric

<sup>6</sup>Richard Morgan, Tom Riesenber, and Michael Troutman, *Taking Charge: A New Look at Public Power*, Washington, D.C.: Environmental Action Foundation, 1976.

<sup>7</sup>Elasticity is defined as a percentage change in one variable (in this case, quantity of electric power demanded), given a percentage change in another variable (in this case, rates for electricity).

<sup>8</sup>Wheeling services involve the use of the transmission facilities of one system to transmit power of and for another system.

<sup>9</sup>Some collective actions were undertaken by municipals with other electric companies by maintaining the physical separation of contributions.

<sup>10</sup>See M.C.L.A. 460.801.

companies. The Michigan Municipals and Cooperatives Power Pool (MCP) includes five small companies—two cooperatives and three municipal electric utilities—and extends over much of the western and northern portion of Michigan's lower peninsula. (A power pool involves interconnections, energy exchange, and reserve sharing among two or more electric systems.) The history of MCP, since its inception in 1968, provides insights into the sources, size, and distribution of savings resulting from coordination. Table 1 illustrates the net savings by MCP members over the first eight years of pool operations.<sup>11</sup> Savings represent the difference between actual costs of pool membership and estimated costs for the hypothetical situation of isolated operation.

Table 1. Net Savings for MCP Members Over Eight Years:

MCP Members	Net Savings
Grand Haven Municipal	\$ 668,326
Northern Michigan Rural Electric Cooperative	3,706,009
Traverse City Municipal	1,863,399
Wolverine Rural Electric Cooperative	5,250,695
Zeeland Municipal <sup>12</sup>	203,679
<b>Totals</b>	<b>\$11,692,108</b>

Differences in net savings are explained in a number of ways. First, the members have had unequal amounts of transactions through the pool. Some companies have also made larger contributions to meet the pool's costs than others. For example, Wolverine Rural Electric Cooperative paid all central dispatching costs for the pool until 1974. Analysis also reveals that rules governing payments for some exchanges of energy within the pool may favor buyers over sellers. Members have benefited unequally from the ability to delay construction.

Nevertheless, the analysis of MCP demonstrates convincingly that pool members have shared significant savings. Members have been able to reduce costs substantially. Table 2 illustrates the percentage reductions in production costs which pool members achieved over eight years.

<sup>11</sup>Savings were calculated using a number of assumptions, including the following:

- 1) Economy energy sold was generated by the seller's base load generator, and economy energy purchased was bought to substitute for peaking generators;
- 2) The incremental cost of additional generation is 80% of average variable cost;
- 3) All interconnection costs among the members are counted as costs of pooling;
- 4) Isolated companies would need to construct new generating facilities so as to provide firm power capacity;
- 5) Costs of borrowing involve a 6% interest rate compounded annually;
- 6) New generating equipment is depreciated by a straight line method over a thirty year period.

<sup>12</sup>One year of membership only.

<sup>13</sup>Ibid.

**Table 2. Net Savings as a Percentage of Total Net Production Costs in Isolation Over Eight Years**

MCP Members	Percentage Reduction
Grand Haven Municipal	6.0%
Northern Michigan Rural Electric Cooperative	9.7%
Traverse City Municipal	16.2%
Wolverine Rural Electric Cooperative	16.1%
Zeeland Municipal <sup>13</sup>	19.1%

### Impediments to Coordination

Experiences of participants involved in the lengthy process required to form MCP and the experiences of participants who have been involved in other attempts to establish coordination among small electric companies reveal impediments to collective action. These other attempts to promote small electric company coordination in Michigan include an existing pool involving two companies in the Upper Peninsula—Cloverland Rural Electric Cooperative and Edison Sault Company. A second example is the proposed South Central Michigan Power Agency, involving seven municipal electric companies at Coldwater, Hillsdale, Marshall, Niles, Paw Paw, Portland, and Union City, Michigan. An attempt is also currently underway to fund a feasibility study to examine the costs and benefits of forming a municipals' power pool among all twenty-eight municipals in the lower peninsula.

Interviews with participants who are attempting to establish new relations with other individuals in the electric power industry reveal two major sets of obstacles to coordination. First, a high degree of uncertainty exists among key decision-makers at the company level over the issue of control. Specifically, the decision-makers are uncertain about the implications of coordination for the ability of individual companies and managers to control future choices. Will operating or investment decisions be made against the will of individual participating companies? What cost sharing formulae will be used? When policy differences among companies arise, whose preferences will count?

A second set of obstacles comes about because problems are likely to occur over who should pay for the steps leading to a pool arrangement. Several steps—purchase of consultant services, construction of interconnections, development of a central dispatch system—are all required before a pool exists. For some of these steps, once action has been taken, non-contributors cannot be prevented from enjoying the product, and the incentive to become a free rider is created. For other steps, economies result from adding new participants, and the incentive is created for participants to join late, to pay only the extra costs associated with their own membership, and to avoid contributions for common base costs. Either of these obstacles creates difficulties in promoting collective actions among a group of potential pool members.

### POLICIES TO PROMOTE COLLECTIVE ACTIONS

Methods by which small electric companies in Michigan have been able to avoid obstacles and achieve varying degrees of coordination suggest ways to promote further coordination. The following methods should prove useful to public and private decision-makers with responsibility for small electric companies and to others interested in promoting coordination among electric companies.

1. Responsible officials can use previous working experiences, such as mutual aid groups, to reduce uncertainty and heighten the sense of community and sharing.<sup>14</sup> Other complementary experiences can be built into attempts to promote coordination. Companies might establish relationships by sharing information on rate structures, technological innovations, conservation measures, or management techniques. Interested state agencies could also promote complementary experiences among small electric companies.

2. Officials contemplating collective actions should anticipate some difficulty over cost sharing. A method which has proved useful is to devise cost sharing formulae which are simplified but equitable. For example, cost shares might be allocated equally or on the basis of relative company size. Consultants who bid for contracts to do feasibility studies for coordination may be asked to submit cost share formulae which have been used for other studies. Prior consideration should be given to how cost sharing formulae will distribute burdens and why the distribution is equitable.

3. Officials who are contemplating coordination could create incentives to avoid free rider and marginal investor situations. For example, contributions to a feasibility study could be regarded as capital contributions to future investments in generating or central dispatch facilities. A rule could be created to allow eventual pool members who contributed to the original feasibility study to deduct this cost from their future investment shares.

4. Interested state agencies could educate consumers and officials about the benefits of coordination. One target area where a large number of small companies operate with little coordination is the Upper Peninsula.

5. The state might subsidize feasibility studies on the costs and benefits of coordination for specific situations. In such cases, the general state taxpayer would pay while benefits would be concentrated among the affected companies and their customers.

6. Wheeling charges could be closely monitored. Wheeling charges will figure significantly in the process of small company coordination. Although wheeling

<sup>14</sup>Mutual aid groups are formed by electric companies to provide a pool of manpower and resources to assist in times of emergency or unusual workload.

charges are not regulated at the state level, utilities are subject to private and public pressures to insure that those companies who can supply wheeling services do not impede the coordination of small systems.

7. State agencies could consider instituting awards for outstanding economizers among electric company managers and public officials with oversight responsibility. Such awards would create incentives for conservation of resources, including reductions in costs through small company power pooling.

### CONCLUSION

Rapid escalation of costs for inputs have forced members of the electric power industry, and especially

small electric companies, to re-examine the ends and the means of their activities. Several policy options exist for small companies, but a highly attractive course of action is the development of intersystem coordination and power pooling. New opportunities for coordination exist because larger companies seem more willing to negotiate the sale of wheeling services and because legal impediments to participation by municipals have now been removed. Successful attempts to promote coordination, however, are dependent on overcoming problems of uncertainty and conflict over cost shares. Public and private officials and other interested parties can utilize a number of means to avoid the problems of uncertainty and conflict. Significant cost reductions for small companies *are* possible.