An Economic Model for Communities Considering the Sale of their Municipal Electric Systems

Gene R. Schwab

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AN ECONOMIC MODEL FOR COMMUNITIES CONSIDERING
THE SALE OF THEIR MUNICIPAL ELECTRIC SYSTEMS

BY
GENE R. SCHWAB

A thesis submitted
in partial fulfillment of the requirements for the
degree Master of Arts, Major in
Economics, South Dakota
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1969
AN ECONOMIC MODEL FOR COMMUNITIES CONSIDERING
THE SALE OF THEIR MUNICIPAL ELECTRIC SYSTEMS

This thesis is approved as a creditable and independent investigation by a candidate for the degree, Master of Arts, and is acceptable as meeting the thesis requirements for this degree, but without implying that the conclusions reached by the candidate are necessarily the conclusions of the major department.

Major Adviser

Thesis Adviser

Head, Economics Department
ACKNOWLEDGMENTS

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CHAPTER I

INTRODUCTION

Today there are approximately 3,500 electric utility systems in the United States. These are owned by investors, cities, and consumers such as rural electric cooperatives. About 2,000 of these electric systems are municipal (city-owned) and serve 13.5% of the consumers in the United States. The investor-owned utilities total about 480 and serve about 79.0% of the customers. The remaining 1,000 systems are rural cooperatives which serve 7.5% of the consumers.\(^1\)

This study is concerned with the 2,000 electric systems that are municipally owned. Most of these systems are smaller than the investor-owned systems. This is evident by the fact that while municipal systems constitute over 50% of the electric systems in the United States, they serve only 13.5% of the consumers.

Statement of the Problem

A number of the cities that own the 2,000 municipal systems are questioning the desirability of ownership of their electric utility systems as opposed to

their sale to investor-owned utilities. A municipality that presently does decide to consider the sale of its electric system to an investor-owned utility is faced with determining the factors that are important in the sale. Some of the factors involved in the decision relate to taxes, electric rates, operating costs, net margins and their disposition, local employment and methods of financing future expansion.

Taxation policy is significantly different under public or private ownership. A municipally-owned electric system makes no tax payment to city, school district, or county governments; but frequently contributions are made to the city general fund that result in a lower city mill rate on property. An investor-owned utility, however, would have to make tax payments to all levels of local government. The municipality is faced with determining how much these tax payments will compensate for other factors that indicate the sale would be detrimental to the community.

The problem of deciding which ownership is better for the community is further complicated when a rate change is involved. If the rate schedule under investor ownership is higher, the added cost to the consumers may entirely offset the benefits of changing to investor ownership of the utility. In any event it is necessary
to determine the magnitude to all consumers of any rate change.

At present a municipality has no guide as to the significance any of the foregoing factors should have in its consideration of the sale of its electric system. Since previous research is inadequate in this area, this study is undertaken to develop a methodology which will be useful in aiding municipalities in making this decision. The factors which should be considered before selling and their significance are delineated.

The question of whether a municipality should own its electric system frequently becomes involved with political and philosophical values. For example, one writer expresses the following views on municipal ownership:

"My basic argument relative to this particular difference in ownership is a philosophical argument, namely, that as I understand the fundamental concept of our government it was not meant to be in any proprietary relationship. Consequently whenever any governmental level attempts to assume ownership of some productive facilities, it is a step toward socialism regardless of the arguments that may arise. I believe that the strict definition of terms would support this contention."  

2 Albert V. Hartl, President of Otter Tail Power Company, correspondence dated July 7, 1967.
It is not the intention of the writer of this thesis to consider the political and philosophical arguments in favor of or opposed to municipal ownership. The study does, however, consider the economic aspects of a change of ownership. Furthermore, the economic benefit or cost of continued municipal ownership is evaluated for a single community but not for an entire region. Thus, it is possible to conclude that for a particular city continued ownership of its electric system is economically better; but it is not necessarily possible from this study to conclude that all municipalities in a region, state or nation should or should not own their electric systems.

A city should weigh both the cost and benefit to the governmental units and to its residents due to the sale of its electric system to an investor-owned utility. Not all the costs and benefits are explicit to a city as there are possible implicit costs and benefits to electricity consumers.

The explicit cost to a city upon a sale is the loss of revenue or profit to the city government and possible increased cost of electric service for the functions of street lighting and water pumping. However, if the price received for the electric system is greater than
its indebtedness, this benefit may completely offset the cost to the city of higher rates.

Also very significant to a city are the implicit costs and benefits of a change to investor ownership. By "implicit" is meant the costs and benefits which do not directly affect the city government but rather those costs and benefits that accrue to residents or electric consumers. The most likely form of an implicit cost or benefit is a change in the electric rates. However, changes may also occur in employment opportunities and wage rates. Thus, a decision making framework that includes the explicit and implicit costs and benefits is necessary for a city to best make its decision to retain or sell its electric system.

**Objectives**

In general, the objective of this study is to devise an economic model which will offer guidelines for cities considering the sale of their municipal electric systems.

Specifically the research in this study has the following objectives:

(1) To determine the factors that communities should evaluate if they are considering the sale of their electric system.
(2) To indicate the measurement where feasible of the dollar amount of changes in factors that significantly vary with ownership.

(3) To apply the findings of this study as an illustration to the Municipal Electric System of Brookings, South Dakota.

Procedure

The research was conducted using Brookings, South Dakota, as a focal point in the study and was implemented as follows:

(1) Collection of data from private power company and public officials regarding:
   (a) costs of operation
   (b) capitalization
   (c) rate schedules and revenue
   (d) taxes and taxation policy
   (e) net margins and their disposition
   (f) other factors that may change with ownership.

(2) Interviews with city officials, investor-owned utility officials, and power suppliers to secure additional information on the operation of municipal and investor-owned electric utility systems.
(3) Analysis through inductive and deductive reasoning of the information gathered with an aim to:

(a) determine the major factors that change as a result of the sale of a municipal electric system.

(b) apply the developed model to the Municipal Electric System in Brookings, South Dakota.

Review of Literature

The January 1939 issue of the Annals of the American Academy of Political and Social Science contained a number of articles on the question of municipal versus private ownership of public utilities. One writer took the stand that municipal ownership is better as rates and taxes are lower. Also, he stated that new techniques of power production and distribution are introduced faster with the absence of stifling monopolies found under private ownership. Another study dealt with the difficulties of making comparisons between the average rates charged by municipalities and those

---

charged by investor owned utilities. A final writer advocated municipal ownership of all distribution systems with state ownership of generating and transmission facilities. These articles may have reflected the political mood of the 1930's in their general support of municipal ownership. None of the articles, however, provided any guidelines for a community to follow in making its decision whether to have a municipally owned electric system or not.

Another study dealt with estimating output and operating expenses of the public utilities owned by Brookings, South Dakota, for the years from 1959 to 1970. The study was based on regression analysis, and the predictions have proved to be inaccurate. Research has also been done regarding an economic comparison of public and private ownership of telephone systems in Canada which has some usefulness in the current study.


7 John W. O'Brien, Public and Privately Owned Telephone Systems: An Economic Comparison, Ph. D. Dissertation, McGill University, Montreal, Quebec, 1952.
However, it was largely descriptive and covered only a few of the factors that vary with public or private ownership.

**Organization of the Thesis**

Chapter One identifies the problem and the objectives of the study. Also in this chapter the general procedure for the study is introduced and the review of literature is presented. Chapter Two introduces the economic theory associated with this study and provides a description of the electric power industry. The industry is discussed on a national and then regional basis, and the concluding portion presents the situation of the Brookings Municipal Electric System.

The economic model for communities considering the sale of their electric system is presented in Chapter Three. The factors that may change as a result of a sale, that is, rates, taxation, finance, services, expansion plans, management, and employment are discussed and evaluated. Chapter Four utilizes data from the Brookings Municipal Electric System as an illustration of the application of the economic model. Finally Chapter Five presents a summary of the model and includes the recommendations and conclusions of the author.
CHAPTER II

ECONOMIC THEORY AND THE ELECTRIC UTILITY INDUSTRY

This chapter first focuses attention on the economic theory of public utilities in general and then on the economic theory applicable to a city considering the sale of its electric system. After the economic theory is presented, the electric industry is described both from a national viewpoint and that of the Missouri Basin Region. Finally, the Municipal Electric System of Brookings, South Dakota, is described since it is utilized in an illustration of the economic model.

Economic Theory

Pure monopoly is a situation in which there exists only one seller in a market for a particular good or commodity which has no good substitutes. Under pure monopoly changes in price or output by the monopolist leave other sectors of the economy unaffected while any changes in price or output of these sectors does not affect the monopolist.8

Local public utility companies are not technically pure monopolies, but they are similar in so many ways

that they may be studied in terms of monopoly economic theory. One factor that presents a problem in consideration of public utilities as pure monopolies is that items such as electricity and natural gas are to some extent substitutes for each other. Yet they may still be considered monopolies as there are many instances in which they do not readily substitute for each other.

Besides the absence of a good substitute product, monopolies are characterized by the absence of competition in the market place. A consumer does not have any choice of the firm from which he purchases electricity or natural gas.

When public utilities were initially established, competition was often present; but a number of economic factors caused monopolies to evolve. Foremost among these factors is the lower fixed cost in plant and equipment per customer that results when only one firm serves a given area. Another economic factor favoring monopolies is the decrease in average cost of production per kilowatt-hour (K.W.H.) as a plant is more fully utilized. Also, a firm serving all the customers in a market faces a more diversified demand. This variation in usage by consumers enables the electric utilities to maintain a smaller plant than would otherwise be the
case. When monopolies do construct generating plants, their size enables them to build larger plants and thereby achieve lower costs per K.W.H. of capacity. A final cost advantage favoring monopolies over competition is the possibility of realizing economies through larger quantity purchases of supplies than smaller firms could make. In summary, the combined effects of the preceding factors promote monopoly rather than competition in the public utility field.

After the foregoing presentation of the economic situation of the utility industry, consideration can now be given to the community considering the sale of its municipal electric system. Basically each community must decide whether the benefits of transferring its monopoly control over electricity distribution to an investor-owned exceed the costs. Examples of benefits of selling include the revenue derived from the sale and the addition of the electric system to the tax rolls. Possible costs to the community are higher electric rates and loss of certain services. The costs and benefits of a sale must be determined and weighed by the community so that an optimal decision may be made.

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National Electric Industry

Nationally there are about 480 investor or privately owned utilities, 2000 municipal systems and 1000 rural electric systems or cooperatives. In terms of production of electric energy, the investor-owned companies produce about 76% of the total, municipalities generate 5%, and the remaining 19% is produced by federal and state governments, public utility districts, and cooperatives. The large proportion of electricity production by investor-owned utilities in spite of their small number is explained by the large number of towns and consumers served by each investor-owned utility.

Missouri River Basin Region

Power production in the Missouri River Basin area is highlighted by a number of power producing dams on the Missouri River. These dams, located in South Dakota, North Dakota, and Montana, have a generating capacity of slightly over 2,000,000 kilowatts. Map 1 indicates the location of all major generating plants in the Missouri River Basin and surrounding areas.


11 Martin Oleson, Jr., Project Manager, U. S. Bureau of Reclamation, interview on August 30, 1967.
EXPLANATION
POWERPLANTS

HYDRO

FUEL

• EXISTING
• UNDER CONSTRUCTION

SUBSTATIONS

EXISTING
UNDER CONSTRUCTION

TRANSMISSION LINES

345 KILOVOLTS

230 KILOVOLTS

115 KILOVOLTS

69 KILOVOLTS
UNDER CONSTRUCTION

OWNERSHIP

BUREAU OF RECLAMATION - REGION 6
REGION 1, REGION 4, REGION 7
BONNEVILLE POWER ADMINISTRATION
CORPS OF ENGINEERS

PUBLIC OR MUNICIPAL (EXCLUSIONS CONSUMERS
PUBLIC POWER DISTRICT; MASSA PUBLIC POWER
SYSTEM & OMAHA PUBLIC POWER DISTRICT)

MONTANA POWER CO.; UTAH POWER & LIGHT CO.;
OTTERTAIL POWER CO.; CONTINENTAL PUBLIC POWER
DISTRICT; IOWA ELECTRIC LIGHT & POWER CO.;
ST. JOSEPH LIGHT & POWER CO.; WISCONSIN ELECTRIC
POWER CO.

WYOMING-GAUNTILITY CO.; PACIFIC POWER &
LIMITED; MINNESOTA POWER & LIGHT CO.; NEVADA
PUBLIC POWER SYSTEM; IDAHO PUBLIC SERVICE CO.;
IDLEWILD POWER & LIGHT CO.; NOVA PUBLIC SERVICE
CO.; PP & L CO.; UTAH PUBLIC SERVICE CO.;
TELEPHONE, INC.; KANSAS CITY POWER & LIGHT CO.

WASHINGTON WATER POWER CO.; NORTHERN
STATES POWER CO.; JOHN POWER & LIGHT CO.; BLACK HILLS
POWER & LIGHT CO.; PUBLIC SERVICE CO. OF COLO.;
CENTRAL KANSAS POWER CO.; KANSAS BAK &
ELECTRIC CO.; UNION ELECTRIC CO.

IDAHO POWER CO.; NORTHWESTERN PUBLIC SERVICE CO.;
IDENTICAL POWER CO.; UTAH PUBLIC POWER DISTRICT;
DIXIE POWER CO.; OREGON PUBLIC SERVICE
CO.; EASTERN KANSAS ELECTRIC CO.; BLACK HILLS
POWER & LIGHT CO.; MINNESOTA POWER & LIGHT CO.

INDUSTRIAL FACILITIES ARE SHOWN IN BLACK EXCEPT
WHEN ANOTHER COLOR IS USED FOR CONTRAST.

NOTE

Colors generally designate major independent
companies or affiliate groups. The same color
in different sections of the map may not
indicate common ownership or control.

Transmission lines below 35 kv and non-federal
powerplants with a total capacity below 75 mw
are not shown.
Also shown on the map are the major transmission lines of the region and their capacity and ownership. As may be noted the Bureau of Reclamation possesses a number of high voltage transmission lines which interconnect the river dams and power destination points. The facilities of the Bureau of Reclamation have particular significance to municipalities since municipalities are "preference customers." This designation means that municipalities have the first option to purchase power from the Bureau. Any power not purchased by preference customers is offered to investor-owned companies. The opportunity to obtain low-cost power from the Bureau of Reclamation has enabled many municipalities in the region to achieve savings by curtailing or ending local generation.

Brookings Municipal Electric System

Since the Brookings Municipal Electric System is utilized in an application of the economic model, it may assist the reader to gain some familiarity with the electric system in Brookings, South Dakota. The characteristics of the system have undergone definite change since power has become available from the Bureau of Reclamation. Previous to 1952 Brookings generated all the power needed within the city. However, in 1952 the city began power purchases from Otter Tail Power Company; and in 1954, as power became available from the dams being
constructed on the Missouri River, the city purchased power from the Bureau of Reclamation. This power is currently supplied to the city at a cost of about 5 mills per K.W.H.. This is lower than the marginal cost of generation associated with the facilities in the Brookings plant. Therefore the city has placed its electric plant on a stand-by basis and has contracted with the Bureau of Reclamation to supply the electric power for the city. This contract guarantees that 6,798 kilowatts will be available to Brookings for the life of a 20-year contract signed in 1966. Furthermore, since a number of the preference customers, especially rural electric cooperatives, are not using their full allotments, the Bureau expects that it will be able to supply all of Brookings' projected power needs through 1972.12

The present facilities of the Brookings Municipal Electric System may be grouped into the categories of the transmission and distribution system, the power plant, and the steam heating system. The transmission and distribution system consists of the necessary lines, poles, transformers, switching gear, and other facilities needed to deliver the power to the consumers from

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12 Martin Oleson, Jr., Project Manager, U. S. Bureau of Reclamation, interview on August 30, 1967.
the Bureau of Reclamation sub-station which is located approximately 3 miles north of the city. The system is undergoing continuous expansion as additional distribution lines are installed to serve new homes and businesses and as a new looped transmission line is built to insure greater reliability of service.

The power plant in Brookings is now used for stand-by service and for steam heating of the downtown area. The plant contains as major equipment 3 boilers and 3 turbine-generator units that can produce a total of 5,250 kilowatts. The actual capacity of the plant depends on the outdoor temperature as wooden cooling towers of limited capacity are used in the condensation process. Lower outdoor temperatures make the condensation process more efficient and permit the generation of electricity at levels closer to full capacity. In the event of interruption of power from the normal source, the Bureau of Reclamation, the power plant is able to carry at least part of the electrical load of the city which has reached a high of 8,285 kilowatts on January 5, 1968.13 If the power is off for an extended period of time, the limited power from the plant can be alternately supplied to the various sections of Brookings to

prevent physical damage to buildings or contents.

The steam heat furnished by the power plant is distributed through tunnels and sold to the schools and most business places in the downtown area. This method of heating is preferred by most businessmen as it eliminates the need for a separate boiler in each building and does enable the firms to obtain some savings in insurance costs.\footnote{Earl L. Bullington, Insurance Agent for the Fishback Agency, Brookings, South Dakota, interview on April 15, 1968.} The city is, of course, faced with the cost of maintaining the system and the cost of the fuel and labor to produce the steam. In previous years when the city was using its plant to generate electricity, the cost of producing the steam was attributed to the generation of electricity; and the steam could be sold as a by-product with the primary cost being just its distribution. Now, however, generation of electricity is usually not conducted locally, and all costs of steam production must be attributed to the heating system.

In summary, this chapter has presented the economic theory of public utilities. The electric industry has been described from national and regional standpoints. Finally, the situation of the electric system in Brookings has been described.
CHAPTER III

AN ECONOMIC MODEL

An economic model is a device to show relationships between variables and their interactions with each other. In the case of an economic model of a municipal electric system, seven major variables may be identified. They are electric rates, taxation, finance, services, expansion, management, and employment. These variables are very much interrelated and a change in one frequently affects other variables in the model.

In order to delineate the variables and their major components Diagram 1 is presented. The diagram as well indicates the major relationships between variables. Also, it displays the significant relationships between components of variables. The diagram is not intended to be all inclusive of all possible interactions between variables, but it does indicate the major interactions between variables of a municipal electric system model.

While there are many possible orders in which the variables of this economic model may be examined, this study considers them in the following order: electricity rates, taxation, finance, services, expansion, management, and employment. These variables or factors are of great significance in the decision making process by the
DIAGRAM 1
THE ECONOMIC VARIABLES AND INTERRELATIONSHIPS

Management

Forms of Government

Municipal Utility Board

Rates
To Public
To City

Finance
Profit
Profit Disposition
To City
To Consumer
To Reserves
Effects of a Sale
Determining Sale Price

Taxes
Corporation
Property
Payments in Lieu

Expansion of System
Generation
Distribution
Employment Effects
On Utility Employees
On Attraction of Industry

Service

Electrical Energy
Steam Heating
community. Some of the economic variables or factors may be positive to municipal ownership of the electric utility and others may be negative. The decision makers must balance and weigh the factors to arrive at an optimum decision for their community.

**Electricity Rates**

Rates for electricity are influenced by and have a number of influences on other variables. These rates, as well as the other variables, are connected with management as it is the officials of the municipality that determine the rates to be charged. The electricity rates influence finance because they are major determinants of the profits of the system. The rates charged the public can be important in the attraction of new industry to the community. The rates charged the city for its purchases of electricity affect the amount of property taxes that the city must levy to pay for the cost of operating the city.

**Rates to the Public**

Any difference in rates charged for electricity between an investor-owned company and a municipality can be quite significant to the consuming public and should be considered by any city contemplating the sale of its electric system. Rates for electric service to the public are generally divided into three classifications:
residential, commercial, and power or industrial. The rate per kilowatt-hour (K.W.H.) usually declines as the customer increases his consumption of electricity. This decreasing marginal cost per K.W.H. helps to promote increased usage and thereby increase the total revenue of the utility.

In order to study the effects of rate changes, the community that is considering the sale of its municipal electric system should determine the cost of electricity to the various consumers under the new ownership. The additional cost or saving in electricity charges can be most accurately determined by calculating for each consumer the cost of electric service under the schedule of rates of the prospective purchaser. The calculations should cover a year's usage of electricity for each consumer. Once the total cost to all consumers under the rate schedule of the prospective purchaser has been obtained, it may be compared with the total cost to the consumers under municipal ownership to indicate which ownership constitutes the lowest cost to the consumer.

An alternative but less accurate method of determining the amount of rate changes involves the use of the average monthly consumption in K.W.H. of each class of consumers. The difference in charges by the
prospective purchaser from those of the municipal system for the average monthly consumption may be multiplied by 12 to obtain the total difference in charges over one year to each consumer. This yearly difference may be next multiplied by the number of consumers in each classification; and if the resulting products are aggregated, the approximate total amount of changes in electricity cost to all consumers may be determined.

Rates to the City

Attention must also be given to the effect that a sale to an investor-owned company would have on the costs of power to the municipality. A considerable quantity of electricity must be purchased by the city for use in city building such as the hospital, if municipally operated, city hall, water pumping stations, and sewage treatment plants. Another major electrical expense is street lighting which frequently includes installation and maintenance expenses. To obtain the best estimate of these costs for the city under an investor-owned utility, one may contact the company and obtain the detailed rate sheets they have for these municipal services. With the city's known usage of electricity in the last year for each function, it is possible to make a reasonable estimate of the cost of electricity and then contrast that with the amount presently charged
by the municipal system.

In summary, the change in electric rates as the result of a sale of a municipal system to an investor-owned utility may be significant and should be considered by the community. Any change in rates influences the other variables of finance, taxes, and employment.

**Taxation**

Taxes are another economic variable or factor that should be examined by any community that is considering the sale of its municipal electric system. The amount of taxes collected has a direct bearing on city finances as this is the major source of revenue for most cities. The local property taxes, over which the city has some control, may also have an employment effect as low levies might help attract new industry.

**Income Tax**

The federal and state laws in regard to income tax place a burden on the investor-owned utilities that is not shared by the municipal utilities. The federal corporation tax rate is as high as 48% and many states also impose a tax on the net income of investor-owned utilities. It is not feasible to impose a similar income

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tax on a municipal electric system because by simply lowering electric rates it could eliminate any net income on which the tax would be levied. Thus a municipality does not face any income taxes on the operation of its electric system.

The federal income tax laws also give an advantage to municipalities as opposed to investor-owned utilities in the issuance of bonds. The federal government does not tax interest received by investors from bonds issued by another level of government. However, the interest received on bonds issued by investor-owned utilities is taxable. Therefore, a municipality finds that it can borrow money for its electric system at a much lower rate than can an investor-owned utility.

The sale of a municipal system to an investor-owned utility would provide additional income tax revenue for the federal and possibly state governments. However, this additional revenue would be so small in relation to the total revenues that the community making the sale would not experience any significant savings on the income taxes that its residents would have to pay. Moreover, the income taxes that the investor-owned utility would have to pay would be reflected in higher electricity rates for the consumers.
Property Tax

While the foregoing differences exist with regard to income taxation, the local property tax changes are likely to be of the most interest to a community considering the sale of its electric system. The change to investor ownership of the system means the addition of the property of the system to the tax rolls. Under municipal ownership it is, of course, not necessary to make property tax payments because property of units of government is not subject to taxation. The tax payment required from the investor-owned utility is distributed to the city, school district, county, and sometimes the state. While the city does receive a tax payment on the utility property, it could be entirely offset by other factors such as higher rates charged the city or other consumers. The other units of government, however, are likely to find the tax payment received by them to be greater than any additional costs from higher rates due to a change in ownership.

A community can determine the property taxes that it would receive as a result of a change to investor ownership by evaluating the property it is selling and applying the current tax levies to the assessed value. Frequently the state department of taxation evaluates all utility property in the state and provides the best
assistance in determining the assessed value of a municipal system.

In Lieu of Tax Payments

Since local units of government do not receive tax payments under municipal ownership, one solution is for the electric system to make voluntary contributions to the units of government. These contributions may be equal to the taxes that would have been paid if the system were privately owned. These in lieu of tax payments are usually regulated by state law. In the state of South Dakota such payments can be made only to the city and school district but not to the county.

In lieu of tax payments insure greater equitability of treatment of taxpayers and electricity consumers within a city. As an illustration consider a situation where a municipal utility sells electricity near cost to a large user but does not make any in lieu of tax payments to the units of local government. An investor-owned utility in the same situation would have to charge the large user more because its costs would include property taxes. Thus, the difference in electricity costs between municipal and investor ownership for the large user is paid by taxpayers, who must pay more when the municipal utility does not make in lieu of tax payments.
If the property tax payment of the large user is relatively small in relation to its electricity purchases, it is likely that the large user receives a hidden subsidy from the other taxpayers due to the absence of any in lieu of tax payments by the municipal utility.

**Finance**

In this section on finance attention is focused on the profits and their disposition under municipal ownership of the electric system. In addition, the effect on finance of the sale of a municipal system is studied with attention also given to the methods of valuation for determining a sale price of the system.

The variable of finance and its components are interconnected with many other variables of the model. The other variables that influence finance include management, service, rates, taxes, and expansion. In turn finance exerts a major influence on rates for both the public and city, on property taxes, and on expansion of the physical facilities of the system.

**Profit**

The decision makers under municipal ownership, the city council or commission or utility board, have great latitude in determining the net margin or profit of the electric utility system. The prime mechanism available
to them to determine the profit level is the rate schedule for sale of electric energy. Since municipal electric systems are publicly owned, there is no state regulation of their electric rates. This does enable the municipality, if it chooses, to set rates high enough to insure a high level of profit. However, most municipalities do not follow the foregoing policy and generally are able to set their electric rates below those charged by investor-owned companies and yet are able to achieve a good profit level.

The aforementioned is possible because municipal systems have a number of advantages over investor-owned systems. One major advantage is that municipal systems are not required to pay income or property taxes. Another advantage is the use of capital from consumers without the payment of interest. This occurs because the charges for electricity over the years are somewhat greater than actual costs, and the system thereby gains capital on which no interest needs to be paid. Also, municipalities are able to borrow money at a rate about 2% below that paid by investor-owned companies. This difference exists because interest from municipal bonds is not subject to federal income tax. A final significant advantage for municipalities in some areas is the availability of low cost power from public projects.
**Profit Disposition**

When a municipality has profits available from its electric system, the city officials must make a decision regarding their disposition. Basically there are three choices for disposing of the profits and they are as follows: (1) transfer to other city funds, part or all of which may be in lieu of taxes, (2) accumulation of reserves which may be used for future expansion of the system, (3) rebates to the consumer.

The choices made by the city officials are influenced by their concept of the ideal capital structure of the electric utility. The capital structure refers to the relationships between liabilities, net worth, and total assets. There are the two extreme positions of either liabilities being equal to assets and net worth equal to zero or liabilities being zero and net worth equal to assets. Between these positions there are, of course, an infinite number of variations of the proportions of net worth and liabilities.

Once city officials have decided what the capital structure should be, the disposition of profits is simplified. If it is decided that liabilities should constitute a large proportion of the assets, there is no need for large reserves for capital investment since expansion would be financed through the sale of bonds.
Profits can then be transferred to the general fund of the city or returned to the consumers. If the decision by the city officials is to have liabilities at a low level, it is then necessary to use the profits for current capital investment and accumulation in a reserve fund for sizeable expansion projects in the future.

Part of the problem regarding the disposition of profits from municipal enterprises stems from uncertainty of ownership of the enterprise. One group argues that the city is the owner and is therefore deserving of receiving the profits. It is true in the legal sense that the city owns the enterprise. However, others contend it was not the city through the taxpayer that paid for the enterprise and built up its net worth; rather, the consumers of the service have paid over the years somewhat more than the actual expenses; and through the resulting profits, the consumers thereby paid off the liabilities and raised the net worth. Thus, the city is only deserving of an amount in lieu of taxes comparable to the property taxes that would be paid by an investor-owned utility on the same property.

The profits remaining after payments in lieu of taxes should be returned to the consumers who paid for the system. This is difficult to carry out so the best compromise is to return the profits to the present
consumers. In many cases these are the same people who paid for the system in previous years. If the return of profits would be attempted through lower tax rates, those who do not pay taxes but do purchase electricity, such as home renters, churches, and schools, would not be receiving any refund of the profits. Thus, the best method is a direct return of cash to the consumers.

The city of Sioux Center, Iowa, is a city that makes an annual cash refund to its electricity and gas consumers each December. It returns at least a portion of the profit to the consumers each year which serves as a reminder of the benefits of municipal ownership.16

Effects of a Sale

The major detrimental effect on municipal finances due to the sale of a municipal electric system is, of course, the loss of profits for both the present and the future. In the infrequent case where money is being lost with a municipal system, a sale would mean the end of a drain on the city treasury.

The major beneficial effect on municipal finances of a sale is the receipt of the sale price from the buyer of the system. The benefit of this sum can be

16 Maurice A. TePaske, Mayor of Sioux Center, Iowa, interview on September 28, 1967.
best evaluated in terms of the earnings it can produce each year when invested. By this means there would be a steady income each year from the invested proceeds of a sale just as profits would have probably continued each year if the system would have not been sold.

To compare fairly municipal versus investor ownership the investment of the proceeds of a sale should be made in a form that has risks about equal to that of the utility sold. The city can choose, if it wishes, to keeps its funds in safer investments such as government bonds and may be required by state law to do so. Once the form of investment is determined, an estimate of the percentage return may be made and multiplied by the sum invested. The gain to the city from this investment and other possible benefits of investor ownership should be compared with any additional costs that may result from a change of ownership.

**Determining Sale Price**

Valuation of a utility by a prospective purchaser is of definite importance to the seller as it determines the price to be offered. Value in the broadest sense connotes the measure of the desirability of ownership of the property. On this basis it can be said that the measure of value is the present worth, to the present owner and the would be purchaser, of the probable future
services expected from the property during its probable future productive life in service.17 However, it is frequently difficult to make good estimates of future events as is required in the foregoing guide to the determination of value of a utility. Professional appraisers often turn to other indicators or evidences of value. In particular these are (1) cost evidences, (2) earnings evidences, and (3) market evidences. These may also be used in combination when the appraiser feels that this method better determines the true value.

The earning approach to the determination of value of a utility requires the assessment of the present worth of costs and revenues projected over the life of the enterprise. Once these have been determined then the basic formula is the sum of the present worth of the future annual net incomes over the life of the venture and the present worth of the net revenue from the disposal of property not needed to produce the preceding income. Mathematically it may be expressed as follows:

\[
\text{Value} = \frac{\text{Disposd Profit}_1}{(1+i)^1} + \frac{\text{Disposd Profit}_2}{(1+i)^2} + \ldots + \frac{\text{Disposd Profit}_n}{(1+i)^n}
\]

where \(i\) is the rate of return desired by the purchaser.

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and the subscripts on profit refer to specific future years and the expected profit for those years.

The cost evidences of value method involves not only the appraisal of physical assets of the utility but also the appraisal of the intangible and liquid assets associated with the property. The value of the physical assets may be based on original cost or replacement cost or reproduction cost with an adjustment to reflect the service that has been already consumed. After a cost basis has been determined for each item among the physical assets, it is only necessary to aggregate them to obtain a valuation of the physical assets through the cost approach. The appraiser must then determine the value of intangible assets such as franchises, easements, and goodwill. This is generally done by determining the cost of acquiring these assets or by making an estimate of the present worth of future earnings that can be attributed to these assets. Finally, an enumeration of the liquid assets that are being sold must be made and combined with the previous totals for physical and intangible assets to obtain a total valuation for the utility.

Market evidences of value are principally used for those properties which are exchanged in an open market.
at frequent intervals. The market provides little indication of value of electric utilities directly as they are infrequently sold. In some cases the market value of a firm's stocks and bonds is used to determine the value of a firm. However, this approach is of no value for a municipal utility as there are no shares outstanding.

In summary, the valuation of a municipal utility is likely to be accomplished by earnings or cost evidences. Use of the earnings approach usually indicates a higher valuation for a municipal electric system. The cases in which the cost evidences produce a higher valuation are those situations where a large capital investment has been made but little return is being received on it by the present municipal owners.

**Service**

Service is another factor that should be taken into account by a municipality that is considering the sale of its electric system. Service is defined for this section as the supplying of electrical energy for consumers of proper quality and the supplying of other functions that would, in the absence of the utility, have to be performed by others. Examples of these functions performed by the utility are the supplying of steam heat to the business district and the monitoring
of equipment for the city.

The level and type of services depend on decisions made in the management sector, and service in turn influences other variables. A high quality of service helps to promote increased electricity consumption and thereby influences the finance variable through higher profits and the expansion variable through the need for increased distribution facilities. The expansion of distribution facilities in turn might result in an improvement in service.

Electrical Energy

Foremost among the service considerations is that of the quality of the electrical energy supplied to the consumer. The electricity should be furnished to the consumer at the proper voltages and quantities with a minimum of outages. For this to be accomplished the distribution system would have to be maintained about the same under either ownership. If a municipality's present maintenance is poor and results in low voltages and numerous outages in comparison with that of an investor-owned company, then this must be taken into account when the costs and benefits of changing to private ownership are considered. Probably the best way to determine the dollar value of the maintenance improvement is for the municipality to determine the additional
cost per year if it would bring its service up to the standards of the investor-owned utility used in comparison. This requires an estimation of the cost of the additional labor and supplies needed along with a depreciation schedule for estimating the yearly cost of large elements that are necessary to improve the system.

Steam Heating

Another service, currently provided by some municipal power systems, that may change with a change to investor ownership is the central steam heating of downtown buildings because many municipalities find it less costly to purchase power than to operate their own generating plant. Most businessmen want the city to continue supplying them with steam heat even though it may not be any longer a by-product of electricity generation. In these instances the costs of producing steam just for heat frequently exceed the revenue from the sale of the steam. Under these conditions a municipality considering the sale of its electric system should discern the policies of the prospective purchaser regarding central steam heating.

If an investor-owned company purchased a municipal electric system that was furnishing steam heat, it would probably set steam rates high enough to cover the costs of steam heating. Not only would revenue have to cover
operating costs but also depreciation, insurance, and taxes. Even if the foregoing costs were covered, there should be a return on the investment in the heating system. The high steam rates required to cover expenses may cause steam customers to change to other fuels for heating, thus necessitating the eventual abandonment of the heating system by the company.

There are arguments by proponents of central steam heating that the city or investor-owned company should continue operating the system even if it is at a loss. A major contention is that businessmen have to pay higher insurance rates with a boiler in their establishments due to a greater likelihood of fires. However, this argument is only partially valid. The rates for fire insurance itself are not higher with a boiler on the premises, but businessmen usually secure additional insurance to cover the possibility of explosion.\textsuperscript{18}

Another argument given by proponents of central heating is that air pollution is reduced when there is only one source of smoke in the downtown area as it can be better monitored and regulated. However, this may be countered by the fact that many businesses would use natural gas with little resulting smoke while the power plant would probably use coal part of the time which frequently

\textsuperscript{18} Earl Bullington, Brookings, May 2, 1968 interview.
produces a fair quantity of smoke.

Another service in addition to the heating system that may change with a sale to an investor-owned utility is the promotion of electric appliances. Frequently an investor-owned utility sells and services electric appliances. These operations are usually conducted at cost as the aim of the utility is the promotion of greater electricity consumption. Other aspects of service that may vary with ownership are the availability and cost, if any, of wiring inspections and consultations regarding electrical problems and construction.

Some services to the city that could change with ownership of the electric system are equipment monitoring and the erection of street decorations. For example, personnel in the power plant at Brookings presently monitor equipment functioning at the water pumping and sewage disposal plants. If an investor-owned company would not be willing to do this monitoring, another city department would need to assume this activity. The cost of erecting, lighting, and removing decorations from the streets may also vary with ownership and should be evaluated by any community considering the sale of its electric system.

In summary, there are services to individual
customers and the city that may change in quality, quantity, and cost with a change in ownership. The costs and benefits of these changes should be evaluated and considered in monetary terms where possible along with the other variables of utility ownership such as rates, taxation, and finance.

**Expansion**

Expansion of the electric system of a community influences the variable of finance through the additional revenues and probable profits from furnishing more electricity. The preparedness for expansion depends in part on the availability of reserves to finance the program. The need for expansion can be produced by the employment variable through the attraction of additional firms and industries to a community. The need for expansion can also be indicated by poor service such as low voltages and frequent outages. It is the management sector, of course, that plans and carries out the expansion projects.

Expansion involves the generation of additional power as demand grows and the construction of additional distribution facilities to bring it to the consumer. Whether a city's system is privately or publicly owned has a definite effect upon the importance local officials and residents must attach to the expansion of the
electric-facilities. If the electric system is investor-owned, the officials of the company make the decisions regarding expansion of the system with no concern necessary by local officials or residents of the city. Thus, it is only with the choice to continue municipal ownership that the city officials and residents must plan the expansion of their electric system. The expansion variable is examined first in regard to the alternative sources of power available and then in regard to the needs for additional distribution facilities.

A municipality that has decided to retain its electric system usually has a number of sources of electric power available to it for expansion. The most usual sources of power are three, namely: local generation in the municipal plant, power purchased from an investor-owned system, and power purchased from a public power source. In some areas a possible source of power in the future may be that produced by a large plant owned by a number of municipalities and transmitted by high-voltage lines to the various cities.

**Local Generation**

Generally the outlook is dim for use of the electric plant in each municipality to produce the additional energy needed each year. It is feasible to use local generation to meet the additional demand only when the
marginal cost of generation is less than the marginal cost of power from other sources. In the Missouri Basin Area the marginal cost of local generation must be less than about 5 mills per K.W.H. as power can be generally purchased from the Bureau of Reclamation for that marginal cost. 19

If capacity is not available in the present generating equipment of the city to meet the growing demand, it is usually unwise to make an addition to the local plant. This is the case because the technology of power production permits the lowest construction costs and operating expenses per kilowatt when units of 400,000 kilowatts or larger are erected. 20 Most municipal systems do not require nearly that large a unit. Thus, a municipality frequently finds it to their financial advantage to purchase power from a large plant and pay the necessary transmission costs rather than add to their existing facilities.


Purchased Power

Many municipalities have found it advantageous to purchase power from public or investor-owned systems rather than utilize local generation. It may be feasible in some instances for a municipality to purchase power only beyond the capacity of the local plant. In other instances the operating costs of the local plant may be so high that it is best to purchase all the power needed by the municipal electric system. In this case a potential source of power for the municipal system may be an investor-owned system. If the wholesale power cost is lower than any alternatives, it would be advantageous for the municipal system to purchase power from the investor-owned system.

Most municipal systems in the Missouri River Basin currently purchase needed power from the Bureau of Reclamation. Basically this arises because the Bureau offers to supply power at a lower price than the investor-owned systems. Since the demand for power by the preference customers, those that are publicly owned such as municipal systems, is greater than that available by the Bureau for sale, each preference customer is given an allotment based on the power usage and the requests of each community. The Bureau guarantees to supply an amount of power up to the allotment of the
preference customer for the life of the contract, which is usually 20 years. Since not all preference customers are taking their full allotments, the Bureau is able to supply additional power until about 1972 to those municipalities that desire power beyond their allotment. However, by 1972 the load growth of the various customers is expected to allow the Bureau to supply only the basic allotment of power to each community.

Possible developments that may enable the Bureau to satisfy all the power needs of its preference customers beyond 1972 include the erection of transmission lines to other systems from which additional power may be secured during the peak winter demand. Another development would be the construction of additional lignite burning power facilities in North Dakota to supply power to cooperative systems and thereby free their allotments for municipalities. These developments may not become reality as they depend on the attitude toward public power of the political administration in Washington.

Group Municipal Power

A possible alternative to local generation or purchased power is for municipalities to join together in the erection and ownership of a common generating plant. This action allows municipalities to reap some
of the economies of scale of electricity generation. However, intercommunity cooperation of this nature is not legally possible in all instances. A number of states do not have laws to provide for cooperation between communities, but many states are working to establish such laws now. For example, the 1965 legislature in Iowa passed a law not only permitting but encouraging cooperation between communities especially in regard to utilities. Minnesota has done likewise but restricted municipalities by permitting them to enter into agreements only with other Minnesota municipalities or those of bordering states. Thus, it would not be legal for a Minnesota municipality to purchase power via a transmission network from one in Montana while an Iowa municipality could do so.²¹

In the Missouri Basin area an existing organization is currently active in promoting orderly planning for expansion by public power groups. It is the Missouri Basin Systems Group, and its membership consists of about 120 cooperative and municipal electric systems in the Missouri River Basin. The organization seeks to plan and develop efficient generation and transmission facilities

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²¹ Maurice A. TePaske, Mayor of Sioux Center, Iowa, interview on September 28, 1967.
in conjunction with those of the Bureau of Reclamation. The cost of membership for a municipality is 0.1 mill per K.W.H. sold, and may be worth it if the group succeeds in providing low cost power to its members.21

**Distribution System**

Attention thus far has been on the expansion of electric power supply by purchase or local generation in order that a community may meet the growing demand. Also important is the expansion of local distribution facilities to maintain and possibly improve the quality and reliability of service. With the increased consumption by each household, it is necessary to install larger transformers and lines of greater capacity. Since the investment is smaller and more gradual, the expansion of the distribution system is probably not of as much concern to city officials and residents as the acquisition of additional power sources. However, the distribution system can not be neglected without a detrimental effect upon the quality of electric service to the consumers.

An improvement in reliability that a municipal electric system may desire to make is possible through

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21 Arle M. Verrips, Secretary of the Municipality sub-division of the Missouri Basin Systems Group, Sioux Center, Iowa, interview on September 28, 1967.
the erection of a power loop around the city. It requires a substantial expenditure but does insure greater continuity of electric service. For example, the power loop presently being erected around Brookings has a cost of about $330,000. If a break should occur at any place in the loop, power would automatically be routed from the opposite direction and no one would be without power. Of course, some outages would yet occur with breaks on lines from the loop to the individual customers, but at least the entire city would not be without power. 22

In summary, if a community chooses to retain its electric system, it is necessary to expand the distribution system, possibly including such improvements as a loop system, as well as provide for a source of additional electric energy.

**Management**

Management of the electric utility is another factor that may undergo definite change if the municipal system is sold to an investor-owned company. Management includes all the decisions made regarding the other variables of the model such as the decisions on the

22 William Gamble, Commissioner of Utilities, Brookings, South Dakota, interview on February 8, 1968.
level and quality of service, rates, and profits. A number of decisions made by management may be significant for the electric consumer. For example, management makes decisions on the level of maintenance and electric rates that affect the consumer through both the quality and cost of electric service. Management influences other variables through its decisions on financing of expansion, investment of reserve funds, level of contributions to the city's general fund, and promotion of new industry.

If a city does sell its municipal electric system, the present management would probably be replaced with men transferred from other cities where the investor-owned utility presently operates. The municipality would be relieved of its supervisory functions over the electric system, and this may enable the elected and appointed officials to devote more attention to other functions of the municipality.

If the municipality decides that it does not want to sell its electric system, it does then have to concern itself with the management of the system. The success that the city achieves in the operation of the system depends to a large degree on the form of government and the selection of competent men to manage it. The major forms of city government today are mayor-council,
commission, and council-manager. Each has various advantages and disadvantages with respect to the city and the management of a municipal electric system.

The mayor-council form of government has been longest established and features a chief executive, the mayor, separate from the legislative branch, the council. This form of government usually permits the greatest participation of the citizens through voting in the selection of city officials. This is especially true if most of the administrative officers of the city are elected rather than appointed. The mayor frequently serves as the leader of the community and the chief administrative officer of the city. This position enables the mayor to exercise considerable power in the management of the electric utility. The extensive powers of the mayor are criticized by some who state that someone who has the popular appeal to be elected may not have any administrative ability. This lack of administrative ability could be to the detriment of the city departments. 23

Another form of city government is the commission plan. The commission usually has five elected members

and each exercises administrative control over certain city activities such as police and fire protection, water supply, electricity generation and distribution, etc. This does permit a commissioner to concentrate his attention on the city departments that he controls. However, the commission system can result in city departments working quite independently of each other, and commissioners may compete against each other for improvements in their own respective departments. The commission as well as the mayor-council form of government faces the problem that the men elected as commissioners may not be good administrators of their departments.24

The third major form of city government is the council-manager plan. Under this plan the city council appoints as city manager an individual who usually has had experience and training in public administration. Thus, the chief administrative officer of the city is chosen not on political considerations but rather on ability, training, and experience. This form of government may well promote better management of the electric system through the use of appointed professional personnel instead of elected officials. Opponents of the

council-manager system state that it is less democratic since the manager is not elected and that it is difficult to secure a good manager without paying a high salary. 25

Municipal Utility Board

A means by which professional rather than elected personnel may manage the electric utility is through the establishment of a municipal utility board. This board may exist in conjunction with any of the three major forms of government. One superintendent of utilities has some interesting views on a utility board.

"You will find some municipally operated utilities very successful and again you will find some that are not. This depends entirely on the personnel operating the utilities and whether or not politics can be kept out of the operation. In most cases a municipal system is operated by the city governing body and their main interest is the complete operation of the city and not enough thought is given to the operation of the electric utility. Therefore, the electric utility is not kept up to date and the service rendered is not satisfactory to most of the customers.

"This situation can be corrected if the city governing body would place the operation of the electric utility system in the hands of a municipal utility board which should be composed of good businessmen of the city, who would have complete control of the operation and financing of the utilities. This is permitted by South Dakota

Statute Chapter 221(H.B. 661-1955). I believe that Watertown is the only city in South Dakota that is operated by a board and they are finding it very successful."

In summary, management of the electric system should be of great concern to the city if it chooses not to turn management over to others as it would do through a sale to an investor-owned utility. If the city retains its electric system, it faces the problem of securing competent management. If it depends on the elective process for the selection of management of the electric system, it may find people in that office who have little ability or qualifications to manage the system. The establishment of a municipal utility board may be the means by which the city can secure more competent management for the system.

Employment

A result of a decision to sell a municipal electric system to an investor-owned company may be a change in the number of workers employed in the community and their wages with consequent influence on the expansion variable. There are direct effects of the sale on the salaries and the number of employees of the electric utility. Indirect effects on employment due to the sale

\[26\text{C. H. Sonnenberg, Superintendent of Utilities, Watertown, South Dakota, correspondence dated June 30, 1967.}\]
of the utility may occur through changes in the level of local purchases by the utility and the success of efforts to attract new industries and businesses to the community.

The sale of a municipal electric system is likely to have an effect on the number of electric utility employees and their wages, but the magnitude of the change in employment depends on a number of considerations. If the purchaser of the municipal system discontinues operation of a local generating plant or steam heating system, the number of employees is likely to be reduced. On the other hand if the purchasing system establishes a district office or a generating plant in the community, the number of employees is likely to be increased. The managerial and administrative staff is likely to be greater under private ownership. This occurs because under municipal ownership elected or appointed city officials perform administrative functions for the electric department without being considered on the staff of the department.

Not only may the number of employees increase under private ownership, but the wages may be higher as well. This is the case because the employees of investor-owned

27 Wendell Wischer, Northern States Power Representative, Sioux Falls, South Dakota, interview on March 1, 1968.
utilities are generally unionized and have been able to secure a higher salary schedule. Municipal employees, on the other hand, are usually prohibited by law from joining a union that claims the right to strike. Without this means to secure a higher wage settlement, salaries are typically somewhat lower for municipal employees. Thus, if a change is made to investor ownership, the former municipal employees are likely to receive a wage increase since they ordinarily retain their positions and are given seniority in the electric utility.  

Selling a municipal electric system to an investor-owned utility is not likely to change employment in local businesses due to increased sales of materials and supplies to the electric utility. It usually is not possible for an electric utility to increase its local purchases substantially because many items such as poles and transformers are not available in the community. Thus, other than for labor most local purchases made by electric utilities under either ownership are for office supplies and motor vehicles.

Employment in a community should increase if a

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28 Wendell Wischer, Northern States Power Representative, Sioux Falls, South Dakota, interview on March 1, 1968.
change to investor ownership of the electric utility causes new industries to locate in the city. An investor-owned utility with its wider contacts may be especially helpful to small communities in this regard. Frequently a brochure is prepared by the utility company and distributed to interested parties which details the resources the community has to offer to a prospective industry or firm. In smaller towns that do not have a Chamber of Commerce or another similar organization, the investor-owned utility may be the only group promoting industrial development. Also, the utility company frequently follows up leads given them on firms seeking a location for a new plant. For example, in South Dakota the Industrial Development Expansion Agency often contacts utilities to pursue leads on potential industry.29 These same industrial promotion functions can be carried out by a municipally owned system but frequently are not.

If the prospective industry is a large consumer of electricity, the rates for such energy are likely to be an important concern to officials of the company. It is likely to make little difference to them whether the

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29 Wendell Wischer, Northern States Power Representative, Sioux Falls, South Dakota, interview on March 1, 1968.
electric system is publicly or privately owned. More important is the cost to the firm of the needed electricity. Where municipal rates are lower than those charged by investor-owned companies, the cities with a municipal electric system have one advantage over others in the competition for industries.30

In summary, the sale of a municipal electric system may have an effect on employment in a community, but the exact effects are impossible to predict. In general it can be expected that the number of electric utility workers may increase slightly if the same facilities are sold to and maintained by an investor-owned utility. Also, the salaries paid these workers may be higher due to their union membership. The level of local purchases of materials and supplies is not likely to change, but employment in the community could be substantially increased if the private utility is successful in attracting new industries.

CHAPTER IV

AN APPLICATION OF THE MODEL

In this chapter data from the Municipal Electric System of Brookings, South Dakota, is used to illustrate the application of the model. Primary attention is given to those variables that change in quantifiable monetary terms such as rates, taxation, finance, and service. The importance of the remaining variables of expansion, management, and employment in a change from municipal to investor ownership is a matter primarily of personal value judgements that are difficult to present in empirical terms.

The appropriate economic tool used for estimating the financial changes that could be expected if the city of Brookings were to sell its electric utility is the partial budget. In the partial budget an effort is made to estimate the effect of a change on the revenue and costs of an existing organization. It necessarily can include only those costs and revenues attributable to those factors that can be quantified. The resulting figure from a partial budget must then be considered in light of the non-quantifiable changes that may occur with the change in ownership. This figure can thus be considered an opportunity cost, the value of the
alternative foregone.

Electricity Rates

Electric rates for consumers in Brookings would probably change considerably with the sale of the municipal electric system. These rates are first considered with regard to the purchases by the public and secondly with regard to the purchases by the city.

Rates to the Public

Since most individuals purchase electricity only for their residences, they are primarily concerned with the cost of residential service. The residential electricity charges made by the Brookings Municipal Electric System and three investor-owned companies located in the area surrounding Brookings are given in Table 1. Since rates vary somewhat with the size of the community, all the rates in Table 1 have been calculated for a city comparable in population to Brookings, South Dakota, or approximately 10,000 people.

The table gives the total charge at four different levels of electricity consumption, but the 500 K.W.H. level is nearest the average monthly consumption for this area. It may be noted that at the 500 K.W.H. level the charge to a consumer in Brookings is $9.63 per month. At that consumption level the present monthly charge by the city of Brookings is $3.37 below that of the lowest
### TABLE 1

**RESIDENTIAL ELECTRIC CHARGES AT VARIOUS CONSUMPTION LEVELS BY SELECTED EASTERN SOUTH DAKOTA UTILITIES**

<table>
<thead>
<tr>
<th>Company</th>
<th>K.W.H. Consumed per Month</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>250</td>
</tr>
<tr>
<td>Otter Tail Power</td>
<td>$8.52</td>
</tr>
<tr>
<td>Northern States Power</td>
<td>8.00</td>
</tr>
<tr>
<td>Northwestern Public Service</td>
<td>8.42</td>
</tr>
<tr>
<td>Brookings Municipal</td>
<td>6.50</td>
</tr>
</tbody>
</table>


An investor-owned utility. This may not initially seem very significant, but over the lifetime of an individual it can become a considerable sum. If a consumer has to pay an additional $3.37 each month over a period of 50 years, his total extra cost including interest at 4½% compounded annually would be $7,218.66. Thus, even a small change in electricity costs can become quite significant over a lifetime.

As an illustration of the cost or savings to consumers due to a change of ownership, data has been obtained on electricity consumption in Brookings. See Table 2. The average monthly K.W.H. consumption in 1967 for each class is used as the basis for calculating the
TABLE 2
1967 AVERAGE MONTHLY CONSUMPTION OF ELECTRICITY BY CONSUMERS IN BROOKINGS AND CHARGES BY BROOKINGS MUNICIPAL AND NORTHERN STATES POWER

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Brookings Municipal</td>
<td>Northern States Power</td>
</tr>
<tr>
<td>Residential</td>
<td>492</td>
<td>$9.53</td>
<td>$12.84</td>
</tr>
<tr>
<td>Commercial</td>
<td>1471</td>
<td>39.10</td>
<td>53.63</td>
</tr>
<tr>
<td>Power</td>
<td>1236</td>
<td>33.16</td>
<td>46.58</td>
</tr>
</tbody>
</table>

The additional amount over the present municipal charges that would have to be paid by consumers in Brookings for service from an investor-owned company is...
presented in Table 3. The calculations are based on the average number of K.W.H. consumed by each class because it is not feasible to base them on the usage of each individual consumer. As indicated in the table, it would have cost the consumers of Brookings in 1967 $221,199.84 in addition to their present municipal rates to have been served by the investor-owned company that offers the lowest rates in eastern South Dakota.

**TABLE 3**

ADDITIONAL COST TO THE PUBLIC IN BROOKINGS IF SERVED BY NORTHERN STATES POWER AT 1967 CONSUMPTION LEVELS

<table>
<thead>
<tr>
<th>Class of Consumer</th>
<th>Number of Consumers</th>
<th>Additional Charge Each Year By Northern States Power</th>
<th>1967 Additional Cost To All Brookings Consumers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>2972</td>
<td>$39.72</td>
<td>$118,047.84</td>
</tr>
<tr>
<td>Commercial</td>
<td>478</td>
<td>174.36</td>
<td>83,344.08</td>
</tr>
<tr>
<td>Power</td>
<td>123</td>
<td>161.04</td>
<td>19,807.92</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total $221,199.84</td>
</tr>
</tbody>
</table>

**Rates to the City**

A change from municipal to investor ownership is likely to change the rates charged the city as well as those charged the public. If the city has to pay higher rates, higher property taxes would probably be necessary.
Using Northern States Power's rate schedules for cities, the charge for electrical service to the city of Brookings can be calculated. See Table 4.

**TABLE 4**

**COMPARISON OF ELECTRICITY COSTS IN 1967 FOR BROOKINGS IF SERVED BY NORTHERN STATES POWER COMPANY OR BROOKINGS MUNICIPAL ELECTRIC SYSTEM**

<table>
<thead>
<tr>
<th>Service</th>
<th>Average K.W.H. Used Each Month</th>
<th>Northern States Power Charge</th>
<th>Brookings Municipal Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Pumping</td>
<td>77,566</td>
<td>$10,598.64</td>
<td></td>
</tr>
<tr>
<td>Sewage Plant</td>
<td>28,726</td>
<td>4,151.76</td>
<td></td>
</tr>
<tr>
<td>City Buildings (19 locations)</td>
<td>4,565 each</td>
<td>30,465.36</td>
<td>$37,756.98b</td>
</tr>
<tr>
<td>Street Lighting—Number and type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27 Mercury Vapor</td>
<td>50,376.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80 4-Tube Fluorescent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>879 2-Tube Fluorescent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$95,591.76</td>
<td>$65,831.98</td>
<td></td>
</tr>
</tbody>
</table>

a Data secured from Elmer Thon, Jr., Superintendent of Electric Utilities, Brookings, South Dakota.

b Total charge for water pumping, sewage plant, and city buildings.

c Data secured from Henry Shirkey, Superintendent of Electric Line Department, Brookings, South Dakota.
The cost of street lighting under both municipal and investor service includes not only the electricity used but also the cost of the poles, fixtures, and maintenance. The total charge to the city that would be made by the investor-owned utility is $95,591.76 in comparison to the present charge of $65,831.98 by the Brookings Municipal Electric System. Most of the difference is due to higher costs for street lighting under private ownership. Thus a change to investor ownership would cost the city of Brookings at least an additional $29,759.78 annually for electricity.

If the rate schedules of Northern States Power Company are applied to the 1967 electricity consumption by both the city and the public of Brookings, the total charges are $250,959.62 higher than the charges by the Brookings Municipal Electric System. In percentage terms this is a 36% increase over the municipal system charges.

Taxation

One of the often mentioned advantages of investor ownership is that taxes would be paid to the local units of government. Under municipal ownership, of course, the utility property is not subject to taxation; but the municipal utility often makes voluntary contributions to local government.
The property tax that would be paid on the Brookings Municipal Electric System if investor-owned can be determined by taking the assessed valuation times the mill levies. The assessed valuation for the system in 1967 is presented in Table 5. The taxable value to which the levies are applied is 60% of the true and full value. The 1967 tax levies in Brookings were as follows: city, 9.48 mills; school district, 40.72; and county, 9.34 mills. Therefore, the total property tax that would have had to be paid in 1967 on the electric utility in Brookings if privately owned would have been $46,040 of which the city would receive $7330.

The Brookings Municipal Electric System does make payments in lieu of taxes, but the entire amount goes to the city general fund. In 1967 the payment made to the city in lieu of taxes was $64,500 while the total property tax that would have been paid if privately owned was $46,040. Since the school district receives nothing in lieu of taxes from the electric system, its mill rate has to be somewhat higher than would be the case if the electric system was investor-owned. On the other hand, the city is able to lower its mill rate more since it receives the entire payment in lieu of taxes.

31 Office of the County Treasurer, Brookings County Brookings, South Dakota, November 27, 1967.
TABLE 5
TAXATION EVALUATION OF THE BROOKINGS MUNICIPAL ELECTRIC SYSTEM FOR 1967

<table>
<thead>
<tr>
<th>Facility or Property</th>
<th>True and Full Value</th>
<th>Taxable Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>$489,023</td>
<td>$293,414</td>
</tr>
<tr>
<td>Transmission</td>
<td>175,688</td>
<td>105,413</td>
</tr>
<tr>
<td>Distribution</td>
<td>396,703</td>
<td>238,022</td>
</tr>
<tr>
<td>General (Less Transportation)</td>
<td>99,494</td>
<td>59,696</td>
</tr>
<tr>
<td>General (Heat)</td>
<td>42,130</td>
<td>25,278</td>
</tr>
<tr>
<td>General (Transportation)</td>
<td>27,228</td>
<td>16,337</td>
</tr>
<tr>
<td>Materials and Supplies</td>
<td>42,314</td>
<td>25,388</td>
</tr>
<tr>
<td>Fuel</td>
<td>16,197</td>
<td>9,718</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$1,288,777</strong></td>
<td><strong>$773,266</strong></td>
</tr>
</tbody>
</table>

Source: Paul E. Schmitt, Utilities Valuation Engineer, South Dakota Department of Revenue, Pierre, South Dakota.

Thus, the total tax paid by a resident of Brookings is slightly lower than if the utility payment in lieu of taxes was distributed to all units of government. However, the taxpayers living in the Brookings school district but outside the city of Brookings do not share in the somewhat lower city tax rate caused by the city receiving the entire payment. Thus, from the standpoint of equity to the property taxpayer outside of Brookings, it would be better if the school district and county shared in the payment in lieu of taxes.
Finance

The major changes that would occur in the finance variable as a result of a sale of the Brookings Municipal Electric System would be the loss of profits and the gain of the sale sum. The profits from the Brookings system have been sizable for a number of recent years as shown in Table 6.

The increase in operating revenue of the system occurred despite rate reductions because electricity sales substantially increased due to the lower cost per K.W.H. and to population growth. The profit level was increased noticeably in Brookings when local generation was reduced in 1952 and power purchases began from the Bureau of Reclamation in 1954. The percentage that profit is of operating revenue is quite comparable to investor-owned utilities. As shown in Table 6 it has ranged during the past 5 years from 43.3% to 34.8%. In 1966 the profit as a percentage of revenue before any taxes was 41.4% for Northern States Power Company and 33.2% for Northwestern Public Service Company as calculated from their 1966 annual reports.

The electric utility profits for the Brookings system since 1950 have been so considerable that not only have current capital investment requirements and the building of a reserve fund been met out of profits,
<table>
<thead>
<tr>
<th>Year</th>
<th>Operating Revenue</th>
<th>Operating Profit Before Transfers</th>
<th>Profit as a % of Operating Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>$398,859.76</td>
<td>$39,123.65</td>
<td>9.8%</td>
</tr>
<tr>
<td>1951</td>
<td>408,458.22</td>
<td>1,622.26</td>
<td>0.3</td>
</tr>
<tr>
<td>1952</td>
<td>398,983.59</td>
<td>36,814.36</td>
<td>9.2</td>
</tr>
<tr>
<td>1953</td>
<td>414,099.84</td>
<td>57,147.53</td>
<td>13.8</td>
</tr>
<tr>
<td>1954</td>
<td>435,978.92</td>
<td>75,780.35</td>
<td>17.3</td>
</tr>
<tr>
<td>1955</td>
<td>494,432.13</td>
<td>204,946.54</td>
<td>41.3</td>
</tr>
<tr>
<td>1956</td>
<td>494,578.37</td>
<td>203,429.09</td>
<td>41.1</td>
</tr>
<tr>
<td>1957</td>
<td>523,967.30</td>
<td>218,975.66</td>
<td>41.7</td>
</tr>
<tr>
<td>1958</td>
<td>551,248.81</td>
<td>228,626.74</td>
<td>41.4</td>
</tr>
<tr>
<td>1959</td>
<td>589,766.93</td>
<td>286,091.73</td>
<td>48.5</td>
</tr>
<tr>
<td>1960</td>
<td>586,291.24</td>
<td>295,645.28</td>
<td>50.4</td>
</tr>
<tr>
<td>1961</td>
<td>546,125.87</td>
<td>227,630.26</td>
<td>41.6</td>
</tr>
<tr>
<td>1962</td>
<td>568,709.56</td>
<td>244,682.84</td>
<td>43.0</td>
</tr>
<tr>
<td>1963</td>
<td>602,706.25</td>
<td>246,429.86</td>
<td>40.8</td>
</tr>
<tr>
<td>1964</td>
<td>614,754.09</td>
<td>266,783.73</td>
<td>43.3</td>
</tr>
<tr>
<td>1965</td>
<td>646,907.15</td>
<td>256,238.00</td>
<td>39.6</td>
</tr>
<tr>
<td>1966</td>
<td>683,953.90</td>
<td>239,545.56</td>
<td>35.0</td>
</tr>
<tr>
<td>1967</td>
<td>707,066.65</td>
<td>246,263.40</td>
<td>34.8</td>
</tr>
</tbody>
</table>

Total Profit: $3,375,174.94


a Local generation reduced and power purchased from Otter Tail Power Company from 1952-1954.

b City began to secure power from the U.S. Bureau of Reclamation in late 1954.

c Rate reductions made for all classes which amounted to a 24.8% decrease for a 500 K.W.H. per month residential consumer.

d Rate reductions which amounted to a 7.3% decrease for a 500 K.W.H. per month residential consumer.

e Rate reductions of 24.4% for a residential consumer.
but also $1,920,000 has been transferred to the water-sewer, telephone, street, and general funds primarily because they were in need of funds for expansion and the electric department had money available. This is also a consideration in the sale of the utility because it raises an equitability question. For example, the transfers to the water-sewer and telephone departments are, in effect, a subsidy paid by the electric consumers to the users of these other services. Inequity arises because not all water-sewer and telephone users purchase electricity from the city. The most notable example in Brookings is South Dakota State University which receives the benefits of low water, telephone, and sewer rental rates while it purchases no electricity from the city. In this case the net result of these transfers from the electric fund is that the electric consumers of the city subsidize the university. Another effect of such transfers is that they tend to reduce the reserve funds that may be needed for future expansion of the system.

The major beneficial effect on finance due to a sale of the municipal system is the receipt by the city of the sum that is agreed upon as the sale price. In the absence of any actual bids for the system, it is assumed for this illustration that the system would sell for $2,165,509.38 which was its total assets on the day
of December 31, 1967. If the sale proceeds are invested and they earn a long-term rate of return of 4.5%, the city would receive $97,447.92 annually as interest.

Service may also change as a result of a change in ownership. In Brookings an increase in rates for steam heat would probably occur if an investor-owned utility purchased the system. The expenses of producing steam just for heating and not generation are presently greater than the revenue from the sale of the steam. The expenses of the steam heating system for 1967 are shown in Table 7.

The expenses of steam production in Table 7 are taken times 99.46% since that was the proportion of steam produced for the heating system only. The remaining 0.54% of the steam was used for generation of 47,000 K.W.H. 32 The resulting total operating expense of the heat system in 1967 was $107,109.77 while the revenue obtained from the sale of the steam was only $79,275.78 producing a loss of $27,833.99 for the year. Since the system failed to cover the operating costs without regard to depreciation or insurance by the amount of $27,833.99, revenue from the electricity consumers had to be used to compensate for the losses

32 Elmer Thon, Jr., interview on February 2, 1968.
on the heating system in the downtown area. This is, in effect, a hidden subsidy paid to the downtown users of city steam heat by the electric consumers of the city.

TABLE 7

OPERATING COSTS FOR THE STEAM HEATING SYSTEM IN BROOKINGS, SOUTH DAKOTA FOR 1967

<table>
<thead>
<tr>
<th>Expense Item</th>
<th>Generation and Heating</th>
<th>Heating System Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation Supervision</td>
<td>$4,294.39</td>
<td></td>
</tr>
<tr>
<td>Station Labor</td>
<td>25,221.44</td>
<td></td>
</tr>
<tr>
<td>Fuel Purchased</td>
<td>46,503.10</td>
<td></td>
</tr>
<tr>
<td>Fuel Inventory Depletion</td>
<td>5,796.27</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>1,896.98</td>
<td></td>
</tr>
<tr>
<td>Supplies</td>
<td>3,321.35</td>
<td></td>
</tr>
<tr>
<td>Boiler Equipment</td>
<td>12,697.11</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$99,730.64</td>
<td>$99,192.09</td>
</tr>
</tbody>
</table>

Operating Expense

Heat System Operating Expense 2,147.17
Heat System Maintenance Expense 3,270.55
Heat System Accounting and Collecting 1,899.96
Heat System Administrative and General Expense 600.00
Total $107,109.77


b Percentage that equipment was used for production of steam only for heating and not electricity generation.
Expansion

This variable may change due to a sale of a municipal system to an investor-owned system, but its changes can not be easily reflected in monetary terms. In general the expansion of the distribution system would probably be the same under either ownership. It may be, however, that municipal systems would tend to rely more on smaller generating units than would the investor-owned company.

Management

Management would undergo definite change with the sale of the municipal system, and the consequences of the change would be reflected in the other variables of the model. A sale of the electric system in Brookings would make available somewhat more time to the city commissioners for consideration of other city affairs.

Employment

This variable may also change with a sale but its effects are difficult to evaluate. The number of electric utility workers might increase slightly as well as their wages, but this depends on the actions of the purchasing utility. Many claims tend to be made by each ownership on their ability to attract industry, but there is no clear evidence to indicate which ownership is more successful in attracting industry.
Summary

The quantifiable changes due to a sale appear in the variables of rates, taxation, finance, and service. These are summarized in the partial budget presented in Table 8. The table includes only the quantifiable variables, and one should bear in mind that changes in the other variables may also be of considerable significance.

TABLE 8

1967 CHANGE IN NET INCOME OF CONSUMERS AND CITY AS A RESULT OF THE SALE OF THE BROOKINGS MUNICIPAL ELECTRIC SYSTEM

<table>
<thead>
<tr>
<th>Credits</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Added Receipts</td>
<td></td>
</tr>
<tr>
<td>Taxes Collected</td>
<td>$46,040.00</td>
</tr>
<tr>
<td>Interest on Sale Sum</td>
<td>97,447.92a</td>
</tr>
<tr>
<td>Reduced Costs</td>
<td>0.00</td>
</tr>
<tr>
<td>Total Credits</td>
<td>$143,487.92</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Debits</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Added Costs</td>
<td></td>
</tr>
<tr>
<td>Electricity for the Public</td>
<td>$221,199.84</td>
</tr>
<tr>
<td>Electricity for the City</td>
<td>29,759.78</td>
</tr>
<tr>
<td>Higher Steam Heating Rates</td>
<td>27,833.99</td>
</tr>
<tr>
<td>Reduced Receipts</td>
<td></td>
</tr>
<tr>
<td>Loss of Profits</td>
<td>246,263.40</td>
</tr>
<tr>
<td>Total Debits</td>
<td>$525,057.01</td>
</tr>
<tr>
<td>Change in Net Income</td>
<td>-$381,569.09</td>
</tr>
</tbody>
</table>

a Based on a sale price of $2,165,509.38 earning 4.5% interest.
As may be noted in Table 8, it would have cost the city and consumers of Brookings in 1967 $381,569.09, the opportunity cost, to have investor ownership of the electric utility. The data were calculated with the assumption that Northern States Power Company would be the purchasing utility since it charges the lowest rates of the investor-owned utilities in eastern South Dakota. The opportunity cost of a sale would be likely to be greater if either Northwestern Public Service Company or Otter Tail Power Company were assumed to be the purchaser. It was also assumed that the purchasing utility would not want to bear a loss on the steam heating system and would set rates high enough to at least cover the operating costs. The opportunity cost was calculated on the basis of data for 1967 and is likely to increase as electricity consumption increases in the years ahead or if Northern States Power Company increases its rates over the 1967 level.
Summary

The issue of whether a municipality should sell its electric system frequently becomes involved with the political and philosophical values of individuals. This thesis, however, is concerned only with the economic factors or variables of this issue. No general statement is made regarding the desirability of municipal ownership. Rather an attempt is made to delineate the factors or variables of the issue that should be considered by any community contemplating a sale of its electric system.

The rate charged for electric service is one major variable that should be considered. A difference in rates under either ownership can become quite significant over a period of time. Not only should the costs or savings due to rate changes be calculated for the public but also for the city for services such as street lighting and water pumping.

Taxation is another aspect that should be considered by a community contemplating the sale of its electric system. Such a sale to an investor-owned company would add the property to the tax rolls, but the
city would receive only a portion of the property tax payment by the utility. The various units of government may be compensated for the loss of tax revenue under municipal ownership through the receipt of contributions in lieu of taxes from the utility.

Finance is another factor, and it is concerned with the profits of the municipal system and with the payment received if the system is sold. If the decision is made to retain municipal ownership, then the disposition of profits must be determined. The profits of the system can be transferred to other city funds or accumulated in a reserve fund for expansion or returned to the consumer.

Expansion of the electric system need be of concern to the community only if it has decided to retain municipal ownership. Decisions must be made whether the community should expand local generation or purchase power and from which potential suppliers. Also, expansion of the distribution system must be accomplished to meet the growing demand for electricity by the consumers.

Service may also change as a result of a change in ownership. Major concerns of the consumers are the voltage of the electricity supplied and the frequency of outages. Finally, services such as central steam heating, appliance sales and repair, and equipment monitoring for the city may change as a result of a sale.
Management needs to be a concern of the community only if the community retains ownership of the electric system. Each of the three major forms of city government has strengths and weaknesses in terms of managing an electric utility. One solution may be placing the management of the system under a utility board.

Employment is the final economic factor considered. A change to investor ownership often results in higher wages for the employees of the electric system. The greatest employment effect would occur if either ownership was more successful in attracting new industry to the community. However, there is no evidence which clearly indicates which ownership, if any, is more successful in this regard.

Conclusions

Since this thesis used the Brookings Municipal Electric System as an illustration of the model, it is possible to come to the tentative conclusion that municipal ownership of the electric system is economically better than investor ownership. This conclusion can be only tentative because it assumes the market value of the system is equal to the sum of original cost less depreciation of fixed assets and of current assets. If the proposed purchasing utility would offer to pay a higher price, it may alter the conclusion.
The dollar value of changes resulting from a sale of the Brookings system are presented in Table 8. Only the quantifiable economic variables that would significantly change as a result of the sale are listed. There may be a need in other communities to consider the value of other factors. As may be noted in the table, a sale to Northern States Power Company at the price indicated would result in additional costs for the city and people of Brookings of $381,569.09 for 1967. If electricity consumption continues to increase, the dollar cost as a result of a sale is likely to increase each year.

Recommendations

No recommendations are made that apply to all communities since each community's situation must be considered separately. However, the author does have some recommendations applicable to Brookings as a result of the familiarity gained through the study of the Brookings Municipal Electric System.

The rates for steam heating should be at least high enough to cover the variable costs of the system. An increase of the magnitude necessary to accomplish this may cause a number of businessmen to change to natural gas. A study should be made to determine whether this would occur as a result of the necessary rate increase for
steam heating. If the study does indicate that it is more economical to heat with natural gas, then plans should be made for the eventual termination of central steam heating.

Another recommendation deals with the interest earnings on city funds such as those in the electric reserves. Presently the city receives $4\%$ interest on certificates of deposit in local Brookings banks when the funds could be earning $5\%$ to $6\%$ in United States Government Bonds or Notes which are also legal investments for city funds. It could mean an extra $10,000 to $20,000 annually if the city would invest its funds where it could obtain the highest return.

Transfers of funds from the electric department to other municipal enterprises such as the telephone or water and sewer departments should be terminated if the city wishes to achieve equitability of treatment of consumers of these services. Every city enterprise should set rates at least high enough to cover its costs inclusive of depreciation and interest and its in lieu of tax payments. These payments should be distributed to all units of government as would be the case if the electric system was owned by an investor-owned utility.
There should be greater publicity regarding the municipal utilities. Many people in Brookings are unfamiliar with the extent of municipal ownership and its profitability. One simple means to improve the situation is the inclusion of a monthly newsletter with the utility bill.

Finally, consideration should be given to the appointment of a utility board. This would tend to insulate the utilities from politics and permit the members to specialize in efficient management of the utilities. It would also provide continuity of management in the event that a utility commissioner fails to win re-election.
SELECTED BIBLIOGRAPHY


