THE UNIVERSITY OF WISCONSIN
MADISON

COLLEGE OF MECHANICS AND ENGINEERING

6/13/12

Mr. W. M. Smith,
Librarian.

Dear Sir:

I am handing you herewith a report of the Railroad Commission of Wisconsin, relating to the application of the LaCrosse Gas and Electric Company for authority to increase its rates. Mr. E. N. Strait, of the Railroad Commission, presents this report as a thesis in applying for the degree Electr[redacted] Engineer. Excepting the opinion and decision of the Commission, the report is the work of Mr. Strait.

The committee appointed by Dean Turneaure to pass upon the matter reports favorably.

Very truly yours,

MCB:R

Professor of Electrical Engineering.

BEFORE THE

RAILROAD COMMISSION OF WISCONSIN.

No. U.—133.

In re APPLICATION OF THE LA CROSSE GAS AND ELECTRIC CO. FOR AUTHORITY TO INCREASE ITS RATES.

WOODWARD & LEES, D. G. MACMILLAN, and P. M. GILLATT for Applicant.

J. F. DOHERTY, FRANK WINTER, J. E. HIGBEE, and F. A. HARTWELL in Opposition.

Decided November 17, 1911.

OPINION AND DECISION OF THE COMMISSION.

The applicant contended that increased valuation is justified in cases where competing utilities consolidate and thus secure cheaper operating conditions because severe losses of purely physical value inevitably occur in making such consolidations. This contention seems to rest upon the assumption that all physical construction costs and all costs of operation are proper elements upon which rates should be predicated, and that a utility is unquestionably entitled to a return for all its operating expenses and earnings on at least the reconstruction cost.

Held: While this assumption is in the main true under normal conditions, if the costs of operation are high because of unusual inefficiency of operation or if the investment is high because of equipment and work clearly unnecessary, it is apparent that equitable rates cannot be based thereon. Examination of such facts as are available concerning the annual operating revenues and expenses, additions to the property and their relation to the present cost of reproducing the physical equipment indicates that the amount upon which the applicant is now entitled to return is not very far from the cost of reproducing the properties of the combined utilities.

The applicant alleged that the rates charged for the several classes of service were not sufficient to cover the operating expenses, interest and depreciation on the investment in the gas, electric and heating properties.

Held: While the existing rate schedules are not just what they ought to be when considered from the standpoint of consumer, demand and output expenses, it was found that, when the net revenues are considered for each department as a whole, the return that the utility receives upon its investment in the several departments is not altogether unreasonable.

In the gas department the situation with respect to the net earnings has been such that an increase is not warranted at this particular time. A marked increase took place in the operating costs for the year ending June 30, 1911, but it is believed that this does not indicate a permanent change in the normal cost of operation. The facts in the case indicate that there should be a readjustment of the schedule, that it may more closely conform with the cost curve. But, because of prevailing conditions, and because the application is not so much for a readjustment of the rates as for an increase affecting a considerable portion of the sales with no corresponding decrease for the larger quantities used, it appears best to leave the gas schedule, for the present, as it now is.

The income accounts for recent years indicate that the earnings of the heating department have been ample to return a fair rate of interest and profit on the investment. Here again, the rate schedule might properly be readjusted to more closely correspond to the variable cost of service; but such a revision is demanded neither by the applicant nor by the respondent, and it appears advisable not to change the existing schedule at the present time.

In the electric department the increase prayed for in the maximum rate for commercial electric lighting service cannot be granted, but a slight increase in the ratio representing the relation of the active to connected load for business consumers should be made in order to correct, to some extent, the inequity between different classes of users of electric current. In the case of emergency or stand-by service, the cost of service is not proportional to the amount of current used, but depends much more upon the fixed expense occasioned by

preparation to meet the demand, and modifications in the schedule are required for this service. The applicant is authorized to amend its rate schedule so as to increase the minimum bill for commercial electric lighting to $1 per month, and to modify its service charge for business lighting and its charges for emergency or stand-by service for lighting and power in accordance with the rates approved by the Commission.

The petition in the above entitled matter was filed with the Commission Aug. 19, 1910, by the La Crosse Gas and Electric Company, requesting authority to substitute for the rates now in effect for gas, electric and heating service rendered by the petitioner in the city of La Crosse, other rates as outlined in the petition and constituting in certain respects increases over the rates now existing. This application was made following a period of operation of about three years under a previous provisional order of this Commission, decided Sep. 19, 1907, and affecting the petitioner's rates then in force for electric service. In the former proceedings the rates for gas and heating service were not considered and no order bearing thereon was made by this Commission. Consequently, the rates which now apply to these two classes of service are those which were in effect April 1, 1907. During this period the electric rates as authorized by the Commission have been so limited by a prior franchise agreement between the petitioner and the city of La Crosse that the maximum rate which the petitioner received both for service connection and current used was 10 cts. per kw. hr. The maximum rate thus established by the agreement appeared from such information then in possession of the Commission to result in so low a meter rate, to very short hour users, that a further restriction in this respect would be unwarrantable. By the same franchise agreement the price for gas was also limited to a maximum rate of $1 per 1,000 cu. ft. On June 20, 1908, the La Crosse Gas and Electric Co. surrendered the city franchise under which it operated and received, in lieu therefor, an indeterminate permit from the state, under the provisions of which the petitioner now operates in the city of La Crosse. The obligations of the company under the franchise having been set aside through the surrender of the same, the company again comes before the Commission, after several additional years of operating experience, with an application wherein it sets forth as follows:

"That it is a corporation organized and doing business under the laws of the state of Wisconsin, with its principal place of business in the city of La Crosse, La Crosse county, Wis., and that it is a public utility engaged in the management and operation of gas, electric and heating plants in said city.

"That, as such public utility, it is subject to the provisions of ch. 499, Laws of 1907.

"That under the provisions of sec. 1797m—105 of said ch. 499, Laws of 1907, it is unlawful for any public utility doing business within the state of Wisconsin to demand, collect, or receive a greater compensation for any service than a charge fixed by it on the lowest schedule of rates for the same service on the first day of April, 1907.

"That the electric rates on the first day of April, 1907, have been superseded by the electric rates authorized in an order of the Railroad Commission of Wisconsin, dated on Sep. 19, 1907, as follows:

"*Electric Lighting Rates.*

"The service charge on all lighting installations shall be $1.80 per year, per 16 c. p. lamp, or equivalent demand, on one-third of the connected installation, or when one-third of the connected installation is considered to be the demand.

"The meter rate for a consumption equivalent to sixty hours or less per month per each installation shall be 7½ cts. per kw. hr.

"The meter rate for a consumption equivalent to more than sixty hours per month for each installation shall be 6 cts. per kw. hr.

"The meter rate for 'patrolled service,' or for signs and other installations with fixed hours of use, shall be 5 cts. per kw. hr.

"*Electric Power Rates.*

"The service charge shall be $27 per year per horse power demanded.

"The meter rate for less than five hours per day per horse power demanded shall be 5 cts. per kw. hr.

"The meter rate for over five hours, but not exceeding eight hours per day per horse power demanded, shall be 3 cts. per kw. hr.

"The meter rate for over eight hours per day and not exceeding ten hours per day per horse power demanded shall be 2 cts. per kw. hr.

"The meter rate for over ten hours per day and not exceeding fifteen hours per day per horse power demanded shall be 1½ cts. per kw. hr.

"Special rates for over fifteen hours per day per horse power demanded and on installations of 200 horse power or over, taking service at 2,300 volts.

"*Rates for Gas.*

"For a consumption of less than 40 M cu. ft. per month, the rate will be $1 per M cu. ft.

"For a consumption of over 40 M cu. ft. and not exceeding 80 cu. ft. the rate will be 95 cts. per M cu. ft.

"For a consumption of over 80 M cu. ft. and not exceeding 120 M cu. ft. the rate will be 90 cts. per M cu. ft.

"For a consumption of over 120 M cu. ft. and not exceeding 160 M cu. ft. the rate will be 85 cts. per M cu. ft.

"For a consumption of over 160 M cu. ft. and not exceeding 200 M cu. ft. the rate will be 80 cts. per M cu. ft.

"For a consumption of over 200 M cu. ft. and not exceeding 250 M cu. ft. the rate will be 75 cts. per M cu. ft.

"For a consumption of over 250 M cu. ft. and not exceeding 300 M cu. ft. the rate will be 70 cts. per M cu. ft.

"For a consumption of over 300 M cu. ft. and not exceeding 350 M cu. ft. the rate will be 65 cts. per M cu. ft.

"*Rates for Hot Water Heating.*

"The rate for hot water heating will be 18 cts. per square foot of radiation required for heating season (Sep. 15 to May 15).

"The rate for heating range boilers of a capacity of forty gallons or less will be $15.00 for the heating season (Sep. 15 to May 15).

"*Minimum Bill.*

"A minimum bill of 50 cts. will be charged when gas to less amount shall be consumed in any one month, and 75 cts. under like conditions for electric current.

"*Penalty for Delay in Payment.*

"Unless paid within ten days following date of presentation a penalty of 10 per cent will be added to all bills.

"The petitioner applies to this Commission for authority to increase its rates for the reason that the rates, tolls and charges in effect at this time are not sufficient to cover the operating expenses, interest and depreciation on the investment in the gas, electric and heating properties, and application is hereby made for authority to increase the rates of said applicant and to put into effect the following schedule:

"*Electric Lighting Rates.*

"The service charge on all lighting installations shall be $1.80 per year, per 16 c. p. lamp, or equivalent demand on one-third

of connected installation, or when one-third of the connected installation is considered to be the demand.

"The meter rate for a consumption equivalent to sixty hours or less per month per each installation shall be 7½ cts. per kw. hr., but the sum of the service and meter charges shall not exceed an equivalent of 13 cts. per kw. hr. for the current used.

"The meter rate for a consumption equivalent to more than sixty hours per month per each installation shall be 6 cts. per kw. hr.

"The meter rate for 'patrolled service' (signs and other installations with fixed hours of use) shall be 5 cts. per kw. hr.

"The minimum bill shall be $1 net per month.

"The company will renew burned out or badly dimmed carbon filament lamps of the type originally furnished or installed by the company, when returned unbroken to its office.

"Power Rates.

"The service charge shall be $27 per year per horse power demanded.

"The meter rate for less than five hours use per day per horse power demanded shall be 5 cts. per kw. hr.

"The meter rate for over five hours, but not exceeding eight hours per day per horse power demanded shall be 3 cts. per kw. hr.

"The meter rate for over eight hours per day and not exceeding ten hours per day per horse power demanded shall be 2 cts. per kw. hr.

"The meter rate for over ten hours per day and not exceeding fifteen hours per day per horse power demanded shall be 1½ cts. per kw. hr.

"Special rates for over fifteen hours per day per horse power demanded and on installations of 200 horse power or over, taking service at 2,300 volts.

"For 'stand-by' connections for emergency service for private lighting and power plants, the above service and meter rate charges shall apply without limit, as to maximum rate per kw. hr.

"Unless paid within ten days following date of presentation, a penalty of 10 per cent will be added to all bills for electric current.

"For the re-connection of meters for the same consumer upon the same premises a charge of $1 will be made.

"Rates for Gas.

"For a consumption of less than 20 M cu. ft. per month, the rate will be $1.15 per M cu. ft.

"For a consumption of over 20 M cu. ft. per month and not exceeding 40 M cu. ft. the rate will be $1 per M cu. ft.

"For a consumption of over 40 M cu. ft. and not exceeding 80 M cu. ft. the rate will be 95 cts. per M cu. ft.

"For a consumption of over 80 M cu. ft. and not exceeding 120 M cu. ft. the rate will be 90 cts. per M cu. ft.

"For a consumption of over 120 M cu. ft. and not exceeding 160 M cu. ft. the rate will be 85 cts. per. M cu. ft.

"For a consumption of over 160 M cu. ft. and not exceeding 200 M cu. ft. the rate will be 80 cts. per M cu. ft.

"For a consumption of over 200 M cu. ft. and not exceeding 250 M cu. ft. the rate will be 75 cts. per M cu. ft.

"For a consumption of over 250 M cu. ft. and not exceeding 300 M cu. ft. the rate will be 70 cts. per M cu. ft.

"For a consumption of over 300 M cu. ft. and not exceeding 350 M cu. ft. the rate will be 65 cts. per M cu. ft.

"The minimum bill shall be 50 cts. net per month.

"Unless paid within ten days following date of presentation a penalty of 10 per cent will be added to all bills for gas.

"For the re-connection of meters for the same consumer upon the same premises a charge of $1 will be made.

"Rates for Hot Water Heating.

"The rate for hot water heating will be 20 cts. per square foot of radiation required for heating season (Sep. 1 to June 1).

"The rate for heating range boilers of a capacity of forty gallons or less will be $15 for the heating season. (Sep. 1 to June 1).

"Rules and Regulations.

"The following rules and regulations are considered a part of the contract with all parties taking gas or electric service.

"1. Application for gas or electric service must be made at the office before using either, or such user may be held liable for any unpaid bills due from a former user, and the company may require the deposit of a sum of money to secure itself against loss.

"2. There must be no obstructions to easy access to meters, and agents of the company must have free access at all reasonable times to examine or remove them.

"3. Consumers must give notice when they are about to remove, or they will be held liable for all gas or electric current that may pass through the meters until notice is given.

"4. The company will keep the service pipe, service wires, and meters in repair; fixtures beyond must be kept in order by the consumer.

"5. If a meter ceases to register, the account bill will be made by the average of another meter, or by the amount used in a corresponding period.

"6. In default of payment of a bill within fifteen days after

presentation, the flow of gas or electric current may be stopped and the meter removed until the bill is paid, and if meter is removed for non-payment of bill, a charge of $1 will be made for re-setting meter.

"7. When gas or electric current is furnished to clubs or associations, other than corporations, the individual members thereof shall be held responsible for the payment of the same.

"8. Failure to receive bill will not entitle customers to any deviations from the above rules.

"Wherefore, the said La Crosse Gas and Electric Company prays that, after due hearing and investigation, the Railroad Commission make an order granting the application herein and establishing the proposed rates of charge, or such rates of charge as it may find to be equitable in the premises."

Upon the filing of this petition due notice was given, fixing the time and place of hearing, in the matter of the application to increase rates and in the matter of the valuation of the petitioner's property for Oct. 31, 1910, at the city hall in the city of La Crosse. The following appearances were entered:

Woodward & Lees, for the La Crosse Gas and Electric Company, *D. G. MacMillan* and *P. M. Gillatt*, president and secretary, respectively, of the company, present in person; *J. F. Doherty*, city attorney, appearing in opposition to the proposed increase in rates; *Frank Winter* and *J. E. Higbee*, representing the La Crosse Board of Trade. *F. H. Hartwell*, for the Progressive League and the Trades and Labor Council.

Further hearing in the same matters was held March 2, 1911, in the city of La Crosse, at which the same appearances were made. At this time formal answer as follows was filed by those appearing in opposition to the petition of the applicant:

"The answer of the city of La Crosse, the La Crosse Board of Trade, Trades and Labor Council of La Crosse, and the North Side Progressive League of the city of La Crosse, respectfully shows:

"1. That the foregoing are duly organized bodies representing commercial and other organizations in the city of La Crosse, which said organizations contain in a large measure the consumers of the light, gas and heat in the city of La Crosse.

"2. That the present rates prevailing in the city of La Crosse for gas, electricity and heat are sufficient and more than sufficient to reimburse the La Crosse Gas and Electric Co. for its services in furnishing said utilities, and that no raise in any case should be allowed.

"3. Further answering, and by way of a counter-petition, the above named city and organizations respectfully show, that the present rates for electrical current and service are excessive and that the same should be reduced.

"Wherefore, said city and said bodies pray that no increase in rates be granted said company, and that, after due hearing and investigation, an order of the Commission be made reducing the rates of electrical current and fixing reasonable and adequate rates, and for such other order as the Commission may deem just and necessary in the premises."

REVIEW OF FORMER PROCEEDINGS.

The present application before the Commission and the objections with which it is met are closely related to the earlier application and to the Commission's order therein (2 W. R. C. R. 3). This may be easily understood, for so little time has elapsed since the former proceedings, that the petitioner still finds conditions which existed at that time, and prior thereto, to be arguments for upholding its present application for increases in its rates. In 1907 the analysis of the company's accounts for a considerable period indicated quite clearly that the revenues from the service which the petitioner furnished were insufficient to meet the operating expenses which the service occasioned. The unusual conditions to which the business had been subjected appeared, in a large measure, to be the cause for the poor financial condition in which the petitioner at that time found itself. These unusual circumstances had, in fact, affected not only the plant operation by placing in the hands of the management a complex and, to a large extent, duplicate electric system, but had also brought the rates to that low level where the combined effect resulted in continual losses in serving the public. At the time of the proceedings in 1907, it was well understood that a careful valuation of the physical property, used and useful in the business of the company, was an essential factor in a sound rate-making analysis. But such a valuation of the property had not as yet been made. With the amount of work then on hand, it was apparent that considerable time must elapse before a valuation could be undertaken and completed by our staff. Information bearing upon other essential features, however, indicated with

sufficient certainty that under the rates then existing for electric service in La Crosse, the plant could not long adequately maintain itself to meet the public needs. Rather than to longer defer those earnings to which the investors were evidently justly entitled, to the detriment of sound business conditions and good service which the company is by law required to maintain, it was deemed advisable to authorize, at least for the time being, those rates which the petitioner requested. In so doing, the Commission commented upon the situation as follows:

"From the foregoing examination of the facts in this case it appears to us that the rates submitted by the petitioner fairly meet the situation, and that they are just and reasonable. It has been determined, therefore, that these rates shall be put into effect, subject, however, to such revisions as may be found necessary when the plant in question has been appraised, or for other reasons.

"The causes which led to this application, and because of which an increase in the rates is authorized, are of such character as to bring this case within sec. 99, ch. 499, Laws of 1907, which provides for emergency rates under certain circumstances. As soon as practicable after the appraisals of the plant, which have been decided upon, have been made, it is our intention to continue this investigation. Any of the rates in the order herein, which are then found to be in any respect unreasonable, will be promptly adjusted upon a fair and equitable basis." (2 W. R. C. R. 3, 30.)

The valuation of the property has now been completed and hearings therein and in the matter of the petitioner's application for further increases affecting the gas and heating rates as well as the electric rates, have been held. The testimony and facts presented in these latter proceedings will not be distinguished herein from those presented in the former, for the order of occurrence of the facts, not the order of their presentation, is material for the proper understanding of the case.

HISTORY OF THE BUSINESS.

Although the gas, electric and central heating business in La Crosse is now conducted entirely by the La Crosse Gas and Electric Company, petitioner, this was not always so. The property which it holds and operates comprises not only plants and their equipment built by itself and its predecessors, but

other property with which it was at one time perforce in active and destructive competition. The results of the vicissitudes through which the lighting and power business had passed are not entirely evident from only an examination of the physical property now in use. A statement of the changes in business and public relationship, and of the changes in the physical property, is an important factor in the understanding of the situation now before us. In the Commission's former decision affecting the electric rates in La Crosse considerable attention was given to the history of the various plants from the beginning of the lighting by gas in 1856 to 1907 when the matter was brought before the Commission. Because of the great importance of an understanding of those circumstances, repetition at some length is made here:

"The original company organized for the supply of gas for illuminating purposes in La Crosse was the La Crosse Gas Company, which held its charter from the state in 1856. This company was reorganized in 1863 as the La Crosse Gas Light Company, and continued an independent corporate existence until its merger into the La Crosse Gas and Electric Company in November, 1901.

"The second lighting company organized in La Crosse was the La Crosse Brush Electric Light and Power Company, incorporated in October, 1881, shortly after the first patents were issued to Mr. Brush on his arc lighting system. The original purpose of the company was to furnish not only electric arc lights for street lighting, but to furnish series arc lamps distributed around in the stores for commercial lighting as well. It appears that at one time it also attempted to supply incandescent lights through the medium of a storage battery, but owing to the crudeness of the apparatus then in use, this plan was abandoned. The company did, however, succeed in obtaining a contract with the city for the lighting of the streets and was in possession of such contract at the time of its merger with the La Crosse Gas and Electric Company in 1901.

"The third lighting company to be organized in La Crosse was The Edison Light and Power Company, incorporated in February, 1887, shortly after Mr. Edison had perfected his incandescent lamp and low voltage dynamo, and the company began at once the general furnishing of electricity for light and power for the first time throughout the city. Shortly after this organization the Brush Company ceased to make any attempt at furnishing light for commercial purposes and relied exclusively upon its street lighting business for its existence.

"The above three companies were operated independently and maintained separate plants and offices until 1897, when a certain

group of capitalists, who had been largely interested in the Gas Light Company in the past, obtained a controlling interest in the stock of all of the companies, and from that time on, until the organization of the Gas and Electric Company in 1901, the three companies were managed from the same office, although retaining their individual corporate existence.

"In November, 1901, Mr. George MacMillan and his associates purchased from the holders of the capital stock of the three companies in existence, all of the property of these corporations and incorporated the La Crosse Gas and Electric Company; the capital stock of said company being $600,000, $150,000 of which being 5 per cent cumulative preferred stock, and $450,000 being common stock. The property was also at the same time bonded for $600,000. In the incorporation of this company and the issuing of the trust deed upon the same covering the bonds (which were made for twenty years) it became necessary to ask the city council of La Crosse to extend the franchise rights of the Edison Company beyond their then expiration, which was only about five years distant. The discussion of this matter produced a sentiment among a number of business men of the city for the establishing of another electric lighting company, and although the Edison Company acceded to all of the demands of the council regarding the establishment of a maximum charge of 10 cts. per kilowatt hour for current with a 2 per cent tax upon its gross receipts and other restrictions in regard to candle power, voltage, etc., the council, at the same time that it extended the franchise of the Edison Company, granted a similar franchise to the Central Electric Company, which had been organized and incorporated by some fifty citizens of La Crosse, and this company proceeded, forthwith, to the erection of a plant and began within some three months after its incorporation to furnish electric light and power quite generally throughout the business section of the city. The rates charged by the Edison Company previous to this time had been considerably higher than the maximum rate which was fixed in their renewal ordinance, and the lowering of the rates by from 33 1-3 per cent to 50 per cent, combined with the endeavor of the competing companies to secure business, very largely increased the use of electric light, but, unfortunately for the new concern, as soon as its one year contracts had expired, it found that the older company was beginning to cut rates very heavily and very soon the usual result of such a fight was reached and negotiations, which were first begun in an endeavor to make an agreement to maintain rates, ended after several months in the leasing of the plant and franchise by the Gas and Electric Company (which now owned the Edison Company) for a term of years practically coincident with the unexpired term of the franchise of the Central Company. The lease was consented to by a large majority of the capital stock holders of the Central Company upon the following basis:

"As the Central Company had invested between $70,000 and $80,000 in its plant and had outstanding at the time the lease was made $81,500 of capital stock, the rental price to be paid was fixed at $6,600 per year, which left to the stock holders of the Central Electric Company, after paying its taxes and insurance and other incidental expenses of about $1,500 a year, something between 6 and 7 per cent on their stock. The holders of a few shares of Central Electric stock, however, felt aggrieved at the making of the lease and proceeded at once to make all the trouble in their power for the Gas and Electric Company and the majority of the stockholders in the Central. The fight was waged largely in the newspapers, and after some fifteen months sentiment was worked up in certain quarters for the establishment of another competing electric company, and after some delay and a considerable amount of public discussion, the council granted another franchise, very similar in its terms to the ones previously granted to the Edison and Central companies, to the Wisconsin Light and Power Company, a corporation composed entirely of local capitalists. They proceeded without delay to erect a first class power building and install therein and throughout the city a first class and thoroughly modern electric generating and distribution system and apparatus. The general rates throughout the city, however, were already so low, owing to the low maximum rate fixed by the ordinance and the favorable contracts which the Gas and Electric Company had made with desirable consumers, that the new company found itself in much the same condition which the Central Company had been in at the end of its first year, and after some twenty months of operation, during which time the promoters had expended more than $350,000 upon their plant and distributing system, and during which time they had been operating the plant constantly at a loss, they disposed of their property to the Gas and Electric Company for exactly the amount of money which they had invested therein.

"The Gas and Electric Company in this operation assumed further liabilities in the shape of bonds upon the Wisconsin Light and Power Company's plant of $400,000, approximately $360,000 of which were represented by actual investment in the Wisconsin Company's plant, and the balance was paid to the Gas and Electric Company in cash, to apply on further additions and betterments to the Wisconsin plant, the stock of the Wisconsin Company becoming an asset of the Gas and Electric Company.

"It appears from the foregoing account that while the gas plant of La Crosse had passed from one control to another, no new or competing plant has been constructed and put in operation. In the electric lighting field, however, the situation is different. In this case four different plants seem to have been

in operation. The first of these, the Brush Electric Light and Power Co., was incorporated about 1881; the second, or the Edison Light and Power Co., was incorporated about 1887; the third, or the Central Electric Co., was organized in the fall of 1901 or soon after the two companies then in existence, but under the same control, had been taken over by the present, or by the La Crosse Gas and Electric Co. The Wisconsin Light and Power Company was organized about two or three years ago and operated for a while as an independent concern. But last spring [1907], owing to the severe competition which resulted, it gave up the struggle by selling its plant to the present company." 2 W. R. C. R. 3, 6–9.

Since the above statement was made in 1907, other important changes have taken place in the operating conditions of the electric and heating plants. In 1909 the La Crosse Water Power Company completed the construction of its water power generating plant on the Black river, near Hatfield, Wis., with transmission lines to La Crosse, Wis., and Winona, Minn. About Dec. 1, of that year, the water power company began to supply electric power to the La Crosse Gas and Electric Company, under a twenty year contract, which was entered into March 25, 1909. This contract provided, among other things, that the charge for electric current sold by the La Crosse Water Power Company to the petitioner shall be 1 ct. per kw. hr., as measured at the latter's substation in the city of La Crosse, and that the sum so paid for a period of an entire year shall not be less than $36,000, with a substation installation of 3,000 kw.; but when the La Crosse Gas and Electric Company's demands upon the services of the power company shall exceed 3,000 kw., which is the capacity of the present transformer installation, then the minimum annual charge shall be increased $12 per kw. for all demand in excess of 3,000 kw. It is agreed that the La Crosse Gas and Electric Company shall purchase from the power company all current required by the former, except so much as it shall be necessary to generate in the south side plant in supplying the central heating plant with sufficient exhaust steam during the heating season. It is further agreed that in case of failure on the part of the La Crosse Water Power Company to supply the demand, such failure not being caused by strike, riot, fire, floods, cyclones, earthquakes, or causes for which the La Crosse Gas and Electric Co. may be responsible, the latter company shall operate for its own use its own generating plants,

and the station operating costs occasioned thereby shall be borne by the former, which company shall receive nothing for current so generated during the period of interruption; but when the output of the steam plants, during the interruption, amounts to 200,000 kw. hrs., the La Crosse Gas and Electric Co. shall pay to the water power company for additional current generated by the steam plants, the usual rate of 1 ct. per kw. hr., but shall receive from the water power company the cost of operating the steam plants and, in addition, liquidated damages at the rate of $500 per month. The contract also provides that the La Crosse Gas and Electric Company shall build the necessary transmission line from the city limits to a suitable substation, which shall be provided by it in the city, that the funds from the construction of this line shall be borrowed from the water power company and that, upon the termination of the contract, title to the transmission line so built shall either revert to the water power company in full satisfaction of the loan made for the construction of the line, or shall remain in the possession of the local company upon payment to the power company of a sum equal to what may then be determined as the present value of the property in question. The annual rental which shall be paid by the power company to the gas and electric company for the use of the substation in the city of La Crosse was placed at such an amount as equals the annual interest charge on the load for the construction of the transmission line within the city. The only additional construction expense, therefore, which is borne by the La Crosse Gas and Electric Company, and which is not met and offset by the terms of the agreement, appears to be such changes as are made in the old Edison generating plant to provide substation facilities, together with the cost of such additional substation auxiliary apparatus as switchboards and instruments.

GENERAL DESCRIPTION OF OPERATING PROPERTY.

Electric Department.

The property which the petitioner has available to serve the electric business in La Crosse consists of two steam operated generating plants owned by the company, besides the water power equipment of the La Crosse Water Power Co. from which

current is purchased. The steam plant of more recent construction, known as the North Side or Turbine station, was built in 1905 by the Wisconsin Light and Power Company and is equipped in every respect with modern machinery for the production of alternating current. In this plant three 350 h. p. water-tube boilers provide steam for two turbo-generators of 400 kws. capacity each, which supply 60 cycle a. c. current at 2,300 volts. The rated capacity of this plant is, therefore, 800 kws., available in two units of equal size for light and power service. Since this property was acquired by the present owners, the lines going out from this station have been so arranged that the turbine plant may be used to assist, by means of motor-generator sets, in the operation of the South Side or Edison plant. The latter is the plant formerly operated by the Edison Electric Company and now contains direct current generating equipment for commercial light and power and street lighting, some a. c. equipment, the central heating apparatus and, if we consider the substation portion, step-down transformers owned by the La Crosse Water Power Co. The generating equipment of this plant is driven by steam engines, gas engines and electric motors. Of the first mentioned prime movers, 3 simple non-condensing engines are connected to 5 d. c. generators with a total capacity of 380 kws., one to an a. c. generator of 200 kws. capacity, and another to two d. c. arc generators. A compound non-condensing engine drives two 75 kw. a. c. generators, while another is arranged to drive either a 300 kw. d. c. generator or a 325 kw. a. c. generator, or both. The latter outfit may also be operated so that either electrical machine may drive the other as a generator when the engine is disconnected. This plant, as has been observed, is entirely non-condensing, the reason for which is, of course, the fact that exhaust steam is used for central heating purposes. Two 3 cycle gas engines are connected to two d. c. generators and are now apparently used very little. In addition there is a 100 kw. motor-generator set, which may be driven either from the a. c. or d. c. side for the generation of alternating or direct current as circumstances require.

Direct current, all of which is generated in the Edison plant, is distributed by a three wire 110—220 volt system. The area supplied by this system is much more limited than that supplied by alternating current, is confined more or less to the business section of the city and is supplied, to a large extent, through

underground conduits. Until the advent of the water power, practically all of the alternating current was generated at the turbine plant and was sent out at about 2,300 volts to distribution or line transformers, there being stepped down to 110–220 volts for lighting and small power use, and to 440 volts for larger power use. The a. c. distribution system supplies current to all parts of the city. In the down-town or business portion of what is known as the south side, underground conduits were laid by the original owners of the turbine plant, so that to a considerable extent the conduits occupied by the d. c. conductors are now paralleled by others for the a. c. Series street lights are furnished from both the a. c. and d. c. systems.

Heating Department.

The central heating plant, which is located in the Edison electric station, supplies heat to the south side business portion of the city and the adjacent residential districts, by means of a hot water system, during the contract season from Sep. 15 to May 15. The heating plant receives exhaust steam from the non-condensing engines of the electric plant and employs the same in closed heaters for heating the water required by the system. In the sense that the heating business is a separate business and because the electric plant, considered alone, is less efficient than if operated condensing and consequently more boiler capacity is required to furnish steam to the engines, a portion of the steam boiler equipment may be said to be required by the heating plant. Besides the steam equipment thus used in common with the electric plant, the heating plant is provided with several additional boilers for use in emergency, or when the strain on this system exceeds the exhaust which the electric station can supply. Several pumps render the necessary pressure to maintain the circulation of the heating system. The distribution system consists of about 11¼ miles of W. I. pipe, ranging in size from 1½″ to 8.″ The length of the distribution system, not considering the return mains, is about 5.6 miles. During the year ending June 30, 1910, there were about 226 consumers supplied and the total radiating surface heated amounted to about 190,000 square feet.

Gas Department.

In the gas department the coal gas process of manufacture is employed, using retorts consisting of four benches of sixes and

four benches of fives. The holder capacity is 167,000 cu. ft. and is divided between one small holder of 27,000 cu. ft. capacity and a larger one of 140,000 cu. ft. There are about forty miles of distribution mains consisting chiefly of sizes of four inches or less. During the year ending June 30, 1910, the sales of gas amounted to 72,387,300 cu. ft., and the number of consumers at the end of that period was 3,169.

VALUE OF PLANTS.

A tentative valuation of the physical property of the La Crosse Gas and Electric Company was made by the engineering staff of the Commission and is of date June 30, 1909. The final summary of the tentative valuation, with the engineers' division of the value among the several departments, is given below:

TABLE I.

TENTATIVE VALUATION OF THE PHYSICAL PROPERTY OF THE LA CROSSE GA AND ELECTRIC CO.

As of date June 30, 1909.

Classification.	Gas Department.		Heating Department.		Electric Department.		Total.	
	Cost of reproduction.	Present value.	Cost of reproduction.	Present value.	Cost of reproduction.	Present value.	Cost of reproduction.	Present value.
1 Land	$11,700	$11,700	$2,300	$2,300	$11,575	$11,575	$25,575	$25,575
2 Water supply-intakes	.....	.....	.....	.....	1,165	1,102	1,165	1,102
3 Holders	21,573	14,928	.....	.....	.....	.....	21,573	14,928
4 Distribution system	105,744	81,914	42,793	39,370	244,479	198,675	393,016	319,958
5 Power plant equipment	39,964	27,641	29,469	17,835	168,040	121,614	237,473	167,090
6 Buildings and miscellaneous structure	18,375	13,323	4,418	3,297	36,257	31,784	59,050	48,404
7 Office furniture and appliances	1,558	1,013	774	506	1,558	1,013	3,890	2,532
8 Tools, implements and machinery	1,812	959	569	358	2,805	1,919	5,186	3,236
9 Horses, wagons, and miscellaneous	899	697	135	81	270	162	1,304	940
Total items 1-9	$201,625	$152,175	$80,458	$63,747	$466,149	$367,844	$748,232	$583,766
10 Add 12% (see note below)	24,195	18,261	9,655	7,650	55,938	44,141	89,788	50,052
Total items 1-10	$225,820	$170,436	$90,113	$71,397	$522,087	$411,985	$838,020	$653,818
11 Stores and supplies	2,149	2,149	800	800	10,998	10,945	13,947	13,894
Total items 1-11	$227,969	$172,585	$90,913	$72,197	$533,085	$422,930	$851,967	$667,712
12 Paving	61,598	50,510	7,980	7,342	12,352	11,981	81,930	69,833
Total items 1-12	$289,567	$223,095	$98,893	$79,539	$545,437	$434,911	$933,897	$737,545
13 Non-operating property	.....	.....	.....	.....	.....	.....	29,189	14,317
Total items 1-13	$289,567	$223,095	$98,893	$79,539	$545,437	$434,911	$963,086	$751,862

NOTE:—Addition of 12% to cover cost of engineering and superintendence, interest during construction, contingencies, etc.

The valuation of the physical property as reproduced above was introduced at the hearings in this case. The property included in this valuation consists not only of that which is actually used and useful for the convenience of the public, but also a considerable additional amount that is, according to the tentative valuation, unused in the production of service which the petitioner renders. The inventories of the engineers, their unit values for materials, construction labor, etc., and the resultant total items, insofar as they relate to the reproduction costs, are unquestioned by either the petitioner or the respondent. It is, therefore, needless to enter into details of the valuation in this regard. The staff's usual methods of procedure have been followed in arriving at the final costs, and these practices have been frequently explained by the Commission. It is the intention of the staff that the valuation so determined shall be such as will be affected as little as possible by sudden fluctuations of market values. As to what items or portions of items of the valuation should be eliminated from the tentative valuation, what rate of depreciation should be allowed, and upon what items it should be based in the determination of the cost of reproduction and present value of the physical property to which the petitioner is justly entitled, the respondent and petitioner were not in so close agreement.

ALLOWANCE FOR ENGINEERING AND SUPERINTENDENCE, INTEREST DURING CONSTRUCTION, CONTINGENCIES, ETC.

There appears in the engineer's tentative valuation an allowance for engineering and superintendence, interest during construction, contingencies, etc., amounting to 12 per cent of the items 1 to 9. The fairness of the valuations upon which the allowance is based was not questioned, but the petitioner declares that the amount allowed to cover these costs should be 15 per cent, instead of 12 per cent, because of extraordinary conditions existing during the construction of the petitioner's plants. These extraordinary conditions were said to be due to financial and competitive causes as well as to the fact that, in the granting of franchises by the city council to competing companies, a time limit for beginning operation was made a condition of the grants, necessitating unusual speed of construction. These facts, it is said, resulted in the necessity of obtaining money for

such constructions from short time loans at higher rates of interest than have been allowed for this item in previous decisions of the Commission.

The costs, which are represented by the addition of 12 per cent, are such as the Commission believes will, under ordinary circumstances, be the amount needed to furnish adequate engineering and superintendence, to provide interest upon funds necessary for financing the project during the construction period, to meet such incidental construction and legal expenses as are not apparent in the physical property, and to cover omissions from a carefully prepared inventory of the same. The petitioner does not claim that all of these costs were occasioned under circumstances so unusual as to increase the costs much, if anything, above those which occur under ordinary circumstances; neither do we find that such unusual conditions have existed in the case of these properties. But it is the petitioner's claim that an additional 3 per cent, above that already allowed, should be added, chiefly because during competition money to finance competing concerns, later acquired by the petitioner, was secured upon short time loans bearing more than the usual rate of interest.

Expense, in the form of interest entailed by the use of funds during construction of a plant, is as legitimate a part of the physical value of the property as the costs of the raw materials and labor which enter into the construction, and the same principles that underlie the determination of unit costs and rates in one case apply also in the other. In arriving at the reproduction value of the property, as distinguished from the original construction cost, we do not seek to discover the actual prices paid by the original investors; to do so might lead to values either much above or much below what it would cost to reproduce the property. Unless, therefore, we intend to find what was actually paid by the investors for material and labor in arriving at the reproduction cost, it appears unnecessary to determine, for this purpose, the actual amounts paid for interest upon money used during construction.

The amount to cover interest during construction, as included in the tentative valuation by the allowance of 12 per cent, is not a definite rate per dollar of the total investment, but represents the entire interest cost for the several portions of the

investment necessary at different stages of the construction. This allowance does not contemplate the use of the entire investment sum for the entire period of construction, as such use appears, as a rule, uncalled for. If a shorter period than usual is involved in constructing the plant, then the increased cost due to higher interest rates on short time loans may be expected to be offset by the shorter period during which it is necessary for the loans to run. That each factor does offset the other to some extent is a conclusion that may be reached by principles which surround the situations; that each did not, in this case, entirely do so, has not been shown by the petitioner nor have we been able to so determine by other means. The only grounds for allowing anything additional, in this respect, would be that the haste with which the competing plants were built may have arisen from need of the service which they were to furnish. That such need existed does not seem probable, and as a matter of fact the petitioner states that such was not the case.

For the purpose of arriving at the cost of reproducing the petitioner's physical property, it does not appear that anything above what the engineers have determined need be added for items included in their allowance of 12 per cent.

PAVING.

The cost of paving for all departments has been included by the engineers in the tentative valuation at $81,930 for cost of reproduction, and for this cost less depreciation, at $69,833. These figures represent the cost that would result had the pavement, which today overlies the underground distribution systems, been cut through and replaced in the construction of distribution lines. Such items as these are, without question, costs to be considered in determining the reproduction costs and should properly be included in a valuation representing the cost of reproducing the plants today. That such sums should be retained in determining the physical value upon which returns should be allowed, is not so clear; this is a matter which is governed largely by conditions that have been met in constructing the plants. If sums, which have been arrived at as expenditures that would be necessary in order to cut through and replace pavement over the underground sys-

tems, have actually been disbursed for these purposes by the company or the former owners, it is difficult to consider such expenditures in any other light than construction costs; for the additional expense due to paving, when actually met, constitutes necessary investments that the company must make in order to place its services at the disposal of the public, regardless of whether the usefulness of the various mains and conduits so laid beneath pavement does or does not exceed the usefulness of others similarly located but in streets that are not paved. When, however, such sums as are said to represent the cost of paving, have not actually been paid out by the utility for this purpose but have been borne only by the community itself, to consider such values as investments upon which consumers must return to the company interest charges, appears unreasonable as such procedure, under these conditions, places a penalty upon civic improvements due to economic and social conditions.

It is the claim of the respondent that the cost of paving should be excluded from the valuation for rate-making purposes and this contention is based upon the claim that the underground construction was undertaken and completed in advance of the paving. Under the conditions that existed in La Crosse it is difficult to conceive that all of the gas and heating mains and conduits for electrical conductors were laid prior to the original paving. It is the testimony of the petitioner that this was not the case, but that paving costs have actually been met by the owners of the plants involved in this case. To what extent this is true, is not evident from the testimony. It appears that the petitioner may have been under the misapprehension that the appearance of the item for paving in the tentative valuation indicated the Commission's conclusion that this is a legitimate item in the value of the property. While the item for paving has its place in the actual reproduction cost, it does not necessarily follow that the item should also be included in the value upon which the petitioner is entitled to receive returns. Investigation subsequent to the hearings was therefore necessary, on the part of the staff, to determine what expense, if any, had been borne by the company for paving. It was found that much of the gas mains was laid by the owners before the organization of the present concern. The records of the early period are not available and some uncertainty surrounds the construction during that time. More complete data are available for the electric and heating systems. From a careful examination of the available accounts of the company, the records of the city and the history of paving and construction of underground distribution systems, we conclude that the paving costs, as they appear in the engineers' valuation, were not entirely borne by the company, but that the amount paid out for paving, as nearly as can now be determined, was about $33,054, divided among the several departments as follows:

DISTRIBUTION OF PAVING.

	Cost.	
	New.	Existing.
Gas	$18,249	$15,614
Heating	1,453	1,337
Electric	13,352	12,951
Total	$33,054	$29,902

Although the petitioner does not claim that it has actually expended for paving an amount as large as the tentative valuation shows for this item, it does contend that the value of paving is a proper part of the physical valuation, for the reason that, insofar as the electric department is concerned, the installation of the underground conduits and cables not only did not in any way extend the services of the company, it having already made an investment in overhead pole lines and was actually serving the entire territory at the time of the passage of the underground ordinance, but is also caused the abandonment, tearing down an practically entire loss of this overhead construction, the cost of which in this case was considerably more than the addition allowed for paving by the engineers in their valuation; that this fact was true in the case of the original property of the gas and electric company; and that, in the case of the Wisconsin Light and Power Company, the pavements were actually taken up and replaced. It is also the claim of the petitioner that the cost to the company for paving is twice the actual expense, as the estimated cost must be deposited with the city before the pavement is cut through and the expense of relaying is thereafter borne by the company itself. This fact,

it is claimed, would greatly add to the reconstruction cost and greatly increases the necessary provision for renewals and extensions, both of electric conduits and gas mains.

The argument of the petitioner, that losses sustained through abandonment of equipment before the end of its usefulness on account of city ordinance requiring other construction to serve the same purposes should receive consideration in determining the investment upon which the owners are entitled to returns, seems worthy of attention. The argument is, however, entirely out of place when it attempts to attach to the physical value of the property the losses of abandoned equipment by adding other costs, such as for paving, for which the company has not paid.

Since the hearings of this case, the petitioner, the La Crosse Gas and Electric Company, submitted an argument wherein it declares that, while for rate-making purposes it might not be proper to include in the valuation all of the cost of pavement overlying conduits and mains in figuring the return on the investment, as all of the pavement was not actually taken up and replaced by the company, for the purpose of figuring depreciation reserve the cost of all such paving should be either included in the depreciable value or the rate of depreciation increased, as the company will eventually be compelled to bear this expense in future renewals of gas mains under existing pavement. The return for depreciation, to which a utility is justly entitled, is usually the sum which set aside annually will be sufficient, at the end of the useful life of the equipment in which investment has been made, to replace the property in question. But when investment has not been made by the company and the cost is borne entirely by the community, it is not clear that these expenditures by the public represent anything for the replacement of which the company is entitled to return. As the original paving by the company is customarily considered construction expense and is added to the company's investment in physical property, in like manner anticipated paving, if it is not in reality a renewal of pavement formerly laid and paid for by the utility, may perhaps be considered new construction cost more properly than renewal cost, even when undertaken in connection with the renewal of other materials. Viewed in this light, both interest and depreciation on paving should be deferred until such time as the paving in question shall, for the first time, be taken up and replaced by the company. It would seem that, in the long run, the effect upon the return to the utility would be little different were depreciation allowed on all paving reported as overlying mains and conduits, or were it deferred for that portion of the cost in which the company has not participated, until such time as the utility is required to bear the cost. In the former instance the cost of paving for which the utility has not paid, but for which it is allowed return for renewal, should never become a part of the capital cost entitled to return for interest; in the latter instance, the utility should be entitled to return both for interest and depreciation as soon as the expense has been incurred.

Return for depreciation constitutes a re-accumulation of the investment to be returned to the investors and to be deducted from cost of plant or to be reinvested as a renewal of parts to be replaced according to circumstances of the business. Considered in this manner, allowance for depreciation appears to be unnecessary for such items as paving in which investment has not been made. Under a practice that considers as a capital expenditure the cost of paving done by the utility, it is to be supposed that, for rate-making purposes, such future expenditures will find their way into future valuations with little regard as to whether the cost thereof is borne by capital supplied by the investors or by a pre-investment depreciation reserve. For these reasons it is believed that the cost of only the paving actually paid for by the utility need be included in the value upon which returns for interest and depreciation are to be determined.

NON-OPERATING PROPERTY.

Property amounting in value to $29,189 cost of reproduction, and $14,317 present value, has been determined by the engineers in their tentative valuation as not used nor useful in the operation of the gas, electric and heating plants. The property which these values cover, is shown in the following table:

TABLE II.

NON-OPERATING PROPERTY

OF THE LA CROSSE GAS AND ELECTRIC CO.

	Cost of reproduction.	Condition, per cent.	Present value.
1—34″x14′ fire tube boilers	$355	20	$79
42″x20′ Lancaster boiler	210	20	52
10″x10″ Ideal H. S. engine No. 705	805	25	235
4—13′x19″x15″ McIntosh Seymour engines	10,000	25	2,863
1— 5″x 6″ vertical engine	100	20	20
56″x 8′ Excelsior open heater	480	20	119
1—12″ Baragwanath barometric condenser	262	20	58
12x20x18 Cooper horz. jct. condenser	2,791	50	1,461
Foundation for above	40	50	20
8x20x12 Allis condenser	1,589	64	1,044
Foundation for above	22	64	14
Belting, engine parts, etc	197	25	57
Scrap	36	100	36
2—Edison 50 kw. generators	3,700	15	810
Old 4′x14½′ steel tank	108	.....	35
1—24″ ammonia concentrator	1,750	100	1,750
Conc. ammonia tank	278	85	238
Misc. machinery in stock	200	25	50
Misc. fittings	306	50	153
Old condenser and scrubber	824	.....	130
Tar piping	23	72	17
Yard connections	119	93	112
Foundation ammonia concentrator	64	100	64
Foundations for old condenser and scrubber	30	.....	.....
Subtotal	$24,289	.....	$9,417
1.83 acres land on south side La Crosse river and west side of C. B. & Q. R. R.	4,900	.....	4,900
Total	$29,189	.....	$14,317

No evidence was furnished that shows that anything included in table II is required for the operation of the applicant's plants. While it is claimed by the applicant that certain items, especially the ammonia concentrator, may be used in the near future, we do not find that the present business nor its immediate prospective growth would in any way be materially affected by the disposal of this equipment. If the ammonia concentrators are retained by the company and are operated at some future time, then the saving or profit that may be derived therefrom should offset the interest, depreciation and operating costs of the same. When such non-operating property is held by a utility, the only warrant for its retention is expected savings and additional net income. This being the case, an addition to the physical value of the plant for non-operating property can be justified for rate-making purposes only when the

income expected therefrom is added to the actual income or is deducted from the operating expenses. Therefore, whether or not this non-operating equipment may profitably be kept on hand, is a matter which need not be passed upon for the purposes of this case; the relative economy of holding non-operating property as against purchases at such time as the equipment in question may be needed, is a matter concerning which the management must use its own judgment. The simplest equitable method would be, it seems, not to consider these investments in the determination of rates.

The respondent, through its witness, claims that certain equipment of the electrical department, which has been included in the tentative valuation as operating property, is in reality unneeded in conducting the petitioner's business and that the value thereof should be deducted from the total physical value in arriving at the investment upon which returns should be based. The conclusions of the respondent, in this matter, appear to rest upon certain observations of the plant operation during the peak load of Dec. 21 and 22, 1910, and upon respondent's estimate of what equipment is needed to meet the demands when generation is either by water or steam power. The respondent finds that the maximum generating capacity required for alternating current is 830 kws., and for direct current 460 kws. To meet these demands when water power is available, respondent believes that no a. c. generating equipment and only 400 kw. d. c. generating or converting capacity are needed in the petitioner's plants. When the operation is entirely by steam power, the respondent believes that an a. c. generating capacity of 850 kws. and d. c. generating capacity of 450 kws. is all that is required. From this assumption the respondent finds that the following equipment, in addition to that which is clearly noted by the tentative valuation as non-operating, can be dispensed with in the operation of the electric plants:

	Cost new.	Present value.
1—13x15 Taylor engine	$1,075	$318
Foundation	191	48
1—20x36x36 McIntosh Seymour engine	12,473	6,788
Foundation	1,032	516
2—Westinghouse gas engines	2,041	2,232
Foundation	206	152
2—40 kw. Edison d. c. generators	3,200	684
Foundations	60	9
2—50 kw. Edison d. c. generators	3,700	810
Foundations	84	13
Total	$24,962	$11,570

From the foregoing table it will be seen that the cost of reproduction and the present value of the equipment which is, according to the respondent, unneeded in operating the electric plant, are $24,962 and $11,570, respectively, as determined from the engineers' valuation. The expense of placing the remaining equipment in position to satisfactorily meet the demands of the electric plants is said to be about $562.

Concerning facts relating to the demands upon the electric system, considerable difference of testimony exists, due, it seems, to differences in observations and in final computations. Examination of the station records for 1909 and 1910 shows that the December peak was each year much above 1,290 kws., the peak demand determined by the respondent's witness and for which witness would allow a generating capacity of 1,250 kws. From these station records we find that the maximum load, exclusive of current for moonlight arcs, was 1,561 kws. on Dec. 20, 1909, and 1,593 kws. on Dec. 20, 1910, indicating quite conclusively that sufficient steam generating capacity has not been allowed in the estimate of the respondent's witness. The conclusion of the witness, that a considerable part of the steam generating capacity should be discontinued, seems to rest also upon the assumption that no reserve capacity is required aside from the incoming high tension transmission line. While it may be possible that in the future the source of purchased power may be so reliable that no reserve above the plant demand will be needed for generating purposes at La Crosse, the extended interruptions of the water power supply, since it was first used in La Crosse, seem to be conclusive evidence that complete reliance

cannot be placed thereon, that long periods prevail during which the steam generating plants must operate as though no other power were available, and that, therefore, for the present at least and until such time as the continuity of water power is reliably established, sufficient capacity must be maintained by the applicant to supply continuous service under such circumstances as might ordinarily be foreseen in the absence of any other source of power.

Since the date of the tentative valuation, further investigation of the electric operating conditions has been made by the engineers of the Commission, and while it is found that all of the equipment that the respondent's witness claims is unneeded in the operation of the plant can not, with due regard to continuous service, be removed from operation, the 20″x36″x36″ McIntosh Seymour twin compound engine installed in the Edison plant is reported to be safely dispensable.

Inspection of the station log sheets for 1909 and 1910 shows that during the early part of the former year this large engine was used for a very few hours only and during those hours of operation several of the other engines then in use were for the time being shut down. It is found from the log sheets that since the early part of 1909, this large McIntosh Seymour engine has not been used, although, during several months of this time, the company received no current from the water power company and the a. c. load was carried entirely by the steam turbine plant and by the a. c. generator at the Edison station. The maximum demand supplied by the water power company appears to have been 1,500 kws. on Dec. 22, 1910, and this demand was used for less than 30 minutes. At other times, during November and December, the maximum demand supplied by the water power company for less than 30 minutes varies from 1,000 to 1,450 kws., including, as we understand it, the power supplied to the street railway company. On Nov. 1, 1910, when the log sheet shows that no current was supplied by the water power company, the maximum demand supplied by the steam turbine station was 1,220 kws. at 5:30 p. m. The log sheet for the Edison station shows that during the time the maximum demand was supplied on that day from the turbine station, the 200 kw. a. c. generator at the Edison plant was not used. From these facts it appears that the maximum a. c. de-

mand can be carried for the short time necessary by the steam turbine station and the 200 kw. a. c. generator at the Edison station without the aid of the McIntosh Seymour engine, especially if the gas engines, driving d. c. generators, are used to relieve the load on the motor-generator set. With respect to the steam boiler capacity of the Edison plant, the engineers find that the steam boiler equipment consists of four 180 h. p. Scotch marine boilers, three 72″x18′ fire tube boilers, and one small Scotch marine boiler, which supply steam to the circulating pumps of the heating system as well as to all the steam engines. Since the engines are non-condensing and consequently the steam consumption per horse power is large, the boiler capacity in this plant does not appear large enough to operate the McIntosh Seymour engine during the time of maximum demand on the other engines and when the demand is heavy on the heating steam, which would be the time when the McIntosh engine would be needed if needed at all. For these reasons the value of the McIntosh Seymour engine, its foundation and belt, have been deducted from the engineer's value of operating property and have been added to non-operating property, item 13 of the valuation.

When item 12 of the tentative valuation, table I, has been so changed as to represent only the cost of paving actually disturbed by the company and item 13 has been increased by deducting from the value of the operating property the value of the McIntosh Seymour engine shown to be now unneeded, we find that the total cost of reproducing the applicant's plants, June 30, 1909, was $913,496, and the present value, that date, $711,899, which values have been distributed among the several classes of service as shown in table III:

TABLE III.

REVISED VALUATION OF THE PHYSICAL PROPERTY OF THE LA CROSSE GAS & ELECTRIC CO.

June 30, 1909.

Classification.	Gas.		Heating.		Electric.						Total.	
					Street Lighting		Com'l Lighting		Power			
	New.	Existing	New.	Existing	New.	Existing	New.	Existing	New.	Existing	New.	Existing
1. Land	$11,700	$11,700	$2,300	$2,300	$1,007	$1,007	$6,551	$6,551	$4,017	$4,017	$25,575	$25,575
2. Water supply—intakes	.....	.....	.....	.....	101	96	660	624	404	382	1,165	1,102
3. Holders	21,573	14,928	.....	.....	.....	.....	.....	.....	.....	.....	21,573	14,928
4. Distribution system	105,744	81,914	42,793	38,370	23,131	13,481	137,236	114,320	84,112	70,374	393,016	319,959
5. Power plant equipment	30,964	27,641	29,469	17,885	13,430	9,923	87,374	64,556	53,566	39,577	223,803	159,532
6. Buildings and miscellaneous structures	18,375	13,323	4,281	3,194	3,154	2,765	20,522	17,990	12,581	11,029	58,913	48,301
7. Office furniture and appliances	1,558	1,013	774	506	135	88	882	573	541	352	3,890	2,532
8. Tools, implements and machinery	1,812	959	569	358	244	157	1,588	1,086	973	666	5,186	3,236
9. Horses, wagons and miscellaneous	889	697	135	81	23	14	153	92	94	56	1,304	940
Total items 1-9	$201,625	$152,175	$80,321	$63,644	$41,225	$27,541	$254,966	$206,292	$156,288	$126,453	$734,425	$576,105
10. Add 12% (see note below)	24,195	18,261	9,638	7,637	4,947	3,305	30,596	24,755	18,755	15,174	88,131	69,132
Total items 1-10	$225,820	$170,436	$89,959	$71,281	$46,172	$30,846	$285,562	$231,047	$175,043	$141,627	$822,556	$645,237
11. Stores and supplies	2,149	2,149	800	800	1,078	1,073	6,632	6,600	3,288	3,272	13,947	13,894
Total items 1-11	$227,969	$172,585	$90,759	$72,081	$47,250	$31,919	$292,194	$237,647	$178,331	$144,899	$836,503	$659,131
12. Paving	18,249	15,614	1,453	1,337	.....	.....	8,278	8,030	5,074	4,921	33,054	29,902
Total items 1-12	$246,218	$188,199	$92,212	73,418	$47,250	$31,919	$300,472	$245,677	$183,405	$149,820	$869,557	$689,033
13. Non-operating property	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	43,939	22,866
Total items 1-13	$246,218	$188,199	$92,212	$73,418	$47,250	$31,919	$300,472	$245,677	$183,405	$149,820	$913,496	$711,899

NOTE.—Addition of 12% to cover cost of engineering and superintendence, interest during construction, contingencies, etc.

Since the date of the tentative valuation June 30, 1909, various additions were made to the physical property for the purpose of extending the business and for making available the services from the water power company. According to the petitioner's report to the Commission, these additions amounted to about $18,739 for the year ending June 30, 1910. When proper corrections are made to the tentative valuation for these changes, the cost of reproducing the physical property Nov. 30, 1909, is about $921,337, and its present value $719,740, distributed as shown below:

TABLE IV.

VALUE OF PHYSICAL PROPERTY.

November 30, 1909.

Classification.	Cost new.			Present value.		
	June 30, 1909.	Additions for 5 mo's.	Nov. 30, 1909.	June 30, 1909.	Additions for 5 mo's.	Nov. 30, 1909.
Gas	$246,218	$4,397	$250,615	$188,199	$4,397	$192,596
Heating	92,212	.....	92,212	73,418	.....	73,418
Electric:						
Street lighting	47,250	136	47,386	31,919	136	32,055
Commercial lighting	300,472	2,201	302,673	245,677	2,201	247,878
Power	183,405	1,107	184,512	149,820	1,107	150,927
Total above	$869,557	$7,841	$877,398	$689,033	$7,841	$696,874
Non-operating	43,939	.....	43,939	22,866	.....	22,866
Total physical property	$913,496	$7,841	$921,337	$711,899	$7,841	$719,740

The cost of reproducing the physical property and the present value of the same are not the only matters to be considered in a determination of equitable rates. Consideration must also be given to the original cost of the plants, income accounts, financial statements as represented by the balance sheets, and other factors which, when taken as a whole, together with circumstances attending them, throw much light upon the situation.

ORIGINAL COST OF PLANT.

The original cost of the plants or cost to the investors should correspond to the book value of the plants if the accounts of the concern have been accurately and properly kept, and will be made up of the investment in the plants when first constructed, plus additions or extensions since that time. It is sometimes

the case, however, that the records bearing on these matters offer little explanation of the original transactions. To a considerable degree this seems to be the situation in this case. The present organization of the La Crosse gas, electric and heating utilities is one that was secured through purchase of properties that had already been in operation for a considerable time, and it has added to these properties not only extensions made by itself, but other constructions built by other concerns for competitive purposes. While the costs to present holders may usually be determined with some degree of accuracy from what records there may be of the transactions involved, these costs do not always represent investments in purely physical property, but frequently include also other real or fancied values for which the purchaser may be willing to pay in order to secure the business. Distinction should therefore be borne in mind between these costs to the present owners and the investments actually expended for constructions.

The petitioner finds that it has invested in gas, electric and heating enterprises from the date of its organization to Nov. 30, 1909, $1,290,530, exclusive of current assets of $79,159. The former amount comprises $547,000, said to be the sum paid in 1901 to the former owners of the plants, and $743,530, which is carried on the books as additions since that time. The petitioner divides the original cost of $547,000 into $285,000 for gas, and $262,000 for electric and heating plants; the additions, amounting to $743,530, into $113,963 for gas, and $629,567 for electric and heating. The difference between the petitioner's statement of $1,290,530, as the physical investment, and the total reproduction cost, determined as $963,086 in the tentative valuation, or $327,444, may be due to various causes. It is the claim of the petitioner that it is due, in part, to the fact that 12 per cent is too small an allowance for engineering, superintendence and interest during construction, contingencies, etc., and, in part, to the fact that the appraisal does not account for losses that have taken place through physical consolidation of plants on account of mergers of competing companies. That certain losses may occur in reorganization and combining competing utilities seems reasonable to suppose. The natural result of bringing together duplicate and competing properties is, in most cases, to cause this apparent value to approach more nearly the cost of a plant normally needed to meet the service

which theretofor was over-supplied. Even in the ordinary operation of public utilities losses occur through rearrangement, consolidation or combining of stations and abandonment of apparatus before the end of its natural life. Such losses may be said to be ordinarily met by that portion of the depreciation reserve which is set aside for obsolescence and inadequacy, aside from ordinary wear and tear from use. These losses may also be said to be offset, at least in part, by gains from greater efficiency of operation. They are, in fact, conditions over which the utility may have more or less control and in the case of which it may choose between losses due to inefficient operation and additional cost of remodeling and rearranging equipment. When such changes do not result in reduction in operating expenses or greater safety operation, it is likely that such changes are not entirely warrantable. But in the case of the consolidation of plants formerly competing, the losses sustained thereby may not be and probably are not entirely due to inadequacy and obsolescence occasioned by the advent of superior apparatus and methods. They often appear to be due rather to a duplication of investment, resulting in unneeded equipment and increased operating costs. This is a circumstance over which the concern may have little or no control, and such changes must ordinarily be carried out as are required to bring the operating costs back to an amount that is more nearly normal.

The applicant has advanced the idea through its written argument that were the values of public utilities fixed solely on the reconstruction value of the plants as they exist at the present day, it would be a mistake for any company to consolidate the physical properties of its various plants in the endeavor to secure better and cheaper operating conditions, because in making such consolidations, severe losses of purely physical value inevitably occur. The applicant declares that this loss of physical value must be justified by decreased operating costs and did the owners of the property neglect or refuse to make such consolidation, as would be the tendency if the principle were established that only physical property should enter into valuations for rate-making purposes, the eventual rate which the public would have to pay for service would be still further increased by reason of increased operating and maintenance costs of a considerable amount of inefficient apparatus. Without attempting, at this time, to enter into a discussion of what elements properly enter into the value upon which rates should be based, it seems advisable to consider for a moment the applicant's argument in this connection, for its unquestioned acceptance may lead to untenable conclusions. The company's contention appears to rest upon the assumption that all physical construction costs and all costs of operation are proper elements upon which rates should be predicated, and that a utility is unquestionably entitled to a return for all its operating expenses and earnings on at least the reconstruction cost. That this is in the main true under normal conditions, will not be denied, but if the costs of operation are high because of unusual inefficiency of operation, or if the investment is high because of equipment and work clearly unnecessary, it is apparent that equitable rates can not be based thereon, and when excessive operating expense and duplication of equipment go hand in hand, it does not seem necessary, as the applicant contends, to justify reduction in the physical value by reduction in operating expenses. Under these circumstances, a reduction of either or of both is in itself justified and is the demand of normal conditions. High operating expenses may be the result of poor management, so also may be high investment. Again, they may be due to unusual circumstances during some period of the plant's life. These facts must, when possible, be taken into consideration in determining what a utility is entitled to receive for conducting the business.

In the case of the several utilities operating in La Crosse, certain losses may have occurred in the value of the physical property of these concerns through combining them for operation as one system. Such vanished value of the physical property can usually be determined with considerable certainty when complete information is available concerning the original construction costs of the component elements of the utilities that are combined and the conditions under which the constructions and consolidations took place. When this information is as meager as it is in the present instance, it is difficult to say with any considerable certainty that the apparent difference between the original investment costs and the reproduction cost is due to one reason or another. The considerations paid by the present owners to gain control of the business may have covered other assets than those of a purely physical nature, in which case the difference in question cannot be entirely accounted for

by disappearance of physical value. The cost of renewals, or a large part thereof, that may in reality be a replacement of waste due to ordinary wear and tear of operation and therefore properly an operating charge resulting in no way in extension of business or improvement above the original cost of operation, may appear in the construction account as additions to property, thereby swelling the plant investment.

During the period from 1901 to 1909 the La Crosse Gas and Electric Company maintained no depreciation reserve. As the various parts which make up the physical structure of plants of these kinds do not all have the same useful lives, various renewals are necessary from time to time. These renewals may sometimes be deferred beyond the period when replacement is customarily made, but, since much of the equipment in possession of the La Crosse Gas and Electric Company in 1901 had already seen considerable service, it is to be supposed that renewal of depreciable equipment began soon thereafter. To what accounts of the company the costs of such replacements were charged has not been shown. It is possible that part of this expense found its way into the operating expenses as maintenance of equipment; it is very likely that much of it was charged to construction costs of the plant extensions. The purchase of competing equipment might, furthermore, to a considerable extent be properly charged to depreciation, since the acquisition of apparatus in this way made it possible to substitute newer equipment for decrepit parts, the renewal of which necessity would soon require.

While the applicant maintains that no reserve has ever been established for depreciation and that, in fact, there is very little of the original equipment that is not now in operating condition, it admits through its testimony that the practice has been followed of including in the maintenance accounts allowances to cover at least a portion of depreciation or renewals. Analysis has been made of the maintenance costs for the petitioner's several plants since the year 1901, and comparison has been made between these costs and those for other class A utilities in Wisconsin. In the case of electric plants, we find that the average maintenance per kw. hr. generated is 0.24 cts., minimum 0.10 cts., maximum 0.63 cts., and median 0.19 cts. This cost varies for the petitioner's electric and heating plant, between 0.39 cts. per kw. hr. in 1902 and 0.13 cts. in 1910. From the analysis of operating

expenses of class A gas plants, the average cost of maintenance was found to be 4.20 cts. per thousand cubic feet sold, minimum 1.58 cts., maximum 10.43 cts., and median 5.44 cts., while for the La Crosse plant maintenance costs from 1902 to 1910 varied from a minimum of 1.10 cts. per thousand cubic feet sold in 1905 to a maximum of 5.88 cts. in 1910.

These figures, as a whole, seem to indicate that the expenses charged to maintenance accounts are about normal, as compared with other class A plants, but do not show how much is properly a maintenance and how much a renewal charge, since the practice has been quite general among such utilities of charging both costs to one account. The amount which should now be set aside for depreciation for the combined electric and heating plant appears to be somewhat less than 4 per cent and, for the gas plant, about 2 per cent. A deduction of about 2 per cent for the electric and heating plant and 1 per cent for the gas plant from the reported operating expenses or extension costs seems to be fair for the purpose of determining what sums were expended since 1902 for new construction and operating expenses, exclusive of depreciation or replacement.

The following table shows the cost of the physical property each year from 1901 to 1909, as determined from what the applicant states were the original cost and the annual additions or extensions:

TABLE V.

PLANT COST.

FROM COMPANY'S STATEMENT OF ORIGINAL COST AND ANNUAL ADDITIONS.

YEAR ENDING NOV. 30.	GAS PLANT.		ELECTRIC AND HEATING PLANT.	
	Cost of Plant.	Additions.	Cost of Plant.	Additions.
1901	$285,000		$262,000	
1902		$44,767		$50,989
1903		11,806		14,705
1904		8,532		16,160
1905		14,070		24,816
1906		7,162		28,226
1907		6,787		54,498
1908		6,607		85,857
1909		14,233		6,665
Paid for W. L. & P. Co. prop.				347,651
Total	$285,000	$113,964	$262,000	$629,567
Additions	113,964		629,567	
Total cost	$398,964		$891,567	

According to the foregoing table, the amount added to the plant account because of the acquisition of the property of the Wisconsin Light and Power Company is $347,651. From such separation as can be made of the engineers' valuation, it appears that the value of this equipment is in the neighborhood of $242,000 and that the remainder is therefore represented by extravagant expenditure during construction, an excessive bond issue for the purpose of acquiring the business, or both. Under the circumstances it is difficult to find that much, if any, of the physical value has disappeared unless accompanied as well by disappearance of physical property. For these reasons, and because the values upon which the computations are based include only the physical value of operating and non-operating property as found by the engineers and as accepted at the hearings of the case, the value of the addition of the Wisconsin Light & Power Company's property will be placed at $242,000. The value of additions to the electric and heating plant reported by the company as $85,857 for the year ending Nov. 30, 1908, will be placed at $80,857, since the former sum includes a loss of $5,000 on account of releasing a former official of the company from the obligations of his contract.

In order to ascertain what was the probable cost of reproducing the physical property in 1901, we have determined first the cost of reproducing the plants Nov. 30, 1909, and have thereafter deducted what appear to be proper allowances for additions to the property during the preceding years. Starting with the engineer's revised cost of reconstruction of operating property, as of June 30, 1909, table III, we have added thereto $35,445 for non-operating electric and heating equipment, $8,494 for non-operating gas equipment, $3,454 for 5/12 of the company's reported electric extensions, year 1909–1910, and $4,397 for 5/12 of the reported gas extensions for the same period. The resulting totals of $662,238 and $259,109 are the amounts employed in this computation as the values of the electric and heating plants and of the gas plant, respectively, Nov. 30, 1909.

Table VI shows the value of the physical property on Nov. 30 of each year. These values were arrived at in the following manner: The sums reported by the company as extensions of plant, and corrected as shown in column 3 of table VI, were considered to be both additions and renewal of property. From

these amounts there were deducted estimates of the cost of replacements, column 4, which are based upon the plant value. The remainder, shown in column 5, represents the estimate of actual expenditure for additions during the year. Deducting this from the cost of the plant at the end of the year, there remains the value of the plant at the beginning of the year as shown by column 6.

TABLE VI.

COST OF PHYSICAL PROPERTY EACH YEAR 1909–1901.

STARTING WITH COST OF REPRODUCING OPERATING AND NON-OPERATING PROPERTY.

Nov. 30, 1909.

1	2	3	4	5	6
Year ending Nov. 30.	Cost end of year.	Additions and renewals.	Replacements estimated.	Additions col. 3. minus col. 4.	Cost beginning of year.
ELECTRIC AND HEATING PLANT.					
1909	$662,238	$6,615	$13,245	—$6,579	$668,817
1908	668,817	80,857	13,376	67,481	601,336
1907	601,336	296,498	12,047	284,451	316,885
1906	316,885	28,226	6,338	21,888	294,997
1905	294,997	24,817	5,900	18,917	276,080
1904	276,080	16,160	5,522	10,638	265,442
1903	265,442	14,705	5,309	9,396	256,046
1902	256,046	50,989	5,121	45,868	210,178
1901	210,178				
GAS PLANT.					
1909	$259,109	$14,233	$2,591	$11,642	$247,467
1908	247,467	6,606	2,475	4,131	243,336
1907	243,336	6,787	2,433	4,354	238,982
1906	238,982	7,162	2,390	4,772	234,210
1905	234,210	14,070	2,342	11,728	222,482
1904	222,482	8,532	2,225	6,307	216,175
1903	216,175	11,806	2,162	9,644	206,531
1902	206,531	44,767	2,065	42,702	163,829
1901	163,829				

By this process the value of the electric and heating properties Nov. 30, 1901, is found to be $210,178, and of the gas property $163,829. While these values are considerably below the amounts said to have been paid to acquire the property in 1901, they do not appear to be lower than the physical investment ordinarily required for plants of their size. In the case of the gas plant, the total value of operating and non-operating property was, in 1909, $259,109, while the amount claimed as the cost in 1901 is $285,000. Since 1901 the sales of the plant have almost trebled, indicating quite clearly that the physical invest-

ment at that time must have been much below the cost of reproduction today.

The following table shows the cost of several class A gas plants per million cubic feet sold and of the La Crosse gas plant in 1902, as based on these units:

Cities.	Cost of gas plant per million cu. ft. sold.		Cost of La Crosse gas plant in 1902, on basis of foregoing units.	
	New.	Existing.	New.	Existing.
Madison	$3,110	$2,680	$80,000	$68,000
Racine	5,454	4,980	135,000	125,000
Kenosha	2,980	2,660	76,000	68,000
Kenosha (deducting purchased gas)	4 220	3,770	108.000	96,000
La Crosse, June 30, '09	3,760	2.880	96,000	73,500

From these comparative investment costs, it appears safe to conclude that $165,000, which is approximately the amount found by computing back from the cost of reproduction in 1909, is an ample allowance for the physical cost of the gas plant in 1901.

Concerning just what was the capacity of the electric plant when it was acquired by the applicant in 1901, we have no definite record. In 1906 the capacity of the direct current portion of the Edison plant was 900 kws. It is quite certain that the capacity of the plant in 1901 was no greater than this; it is even probable that it was no more than 800 kws., since records show that some of the direct current equipment was installed in 1902. Up to that time no underground lines had been laid and the station operated non-condensing, furnishing its exhaust steam to the heating plant. It seems, therefore, that $200 per kw. would have been ample for the cost of reproduction and $160 for the present value at that time. These figures are substantiated by the values of the Beloit and Madison plants as well as by the reported investments in electrical plants in other states:

	Capacity of electric plant in kws.	Cost new per kw.	Present value per kw.
Beloit	1,400	$182	$160
Madison	3,200	200	163

The following table shows the probable value of the La Crosse electric plant in 1901, based on 900 and 800 kw. plant capacity.

Capacity of plant.	Cost new.	Existing value.
900 kw	$180,000	$144,000
800 kw	160,000	128,000

The cost of reproducing the heating plant, Nov. 30, 1909, was $92,212, and the present value, that date, was $73,418. Since the acquisition of the property in 1901, the company reports additions to the heating plant amounting to approximately $40,000. It is very likely that this amount includes replacements as well as new construction. It appears, therefore, that the cost of reproducing the heating plant, in 1901, was about $60,000, and the existing value, at that time, about $50,000. When these values are added to the foregoing estimates for the electric plant, it appears that the total physical value of both heating and electric properties in 1901, was not far from the value determined by table VI.

COST OF THE PLANTS AND THEIR BUSINESS.

The applicant has set up no claim as to just what value it is entitled to return upon, but declares that this amount is considerably larger than that fixed as the cost of reproducing the physical property today. By methods purporting to follow those pursued by the Commission in other cases, the applicant finds that the value of the gas plant, Dec. 1, 1909, was about $528,000, and of the electric and heating plant $1,121,000, or about $1,649,000 for both. These values are said to represent the cost to the present owners of the physical property, plus the cost of building up the business, when the latter cost is considered to be the difference between the actual net earnings since 1901 and reasonable return upon the investment. It is stated that, for this purpose, annual interest at 8 per cent and depreciation at 4 per cent were allowed for the electric plant and 7½ per cent and 2½ per cent, respectively, for the gas plant. The details of the applicant's computations were not submitted

to the Commission and we are, therefore, not entirely certain as to just what has entered into the final figure of $1,649,000. It seems quite certain, however, that whatever has been expended for renewals has entered into the applicant's calculations twice, for, as we have already pointed out, no depreciation reserve was kept by the company and renewals must, therefore, have entered into either the cost of operation or of construction, appearing thereby, as well as by an allowance for depreciation, in the applicant's computation of earning value. If, in such a determination, an annual allowance for depreciation is deducted from net income, in years when the income is ample to return both interest and depreciation, or is added to the investment in years when the net income is insufficient for this purpose, actual expenditures for the up-keep of equipment, above ordinary maintenance, must be deducted from operating expenses or new construction costs, as the cost of such renewals is taken care of by the allowance for depreciation. In the absence of accurate knowledge as to what the costs of replacements were, it seems proper, for the purpose of estimate, to deduct from operating expenses and construction costs a fair annual allowance for renewals. Column 5 of table VI shows the resulting estimate of actual annual additions to the property when we deduct estimated renewals entirely from the reported extensions. This process leads, as is shown in table VI, to $210,178 as the physical value of the electric and heating plant and $163,829 as the value of the gas plant in 1901.

The following table shows the earning value of the properties, Nov. 30 of each year, starting with what was determined in table VI to be the value of the plants in 1901:

TABLE VII.

COST OF PLANT AND BUSINESS.

Nov. 30, 1901—Nov. 30, 1909.

Interest compiled at six per cent.

1	2	3	4	5	6	7	8
Year.	Cost of plant and business beginning of year Dec. 1.	Additions during year.	Annual depr. of average physical value for year.	Interest at 6% on column 2 plus ½ of column 3.	Total of column 2, 3, 4, and 5.	Net earnings from operation.	Cost of plant and business Nov. 30, column 6 minus column 7.
			ELECTRIC AND HEATING PLANT.				
1901							$210,000
1901–1902	$210,000	$45,868	$8,386	$13,976	$278,230	$22,671	255,559
1902–1903	255,559	9,396	9,380	15,615	289,950	16,376	273,574
1903–1904	273,574	10,638	9,740	16,734	310,686	41,174	269,442
1904–1905	269,442	18,917	10,272	16,734	315,365	39,373	275,992
1905–1906	275,992	21,888	11,007	17,216	326,103	11,272	314,831
1906–1907	314,831	284,451	16,521	27,423	643,226	22,781	620,445
1907–1908	620,445	67,481	22,856	39,251	750,033	52,221	697,812
1908–1909	697,812	—6,579	23,952	41,671	756,856	64,207	692,649
			GAS PLANT.				
1901							$165,000
1901–1902	$165,000	$42,702	$3,727	$11,181	$222,610	$14,510	208,100
1902–1903	208,100	9,644	4,205	12,775	234,724	22,987	211,737
1903–1904	211,737	6,307	4,478	12,893	235,415	28,597	206,818
1904–1905	206,818	11,728	4,658	12,761	235,965	26,359	209,606
1905–1906	209,606	4,772	4,823	12,720	231,921	27,123	204,795
1906–1907	204,795	4,354	4,915	12,427	226,491	22,514	204,977
1907–1908	204,977	4,131	4,999	12,422	226,529	20,125	206,404
1908–1909	206,404	11,642	5,157	12,734	235,937	24,971	210,966

In order to determine what losses, if any, the applicant has sustained in conducting its business, interest has been computed in the foregoing table at 6 per cent upon the applicant's investment instead of at 8 per cent for the electric and 7.5 per cent for the gas plant. Were the latter figures employed, manifestly a higher earning value would have resulted. To just what rate of return the investors in these properties were entitled during the unprofitable years of the concern's existence, is not easily decided in view of the peculiar circumstances which existed at that time; but it seems quite clear that, when a "going value" or "earning value" determination is made, the capitalization of unearned sums for depreciation and interest and the unquestioning acceptance of the operating expense, amount to an elimination of the risks of the business and that, therefore, little, if anything, need be allowed for profit above a bare interest rate

on the investment during those years. The calculations upon which table VII are based lead to an earning value of the electric and heating business of $692,649, an amount about $30,400 in excess of the cost of reproducing the operating and non-operating property. The earning value found for the gas plant is $210,966, which is about $48,100 less than the cost of reproduction. The combined earning value is $903,615, being less than the cost of reproducing all of the applicant's plants and equipment by about $17,700, but exceeding the existing value by about $183,875.

Table VIII shows what earning values result when interest is placed at 7 per cent:

TABLE VIII.

COST OF PLANT AND BUSINESS.

Nov. 30, 1901—Nov. 30, 1909.

Interest computed at seven per cent.

1	2	3	4	5	6	7	8
Year.	Cost of plant and business beginning of year Dec. 1.	Additions during year.	Annual deprec. of average physical value for year.	Interest at 7 per cent on column 2 plus ½ of column 3.	Total of columns 2, 3, 4, and 5.	Net earnings from operation.	Cost of plant and business Nov. 30. Column 6, minus column 7.
ELECTRIC AND HEATING PLANT.							
1901							$210,000
1901–1902	$210,000	$45,868	$3,386	$16,305	$280,559	$22,671	257,888
1902–1903	257,888	9,396	9,380	18,381	295,045	16,376	278,669
1903–1904	278,669	10,638	9,740	19,879	318,926	41,174	277,752
1904–1905	277,752	18,917	10,272	20,105	327,046	39,373	287,673
1905–1906	287,673	21,888	11,007	20,903	341,471	11,272	330,199
1906–1907	330,199	284,451	16,521	33,070	664,241	22,781	641,460
1907–1908	641,460	67,481	22,856	47,264	779,061	52,221	726,840
1908–1909	726,840	—6,579	23,952	50,648	794,861	64,207	730,654
GAS PLANT.							
1901							$165,000
1901–1902	$165,000	$12,702	$3,727	$13,045	$224,474	$14,510	209,964
1902–1903	209,964	9,644	4,205	15,035	238,848	22,987	215,861
1903–1904	215,861	6,307	4,478	15,331	241,977	28,597	213,380
1904–1905	213,380	11,728	4,658	15,347	245,113	26,359	218,754
1905–1906	218,754	4,772	4,823	15,480	243,829	27,126	216,703
1906–1907	216,703	4,354	4,915	15,322	241,294	22,514	218,780
1907–1908	218,780	4,131	4,999	15,459	243,369	20,125	223,244
1908–1909	223,244	11,642	5,157	16,035	256,078	24,971	231,107

From the foregoing table it will be seen that the cost of the electric and heating plant and its business amounted to $730,654 when interest is allowed at 7 per cent. This amount exceeds the cost of reproducing operating and non-operating property by about $68,400. The value determined for the gas plant is $231,107, which falls short of the cost of reproduction by about $28,000.

It is quite certain that, insofar as the physical property is concerned, investment therein was greater at various periods than the business of the company required and that, since the value of such property has been included in the company's reported extensions, the resultant earning value is swollen not only by the amount of the investment in such property, but also by interest and depreciation thereon. Precisely how much should now be deducted from the computed earning value on this account it is impossible to determine, because of uncertainty as to when the various superfluous elements were added. The value of the non-operating or unneeded property, June 30, 1909, has been determined by the engineers to be $43,939 cost to reproduce, which, it seems, is the least that should now be subtracted from the earning values of tables VII and VIII.

Reference has already been made to competition that existed for several years in the electrical business by reason of which, it is believed, various losses were sustained by the La Crosse Gas and Electric Company, as well as by its competitors, in their endeavor to get and maintain business. Such cost of promoting business, if not returned to the investors through earnings during years of competition, may perhaps be said to represent costs which should now be charged to the business investment. Competition of this kind, accompanied by low rates and energetic solicitation of business, may and frequently does produce a high saturation of the use of current beyond that which would ordinarily result from the normal growth of the business, resulting in later years, when competition has relaxed, in a condition under which attempts to promote further use may be practically futile and the cost of such attempted promotion may be an additional loss to the plant. Such efforts, under these conditions, may be more or less dispensed with in years following competition resulting, ordinarily, in decreasing, for a time, the operating expenses in which new business costs are usually included. If this expense is neither considered as a cost of building up the business, nor is distributed as an operating expense over subsequent years, then, it seems, expenditures of capital may have been made for which there will be no return.

That business getting expenses should receive consideration in rate making, either as investments in the business or as additional operating expenses during following years when business promotion is uncalled for, with the view of returning whatever had been legitimately and normally expended, seems to be quite clear. While the latter method of providing for this expense, when unusually large, may appear to be in theory the more correct one, because if these costs are permanently charged to investment in the business, return would be had thereon in all future years regardless of the fact that natural conditions of business growth may again exist and the plant may be again bearing, in the operating expenses, its annual portion of the cost of getting new business; the effect of capitalizing the losses for the present will be about the same as to properly distribute them to later years. On the other hand, it is quite evident that costs of greatly developing the business during periods of competition, the costs of creating a desire for the commodity above the natural tendency in the community, may be and probably are, even when distributed over the years when the expense of promotion of business is low, much in excess of the costs that would ordinarily be borne for this purpose.

In former decisions of this Commission it has been pointed out that, during the promotion period which follows the first construction of the plant, the ordinary losses due to building up the business from an unprofitable plant with few or no consumers to a profitable one, are often sums for which the investors are entitled to return later on. But what consideration should be given to losses that may be the result of competition occuring some years after the first construction, is a matter that is not so clear. One view that may be held is, that during periods when no public regulation of utilities exists and there is little restriction as to the number of concerns that may enter the same field, the risks of the business are greater and utilities are therefore entitled to larger returns during the profitable years than would otherwise be the case. Investors, it may be held, knowing, as they should, that these conditions prevail, take upon themselves, when entering the field, the risks of the business as well as the privilege of enjoying substantial profits from the undertaking. Another view may be advanced, holding that since a municipality, during former years, could choose

between allowing one or more utilities of the same kind to supply the community, it took upon itself the responsibility of increased costs and losses due to competition when duplicate franchises were granted.

Whichever position is more representative of the truth in these respects, it seems quite certain that municipalities are to some degree responsible for the increased cost of service and losses in conducting the business when they permit duplicate investment to serve an already adequately supplied public. Just how the public in such instances expects to permanently profit by such action is difficult to say. As a rule, its action is believed to be due to misapprehension as to the cost of service, the amount of profit utilities usually secure, and the rights to which they are entitled. High rates, poor service or other local circumstances have sometimes formed the grounds upon which attack or retaliation has been made by the public by permitting competition to take place, and to what extent it was justified therein, in the absence of other protective methods, depends largely upon the importance of these offenses and whether the utility was responsible for them.

Whatever may have once been the situation in this respect in La Crosse, and whatever may have been the losses to the applicant during the years of competition, it now appears that the earnings from the business as a whole have been, during the several years of operation, sufficient or nearly so to reimburse the company for these unusual losses, and it is further found that, even when it is assumed that adequate sums have been set aside as a reserve for depreciation and full allowance is made for superfluous holdings of the company, the evidence points to the fact that the investment in the business of the La Crosse Gas and Electric Company is not very far from the cost of reproducing the combined utilities.

BALANCE SHEETS.

The balance sheets of the La Crosse Gas and Electric Company are reproduced in the following table for the period from Nov. 30, 1902, to June 30, 1910:

TABLE IX.

COMPARATIVE BALANCE SHEETS.

La Crosse Gas & Electric Company 1902 to 1910.

	Nov. 30, 1902.	Nov. 30, 1903.	Nov. 30, 1904.	Nov. 30, 1905.	Nov. 30, 1906.	Nov. 30, 1907.	Nov. 30, 1908.	Nov. 30, 1909.	June 30, 1909.	June 30, 1910.
ASSETS.										
Plant account	$1,075,000 00	$1,170,756 59	$1,197,268 40	$1,221,960 11	$1,260,846 32	$1,645,541 12	$1,705,418 03	$1,797,882 45	$1,786,910 25	$1,809,042 80
Construction during current year	95,756 59	26,541 81	24,691 71	38,886 21	35,388 63	61,285 00	92,463 83	20,898 78	24,742 55	18,738 77
Treasury stock	25,000 00	25,000 00	25,000 00	25,000 00						
Storehouse and supply accounts	10,165 15	18,937 07	22,427 27	31,216 43	39,269 34	34,525 81	22,052 07	23,979 04	24,645 66	25,845 40
Accounts receivable	16,064 50	15,816 90	25,255 59	30,491 36	27,108 70	40,817 19	38,877 47	38,012 57	25,874 95	36,498 46
Expenses paid in advance	696 70	798 12	856 39	889 95	824 27	1,818 61	709 04	1,364 92	3,169 85	9,365 46
Cash	414 32	599 22	359 57	402 50	1,648 22	1,861 94	18,668 66	14,402 66	19,765 77	33,067 90
Stocks, other companies		150 00	1,150 00	1,150 00	1,600 00	15,579 48	1,400 00	1,400 00	1,400 00	1,400 00
Total assets	$1,223,097 26	$1,258,529 71	$1,297,007 93	$1,350,396 56	$1,366,685 48	$1,801,429 15	$1,879,590 59	$1,897,940 72	$1,886,508 33	$1,933,943 79
LIABILITIES.										
Capital stock	$600,000 00	$600,000 00	$600,000 00	$600,000 00	$600,000 00	$600,000 00	$650,000 00	$650,000 00	$650,000 00	$650,000 00
Bonds	550,000 00	550,000 00	550,000 00	600,000 00	600,000 00	1,000,000 00	1,000,000 00	1,000,000 00	1,000,000 00	1,000,000 00
Bills payable	19,900 00	52,916 05	54,400 00	18,400 00	44,968 52	73,524 08	92,322 11	80,994 48	88,994 48	85,455 15
Accounts payable	35,597 69	26,301 38	23,075 09	25,739 01	32,886 36	54,223 14	47,742 11	50,778 00	51,797 46	51,900 82
Interest accrued	1,875 00	2,645 83	2,864 82	2,450 00	2,373 25	5,541 66	19,566 66	18,716 62	22,637 47	23,077 47
Labor unpaid		1,732 26	2,298 71	2,640 10	3,044 10	3,636 19	3,518 61	3,451 77	3,198 96	2,973 49
Consumers' deposits	131 01	101 01	154 01	177 51	136 51	166 51	159 01	182 71	151 01	235 21
Unpaid taxes	5,202 16	6,198 36	7,652 64	7,250 06	6,949 46	7,258 13	7,179 84			
Accrued dividends on ptd. stock				25,000 00	7,500 00	15,000 00	23,750 00	33,749 96	29,583 31	39,583 27
Sinking fund					12,000 00	24,000 00	36,000 00	42,000 00	37,625 00	48,125 00
Depreciation reserve										50,000 00
Profit and loss account first of year		9,570 16	18,636 82	32,162 66	49,259 88	12,192 31	*12,344 16	*11,297 40	*17,715 92	*62,629 12
Profit for the year	10,391 40	9,068 66	38,525 84	36,587 22	7,867 34	*172 87	11,698 51	29,364 58	20,236 55	45,222 50
Total liabilities	$1,223,097 26	$1,258,529 71	$1,297,007 93	$1,350,396 56	$1,366,685 48	$1,801,429 15	$1,879,590 59	$1,897,940 72	$1,886,508 33	$1,933,943 79

*Credits

While the applicant claims that the amount paid to secure the properties in 1901 was $547,000, the plant account reported for Nov. 30, 1901, amounted to $1,075,000. During the following year, the balance sheet shows that there was added for new construction about $95,757, making a total book value of the plant of $1,170,757. The applicant's liabilities, at that time, show that there had been issued bonds to the extent of $550,000, and capital stock of $600,000. During the subsequent period to June 30, 1910, the book value of the plant increased to $1,827,782, the bonds outstanding to $1,000,000 and the capital stock to $650,000. The cost of reproducing both operating and non-operating property June 30, 1910, was about $930,000, being exceeded by the outstanding bonds by about $70,000, and by the book value by about $900,000.

WORKING CAPITAL.

It is the claim of the applicant that there is needed for conducting its business as a whole, a sum of at least $50,000 for working capital. While admitting that stores and supplies properly represent a portion of the necessary working capital, the applicant was unable to state at the hearing how much was needed in the way of actual cash, but was of the opinion that $12,700 is considerably less than the amount required for the electric business. By deductions from the Commission's opinion in the case of the *State Journal et al. v. Madison Gas & El. Co.* 1910, 4 W. R. C. R. 501, the respondent finds that $12,700 is ample for working capital above stores and supplies in the case of the electric department, and $7,000 in the case of the gas department. No statement was made as to what amount should be devoted to the heating business.

Reference to the balance sheets of the company shows that what are known as the quick assets and liabilities of the concern were, at various periods, as follows:

	Nov. 30, 1908.	June 30, 1909.	Nov. 30, 1909.	June 30, 1910.
CURRENT ASSETS				
Supply accounts	$22,052	$24,646	$23,979	$25,843
Accounts receivable	38,877	25,874	38,013	36,495
Cash	18,669	19,766	14,403	33,067
Total	$79,598	$70,286	$76,395	$95,405
CURRENT LIABILITIES				
Accounts payable	$47,742	$51,797	$50,779	$51,900
Labor unpaid	3,519	3,199	3,451	2,973
Total	$51,261	$54,996	$54,230	$54,873
Difference	$28,337	$15,290	$22,165	$40,532

From the foregoing it is seen that, on the several dates considered, the difference between the quick assets and liabilities was lowest June 30, 1909, when it amounted to $15,290, and highest June 30, 1910, when it was $40,532.

The following table shows what 15 per cent and 10 per cent of the gross earnings of the combined utilities amount to for the various periods:

	15 per cent of gross earnings.	10 per cent of gross earnings.
Year ending Nov. 30, 1908	$42,400 00	$28,300 00
Year ending June 30, 1909	43,200 00	28,800 00
Year ending Nov. 30, 1909	43,600 00	29,100 00
Year ending June 30, 1910	48,500 00	32,300 00

Without entering into a discussion of working capital, which subject was considered in some detail in the case of *State Journal et al. v. Madison Gas & El. Co.* 1910, *supra,* we conclude that the amount of working capital that the applicant declares is necessary for its business is excessive by about $15,000 and that $35,000, including stores and supplies, appears to be ample under present conditions. While the difference between this figure and the engineers' value of stores and supplies leaves as cash capital a sum that appears to be relatively a large proportion of the working capital, an increase in the value of stores and supplies by a reasonable amount for residual stock of the gas business decreases this difference materially.

INCOME ACCOUNT.

The following table X shows the detailed income account of the La Crosse Gas and Electric Company for the years ending June 30, 1909 and 1910. It should be borne in mind that, during the former year, electric generation was entirely by steam equipment of the La Crosse Gas and Electric Company, and that, during the latter year, power was purchased from the La Crosse Water Power Company for a portion of the time, from early in December 1909 to the end of the fiscal year.

TABLE X.

DETAILED INCOME ACCOUNT.

LA CROSSE GAS AND ELECTRIC COMPANY.

CLASSIFICATION.	Year ending June 30, 1909.	Year ending June 30, 1910.
REVENUES		
Gas Department		
Commercial earnings	$64,877 70	$72,975 75
Power earnings (gas)	867 78	
Residuals		
Coke made	28,669 04	31,815 81
Tar made	2,027 00	2,279 00
Miscellaneous earnings	326 41	27 42
Total gas earnings	$96,767 93	$107,097 98
Electric Department		
Commercial lighting earnings	$94,820 52	$106,114 15
Municipal contract lighting earnings	17,447 89	17,899 38
Commercial power earnings	42,586 18	57,282 28
Commercial heating earnings	33,757 72	34,447 70
Miscellaneous earnings	2,979 67	513 66
Rents from pole contracts		109 02
Total electric earnings	$191,591 97	$216,366 19
Total revenues	$288,359 90	$323,464 17
OPERATING EXPENSES		
Gas Works		
Operation		
Superintendence	$622 00	$840 00
Retort house labor	5,780 01	6,881 19
Purifying labor	616 44	480 41
Miscellaneous labor	341 63	833 82
Operating labor (steam)	485 00	828 50
Coal carbonized	37,852 57	39,248 53
Bench fuel	7,319 91	8,048 89
Fuel for steam	2,240 93	2,945 00
Water for steam	42 23	80 76
Miscellaneous steam supplies and expenses	45 82	13 71
Retort house supplies and expenses	227 49	315 04
Miscellaneous coal gas supplies and expenses	1,887 05	887 85
Coal gas purification supplies and expenses	475 29	52 98
Total operation	$57,336 37	$61,456 68

TABLE X, Continued.

DETAILED INCOME ACCOUNT.

LA CROSSE GAS AND ELECTRIC COMPANY.

CLASSIFICATION.	Year ending June 30, 1909.	Year ending June 30, 1910.
OPERATING EXPENSES—Continued.		
Maintenance		
Maintenance of boilers and boiler auxiliary equipment	$35 39	$69 98
Maintenance of coal and ash handling equipment	18 58	49 33
Maintenance of benches	40 17	2,399 98
Maintenance of coal gas apparatus	339 40	318 01
Maintenance of coal gas buildings, fixtures, and grounds	60 48	913 67
Total maintenance	$493 02	$3,750 92
Total gas works expense	$57,829 39	$65,207 60
Electric Plant, Edison		
Operation		
Superintendence	$800 00	$1,150 00
Engine labor	1,760 00	1,245 37
Electrical labor	860 00	1,218 46
Miscellaneous labor	110 61	54 25
Operating labor (steam boilers)	2,306 34	2,518 74
Operating labor (heating boilers)	1,001 19	775 76
Fuel for steam	36,276 98	28,873 22
Fuel for heating system	4,618 67	6,414 21
Water for steam	351 52	291 86
Miscellaneous steam supplies and expenses	279 72	414 29
Lubricants	820 23	540 61
Miscellaneous power plant supplies and expenses	2,049 01	1,033 56
Miscellaneous heating plant supplies and expenses	33 97	77 23
Power gas purchased	568 84	
Total operation	$51,737 98	$44,607 56
Maintenance		
Maintenance of steam engines and turbines	$552 96	$408 19
Maintenance of power plant auxiliary equipment	284 51	18 38
Maintenance of generators	262 92	132 99
Maintenance of boilers and boiler auxiliary equipment	589 31	410 12
Maintenance of heating plant equipment	749 91	581 45
Maintenance of coal and ash handling equipment	34 53	
Maintenance of power plant buildings, fixtures and grounds	42 65	80 64
Total maintenance	$2,516 79	$1,581 77
Total Edison plant	$54,254 77	$46,189 33
Electric Plant, Turbine		
Operation		
Superintendence	$625 00	$350 00
Engine labor	1,949 97	804 04
Electrical labor	905 75	761 67
Miscellaneous labor		280 37
Operating labor (steam)	2,446 54	1,232 15
Fuel for steam	29,566 54	18,788 01
Water for steam	533 06	1,028 64
Miscellaneous steam supplies and expenses	41 49	5 04
Lubricants	324 52	151 29
Miscellaneous power plant supplies and expenses	1,492 47	1,295 06
Total operation	$37,885 34	$24,696 27

TABLE X, Continued.

DETAILED INCOME ACCOUNT.

LA CROSSE GAS AND ELECTRIC COMPANY.

CLASSIFICATION.	Year ending June 30, 1909.	Year ending June 30, 1910.
OPERATING EXPENSES—Continued.		
Maintenance		
Maintenance of steam engines and turbines	$813 42	$30 40
Maintenance of power plant auxiliary equipment	536 61	510 59
Maintenance of generators		37 88
Maintenance of boilers and boiler auxiliary equipment	346 99	214 73
Maintenance of coal and ash handling equipment		
Maintenance of power plant buildings, fixtures, and grounds	19 41	85 95
Maintenance of boiler plant buildings, fixtures and grounds		
Total maintenance	$1,716 43	$879 55
Total turbine plant	$39,601 77	$25,575 82
Commercial Power Purchased		$23,962 45
Gas Distribution		
Operation		
Labor removing and resetting meters	$183 54	$411 39
Street department labor	6 99	60 23
Meter and fittings department labor	222 10	427 79
Customers' premises expenses	898 70	924 88
Gas arc lights supplies and expenses	307 82	91 43
Street department supplies and expenses	8 35	8 04
Meter and fittings department supplies and expenses	29 81	19 02
Total operation	$1,657 31	$1,942 78
Maintenance		
Maintenance of mains	$160 74	$298 44
Maintenance of services		7 82
Maintenance of meters	360 14	198 62
Total maintenance	$520 88	$504 88
Total gas distribution	$2,178 19	$2,447 66
Electric Distribution		
Operation		
Labor removing and resetting meters	$170 66	$431 31
Labor inspecting, removing and resetting transformers	173 04	325 87
Labor inspecting and testing meters	1,467 95	1,240 55
Miscellaneous distributing system operating labor	637 00	768 45
Miscellaneous distributing system supplies and expenses	970 71	609 81
Miscellaneous heating system supplies and expenses	109 29	13 79
Miscellaneous heating system operating labor	632 70	140 80
Meter department supplies and expense	140 05	132 58
Total operation	$4,301 40	$3,663 16
Maintenance		
Maintenance of overhead distribution system	$2,200 51	$1,623 98
Maintenance of underground distribution system	639 68	52 03
Maintenance of transformers	52 61	51 39
Maintenance of meters	566 07	720 06
Maintenance of heating distribution system	223 23	169 86
Total maintenance	$3,682 10	$2,617 32
Total electric distribution	$7,983 50	$6,280 48

TABLE X, Continued.
DETAILED INCOME ACCOUNT.
LA CROSSE GAS AND ELECTRIC COMPANY.

CLASSIFICATION.	Year ending June 30, 1909.	Year ending June 30, 1910.
OPERATING EXPENSES—Concluded.		
Consumption		
Operation		
Trimming and inspecting commercial lamps	$120 05	$64 73
Commercial lamp supplies	210 36	38 15
Commercial incandescent lamp renewals	2,766 08	2,564 94
Miscellaneous consumption supplies and expenses	35 00	55 00
Customers' premises expenses	1,024 24	534 34
Trimming and inspecting municipal contract lamps	1,068 65	550 65
Municipal contract lamp supplies	292 10	393 49
Miscellaneous municipal contract lighting supplies and expenses	1 88	
Nernst lamp supplies and expenses	849 19	209 32
Labor inspecting Nernst lamps	208 51	58 18
Total operation	$6,576 06	$4,468 80
Maintenance		
Maintenance of commercial lamps	$3 00	
Maintenance of municipal contract lamps	4 16	66 61
Total maintenance	$7 16	$66 61
Total consumption	$6,583 22	$4,535 41
Commercial		
Collection salaries and commissions	$561 83	$1,000 19
Reading meters and delivering bills	1,236 88	1,461 12
Collection supplies and expenses	16 00	95 35
Promotion of business, salaries and commissions	184 70	112 14
Promotion of business, supplies and expenses	1,631 59	1,404 70
Total commercial	$3,631 10	$4,073 50
General		
Operation		
Salaries of general officers	$6,000 00	$6,875 00
Salaries of general office clerks	5,310 00	6,046 25
General office rent	720 00	720 00
Miscellaneous general office supplies and expenses	2,398 28	1,859 77
Law expense—general	297 00	394 92
Miscellaneous general expense	145 00	809 47
Railroad Commission expense	25 00	12 80
Total operation	$14,895 28	$16,718 21
Maintenance		
Maintenance of general office equipment	$137 50	
Total maintenance	$137 50	
Total general	$15,032 78	$16,718 21
Undistributed		
Injuries and damages	$5 00	$125 00
Insurance	2,114 47	2,114 09
Stationery and printing	1,033 06	722 79
Operation and stores department	517 37	1,176 20
Operation of utility equipment	76 80	255 12
Maintenance of utility equipment	96 55	94 10
Total undistributed	$3,843 25	$4,487 30
Depreciation reserve charge		$50,000 00
Taxes	$14,906 90	$17,250 94
Total operating expenses	$205,844 87	$266,728 70
Gross income	$82,515 03	$56,735 47

TABLE X, Concluded.
DETAILED INCOME ACCOUNT.
LA CROSSE GAS AND ELECTRIC COMPANY.

CLASSIFICATION.	Year ending June 30, 1909.	Year ending June 30, 1910.
DEDUCTIONS FROM GROSS INCOME		
Dividends accrued	$10,208 31	$9,999 96
Interest on funded debt	52,750 00	52,750 00
Interest on floating debt	9,528 48	6,971 26
Contractual sinking fund requirements	6,625 00	10,500 00
Miscellaneous deductions		1,791 71
Total deductions	$79,111 79	$82,012 93
Net income or deficit	$3,403 24	$25,277 46*

*Deficit.

Attention should be called to the fact that no depreciation reserve charge was made for the year ending June 30, 1909, but a provision of $50,000 was made for this purpose during the following year. While, exclusive of the depreciation reserve charge, the operating expenses of the combined utilities increased about $11,000 from the first to the second period, the total revenues increased about $35,000 during the same time.

APPORTIONMENT OF OPERATING EXPENSES.

The Commission's practice of dividing the operating expenses between the different departments of the business according to the respective responsibility of the several classes of service has been followed in the succeeding tables. Because of the intimate relation of the heating to the electric business, such service has at first been treated as one group and gas service as another. Tables XI and XII show the apportionment of revenues and operating expenses between the gas, and the electric and heating business for the years ending June 30, 1909 and 1910.

TABLE XI.

APPORTIONMENT OF REVENUES AND OPERATING EXPENSES BETWEEN GAS DEPARTMENT AND ELECTRIC AND HEATING DEPARTMENT.

Year ending June 30, 1909.

Classification.	Combined utilities.	Gas.	Electric and heating.
Revenues:			
Gas.			
Commercial earnings	$64,877 70		
Power earnings	867 78		
Coke made	28,669 04		
Tar made	2,007 00		
Miscellaneous earnings	326 41		
Total gas department		$96,767 93	
Electric and Heating.			
Commercial lighting	94,820 52		
Municipal contract lighting	17,447 88		
Commercial power	42,586 18		
Commercial heating	33,757 72		
Miscellaneous earnings	2,979 67		
Rents from pole contacts			
Total elec. and heating dep			$191,591 97
Total revenues	$288,359 90	$96,767 93	$191,591 97
Operating Expenses:			
Gas manufacture	$57,829 39	$57,829 39	
Gas distribution	2,178 19	2,178 19	
Elec. & htg. gen. Edison plant	54,254 77		$54,254 77
Elec. gen. turbine plant	39,601 77		39,601 77
Current purchased			
Elec. and htg. distribution	7,983 50		7,983 50
Consumption	6,583 22		6,583 22
Commercial	3,631 10	1,738 93	1,882 17
Total above items	$172,061 94	$61,746 51	$110,315 43
General	15,032 78	5,393 76	9,639 02
Undistributed	3,843 25	1,378 96	2,464 29
Taxes	14,906 90	4,221 63	10,685 27
Depreciation	30,353 00	5,486 00	24,867 00
Total operating expenses	$236,197 87	$78,226 86	$157,971 01
Remaining for interest and profits	$52,162 03	$18,541 07	$33,620 96
Rate of return*	5.80%	7.30%	5.20%

*Based on engineers' revised cost of reproduction, June 30, 1909, plus allowance for omissions and additional working capital.

Depreciation on the gas plant has been placed at $5,486 for the year ending June 30, 1909, and at $5,584 for the year following. For the electric and heating plants the depreciation for the respective periods was placed at $24,867 and $25,108. These values represent composite determinations for the various equipment going to make up the plant as a whole. From this analysis it is found that, during the first period, there remained for interest and profit a sum equal to 5.80 per cent of the total cost of reproduction, plus working capital, and during the second period, 8.35 per cent. During the first period, year ending June 30, 1909, this return, when properly divided between the gas and the heating and electric departments, was equal to 7.30 per cent of the cost of reproduction, plus working capital, for

TABLE XII.

APPORTIONMENT OF REVENUES AND OPERATING EXPENSES BETWEEN GAS DEPARTMENT AND ELECTRIC AND HEATING DEPARTMENT.

Year ending June 30, 1910.

Classification.	Combined utilities.	Gas.	Electric and heating.
Revenues.			
Gas			
Commercial earnings	$72,975 75		
Power earnings	31,815 81		
Coke made	2,279 00		
Tar made	27 42		
Miscellaneous earnings			
Total gas department		$107,097 98	
Electric and Heating			
Commercial lighting	106,114 15		
Municipal contract lighting	17,899 38		
Commercial power	57,282 28		
Commercial heating	34,447 70		
Misc. earnings	513 66		
Rents from pole contacts	109 02		
Total elec. and heating dept			$216,366 19
Total revenue	$323,464 17	$107,097 98	$216,366 19
Operating Expenses:			
Gas manufacture	$65,207 60	$65,207 60	
Gas distribution	2,447 66	2,447 66	
Elec. and htg. gen. Edison plant	46,189 33		$46,189 33
Elec. gen. turbine plant	25,575 82		25,575 82
Current purchased	23,962 45		23,962 45
Elec. and heating dist	6,280 48		6,280 48
Consumption	4,535 41		4,535 41
Commercial	4,073 50	1,927 58	2,145 92
Total above items	$178,272 25	$69,582 84	$108,689 41
General	16,718 21	6,525 12	10,193 09
Undistributed	4,487 30	1,751 39	2,735 91
Taxes	17,250 94	4,885 47	12,365 47
Depreciation	30,692 00	5,584 00	25,108 00
Total operating expenses	$247,420 70	$88,328 82	$159,091 88
Remaining for interest and profits	$76,043 47	$18,769 16	$57,274 31
Rate of return*	8.35%	7.25%	8.80%

* Based on engineers' revised cost of reproduction, June 30, 1909, plus allowance for omissions, additions to Nov. 30, 1909, and additional working capital.

the former department, and 5.20 per cent for the latter. For the year following these values were 7.25 per cent and 8.80 per cent, respectively.

Gas Costs.

The operating expenses of the gas plant are divided in the following table XIII between consumer and output costs along lines which we have frequently explained. Interest and profits have been placed in this table at 7½ per cent of the cost of reproduction, plus working capital. Taxes, depreciation, interest and profits are apportioned between consumer and output, according to the investment in and use of the several portions of the plant:

TABLE XIII.

APPORTIONMENT OF EXPENSES FOR THE GAS PLANT BETWEEN CONSUMER AND OUTPUT EXPENSES.

Classification.	Year ending June 30, 1909.						Year ending June 30, 1910.					
	Consumer.		Output.		Total.		Consumer.		Output.		Total.	
	Per cent.	Amount.	Per cent.	Amount.	Amount.		Per cent.	Amount.	Per cent.	Amount.	Amount.	
Manufacture			100.00	$57,829 39	$57,829 39				100.00	$65,207 60	$65,207 60	
Distribution	87.66	$1,909 45	12.34	268 74	2,178 19		87.66	$2,168 85	12.34	278 81	2,447 66	
Commercial	100.00	969 11			969 11		100.00	1,209 81			1,209 81	
Total direct expense	4.56	$2,778 56	95.44	$58,098 13	$60,876 69		4.91	$3,378 66	95.09	$65,486 41	$68,865 07	
General	4.56	245 96	95.44	5,147 80	5,393 76		4.91	320 38	95.09	6,204 74	6,525 12	
Undistributed	4.56	62 88	95.44	1,316 08	1,378 96		4.91	85 99	95.09	1,665 40	1,751 39	
New business	4.56	39 66	95.44	830 16	869 82		4.91	35 24	95.09	682 53	717 77	
Total above	4.56	$3,127 06	95.44	$65,392 17	$68,519 23		4.91	$3,820 27	95.09	$74,039 08	$77,859 35	
Deduct residuals	100.00		100.00	30,696 04	30,696 04		100.00		100.00	34,094 81	34,094 81	
Deduct miscellaneous earnings	4.56	14 38	95.44	311 53	326 41		4.91	1 35	95.09	26 07	27 42	
Net above	8.30	$3,112 18	91.70	$34,384 60	$37,496 78		8.73	$3,818 92	91.27	$39,918 20	$43,737 12	
Taxes	30.35	1,281 44	69.65	2,940 19	4,221 63		30.35	1,482 94	69.65	3,402 53	4,885 47	
Depreciation	40.25	2,207 00	59.75	3,279 00	5,486 00		40.25	2,247 00	59.75	3,337 00	5,584 00	
Interest and profits	30.35	5,796 56	69.65	13,302 49	19,097 05		30.35	5,896 14	69.65	13,532 18	19,428 82	
Total	18.70	$12,397 18	81.30	$53,906 28	$66,303 46		18.26	$13,445 50	81.74	$60,190 91	$73,635 41	

TABLE XIV.

GAS ACCOUNT.

Items.	Cubic feet. Year ending June 30, 1909.	Year ending June 30, 1910.
Gas on hand first of year	134,900	108,600
Gas made during year	75,163,500	79,044,800
Total gas to account for	75,303,400	79,153,400
Gas on hand close of year	108,600	144,400
Gas delivered to mains	75,194,800	79,009,000
Gas sold	63,616,700	72,387,300
Gas used by company	1,890,800	463,100
Total gas used and sold	65,507,500	72,850,400
Gas unaccounted for	9,687,300	6,158,600

From the foregoing table of the gas account it will be observed that the sales increased from 63,616,700 cu. ft. for the year ending June 30, 1909, to 72,387,300 cu. ft. for the year ending June 30, 1910. The gas consumed by the company decreased during this time from 1,890,800 cu. ft. for the former year to 463,100 cu. ft. for the latter. This large use by the utility during the year ending June 30, 1909, undoubtedly represents a considerable amount not directly chargeable to conducting the gas business, and we have therefore placed the sales for that period at 65,207,500 cu. ft., which is 300,000 cu. ft. below the amount reported by the company as sold and used. Were this difference increased to as much as 500,000 cu. ft. to correspond to the amount used by the company during the year following, the effect on the unit output cost would amount to only a fraction of a cent per M cu. ft. sold. By dividing the output costs of the gas department for the year ending June 30, 1909, by 65,207.5, and for the year ending June 30, 1910, by 72,387.3, we find that the unit output costs for these periods were, respectively, $0.8267 and $0.8315 per M cu. ft.

GAS METER-MONTHS.

	1908–1909.	1909–1910.
Meters in use first of year	2,711	3,032
" " " " end " "	3,032	3,146
Average No. of meters in use during year	2,871.5	3,089
" " " " meter-months	34,458	37,068

In order to properly distribute the consumer expenses of the gas department between the several consumers, we have divided the total consumer expense by the number of meter-months, and find the cost per meter-month to be 36 cts. for the year ending June 30, 1909, and 36.3 cts. for the year ending June 30, 1910. These amounts should be divided by the number of M cu. ft. used by the consumer and the result added to the output costs, in order to find what is the total charge per M for the quantity used. The following table shows these unit costs and also the average cost per M cu. ft. for the two years under consideration:

Class of expense.	Unit.	*Year ending June 30, 1909.*			*Year ending June 30, 1910.*		
		No. of units.	Total cost.	Unit cost.	No. of units.	Total cost.	Unit cost.
Consumer.	Meter-months.....	34,458	$12,397 18	$0.3600	37,068	$13,445 50	$0.3630
Output....	M cu. ft.....	65,208	53,906 28	.8267	72,387	60,189 91	.8315
Total....	M cu. ft.....	65,208	$66,303 46	$1.0168	72,387	$73,635 41	$1.0173

When the consumer cost is distributed over the quantity used as in table XV, the total cost per M cu. ft. used is found to vary, for the year ending June 30, 1909, from $1.187 for the first M to $0.827 per M for 1000 M cu. ft.; for the year ending June 30, 1910, the cost varies over the same range of use from $1.195 to $0.832 per M cu. ft.

TABLE XV.

GAS DEPARTMENT.

COST PER UNIT OF THE CONSUMER, THE OUTPUT AND THE TOTAL EXPENSE.

Cu. ft. per m.	*Year Ending June 30, 1909.*				*Year ending June 30, 1910.*			
	Consumer cost.	Output cost $0.8267 per M.	Total cost.	Total cost per M cu. ft.	Consumer cost.	Output cost $0.8315 per M.	Total cost.	Total cost per M cu. ft.
1 M...	$0.360	$0.827	$1.187	$1.187	$0.363	$0.832	$1.195	$1.195
1.5.....	"	1.240	1.600	1.067	"	1.247	1.610	1.073
2.....	"	1.653	2.013	1.006	"	1.663	2.026	1.013
3.....	"	2.480	2.840	.947	"	2.494	2.857	.952
4.....	"	3.307	3.667	.917	"	3.326	3.689	.922
5.....	"	4.134	4.494	.899	"	4.158	4.521	.904
10.....	"	8.267	8.627	.863	"	8.315	8.678	.868
25.....	"	20.668	21.028	.841	"	20.788	21.151	.846
50.....	"	41.335	41.695	.834	"	41.575	41.938	.839
100.....	"	82.670	83.030	.830	"	83.150	83.513	.835
250.....	"	206.675	207.035	.828	"	207.875	208.238	.833
500.....	"	413.550	413.910	.828	"	415.750	416.113	.832
1000.....	"	826.700	827.060	.827	"	831.500	831.863	.832

The meter schedule asked for by the La Crosse Gas and Electric Co. proposes a rate of $1.15 per M for the first 20 M used, $1.00 per M for the next 20 M, and other decreases, as exist at present, for succeeding quantities. This schedule differs from the existing schedule by increasing the rate 15 cts. for the first 20 M used. Analysis of the consumption of gas in La Crosse shows that the sales are distributed as follows:

PER CENT OF TOTAL ANNUAL SALES IN EACH GROUP.

1st M	2nd M	3rd M	4th M	5th M	5th to 10th M	10th to 20th M	20th to 40th M	40th to 100th M	All over 100 M
41.75	23.60	10.84	5.67	2.99	5.56	3.58	2.66	1.92	1.43

From this it may be seen that the proposed increase would affect 93.99 per cent of the sales and would have amounted to an increase in revenue of about $10,206 for the year ending June 30, 1910. From an examination of the distribution of sales as shown in the foregoing table, and of the cost curves of table XV, it appears that the schedule which properly meets the conditions of service would consist of a rate of $1.10 per M for the first M cu. ft. used per month, $0.90 per M for the next 3 M, and $0.80 per M for all gas sold in excess of 5 M.

TABLE XVI.

ESTIMATE OF REVENUE FROM GAS SALES UNDER PROPOSED RATE.

Rate per M.	Group.	Per cent of total gas sold.	M cu. ft. sold.	Estimated revenue.
$1 10	First 2 M.....	65.35	47,305	$52,035 50
90	Next 3 M.....	19.50	14,116	12,704 40
80	All over 5 M.....	15.15	10,967	8,773 60
	Total.....	100.00	72,388	$73,513 50
	Total cost year 1909-1910.....			73,645 49
	Difference.....			$131 99

The foregoing estimate shows what revenues might be expected under the rates which we have proposed and conditions as they were for the year 1909—1910. Exclusive of revenue from minimum bills, above what the minimum bill may provide for cost of gas, the estimated revenue from gas sold is only about $130 less than the total gas cost for that year. The difference between

the revenue from minimum bills and the cost of gas used by consumers paying minimum bills may be expected to amply cover the small deficiency of the estimated revenue.

The minimum bill now existing for gas service is a monthly charge of $0.50. Further examination has been made of the expense, return for which the utility is supposed to be ensured by a minimum charge, in order to learn how accurately the present rate meets the existing conditions and to determine what adjustments may be necessary to equitably distribute these costs among the several consumers.

TABLE XVII.

COMPARISON OF CONSUMER EXPENSES PER METER FOR NINETEEN WISCONSIN GAS UTILITIES.

	Labor removing and resetting meters.	Meter and fitting department labor.	Customers premises expense.	Meter and fitting department supplies and expenses.	Maintenance of services.	Maintenance of meters.	Collection salaries and expenses.	Reading meters and delivering bills.	Collection supplies and expenses.	Uncollectible accounts
Minimum	$0.0607	$0.0323	$0.0760	$0.0089	$1.0080	$0.0696	$0.0325	$0.1242	$0.0017	$0.0163
Maximum	.7326	.5319	.8165	.1366	.3459	.6282	1.3453	.6078	.7072	.3787
Average	.1990	.1189	.3038	.0674	.1306	.2727	.3888	.2436	.1732	.1373
Median	.1491	.0731	.2284	.0514	.1210	.2714	.2591	.2016	.0952	.1148
La Crosse 1908										
1909	.0676	.0818	.3315	.0108	.....	.1326	.0991	.2182	.0028	.....
La Crosse 1909										
1910	.1332	.1385	.2994	.0061	.0026	.0643	.1532	.2238	.0146	.....

Table XVII is a comparison for La Crosse and nineteen other gas companies in Wisconsin, of those operating expenses, exclusive of fixed charges, the return of which should be provided for even when no gas is used. As compared with the averages and medians for the nineteen companies, none of the items for La Crosse appear to be excessive, but on the contrary, several appear to be quite low.

The total of the foregoing expenses per meter-month, for the La Crosse Gas and Electric Company, was $0.074 for the year ending June 30, 1909, and $0.086 for the year ending June 30, 1910, as shown below:

TABLE XVIII.

CONSUMER EXPENSES.

LA CROSSE GAS AND ELECTRIC COMPANY.

Item.	Year ending June 30, 1909.	Year ending June 30, 1910.
Labor removing and resetting meters	$183 54	$411 39
Meter and fittings department labor	222 10	427 79
Customers' premises expenses	898 70	924 88
Meter and fittings department supplies and expenses	29 81	19 02
Maintenance of services	.....	7 92
Maintenance of meters	360 14	198 62
Collection salaries and commissions	269 11	473 19
Reading meters and delivering bills	592 33	691 25
Collection supplies and expenses	7 66	45 11
Uncollectible accounts	.....	.....
Total	$2,563 39	$3,199 17
Meter-months	34,458	37,068
Consumer expenses per meter-month	$0.074	$0.086

These costs added to the fixed costs, which vary with the size of meter, result in the total charges per meter shown in the following table:

COST PER METER PER MONTH.

Size of meters.	Fixed charges.*	Total charges year ending June 30, 1909.	Total charges year ending June 30, 1910.
3 light	$0.058	$0.132	$0.144
5 "	.072	.146	.158
10 "	.085	.159	.161
20 "	.129	.203	.205
30 "	.188	.262	.274
45 "	.284	.358	.370
60 "	.367	.441	.453
80 "	.497	.571	.583
100 "	.582	.656	.668
200 "	1.134	1.208	1.220

**City of Racine v. Racine Gas Light Co.* 6 W. R. C. R. 311.

From these facts it is to be concluded that a uniform minimum bill for all consumers is not equitable, but that, when these costs are properly distributed and there are added thereto sufficient sums to about cover the cost of gas used in small quantities, the minimum bill should be scaled about as follows:

Size of meter.	Amount to be charged each month.	Size of meter.	Amount to be charged each month.
3 light	$0.25	45 light	$0.80
5 "	.25	60 "	1.00
10 "	.35	80 "	1.50
20 "	.35	100 "	2.00
30 "	.50	200 "	4.00

Electric and Heating Costs.

The operation of the heating business is so completely dependent upon the operation of the Edison electric plant that costs of the combined business must receive careful examination in order that they may be charged in proper proportion to each service.

The respondent contends through its expert witness that, although the cost of coal per kw. hr. generated would amount to 2.35 cts. if the exhaust from the steam equipment of the La Crosse Edison plant were not charged to the heating business, such economies are effected by heating in connection with the electrical generation that the cost of fuel per kw. hr. would amount to only 0.4 cts. if the electrical business is charged only with that portion of the heat originally contained in the steam and actually converted into work (considering also certain losses) and if the balance of the heat of the steam were then charged to the heating system. Considering the electric plant as a whole, respondent believes that 1.0 cts. per kw. hr. would be a fair charge to the electric plant for fuel used. This figure, it is said, might be increased to 1.1 cts. per kw. hr. because of certain adjustments which respondent fails to point out.

The facts and figures upon which the witness' results and conclusions are based and their special application to the plants in question have not been made entirely clear. Because the heating business must receive all the heat of the steam which the engines have not converted into energy, hardly seems to be a valid reason for charging the heating business with that proportion of the cost of steam generated; for even in the most efficient steam operated electric plants, only a relatively small amount of the energy of the steam is converted into useful work, the remainder being lost in various ways.

It is the practice of the applicant to generate, as far as possible, only as much current at the non-condensing Edison plant as is required to furnish the necessary exhaust steam for the heating system. It is also the practice, when sufficient current from water power is not available, to generate as much of the balance of current at the turbine plant as possible. Inasmuch as water power is not at all times available in sufficient quantities, it would appear to be about right to charge the electric business for the generation at the Edison plant at about the same rate as the cost of generation in the turbine plant, provided it were possible to generate at the turbine plant all the current required. But this is impossible during the winter months when the load is heaviest and it is then necessary to operate also the less efficient reciprocating steam engines of the Edison plant. It seems to be impossible to obviate this without additional high efficiency steam equipment.

The following table shows the cost of generation by the turbine plant for several periods of operation.

COST OF ELECTRICAL GENERATION LA CROSSE TURBINE PLANT.

Period.	Kw. hrs. generated.	Cost per kw. hr. in cents.				
		Fuel.	Steam generated.	Entire station.		
				Maintenance.	Operation.	Maintenance and operation.
July 1909	287,300	1.16	1.31	.03	1.53	1.56
Aug. "	278,900	1.12	1.26	.14	1.44	1.58
Sept. "	313,800	1.07	1.20	.02	1.36	1.38
Oct. "	247,300	1.14	1.31	.08	1.47	1.55
Nov. "	247,800	1.13	1.29	.02	1.45	1.47
Total	1,375,100					
Weighted average		1.12	1.27	.057	1.448	1.505
Year ending June 30, 1909						1.57
" " " 1910						1.68

The foregoing table shows that for the period from July 1 to Nov. 30, 1909, the cost of generation in the turbine plant per kw. hr. was as follows: For fuel 1.12 cts., steam generated 1.27 cts., total station maintenance and operation 1.505 cts. For the entire year ending June 30, 1909, the total cost of station maintenance and operation was 1.57 cts. per kw. hr. generated; for the year following, 1.68 cts. per kw. hr. The total maintenance and operating costs for 1908–1909 are only slightly greater than for the first five months of the following year, but for the year 1909–1910 there is a notable increase in the total turbine station cost, probably due to the lower station load factor brought about by the introduction of water power during that time. The following table shows what some of these costs amount to for the various electric utilities in Wisconsin:

TABLE XIX.

POWER EXPENSES.

WISCONSIN ELECTRIC UTILITIES.

Year ending June 30, 1909.

	Cents per kw. hr. generated.				No. of utilities represented.
	Average.	Median.	Minimum.	Maximum.	
Class A utilities					
Power expense, all methods	2.216	2.124	0.913	3.081	12
" " by steam only	2.089	2.060	.694	3.590	12
Steam generated	1.603	1.628	.590	3.040	12
Miscellaneous labor	.034	.005	.003	.117	12
Steam generated and misc. labor.	1.637	1.633	.593	3.157	12
Class B utilities					
Power expense, all methods	3.301	3.946	.501	5.011	10
" " by steam only	3.698	3.053	1.467	8.646	7

This shows that, for the class A and B electric plants, whose accounts were kept with sufficient detail for a complete comparison, the average and median costs of power generated by all methods and of power generated by steam were greater than for the La Crosse turbine plant, and that the average and median costs of steam generated in class A utilities were also greater than for the La Crosse turbine plant.

The following table is a comparison of the prices paid for coal by several Wisconsin class A electric utilities.

TABLE XX.

COST OF COAL FOR ELECTRIC POWER GENERATION.

WISCONSIN CLASS A UTILITIES.

Utility.	1908-1909.		1909-1910.		1910-1911.	
	Average cost per ton.	Lbs. of coal used.	Average cost per ton.	Lbs. of coal used.	Average cost per ton.	Lbs. of coal used.
1	$3 50	1,724,969	$3 05	1,200,000	$3 30	3,576,171
2	2 33	8,354,900	2 34	8,871,374	2 69	8,316,036
3	.....	.....	.....	.....	2 95	3,082,470
4	.....	.....	2 40	11,066,000	2 60	5,334,080
5	.....	.....	.....	.....	2 71	4,482,737
6	2 48	7,912,000	2 52	10,602,000	.....	.....
7	.....	.....	.....	.....	3 57	24,244,492
8	3 32	4,768,000	3 27	5,364,000	3 45	5,792,000
9	2 75	8,495,000	2 06	12,727,700	3 44	18,133,800
10	3 10	10,949,789	2 81	8,524,496	3 04	9,150,841
11	2 97	25,500,000	.....	.....	2 08	25,638,000
12	2 32	14,372,000	3 05	14,234,000	3 15	14,127,718
13	.....	.....	.....	.....	2 80	9,050,000
Weighted average	$2 994	.....	$2 946	.....	$2 87	.....
La Crosse G. & E. Co.	3 80	.....	3 75—4 40	.....	.....	.....

Although the comparison is not all that might be desired, because the table does not show the grade of coal used, it is interesting to note that the price paid by the La Crosse Gas and Electric

Company exceeds all prices paid by the other utilities for coal delivered. During the periods shown above, the La Crosse Gas and Electric Company and many of the other utilities tabulated used both lump coal and screenings. A comparison on the basis of kw. hr. generated per pound of coal would add considerably to the value of the foregoing table, but it is obvious that if we had the necessary facts for the La Crosse Edison plant for such a comparison we would have a satisfactory basis of apportioning the fuel cost between electric generation and heating. The facts available seem to indicate that the cost of the necessary generation in the La Crosse Edison plant is considerably more per unit than for the La Crosse turbine plant, and is probably somewhat more, on account of greater cost of coal transportation, than it is for the average class A utilities. For these reasons we are charging the electric generation in the Edison plant at the rate of 1.75 cts. per kw. hr. to cover the following items:

Miscellaneous labor
Steam operating labor
Heating operating labor
Fuel for steam
Fuel for hot water
Water for steam
Miscellaneous steam supplies
Power gas
Maintenance of boilers
Maintenance of coal and ash apparatus
Maintenance of boiler plant building
Maintenance of heating plant.

The following items of plant expense are either all electrical or all heating costs, and have been charged accordingly to the proper department:

Engine labor
Electrical labor
Maintenance of engines
Maintenance of generators
Miscellaneous heating plant supplies.

The following items are in the nature of overhead costs for both businesses, and have been divided in tables XXI and XXII according to the division of the other plant expenses:

Superintendence
Lubricants
Miscellaneous power plant supplies
Maintenance of power plant auxiliary apparatus
Maintenance of power plant building, fixtures and grounds.

When the operating expenses of the Edison plant are apportioned in this way, the cost of power generated at this plant is $34,434.55 or 2.11 cts. per kw. hr. for the year ending June 30, 1909, and $25,385.38 or 2.13 cts. per. kw. hr. for the year ending June 30, 1910. The amounts apportioned to the heating business for these respective periods are $19,830.22 and $20,803.95. The following tables give the apportionment of all operating expenses between the electric and heating systems for the two years ending June 30, 1909 and 1910:

TABLE XXI.

APPORTIONMENT OF ELECTRIC AND HEATING OPERATING EXPENSES.

Year ending June 30, 1909.

Classification.	Total.	Electric.		Heating.	
		Per cent.	Amount.	Per cent.	Amount.
Edison plant:					
Misc. labor	$110 61				
Steam operating labor	2,306 34				
Heating operating labor	1,001 19				
Fuel for steam	36,276 98				
Fuel for hot water	4,618 67				
Water for steam	351 52				
Misc. steam supplies	279 72				
Power gas	468 84				
Maintenance of boilers	589 31				
Maintenance of coal and ash apparatus	34 53				
Maintenance boiler plant building					
Maintenance heating plant	749 91				
Total above	$46,787 62		[1]$28,452 38		$18,335 24
Engine labor	1,760 00		1,760 00		
Electric labor	860 00		860 00		
Maintenance of engines	552 96		552 96		
Maintenance of generators	262 92		262 92		
Misc. htg. plt. supplies	33 97				33 97
Total above	$50,257 47	63.45	$31,888 26	36.55	$18,369 21
Superintendence	$800 00				
Lubricants	820 23				
Misc. pr. plt. supplies	2,049 91				
Maint. pr. plt. aux. app.	284 51				
Maint. pr. plt. bldg.	42 65				
Sub-total	$3,997 30	63.45	$2,536 29	36.55	$1,461 01
Total Edison plant	$54,254 77	63.45	$34,424 55	36.55	$19,830 22
Turbine plant	39,601 77	100.00	39,601 77		
Electric and heating distribr.					
Operation	4,301 40	82.75	3,559 41	17.25	741 99
Maintenance	3,682 10	93.94	3,458 87	6.06	223 23
Consumption	6,583 22	100.00	6,583 22		
Commercial	1,892 17	93.15	1,762 56	6.85	129 61
Total above	$110,315 43	81.03	$89,390 38	18.97	$20,925 05
General	9,639 02	81.03	7,810 50	18.97	1,828 52
Undistributed	2,464 29	81.03	1,996 83	18.97	467 46
Taxes	10,685 27	85.20	9,103 85	14.80	1,581 42
Depreciation	24,957 00	93.20	23,259 00	6.80	1,698 00
Interest	51,361 18	86.17	44,225 76	13.83	7,135 42
Total	$209,422 19	83.94	$175,786 32	16.06	$33,635 87

[1]—1,625,850 kw. hrs. at 1.75 cts.

TABLE XXII.

T OF ELECTRIC AND HEATING OPERATING EXPENSES.

Year ending June 30, 1910.

Classification.	Total.	Electric.		Heating.	
		Per cent.	Amount.	Per cent.	Amount.
Edison plant					
Miscellaneous labor	$54 25				
Steam operating labor	2,518 74				
Heating operating labor	775 76				
Fuel for steam	28,873 22				
Fuel for hot water	6,414 21				
Water for steam	291 86				
Miscellaneous steam supplies	414 29				
Maintenance of boilers	410 12				
Maintenance of heating plant	531 45				
Total above	$40,283 90		$20,828 74		$19,455 16
Engine labor	1,245 37		1,245 37		
Electric labor	1,218 46		1,218 46		
Maintenance of engines	408 19		408 19		
Maintenance of generators	132 99		132 99		
Miscellaneous htg. plt. supplies	77 23				77 23
Total above	$43,366 14	54.96	$23,833 75	45.04	$19,532 39
Superintendence	1,150 00				
Lubricants	540 61				
Misc. pwr. plt. supplies	1,033 56				
Maintenance pwr. plt. aux. app.	18 38				
Maintenance power plant bldgs.	80 64				
Subtotal	$2,823 19	54.96	$1,551 63	45.04	$1,271 56
Total Edison plant	$46,189 33	54.96	$25,385 38	45.04	$20,803 95
Turbine plant	25,575 82	100.00	25,575 82		
Current purchased	23,962 45	100.00	23,962 45		
Electric and heating distrib.					
Operation	3,663 16	95.78	3,508 57	4.22	154 59
Maintenance	2,617 32	93.51	2,447 46	6.49	169 86
Consumption	4,535 41	100.00	4,535 41		
Commercial	2,145 92	93.54	2,007 29	6.46	138 63
Total above	$108,689 41	80.43	$87,422 38	19.57	$21,267 03
General	10,193 09	80.43	8,198 30	19.57	1,994 79
Undistributed	2,735 91	80.43	2,200 49	19.57	535 42
Taxes	12,365 47	85.20	10,535 38	14.80	1,830 09
Depreciation	25,108 00	93.24	23,410 00	6.76	1,698 00
Interest	51,636 70	86.18	44,501 28	13.82	7,135 42
Total	$210,728 58	83.65	$176,267 83	16.35	$34,460 75

Heating Department.

The foregoing apportionments of electric and heating expenses show that the cost of operating the heating plant, including taxes, depreciation and interest, was $33,635.87 for the year ending June 30, 1909, and $34,460.75 for the year ending June 30, 1910. For these respective periods the earnings from this class of service were $33,757.72 and $34,447.70. These facts indicate that the present uniform rate of 18 cts. per square foot is just about sufficient to return the cost of service.

TABLE XXIII.

APPORTIONMENT OF EXPENSES OF THE HEATING PLANT BETWEEN CONSUMER AND OUTPUT EXPENSES.

Classification.	Year ending June 30, 1909.					Year ending June 30, 1910.				
	Consumer.		Output.		Total amount.	Consumer.		Output.		Total amount.
	Per cent.	Amount.	Per cent.	Amount.		Per cent.	Amount.	Per cent.	Amount.	
Production			100.00	$19,830 22	$19,830 22			100.00	$20,803 95	$20,803 95
Distribution	33⅓	$321 74	66⅔	642 48	965 22	33⅓	$108 15	66⅔	216 30	324 45
Commercial	100.00	129 61			129 61	100.00	138 63			138 63
Total above	2.15	$451 35	97.85	$20,473 70	$20,925 05	1.16	$246 78	98.84	$21,020 25	$21,267 03
General	2.15	39 31	97.85	1,789 21	1,828 52	1.16	23 14	98.84	1,971 65	1,994 79
Undistributed	2.15	10 06	97.85	457 41	467 46	1.16	6 21	98.84	529 21	535 42
Total above	2.15	$500 71	97.85	$22,720 32	$23,221 03	1.16	$276 13	98.84	$23,521 11	$23,797 24
Taxes	18.32	289 93	81.68	1,291 49	1,581 42	18.32	362 18	81.68	1,467 91	1,830 09
Depreciation	17.03	289 00	82.97	1,409 00	1,698 00	17.03	289 00	82.97	1,409 00	1,698 00
Interest	18.32	1,308 16	81.68	5,827 26	7,135 42	18.32	1,308 16	81.68	5,827 26	7,135 42
Total	7.10	$2,387 80	92.90	$31,248 07	$33,635 87	6.49	$2,235 47	93.51	$32,225 28	$34,460 75

In order to illustrate what are the costs of rendering such heating service to patrons having heating installations of different sizes, the operating expenses have been divided, in table XXIII, between consumer and output expenses in much the same manner as we are accustomed to apportion the expenses of gas plants. The consumer expenses, which bear little relation to the heating area, are about 7.10 per cent of the total heating expenses for the year 1908—1909 and about 6.49 per cent for the year 1909—1910. This amount divided by the number of patrons is the annual sum which should be paid by each patron regardless of the number of square feet of radiating surface. What we have termed output expense, to correspond with the same class of costs for gas plants, amounted to 92.90 per cent of the total operating expenses for the year 1908—1909 and 93.51 for the year 1909—1910. This amount divided by the total radiating area is the unit price to be paid per square foot.

We do not have a report of the radiating area for either of the years under consideration but, for a later date, the distribution of the heating area was as follows:

DISTRIBUTION OF HEATING AREA.

Heating area in square feet.	Number of patrons.	Total heating area, sq. ft.
0– 100	4	209
101– 200	14	2,033
201– 300	7	1,715
301– 400	16	5,635
401– 500	20	8,876
501– 600	26	14,091
601– 700	28	17,974
701– 800	37	27,447
801– 900	20	16,715
901–1,000	13	12,230
1,001–1,100	8	8,226
1,101–1,200	10	11,352
1,201–1,300	7	8,569
1,301–1,400	1	1,388
1,401–1,500	1	1,430
1,501–1,600	6	9,131
1,601–1,700	4	6,455
1,701–1,800	3	5,282
1,801–7,500	13	42,945
Total	238	201,703

According to the reports of the company, the number of service takers increased from 226, for the year ending June 30, 1910, to 238 at the date the above record was taken from the books.

Assuming that the radiating area increased in the same ratio, the number of square feet, for the year 1909–1910, is found to be about 191,050, which, at 18 cts. per square foot, produces a return of $34,389 per annum. This amount agrees very closely with the actual revenue for the year 1909–1910. Applying these values to the 1909–1910 costs, for the purpose of illustration, it is found that the output or area costs per square foot amount to 16.76 cts. per year and the consumer costs per consumer to $9.89. These costs are combined in the following table which shows that the cost of serving the various patrons varies from $0.3654 per square foot, for those having 50 square feet of radiating area, to $0.1689 per square foot for those having 7,500 square feet.

TABLE XXIV.

HEATING SYSTEM UNIT COSTS.

Year ending June 30, 1910.

Square feet of radiating area.	Consumer cost.	Output cost at $0.1676 per square foot.	Total cost.	Total cost per square foot.
50	$9.89	$8 38	$18 27	$0.3654
100	"	16 76	26 65	.2665
200	"	33 52	43 41	.2170
300	"	50 28	60 17	.2008
400	"	67 04	76 93	.1923
500	"	83 80	93 69	.1874
600	"	100 56	110 45	.1861
700	"	117 32	127 21	.1817
800	"	134 08	143 97	.1800
900	"	150 84	160 73	.1786
1,000	"	167 60	177 59	.1776
1,500	"	251 40	261 29	.1742
2,000	"	335 20	345 09	.1725
2,500	"	419 00	428 89	.1716
3,000	"	502 80	512 69	.1709
4,000	"	670 40	680 29	.1701
5,000	"	838 00	847 89	.1696
6,000	"	1,005 60	1,015 59	.1693
7,000	"	1,173 20	1,183 09	.1690
7,500	"	1,257 00	1,266 89	.1689

These figures suggest that the rate for heating service should be a charge of about 19.5 cts. for the first 500 square feet, 17.5 cts. for the next 500 square feet, and 15.5 cts. for all over 1,000 square feet. Analysis of the table of distribution of heating area shows that 53.03 per cent is in the first 500 square feet, 26.25 per cent in the next 500 square feet, and 20.72 per cent in the remainder. These percentages, applied to the total estimated area of 191,050 square feet for year 1909–1910, result

in the following distribution of service and estimated revenue therefrom:

	Area.	Rate.	Estimated revenue.
Primary (first 500 sq. ft.)	101,314 sq. ft.	19.5 cts.	$19,756 23
Secondary (next 500 sq. ft.)	50,151 " "	17.5 "	8,776 42
Excess (all over 1000 sq. ft)	39,585 " "	15.5 "	6,135 68
Total	191,050 " "	.....	$34,668 33

ELECTRIC DEPARTMENT.

The operating expenses, apportioned to the electric department in tables XXI and XXII, have been further divided between capacity and output costs in table XXV for the year ending June 30, 1909, and in table XXVI for the year ending June 30, 1910. During a portion of the fiscal year 1909–1910 a considerable portion of the current purchased from the La Crosse Water Power Company was delivered directly from the switchboard to the Listman Mill Company for power purposes and the rate, both for the purchase and re-sale thereof, was, by agreement with the water power company, placed at 0.75 cts. per kw. hr. The purpose of this transaction, on the part of the La Crosse Gas and Electric Company, was to keep the substation sufficiently loaded to ensure an advantageous rate for other use of current. This matter was in the nature of an experiment for all parties concerned, and the sale of current to the Listman Mill Company was later discontinued. For these reasons we have deducted from the income account of the electric business both the revenue and cost of current for all power sold to the Listman Mill Company. Were this service continued, we are not entirely certain at this time that this portion of the business should not bear some expense in addition to the price paid by the La Crosse Gas and Electric Company for the current resold.

TABLE XXV.

DIVISION OF TOTAL ELECTRIC OPERATING EXPENSES BETWEEN CAPACITY AND OUTPUT EXPENSES.

Year ending June 30, 1909.

Classification.	Total.	Capacity.		Output.	
		Per cent.	Amount.	Per cent.	Amount.
Power	$74,026 32	30.00	$22,207 90	70.00	$51,818 42
Distribution	7,018 28	79.40	5,572 54	20.60	1,445 74
Consumption	6,583 22	16.79	1,104 49	83.21	5,478 73
Commercial	1,762 56	65.01	1,145 76	34.99	616 80
Total above	$89,390 38	33.60	$30,030 69	66.40	$59,359 69
General	7,810 50	"	2,624 33	"	5,186 17
Undistributed	1,996 83	"	670 93	"	1,325 90
Total above	$99,197 71	33.60	$33,325 95	66.40	$65,871 76
Taxes	9,103 85	"	3,058 89	"	6,044 96
Depreciation	23,259 00	"	7,815 02	"	15,443 98
Interest	44,225 76	"	14,859 86	"	29,365 90
Total operating expenses	$175,786 32	33.60	$59,059 72	66.40	$116,726 60

TABLE XXVI.

DIVISION OF TOTAL ELECTRIC OPERATING EXPENSES BETWEEN CAPACITY AND OUTPUT EXPENSES.

Year ending June 30, 1910.

Classification.	Total.	Capacity.		Output.	
		Per cent	Amount.	Per cent	Amount.
Power	$60,644 73	30.00	$18,193 42	70.00	$42,451 31
Distribution	5,956 03	79.31	4,723 71	20.69	1,232 32
Consumption	4,535 41	13.52	613 05	86.48	3,922 36
Commercial	2,007 29	61.17	1,227 88	38.83	779 41
Total above	$73,143 46	33.85	$24,758 06	66.15	$48,385 40
General	8,198 30	"	2,775 12	"	5,423 18
Undistributed	2,200 49	"	744 87	"	1,455 62
Total above	$83,542 25	33.85	$28,278 05	66.15	$55,264 20
Taxes	10,535 38	"	3,566 23	"	6,969 15
Depreciation	23,410 00	"	7,924 28	"	15,485 72
Interest	44,501 28	"	15,063 68	"	29,437 60
Total operating expenses	$161,988 91	33.85	$54,832 24	66.15	$107,156 67

The capacity expenses of the electric department, for the year 1908–1909, have been divided among commercial lighting, commercial power and street lighting, as shown in table XXVII; the output expenses are for the same period as in table XXVIII. For the year 1909–1910, capacity and output expenses are divided between these classes of service as shown in tables XXIX and XXX.

TABLE XVII.

APPORTIONMENT OF CAPACITY EXPENSES BETWEEN COMMERCIAL LIGHTING, COMMERCIAL POWER AND STREET LIGHTING.

Year ending June 30, 1909.

Classification.	Total.	Commercial lighting.		Commercial power.		Street lighting.	
		Per cent	Amount.	Per cent.	Amount.	Per cent.	Amount.
Power	$22,207 90	56.69	$12,569 67	34.70	$7,706 14	8.77	$1,932 09
Distribution	5,572 54	67.48	3,760 90	26.09	1,453 76	6.43	358 58
Consumption	1,104 49	88.22	974 37	11.46	126 62	.32	3 50
Commercial	1,145 76	88.23	1,010 90	11.77	134 86	.....	.....
Total above	$30,030 69	60.99	$18,315 14	31.37	$9,421 38	7.64	$2,294 17
General	2,624 33	"	1,600 58	"	823 25	"	200 50
Undistributed	670 93	"	409 20	"	210 47	"	51 26
Total above	$33,325 95	60.99	$20,324 92	31.37	$10,455 10	7.64	$2,545 93
Taxes	3,058 89	60.30	1,844 51	29.90	914 61	9.80	299 77
Depreciation	7,815 02	"	4,712 46	"	2,336 69	"	765 87
Interest	14,859 86	"	8,960 49	"	4,443 10	"	1,456 27
Total capacity	$59,059 73	60.69	$35,842 38	30.73	$18,149 50	8.58	$5,067 84

TABLE XXVIII.

APPORTIONMENT OF OUTPUT EXPENSES BETWEEN COMMERCIAL LIGHTING, COMMERCIAL POWER AND STREET LIGHTING.

Year ending June 30, 1909.

Classification.	Total.	Commercial lighting.		Commercial power.		Street lighting.	
		Per cent.	Amount.	Per cent.	Amount.	Per cent.	Amount.
Power	$51,818 42	44.98	$23,307 93	43.77	$22,680 92	11.25	$5,829 57
Distribution	1,445 74	60.61	876 31	33.19	479 78	6.20	89 65
Consumption	5,478 73	74.91	4,104 29	0.14	7 66	24.95	1,366 78
Commercial	616 80	88.23	544 20	11.77	72 60	.....	.....
Total above	$59,359 69	48.57	$28,832 73	39.16	$23,240 96	12.27	$7,286 00
General	5,186 17	"	2,518 92	"	2,030 91	"	636 34
Undistributed	1,325 90	"	643 99	"	519 22	"	162 69
Total above	$65,871 76	48.57	$31,995 64	39.16	$25,791 09	12.27	$8,085 03
Taxes	6,044 96	60.30	3,645 11	29.90	1,807 44	9.80	592 41
Depreciation	15,443 98	"	9,312 72	"	4,617 75	"	1,513 51
Interest	29,365 90	"	17,707 64	"	8,780 40	"	2,877 86
Total output	116,726 60	53.68	$62,661 11	35.12	$40,996 68	11.20	$13,068 81

TABLE XXIX.

APPORTIONMENT OF CAPACITY EXPENSES BETWEEN COMMERCIAL LIGHTING, COMMERCIAL POWER AND STREET LIGHTING.

Year ending June 30, 1910.

Classification.	Total.	Commercial lighting.		Commercial power.		Street lighting.	
		Per cent.	Amount.	Per cent.	Amount.	Per cent.	Amount.
Power	$18,193 42	56.60	$10,297 47	34.70	$6,313 12	8.70	$1,582 83
Distribution	4,723 71	70.94	$3,351 01	23.08	1,090 01	5.98	282 69
Consumption	613 05	84.72	519 38	11.81	72 43	3.47	21 24
Commercial	1,227 88	88.23	1,083 36	11.77	144 52	.....	.....
Total above	$24,758 06	61.60	$15,251 22	30.78	$7,620 08	7.62	1,886 76
General	2,775 12	"	1,709 47	"	854 18	"	211 47
Undistributed	744 87	"	458 84	"	229 27	"	56 76
Total above	$28,278 05	61.60	$17,419 53	30.78	$8,703 53	7.62	2,154 99
Taxes	3,566 23	60.30	2,150 44	29.90	1,066 30	9.80	349 49
Depreciation	7,924 28	"	4,778 34	"	2,369 36	"	776 58
Interest	15,063 68	"	9,083 40	"	4,504 04	"	1,476 24
Total capacity	$54,832 24	60.93	$33,431 71	29.95	$16,643 23	8.68	$4,757 30

TABLE XXX.

APPORTIONMENT OF OUTPUT EXPENSES BETWEEN COMMERCIAL LIGHTING, COMMERCIAL POWER AND STREET LIGHTING.

Year ending June 30, 1910.

Classification.	Total.	Commercial lighting.		Commercial power.		Street lighting.	
		Per cent.	Amount.	Per cent.	Amount.	Per cent.	Amount.
Power	$42,451 24	44.98	$19,094 60	43.77	$18,580 91	11.25	$4,775 77
Distribution	1,232 32	65.14	802 75	29.12	358 89	5.74	70 68
Consumption	3,922 36	74.33	2,915 33	.30	12 04	25.37	994 99
Commercial	779 41	88.23	687 67	11.77	91 74	.....	.....
Total above	$48,385 40	48.57	$23,500 35	39.36	$19,043 61	12.07	$5,841 44
General	5,423 18	"	2,634 04	"	2,134 56	"	654 58
Undistributed	1,455 62	"	707 00	"	572 93	"	175 69
Total above	$55,264 20	48.57	$26,841 39	39.36	$21,751 10	12.07	$6,671 71
Taxes	6,969 15	60.30	4,202 40	29.90	2,083 78	9.80	682 97
Depreciation	15,485 72	"	9,337 89	"	4,630 23	"	1,517 60
Interest	29,437 60	"	17,750 87	"	8,801 84	"	2,884 89
Total output	$107,156 67	54.25	$58,132 55	34.78	$37,266 95	10.97	$11,757 17

From the foregoing tables we find that the cost of operating the electric department is divided among the several kinds of service as follows:

Classification.	Cost of Service.		
	Capacity.	Output.	Total.
1908-1909.			
Commercial lighting	$35,842 38	$62,661 11	$98,503 49
" power	18,149 50	40,996 68	59,146 18
Street lighting	5,067 84	13,068 81	18,136 65
Total	$59,059 72	$116,726 60	$175,786 32
1909-1910.			
Commercial lighting	$33,431 71	$58,132 55	$91,564 26
" power	16,643 23	37,266 95	53,910 18
Street lighting	4,757 30	11,757 17	16,514 47
Total	$54,832 24	$107,156 67	$161,988 91

The following is a comparison of the earnings and expenses for the several classes of electric service which the applicant furnishes:

Classification.	1908-1909.		1909-1910.	
	Earnings.	Expenses, including interest and depreciation.	Earnings.	Expenses, including interest and depreciation.
Commercial lighting	$94,820 52	$98,503 49	$106,114 15	$91,564 26
" power	42,586 18	59,146 18	*43,003 36	*53,910 18
Street lighting	17,447 88	18,136 65	17,899 38	16,514 47
Miscellaneous	2,979 67	.....	622 68	.....
Total	$157,834 25	$175,786 32	$167,639 57	$161,988 91

*Exclusive of current sold to Listman Mill Company.

During the year ending June 30, 1909, the earnings of the electric department were exceeded by the cost of service by about $18,000, but during the following year the situation was reversed and earnings exceeded the cost of service by about $6,000. The greatest improvement is found in the commercial lighting sales, in which instance a change occurred from a deficit of about $3,700 to a surplus of $15,000. The situation with respect to the commercial power business was less favorable, as the deficit of $16,600 for the first period was only decreased to a deficit

of $11,000 for the second period. These facts show that the earnings from lighting are more than sufficient to meet the cost of service and that it is the surplus from this source that places the electric business as a whole upon a satisfactory basis.

From an analysis of the consumer records, the distribution of the number of consumers, connected load, and current sold for twelve months residence, store, office and saloon consumers, is found to be as shown by the following tables:

RESIDENCE LIGHTING

DISTRIBUTION OF CONSUMERS, CONNECTED LOAD AND CURRENT SOLD.

12 months users.

Lamp groups.	Per cent of No. of consumers.	Per cent of No. of 16 c. p. lamps.	Per cent of kw. hrs.	Kw. hrs. per lamp per year.	Kw. hrs. per consumer per year.
1 to 5 lamps	1.54	.33	1.15	40.9	167.4
6 to 10 "	21.11	9.97	15.40	18.2	164.5
11 to 15 "	27.13	18.39	22.35	14.3	185.7
16 to 20 "	22.80	21.34	20.82	11.5	205.9
21 to 25 "	12.57	14.76	13.97	11.1	250.5
26 to 30 "	6.10	8.82	7.36	9.8	271.7
31 to 35 "	2.79	4.95	3.59	8.6	290.0
36 to 40 "	1.69	3.30	2.91	10.4	388.0
41 to 45 "	.74	1.65	1.18	8.4	361.4
46 to 50 "	1.10	2.74	1.71	7.3	349.8
All over 50 "	2.43	13.75	9.56	8.2	888.4
Total	100.00	100.00	100.00	.....	.....
Weighted average	.....	.....	.....	11.8	225.4

STORE LIGHTING.

DISTRIBUTION OF CONSUMERS, CONNECTED LOAD AND CURRENT SOLD.

12 month users.

Lamp groups.	Per cent of No. of consumers.	Per cent of No. 16 c. p. lamps.	Per cent of kw. hrs.	Kw. hrs. per lamp per year.	Kw. hrs. per consumer per year.
1 to 5 lamps	.....	.....	.....	.....	.....
6 to 10 "	21.77	3.57	2.37	27.9	244.8
11 to 15 "	10.21	2.39	2.06	36.3	454.6
16 to 20 "	10.21	3.56	1.98	23.4	437.6
21 to 25 "	9.52	3.90	2.04	22.0	482.8
26 to 30 "	6.80	3.57	2.30	27.1	760.6
31 to 35 "	2.04	1.22	.76	26.2	837.7
36 to 40 "	4.08	2.84	1.47	21.7	807.1
41 to 45 "	4.76	3.83	2.50	27.5	1185.1
46 to 50 "	4.08	3.72	1.90	21.5	1049.0
All over 50 "	26.53	71.40	82.62	48.7	7016.0
Total	100.00	100.00	100.00	.....	.....
Weighted average	.....	.....	.....	42.1	2253.0

SALOON LIGHTING.

DISTRIBUTION OF CONSUMERS, CONNECTED LOAD AND CURRENT SOLD.

12 month users.

Lamp groups.	Per cent of No. of customers.	Per cent of No. of lamps.	Per cent of kw. hrs.	Kw. hrs. per lamp per year.	Kw. hrs. per consumer per year.
1 to 5 lamps	2.17	0.28	0.42	60.25	241.0
6 to 10 "	21.74	6.51	11.11	69.13	636.0
11 to 15 "	10.87	4.60	3.38	29.78	387.2
16 to 20 "	15.22	8.71	12.00	55.79	980.4
21 to 25 "	6.52	5.03	5.25	42.34	1002.0
26 to 30 "	8.70	8.14	6.53	37.51	1078.5
31 to 35 "	4.35	4.67	2.28	18.30	654.0
36 to 40 "	4.35	5.66	8.28	59.34	2373.5
41 to 45 "	8.69	12.04	9.30	31.32	1331.2
46 to 50 "	2.17	3.33	4.90	62.13	2920.0
All over 50 "	15.22	40.73	35.35	34.95	2892.1
Total	100.00	100.00	100.00	.....	.....
Weighted average	.....	.....	.....	40.6	1244.9

OFFICE LIGHTING.

DISTRIBUTION OF CONSUMERS, CONNECTED LOAD AND CURRENT SOLD

12 month users.

Lamp groups.	Per cent of No. of consumers.	Per cent of No. of lamps.	Per cent of kw. hrs.	Kw. hrs. per lamp per year.	Kw. hrs. per consumer per year.
1 to 5 lamps	12.82	2.35	3.15	35.0	143.6
6 to 10 "	29.49	10.18	7.08	18.2	140.5
11 to 15 "	15.38	8.52	5.82	17.8	221.5
16 to 20 "	14.10	11.50	7.41	16.8	307.5
21 to 25 "	8.98	8.98	9.23	26.8	601.6
26 to 30 "	5.13	6.41	9.97	40.6	1137.8
31 to 35 "	5.13	7.61	7.67	26.3	875.8
36 to 40 "	1.28	2.06	2.61	33.0	1187.0
41 to 45 "	.....	.....	.....	.....	.....
46 to 50 "	.....	.....	.....	.....	.....
All over 50	7.69	42.39	47.06	29.0	3580.5
Total	100.00	100.00	100.00	.....	.....
Weighted average	.....	.....	.....	26.1	585.2

Of the 1,428,637 kw. hrs. reported as sold for lighting purposes during the year 1909–1910, about 91 per cent has been so recorded as to enable a division to be made into primary, secondary, and excess use. This analysis is shown below:

DISTRIBUTION OF COMMERCIAL LIGHTING SALES.

Year ending June 30, 1910.

No of consumers.	No. of lamps.	Primary, kw. hrs.	Per cent.	Secondary, kw. hrs.	Per cent.	Excess, kw. hrs.	Per cent.	Total, kw. hrs.	Per cent.
A 2,410	40,648	229,626	55.68	137,470	33.34	45,256	10.98	412,352	100.00
B 551	20,831	182,631	28.48	220,248	34.34	238,455	32.18	641,334	100.00
C 177	14,584	79,853	32.63	79,000	32.28	85,887	35.09	244,740	100.00
D 4	192	7,833	100.00	.....	.....	.....	.....	7,833	100.00
Total 3,142	76,255	499,943	38.27	436,718	33.43	369,598	28.30	1,306,259	100.00

Class A of the foregoing table consists of residences; class B of restaurants, lodges, halls, photo galleries, barber shops, bakeries, laundries, theaters, saloons, offices, railroads, stores, and several consumers reported as miscellaneous and can therefore not be otherwise classified; class C of factories, churches, hotels, barns, garages, warehouses, boarding houses, newspapers, printing shops, hospitals, schools, shops, clubs, city buildings, county buildings and federal buildings; class D of signs. The primary current consists of the first 30 hours' use per month of the active load, the secondary of the next 60 hours' use, and the excess of all over 90 hours' use.

The present electric rate schedule of the La Crosse Gas and Electric Company provides that there shall be a service charge on all lighting installations of $1.80 per year per 16 c. p. lamp or equivalent demand, on one-third of the connected installation, or when one-third of the connected installation is considered to be the demand. Thus, it may be seen that no distinction is made in the present service charge between different classes of users, although practice shows that considerable difference actually exists between the ratio of the active load to total connected load for different uses to which the load is put. For the purposes of this analysis, the active connected load is considered to be, for class A, 50 per cent of the first ten 50 watt lamps connected, plus one-third of all over ten lamps; for class B, 70 per cent of the first fifty 50 watt lamps, plus 55 per cent of all over fifty lamps; for class C, 55 per cent of the connected load; and for class D, 100 per cent of the connected load. On this basis the foregoing table shows that the primary current amounted to 38.27 per cent, the secondary to 33.43 per cent, and the excess to 28.30 per cent of that portion of the lighting sales which is so reported as to be capable of analysis. The commercial lighting load is distributed between the several classes of users as shown below:

ACTIVE CONNECTED LOAD
COMMERCIAL LIGHTING
Year ending June 30, 1910.

Class.	Total number 50 watt lamps connected.	Total lamp-months.	Per cent active.	Total active lamp-months.
A	40,648	432,801	42.1	182,361
B	20,831	219,316	63.7	139,851
C	14,584	170,549	55.0	93,802
D	192	1,693	100.0	1,693
Total	76,255	824,359	50.7	417,707

The average number of lamps connected during the year is found to be 68,696 by dividing the total lamp-months by 12. The ratio of the average active lamps to the average connected lamps, or of the active lamp-months to the total lamp-months, is 50.7 per cent. The ratio of the average lamps connected to the total lamps connected is 90.1 per cent. The total active lamp-months of 417,707 is equivalent to an average active connected lighting load of 1,740.4 active kws. Applying the ratios thus determined to the lighting load reported for the year ending June 30, 1909, the following units are arrived at:

Total 50 watt lamps connected..... 77,240 lamps
Average " " " = 90.10 x 77,240 = 69,593 "
" active 50 watt lamps = 50.7 x 69,593 = 35,284 "
" " kws. = 35,284 ÷ 20 = 1764.2 kws.

The commercial lighting output costs, amounting to $58,132.55 for the year 1909–1910, divided by the commercial lighting sales of 1,428,637 kw. hrs. for that period, results in a unit output cost of 4.069 cts. per kw. hr. Dividing the capacity costs of $33,431.71 for the year 1909–1910 by the average active load of 1,740.4 kws., we find the unit capacity cost to be $19.21 per active kw. per year. This divided by 365 gives a unit cost of 5.263 cts. per kw. hr. for the first hour's daily use of the active load. For the year 1908–1909, capacity costs are 5.566 cts. per kw. hr. for the first hour's daily use of the active load and the output costs are 4.738 cts. per kw. hr. These units and the total cost per kw. hr. for various lengths of time the active load is used, are shown in the following table:

TABLE XXXI.

UNITS OF COST FOR COMMERCIAL ELECTRIC LIGHTING.

Use of active load, hours per day.	CENTS PER KW. HR. 1908–1909. Capacity.	Output.	Total.	1909–1910. Capacity.	Output.	Total.
1	5.566	4.738	10.304	5.263	4.069	9.332
2	2.783	"	7.521	2.632	"	6.701
3	1.855	"	6.593	1.754	"	5.823
4	1.392	"	6.130	1.316	"	5.385
5	1.113	"	5.851	1.053	"	5.122
6	.928	"	5.666	.877	"	4.946
8	.696	"	5.434	.658	"	4.727
10	.557	"	5.295	.526	"	4.595
24	.232	"	4.970	.219	"	4.288

The foregoing table shows that the difference between the cost of operation for the year ending June 30, 1909, when the generation was entirely by steam power, and for the year ending June 30, 1910, when a portion of the power was purchased, was about 1.0 cts. per kw. hr. for one hour's daily use of the active load and about 0.7 cts. for ten hour's use. The facts disclosed suggest that, for the former year, a rate of about 10 cts. per kw. hr. for the first 30 hours' use per month of the active load, 7 cts. for the next 60 hours' use, and 4.5 cts. for all use in excess of 90 hours would about return the cost of operation for that period. For the latter year the rate should be about 9 cts. per kw. hr. for the first 30 hours' use per month, 6 cts. for the next 60 hours' use, and 4 cts. for all use in excess of 90 hours.

Assuming that all of the commercial lighting sales for the years 1908–1909 and 1909–1910 are divided among primary, secondary and excess in the same ratios as are 90 per cent of the lighting sales for the year 1909–1910, we find the distribution in kw. hrs. to be as follows:

PRIMARY, SECONDARY AND EXCESS COMMERCIAL LIGHTING CURRENT.

Group.	Per cent.	Kw. Hrs.	
		1908-1909.	1909-1910.
Primary	38.27	506,140	546,740
Secondary	33.43	442,128	477,593
Excess	28.30	374,281	404,304
Total	100.00	1,322,549	1,428,637

The estimated revenues from the foregoing sales, based on the unit rates determined from table XXXI, are shown in the following table:

Group.	1908–1909.			1909–1910.		
	Kw. hrs.	Rate cts.	Estimated revenue.	Kw. hrs.	Rate cts.	Estimated revenue.
Primary	506,140	10	$50,614 00	546,740	9	$49,206 60
Secondary	442,128	7	30,948 96	477,593	6	28,655 58
Excess	374,281	4.5	16,842 64	404,304	4	16,172 16
Total	1,322,549		$98,405 60	1,428,637		$94,034 34
Actual cost			$98,503 49			$91,564 26

The following comparative table shows that the revenue per kw. hr. for several classes of La Crosse and Madison consumers:

UNIT REVENUE
FROM SALES OF ELECTRIC CURRENT.

Class.	La Crosse, year ending June 30, 1910.			Madison, year ending March 31, 1911				
				Rate existing under decision U-58.			New rate under decision U-114.	
	Kw. hrs. sold.	Net revenue.	Net revenue per kw. hour.	Kw. hrs. sold.	Net revenue.	Net revenue per kw. hour.	Net revenue.	Net revenue per kw. hour.
			cts.			cts.		cts.
Residence	411,225	$41,593 20	10.1	711,214	$80,527 19	11.3	$66,600 86	9.4
Short hour business	346,304	27,169 79	7.8	247,787	21,898 45	8.8	19,610 61	9.4
Long hour business	653,805	35,108 50	5.4	645,917	52,670 28	8.1	44,730 43	6.9
	1,411,334	$103,871 49	7.4	1,604,918	$155,095 92	9.7	$130,971 90	8.2

According to the foregoing table, La Crosse residence consumers have been paying an average rate of 10.1 cts. per kw. hr., which is somewhat less than was paid by Madison residence consumers under the rates recently superseded, but that amount is somewhat more than will be paid under the existing Madison rate. Apparently very few of the La Crosse residence consumers enjoy a rate lower than the maximum of 10 cts. per kw. hr.

In the case of business consumers, however, the average rate paid is about 1.5 cts. per kw. hr. less than for the corresponding group of Madison consumers. But this cannot be entirely due to the rate schedule; for, it may be observed, the average rate paid by La Crosse long hour business consumers is 5.4 cts. per kw. hr., while the lowest rate of the applicant's schedule is 6 cts. plus the readiness-to-serve charge. The evident explanation of this situation seems to be the existence of contract rates established prior to April, 1907. Although the revenue per kw. hr. may, therefore, be rather low for business consumers, it appears that this condition is brought about by such circumstances that it cannot be equitably remedied by an increase in the maximum rate prayed for. Some inequity, however, does exist, as we have already stated, between the readiness-to-

serve charge for business and residence consumers, and the facts seem to warrant an increase in the ratio of active to connected business lamps. There were connected, during the year ending June 30, 1910, about 35,400 equivalent 50 watt business lamps, which, under the existing schedule, correspond to an active connected load of 11,800 50 watt lamps. The revenue from the readiness-to-serve charge of $1.80 per active lamp per year is now about $21,240 for the business consumers.

The following table shows what the apparent increase of revenue from the service charge amounts to when the ratio of active to total connected load is increased to the amount shown below:

Number of 50 watt business lamps connected.	Per cent active.	Number of active 50 watt lamps.	Revenue from service charge of $1.80 per active lamp per year.	Increase over present revenue from service charged.
35,400	33⅓	11,800	$21,240	.....
35,400	35	12,390	22,302	$1,062
35,400	38	13,452	24,214	3,974
35,400	40	14,160	25,488	4,248

The bills of those consumers, who are now paying the maximum rate, would be unaffected by an increase in the ratio of active to connected load, and in such instances, therefore, the revenue from current sold would decrease at the same rate as the revenue from the service charge increased. Total revenues would therefore be increased by an amount somewhat less than the apparent increase due to a larger percentage active. Were the active business load increased to 50 per cent of the connected load, the apparent increase in the revenue would be about $10,620.

Electric Power.

During the year ending June 30, 1909, there were sold for commercial power purposes 1,274,815 kw. hrs., and during the year following, 1,322,815 kw. hrs. The total power output costs for these respective periods were $40,996.68 and $37,266.95, corresponding to a unit output cost per kw. hr. of 3.216 cts. for the former year and 2.817 cts. for the latter. To properly apportion the power capacity costs among the various installations, it is necessary to determine the active horse-power-months for this class of service. Analysis of the individual power installations for the year ending June 30, 1910, shows that the distribution of the load was as follows:

DISTRIBUTION OF POWER LOAD AND HORSE-POWER-MONTHS.

Year ending June 30, 1910.

Size of installation.	Number of consumers.	Horse power connected.	Total horse-power-months.	Per cent active.	Active horse-power-months.
Less than 10 h. p.	199	707.0	7,075.0	90	6,367.3
From 10 h. p. to 19 h. p.	33	425.0	4,269.5	70	2,988.6
From 20 h. p. to 49 h. p.	23	642.5	6,330.0	60	3,798.0
From 50 h. p. to 100 h. p.	5	416.0	3,707.5	55	2,039.1
Over 100 h. p.	.....	245.0	1,780.0	50	890.0
Total	.....	2,435.5	23,162.0	69.4	16,083.0

If the 2,435.5 h. p. had been connected for the entire year, the total horse-power-months would have been 29,226. Of this, the actual horse-power-months, amounting to 16,083, are 55.03 per cent. The total commercial horse power connected, June 30, 1909, was reported to be 1,924, which corresponds to 23,088 horse-power-months were this load connected for a full year. Assuming that the relation of actual horse-power-months to the product of the total horse power by 12 remained the same for the two years, we find that the probable actual horse-power-months for the year ending June 30, 1909, were 12,705. Dividing the power capacity costs of $16,643.23 for year 1909–1910 by 16,083, and $18,149.50 for year 1908–1909 by 12,705, the unit capacity costs per active horse-power-month are found to be $1.035 for the year 1909–1910, and $1.428 for the year 1908–1909. Placing the rate for current used at 3 cts. per kw. hr. and the service charge at $1.70 per active horse-power-month for 1908–1909 and at $1 per active horse-power-month for 1909–1910, the estimated commercial power revenues are as follows:

ESTIMATED POWER REVENUE

Year 1908–1909.

12,705 active h. p. months at $1.70	$21,601.50
1,274,815 kw. hrs. at 3 cts	38,244.45
Total estimated revenue	$59,845.95
Actual power cost	$59,146.38

Year 1909–1910.

16,083 active h. p. months at $1	$16,083.00
1,322,815 kw. hrs. at 3 cts	39,684.45
Total estimated revenue	$55,767.45
Actual power cost	$53,910.00

STREET LIGHTING.

The following table shows the relation between the cost of street lighting and the revenues therefrom for the two years under consideration:

	1908–1909.	1909–1910.
Capacity cost	$5,067 84	$4,757 30
Output cost	13,068 81	11,757 17
Total cost	$18,136 65	$16,514 47
Revenue	$17,447 88	$17,899 38

These facts show that, during the year 1908–1909 the revenue from street lighting fell short of the cost of service by about $700. During the year 1909–1910, however, the cost of service so decreased that it is exceeded by the revenue from this source by about $1,300.

EFFECT OF ALLOWANCE FOR GOING VALUE.

The unit operating costs, so far computed, have taken into consideration no allowance for going value, but have been deduced from the operating expenses, including depreciation and interest, only upon the physical investment and necessary working capital. Taxes, also, have been included in the operating expenses as they were reported by the applicant. Subsequent to the hearings of this case, the supreme court of Wisconsin has held that the tax of 2 per cent, imposed by the city upon the applicant's gross income from electric lighting and power, is set aside since the applicant surrendered its franchise from the city and received an indeterminate permit from the state. This reduction in taxes corresponds to a decrease in operating expenses of about $2,748 as based on the gross revenue of the commercial electric business for the year ending June 30, 1909, and of $3,268 as based on the gross revenue for the year ending June 30, 1910. The former figure capitalized at 8 per cent corresponds to an investment of $34,000, and at 7½ per cent to $37,000. The tax for 1909–1910, capitalized at these rates, corresponds to an investment of $41,000 and $44,000. If no credit is now made to the operating expenses because of the discontinuance of the tax on the applicant's gross revenues, the effect on the net income would be the same as though there were allowed an intangible value of $34,000 to $44,000. In order to show what effect a further allowance for going value would have upon the unit costs of service, additional computations have been made assuming for the electric department a going value of $50,000. The return at 8 per cent upon this sum, distributed as was the interest upon the physical investment, results in slight increases in the unit costs.

UNIT COSTS FOR COMMERCIAL LIGHTING.

ALLOWING $50,000 GOING VALUE FOR ELECTRIC UTILITY.

Cents per kw. hrs.

Use of active load, hours per day.	1908–1909.			1909–1910.		
	Capacity.	Output.	Total.	Capacity.	Output.	Total.
1	5.694	4.845	10.539	5.393	4.170	9.563
2	2.847	"	7.692	2.696	"	6.866
3	1.898	"	6.743	1.797	"	5.967
4	1.424	"	6.269	1.348	"	5.518
5	1.139	"	5.984	1.079	"	5.249
6	.949	"	5.794	.899	"	5.069
8	.712	"	5.557	.675	"	4.845
10	.569	"	5.414	.539	"	4.709
24	.237	"	5.082	.225	"	4.395

From the following estimate of revenues it will be seen that, except for an increase of half a cent in the suggested rate for excess current for the year 1908–1909, the units already determined are ample to cover the costs of commercial lighting operation, including interest on a going value of $50,000, while deducting nothing for reduction in taxes:

Group.	1908–1909.			1909–1910.		
	Kw. hrs.	Rate, cts.	Estimated revenue.	Kw. hrs.	Rate, cts.	Estimated revenue.
Primary	506,140	10	$50,614 00	546,740	9	$49,206 60
Secondary	442,128	7	30,948 96	477,593	6	28,655 58
Excess	374,281	5	18,714 05	404,304	4	16,172 16
Total	1,322,549	.....	$100,277 01	1,428,637	.....	$94,034 34
Actual cost, inclusive of interest on going value of $50,000	.....	.....	$100,777 53	.....	.....	$93,387 91

UNIT COSTS FOR COMMERCIAL POWER.

The allowance of $50,000 going value for the electric utility increases the capacity and output power costs for the year 1909–1910 to $17,054.22 and $38,187.28, respectively, from which the unit costs are found to be a service charge of $1.06 per active horse power per month and an output cost for current used of 2.887 cts. per kw. hr. For the year 1908–1909 the capacity costs on this basis are $18,565.59, and the output costs $41,925.95, from which are obtained a unit service charge of $1,462 per active horse power per month and an output charge of 3.290 cts. per kw. hr. These units differ very little from those previously computed.

STREET LIGHTING.

The following table shows the relation between operating costs and revenues for street lighting when $50,000 going value is allowed for the electric utility:

	1908–1909.	1909–1910.
Total street lighting operating expenses	$18,548 91	$16,922 27
Street lighting revenues	17,447 28	17,899 38

MINIMUM ELECTRIC BILL.

The applicant requests that authority be granted to increase the minimum monthly electric lighting bill from $0.75 to $1. The readiness-to-serve form of the applicant's schedule is such that apparently those fixed expenses which are proportional to the number of consumers or number of meters are returned to the utility through the service charge of $1.80 per active lamp per year, and this would be the case were it not provided that the combined service and current consumption charges shall not be greater than 10 cts. per kw. hr. For this reason, it is necessary that provision be made for a minimum charge sufficient to cover those expenses which bear little or no relation to the consumption of current. When interest, depreciation, and taxes on the applicant's investment in consumers' meters and services are added to meter, collection and customers' premises expenses, and when further allowance is made for the cost of current likely to be used under the minimum bill, it appears that minimum charge of $1 per month is not unreasonable.

EMERGENCY SERVICE CHARGE.

In order to meet the demand for "stand-by" connections, for such costomers as generate their own current for light and power, the petitioner proposes that the existing service and meter rates apply without limit as to maximum rate per kw. hr. Obviously, the total cost of serving customers of this class is not proportional to the amount of current which they use, but depends much more upon the fixed expense occasioned by preparations to meet their demands. We have already shown what the capacity or demand costs amount to for the years ending June 30, 1909 and 1910. When these costs are reduced to the basis of one-third of the load active, they agree very closely with the readiness-to-serve charge now in effect. The commercial lighting output costs were 4.74 cts. per kw. hr. for the year 1908–1909 and 4.07 cts. for the year 1909–1910. The meter charge for this service should therefore be a uniform rate of from 4 to 5 cts. per kw. hr. when the service charge applies without limiting the total charge per unit used. In the case of power service, the output cost was found to be about 3 cts. per kw. hr.

Since the determination of the foregoing units of operating costs, which are based chiefly upon conditions of operation from June 30, 1908, to June 30, 1910, there have been filed with the Commission the applicant's reports of its gas, electric, and heating business for the year ending June 30, 1911. Some analysis has been made of these statements, which will be presented here in order to throw more light upon the conditions under which the business is conducted.

GAS PLANT OPERATION.

COMPARATIVE TABLE OF THE INCOME ACCOUNTS OF THE GAS PLANT.
For the years ending June 30, 1909 and 1911.

	Year ending June 30,		
	1909.	*1910.*	*1911.*
OPERATING REVENUES			
Commercial earnings	$64,877 70	$72,975 75	$74,193 33
Power earnings	867 78		
Misc. operating revenues	326 41	27 42	
Total operating revenues	$66,071 89	$73,003 17	$74,193 33
OPERATING EXPENSES			
Production	$57,829 39	$65,207 60	$71,580 92
Net earnings from residuals	30,696 04	34,094 81	32,630 21
Net cost of production	$27,133 35	$31,112 79	$38,950 71
Distribution	2,178 19	2,447 66	2,026 22
Commercial	1,738 93	1,927 58	1,583 31
Total direct expenses	$31,050 47	$35,488 03	$42,560 24
General	5,393 76	6,525 12	5,254 29
Undistributed	1,378 96	1,751 39	8,304 52
Total above expenses	$37,823 19	$43,764 54	$56,119 05
Taxes	4,221 63	4,885 47	5,522 92
Depreciation	5,486 00	5,584 00	5,625 00
Total operating expense	$47,530 82	$54,234 01	$67,266 97
NET REVENUE	$18,541 07	$18,769 16	$6,926 34
Net revenue in per cent of cost of production	7.5	7.5	3.7

It will be observed that for the first two years of this period the net revenues remaining for interest and profits amounted to about 7.5 per cent of the cost of reproducing the gas plant. During the last year, however, the operating expenses have so increased without a corresponding increase in gross revenues that the net revenue fell to about 3.7 per cent of the cost of reproduction. Examination of the applicant's statements reveals the fact that a notable increase in production and undistributed expenses is accountable almost entirely for this marked falling off of the earning capacity of the gas plant. Of the undistributed expenses, amounting to $8,304.52 for the year ending June 30, 1911, $6,761.40 are for injuries and damages resulting from an accident in 1906, which was not fully covered by insurance. Such expenses and infrequent in occurrence and manifestly should be distributed over several years if a determination of normal operating costs is desired. The result of this operation will be to so increase the net revenues for the last fiscal year that the rate of return will be about 5 per cent.

The net cost of gas production during the year ending June 30, 1911, exceeded that for the preceding year by about $7,800. During the same time the revenues from Commercial sales increased only about $1,100. Although it appears that the gas produced increased about 4,760,000 cu. ft., or 6 per cent, there was no material increase in the amount of gas sold. The applicant's explanation of the condition of the station meter throws considerable doubt upon the reliability of this instrument and, therefore, upon the fairness of a comparison of the unit production costs that may be based on the amount of gas recorded at the station. The following table shows some of the important facts relating to the applicant's production of gas since June 30, 1908:

	Year ending June 30,		
	1909.	*1910.*	*1911.*
Cu. ft. of gas made	75,168,500	79,044,800	83,817,700
Cu. ft. of gas sold	63,616,700	72,387,300	72,476,200
Cu. ft. of gas used by Co.	1,890,800	463,000	758,000
Cu. ft. of gas sold and used	65,507,500	72,850,300	73,235,200
Per cent lost	12.9	7.7	12.6
Tons of coal carbonized	8,092	8,447	9,231
Cost of coal per ton	$4 60	$4 65	$4 67
Cu. ft. made per lb. of coal	4 64	4 68	4 54
Cu. ft. sold and used per lb. of coal	4 05	4 32	3 96
Residuals	$30,696 04	$34,094 81	$32,630 21
Residuals per ton of coal carbonized	3 80	4 03	3 53
Residuals per M ft. sold and used	.480	.468	.446

The foregoing table discloses that, during the last year of this period, very material decreases took place in the amount of gas sold and used per pound of coal carbonized, residuals per ton of coal carbonized, and per M cu. ft. of gas sold and used. The combined effect of these circumstances may best be shown by the following table:

	Year ending June 30,		
	1909	*1910.*	*1911.*
Production	$57,829 39	$65,207 50	$71,580 92
Residuals	30,696 04	34,094 81	32,630 21
Net cost of mfg.	$27,133 35	$31,112 69	$38,950 71
Net cost of mfg. per M sold and used	$0.413	$0.427	$0.532

It is the applicant's claim that although the grade of coal purchased for gas production is presumably similar to that heretofore used, its inferiority as represented by the decrease in the yield of gas is chiefly accountable for the increased cost of manufacture. Production labor has also increased over former years and, it is claimed, must be still further increased in order to meet conditions elsewhere. Comparison, however, with con-

ditions in other cities, as shown by the following table, does not substantiate the applicant's contention that the cost of its gas production labor is low. While it is true that this cost per M cu. ft. sold has increased in the applicant's business during the last three years, it is now considerably above the average for other coal gas plants of about the same size.

COAL GAS PRODUCTION LABOR FOR CLASS A UTILITIES.*
Year ending June 30, 1911.
Cents per M cu. ft sold.

City.	Superintendence.	Retort house labor.	Purifying labor.	Miscellaneous labor.	Total.
Appleton	0.0137	0.0594	0.0037	.....	0.0768
Eau Claire	.0047	.0793	.0028	0.0033	.0901
Green Bay	.0193	.1082	.0037	.0098	.1410
Manitowoc	.0204	.1024	.0030	.0018	.1276
Marinette	.0263	.1297	.0061	.....	.1621
Oshkosh	.0267	.0944	.0041	.0006	.1258
Sheboygan	.0198	.1218	.0088	.0045	.1549
Wausau	.....	.0836	.0095	.....	.0931
Maximum	.0267	.1297	.0095	.0098	.1621
Minimum	.....	.0594	.0028	.....	.0968
Average	.0164	.0974	.0052	.0015	.1224
La Crosse					
1908-1909	.0096	.0890	.0095	.0052	.1133
1909-1910	.0116	.0952	.0066	.0115	.1249
1910-1911	.0165	.1070	.0071	.0194	.1500

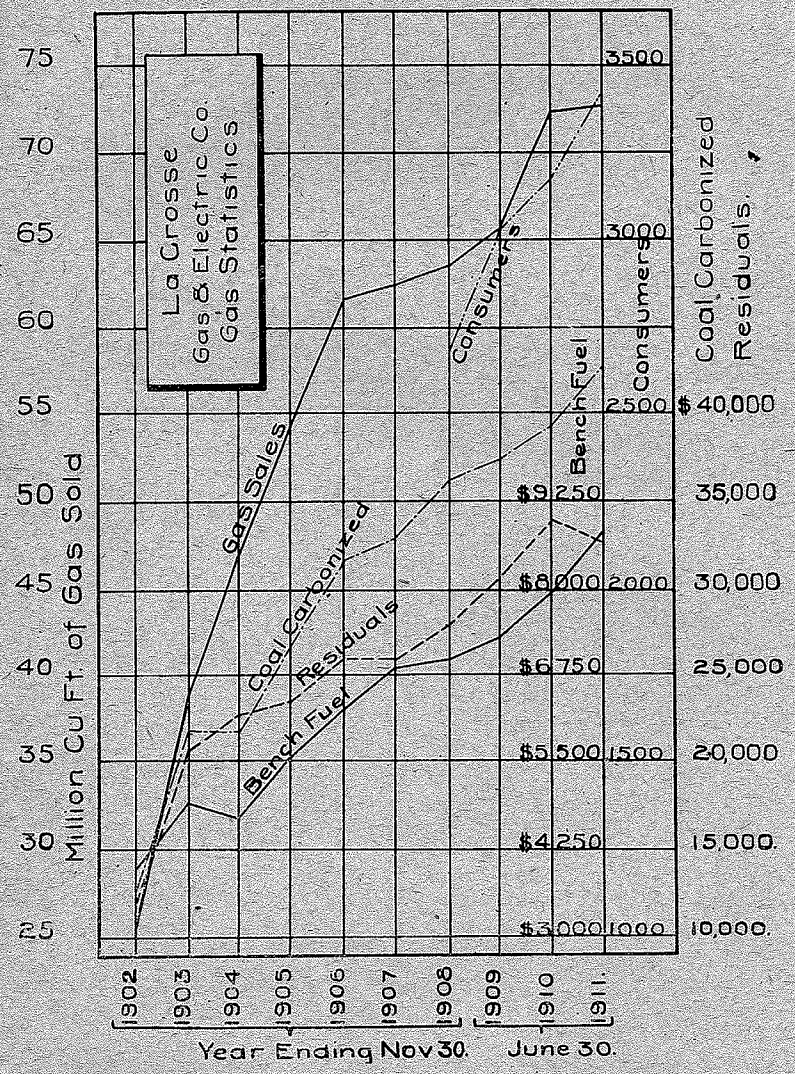
*Class A utilities producing only coal gas and purchasing no gas for resale.

Examination of the operating statistics for other class A coal gas utilities shows that there has been, on the whole, little or no change in the cost of gas coal and that the yield per pound of coal has slightly increased rather than decreased.

COST OF COAL PER TON AND YIELD OF GAS PER POUND OF COAL.
Coal Gas Utilities.

City.	Year ending June 30, 1909		1910		1911	
	Cost of coal per ton.	Cu. ft. of gas made per lb. of coal.	Cost of coal per ton.	Cu. ft. of gas made per lb. of coal.	Cost of coal per ton.	Cu. ft. of gas made per lb. of coal.
Appleton	$4 25	5.24	$3 95	5.22	$4 03	5.20
Eau Claire	4 05	5.26	4 05	5.44	4 27	5.22
Green Bay	3 50	4.80	3 40	4.57	3 65	4.96
Manitowoc	3 50	4.83	3 46	4.87	3 25	4.60
Marinette	3 14	4.30	3 18	4.70	3 19	4.67
Oshkosh	4 13	5.22	3 83	5.18	4 08	5.09
Sheboygan	3 29	4.80	3 29	4.85	3 50	4.82
Wausau	4 50	4.48	4 50	4.53	4 50	4.87
Average	$3 79	4.87	$3 71	4.92	$3 81	4.94

What the applicant's statement concerning its production expenses shows for the year ending June 30, 1911, as compared with the previous history of the business, may well be seen by examination of the following diagram:



From 1906 to 1908, the curves of the preceding diagram show a tendency to approach the horizontal. This is explained by the fact that, at about that time, the electric properties were all combined under the managment of the La Crosse Gas and Elec-

tric Company and active competition ceased between the gas and electric business as well as between the several electric utilities. When normal conditions again began to be restored, the curves again approached their former slope until the last year of operation when some of the curves show a remarkable tendency to reverse their direction. The points of the curves representing the number of consumers, the cost of coal carbonized and of bench fuel, seem to fall in their natural positions for the year ending June 30, 1911. Sales of gas, however, remain practically stationary and revenues from residuals decline considerably, although the quantity of coke per ton of coal carbonized and the price received per ton of coke remained the same.

Did all of these circumstances tend to show a permanent inclination of the gas business to narrow the margin between the operating revenues and the operating expenses, the business might, indeed, be considered to be in a grave situation. But these facts are supported neither by the history of the plant's business nor by the tendency of conditions elsewhere, and it therefore seems necessary to conclude that the conditions that apparently prevailed in the applicant's gas business during the year 1910–1911 are, at most, only temporary and do not indicate a permanent change in the normal cost of operation.

ELECTRIC PLANT OPERATION.

Year Ending June 30, 1911.

The following is a comparative statement of the income account for the applicant's electric business for the years ending June 30, 1909, 1910, and 1911:

ELECTRIC DEPARTMENT.
COMPARATIVE INCOME ACCOUNTS.

	Year ending June 30.		
	1909.	*1910.*	*1911.*
OPERATING REVENUES:*			
Commercial lighting earnings	$94,820 52	$106,114 15	$110,460 81
Mun. contract earnings	17,447 88	17,899 38	17,864 84
Commercial power earnings	42,586 18	43,003 36	56,224 07
Total operating revenues	$154,854 58	$167,016 89	$184,549 72
OPERATING EXPENSES:*			
Power	$74,026 32	$60,644 73	$61,976 77
Distribution	7,018 28	5,956 03	7,814 33
Consumption	6,583 22	4,535 41	6,079 18
Commercial	1,762 56	2,007 29	3,166 65
Total direct expenses	$89,390 38	$73,143 46	$79,036 93
General	7,810 50	8,198 30	10,508 56
Undistributed	1,996 83	2,200 49	3,346 27
Total above expenses	$99,197 71	$83,542 25	$92,891 76
Taxes	9,103 85	10,535 38	11,045 93
Depreciation	23,259 00	23,410 00	24,190 00
Total operating expenses	$131,560 56	$117,487 63	$128,127 69
Net operating revenues	$23,294 02	$49,529 26	$56,422 03
Non-operating revenues	2,979 67	622 68	1,015 47
Total net revenues	$26,273 69	$50,151 94	$57,437 50
Return on cost of reproduction plus working capital	*4.75%*	*9.00%*	*10.12%*

*Exclusive of earnings and expenses of current for Listman Mill Company, year ending June 30, 1910.

During the year ending June 30, 1911, the La Crosse Gas and Electric Company generated, by steam power, 2,721,740 kw. hrs. of electrical energy, and purchased from the La Crosse Water Power Company 2,122,550 kw. hrs. generated by water power. The La Crosse Water Power Company found itself unable to furnish the necessary demand at various times during this period and the costs of steam power were, to this extent, charged against the latter concern. As a result of this situation, the applicant reports the following account of its cost of power for the year 1910–1911.

Total steam power generation	$62,543.12
Total electric current purchased	37,718.52
Total	$100,261.64
Less charges to La Crosse Water Power Co.	38,284.87
Net cost of power	$61,976.77

Unusual rainfalls in the Black river valley, since the close of the last fiscal year, caused the Black river to overflow the embankments at the Hatfield plant of the La Crosse Water Power Company and to wash away the earthwork and to otherwise

damage the power company's property. Following this occurrence, the receiver of the La Crosse Water Power Company canceled its contract with the applicant. For these reasons the applicant is now compelled, at least during the immediate future, to generate its own current, and it estimates that the losses effected thereby will be about as follows:

Penalties actually received in 1911	$2,263.00
Increased cost of steam generation over water power contract basis, 2,883,700 kw. hrs. at about ½ cts. per kw. hr.	14,418.50
Rent of north side plant under the contract terms, eight months and seven days	4,116.69
Loss of profit on street railway business, 679,610 kw. hrs. at ⅛ cts. per kw. hr.	1,224.25
Total loss which applicant estimates it will sustain by the failure of the La Crosse Water Power Company and the damage of its property	$22,022.44

The applicant also claims that, on the basis of the taxes for 1911, this expense will be increased during the ensuing year by $477 which, combined with a probable increase of 1 mill in the tax rate, will effect a further addition of $1,400 for the year ending June 30, 1911. On the other hand, the attorney for the respondent contends that the applicant's taxes are clearly too high and that an appeal should be taken to the board of equalization. For the purpose of this analysis, it appears reasonable to place taxes at the actual figure for the year 1910–1911.

During the year ending June 30, 1911, there were generated by steam power, 1,691,800 kw. hrs. of alternating current and 1,002,040 kw. hrs. of direct current, or a total, by steam power, of 2,693,840 kw. hrs. There were purchased, during this time, 2,122,550 kw. hrs. of current generated by water power, of which 991,227 kw. hrs. were resold at the switchboard to the street railway company, leaving 1,113,323 kw. hrs. of hydraulic current used for light and power. The combined delivery to the switchboard for these purposes was 3,825,163 kw. hrs.

SWITCHBOARD OUTPUT.

Year ending June 30, 1911.

Steam power generation	1,691,800 kw. hrs.	a. c.
Steam power generation	1,002,040 "	d. c.
Total steam power generation	2,693,840	
Purchased current	2,122,550 kw. hrs.	
Sold to traction company	991,227 "	
Purchased for light and power	1,131,323 kw. hrs.	
Total generated and purchased for light and power	3,825,163 kw. hrs.	

What this current would have cost the applicant if generated entirely by its steam equipment, depends not so much upon the cost per unit of that current which was generated by steam power during the last fiscal year, as upon the cost of generation during former years when no current was purchased and when the load factor of the steam equipment must, undoubtedly, have been much better. During the year ending June 30, 1909, all current, except a small amount produced by gas power, was generated by the applicant's steam equipment and it is believed, therefore, that the cost of generation per kw. hr. during that period more accurately indicates the probable cost of production, when water power is not available, than any subsequent period. Although the average cost of steam power generation, as reported for the year 1910–1911, amounted to 2.32 cts. per kw. hr., the average cost, which we have found for the year 1908–1909, was 1.804 cts., being 2.11 cts. per kw. hr. for direct current and 1.57 cts. per kw. hr. for alternating current. Assuming that all of the direct current is generated in the Edison plant and all of the alternating current in the turbine plant, which will be approximately correct, the cost of generation by steam power is estimated to be as follows:

Direct current	1,002,040 kw. hrs. at 2.11 cts.		$21,000.00
Alternating current	2,823,123 " " 1.57 cts.		44,400.00
Total			$65,500.00

Estimating on the basis of the average cost of current during year 1908–1909, the estimate of cost of generation is increased to $69,150. These estimates of power generation costs are used in the following table of income accounts for the purpose of which it was assumed that there existed no contract for purchase of current by the applicant nor sale of current for traction purposes.

ESTIMATE OF EXPENSES AND NET REVENUES.

Year ending June 30, 1911.

Assuming no Water Power and Street Railway Contracts.

	Estimate No. 1.	Estimate No. 2.	Estimate No. 3.	Estimate No. 4.
OPERATING REVENUES:				
Com'l lighting	$110,460 81	.....	.....	.....
Com'l power	45,075 18	.....	.....	.....
Street lighting	17,864 84	.....	.....	.....
Total oper. revenue	$173,400 83	$173,400 83	$173,400 83	$173,400 83
OPERATING EXPENSES:				
Power	$69,150 00	$65,500 00	$69,150 00	$65,500 00
Distribution	7,814 33	7,814 33	5,955 03	5,955 03
Consumption	6,079 18	6,079 18	4,535 41	4,535 41
Commercial	3,166 65	3,166 65	2,007 29	2,007 29
General	10,508 56	10,508 56	8,198 30	8,198 30
Undistributed	3,346 27	3,346 27	2,200 49	2,200 49
Total above	$100,064 99	$96,414 99	$92,046 52	$88,396 52
Taxes	11,045 93	11,045 93	11,045 93	11,045 93
Depreciation	24,190 00	24,190 00	24,190 00	24,190 00
Total oper. expenses	$135,300 92	$131,650 92	$127,282 45	$123,632 45
Net oper. revenues	$38,099 91	$41,749 91	$46,118 48	$49,768 48
Non-oper. revenues	1,015 47	1,015 47	1,015 47	1,015 47
Total net revenues	$39,115 38	$42,765 38	$47,133 95	$50,783 95

In the first estimate of the foregoing table the cost of power is computed at the average cost of current produced during the year 1908–1909. Other expenses, except depreciation, are the same as were reported by the applicant for the year 1910–1911. The cost of power, in the second estimate, is based on 2.11 cts. per kw. hr. for direct current and 1.57 cts. for alternating current, resulting in a somewhat lower cost of power. In this, as well as in the first estimate, other expenses, except depreciation, are as reported by the company. It will be noted that the distribution, consumption, commercial, general and undistributed expenses, which the applicant reports for its electric business for the year 1910–1911, are somewhat greater than the expenses we have found for similar items for the preceding year. This may be due to taking on the street railway business, to a general increase of these expenses, or to loading the electric department with more than its fair share of the costs. Aside from the sales for traction purposes, the general business of the electric department during the last year's operation was not materially greater than for the year next preceding; the kw. hrs.

sold during these respective periods were 3,095,232 and 3,109,721. For this reason, estimates three and four were made to illustrate the amount of net revenue resulting when the same costs are assumed for power, depreciation and taxes, as in estimates one and two, but when other expenses are placed at the same figures as for the year 1909–1910. What return on the investment the various estimated net revenues of the foregoing table amount to is shown below:

RETURN ON INVESTMENT IN ELECTRIC BUSINESS.

Year ending June, 30, 1911.

	Cost of reproduction.	Per cent return for int. and profits.				Present value.	Per cent return for int. and profits.			
		Est. No. 1.	Est. No. 2.	Est. No. 3.	Est. No. 4.		Est. No. 1.	Est. No. 2.	Est. No. 3.	Est. No. 4.
Engineer's value 6-30-'09	$531,127	.....	.....	.....	.....	$427,416	.....	.....	.....	.....
Omissions added	13,000	.....	.....	.....	.....	10,430	.....	.....	.....	.....
Additions year 1909-1910	8,290	.....	.....	.....	.....	8,290	.....	.....	.....	.....
" " 1910-1911	6,422	.....	.....	.....	.....	6,422	.....	.....	.....	.....
Total physical value 12-31-1910	$558,839	7.00	7.65	8.43	9.09	$452,558	8.64	9.44	10.41	11.22
Working capital	8,695	.....	.....	.....	.....	8,695	.....	.....	.....	.....
Physical value plus working capital	$567,534	6.89	7.54	8.31	8.95	$461,253	8.48	9.26	10.22	11.01
Tentative further increase	50,000	.....	.....	.....	.....	50,000	.....	.....	.....	.....
	$617,534	6.32	6.92	7.63	8.22	$511,253	7.65	8.36	9.22	9.93

HEATING PLANT OPERATION.

Year Ending June 30, 1911.

The following table is a comparison of the income accounts of the heating business for the three years ending June 30, 1911. The last column of this table shows the revenues and expenses as reported by the utility for the last fiscal year:

HEATING DEPARTMENT.

COMPARATIVE INCOME ACCOUNTS.

	Year Ending June 30,		
	1909.	*1910.*	*1911.*
OPERATING REVENUES	$33,757 72	$34,447 70	$35,941 03
OPERATING EXPENSES			
Production	$19,830 22	$20,803 95	$18,609 25
Distribution	964 22	324 45	1,153 01
Commercial	129 61	138 63	527 80
Total direct expenses	$20,924 05	$21,267 03	$20,290 06
General	1,828 52	1,994 79	1,751 44
Undistributed	467 46	535 42	514 39
Total above expenses	$23,220 03	$23,797 24	$22,555 89
Taxes	1,581 42	1,830 09	1,841 00
Depreciation	1,698 00	1,698 00	1,698 00
Total operating expenses	$26,499 45	$27,325 33	$26,094 89
NET REVENUE	$7,258 27	$7,122 37	$9,846 14
Return on cost of reproduction plus working capital	*7.6%*	*7.5%*	*10.3%*
Return on present value plus working capital	*9.5%*	*9.3%*	*12.9%*

According to these facts a marked improvement has taken place in the financial condition of the heating business during the period when water power was available, which may be due, at least in part, to the fact that at such times the quantity of electric generation in the Edison plant can more closely conform to the demand on the heating system. But generation by the company's steam equipment must, for some indefinite period, be again reverted to, resulting a probable increase of cost of service for the heating as well as for the electric business. How much this increase will amount to, it is difficult to say, but we are inclined to the belief that it is not likely to rise above the costs for the year ending June 30, 1909.

SUMMARY.

The application for the various increases of rates for the gas, heating and electric business, as heretofore enumerated, rests, almost entirely, upon the petitioner's claim to an investment in plant and business that is much in excess of the cost of reproducing the physical properties. Examination of such facts as are available concerning the annual operating revenues and expenses, additions to the property, and their relation to the present cost of reproducing the physical equipment leads us to believe, however, that the amount upon which the applicant is now entitled to return is not very far from the cost of reproducing the properties of the combined utilities.

In the gas department the situation with respect to the net earnings has been such that we do not feel warranted, under the circumstances, in authorizing an increase at this particular time. The facts in the case indicate that there should be a readjustment of the schedule, as already outlined, in order that it may more closely conform with the cost curve. But, because of prevailing conditions, and because the application is not so much for a readjustment of the rates as for an increase affecting a considerable portion of the sales with no corresponding decrease for the larger quantities used, it appears best to leave the gas schedule, for the present, as it now is.

A separation of the revenues and expenses for the electric and the heating systems has not been made for the entire period since the properties were acquired by the applicant, but separations of the income accounts for recent years indicate that the earnings of the heating department have been ample to return a fair rate of interest and profit on the investment. Here, again, the rate schedule might properly be readjusted to more closely correspond to the variable cost of service; but such a revision is demanded neither by the applicant nor by the respondent, and it appears advisable not to change the existing schedule.

The net earnings of the electric business have been less certain than those of the gas and heating departments, especially during the period of competition when various losses probably took place. Since Nov. 30, 1909, the electric business has much improved, due somewhat to use of purchased current, and the net earnings during that period offset, to some extent, the earlier losses. Since the close of the last fiscal year circumstances have developed which require the applicant to discontinue the use of purchased current for an indefinite period, and the net return for the year ending June 30, 1911, is therefore probably greater than should be expected for the immediate future. But estimates of the normal operating expenses, as based on former costs of steam generation, warrant the conclusion that the net earnings, with the existing rate schedule, will be sufficient or nearly so to meet the legitimate claims of the business. The schedule for commercial lighting fails to recognize the proper

relation between the residence and business use of current and it is believed that a small increase in the ratio representing the relation of active to connected load for business users will, to some extent, remedy this situation and at the same time add slightly to the applicant's income. The minimum commercial lighting bill also appears to be too low and should be increased to about $1.

The revenue from electric power sales appears to be insufficient to meet the expenses of this department when the operating expenses are divided upon a strictly cost of service basis. This is due chiefly to the fact that the applicant's average output charge is somewhat less than 2.0 cts. per kw. hr., although the output cost was found to be about 3 cts. On the whole, the form of the power schedule does not appear to be unreasonable, but the rate charged may not be just what it ought to be. The power business that has been built up may have been attracted by the advantageous rate rather than by the necessity of electric power. It appears advisable, however, not to disturb the power rates at this time.

In reply to the applicant's petition for increases in rates, the respondent has filed certain counter claims for reductions. It has been deemed unnecessary to discuss these claims as such, in detail, since the matters involved have been considered in connection with the discussion of the applicant's investment and the cost of service.

ORDER.

IT IS ORDERED, That the applicant in this case, the La Crosse Gas and Electric Company, be and hereby is authorized to amend its rate schedule, as follows:

COMMERCIAL LIGHTING.

Service Charge.

The service charge for all business lighting installations shall be $1.80 per year per 50 watt lamp, or equivalent unit, on 38 per cent of the connected installation.

No change is made in the rate for residence lighting.

Minimum Bill.

The minimum bill for commercial lighting shall be $1 per month. Where company is unable to read meter after reasonable effort, the fact shall be plainly indicated upon the monthly bill, the minimum charge assessed, and the difference adjusted with the consumer when the meter is again read.

Emergency or Stand-by Service.

The service charge for emergency or stand-by lighting service shall be $1.80 per year per active 50 watt unit. The charge for current used shall be 4.5 cts. per kw. hr. The service charge plus the charge for current used shall be unaffected by the existing maximum rate per kw. hr.

POWER.

Emergency or Stand-by Service.

The service charge for emergency or stand-by power service shall be $27 per active horse power per year. The charge for current used shall be 3 cts. per kw. hr. The service charge plus the charge for current used shall be unaffected by a maximum rate per kw. hr.