OLIGSCHLAEGER

KCPL

April 2, 1982

Mr. A. J. Doyle

As I previously mentioned to you, I have been reviewing a plan to reorganize our way of handling our steam heat system. For a number of years we have not had a steam heat department; the various work functions have been split between several groups in T&D Systems Operations. Presently there are five operating people reporting to Mr. T. D. Matthews, Manager of Distribution Operations. These people read meters, make inspections, do minor maintenance, operate valves, etc. There are a number of people, depending upon the job, reporting to Mr. R. C. Huttsell, Manager of Construction & Maintenance at Manchester, who do the excavating, backfilling and labor type activities. When welding is required, these people are furnished by Building & Shop Services under Mr. J. L. Stracke. There is no foreman or first line supervisor to oversee the whole operation.

It is generally agreed that operation and maintenance of the steam system has been treated as a "step child", always treated with less interest and priority than the electrical system. I believe that a much better job of operating and maintaining this system can be accomplished by reorganizing the work functions into a single department with a foreman accountable for overall performance of the heat system.

For this newly formed department it is proposed to transfer five employees from Distribution Operations and four employees from T&D Construction & Maintenance, making a total of nine people. We would appoint a first line supervisor, Mr. K. E. Nash, currently a supervisor in Building & Shop Services, who has had many years of practical experience in welding of the steam system. We propose to have Mr. Nash report to J. L. Stracke, Manager of Building & Shop Services. Mr. Stracke is well qualified to take on this assignment, being a Mechanical Engineer and served many years in the old steam heat department. Also, Mr. Stracke is very interested in taking on this assignment.

I have discussed the proposal with L. C. Rasmussen and have reviewed last year's accounting records of expenses charged to steam operations and have concluded that the new organization will not result in higher expenses charged to steam heat.

May I have your approval to proceed?

J. R. Miller

OKAY 4/2/82

SCHEDULE 11

OLIGSCHLAEGER

FEB 04 1982

January 29, 1982

To: All KCPL Officers, Executives and Department Heads

Effective February 1, 1982, Mr. A. L. Samuels' title is changed to Director-System Energy Services and, in addition to his responsibilities for fuels, plant materials and system interchange, he will have responsibility for KCPL's Downtown utility steam operations. Mr. Samuels will continue to report to Mr. D. T. McPhee, Vice President-System Power Operations.

Also, effective February 1, 1982, Mr. M. C. Mandacina will be promoted to Manager-Utility Steam Operations and will report to Mr. Samuels. In this capacity Mr. Mandacina will have general responsibility for all of KCPL's Downtown utility steam operations.

With respect to these utility steam operations, Messrs. Samuels and Mandacina will report functionally to Messrs. D. T. McPhee, J. R. Miller and J. A. Mayberry, jointly, for overall management policy and direction. Each Department and Division will continue to provide and be responsible for the day-to-day planning and implementation of all related line functions required for these utility steam operations, subject to the general management of Messrs. Samuels and Mandacina in implementing the policies established by Messrs. McPhee, Miller and Mayberry.

Each Department and Division is directed to cooperate with Messrs. Samuels and Mandacina in providing those related services which will be necessary for them to carry out these new responsibilities.

A. J. Doyle

AJD:be

SCHEDULE 12

OLIGSCHLAEGER

RECEIVED
SYSTEM PLANNING

FEB 17 '82

TO	FOR A	C	I	CC
EVANS				
CHRONISTER				
BRANCA			X	X
McGEENEY				
WKD				X
JLS				X

RETURN TO FILE SME

Please make 3 copies. J

February 16, 1982

Mr. J. M. Evans

During the first Utility Steam Operations "Board of Directors" meeting last Friday with Mr. Mayberry, Mr. McPhee and Mr. J. R. Miller, the concept of a long-range planning study for the Steam Heat System was discussed. It was basically agreed that there is a need for such a study, and an obvious area for this would be through ESCC.

This, then, is a formal request for further consideration of such a study by ESCC. Alternatives from expanding to abandoning and their ramifications should be developed. For example, these alternatives should include the feasibility of expanding the steam heat system; restructuring the steam heat as a subsidiary, perhaps non-regulated, corporation; obtain feasibility study of Budget Billing for steam customers to help spread bills over longer period; study of conversion and energy costs for possible steam customer conversion to electric boilers; possibility of converting, retrofitting or modernizing GAS steam generation facilities; and, investigate possibility of selling steam heat system to the City, private buyer, or group of customers.

If the long-range study by ESCC is approved, I will present more alternatives which should be reviewed. Since Mr. Doyle has been approached by the Downtown Council for a "report" on the Steam Heat System, parts of an ESCC study may suffice for this need also. It is my understanding that it will be three to four months before such a presentation is expected.

Obviously, major decisions on the Steam Heat System for the next four to five years need to be based on long-term plans. The time parameters for this study should consider the period from 1985-1990, and then past 1990.

Please advise me as to the acceptability of a long-range study by ESCC, or if another course of action is preferred, so that we can establish a realistic time schedule.

M. C. Mandacina

MCM:rm

cc: A. J. Doyle
A. L. Samuels

OLIGSCHLAEGER

UTILITY STEAM OPERATIONS
"Board of Directors" Meeting, February 12, 1982

I. INTRODUCTION

A. The purpose of the meeting is to report to the "Board" on what has been accomplished in the first two weeks of the concentrated effort for Steam Operations, and outline future plans as conceived at this time.

B. The focus is on the addition of CPC as a steam customer, as well as the plans for the present steam heat system.

II. PROPOSED STEAM CUSTOMER - CORN PRODUCTS

A. Outline present requests of CPC submitted to KCPL in "negotiating draft" contract form.

B. Review present status of GAS and 1A boiler without CPC.

C. Describe various cost of service alternatives with CPC.

D. Outline possible responses to CPC.

III. USE AND FUTURE VIABILITY OF DOWNTOWN STEAM HEAT

A. GAS Operations Efficiency Study.

B. Review steam loss situation.

1. Supply metering - GAS, Wall Street, Wyandotte.

2. Steam transmission/distribution system losses.

3. Customer metering and usage.

C. Development of alternatives: Expanding to Abandoning.

IV. ESTABLISHED TIME SCHEDULE

A. Short term goals.

B. Long range plans.

C. Political Ramifications

M. C. Mandacina

cc: A. J. Doyle
J. A. Mayberry
D. T. McPhee
J. R. Miller
A. L. Samuels
J. M. Evans

OLIGSCHLAEGER

UTILITY STEAM OPERATIONS

Notes Corresponding to Agenda Items for
February 12, 1982 "Board of Directors" Meeting

II. A. Outline of present requests by CPC.

Copy of "First Draft" attached. Mr. C. R. Morton of CPC in Chicago explained that this was a vehicle on which he intended to begin negotiations, and did realize it was probably not acceptable to KCPL in this form.

B. Grand Avenue Station - Without CPC & Without NE Station.

1. Determination of need to re-tube 1A boiler for present Downtown Steam Heat Operations. (Cost estimated by Leon Boyce - $650,000.) ?

2. Cost of banking boiler for firm steam heat supply?

3. Allocation of banking boiler with electric generator?
Allocation of banking boiler without electric generator?

4. Are present manpower levels at GAS excessive, if there is no need to man Northeast Station?

5. Review economics of installation of automatic controls.

C. Consideration of alternatives: Proposed steam customer - Corn Products.

1. Given constants.

a. 200psig, 425°F. steam supply, 250,000 lb/hr.

b. Fully interruptible, 5 year contract.

c. Steam supply metered at GAS (no losses).

d. CPC to provide line to GAS P/L which will be point of service.

e. Contract to include a Fuel Adjustment clause.

f. Engineering and other studies have indicated supplying steam to CPC is feasible, given certain parameters, including capital additions.

2. Alternatives. (Each case also contains the above given constants.)

Case I. KCPL provides capital expenditure to retube 1A boiler, install piping to GAS property line, install pressure reduction and desuperheating station, and install a

water softener, at total cost estimated by Leon Boyce at $915,000. The Rate Department quoted $7.00, calculated @ $6.67/Mlb rate to CPC.

Case II. CPC pays entire expenses of capital investments needed "up front". Takes $915,000 out of rate base, which lowers rate to $6.55/Mlb, with all the remaining allocations and assumptions used by the Rate Department in Case I.

Case III. Review allocations incorporated into Rate Department's calculations of rate to CPC to determine what adjustments can be made to final rate/Mlb. These should include:

(1) Reduction of extra personnel originally estimated at GAS for additional CPC load. Consider no manpower needs for Northeast Station.

(2) Assume standby boiler needed for firm Downtown Steam Heat System already, and since CPC will be fully interruptible, no standby costs should be allocated to CPC. Thus, the "firm" back-up boiler could be the supply to CPC until it is needed for Downtown Steam Heat, and then interrupt CPC.

Case IV. Assign Grand Avenue plant and expenses 100% to steam production. Electric generation would be considered byproduct, applicable to Corn Products to provide a more attractive rate. (Preliminary studies indicate a rate of about $4.88/Mlb.)

With CPC and the 100% allocation of GAS to steam, it appears feasible that KCPL would have a greater probability of recovering all costs of the plant from the steam heat customers and CPC.

Also, a firm 5-year commitment is already required for supplying the Downtown Steam System which, during most of the year, is inefficient due to underutilization. The CPC steam load would increase plant operation with corresponding increases in efficiency.

III. A. Grand Avenue Station Efficiency Study.

1. Review existing studies.

2. Fuel mix efficiencies with and without CPC.

3. Review manpower and operations procedures.

4. Determine other potential cost-saving areas.

B. Review steam loss situation.

1. Determine accuracy of meters and procedure efficiency of meter reading on flow meters at GAS.

2. Compare GAS output readings to readings at Wall Street and Wyandotte to isolate loss areas.

3. Investigate areas of steam leaks in Hp line and then Lp line.

4. Review maintenance procedures on traps, etc.

5. Analyze customer use records to isolate largest reduction in metered consumption and physically check customer premises and metering.

6. Correct known metering problems at following customers: Western Adhesive, Federal Office Building, Kansas City Club, FAC Investment.

7. Isolate line, reduce pressure and determine difference in consumption vs. supply to provide estimate of actual line losses.

8. Review suggestion of steps necessary to prevent loss of revenue due to confusion in meter readings and accounting procedures, as occurred with Burd & Fletcher.

9. Obtain from Commercial Operations list of customers on 15 lb., 105 lb. and 185 lb. lines, respectively, for above reviews.

10. Institute better meter reading procedures, including on-site understanding of flow meter daily charts, and more frequent flow meter inspections and calibration at all locations.

C. Development of alternatives: Expanding to Abandoning.

1. Feasibility of expanding Steam Heat System.

2. New rate structure to encourage new customers or retain existing customers.

3. Restructure steam heat as subsidiary, perhaps non-regulated, corporation.

4. Obtain feasibility study of Budget Billing for Steam Customers to help spread increasing bills over twelve months.

5. Customer education on more efficient steam use.

6. Obtain study of capital, conversion and installation costs for electric boilers for possible customer conversions.

7. Possibility of converting, retrofitting or modernizing steam generation facilities.

8. Feasibility of obtaining any government funds, tax relief or customer aid to assist in steam operations.

9. Determine benefits of 100% steam allocation to GAS and retiring all electrical plant and expenses.

10. Investigate possibility of selling Steam Heat System to city, private buyer, or group of customers.

11. Likelihood of abandoning Steam Heat System.

IV. A. Short term goals.

1. Define and implement Loss Reduction Program.

2. Increase efficiency of operations of personnel and fuel.

B. Long range plans.

1. Investigate efforts of other utilities in Steam Heat System.

2. Review all possible alternatives. - ° C Political Ramifications

3. Provide recommendations for future of steam system.

OLIGSCHLAEGER

No. 403

Class

Data Information Request
Kansas City Power & Light Company
Case No. HO-86-139

NOV 20 1986

Requested From: Steve Cattron

Date Requested: 11/20/86

Information Requested:

Reference the 1981 'Study of KCPL's Steam Heat Business' (provided thru DR #10), p. 10 '

please provide the 'recent report made by System Power Operations that recommended 'additional efforts be made to improve customer inspection and metering' (see attached)

Requested By: Mark Oligschlaeger

Information Provided:

The attached information provided to the Missouri Public Service Commission Staff in response to the above data information request is accurate and complete, and contains no material misrepresentations or omissions, based upon present facts of which the undersigned has knowledge, information or belief. The undersigned agrees to immediately inform the Missouri Public Service Commission Staff if, during the pendency of Case No. HO-86-139 before the Commission, any matters are discovered which would materially affect the accuracy or completeness of the attached information.

If these data are voluminous, please (1) identify the relevant documents and their location (2) make arrangements with requestor to have documents available for inspection in the KCP&L Kansas City, Missouri office, or other location mutually agreeable. Where identification of a document is requested, briefly describe the document (e.g., book, letter, memorandum, report) and state the following information as applicable for the particular document: name, title, number, author, date of publication and publisher, addresses, date written, and the name and address of the person(s) having possession of the document. As used in this data request the term "document(s)" includes publication of any format, workpapers, letters, memoranda, notes, reports, analyses, computer analyses, test results, studies or data, recordings, transcriptions and printed, typed or written materials of every kind in your possession, custody or control or within your knowledge. The pronoun "you" or "your" refers to Kansas City Power & Light Company and its employees, contractors, agents or others employed by or acting in its behalf.

Signed By: Steven K Cattron

Date Received:

Nov 26, 1986 12-3-86 Mark

SCHEDULE 14-1

OLIGSCHLAEGER

TO: PAUL ARSUAGA ✓ OFFICE

FROM: LEON BOYCE OFFICE

SUBJECT: DISTRICT STEAM LOSSES DATE

MESSAGE

I HAVE TRYED TO EXPLAIN THE INCREASED DISTRICT STEAM SYSTEM LOSSES BUT IT IS DIFFICULT DUE TO LIMITED AND INACCURATE DATA AND LARGE NUMBER OF VARIBLES.

FACT

1. LOSSES ARE INCREASING
2. FEWER CUSTOMERS
3. METERING IS A PROBLEM BOTH AT CUSTOMER AND GAS
4. METERED SALES PER CUSTOMER PER DEGREE DAY ARE DECREASING

SPECULATION.

1. LOSSES ARE EXCESSIVE & AND CAN BE REDUCED
2. PRESENT METERING METHODS CAN BE IMPROVED
3. ACCURATE DATA WILL PINPOINT PROBLEMS ALONG WITH A DETAILED REVIEW.

UNCLAIMED

I RECOMMEND ADDITIONAL EFFORTS BE MADE TO IMPROVE CUSTOMER INSPECTION AND METERING BECASE STEAM TRANSFERRED PER CUSTOMER PER DEGREE DAY IS RELATIVELY CONSTANT

DATE 9/24/81 SIGNED Leon Boyce

ATTACHMENTS

cc: T.D. MATTHEWS (J. BOLTON)

SCHEDULE 14-2

KANSAS C[illegible]Y POWER & LIGHT COMPANY
KCPL FORM [illegible]

ANALYSIS FORM

DISTRICT STEAM LOSSES

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
No. of Customers		272	271	271	250	252	253	248	222	218	210	
Estimated No of Buildings		284	283	286	267	268	268	271	252	244	238	
Steam Transferred MM # + H_2O		1335 / 20	1340 / 22	1203 / 23	1121 / 24	1096 / 33	1095 / 37	1096 / 26	1222 / 31	1208 / 39	1035 / 80	
Steam Sold MM#		1141	1,169	1,139	882	922	868	908	864	764	634	
Used by Co MM#		8.3	8.0	6.5	7.2	8.6	6.1	7.2	9.8	12.8	12.3	
Losses MM#		205.5	185.5	79.8	255.6	198.1	258.6	307.0	379.5	431.5	419.0	
Degree Days		4529	5036	4514	4370	4636	4763	4728	5570	5264	4689	
# Sales/DD/Bldg		887	826	884	703	742	680	710	615	595	568	
Yearly Change Sales MM#		+28	-30	-257	+40	-55	+41	-44	-100	-130	Total	-507
Yearly Change Losses MM#		-20	-106	+175	-57	+60	-51	+172	+52	-12	Total	+213
Steam Transf. # Steam/DD/Bldg		1038	940	934	960	883	856	859	875	941	927	
% Variation from Average		+13	+2	+1	+4	-4	-7	-7	-5	+2	+1	
% Losses		15.1	13.6	6.5	22.3	17.5	22.8	18.4	30.3	36.7	39.3	

9-21-81 [illegible]

OLIGSCHLAEGER

SCHEDULE 14-3

OLIGSCHLAEGER

February 10, 1982

T&D Engineering

Memorandum of Meeting January 11, 1982

On Monday, January 11, 1982 a meeting was held with personnel from T&D Engineering; who included J. L. Hogan, O. L. Freeman, B. F. Walraven, and J. Gawron and personnel from T&D Operations; W. Wiehe, J. Bolton. The purpose of the meeting was to discuss possible causes for the apparent high steam distribution system losses being experienced for the last several years.

The result of the discussion generated was that before any specific causes and solutions to the apparent high losses can be determined, it must first be determined if the reported metered quantities of customer usage and Grand Avenue Station send-out are correct. There were four courses of action discussed that could show what metering problems there are, if any, and their location on the system. The four are:

1. Install shunt flow meters (BIF) on the system as opposed to those presently used, which are condensate and flow meters. Since customers are presently being metered and billed it would not be economical to replace all present meters with shunt flow meters for the following reasons:

   a. The cost of the meter itself is approximately $2,000 each for a low pressure customer.

   b. The probability of extensive piping adjustment in existing facilities to provide the necessary space for the meter installation.

   c. These type meters require recalibration and regular maintenance. This is no different than any other type meter but would require KCP&L to develop new techniques and test facilities if it was decided to do in house.

   d. The meter is accurate over a specified flow range but not able to measure very low flows.

   However, it was felt that this type of meter had advantages over condensate meters on a selective customer basis and these are the following:

   a. The steam is measured before the customer uses it and KCP&L would not have to be concerned with the customer's piping arrangement throughout the building to ensure that all condensate is being returned to the metering point.

b. Integer reading capability and remote reading available.

c. In the measuring of high pressure steam the turn down ratio for shunt flow meters is greater than for flow meters using an orifice plate and differential pressure cell.

2. T&D Operations would look at the feasibility of putting the existing flow meters located in the desuperheating stations into active service. It would then be possible to compare the readings from the desuperheating stations of steam send-out with the steam send-out readings reported from Grand Avenue Station. From this data it would be possible to determine if there is a problem with metering at Grand Avenue Station or excessive losses in the high pressure transmission system.

3. If losses, inherent in the high pressure transmission system, are determined not to be excessive and the meter readings from Grand Avenue Station are accurate, it may be necessary to install metering devices on the low pressure system away from the desuperheating station. The readings from these meters could be used to isolate and possibly identify sources of high losses on the distribution system, whether it be customer or KCP&L underground facilities.

4. T&D Engineering is to compile a summary of each individual customer usage for the past ten years. From this data, individual customer trends may be able to be defined and compared with calculated values of projected steam usage based on degree day comparisons. It may then be possible to identify suspect installations and institute appropriate actions, one of which may be more frequent meter reading (perhaps daily).

J. Gawron

J. Gawron

JG/rgl

OLIGSCHLAEGER

No. 434

Class

NOV 25 1986

Data Information Request
Kansas City Power & Light Company
Case No. HO-86-139

Requested From: Steve Cottrell

Date Requested: 11/25/86

Information Requested:

Regarding attached page of 'Utility Steam Operations - 1983 Program Report', obtained from file search of M.C. Mendecino:

please provide the 'formal paper' on the KCPL steam system to have been presented at the International District Heating Association annual technical conference.

Requested By: Mark Oligschlaeger

Information Provided:

Copy attached 12/9/86

The attached information provided to the Missouri Public Service Commission Staff in response to the above data information request is accurate and complete, and contains no material misrepresentations or omissions, based upon present facts of which the undersigned has knowledge, information or belief. The undersigned agrees to immediately inform the Missouri Public Service Commission Staff if, during the pendency of Case No. HO-86-139 before the Commission, any matters are discovered which would materially affect the accuracy or completeness of the attached information.

If these data are voluminous, please (1) identify the relevant documents and their location (2) make arrangements with requestor to have documents available for inspection in the KCP&L Kansas City, Missouri office, or other location mutually agreeable. Where identification of a document is requested, briefly describe the document (e.g., book, letter, memorandum, report) and state the following information as applicable for the particular document: name, title, number, author, date of publication and publisher, addressee, date written, and the name and address of the person(s) having possession of the document. As used in this data request the term "document(s)" includes publication of any format, workpapers, letters, memoranda, notes, reports, analyses, computer analyses, test results, studies or data, recordings, transcriptions and printed, typed or written materials of every kind in your possession, custody or control or within your knowledge. The pronoun "you" or "your" refers to Kansas City Power & Light Company and its employees, contractors, agents or others employed by or acting in its behalf.

Signed By:

Date Received: 12/15/86 M.O.

SCHEDULE 16-1

representation of the distribution of 1983 expenses for Utility Steam Operations.

Future Development

Since the basis for acquiring the Corn Products steam load was to maintain steam as a competitive heat source to downtown customers, the achievements of 1983 will enable us to proceed with a marketing effort of sorts in 1984. A presentation is being developed for civic, business, and industry organizations. The narration, accompanied by slides, will describe the history of the KCPL steam system, present revitalized efforts, and benefits of the new CPC steam load for the downtown business community. This program will be adapted to a formal paper to be presented this May at the International District Heating Association annual technical conference in New Hampshire.

The goal of this marketing effort is to retain as many present steam customers as possible and maximize steam sales on the existing network within existing production limitations. Typically, once a customer has installed a steam service, especially in a new building, the chances of economically converting to gas are very slim and the potential increases for future electric heat applications.

The overall efforts to revitalize the steam operation has created the opportunity for another significant achievement. Although difficult to measure, the increase in morale and esprit de corps of the Steam Department is obvious. For many years a "forgotten" segment of the Company, this group has now been unified and each person openly takes pride in being a member of the "Steam Team". Together with Grand Avenue Station, their efforts will soon represent over a $20 million annual revenue for KCPL.

The recent consolidation of operations has conceptually outlined the

M. C. Mandacina
June 1984

A STEAM RENAISSANCE: THE CPC CONNECTION

S2 In 1881 history was made in Kansas City, Missouri, when an exclusive license, believed to be the first of its kind, was obtained by the Kawsmouth Electric Light Company to generate and sell electric power from dynamos installed that year in its tiny plant. S3 Seven years later, a second powerhouse began generating electricity for an incandescent light system, the new technology which would replace the arc light equipment prevalent in that day. S4 By operating the engines in this plant at slightly above atmospheric pressure, the exhaust steam was distributed for heating purposes in nearby buildings and proved to be an economic outlet for an otherwise waste product. S5 Steam heat sales met with such success that the Kansas City Heating Company was formed in 1905 as a subsidiary of Kansas City Electric Company--a predecessor of Kansas City Power & Light Company. When the plant was abandoned as a primary source of electrical power due to the advent of condensing type equipment, the original boiler installation was converted to a heating station so that steam service to customers could continue. S6 But the increased demand for steam in the downtown area by 1907 necessitated the construction of several additional heating plants.

S7 In 1927, the company purchased the Missouri River Power House located at Second and Grand Avenue from the Kansas City Transit Company and renamed it Grand Avenue Station. S8 Modernizing its generating equipment, Grand Avenue offered the opportunity to produce steam heat in a very economical manner.

S9 Twenty-inch steam lines were tapped off of the 185 pound header that had supplied early piston type steam engines. These main steam lines were extended

6-1-84

from Grand Avenue to the existing heating stations, which were eventually converted to pressure reduction stations. The majority of steam is now distributed to Downtown customers at 15 psig, with less than a dozen customers taking 185 pound steam.

S_{10}
The steam business grew slowly from 1918, and the prices remained relatively constant. Major expansions and modifications of the steam distribution system were made in the 1950's when the number of steam customers reached its highest level at nearly 400. S_{11} Since then the steam customer base has declined steadily to about half that number due to demolition of older buildings and increased use of alternative heating fuels. The future of the district steam operation became more uncertain in 1974 as declining sales were coupled with dramatic increases in steam production and fuel costs, and higher steam losses resulting from inadequate maintenance.

S_{12}
By 1981, the future looked very bleak for Kansas City's downtown steam customers. The major concern was a decreasing load factor creating the need to burn much more natural gas than coal to produce steam. This is because the steam production facilities could not maintain a coal-fired steam supply for the low load levels of 40 to 50,000 pounds per hour typical during summer months. With projections of increasing gas prices, KCPL was very concerned about the future viability of the Downtown steam system.

S_{13}
At about the same time, several major commercial construction projects were announced for the downtown area. One of the first and most significant for KCPL was the 12-story, 600 room Vista International Hotel, now under construction on the famous 12th Street Strip in downtown Kansas City. Surrounded

by other steam heated hotels, major auditoriums, and entertainment facilities such as the famous Folly Theater, Vista architects also requested steam heat.

S14
A steam heating system was also designed for the newly completed Jackson County Jail facility. This minimum security detention building located on the edge of the downtown loop is adjacent to the City Hall and County Court House buildings, S15 both existing steam customers. As revitalization accelerated, a number of other major new buildings were announced including the Twelve Wyandotte Plaza office building, under construction near the Vista hotel. Two blocks away, in the heart S16 of the Central Business District, three city blocks will be leveled for construction of three buildings beginning with the 1.2 million square foot, 38-story AT&T S17 regional headquarters and retail complex. United Missouri Bank is building a 250,000 square foot office building with a second phase planned for a 25-story, S18 500,000 square foot adjoining office tower. Adjacent to these buildings, Commerce S19 Bank has also begun construction of a 19-story, 470,000 square foot office and retail center.

The steam heat system had been a major factor in the historical development of downtown Kansas City and was again thrust into the middle of what was being labeled as the City's renaissance. With the prospect of extreme escalating steam S20 costs in the future, the advent of Corn Products on the scene offered a mutually beneficial solution to both companies' growing steam problems.

S21
A division of CPC International, the 68-year old Corn Products wet milling facility S22 is located across the Missouri River, just north of Downtown Kansas City. The plant's main function as a corn refiner is to separate corn into starches, solubles, gluten, hulls and germ. Starches are further processed for corn syrup, dextros S23 and other industrial uses. Animal feed, corn oil, sweetner additives, lactic acid

and high fructose corn syrup are other products of the local corn milling process.

Having generated steam in their own plant with gas-fired boilers, Corn Products was also very familiar with the presently increasing and even higher future projections of natural gas costs. S24 Although the North Kansas City operation has the advantage of an economic water supply from on-site wells, the old plant's future was in question due to several factors, of which the rising gas costs were foremost. Representing some 400 jobs, Corn Products' continued existence was important to the entire community, as well as to CPC International. A foresighted plant manager proposed buying steam from KCPL's Grand Avenue Station, rather than operating their own boilers. S25 Although this concept could be economically justified, the physical and political obstacles seemed insurmountable at first.

The most obvious problem was the wide Missouri River. The Corn Products plant is located on the north side of the river, approximately 1/2 mile downstream of the KCPL plant on the River's south side.

A joint railroad and auto bridge crosses the river in between the two plants. Called the ASB Bridge (Armour, Swift & Burlington), S26 it was originally constructed in the early 1900's as a railroad bridge to serve the large meat packing industry in Kansas City. Later, a top deck was added to allow vehicular traffic access over the river. S27 Adjacent to the ASB, the Missouri State Highway Department is now building a modern 6-lane bridge which should be ready for traffic in 1986. At that time, the ASB's auto deck and highway approaches will be removed, leaving only the railroad span. S28 Since the Highway Department would not allow the steam pipe to be attached to the new bridge, Corn Products received approval from the Burlington Northern Railroad to attach the steam pipe

S29
to what would be the remaining structure of the old ASB bridge. Between Grand Avenue and the river are about 20 sets of railroad tracks, owned by five different railroads. These rails are the major east-west tie for most rail traffic through Kansas City, which is the country's second largest rail center.

In early spring 1981, Corn Products posed the feasibility of the steam service to KCPL. The concept provided many challenging aspects, beginning with a basic agreement between the two parties as to the cost and details of this proposed service. Formal contractural discussions began in early 1982, after the feasibility of the project was accepted. The final document, called the Steam Service Agreement, was executed by both parties in November 1982.

S30
The typical KCPL downtown steam heat peak of 350,000 pounds per hour occurs during the winter months, and lasts only a short time, resulting in a quickly decreasing steam load duration curve for the year. The continuous and reliable boiler capacity at Grand Avenue totals 1,100,000 pounds per hour. This is provided by three large combination coal and gas boilers, and one smaller package boiler which burns gas or oil.

With the continuing reduction of electrical generation required at Grand Avenue, S31
there is ample boiler capacity available to supply the Corn Products normal steam load of 250,000 pounds per hour. Their wet milling process requires an almost constant steam supply at over a 95% load factor. The addition of this base load at Grand Avenue will allow at least 80% coal-fired steam production all year, rather than just in winter months. The resulting per unit fuel cost savings will be an obvious benefit to all of the steam customers in the future.

S32
The contract with Corn Products contains several interruptible provisions which are intended to maintain the reliability of steam supply to the electric and downtown steam customers also serviced by Grand Avenue Station. In the event of an emergency during the winter, the steam flow to Corn Products can be curtailed to as low as 50,000 pounds per hour, before steam to downtown customers is reduced. Further flow reduction to 10,000 pounds per hour concurrently with curtailments to downtown customers are provided in the Agreement, should a major emergency continue.

The combined peak demand of Downtown steam, internal plant requirements, and Corn Products would require operation of three of the four boilers at peak load times. Due to the relatively short steam heat season however, we anticipate only two boilers for total steam supply the majority of the year. Thus, with the remaining boiler capacity available, we do not anticipate any curtailments to Corn Products.

The projected Corn Products steam load is 2,100,000 M pounds per year, compared to the typical downtown steam heat requirements of about 700,000 M pounds per year. S33 Preparing for this quadrupled load required extensive modifications in facilities and operational procedures at Grand Avenue. An additional zeolite water softner was added to provide ample make-up water. Old coal handling facilities were also improved. S34 The 200,000 pound per hour package boiler was compietely retubed, and a new cyclone pilot ignition and fan system was added to reduce fuel consumption for standby boiler service.

S35
The service for the Corn Products line was tapped directly off of the existing 185 pound header in the plant with 18" pipes. A Copes Vulcan desuperheating S36 station was installed to maintain temperature control. Also, some 50 feet of

existing feedwater heater piping was relocated to provide the necessary space for the new service and desuperheater. Altogether, over 300 feet of new 18" piping was added inside and about 100 feet of pipe S37 outside the plant to the property line, which was defined as the legal point of service.

S35
Corn Products requested a blocking valve in the line which would be operated solely by their personnel. Since they are responsible for the operation and maintenance of the steam line from the point of service to their plant, this 18" valve provides them complete control over their line. The valve was located inside the KCPL plant for ease of operation and maintenance, as were the KCPL butterfly control valve and metering station. S39 The 18" James Bury butterfly valve with a Fisher Porter microprocessor based controller was installed on the supply side of the blocking valve to meet operating requirements which included flow limitations at various curtailment levels from a maximum of 300,000 pounds per hour to 10,000 pounds per hour. The system is designed to fail closed in order to protect the station from boiler shut down should a calamity occur along the pipe that would create a sudden opening to atmosphere. The exposure to railroad and river traffic greatly increases the probability of such an occurrence.

S40
Accurate and reliable steam flow measurement was obviously of major importance to both Corn Products and KCPL. To provide a complete metering system accuracy S41 of ± 2% of indicated flow, a Fisher Porter differential pressure system using a Victory Simms calibrated flow tube was selected. Corn Products elected not to S42 duplicate metering at their end of the line but to monitor with telemetering from our unit instead. The steam will be supplied at a temperature of 420°F and 185 pounds guage, as measured at Grand Avenue. The required work at Grand S43 Avenue was completed in October 1983 and culminated with a live steam blowdown of the KCPL pipe prior to connection to the CPC pipe.

~~The CPC line was designed by the engineering firm Burns and McDonnell of Kansas City, according to standards of the American National Standards Institute.~~

S44

The CPC pipe officially begins at the property line of the Grand Avenue Station with an 18" to 20" eccentric reducer after the "T". The eccentric reducer was used to allow proper condensate drainage towards a trap located at the base of our vertical pipe.

The straight line distance along the pipe route between the point of service and the Corn Products plant is 5,425 ft. The total steam pipe length is about 525 ft. S45 longer, due to the expansion loops. Starting at Grand Avenue, there is about 3,500 ft. of 20" pipe. This is initially supported on steel joist bridge spans that S46 range in length up to 150 ft. long between support towers. An expansion loop was located about every 200 ft., depending on tower spacing. This spacing S47 varied according to the physical room available between railroad tracks. The steam and condensate lines were anchored on the north side of the towers located in between the expansion loop towers, where pipe glides were used to mount the lines.

S48

The pipeline path from the station to the bridge angled across the railroad yards, rather than going the direct route over to the existing bridge structure, because these bridge girders will be removed when the traffic deck of the ASB bridge is removed. Thus, the shortest distance between two points was also the most S49 challenging for construction. Working around 20 sets of railroad tracks and between actual train traffic added to the typical logistics problems for con- S50 struction projects. The complete impact of train traffic was not apparent until work began on the bridge, however. There was only one period a day, for about two hours, that the track was clear of trains. Ironically, many of these are coal trains destined for power plants.

S51
Clearance requirements by the five different railroad lines varied from 23 ft. to 25 ft. The Missouri Pacific indicated that the additional two ft. was needed to allow for the possibility of converting to electrified railroads in the future. S52 The total steam pipe was insulated with preformed sections of 4" high density fiberglass. The external jacket is an aluminum alloy with a factory applied moisture barrier. S53 The last span prior to attachment to the ASB Bridge is about six feet lower to provide clearance for a future roadway bridge that is now in early conceptual stages for future riverfront expansion projects.

S54
The railroad lift span begins about 100 ft. from the south edge of the bridge approach. The span is 420 ft. long, and is raised an average of four times daily for river traffic. This section presented both benefits and disadvantages to the pipe construction. S55 Twelve inch reducers were required in the steam pipe in order for it to fit through the small space between the massive steel bridge supports at both ends of the lift span. S56 Each such restriction causes a loss of about 1 psig. This small area between the supports had to be used rather than hanging the pipe below the steel in order to clear the maximum vertical rise of the lower deck. The clearances were so close, that the pipe had to be carefully aligned, because, when the span was completely raised, S57 there was only a 2 inch space between the outer edge of the insulated steam line jacket and the top of the railroad tracks. However, the raisable span did simplify the process of lifting the pipe into place as opposed to construction on the other parts of the bridge. S58 A section of pipe was placed on rail dollys and pushed along the track just under where it was to be attached, some 46 ft. above the track. The bridge operator then raised the lift span while the workmen and pipe rode to the top. Final adjustment and welding to attach the pipe to the stationary part of the bridge were somewhat simplified with this process.

S59 The original construction of the bridge used riveted and bolted connections to attach the steel girders together. This old steel is not conducive to today's welding methods so all of the structural connections were made by removing existing bolts or rivets. New high strength bolts were inserted in the holes to attach steel plates holding the hangers, since welding to existing steel would have induced excessive stress in the old material. S60 Pipe sections were made up in an empty rail yard at the south end of the bridge, and then S61 carried out to their approximate location by a truck fitted with rail wheels. S62 Pulleys were attached to the top of the bridge, and steel cables S63 affixed to the pipe, pulled up by an electric winch. One end of the S64 section was lifted first with the other end tied down, so that the pipe could be threaded S65 through the steel buttresses of the bridge.

S66 Numerous scaffolding sections were used to place, weld and insulate both the steam pipe and condensate return lines. S67 A 2" condensate return line parallels the steam line the entire distance except for the lift span section on the bridge. The south section of this condensate line drains four traps and empties into Grand Avenue Station. The condensate pipe on the north S68 side drains 17 traps to the CPC plant, for a total distance of about 3600 ft. S69 The entire condensate line is heat taped and has one inch of insulation. There are no traps on the steam line over the bridge lift span so there was no need to continue the condensate return line through this section. S70 The steam pipe expansion loops on the lift span section are about 30 ft. long, 15 ft. wide, and about 120 ft. apart. S71 The remaining pipe on the fixed bridge is a series of evenly spaced "U's" each about 60 ft. long, extending 15 ft. horizontally. The bridge is about 850 ft. long, north of the lift span.

S72
The vertical spans of steam pipe going to the top of the bridge structure required two ball joints to reduce the stress concentrations in the adjacent elbows. S73 Various types of pipe supports and hangers were used for mounting S74 depending on the anticipated direction and concentration of stress at particular S75 locations. For example, tension and compression type S76 hangers, rollers and pipe slides with S77 and without guides were used at strategic spots to maintain design stress levels.

S78
As the steam pipe leaves the bridge structure, it angles to the northeast for about 640 feet and is then confronted by another obstacle, S79 the huge approach for the new 6 lane bridge under construction. Fortunately, the steam pipeline concept had come about early enough for Corn Products to have a S80 7 ft. square reinforced concrete tunnel constructed across the new highway right of way, prior to construction of the approach embankment. This highway base is about S81 30 ft. high and 260 ft. wide at this point. At the east side of the embankment, the pipe again rises vertically to provide a 16 ft. clearance above grade for a span of about 90 ft. This allows vehicles access to the dike and other areas past the steam pipe towards the river. At this point, about 2,100 ft. from the Corn Products plant a 20" x 24" eccentric reducer increases the line size to 24 inches for the remaining run of pipe. S82 In this area, the pipe is about 3 to 4 ft. above S83 grade. The horizontal expansion loops are about 30 ft. long and 10 ft. wide, and are paralleled by expansion loops in the condensate return line.

S84
About 600 ft. from the plant, railroad tracks serving Corn Products must be S85 cleared so the pipe is again elevated with support towers and steel joist bridge S86 spans. Two more vertical expansion loops are used, with ball joints on the final S87 vertical section of pipe dropping the 24" line as it enters the CPC plant.

In the total 5947 ft. of steam pipe from Grand Avenue Station to the Corn Products plant, there are 26 expansion loops, 22 traps, and 10 ball joints. The maximum longitudinal movement parallel to the steam pipe between anchor points will be about 5½". In most sections, maximum transverse movement is designed at 1½ inches. The steam supply pressure is 185 psig, and the pressure at the Corn Products plant is expected to reach a minimum of 150.5 psig, at a maximum steam flow of 300,000 pounds per hour. The design temperature range was -35°F to 465°F, or a differential of 500°.

The complete engineering and design efforts took about six months. In May 1983, the Foley Company was the successful bidder for the construction contract. Although the original target date for completion was November 1983, disagreement regarding the bridge attachment contract between the Missouri State Highway Department, Burlington Northern Railroad, and Corn Products delayed construction into the winter. The continuous train traffic on the bridge, together with the severe winter weather, further slowed construction. Finally in March 1984, the line was completed taking about 4500 man hours of actual construction time.

In early April 1984 the entire line was pressure tested. The pipe was filled with water from the Corn Products plant end of the line, which took several days. The pressure was increased to 300psi for several hours while the line was checked for leaks. The water was then drained from the line, and an "L" shaped section was cut into the pipe just prior to the entrance to the CPC plant. This was used as an outlet for the steam during the final blowdown, which began Friday, April 13.

The line was slowly heated through the by-pass on the blocking valve in Grand Avenue. Steam flow was gradually increased with the butterfly valve to a S96 maximum of 210,000 pounds per hour, with the total blowdown taking about 4 hours. During the following week, the line was reconnected to the plant, and S97 prepared for continuous service which officially began on April 24, 1984 with ~~some~~ KCPL and CPC dignitaries in attendance.

S98 After three years of planning, design, and construction all were happy to hear the steam flowing through the S99 mile long pipe. Truly an indication of the renaissance of the Kansas City Downtown District Steam System. S100 LOGO

OLIGSCHLAGER

KCPL

April 28, 1983

To: Chris Giles

Re: Percent of "Steam Unaccounted For" Projection for 1983

The long-range goal of Utility Steam Operations with respect to steam lost or unaccounted for during a year is 20% or below. The actual percentage is calculated in the monthly Comparative Financial and Operating Statement in the "Summary of Heat Operations" section.

The goal of 20% or below was established based on technical feasibility and historical averages. From 1970 through 1977 the annual amount of steam lost was around 22% or less. By year-end 1981, the annual loss had increased to 44.78% of total steam and condensate sent from Grand Avenue Station. With a renewed emphasis on maintenance and operation in 1982, we were able to reduce the losses by about 10%, to 34.63%.

Continuing this intense maintenance effort, we should be able to reduce the "unaccounted for" steam by another 10%, or to about 25% at year-end 1983. As of March 31, the year-to-date steam lost was 16.14% (line 63, page 33, March Financial Statement). Since the low-load summer loss percentages are typically higher than winter months, it appears at this point in time that 25% is a realistic projection for steam unaccounted for at year-end 1983.

M. C. Mandacina

MCM:jj

cc: J. R. Miller

SCHEDULE 17

OLIGSCHLAEGER
OCT 09 1986

No. 39

Class

Data Information Request
Kansas City Power & Light Company
Case No. HO-86-139

Requested From: Steve Catron

Date Requested: October 9, 1986

Information Requested: In regards to Mike Mardacina's testimony, page 4, line 13.

1. Please provide Company's definition of a major leak on their steam system.
2. For the last three (3) years, please provide by month the number leaks broken down between high and low pressure system.
3. Please provide for the last ten (10) years by year, the number of major leaks broken down between high and low pressure system.

Requested By: Sharon K. White

Information Provided: See attached

The attached information provided to the Missouri Public Service Commission Staff in response to the above data information request is accurate and complete, and contains no material misrepresentations or omissions, based upon present facts of which the undersigned has knowledge, information or belief. The undersigned agrees to immediately inform the Missouri Public Service Commission Staff if, during the pendency of Case No. HO-86-139 before the Commission, any matters are discovered which would materially affect the accuracy or completeness of the attached information.

If these data are voluminous, please (1) identify the relevant documents and their location (2) make arrangements with requestor to have documents available for inspection in the KCP&L Kansas City, Missouri office, or other location mutually agreeable. Where identification of a document is requested, briefly describe the document (e.g., book, letter, memorandum, report) and state the following information as applicable for the particular document: name, title, number, author, date of publication and publisher, addressee, date written, and the name and address of the person(s) having possession of the document. As used in this data request the term "document(s)" includes publication of any format, workpapers, letters, memoranda, notes, reports, analyses, computer analyses, test results, studies or data, recordings, transcriptions and printed, typed or written materials of every kind in your possession, custody or control or within your knowledge. The pronoun "you" or "your" refers to Kansas City Power & Light Company and its employees, contractors, agents or others employed by or acting in its behalf.

Signed By: Joseph Lawson

Date Received: 10/21/86

SCHEDULE 18-1

OLIGSCHLAEGER

October 17, 1986

TO: Steve Cattron

FROM: J. A. Gawron

RE: Steam Rate Case, MPSC Data Information Request, Docket No. HO-86-139, Data Request No. 39.

Information Requested:

Item #1 Please provide Company's definition of a major leak in their steam system.

Reply:

There is not a formal definition of a major leak by KCPL. A leak is designated major anytime an excavation is required in the street, or if there is a replacement of piping in a manhole to repair a leak. Since most steam lines are six to eight feet below the street surface, considerable effort is required to make repairs.

Item #2 For the last three years, please provide by month the number of leaks broken down between the high and low pressure system.

Reply:

There has been no record kept of major leaks repaired dssignating between the low and high pressure system. The total major leaks repaired, however, is available by month.

Major Leaks Repaired By Month

	J	F	M	A	M	J	J	A	S	O	N	D
1984	2	4	2	4	2	5	6	9	6	9	6	3
1985	4	3	6	1	1	2	4	2	4	4	7	4
1986	6	3	5	6	3	1	1	3	3			

SCHEDULE 18-2

Item #3: **Please provide for the last ten years, by year, the number of major leaks broken down between low and high pressure.**

Reply:

Record of major leak repair is only available since 1982 and is not broken down between low and high pressure.

1982	20	
1983	42	
1984	58	
1985	42	
1986	31	(through September 1986)
Total	193	

J. A. Gawron

JAG:gp

OLIGSCHLAEGER

INTERNAL SERVICES AND STEAM OPERATIONS
APRIL 1985 MONTHLY REPORT
M. C. MANDACINA, DIRECTOR

EXECUTIVE OVERVIEW

The Corn products steam load for April averaged 156,000 lb/hr with a total consumption of 112,384 Mlbs. During the month the contractual six-month calibration check of the CPC steam flow meter was completed. There were no significant problems found with the metering equipment and a written report will be submitted to KCPL by the consultant performing the work.

The project to install eight electric boilers in the downtown area proceeded during the month. All initial customer contacts have been made and six easement documents prepared and issued to Real Estate. The installation specification was completed and bidders for seven of the locations are scheduled for a pre-bid meeting on May 1. Bids are due to KCPL by May 15.

A building permit was finally received for the construction of the new Johnson County Vehicle Maintenance Garage. Construction activity commenced April 29.

Proposals have been accepted for architectual services for two locations. Dean Graves, architect, was selected to make a feasibility study of office space rearrangement of both commercial and construction areas at Johnson County Service Center. Charles Steele, architect, was selected to make the feasibility study for the proposed expansion of Front and Manchester.

UTILITY STEAM OPERATIONS

The peak downtown steam load for April was 160,000 lb/hr at 8:00 a.m. on April 1 and the minimum flow was 14,000 lb/hr at 2:00 a.m. on April 26. The minimum steam flow for the year of 1984 was 15,000 lb/hr in August 1984. These figures demonstrate the fact that already in 1985, a recent historical minimum steam input occurred in the downtown steam system. Some of the causes for this are abandonment of mains, loss of customers, and cutting and capping services.

One major leak was repaired during the month at 13th and Walnut, which included the replacement of a 14 inch expansion joint. At the end of the month there was one steam leak remaining for repair. Presently there are no known problems on the electrical distribution system caused by leaking steam; likewise, Southwestern Bell has not reported any locations where leaking steam is causing problems. It has taken three years of effort and many manhours to get the system to this manageable condition.

The department completed the work required to abandon 800 feet of steam main between 11th and 13th Streets and between Walnut and Grand that was required by the construction of the AT&T parking garage. This work included the construction of a new trap manhole and the filling with fly ash abandoned manholes in 12th and 13th Streets.

Four services were cut and capped at the main during the month and a manhole at 4th and Grand filled with fly ash slurry.

Greg Moten, Lead Operator Constructor from Steam Department, received a $10,000 award for an idea that was suggested in August 1984. The idea was to use fly ash slurry as a substitute for concrete encasement around steam lines. This method of construction saved the department considerable manhours on each leak repair. This savings resulted in the department having only one major leak remaining for repair at this time.

During the month of April, 340 hours of overtime were worked due to the requirement of the City Transportation Department that the work in the intersection of 13th and Walnut be done at night. Also off-hours work was required for the replacement of 15 lb and 105 lb service valves at the Kansas City Club.

Other work during the month included 19 manhole inspections, the start of the bi-annual condensate testing at customer locations, and closing and sealing customer service valves.

Training during the month consisted of one bargaining unit employee attending a problem solving course at Pin Oaks for two days and a supervisor attending three days of Supervisory Leadership Development.

OLIGSCHLAEGER

Preliminary only

Corn Products Corporation
Cost of Service Study

Preliminary Conclusions

A cost of service study was made for the purpose of pricing steam to Corn Products Corporation (CPC). All steam would be supplied from KCPL's Grand Avenue Station. The study indicates that CPC could be supplied steam at a fixed cost of $215,010 per month and a variable fuel cost of $3.40 per Mlbs. for a total cost of $4.56 per Mlbs. Total annual steam sales of 1,773,900 Mlbs. is assumed. The following are my principle assumptions:

1) An average boiler efficiency of 77.8 %
2) A base fuel cost of $2.2164/MMBtu (1982 fuel budget) with the following fuel mix

Coal	78.0%
Oil	5.5%
Gas	16.5%

3) Cost of retubing boiler 1A is 100% to CPC
4) Allocation of plant and expenses based on previous Grand Avenue allocation philosophies. (All increased O & M expenses due to the increased steam load were included in Grand Avenue totals and then allocated). See the attached worksheet "Summary of COS Study for CPC" dated 10-22-81 for details.
5) KCPL would deliver and meter steam at the Grand Avenue property line. CPC would construct and pay for the steam distribution line.
6) Extra startup costs of $8,570 were assigned to CPC.
7) No standby boiler costs were assigned to CPC.

It was decided that no standby boiler costs should be assigned to CPC for three reasons.

1) CPC will have an interruptible contract.
2) The increased load will allow for an additional boiler to be run besides the boiler supplying steam heat to the downtown network. The additional boiler will in effect be the banked boiler.
3) The retubing of boiler 1A which is a quick start boiler will help to reduce the need for gas-fired boiler banking operations.

Please note that there are additional working papers and a computerized allocation of the plant and general plant for additional documentation of the above numbers.

Alternate Cost of Service Study for CPC

As a check of the initial costing work an alternate cost of service study for CPC was performed. It was assumed that Grand Avenue Plant and Expenses would be assigned 100% to steam production. Total Plant and O & M costs were for the 12 months ended Dec 31 1981. Electrical generation would be considered by product.

The steam demand allocator is developed below for the 12 months ended September 30, 1981.

	MLbs/Hr	%
12 month steam flow to CPC	3000	57.0
12 month 1980 steam flow to Grand Avenue	2265	43.0
TOTAL	5265	100.0

All plant and O & M expenses associated with Grand Avenue are allocated to CPC at 57.0%. All other expenses including fuel would be directly assigned to CPC. This would result in a total cost of $6.93 per Mlbs. See the attached worksheet entitled "Cogeneration Costing Scenario for CPC" dated 12-7-81.

It is proposed that a credit for all generated electricity from Grand Avenue be applied to the cost of steam supplied to CPC. If this firm supply of electricity were price at 4.4¢ per kwh, the price of steam to CPC would be a net $4.88 per Mlbs. See the attached worksheet entitled "Cogeneration Contribution" dated 12-7-81.

The cogenerated by product pricing of electricity would offer two primary advantages to KCPL.

1) The allocation of Grand Avenue between electric and steam customers continues to be a time consuming process for both the Rate and Accounting Departments. The accuracy of this process is controversial. If Grand Avenue Plant and Expenses were allocated in total to steam the allocation process would be greatly simplified.

2) The allocation of Grand Avenue between electric and steam customers is a subjective process. Accordingly KCPL continually exposes itself to "creative allocation techniques" by the Commissions. If Grand Avenue were assigned 100% to steam KCPL would have a greater probability of recovering all costs of the plant from the steam heat customers and CPC. The credit assigned to the electrical generation may be subjected to Commission approval but the risk of this allocation

judgment would be transferred to CPC instead of KCPL stockholders as has always been done in the past.

It is interesting to note that Grand Avenue Station meets the fuel efficiency requirements of a cogenerator as defined by Subpart B of Part 292 of the Federal Energy Regulatory Commission regulations. However, KCPL would have to sell off a majority interest in the unit to qualify the unit as a qualifying cogeneration facility.

Advantages of Steam Contract with CPC

In recent years steam sales have incurred significant losses to KCPL. It is understandable that there may be considerable reluctance to engage in a steam contract which would easily double our total steam sales. However, it should be realized that this operation with CPC will not have the operating problems associated with our present industrial steam (Mobay) and steam heat (Downtown) customers.

Industrial steam sales to Mobay became unprofitable because it was based on by-product pricing with the assumption that Hawthorn 1-4 would be operated at or near base load conditions. However, Hawthorn 1-4 is not operating in this manner and two units must be forced run to supply firm steam to Mobay. These low load conditions associated with Hawthorn 1-4 impose efficiency losses on the station as well as requiring the burning of a substantial amount of oil or gas for flame stability. This will not be the case for the Grand Avenue Plant. In fact, the opposite is true. A firm steam commitment is already required for downtown steam requiring the operation of Grand Avenue in an underutilized, inefficient operation. The increased load from CPC would allow the plant to operate at or near full capacity with corresponding efficiency improvements as discussed later in this report.

Recently it has become apparent that substantial losses are occurring in the distribution lines to our downtown steam heat customers. It could be due to leakage, theft or both. It should be noted that CPC steam will be metered at Grand Avenue on KCPL property and the Company would not be subjected to these kinds of distribution losses.

The following is a summary of the several advantages the CPC contract would convey to KCPL.

1) Reduce Fixed Costs to Steam and Electric Customers. Approximately $2,000,000 of fixed costs associated with Grand Avenue Station and other KCPL general costs would be transferred to CPC. This could be of significant advantage to present steam heat customers. In the long run if Grand Avenue Station does not cover its costs, the station could be shut down. Alternate space heating supplies to downtown customers will probably be much more expensive. This could have a serious impact to the redevelopment of downtown Kansas City.

2) Improved Fuel Mix Burn at Grand Avenue. As mentioned previously, Grand Avenue station is operating at underutilized capacity. During the non-heating season steam loads are often so low that large quantities of gas or fuel oil must be burned to supply flame stability in the boilers. For example the following table lists the fuel mix for a few recent months at Grand Avenue Station.

	% of MMBtu Fired		
	Coal	Oil	Gas
May 1980	25.68	0.01	74.21
Sep 1980	44.39	0.00	55.61
Apr 1981	19.43	0.10	80.47
May 1981	14.35	0.08	85.57

However during the winter season when the plant is more fully utilized the fuel mix combination is is significantly improved.

	% of MMBtu Fired		
	Coal	Oil	Gas
Dec 1979	82.89	0.38	16.73
Jan 1980	81.66	0.94	17.40
Feb 1980	86.41	0.87	12.72
Dec 1980	81.80	0.55	17.65
Jan 1981	82.36	0.14	17.50
Feb 1981	73.86	2.15	23.99

The overall fuel mix is shown below:

	% of MMBtu Fired			Price
	Coal	Oil	Gas	¢/MMBtu
For 12 months ended December 1980	67.80	0.28	31.92	151.18
For 12 months ended October 1980	58.11	0.31	41.58	195.65

With the increased steam loads due to CPC it is believed that the boilers could be operated on a higher percentage of coal. Additionally the retubing of Boiler 1A which is a guide start boiler could substantially reduce the need for gas fired boiler banking operations. Accordingly, it is felt that the estimate for a 78% coal fuel mix with an average fuel price of 221.65¢ per MMBtu (1982 fuel budget prices) is conservative and will probably be exceeded. Note that in any case KCPL will not be at risk on this issue because fuel costs are covered by the fuel adjustment clause.

3) Topping Turbine Generation Fuel Savings. The topping turbine is expected to have a net heat rate of 4000 Btu/kwh. This is a savings of 7158 Btu/kwh over the 1980 overall KCPL heat rate for 1980. Assuming an 81% capacity factor for the topping turbine and a 10,500 kw average output, the total generation would be approximately 75,000 mwh. At a 1.3¢ per kwh fuel savings this results in savings of nearly $1,000,000 for the electric customers.

4) Reduce Accredited Capacity of Grand Avenue to 10.5 MW. The Iatan rate base issue and the upcoming attempted inclusion of Wolf Creek in the rate base is somewhat dependent on the present accredited capacity of all generating stations. It is proposed that Grand Avenue be derated to 10.5 MW (average topping turbine capacity) as it will primarily be a steam production plant. It is felt that both Commissions would have a difficult time disapproving this for four reasons.

   a) Most plant and O & M costs will have been transferred to steam.

   b) The topping turbine operating will generate $1,000,000 in fuel savings to electric customers.

   c) Based on present electrical generation from Grand Avenue, the topping turbine operation, made possible by the steam supply to CPC, will actually triple electrical output from the plant.

   d) Because CPC is an interruptible contract the capacity of the plant of about 70 MW would still be available for emergency needs in the summer

or for a backup for the downtown electrical network should the 161 kv stepdown transformers at Grand Avenue fail or require maintenance.

Inclusion of Iatan and Wolf Creek in the rate base is enhanced by the reduction of electrical generating capacity of Grand Avenue Station. This could be of considerable benefit to KCPL stockholders.

5) Enhanced Capability for Emergency Winter Operations. Presently the downtown network could be vulnerable to severe winter conditions. Winter peaking requirements have been as high as 433 Mlbs/hr as recently as January, 1979. If Grand Avenue Station were required to meet this load and supply an electrical backup for the downtown network, the probability of meeting this load would be significantly enhanced by the availability of Boiler 1A.

6) Limitation on CPC Load. Mr. J. England, Superintendent of Grand Avenue Station, has suggested that an orifice be placed in the steam transfer line to CPC so that a predetermined maximum steam flow would not be exceeded. This would prevent an excess steam flow from Grand Avenue which could disrupt the operation of the plant and reduce steam flow to the downtown network.

7) Retention of CPC as an Electrical Customer. Mr. J. Custead, Manager of North Kansas City District Office, has suggested that CPC may not be able to continue operations in Kansas City if unable to obtain an economical supply of steam (CPC is KCPL's 16th largest electrical customer and employs about 500 people). It is possible that the availability of KCPL's coal fired steam north of the river could entice other firms to locate or remain in the Kansas City area. However, it does appear that CPC would be using most if not all of the available steam capacity.

It should be noted that the advantages of the contract listed above will provide benefits to electric customers, steam customers and the KCPL stockholders.

Given the above considerations, I beleive it is imperative that KCPL give strong consideration to supplying steam to the Corn Products Corporation.

Phillip Cacioppo, P. E.

OLIGSCHLAEGER

KCP&L

MEMORANDUM

TO: R. H. Graham

FROM: J. R. Custead

SUBJECT: Corn Products' steam request.

DATE: January 19, 1982

In a meeting with Frank Trewartha, plant manager, on Friday January 15, 1982, an in-depth discussion resulted on CPC's and KCP&L's respective positions on the request for steam from the Grand Avenue Station.

In the way of background, Mr. Trewartha explained that for the first time in several years, the Corn Products Plant in Kansas City had a profitable year. This was due to several factors, the main ones being that they decreased their work force by over 100 employees; and the production of a major sweetner product that was transferred from Peoria to the Kansas City Plant. As a result of this profitable year, the decision to close the Kansas City Plant has been postponed for at least 2 years.

In fact, the future for the Kansas City Plant has greatly improved because of the plans to produce starch products instead of Methanol over the next few years. They are still projecting production of Hydro Carbons from grain at this plant in the mid to late 80's. Of course these decisions will be based on the economy and their projected need for their product in the Midwest. In the light of present trends, they still want to consider receiving steam from KCP&L.

In further discussion, KCP&L's position was presented. As currently evaluated, this being that with the age and condition of our steam plant, and steam system, we are hesitant to commit to a new large steam user, even though the load factor would appear to be beneficial to both parties. In further explaination, although a recent study was completed on our District steam operation, it has been concluded that a greater in-depth study needs to be accomplished to determine the course that the company should follow with regard to steam production in the years ahead. Basically, the in-depth study will recommend the best of 3 courses of action, those being to make major improvements in the steam system, to leave the aged system as is not adding new customers, and third to work towards termination of the District steam at some future date.

CONFIDENTIAL

OLIGSCHLAEGER

It was explained to Mr. Trewartha, that it would probably take several more months to complete the new study. The indication was given that KCP&L was not in a position to make a commitment to provide steam to a major new customer at this time. Mr. Trewartha countered with the statement, that he still believes that steam energy from the Grand Avenue Station could be profitable to both parties.

Mr. Trewartha projected a perturbed attitude because we did not have a definite answer after over 8 months of investigation at the Rate Department, and that the $7.00/Mlb steam costs, is unfounded from his point of view. He also informed me that his corporate Vice President, Thomas M. McKenna, will be in Kansas City on January 12, 1982, and may be in direct contact with our executives.

Of course there is still the question of whether Corn Products will be able to obtain approval to construct the steam line across the Missouri River.

JRC:da

cc: file

CONFIDENTIAL

OLIGSCHLAGER

KCPL

TO: A. J. Doyle
J. R. Miller
D. T. McPhee
L. C. Rasmussen
J. M. Evans
J. A. Mayberry
J. L. Hogan
F. L. Branca
R. H. Graham ✓
M. C. Mandacina
R. B. Sullivan

FROM: B. J. Beaudoin

DATE: August 3, 1984

Attached is the latest summary and action plan regarding our review of the steam business. It incorporates comments received subsequent to Mr. J. R. Miller's distribution of the first draft on July 24, 1984.

BJB/lls
Attachment

B J Beaudoin

DIST COML OPERATIONS
AUG 6 1984
R. H. GRAHAM

CONFIDENTIAL

BJB34 D-1

SCHEDULE 22-1

REVIEW OF STEAM BUSINESS

BACKGROUND

Studies of the KCPL steam business conducted in 1981 and 1982 indicated that steam rates to the downtown steam customers would have to be raised substantially in order to cover operating costs and earn a reasonable return on steam plant investment. The studies also indicated that the retirement in 1990 of electric production facilities at Grand Avenue would increase costs allocated to the steam business and therefore, require further steam rate increases. Analyses of projected steam load scenarios concluded that the addition of a large high load factor steam customer could help alleviate the need for downtown steam rate increases at least until retirement of the electric facilities at Grand Avenue.

Subsequently in 1982 KCPL filed a downtown steam rate increase with the MPSC and concurrently began negotiating a high use and load factor steam contract with Corn Products, International which would more than triple annual steam sales. Upon signing of a contract in 1983 with CPC having a term of five years beginning in April, 1984 and agreement by the MPSC in KCPL's last electric rate case not to change its allocation procedures between electric and steam, KCPL withdrew its filed steam rate case. It was then anticipated that the addition of CPC revenues based on projected steam demand and contractual rates would cover the shortfall from the downtown customers so that KCPL's aggregate steam business would not sustain further operating losses. KCPL's contractual steam rate to CPC included recovery of certain boiler improvements

by KCPL at Grand Avenue and CPC invested about $3 million in a steam line from Grand Avenue to CPC's property across the Missouri River.

CPC's demand for steam was projected to be a constant load of 250,000 lbs. per hour but actual experience to date has been loads averaging 180,000 lbs. per hour with rapid load variations of as much as 60,000 lbs. per hour. This has resulted in actual plant operations deviating significantly from those projected when the CPC contract was executed.

In June of 1984 CPC informed KCPL of its intent to sell its manufacturing plant to National Starch to whom CPC would like to assign its steam supply contract. National Starch has indicated an interest in renegotiating the contract at a lower rate for a ten-year period based on an average of 115,000 lbs per hour of steam demand -- about one half the contractual CPC steam demand. Such terms would substantially lower KCPL's steam sales revenues compared to the existing CPC contract.

In KCPL's last electric case, completed in July 1983, the MPSC ordered the Company to file its plan to phase-out the electric generating facilities at Grand Avenue. A study committee has recommended that the Grand Avenue electric facilities be retired upon the commercial operation of Wolf Creek scheduled for 1985. This phase-out of the electric facilities in 1985 accelerates the re-allocation of operating and maintenance costs and plant investment to the steam business.

The projected lower steam demand from National Starch even at the negotiated CPC rates and the anticipated re-allocation of Grand Avenue electric costs to the steam business without an upward rate adjustment to National Starch or the downtown steam customers is expected to put KCPL into an operating loss position for steam operations.

ACTION PLAN

In view of these changing circumstances, the management of KCPL recommend the following actions:

1. System Power Operations explore any further reductions in steam operations and maintenance costs and boiler efficiency improvements that can be effected at Grand Avenue station including shutdown of a standby boiler for eight months of the year. Rough estimates of all of the above indicate that some costs could be eliminated but not a sufficient amount to offset the shortfall in projected revenue. However, a standby boiler is required in the current CPC contract. It is needed, too, to provide reliable service to downtown customers. Without it, the consequences on reliability of service to steam customers would be severe.

2. Allow CPC to assign the steam contract to National Starch for the same five-year term and steam rate or offer an alternate proposal to National Starch for conversion to an electrode boiler operation.

3. The Commercial Operations Division explore with CPC the possibilities of adding other high load factor steam customers on CPC property at similar terms and conditions of the current contract (term no longer than five years). Offer this as an incentive to CPC in recovering its investment in the steam line and the possibility of KCPL reducing its steam rates to National Starch by spreading steam costs over more sales units of steam.

4. KCPL wants to retain the downtown steam customers as "energy customers" of KCPL. Rough estimates indicate a potential for 176 million KWH of winter sales and 113 MW of winter peak demand. The Commercial Operations Division undertake a detailed marketing study of the downtown

steam customers to develop a plan for converting these steam customers to electric energy as a primary source of their energy requirements. The study should consider, but not be limited to, the following factors: types of equipment and space required to supply steam for specific customer applications (heating, cooking, etc), purchase or lease arrangements, projected steam and electric rates, competitive gas prices, and other conversion incentives. The study should also consider conversion of steam loads by areas to expedite abandonment of sections of steam distribution facilities.

5. Rough cost of service studies reflecting the retirement of Grand Avenue electric facilities and the prospect of reduced demand to National Starch indicate that a rate increase to the downtown steam customers may be required. The Rate Department should consider filing a steam rate case with rates effective upon the retirement of the electric facilities at Grand Avenue.

6. In view of the five-year time horizon in the CPC contract, the upward pressure on steam rates, and the prospect of having to invest considerable amounts of capital to upgrade an old and deteriorating downtown steam distribution network, KCPL will no longer encourage the connection of "new" steam customers to the downtown network.

OLIGSCHLARGER

KCPL

July 30, 1984

RECEIVED
M. C. MANDACINA
JUL 31 1984
Attn: _____
Return _____

TO: J. A. Mayberry
J. R. Miller
B. J. Beaudoin
J. L. Hogan
J. N. Jester
M. C. Mandacina
R. B. Sullivan
W. R. Johnson

The attached confidential memo lists the members and outlines the people of the committee appointed July 27, 1984 to study the steam service to National Starch and the downtown steam service.

Robert H. Graham

RHG/rms
Attachment

cc: L. C. Rasmussen (atc.)

CONFIDENTIAL

OLIGSCHLAEGER

CONFIDENTIAL

KCPL

STEAM SERVICE TO NATIONAL STARCH
AND
CONVERSION OF DOWNTOWN SYSTEM

A committee was appointed at a meeting July 27, 1984 to prepare a proposal to National Starch on KCPL serving their steam load utilizing electrode boilers. Those on the committee are:

B. J. Beaudoin
J. L. Hogan
J. N. Jester
R. H. Graham, Chairman
M. C. Mandacina

Wayne Johnson will be a consultant to the committee. Hubert Kent and Joe Gawron will provide information and perform field work for the committee. The Rate Department is available to review and comment on proposals only, during preparation of the Wolf Creek rate case. T&D Engineering will provide information as requested.

The scope of the National Starch proposal will include:

1. A review of National Starch steam and electric loads.

2. Pricing of electrode boilers.

3. A study of both KCPL and National Starch owning or leasing the electrode boiler.

4. Method and cost of providing electrical service to the new electrical load.

5. Approach to pricing service - whether by kilowatt hour, pound of steam, or some other method.

6. Practicability and possibility of co-generation proposal by the Gas Service Company or others.

With the loss of Corn Products as a steam customer, there is no longer a high use, high load factor steam customer on the steam system. Prior studies have concluded that without such a customer the downtown steam system is not economically competitive. This committee was, therefore, assigned to study and recommend ways to continue serving this load.

The scope of the study on the steam distribution system will include:

1. Confirmation that the steam distribution system should be abandoned and existing customers should be served with equipment on their property.

2. Survey of all existing steam customers to determine feasibility of using electric boilers or other electrical supplied heating system.

3. Pricing of replacement equipment.

4. Study of both KCPL and customer owning or leasing the electrical equipment.

5. Approach to pricing heating service - whether by kilowatt hour, pound of steam, or some other method.

6. Impact of steam rate increase on loss of steam customers to natural gas.

7. Need of acquiring approval by Missouri Public Service Commission of the new service and rates.

8. Impact of new electrical loads on downtown electrical distribution system.

9. Marketing plan for selling new service to customers.

RHG/rms

OLIGSCHLAGER

KCPL

RECEIVED
M. C. MANDACINA
AUG 0 1984
Attn: _____
Return _____

August 28, 1984

TO: J. R. Miller
J. A. Mayberry

RE: CONVERSION OF DOWNTOWN STEAM SYSTEM

The Steam Committee appointed July 27, 1984 has completed the first phase of the study on the Conversion of Downtown Steam.

The committee would like to include this report in the discussion on National Starch at the meeting scheduled for Friday, August 31.

Robert H. Graham

RHG:rm
Attachment

cc: (W/attachments)
B. J. Beaudoin
J. L. Hogan
J. N. Jester
M. C. Mandacina
R. B. Sullivan
W. R. Johnson
H. A. Kent
J. A. Gawron

CONFIDENTIAL

SCHEDULE 24-1

OLIGSCHLARGER

CONVERSION OF DOWNTOWN STEAM SYSTEM

August 28, 1984

The average price of steam on the KCPL downtown system is now about $12/Mlb. At the present gas price, steam can be produced with a gas-fired boiler at a cost of under $10/Mlb. The removal of electric generation from the Grand Avenue plant, and the necessary related increase, would drive the cost of steam even further above the competitive price. These facts make it apparent that we must find an alternate method of selling heat to these customers, or lose this business to the Gas Service Company over the long run.

Hubert Kent and Joe Gawron have made on-site surveys at 73 of the 122 customers on the Large Steam Customer List. This represents about 74% of the steam sales in 1983. In most cases, there appeared to be sufficient space in the equipment rooms in the general area of the present steam entry equipment to install an electric boiler. It is estimated that the peak flow to these 73 customers would be approximately 235 Mlbs/hr. A very rough estimate of the cost of conversion is $20/Mlb. This would cover the cost of an electric boiler and the associated wiring on the customer's property. This equates to $4.7 million to convert the customers surveyed so far, and $6.35 million for all customers. These estimates are very rough and provide order of magnitude only.

It is estimated that these steam customers utilize only about 1,000 BTU/lb. At the $12/Mlb price, it is equivalent to 4¢/KWH electricity. This is energy only, with no capital costs or maintenance costs. The cost to convert a building from KCPL steam to natural gas would be about the same or less than converting to an electric boiler <u>if the stack were not a problem</u>. It would be nearly impossible to get a stack up and out of some buildings. The energy cost at $4.80/MCF for natural gas at 80% efficiency is about $6/Mlb, equivalent to electric boilers utilizing 2¢/KWH electricity. It does not appear that we would be competitive in this market if the customer has to sustain any of the conversion costs and could overcome the stack problem.

A preliminary review of the downtown electrical distribution system indicates that there are areas where the additional load from electric boilers could be added at little or no cost. Other areas would require considerable cost, and these areas are primarily in the heart of downtown, roughly 9th Street to 13th, Baltimore to Walnut. The estimate for expanding the electrical distribution system to carry the total steam conversion load is $3 million.

The survey of our steam heat customers pointed out that most of our larger and newer customers are on the high pressure (185 PSI) system. The high pressure system is in better condition than the low pressure (15 PSI) system, and sustains lower losses. The 15 PSI system is very old and that is where we have been spending, and will continue to spend, most of the maintenance dollars. Table 1 lists each pressure system and the total steam flow for each month for the most recent year. The high pressure system will have to be maintained and operated as long as we serve steam to any customer. Any conversion plan should start with the low pressure customers so that we

could eliminate sections of low pressure piping, reduce losses and maintenance, and give us more time to develop plans for converting the newer and, in most cases, larger customers.

Any increase in steam rates would make steam even less competitive with gas-fired boilers than it presently is. If we are to convert our present steam customers to the electric system, we must retain them as steam customers for the present time.

The cost of installing electric boilers and the related wiring on the customer's property is in the order of $6.35 million. The expansion of the electrical distribution system to carry this new load is in the order of $3 million, making a total of $9.35 million. This assumes that the company is willing, and could obtain commission approval, to pay for the installation of the customer utilization equipment. For this investment, the company can pick up a maximum of 100 MW of winter load and annual KWH sales of 177,000,000 KWH. The winter consumption would be 160,000,000 KWH. At the newly filed price of 3.25c per KWH, the winter revenue would be $5,200,000. The summer consumption would be 16,000,000 KWH and at the filed water heating rate for 1985 of 5.91¢/KWH the revenue would be $945,000. The steam distribution maintenance cost would also be eliminated. In 1983, this cost was $720,000, and $433,000 the first seven months of 1984.

If we develop a conversion plan that does not include furnishing the electric boilers and associated wiring, the potential sales are greatly reduced. The market would consist of the very small customer, those who are remodeling and changing out their heating and cooling systems, and those who find it impossible to get a stack out of their buildings. If the company initially furnishes the electric boilers and wiring, the plan should include an agreement with the customer wherein he operates and maintains the equipment and within a relatively short time would also own the equipment. The timing of the conversion plan should be such that it would be completed at about the same time as the contract with CPC expires. If the CPC contract is not picked up by National Starch, the conversion plan should be accelerated, but it is probably not practical to complete the conversion in less than four years.

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RGN:rm

MONTHLY STEAM USAGE DATA
August 1983 - July 1984

	15 PSI* CUSTOMERS TOTAL M#	105 PSI* CUSTOMERS TOTAL M#	185 PSI* CUSTOMERS TOTAL M#	A L L CUSTOMERS TOTAL M#	DATE OF PEAK FLOW	PEAK FLOW **	DATE OF MINIMUM FLOW	MINIMUM FLOW
8/31/83	9,049	480	9,928	19,457	8/7/83	79	8/20/83	41
9/30/83	6,647	470	4,892	12,009	9/3/83	99	9/17/83	36
10/31/83	9,543	576	7,394	17,513	10/21/83	128	10/16/83	39
11/30/83	35,467	972	14,696	51,135	11/29/83	250	11/3/83	60
12/30/83	105,898	2,357	41,701	149,956	12/25/83	386	12/16/83	150
1/31/84	80,457	1,755	39,101	121,313	1/20/84	333	1/29/84	159
2/28/84	46,340	1,270	18,865	66,475	2/6/84	320	2/16/84	100
3/30/84	57,502	1,580	23,408	82,490	3/23/84	315	3/27/84	135
4/30/84	26,931	1,473	13,111	41,515	4/4/84	165	4/27/84	50
5/30/84	11,365	1,143	5,810	18,318	5/8/84	110	5/31/84	38
6/29/84	9,634	900	2,324	12,858	6/19/84	63	6/2/84	34
7/31/84	8,485	677	2,064	11,226	7/11/84	50	7/29/84	32
	407,318	13,653	183,294	604,265				

* Metered data at customer premises without adjustment.

**Data from Gas Steam Heat Data. (Peak Flow at Grand Avenue)

HAK:rm
8/28/84

OLIGSCHLAEGER

KCPL

RECEIVED
M. C. MANDACINA
SEP 5 1984
Attn: _____
Return _____

September 4, 1984

TO:

A. J. Doyle	M. C. Mandacina
B. J. Beaudoin	J. A. Mayberry
J. M. Evans	J. R. Miller
J. L. Hogan	L. C. Rasmussen

RE: Steam Meeting Minutes, August 31, 1984

Enclosed are the minutes of the Steam Meeting on August 31, 1984 regarding National Starch Steam Service and Conversion of Downtown Steam System.

R. H. Graham

RHG:rm
Enclosure

CONFIDENTIAL

SCHEDULE 25-1

OLIGSCHLAEGER

MINUTES
STEAM MEETING
August 31, 1984

Those Attending:	A. J. Doyle	J. L. Hogan
	L. C. Rasmussen	B. J. Beaudoin
	J. R. Miller	M. C. Mandacina
	J. M. Evans	R. H. Graham

Topic: National Starch Steam Service and Conversion of Downtown Steam System

The report of the Steam Committee dated August 23, 1984 was reviewed and discussed. The sub-station cost to serve full requirement of electrode boilers was clarified to be either $2.9 million or $3.1 million, depending on the method used, not a total of each method. The average cost of steam to National Starch in a scenario where they take three-quarters of their load, or 750,000 Mlbs/year from Grand Avenue and produce the remaining one-fourth, or 250,000 Mlbs by electrode boiler, was calculated to be $10.85/Mlb. No other significant clarifications were made.

Mike Mandacina pointed out that National Starch has confirmed that their agreement with CPC has been finalized. No knowledge has been gained as to what their agreement is in reference to the steam contract with KCPL. National Starch also indicated that they were looking at a design that would allow them to essentially satisfy their needs with 300 PSI steam, which is the limitation of the pipeline. It was agreed that we would make no concessions or extensions in the contract, but that we would pursue selling as much steam to National Starch as the constraints of the pipeline would allow, with the understanding that National Starch would be responsible for any modifications in the Grand Avenue Plant required to supply a higher-pressure steam. A meeting with National Starch will be scheduled prior to September 11, 1984. Mike Mandacina will continue to be the contact person with National Starch.

Mike Evans requested that all authorizations for maintenance work at Grand Avenue be returned to him so they can be held until a final decision is reached on the extent of our steam supply to National Starch.

The report of the Steam Committee on the Conversion of Downtown Steam System dated August 24, 1984 was reviewed and discussed. It was decided that we should pursue a plan to convert the downtown steam system to steam and heat supplied by electricity. The conversion should be completed at about the same time as we conclude our obligation to serve National Starch, provided National Starch does indeed continue the present CPC contract for the full five-year term of the original contract.

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After discussing the probability of success with various marketing approaches, it was agreed that the market plan would include an arrangement wherein the company would supply and install all of the equipment at each customer location necessary to provide the heating or steam service. This concept allows the customer to be told that we are abandoning the steam distribution system, but continuing to supply steam service with company-supplied equipment. This plan would have to include a provision wherein the customer would be responsible for operating and maintaining the system, and would eventually take ownership of the equipment and be an electric heating customer rather than a steam customer.

J. A. Mayberry and B. J. Beaudoin are responsible for developing the detailed study and marketing plan. The team will be similar to that used to develop the plan for the conversion of the direct current system. This study is to cover as many options as practical and have input from Corporate Planning on the economics, from Taxes on the implication of ownership, from Legal on the contracts and presentation to the Corporation Commission, from Commercial Operations on the development of the marketing plan, and from Utility Steam Operations on the steam system itself.

The order from the Missouri Public Service Commission expected September 17 on the suspension of our rate case may well have a bearing on the direction of our conversion plan. Prior to that time, work can proceed on a conversion plan with the emphasis initially on the 15 PSI customers and working on up to the high pressure or 185 PSI customers. This study is to proceed as expeditiously as practical.

R. H. Graham

RHG:rm
09/04/84

CONFIDENTIAL

OLIGSCHLAEGER

KCPL

RECEIVED
M. C. MANDACINA

FEB 25 1985

Attn: _____
Return _____

February 22, 1985

TO: J. A. Mayberry
B. J. Beaudoin

FROM: R. H. Graham

RE: STATUS REPORT: CONVERSION DOWNTOWN STEAM SYSTEM

Since the last report on December 17, 1984, considerable progress has been made toward getting the first conversion made from our steam distribution system to an electric boiler. On December 20, a meeting was held with Mike Mandacina, Joe Gawron, Hubert Kent, Bob Graham and with Jim Hogan and his engineering staff who are associated with this project. The details of the engineering approach and requirements were discussed and agreed upon. Engineering is to review each of the sites, determine the size of the necessary boiler and prepare plans which can be given to a contractor for detailing and pricing. It has been cleared with purchasing that on the initial two or three installations that Natkin would be used as the contractor and would be monitored closely by engineering personnel. From a list of 12 potential early conversions, two customers were selected for early conversion which would allow us to cut-off approximately two blocks of distribution line which would help minimize steam transmission losses.

A meeting was held January 18, 1984, with J. A. Mayberry, B. J. Beaudoin, Mike Mandacina and Bob Graham to finalize procedures prior to contacting customers. It was estimated that the first 12 to 14 conversions could be completed for approximately $250,000. It was decided, at this time, that we could proceed with contacting customers to get their permission to make the conversions.

The first contact was with the Mercantile Bank Drive-In at 1331 Walnut. We were informed that the bank has plans underway to build a new facility at this location and demolish the existing facility. We had no knowledge of this and contact with the architect indicated that the plans are still preliminary and the heating and cooling systems have not even been considered. We made an early pitch for electric heat and will follow this project closely. The second contact was with the Leo Eisenberg Company on their building at 1320 Grand which backs up to the Mercantile Bank facility. The customer was receptive to the idea and had no problems with our making the conversion so long as there was no expense to the customer and that we would maintain service at the same rate.

The real estate department has prepared an easement for our facilities at this location. The legal department has been contacted to prepared any necessary agreement or release for us to proceed with our conversion. In a subsequent discussion between the legal and the rate department, it was thought that Rule 1.13, in the General Rules and Regulations applying to steam service, would

require us to get a release or clarification from the commission staff that we could proceed. This paragraph deals with Scope of Applicability. This paragraph restricts our responsibility to serve steam from the company's existing integrated steam and distribution facilities and all completed extensions thereto. It was my interpretation of our discussion with the commission staff on December 7, 1984, that the staff believed that there was no problem with our rules and regulations or promotional practices if we were to install, own and operate a piece of equipment on the customers premises and provide steam on our currently filed tariff. It is now the feeling of the rate department, that we should take the details of this first conversion and review it with the staff prior to making the installation. We need to make an early decision on this point so that, if necessary, we can make contact with the commission and, if not, we can proceed with the installation of the conversion equipment.

R. H. Graham

RHG:gp

cc: M. Mandacina

CONFIDENTIAL

OLIGSCHLAEGER

KCPL

June 24, 1985

TO: F. S. Nelson

FROM: J. Gawron

RE: On Site Electric Boiler Installations at Customer Locations

In anticipation of expanding the number of electric boiler installations subsequent to the completion of those 8 presently authorized, it is requested the FPC&E do the following described project:

The attached is a list of proposed steam customers to be converted in 1986. The order of priority that these are to be considered for conversion is Rodeway Inn first and Seidens Fur Inc. last. Proceed with preparing cost estimates for these installations similar to those prepared for the first eight. Also, proceed with Real Estate Department obtaining ownerships and preparing easement documents. Proceed with the preparation of R/W drawings for the installations which will require an on site inspection to be coordinated by Commercial Operations.

It is requested that cost estimates be completed on all the installations by September 1, 1985, and that the preparation of easement documents and drawings begin as soon as possible and be completed by October 1, 1985.

This second phase of boiler installations is to be kept separate from the first eight presently in progress as for as charge accounts are concerned.

Regular status reports of progress being made will be expected and also regular reporting of costs as presently done on the first phase.

If there are any questions, contact me on 556-2378.

J. Gawron

JG:sk
Enc.
cc - M. Mandacina
R. H. Graham
H. Kent
R. Decker
J. Foley
M. Schockey
P. Sells
W. C. Martin
J. Jaksetic

CONFIDENTIAL

DIST COML OPERATIONS
JUN 25 1985
R. H. GRAHAM

SCHEDULE 27-1

OLIGSCHLAGER

REQUEST FOR ENGINEERING SERVICES

Number _____

DATE: June 24, 1985
STATION: DISTRICT STEAM HEAT SYST.
REF: ELECTRIC BOILER INSTALLATION

TO: F. S. Nelson, Director

This letter requests the services of Fossil Plant Construction and Engineering Department for the following described project:

See ATTACHED LETTER DATED June 24, 1985

We are suggesting a completion date of: OCT 1 1985
The Plant representative/technical support for this project is:
R. Decker / H. Kent
The above project ~~is~~ is not an approved budget item.
Total approved dollar amount: $_____
Other comments: _____

REQUESTED BY ~~Power Plant/Technical Service Manager~~

APPROVED: J. Gauron
J. Trask/C. King, Director

TO: _____
Power Plant/Technical Service Manager

Per your request, we are planning to proceed on this project in accordance with the following milestone dates: _____

The FPC&E representative responsible for the planning and coordinating of this project is: _____

The following Project Number _____ is assigned to this project for all correspondence and reference.

Other comments: _____

cc: N. Evans
C. E. Trask
J. L. Hogan
P. A. Sells

F. S. Nelson - FPC&E

21683

SCHEDULE 27-2

OLIGSCHLAEGER

File Elec Boilers

KCPL

June 17, 1985

TO: C. C. Martin
A. E. Carr

FROM: Utility Steam Operations

RE: FUTURE CUSTOMER CONVERSIONS TO ELECTRIC BOILER

In order to continue our program of converting our present steam customers to electric boilers and maximizing the removal of steam piping from our system, we recommend the following customers be studied for conversion on the basis of the following priority list:

CUSTOMER	ADDRESS	DEMAND
Rodeway Inn	601 Main	500 KWD
Rodeway Inn	701 Main	300 KWD
R. K. Powell	810 Baltimore	100 KWD
John A. Marshall	110 West 9th	215 KWD
Baltimore Inn	109 West 9th	25 KWD
Executive Plaza	122 West 8th	806 KWD
William Pickett	417 East 13th	469 KWD
Union Nat. Bank	405 East 13th	375 KWD
MO Court of Appeals	1300 Oak	150 KWD
Naval Jelly	412 West 10th	177 KWD
Rothberg Cigar Co.	930 Broadway	352 KWD
Seidens Fur Inc.	935 Broadway	25 KWD

H. A. Kent

HAK:gp
cc: R. M. Graham
M. C. Mandacina
J. A. Gawron

CONFIDENTIAL

DIST COML OPERATIONS
JUN 25 1985
R. M. GRAHAM

SCHEDULE 27-3

OCT 24 1986

OLIGSCHLAEGER

No. 78

Class

Data Information Request
Kansas City Power & Light Company
Case No. HO-86-139

Requested From: Steve Catron

Date Requested: 10/24/86

Information Requested:

Re Reardon Schedule 8, p. 2.1 :

Please provide all correspondence between the Building Owners and Managers Association of Kansas City (BOMA) and Mr. A. J. Doyle from 1981 to the present concerning the condition and future of the Downtown Steam System.

Requested By: Mark Oligschlaeger

Information Provided:

The attached memo to BOMA members inviting them to a meeting at which Mr. Doyle would speak on the steam issue is the only correspondence of which we are aware.

The attached information provided to the Missouri Public Service Commission Staff in response to the above data information request is accurate and complete, and contains no material misrepresentations or omissions, based upon present facts of which the undersigned has knowledge, information or belief. The undersigned agrees to immediately inform the Missouri Public Service Commission Staff if, during the pendency of Case No. HO-86-139 before the Commission, any matters are discovered which would materially affect the accuracy or completeness of the attached information.

If these data are voluminous, please (1) identify the relevant documents and their location (2) make arrangements with requestor to have documents available for inspection in the KCP&L Kansas City, Missouri office, or other location mutually agreeable. Where identification of a document is requested, briefly describe the document (e.g., book, letter, memorandum, report) and state the following information as applicable for the particular document: name, title, number, author, date of publication and publisher, addressee, date written, and the name and address of the person(s) having possession of the document. As used in this data request the term "document(s)" includes publication of any format, workpapers, letters, memoranda, notes, reports, analyses, computer analyses, test results, studies or data, recordings, transcriptions and printed, typed or written materials of every kind in your possession, custody or control or within your knowledge. The pronoun "you" or "your" refers to Kansas City Power & Light Company and its employees, contractors, agents or others employed by or acting in its behalf.

Signed By: B J Reardon 10/30/86

Date Received: 10-31-86

9/1986a

SCHEDULE 28-1

OLIGSCHLAEGER

MAY 2 2 1985

1100 Main Street, Suite 850
Post Office Box 26008
Kansas City, Missouri 64196
TWX 910-771-0210
Telephone 816 471-0700

Cohen Asset Management, Inc.

May 21, 1985

TO: Those Listed

FROM: Mike Dwyer, Cohen Asset Management
President, BOMA Kansas City

RE: KCP&L Steam Rate Increases

As a customer of steam supplied by Kansas City Power & Light, you may already be aware of possible increases in steam rates which may become effective upon opening of the Wolf Creek Nuclear Power Plant. Based on past experience, operators of commercial properties which utilize KCP&L supplied steam believe that the utility and/or the Public Service Commission will attempt to increase steam rates dramatically when supplemental income derived from Grand Avenue Station electricity is no longer realized.

As such, an ad-hoc committee has been formed to investigate what alternatives and actions should be taken to protect the interests of those utilizing steam supplied by Kansas City Power & Light. Members of this group, composed primarily of office building owners and managers, have met previously and believe these rate increases to be a very real economic threat to commercial properties in the Central Business District. In addition, there is grave concern that the operation of the Grand Avenue Station will be phased out altogether at some future date, thereby rendering existing customer's steam facilities useless without expensive modifications.

This committee has proposed that a general meeting of all customers currently utilizing steam supplied by Kansas City Power & Light be held to discuss what position and/or action is warranted to protect their mutual interests. This meeting, scheduled for the time and place shown below, will include Arthur Doyle, President, Kansas City Power & Light, who will address the future of the Grand Avenue Station and rates for the steam it produces. We invite you to attend this meeting and provide your input on this very important issue.

OLIGSCHLAEGER

Thursday, June 6, 1985
10:00 a.m.
City Center Square Conference Room
Suite 2860

RSVP, Mary Summers, BOMA
471-1735

I look forward to seeing you.

MED/mp

cc: J. Wayne Roy, General Service Administration
Marvin Brown, City of Kansas City, Missouri
General Manager, Radisson-Muehlebach Hotel
John Windsor, Windsor & Co.
Daniel Hinrichs, Federal Reserve Bank
General Manager, Sheraton Prom
Richard King, United Missouri Banks
Operations Manager, Jackson County
Operations Manager, Southwestern Bell Telephone Co.
General Manager, Vista Del Rio
General Manager, The Kansas City Club
Rick Baier, Eisenberg & Co.
Kessinger & Hunter, Traders Bank
General Manager, Hotel Phillips
Rusty Baltis, Tower Properties
Ruth Simison, AMC
William Kessinger, Moore & Kessinger
Jan Redding, Gailord Enterprises
Robert Regnier, First National Bank
Operations Manager, Kansas City School District
Kansas City - St. Joseph Diocese
Operations Manager, Folger's Coffee Company
Al Morrow, Kansas City Southern Industries
Vice President-Operations, Macy's
W. K. Stapp, Cohen Asset Management
Robyn Bousum, Home Savings Association
Building Manager, Professional Building
Building Manager, Greyhound Lines, Inc.
University Club of K.C.
Operations Manager, Trans-World Airlines
Jack Pritchard, Cohen Asset Management
Gil Bourk, Columbia Union National Bank
Vice President-Operations, James Barickman & Associates
Building Manager, Law Building
Robert Ingrahm, Argyle Investment Company
Jan Oudendijk, Vista Hotel
Ilus W. Davis, Dietrich, Davis, Dicus, Rowlands & Schmidt

OLIGSCHLAEGER

No. 642

Class

Data Information Request
Kansas City Power & Light Company
Case No. HO-86-139

Requested From: Steve Cattron

Date Requested: 1/28/87

Information Requested:

Per the document 'A Study of KCPL's Steam Heat Business', dated December, 1981, provided to Staff thru O.R. #10:

1) Why was this study prepared? Please provide all documentation reflecting the decision to initiate this study of KCPL's steam heat business.
2) When did work on this study begin? End?
3) Provide the names of all individuals who assisted in the preparation of the above study

Requested By: Mark Oligschlaeger

Information Provided:

The attached information provided to the Missouri Public Service Commission Staff in response to the above data information request is accurate and complete, and contains no material misrepresentations or omissions, based upon present facts of which the undersigned has knowledge, information or belief. The undersigned agrees to immediately inform the Missouri Public Service Commission Staff if, during the pendency of Case No. HO-86-139 before the Commission, any matters are discovered which would materially affect the accuracy or completeness of the attached information.

If these data are voluminous, please (1) identify the relevant documents and their location (2) make arrangements with requestor to have documents available for inspection in the KCP&L Kansas City, Missouri office, or other location mutually agreeable. Where identification of a document is requested, briefly describe the document (e.g., book, letter, memorandum, report) and state the following information as applicable for the particular document: name, title, number, author, date of publication and publisher, addresses, date written, and the name and address of the person(s) having possession of the document. As used in this data request the term "document(s)" includes publication of any format, workpapers, letters, memoranda, notes, reports, analyses, computer analyses, test results, studies or data, recordings, transcriptions and printed, typed or written materials of every kind in your possession, custody or control or within your knowledge. The pronoun "you" or "your" refers to Kansas City Power & Light Company and its employees, contractors, agents or others employed by or acting in its behalf.

Signed By: [signature] 2/11/87

Date Received: 2/20/87

SCHEDULE 29-1

KANSAS CITY POWER & LIGHT COMPANY

Data Request No. 642
Case No. HO-86-139

Q: (1) Why was the study prepared? Please provide all documentation reflecting the decision to initiate this study of KCPL's steam heat business?

A: The purpose or objective of the study was to recite the history of the steam department from its inception, to document and analyze the financial results, to reveal the present physical characteristics of the system, to analyze the future financial inplications and to propose courses of action to company management.

We were unable to locate any written documentation reflecting on the decision to initiate the study. However, attached is a 9/2/81 memo indicating the opinions of L.M. Marks about the steam business situation. The Steam Study was probably already in the planning stages at the time of this memo. Mr. Marks was the Planning Administrator at the time and left the company in 1981.

Q: (2) When did the work on this study begin? End?

September 1981 - December 1981.

Q: (3) Provide names of individuals who assisted in the preparation of the above study?

A: B. J. Beaudoin
Dave M. McCoy
Paul Arsuaga
James K. Liberda

OLIGSCHLAEGER

KCPL

September 2, 1981

TO: B. J. Beaudoin

RE: Steam Business

We discussed the impact of PURPA's cogeneration programs on possible divestiture of the downtown steam business. At your suggestion I called a few members of the Mid-West Corporate Planning group to discover if anyone had experience with restructuring the steam business into a profitable business or to at least a break-even business.

Detroit Edison has structured their steam business into a profit center organization. This organization is headed by Mr. Jim O'Hara (313-237-6881). His assignment from the CEO is to make it profitable or get rid of the business.

In exploring the divestiture option Mr. O'Hara has contacted the Synergy System Management Company. The Executive Vice President is Mr. Bill McMillian (305-368-5072). Snyergy acquired the steam system of Ohio Edison and formed the Youngstown Thermal Company. From O'Hara's contacts there is the indication that Synergy has further interests in expanding their operations in other areas.

Because of the continued complaint that the steam business is a losing operation, I believe some changes should be made. First we should prove to ourselves that there is a loss. The reasons (possibly other than unfairly low rates) could contribute to these losses. The steam business (Grand Avenue Generating Station and the steam distribution system) should be structured into a separate subsidiary. A sharp aggressive risk taker should be found to become Vice President of the new subsidiary. This new guy should be given a simple assignment — make money for KCPL. He should be permitted to recommend selling off the business if necessary to prevent the losses. Contacts with Synergy Systems Management Company should be made immediately to explore their interest and capabilities. Ohio Edison should be contacted to fill in information about their decisions to leave the steam business. Youngstown Thermal Company should be visited.

who?

I will be available this week and next to make some of the contacts recommended above if you want me to do so. A discussion with Lou might be advisable before talking to Synergy, but all the other contacts seem to be possible without further review. If no commitments are discussed it seems reasonable to contact Synergy to explore their business activities. Let me know if I can give you any further help on this.

Lindal

Lindal Mark

LLM:kll

OLIGSCHLAFGER

KCPL

Steam Study

March 24, 1982

TO: Electric Supply Coordinating Committee (ESCC)

Mr. B. J. Beaudoin
Mr. F. L. Branca
Mr. G. W. Burrows
Mr. J. L. Hogan
Mr. J. N. Jester
Mr. M. C. Mandacina
Mr. F. S. Nelson
Mr. R. B Sullivan

SUBJECT: Statement of Scope
KCPL Long-Range Steam Heat Planning Study

Please find attached a copy of the subject document, prepared at the regular ESCC meeting of Friday, March 19, 1982. As we discussed at that time, work on the steam heat study will begin as soon as possible.

J. M. Evans

JME:tlp

cc: Mr. A. J. Doyle
Mr. J. R. Miller
Mr. D. T. McPhee
Mr. J. A. Mayberry
Mr. L. C. Rasmussen
Mr. W. R. Johnson
Mr. A. L. Samuels
Mr. W. Wiehe

Attachment

CONFIDENTIAL

SCHEDULE 30-1

STATEMENT OF SCOPE

KCPL LONG-RANGE STEAM HEAT PLANNING STUDY

Prepared by: Electric Supply Coordinating Committee
March 19, 1982

OLIGSCHLAEGER

STATEMENT OF SCOPE

LONG-RANGE STEAM HEAT PLANNING STUDY

INTRODUCTION

The downtown steam system, including Grand Avenue Station, is at an equipment age and condition that will require a decision within the next few years as to the future of the Company's steam heat business. During the past several months, a number of events have occurred which emphasizes the urgent need for a long-range strategy for downtown steam.

The recent conversion of a major retail store to natural gas raised the concern for the competitiveness of steam heat. Next, the request by a major industry for process steam that could eventually triple annual steam output and increase peak hour demand by 75% has focused attention on the aging Grand Avenue steam facilities. In addition, the question of the role that Company supplied steam heat will have in the revitalization of downtown Kansas City must be answered. Finally, the December 1981 report titled "A Study of KCPL's Steam Heat Business" raised several questions concerning the long-term financial viability of the steam heat system.

In February 1982, KCPL's newly appointed Manager of Utility Steam Operations requested that a long-range steam heat study be prepared. The purpose of this Statement of Scope is to respond to this request by outlining the major tasks involved in performing a steam heat study.

OBJECTIVE

The basic objective of the study will be to determine whether there is a plan that will be technically and financially feasible, and will contribute to maintaining steam as a competitive heat source in the long-term. The goal of

this study is to examine all reasonable alternatives to the future supply of downtown steam in a reliable and economic manner. As such, this study should be considered a "phase one" effort with a phase two study to follow if the alternatives considered result in a future steam system that is unprofitable and/or uncompetitive with other heat sources, such as natural gas.

Concentrating on the period 1985-2005, this study will consist of engineering, economic, and financial evaluations of alternative plans for meeting future steam requirements. Due to the interdependent relationships of the many tasks involved in such a study, close cooperation and coordination between the various functional groups involved will be necessary. To insure this coordination, the overall responsibility for this study will be assigned to the Electric Supply Coordinating Committee (ESCC). To assist in this study effort, the Manager of Utility Steam Operations will be included as a member of ESCC. ESCC will report its progress and final recommendation to the System Expansion Alternatives Committee (SEAC).

ASSUMPTIONS

A basic assumption to this study is that the Company will continue to provide steam heat service in the future. The alternatives of discontinuing service, divestiture, or establishment as a non-regulated subsidiary are not part of this phase one study but will be included in a phase two effort if necessary.

This study will concentrate on long-term solutions with large scale improvements to or replacement of existing steam facilities. Solutions to immediate problems, such as steam losses and Grand Avenue heat rate, are not included as part of this study. To account for the solution of these short-term problems, a base

level of capital improvements will be assumed common to all plans.

In addition, as an initial study condition, it is projected that electrical generation at Grand Avenue will retire as currently anticipated in the Load and Capacity Planning Scenario approved by SEAC on February 26, 1982.

ANALYSIS AND EVALUATION OF PLANS

The alternatives to be studied and compared are summarized as follows:

1. Rehabilitation. A full rehabilitation program for Grand Avenue boiler and related facilities and the downtown steam transmission and distribution (T&D) system. With respect to this later activity, a special task force within the T&D Department will develop information on the need for rehabilitation of the steam T&D system.
2. Package Boilers. Replace existing Grand Avenue boilers with coal-fired, low pressure package boilers and rehabilitate the T&D system.
3. FBC. Replace Grand Avenue boilers with Fluidized Bed Combustion (FBC) boilers and rehabilitate the T&D system. (A major advantage to FBC is that it can meet stringent air quality standards while burning high-sulphur coal).
4. Electrode Boilers. Central station electrode boilers at Grand Avenue to replace coal-fired boilers, and rehabilitate the T&D system.
5. De-centralized Electrode Boilers. Replace Grand Avenue with electrode boilers located at dispersed downtown sites and rehabilitate the T&D system.
6. Leased Electrode Boilers. Company owned, customer leased electrode boilers on customer premises at a favorable

6. (Continued)

electric rate. (This option would eliminate T&D rehabilitation, improve KCPL's electrical system load factor, and could allow a gradual phase-out of steam business).

An analysis of the capital and operating costs of alternative plans will be performed to include both present worth of revenue requirements and capital investment requirements. A financial analysis will be performed and will include an evaluation of the Company's "ability to finance" under various regulatory circumstances. The impact on future steam heat rate levels will be determined and compared to the cost of competitive fuels.

The analysis and evaluation of plans will require an in-depth examination of the existing T&D system and Grand Avenue Station. Due to manpower and time constraints, the retention of engineering and/or consulting services for selected tasks such as boiler inspections will be considered by ESCC.

After a thorough analysis and evaluation of each alternative, ESCC will determine the single plan that best meets the objective of the study, and a recommendation will be proposed and forwarded to SEAC. If none of the alternatives meets the stated objective, ESCC will recommend to SEAC that a phase two study be initiated to examine alternatives to staying in the steam business.

STUDY SCHEDULE

Important milestones for the study are outlined below. Scheduled milestones may be modified from time to time to insure a final study product that is complete and accurate as possible.

OLIGSCHLAEGER

EVENT	DATE
Approve Scope	March 26, 1982
Develop Plans	April 23
Complete Preliminary Evaluation	June 30
Complete Evaluation	August 27
Submit Recommendation	September 30

FLB:jb

OLIGSCHLAEGER NOV 23 1986

No. 406

Class

Data Information Request
Kansas City Power & Light Company
Case No. HO-86-139

Requested From: Steve Catron

Date Requested: 11/20/86

Information Requested:

Reference the Dec. 1981 'Study of KCPL's Steam Heat Business' (provided thru D.R. #10), pages 21-22:

1) Please provide all studies, analyses, reports or other documentation reflecting KCPL's investigation of the possibility of divesting itself of the steam business through sale of the business or creation of a separate subsidiary.

2) If the investigation of KCPL's divestiture of the steam business was not performed as suggested in the study, please explain why.

Requested By: Mark Oligschlaeger

Information Provided: Response to Data Information Request #406 dated 11/20/86
Supplemental Response to Data Information Request #318 dated 11/5/86

The attached information provided to the Missouri Public Service Commission Staff in response to the above data information request is accurate and complete, and contains no material misrepresentations or omissions, based upon present facts of which the undersigned has knowledge, information or belief. The undersigned agrees to immediately inform the Missouri Public Service Commission Staff if, during the pendency of Case No. HO-86-139 before the Commission, any matters are discovered which would materially affect the accuracy or completeness of the attached information.

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Signed By: R J Beaudoin 12/9/86

Date Received: 12/15/86 M.O.

SCHEDULE 31-1

OLIGSCHLAEGER

Response to Data Information Request #406 dated 11/20/86
Supplemental Response to Data Information Request #318 dated 11/5/86

The Downtown Steam System Conversion Study (and the Study of KCPL's Steam Heat Business dated December 1981 and KCPL Long-Range Steam Heat Planning Study 1984-2003 dated September 14, 1982) are the only KCPL studies even remotely addressing divestiture of the steam business. KCPL did not directly investigate the possibility of divesting itself of the steam business by sale of the business, by establishing a separate subsidiary, by establishing a separate company which sells by-product electricity, by cogeneration or any such arrangement regulated or otherwise.

The basic reason that no other such studies were done is that KCPL has always wanted to retain and service all its customers', both electric and steam. The CPC steam agreement of November 3, 1982 and the attendant high load, high load factor load made pursuing any of the alternative arrangements that were suggested in KCPL's internal planning documents economically unnecessary.

However, the loss of CPC load December 1, 1985 changed the economics drastically. Without a major high load factor customer the economics of the system became unfeasible as is addressed in the Downtown Steam System Conversion Study.

OLIGSCHLAEGER

OCT 20 1986

No. 55

Class

Data Information Request
Kansas City Power & Light Company
Case No. HO-86-139

Requested From: Steve Cattron

Date Requested: 10/21/86

Information Requested:

Follow up to Response to D.R. #17:

Please provide all correspondence and related documentation (memos to meetings, notes of telephone conversations) between KCPL and Kent McCord - Laffrey Equip. Co., Catalyst Thermal Energy Corp. (1983-1986) and K.C. Mo. Energy Commission.

Requested By: Merle Oligschlaeger

Information Provided:

(1) Call Slip re Kent McCord Copy attached - No other notes made.
(2) Catalyst Thermal - Verbal conversation at IOHA Meeting - No notes other than 1986 letter previously submitted. + Cards from meeting - all verbal info
(3) KC. Mo Energy Commission - from J.R. Shaw file - attached. (Notes from 11/19/85 mtg but no discussion of KCPL selling system).

10/27/86

The attached information provided to the Missouri Public Service Commission Staff in response to the above data information request is accurate and complete, and contains no material misrepresentations or omissions, based upon present facts of which the undersigned has knowledge, information or belief. The undersigned agrees to immediately inform the Missouri Public Service Commission Staff if, during the pendency of Case No. HO-86-139 before the Commission, any matters are discovered which would materially affect the accuracy or completeness of the attached information.

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Signed By:

Date Received:

SCHEDULE 32-1

CALL SLIP

Time 4:20 Date 5/20/86

M Mike

While You Were OUT

M Kent McCord

of Laffey Equip Co.

Phone No.

- ☐ Telephoned
- ☐ Called to see you
- ☐ Left the following message:
- ☐ Please return call
- ☐ Will call again
- ☐ Returned your call

- referred by Frank Branica
- Represents a co. that may be interested in buying CAS if it is ever for sale

KCPL FORM 71-144 (12/77)

OLIGSCHLAEGER

File: Steam:

KANSAS CITY, MISSOURI ENERGY COMMISSION

JULY 15, 1986, 9:00 A.M.

COUNCIL DINING ROOM, 8TH FLOOR, CITY HALL

AGENDA

I.	Welcome, Introductions, Approval of Minutes, and Vice-Chairman's Report
	-Peter Dreyfuss, Vice-Chairman
II.	Report of District Heating and Cooling Feasibility Study Grant
	-City Architect's Office -City Manager's Office
III.	Alternatives to District Heating and Cooling Systems
	-Mr. Mike Mandacina, Director of Internal Services and Steam Operations, KCP&L
	-Mr. Randy Lennan, Marketing Supervisor, KPL Gas Service
IV.	Committee Reports
V.	New Business/Announcements
VI.	Old Business
VII.	Adjournment

SCHEDULE 32-3

OLIGSCHLAEGER KC Energy Commission Meeting 7/15/86
8th floor City Hall -

Mtg on all follow-up for JEH.

★ Chec JLS - on Decy Smoking Area Engine JEH
JLS - on Roll top desk.

Al Pacini, Dominic Amato, Peter Dreyfuss, Todd Hall, Randy
Tom Bean, Jerry Sloan, Mike Burke, Gene Chipman Asst City Mgr!
Bob Wallenberg -

What about electrical switching in GAS.

Randy Lenin - Some situation in Topeka - They have previous experience. Operating costs spread over fewer customers. Some customers was paying ±55/Mlb.
Have been dealing w- quite a few customers & converted quite a few:
Bradford, Jones, Mark Twain Tower, Commerce Bank, Ozark Bldg, 10th Library, CE Union, Midland Midland, Palace Bldg.

- Rates lower because close to gas fields.

Have no plan to give away boilers - customer responsible for capital expense. Customers have done so by economic pay out in 4 years.

No space available for a heating plant -

Group of investors - cogeneration projects - bldg retrofits - will finance boiler purchase.

SCHEDULE 32-4

No A/C in studios Majority of customers -

All Surveys have indicated a suitable location.

- Absorption chiller vs centrifugal chiller. -

KCMO
- Grant to Study replacement of downtown dist. plt. Sys.
. Total 80K city's share 35K. Negotiated grant - some items in grant proposal a problem. Revised grant had old information.

Solid Waste Mgmt Plan - dovetail w KCPL - downtown loop - Savings from trash bags -

Resolution to be introduced by Councilman Burke re future (Waste to Energy) of overall solid waste Plan

OLIGSCHLAEGER

KC Energy Commission Notes 11/19/85

(Utility) attended for Ron Wilson.

~~Energy~~ Resource Development Association Bill
Dayton Ohio, Atlanta Georgia

Steam heat & other types of energy engr.
Doe & Dept housing & Urban Development
1) RFP for assessment of District Heating Systems future.
2) Provide KC energy commission w/ recent changes & developments in district heating.

When budget approved will expect a request for proposals.

Slide Show - Rochester N.Y. 7 provide up front funding for community - Roch G&E wanted to abandon service

Baltimore Maryland - Resource recovery plant.
50 MW turbine - Co-generation - Excess heat to Cherry Hill - public housing. Not completed still negotiating

Provo Utah, Municipal utility - multi fam. housing & commercial d.
Expanding system from present plant to larger.

Hartford Conn. - Hartford Steam Co. - Chilled water plant.
Citizens will own generating station. 30-40 MW co-gen.

OLIGSCHLAEGER

KC Energy Commission · 11/19/85

Buffalo N.Y. –

End user efficiency higher than own individual heating plant.
One point of production, higher efficiency on central sys.
More cost effective to have production source in ctr of community.

200°F+ Polyurethane foam w/ plastic jacket.

Dayton Ohio – Coal fired downtown steam system.

Co gen systems. – Phase 1 assessments.

Tom Dinardo – Rochester District heating cooperative.
Roch Gas & Electric Corp. – was going to abandon downtown steam system. 1960 – 4th largest 621 customers. 1984 < 100 cust.

Abandon by Oct 85 – plan ordered by NYPSC
Major users got together – Monroe County. XEROX etc.
"Core group" of customers looking @ $12 M to install boilers.
Developed Cooperative – Unregulated.

Xfer distribution system. The 1925 plant – peaking station & pressure reducing station. Negotiated w/ RGE to purchase station. Coal fired converted to natural gas. Got station – installing new boilers – & meters. Renewals production. Industrial development bonds $9 mill.

11/19/85

Installing temporary rented boiler hooked up to system sitting in alley next to station.

#16/Mlb on RGE. Projected @ $20/Mlb

Avg cost of $14/Mlb Cooperative projected cost.
Now production cost of $10/Mlb.

How will fire Station 8?
History of line losses?

Provo – Municipal Revenue Bonds
Bradford – Sub. of Con. Nat Gas.
Richmond, City, State, Municipality & Rec. grounds.
Youngstown Thermal – HUD money.

Bill Eskew – RDA

Peter Dreyfuss – KC Energy Commission
John Kafafi.
John Rushing.

AFP – $30–50K DOE + matching from City – ≈ $80K total

7/84 NYPSC Ordered abandonment by 10/85. Comp. formed 11/9/84.

Town Prop. – 811 Main.

OLIGSCHLAEGER

Met with these people 2-27-86

H/Mail

Thermal Resources of St. Louis Inc.

TAB SCHMIDT, PE
General Manager
Chief Operating Officer

(314) 621-3550
1 Ashley Place
St. Louis, Missouri 63102

THERMAL®

CATALYST THERMAL
ENERGY CORPORATION

DAVID J. TOOMBS
VICE PRESIDENT
(216) 743-7712
205 NORTH AVENUE
YOUNGSTOWN, OHIO 44502

Catalyst Energy
DEVELOPMENT CORPORATION

180 Maiden Lane, New York, N.Y. 10038 (212) 968-1700

FRANK J. RYDER, III
MANAGER OF MARKETING

SCHEDULE 32-9

OLIGSCHLAGER

Catalyst Energy

DEVELOPMENT CORPORATION

180 Maiden Lane, New York, New York 10038 (212) 968-1700

March 18, 1986

Mr. Arthur Doyle
Chairman of the Board
Kansas City Power & Light Company
1330 Baltimore Avenue
Kansas City, Missouri 64105

Dear Mr. Doyle:

Catalyst Energy Development Corporation (Catalyst) and Catalyst's district heating subsidiary, Catalyst Thermal Energy Corporation (Thermal) would like to offer an alternative proposal to Kansas City Power and Light (KCP&L) for the planned retirement of their downtown central district heating system. Within the past eighteen months, Catalyst and Thermal have successfully taken over the ownership and operations of the Baltimore, St. Louis and Youngstown steam systems to the benefit of the utilities, municipalities and customers alike. Each system is currently undergoing programs of expansion and improvement designed to maintain reliable, cost effective steam heat service. In the case of St. Louis, Catalyst and Thermal are about to begin construction of a 600 TPD Waste to Energy Facility at a cost of approximately $50 million further indicating our dedication and commitment to the restoration of our nation's historic central district heating systems.

It is my understanding that KCP&L plans to retire their steam system over the next four years. It is also my understanding that the city and surrounding counties have expressed a sincere interest in developing a municipal waste to energy facility in conjunction with KCP&L. I strongly believe that Catalyst and Thermal have the technical and financial capability to provide KCP&L with a successful alternative for continued steam service and development of the waste to energy project.

I have enclosed our brochure and 1985 annual report, as well as additional information regarding Catalyst and Thermal's

experience and qualifications. We are prepared to meet with KCP&L immediately to discuss in detail our plans for continuing vital steam services to downtown Kansas City. I will contact you within a few days to determine KCP&L's interest in pursuing this matter.

Very truly yours,

Jay Ryder

Frank J. Ryder, III
Director of Marketing

cl

cc: Carl Avers
President of Catalyst Thermal

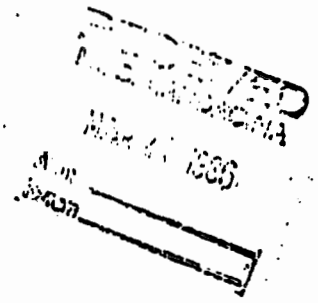
Mike Mandacina
Director

OLIGSCHLAEGER

KANSAS CITY POWER & LIGHT COMPANY
1330 BALTIMORE AVENUE
P O BOX 679
KANSAS CITY, MISSOURI 64141

March 20, 1986

ARTHUR J. DOYLE
CHAIRMAN OF THE BOARD
AND
PRESIDENT



Mr. Frank J. Ryder, III
Catalyst Energy
280 Maiden Lane
New York, New York 10038

Dear Mr. Ryder:

As you may know, KCPL has under study a variety of alternative options for meeting the energy requirements of our customers at the least cost to them. Included in those options are a waste-to-energy facility, and alternative utility services to our existing downtown steam heat customers. By "least cost" I mean without hidden subsidies from either taxpayers or other utility ratepayers, which, of course, would be indirect additional cost burdens on our customers.

We believe that a waste-to-energy facility may be an attractive alternative because it solves a municipal refuse disposal problem in addition to supplying supplemental energy to meet customer nees. From the literature enclosed with your letter, we understand your expertise in these areas. We will add it to the literature we are compiling and analyzing as part of our studies.

We appreciate your interest. Should we be in need of your assistance, we will contact you.

Sincerely,

AJD:be
bcc: Messrs. J. R.Miller (Enc.)
M. C. Mandacina
F. L. Branca

SCHEDULE 32-12

OLIGSCHLAEGER

Catalyst THERMAL ENERGY CORPORATION

September 23, 1986

Mr. Michael Mandacina
Director, Internal Services
& Steam Operations
Kansas City Power & Light
P.O. Box 679
Kansas City, MO 64141

Dear Mike:

Thank-you for bringing me up to date on the plans by your company to discontinue steam service in Kansas City. Please keep in touch if we can be of any assistance. I am enclosing a Thermal Update on our Philadelphia project for your general information.

Best regards,

Carl E. Avers
President

CEA/lk

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