

Exhibit No.:
Issue: "Marketing"
Witness/Type of Exhibits: Graham Rebuttal
Sponsoring Party: KCPL
Case No.: HO-86-139

REBUTTAL TESTIMONY OF

Robert H. Graham

ON BEHALF OF

KANSAS CITY POWER & LIGHT COMPANY

CASE NO. HO-86-139

Exhibit No. 16
Date 4-7-87 Case No. HO-86-139
Reporter Wendy

SPECIAL CASE FILE
FOR PUBLIC SERVICE COMMISSION

REBUTTAL TESTIMONY
of
ROBERT H. GRAHAM

Director, District Commercial Operations

KANSAS CITY POWER & LIGHT COMPANY

Case No. HO-86-139

1. Q. PLEASE STATE YOUR NAME.
2. A. Robert H. Graham.
3. Q. HAVE YOU PREVIOUSLY SUBMITTED TESTIMONY IN THIS
4. PROCEEDING?
5. A. Yes, I have.
6. Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?
7. A. I will respond to the prefiled testimony of Staff
8. Witnesses Bernsen, Haskamp and Dahlen contending
9. that the Company has demarketed its steam heating
10. system. I will submit testimony showing that even
11. if the Company had acquired all of the potential
12. customers in its steam service territory, the
13. steam system would still not be a viable heating
14. alternative for the Downtown area today.
15. Q. HAVE YOU BEEN DIRECTLY INVOLVED WITH THE COMPANY'S
16. MARKETING EFFORTS OF STEAM AND ELECTRIC HEATING?

1. A. Yes, I have had responsibilities pertaining to the
2. Company's marketing functions for the past twenty
3. years.

4. Q. WHAT HAS BEEN THE COMPANY'S PROCEDURE FOR
5. MARKETING ITS STEAM AND ELECTRIC HEATING OPTIONS
6. TO POTENTIAL CUSTOMERS IN THE STEAM SERVICE
7. TERRITORY?

8. A. Whenever there was an opportunity, the Company
9. always provided rate information and energy
10. analysis on both the steam and electric options.
11. From this information and information supplied by
12. the customer's consultants, the customer selected
13. a heating system.

14. Q. WHICH HEATING SYSTEM DID THE ENERGY RATE ANALYSIS
15. USUALLY FAVOR?

16. A. It depended on the type of building and heating
17. delivery system. As the price of steam rose and
18. more efficient heating delivery systems were
19. utilized, the analysis more often favored electric
20. heat. These analyses did not include
21. consideration of capital costs or O&M costs other
22. than the cost of electricity or steam. One energy
23. analysis completed in 1972 (provided in the answer
24. to Staff Data Request No. 632) indicated electric
25. heat was about 9% more economical than steam heat.

1. Q. IF ALL HEATING CUSTOMERS IN THE DOWNTOWN STEAM
2. SERVICE TERRITORY TODAY WERE CONNECTED TO THE
3. STEAM SYSTEM FOR HEATING, WHAT WOULD BE THE
4. RESULTING INCREASE TO THE COMPANY'S EXISTING STEAM
5. LOAD?

6. A. We have previously provided in the answer to Staff
7. Data Request No. 578 information concerning the
8. amount of additional steam load which would have
9. resulted from acquiring all the new buildings in
10. the Downtown area (beginning with the City Center
11. Square building in 1977) as customers for the
12. steam system. As that Data Request answer
13. indicates, the additional load would have been
14. 38,288 Mlbs. For purposes of this rebuttal
15. testimony, we reviewed all possible heating
16. customers in the steam system territory and
17. estimated that the acquisition of all possible
18. heating customers in the area would result in an
19. increase of 98 customers (10 new buildings, 54
20. buildings lost to gas and electric heating, and 34
21. buildings always gas) and approximately 255,989
22. Mlbs. in sales annually.

23. Q. CAN YOU GIVE AN IDEA OF THE EFFECT TO THE AVERAGE
24. COST PER MLB. OF ADDING THIS INCREASED STEAM LOAD?

25. A. Mr. Levesque in his rebuttal testimony presented a
26. modified version of Staff Witness Dahlen's

1. economic analysis of the cost of steam for Staff's
 2. long-term rehabilitation scenario. Under this
 3. revised long-term scenario, the cost of this
 4. additional 255,989 Mlb. of load would result in an
 5. average price per Mlb. of \$13.65 (\$15.16 without
 6. National Starch), which is a \$3.61 per Mlb.
 7. reduction from the cost per Mlb. resulting from
 8. Mr. Levesque's original modifications to Staff's
 9. long-term rehabilitation scenario. Exhibit
 10. No. _____ (RHG), Schedule 1 presents the results
 11. of these modifications to Staff's long-term
 12. rehabilitation scenario with National Starch, and
 13. Schedule 2 presents the results without National
 14. Starch.

15. Q. EVEN AT THIS \$13.65 COST PER MLB. OF STEAM, BASED
 16. ON THE INCLUSION OF ALL POTENTIAL CUSTOMERS IN THE
 17. STEAM SERVICE TERRITORY, WOULD THE STEAM SYSTEM BE
 18. VIABLE TODAY IN THE DOWNTOWN AREA?

19. A. Based on the Downtown Steam System Conversion
 20. Study (Exhibit No. _____ (BJB), Schedule 1), any
 21. steam cost per Mlb. over \$12 would not be
 22. competitive today with other forms of heating.
 23. The significant number of customers converting
 24. from steam, or deciding not to go with steam, over
 25. the past few years indicates that steam has not
 26. been competitive at \$10 per Mlb. or less.

1. Q. DOES THIS ADJUSTED COST OF \$13.65 PER MLB. OF
2. STEAM REFLECT ANY CAPITAL COST OF SERVING THIS
3. ADDITIONAL 255,989 MLB. OF LOAD?

4. A. No. Based on Staff Witness Miller's costs, we
5. have estimated that service entrance, line
6. extension, customer PRV stations and boiler
7. necessary to serve these 98 additional new
8. customers to the system would cost over
9. \$3,000,000. This cost would either have to be
10. borne by the customer or KCPL. To give an
11. indication of the effect this necessary investment
12. would have on the price of steam, Mr. Levesque
13. included the effects of this investment in his
14. revised version of Staff's long-term
15. rehabilitation scenario. The results are
16. displayed in Exhibit No. _____ (RHG), Schedules 3
17. and 4, which shows that this capital cost would
18. increase the price to \$14.51 (\$16.03 without
19. National Starch) per Mlb.

20. I'd also like to point out that these
21. analyses assume that all potential customers are
22. physically able to use steam service in their
23. buildings, that they are all able to convert to
24. steam service at no cost, and that it would be
25. advantageous to convert to steam service. This
26. is, of course, highly unrealistic and underscores
27. the fact that, despite salesmanship, the

1. additional potential customer load which could be
2. gained by marketing efforts is nowhere near
3. 255,989 Mlb.

4. Q. TO YOUR KNOWLEDGE, DURING THE PAST FEW YEARS, HAVE
5. ANY STEAM CUSTOMERS LEFT THE SYSTEM FOR REASONS
6. OTHER THAN ECONOMICS?

7. A. Aside from the wrecking ball, I know of no reasons
8. other than economics. Even at the Company's
9. current steam rate of about \$10 per Mlb., steam
10. has not been competitive in many instances with
11. other forms of heating energy.

12. Q. WHY HAS THE COMPANY NOT SOUGHT TO EXTEND THE
13. SYSTEM OUTSIDE THE DOWNTOWN SERVICE TERRITORY TO
14. OTHER HIGH LOAD CUSTOMERS SUCH AS NATIONAL STARCH
15. (FORMERLY CPC)?

16. A. According to Staff Witness Miller's testimony,
17. extensions to the steam distribution system would
18. be made at \$455 per foot, and this cost assumes
19. that the system would not be extended across
20. bridges, highways or other difficult terrain. The
21. extension of the system across to National Starch
22. (formerly CPC) cost over \$3,000,000, which was
23. paid by CPC. There are and were no other
24. potential customers surrounding the Downtown area

1. with sufficient load to make an extension of the
2. steam system feasible.

3. Q. IS THE CONCLUSION BY STAFF THAT THE COMPANY
4. DEMARKETED STEAM SINCE 1972 CORRECT?

5. A. No it is not. Staff has apparently misinterpreted
6. my internal memo supplied in answer to Staff Data
7. Request No. 632. The statement in that memo that
8. steam might not be available for the project was
9. not the Company's position on supplying steam to
10. new customers, but instead, reflected operating
11. constraints at the time. Grand Avenue Station, at
12. that time, was used primarily for electric
13. generation and was important in supplying
14. electricity to the Downtown area. To the extent
15. steam was available from the Station, it was used
16. to meet the demand from steam customers. The old
17. de-superheating stations used to supply low
18. pressure steam were operating at or near their
19. capacity. It was necessary to consult our
20. internal operating personnel concerning these
21. restrictions before we could commit to new
22. customers.

23. The Company has, in fact, connected slightly
24. more steam heating customers than electric heating
25. customers since 1970 including the connection of a

1. large industrial customer National Starch
2. (formerly CPC).

3. Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

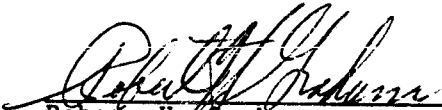
4. A. Yes.

AFFIDAVIT

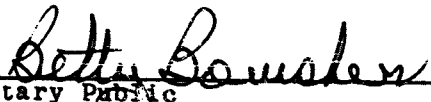
STATE OF MISSOURI
COUNTY OF JACKSON

)
) ss.
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Robert H. Graham, being first duly sworn, on his oath states: that he has participated in the preparation of the foregoing written testimony, in question and answer form, consisting of 8 pages, to be presented to the Public Service Commission of the State of Missouri in Case No. HO-86-139; that the answers therein contained were given by him; that he has knowledge of the matters set forth in said answers; and that such answers are true to the best of his knowledge and belief.


Robert H. Graham

Subscribed and sworn to before me this 2nd day of
April, 1987.


Notary Public

My Commission Expires:

September 28, 1988

BETTY BOWSHER
NOTARY PUBLIC - MISSOURI
My Comm. Expires Sept. 28, 1988
State of Missouri

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1987-1999	1.1725	1.2357	1.2544	1.3393	1.3622	1.4278	1.5283	1.5843	1.6546	1.7423	1.8429	1.9572	2.0766	2.2007	2.3298
2000-2001	1.4400	1.4347	1.6723	1.1129	1.1622	1.2193	1.2697	1.3466	1.4237	1.5037	1.5887	1.6795	1.7725	1.8689	1.9678
2002-2003	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2004-2005	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2006-2007	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2008-2009	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2010-2011	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2012-2013	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2014-2015	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2016-2017	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2018-2019	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2020-2021	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2022-2023	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2024-2025	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2026-2027	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2028-2029	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2030-2031	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2032-2033	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2034-2035	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2036-2037	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2038-2039	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2040-2041	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2042-2043	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2044-2045	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2046-2047	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2048-2049	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2050-2051	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2052-2053	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2054-2055	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2056-2057	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2058-2059	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2060-2061	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2062-2063	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2064-2065	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2066-2067	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2068-2069	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2070-2071	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2072-2073	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2074-2075	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2076-2077	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2078-2079	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2080-2081	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2082-2083	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2084-2085	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2086-2087	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2088-2089	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2090-2091	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2092-2093	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2094-2095	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2096-2097	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2098-2099	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2100-2101	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2102-2103	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2104-2105	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2106-2107	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2108-2109	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2110-2111	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2112-2113	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2114-2115	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2116-2117	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2118-2119	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2120-2121	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2122-2123	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2124-2125	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2126-2127	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2128-2129	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726
2130-2131	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726	1.4726		

1

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1977. *Journal of the American Medical Association*, 237: 1000-1001.

The Commission will later in December try to increase the number received for proper operation and maintenance. It's funds, based on existing experience, just a summer level, of at least ten would be required to support the state distribution system. This is combined with no, 61,000 estimates of more.

of 1944, and the 1945-46 season. The 1945-46 season was particularly bad, with a loss of 100% of the crop.

The majority hangs on current plan and has increased additions were required by law. Property taxes are assessed on 115 of 118 acres. The majority meet the conversion ratio as a case of a bill.

THE JOURNAL OF THE

22. The following table shows the number of people who attended the 2008 Summer Olympics in Beijing, China. The number of people who attended the 2008 Summer Olympics in Beijing, China is 105,311,000.

Journal of Management in 1987 (1987, 13, 1).

Increase per price to a 20% jump in Δ interest	1.81
Inclusion of current net Δ interest	2.59
Increase of distribution tax law	2.22
Inclusion of poverty tax	0.52
Increase of electricity for railroads	2.43
Inclusion of station that are higher level of losses	0.39
Application of capital treatment rate to 20% of Δ loss	0.13
Increase in sales to reduce all possible taxonomic changes	0.13

Amiga's AmigaOS

[illegible]

1

Dr. R. G. Anderson, who is based on the 1987-88 season, is the author of the book, "The 1987-88 Season: A Year of Record Breaking." The book is available for \$2.95 and is available from the publisher, 1987.

^{a/} Devices¹ returned costs of 20% are approximately 0.06/m², rather than 0.12 used in Table 1.

At the 1974 re-construction on 42.5' a current set that was new 20.1' in position at 23 year 1.1 g for 30%.

2. Fe^{2+} ions are oxidized to Fe^{3+} on O_2 at 62.5 °C according to: $2\text{Fe}^{2+} + \text{O}_2 + 4\text{H}^+ \rightarrow 2\text{Fe}^{3+} + 2\text{H}_2\text{O}$.

RECEIVED BY THE DIRECTOR OF THE FBI

Incision of rectum : anus

increase of electricity 'or energy'

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INCREASE IN SALES TO: PRICE ALL FOR

100

1

FILE 40514

10-10-94

MINNAPOLIS STEAM & LIGHT CO.
MINNAPOLIS STEAM SYSTEM INCLUDING NATIONAL STADIUM - LONG TERM
INCLUDES SALES (200000 MMBTU) TO ALL STEAM CUSTOMERS IN THE DOWNTOWN SERVICE AREA
AND ADDITIONAL CAPITAL COSTS OF \$1,311,329
REAL STEAM RATE CASE RESULTS TESTIMONY

		1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
SALES:																
STADIUM		714,623 MMBTU	10,378,636	10,538,576	10,432,545	10,537,741	10,823,539	11,323,553	11,912,118	12,551,534	13,465,233	14,463,441	15,722,412	17,275,425	19,179,014	21,561,404
NATIONAL STADIUM		425,634 MMBTU	1,555,515	1,709,730	1,709,830	1,825,279	1,953,653	2,075,745	2,203,961	2,342,382	2,489,895	2,647,134	2,812,537	2,987,378	3,171,576	3,364,856
TOTAL		1,140,257 MMBTU	11,934,151	12,248,306	12,142,375	12,363,020	12,777,192	13,399,298	14,116,079	14,893,916	15,955,128	17,110,575	18,634,949	20,262,803	22,350,590	24,926,260
EXPENSES:																
WATER	1/	2,007,160 MMBTU	7,206,800	7,627,229	7,627,230	7,944,385	8,434,106	9,192,829	10,116,127	11,199,997	12,544,820	14,218,833	16,215,454	18,524,319	21,194,834	24,287,522
ELECTRICITY	2/	6,303 MMBTU	437,672	425,540	464,626	464,372	494,711	519,474	537,629	570,762	607,876	649,363	696,243	748,543	806,375	869,731
WATER/SEWER	3/		1,094,890	1,132,871	1,171,825	1,218,441	1,272,436	1,333,811	1,401,539	1,475,273	1,554,750	1,640,292	1,732,423	1,831,724	1,944,823	2,072,359
CHEMICAL TREATMENT	4/	244,857 MMBTU	244,857	244,793	256,935	267,156	278,993	292,452	307,382	323,660	341,774	361,966	383,257	405,725	429,434	454,455
MAINTENANCE			51,524	51,524	51,524	51,524	51,524	51,524	51,524	51,524	51,524	51,524	51,524	51,524	51,524	51,524
DEPRECIATION			162,400	175,904	181,952	189,190	197,574	207,104	217,620	229,224	242,832	258,524	276,385	295,545	316,129	338,247
DISTRIBUTION			179,900	144,720	149,736	155,692	162,552	170,434	179,009	188,638	199,178	210,363	222,254	234,822	248,075	261,940
WATER & SEWER		231,000 MMBTU	231,000	239,202	247,241	257,476	268,469	281,418	295,700	311,476	328,879	347,340	366,999	387,733	409,623	432,779
WATER & SEWER & WASTE		92,000 MMBTU	92,000	95,195	98,464	102,385	106,923	112,000	117,771	124,051	130,962	138,338	146,164	154,482	163,302	172,623
WASTEWATER TREATMENT		176,000 MMBTU	176,000	182,112	188,374	195,860	204,547	214,414	225,381	237,315	250,275	264,246	279,218	295,195	312,180	329,189
PROPERTY TAX	5/		223,151	271,738	244,781	229,321	193,922	171,523	147,124	127,124	107,124	87,124	67,124	47,124	27,124	7,124
TOTAL EXP. \$MM		10,236,573	10,628,181	10,692,404	11,079,823	11,674,400	12,560,746	13,613,726	14,788,738	16,117,384	17,586,184	19,243,251	21,072,752	23,084,625	25,384,889	27,972,861
DEPRECIATION	6/		1,063,091	1,063,091	1,063,091	1,063,091	1,063,091	1,063,091	1,063,091	1,063,091	1,063,091	1,063,091	1,063,091	1,063,091	1,063,091	1,063,091
TOTAL EXP. & DEPRECIATION		11,300,664	11,711,272	11,755,495	12,142,914	12,737,491	13,623,837	14,676,817	15,851,829	17,180,475	18,649,275	20,306,342	22,135,843	24,147,716	26,447,980	29,035,952
STADIUM REVENUE	7/		2,224,709	2,123,341	2,009,134	1,894,326	1,778,519	1,654,711	1,549,983	1,423,856	1,320,288	1,203,400	1,076,673	975,865	861,257	746,223
STADIUM SALES			297,740	277,343	268,946	258,549	246,132	232,733	219,329	204,952	190,565	176,168	161,771	147,374	132,977	118,580
STADIUM REVENUE		2,522,449	2,400,684	2,278,080	2,152,875	2,024,651	1,935,252	1,811,444	1,769,312	1,628,808	1,510,853	1,379,568	1,238,444	1,123,242	994,234	864,803
STADIUM REVENUE MINUS EXP. \$MM		1,761,876	1,339,413	1,228,686	1,138,061	1,047,162	954,517	867,633	797,573	737,930	689,675	642,373	597,273	556,077	517,757	481,924
STADIUM REVENUE MINUS EXP. PER MMBTU		1.51	1.11	1.01	0.93	0.85	0.75	0.66	0.57	0.49	0.43	0.38	0.32	0.27	0.23	0.19
STADIUM REVENUE PER MMBTU		2.19	2.01	1.86	1.72	1.59	1.45	1.30	1.17	1.05	0.94	0.84	0.74	0.65	0.57	0.49

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Impact of Interventions in 1987 (8/2/87)

THE UNIVERSITY OF CHICAGO PRESS
50 EAST LAKE STREET, CHICAGO, ILL. 60601
1987

[illegible][illegible][illegible]

Incision of coronary artery: myocardial infarction; the narrowing of coronary artery

Inclusion of property taxes
Increases of a percentage for inflation

Reaction in chemical systems: 100 to 1000

[illegible]

SECRET

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