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DOWNTOWN DENVER RENEWAL STIMULATES STEAM HEAT BUSINESS

by **Marilyn Pollard** and **Daniel Danbom**
Public Service Company of Colorado, Denver

The cry of "gold!" still echoed through Colorado in 1879 when the Denver Steam Heating Company, one of the predecessor companies of Public Service Company of Colorado, began to supply steam to the colorful Larimer Street area, Denver's original business district.

The beginning of the steam industry can be traced to a bewhiskered pioneer named John W. Smith. In 1869 he built downtown Denver's first modern hotel, the American House. In 1879, Smith decided that he wanted to heat his hotel in the most modern manner possible. Steam was becoming popular in other parts of the country, but was not commercially available in Denver. So Smith organized the Denver City Steam Heating Company to supply steam for his hotel.

Shortly after his steam company went into operation, several Denver merchants told Smith they would like to heat their establishments with the steam produced at his plant. Smith expanded his operation and within a few years was supplying steam heat not only to his hotel, but also to other businesses in downtown Denver.

Until 1949, this same steam plant, albeit much expanded and then owned by Public Service Company of Colorado, provided most of the steam used in downtown Denver buildings.

In the late 1940's, however, the boilers at PSCo's Zuni Steam Electric Generating Station began to carry most of the system steam load, and Smith's original steam plant has been used since as a standby unit and peaking source for the PSCo system.

John Smith would be proud to know, however, that his original steam plant will be the location of a new 150,000 lb per hr boiler to cost an estimated \$1,130,000. This installation will be part of a \$2 million expansion program planned for Public Service Company's Denver steam system.

Nearly 100 years have passed since John Smith provided Denver with its first steam heat, and it is ironic to note that the same area in which he originally settled—lower downtown Denver—is primarily responsible for the expansion program now taking place. The 1970's have seen urban renewal come to lower downtown Denver, and the Skyline Urban Renewal project is moving ahead rapidly. This projected building and growth calls for the expansion of PSCo's steam system.

At the present time, the Denver steam heat system is capable of providing approximately 435,000 lb per hr, including purchases from outside sources. The maximum winter load on the system, which occurred on January 5 in 1971, was 374,000 lb per hr.

Growth in the Denver core area indicates that the existing steam heat load will double in from three and one-half to four years. It is estimated that the Skyline Urban Renewal projects will add about 226,000 lb per hr in the 1973-74 heating season.



FIG. 1 — Installing new steam mains in lower downtown Skyline Urban Renewal District. All old buildings in photo will be razed.

One project alone—the Prudential Plaza Complex—will require 50,000 lb of steam per hr.

This requirement can be compared to the requirements of 11 existing buildings in the Skyline area, which have been or will be leveled to provide space for urban renewal. Their steam needs were less than 17,000 lb per hr, or about one-third of the load which will be required by the Prudential complex.

At the present time, approximately 250,000 lb of steam per hr are provided by PSCo's Zuni Steam Electric Generating Station. Another 100,000 lb per hr can be provided by the Denver Hilton Hotel and United Bank of Denver under purchase contracts negotiated by the Company several years ago. In 1964, PSCo entered into a 30-year lease with the State of Colorado for use of the State steam plant, located just south of the State capital on the southeast edge of downtown Denver. Built in 1939, the plant was capable of supplying another 60,000 lb of steam per hr from its two boilers.

Anticipating increasing demands from new Denver buildings, PSCo began a modification program at the State steam

plant to accommodate a third boiler. Some four years later, a 97,000 lb per hr boiler went into operation in the plant. The new boiler was delivered to the building in pieces, and erected inside so that no walls had to be torn out to "fit" the new boiler. With the addition of this boiler, the company capability was increased to 435,000 lb of steam per hr, its present capability.

The current expansion program will see the installation and upgrading of steam mains that have been in service for some 60 years, installation of services to new developments, and removal of discontinued services. Included in the current program is the installation of the 150,000 lb per hr boiler at the old steam heat plant in lower downtown. In all, about a mile and a half of distribution main will be installed or replaced in the downtown area in the next four years. This main varies in size from about 10 to 16 inches. The greatest expense will be for excavation and installation.

PSCO's Steam Heat Department serves an average of approximately 165 heating customers. This number has been declining by about a dozen a year for the past couple of years because of the termination of service to buildings being removed for urban renewal. Although the number of customers has declined, the requirements of existing customers have generally increased, and anticipated future needs are also increasing. In 1950, PSCO ranked 24th nationally out of 54 companies which served steam. In 1971, the Company ranked 15th of 46 companies.

Some of the growth and expansion of PSCO's steam system can be attributed to the fact that many customers now use steam not only to keep buildings warm in winter, but also to keep them cool in summer. Many existing buildings in downtown Denver use "absorption cooling" to condition their air during the summer months. It is anticipated that many of the new buildings and complexes planned in the Skyline Urban Renewal area also will utilize this type of cooling, thus making the Denver steam system heavily used on a year-round basis.

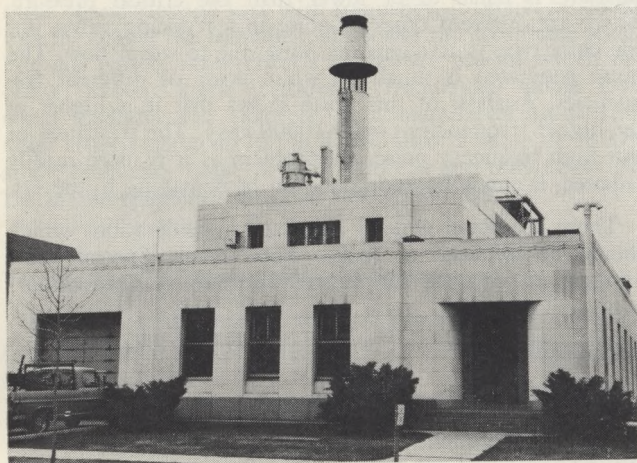


FIG. 2 — State steam plant.

Interestingly, one of PSCO's biggest steam customers is its own Headquarters Office Building. This building eats up nearly eight million lb of steam each month, and uses more steam in summer for cooling than it uses in winter for heating. Other large customers currently utilizing steam for cooling and/or heating are the Federal buildings, State offices, Capital Life Insurance Building, several hotels and many other large edifices in downtown Denver.

Steam may be one of the oldest partners at PSCO, but it would appear that it will never out-live its usefulness. With continuing growth of the Denver area, steam will continue to form an integral part of the Company's energy service. □

NEW ENGLAND SECTION OF IDHA

by **Boyd W. Martin**

Section Secretary

The New England Section has held two informative, interesting and well attended meetings in recent months: on October 20 and December 8, 1971.

The October meeting was in Boston, Mass., and because it was combined with a meeting of the Boston Chapter of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), the Section's business meeting was omitted.



L-R: Lester Lampert, President of the ASHRAE Boston Chapter; Dr. Zaki, Speaker; James Simmons, President of the New England Section.

Dr. Moustafa A. Zaki, Director of Research and Development at Spence Engineering Company, Walden, N. Y., presented a program on noise pollution in relation to steam reducing stations. (Please turn to Page 12 for an article by Dr. Zaki on this subject, and a brief outline of some of his many accomplishments.)

The December 8 meeting was held in Plymouth, Mass. A tour of Boston Edison's Nuclear Power Plant in Plymouth was scheduled in the afternoon, and following dinner in a local restaurant a representative of Boston Edison presented a film entitled "Nuclear Power and the Environment" and then conducted an open discussion period. □

HANDBOOK, THIRD EDITION

Headquarters is still receiving requests for the 1951 Edition of The District Heating Handbook which has been out of stock for several years. Some of these requests say that the Handbook data are urgently needed. If you have a copy of this volume that you no longer need, please let us know: IDHA, 5940 Baum Square, Pittsburgh, Penna. 15206.

ERRATUM, 1971 SUPPLEMENT (1970 RATE REFERENCE BOOK)

Page 7. Listing for the Pennsylvania Power & Light Company, Allentown, Penna. The "Tax Adjustment Surcharge" should be 0.55 per cent (and not 1.22 as shown).