District Heating & Cooling

Volume 76 Number 2 Fourth Quarter 1990

Energy and the Environment:

A Delicate Balance for Planet Earth

Featuring

Test Your CFC IQ!

CFCs: A Time for Action

Environmental Dictionary: Staying Informed

Also in this Issue

Kansas City Steam Comeback

Nation's Largest District Heating Company Responds to National Energy Strategy

and more...

KANSAS CITY: Energy-Rich History

In January 1900, the Metropolitan Street Railway Company merged with the Kansas City Electric Light Company—a predecessor of Kansas City Power & Light (KCP&L)—bringing transportation and electrical service under one roof. This was a marriage of convenience; electric streetcars operated mainly during the day, while lights brightened the night. Now, any equipment installed to produce electricity could operate and earn money 'round-the-clock.

That same year, ground was broken for the Missouri River Powerhouse which later became known as Grand Avenue Station. The power plant may have been more appropriately named "Buzzard's Roost," the namesake of an old hotel which was located on the northeast corner of the plant site. The plant was built to provide power to the Metropolitan Street Railway Company system. The rail company saw the new plant as the answer to the increasing demand for electrical lighting and streetcar service.

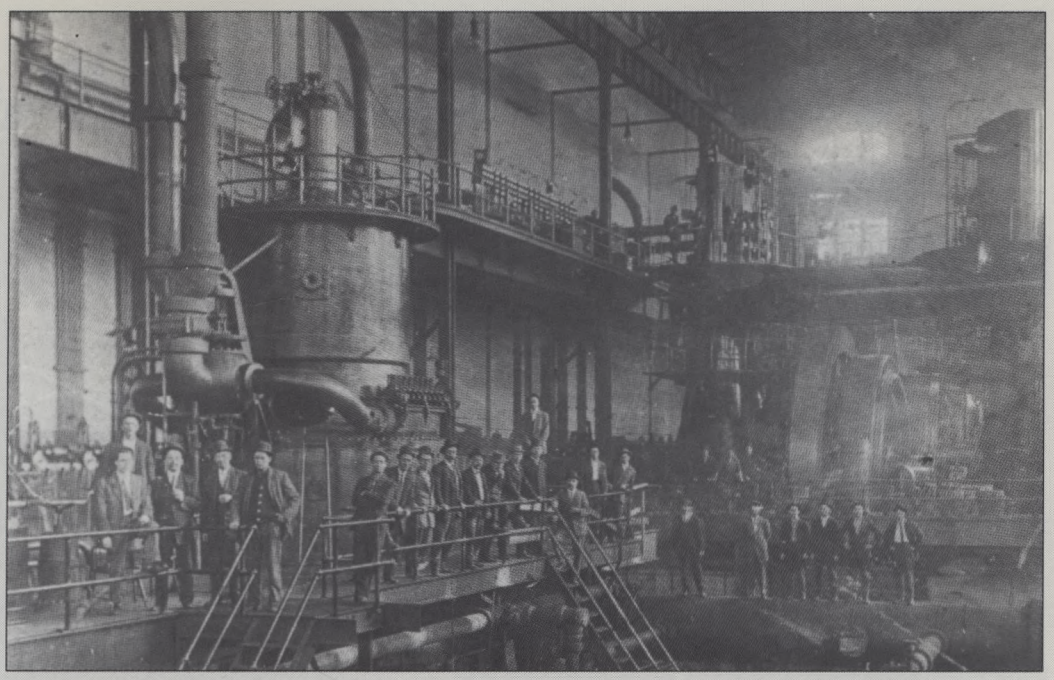
After four short years, on February 6, 1904, electricity began flowing from the new powerhouse to a substation then located at Eighth Street and Woodland. Judging from reports of the times, the Missouri River Powerhouse was quite a spectacle. It was constructed only 22 years after central-station electrical service was first available in Kansas City, and it represented the revolutionary changes in people's lives brought about by electricity.

Men, mules and horse-drawn wagons hauled endless tons of rock and soil to carve a site for the Missouri River Powerhouse (Grand Avenue Station) at Second and Grand avenues. Courtesy Trigen

About the same time this new source of electricity began operations, Kansas City's steam system took root. Built in 1905, the original steam sources in downtown Kansas City were located at Sixth and Baltimore and 1312 Baltimore. In 1917, another source was built at 1311 Wyandotte and interconnected with the 1312 Baltimore source.

Although the district steam service seemed secure and even growing, the novelty of some of the new modern conveniences of electricity and transportation were wearing off as public attitudes toward them changed. Investor confidence in an urban railroad waned in 1911 because of intense community opposition to rail-line extensions. With no funds available for construction, the railway system faltered, as did the electric company.

Thus, the arrangement between the transportation and electric companies was short-lived. The courts engineered a reorganization which resulted in a split between the electric company and transportation system. In 1916, Kansas City Light and Power Company (renamed Kansas City Power & Light



Put into operation in 1904, the Grand Avenue Station plant produced 25-cycle power to run Kansas City's electric street car system and sold excess power to the electric company. Courtesy Trigen

[KCP&L] a few years later) was formed as an outgrowth of those receivership years.

Grand Avenue Station remained a part of the railway system until 1927 when KCP&L bought the electrical plant and began extensive renovations to convert the Grand Avenue Station to a dual-purpose plant producing both electricity and steam. This second phase of construction included the switch house, pump house, coal yard and warehouse. One year later, in 1928, the plant began providing steam for downtown customers' heating needs as well as maintaining its electrical-production capacity.

Later that same year a modern, high-pressure steam line operating at 185 psi was constructed between Grand Avenue Station and the Sixth and Baltimore pressure-reducing unit. A tap extended to 11th and McGee streets and served several high-pressure users. This started the consolidation of the steam system to the "central-source" production plant at Grand Avenue.

In the 1940s, a new network concept was developed for supplying electricity to important downtown locations. Grand Avenue became a central relay point for the downtown electrical network.

In the 1950s, the emerging use of air conditioning and corresponding higher summer peaks indicated that the older Grand Avenue Station would have more steam capacity available for the heating system in wintertime. In 1954, the high-pressure steam transmission line was extended from 11th and McGee streets to the Baltimore and Wyandotte steam-heat sources. This permitted the retirement of the 1312 Baltimore source. In 1957, a second high-pressure line was constructed from Grand Avenue to permit the retirement of the 1311 Wyandotte boilers. The new steam-line additions formed a continuous loop around the service area, permitting two-way feed. KCP&L built adequate electrical capacity at new coal-fired plants and one nuclear plant, discontinuing the need for electrical production at Grand Avenue Station.

The Grand Avenue Station turbine room after extensive 1927 - 1931 reconstruction during which the plant began district steam service. Courtesy Trigen

Since 1958, Grand Avenue Station has been the sole source of steam for the system. Although the customer load numbered 200 in 1958 and peaked at 1.2 million Mlb. in 1973, the system eventually lost load due to business migration to the suburbs and the threatened steam-system shutdown. The Kansas City steam system presently serves over 100 customers located within the downtown freeway loop between Broadway on the west and McGee Street on the east.