

CITY COUNCIL MEETING
NOVEMBER 5, 1986

LOAD RESEARCH
PROGRAM CONCEPT
APPROVED

CC-51(d)

Electric Utility Director Henry J. Rice introduced agenda item K-6 relating to the load research program concept. Mr. Rice advised that the nature of electrical use, its patterns, trends and forecasts into the future are important to electrical utilities. The need for increased accuracy in forecasting and its close relationship to capital and energy costs make load research a very important tool to this end. Load research is the method used to obtain data for a representative cross section of City customers for use in, but not limited to, system planning, cost analysis, rate determination and load forecasting. Load research is performed by installing a limited number of meters which record and store load data on a continuous basis.

Installation of all metering devices and final checkout of data translation equipment must be concluded prior to the peak season. Reliable data from a load research program will not become available in less than two years and may require a full three-year period for verification.

Determination of the least number of required data collection devices is based upon a sophisticated statistical analysis. Several months delay in implementing this program was necessitated while the statistical analysis was performed. Initiation of the load research program at this time will allow sufficient time to go out for bid, install the devices and check out the system prior to utility's 1987 peak season. Therefore, collected and analyzed data would become useful in 1989.

Additional information regarding the subject was presented by Mr. Rice.

A lengthy discussion followed with questions being directed to Staff. Council, on motion of Mayor Pro Tempore Olson, Hinchman second, approved the transfer of funds in the amount of \$124,205.91 from the 16.1 650.23 - 500 account to the System Equipment Purchase Account - 16.680.01 - 519 for program implementation of the Electric Utility Load Research Program.

Further, Council, on motion of Mayor Pro Tempore Olson, Reid second, approved the specifications for the purchase of solid state data recorder and associated software and authorized the advertising for bids thereon.

COUNCIL COMMUNICATION

TO: THE CITY COUNCIL	DATE	NO.
FROM: THE CITY MANAGER'S OFFICE	November 5, 1986	
SUBJECT: LOAD RESEARCH PROGRAM		

INTRODUCTION

The nature of electrical use, its patterns, trends and forecasts into the future are important to electrical utilities. The need for increased accuracy in forecasting and its close relationship to capital and energy costs make load research a very important tool to this end. Load research is the method used to obtain data for a representative cross section of City customers for use in, but not limited to system planning, cost analysis, rate determination and load forecasting. Load research is performed by installing a limited number of meters which record and store load data on a continuous basis.

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Determination of the least number of required data collection devices is based upon a sophisticated statistical analysis. Several months' delay in implementing this program was necessitated while the statistical analysis was performed. Initiation of the load research program at this time will allow sufficient time to go out for bid, install the devices and check out the system prior to our 1987 peak season. Therefore, collected and analyzed data would become useful in 1989.

CONCEPT

Certainly the very best load research would be the installation of a recorder at each meter location in the City's electric service area. The recorder would record the energy used over time and the demand for energy constantly. Obviously, this idealistic approach would be enormously expensive and the data gathered, while excellent, would be unmanageable even in relatively small utilities.

A measure of the characteristics of the use of energy can be very closely estimated by the use of accepted statistical practices. By the use of a relatively small number of samples taken from the total numbers of customers, the typical patterns and trends develop over a period of time and, therefore, forecasts can be made. A certain percentage of error exists in this method of research, but the error can be calculated and used in developing any forecast margins.

The equipment required for the load research will include solid state recording devices and IBM based software to statistically evaluate and extrapolate from the survey results. This equipment and software is specified in the bid document.

The quantity of recorders necessary to develop a recognized statistically valid sample was determined to be 110, which includes some spare recorders (6) as backup.

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Deployment of the devices will generally be as follows: 19 industrial, 15 commercial, 70 residential customers. Initial deployment should be fixed for approximately 3 years. Initial year data may not be totally accurate; second year should be complete and accurate; the third year would provide additional assurance of accuracy.

All devices installed at industrial sites will be on a permanent basis. Residential and commercial installations will be changed out when sufficient data is collected to predict the class load. Such residential and commercial devices would then be installed at industrial load sites. Fortunately, the number of devices being obtained would be sufficient to meter most industrial loads in the near future. Continuing access to load profile information will be of great use to the City as well as our major customers.

Equipped with the load recording devices and translation equipment, we shall be able to upgrade our rate studies and develop appropriate rate incentives for larger customers to manage their loads and perhaps shift load from peak to off-peak periods.

No determination of the scope of this project could be made during the 1986-87 budget preparation period. However, adequate funds currently exist in the Substation Construction account for this acquisition. To facilitate this purchase, it is recommended that available funds in the amount of \$124,205.91 be transferred to the System Equipment Purchases account (16.1-680.01).



Henry J. Rice
Electric Utility Director

c.c. Assist. Electric Utility Director
Sr. Electric Rate Analyst