



CITY OF SACRAMENTO
CALIFORNIA

OFFICE OF THE
CITY MANAGER

January 10, 1983

CITY HALL
915 I STREET - 95814
(916) 449-5704

City Council
Sacramento, California

Honorable Members in Session:

SUBJECT: Upgrade Of The City Computer System

APPROVED
BY THE CITY COUNCIL

JAN 18 1983

OFFICE OF THE
CITY CLERK

SUMMARY

This report describes action taken by the Budget and Finance Committee on two separate staff reports advocating an upgrade in the City's computer system. The Budget and Finance Committee recommends approval of the revised Information Master Plan and the upgrade of the City's Sperry Univac equipment by a competitive bid process.

BACKGROUND

The Management Information Executive Committee, consisting of department heads of the major data processing user departments, prepared a revised Information Master Plan during the latter part of 1982. The Committee, with assistance from the Data Processing Department, concurrently completed an evaluation of the existing City computer system. The MIEC projected the system's capability to service current programs and to implement new programs identified by the revised City Information Master Plan.

Two separate one and one-half hour sessions were scheduled before the Budget and Finance Committee to review the attached staff reports designated as Exhibits I and II. Exhibit I provides a review of the existing information system, describes the need for the development of future elements to the information system and concludes that the City should upgrade the existing computer hardware. Exhibit II describes alternatives on upgrading the City's computer system and concludes that a migration to the next level of Sperry Univac equipment is the most cost effective method to improve the City's computer system during the next six (6) year period.

FINANCIAL DATA

The estimated net cost to upgrade the City's Sperry Univac equipment is \$974,000 over a period of six years from the effective date of the new equipment acquisition. This differential is developed by comparing the cost of the existing system and the proposed upgraded system over a period of six years. A more detailed financial disclosure appears in Exhibit II; pages 4 and 5.

RECOMMENDATION

The Budget and Finance Committee recommends that the City Council, by resolution, approve the following:

1. City Council approves the revised Information Master Plan described as Chart. 1, in a report designated Exhibit I, dated December 15, 1982.
2. The City Council approves the upgrade of the existing Sperry Univac computer system through a competitive bid process contained in a modified request for proposal (RFP) including the following elements:
 - (a) Provide for "buy out" of the existing contract with Sperry Univac Corporation.
 - (b) Provide a contract negotiation position that includes a "funding out" clause, maintenance agreement, and a financial plan for lease or lease/purchase of the equipment.
 - (c) Specify equipment characteristics for the upgrade.
 - (d) Specify a time period for equipment removal and update equipment installation, not to exceed 5 days.
 - (e) Require a performance bond.

Respectfully submitted,

Solon Wisham, Jr.
 SOLON WISHAM, JR.
 Assistant City Manager

RECOMMENDATION APPROVED:

Walter J. Slipe

WALTER J. SLIPE
City Manager

Attachments

January 18, 1983
All Districts

RESOLUTION NO. 83-044

ADOPTED BY THE SACRAMENTO CITY COUNCIL ON DATE OF

A RESOLUTION REVISING THE CITY INFORMATION MASTER PLAN AND DIRECTING THE CITY MANAGER TO UPGRADE THE EXISTING SPERRY UNIVAC COMPUTER SYSTEM THROUGH A COMPETITIVE BID PROCESS

WHEREAS, the City acquired a Sperry Univac 90/70 Computer System in 1978 concurrent with the adoption of the Information Master Plan; and

WHEREAS, the Budget and Finance Committee on January 4, 1983 unanimously approved a staff recommendation to revise the Information Master Plan and to upgrade the existing Sperry Univac Computer System.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF SACRAMENTO that:

1. The City Council approve the revised City Information Master Plan described in Chart 1, in a report designated Exhibit I dated February 15, 1982.

2. The City Council hereby directs the City Manager to upgrade the existing Sperry Univac Computer System, utilizing a competitive bid process, and return to the Council with a Request for Proposal (RFP) including the following elements:

- (a) Provide for "buy out" of the existing contract with Sperry Univac Corporation.
- (b) Provide a contract negotiation position that includes a "funding out" clause, maintenance agreement, and a financial plan for lease or lease/purchase of the equipment.
- (c) Specify equipment characteristics for the upgrade.
- (d) Specify a time period for equipment removal and update equipment installation, not to exceed 5 days.
- (e) Require a performance bond.

APPROVED
BY THE CITY COUNCIL

JAN 18 1983

OFFICE OF THE
CITY CLERK

MAYOR

ATTEST:

CITY CLERK



CITY OF SACRAMENTO

DEPARTMENT OF DATA PROCESSING
819 TENTH STREET SACRAMENTO, CALIF. 95814
TELEPHONE (916) 449-5763

JAMES L. PUTHUFF
D.P. MANAGER

December 15, 1982

Budget and Finance Committee
Sacramento, California 95814

Honorable Members in Session:

SUBJECT: Upgrade of City's Computer System, Question 1 -
"Should the City Upgrade?"

SUMMARY

This is the first of two planned reports on upgrading the City's computer system. The subject of this report is "Should the City upgrade its system?". Staff recommends the Committee approve the Data Processing Department's finding that the present Univac 90/70 system should be upgraded. The Committee is also asked to direct the Department to return in January with the second report on "How should the system be upgraded?"

BACKGROUND

The City's computer system was installed in February of 1978. Since that time the City has implemented twenty-four automated systems and has installed a communications network of forty-five video terminals in ten different departments. The terminals allow the users to view data stored in the computer and, in some departments, add, change and delete data. This capability is carefully controlled so as not to permit unauthorized modification of data files.

During FY 81/82 (July 1981 through June 1982) the Data Processing Department completed ten new processes, made eight significant modifications to existing systems, and processed 180 requests from various departments for changes to existing systems. Following is a brief description of these projects:

1. City Clerk On-Line Index System - This system allows the City Clerk to input City Council actions to the computer. The information can then be searched using several indexes: Department code, date, type of action, and key word. For example, if one needed to see what action the Council took on "Light Rail" then those key words could be used to locate all actions that have been entered into the index system since its inception in October of 1981 that relate to "Light Rail".
2. Police Department Alarm Reporting System - This is an inventory of all burglar alarms in the City. Records are kept of all false alarms to allow follow-up by the Police Department to require corrective action by the owner. This system will significantly reduce patrol time currently used in responding to false alarms.
3. Transfer Tax System - This is an on-line system that allows the Revenue Division staff to input transfer tax detail directly into the computer to more efficiently compute and manage the transfer tax data. This was a very labor intensive process that had significant revenue implications. The new process has resulted in manpower savings as well as provided a tool to better manage and control this revenue source.
4. Utility Billing Storm Drainage Fee - This major change to the Utility Billing System took 5 months to implement with four separate departments being involved. This change resulted in a more equitable storm drainage fee being assessed to all City residences and provided additional revenue to the City.
5. Waste Removal Route Code Update - This process is a totally new module that allows the Waste Removal staff to update route codes from their video terminals. This has eliminated the duplication of effort in Waste Removal and Utility Billing each time there is a route change. The sole responsibility of route code changes is with the Waste Removal Division.
6. Worker's Compensation On-Line Inquiry - The Worker's Compensation section found that it was essential that they be able to have direct access to their data stored in the computer. This has resulted in improved ability to respond to claimant detail from legal, medical and operational inquiries.

7. Police Department Geo-Coding - This process has replaced manual coding of location information on related forms that are input to the computer. Through the address of the crime, arrest and maintenance forms the computerized geo-coding process determines the correct district and subdistricts that relate the activity to a specific area of the City. This process has restored the capability to generate reports for specific areas of the City for investigative purposes.
8. 1915 Bond On-Line System - This was a total re-write of the old 1915 bond system to take advantage of the on-line capability of the computer. This system has improved the accounting controls, management reporting, data availability, and incorporated as well as updated most of the old manual processes.
9. Production Program Time Plotting - This was a system developed to assist the computer operations staff to track all production programs on a time base plot. This has reduced manual development of this same detail, improved the accuracy of the plot and has resulted in a better operational flow of production programs as well as reduced overtime for the late night computer shifts.
10. Significant modifications to systems were as follows:
 - A. Standardizing and updating the address and name fields on the Utility Billing Master File.
 - B. Adding zoning and land use data to the parcel system for the Planning Department.
 - C. Completing a major reconciliation process for the Worker's Compensation System.
 - D. Adding an ownership change notification module to the Utility Billing System for the energy conservation program.
 - E. Adding private streets into the geo-coding system.
 - F. Enhancing the residential parking survey process.

11. During fiscal year 81/82, the following departments had video terminals installed:

- A. Waste Removal (3)
- B. Planning (1)
- C. City Clerk (1)
- D. Revenue Division (3)
- E. City Engineers, Real Estate Section (1)
- F. Worker's Compensation Section (1)

12. During the last year the department has consulted with many departments on automation requirements. Some of the more important projects are:

- A. Police Department - Computer Assisted Dispatching in conjunction with the Police and Fire Communications Center.
- B. Water & Sewer - Computerized model of the City's water system and the development of a Request for Proposal for maintenance on all computer, telemetry and other electronic gear involved in handling water, sewer and storm drainage flow.
- C. Traffic Engineering - Automated parking lot applications - both development of specifications and working with installation problems.
- D. Libraries - Discussed their applications for a microcomputer and recommended approach to the Management Information Executive Committee.
- E. Housing & Redevelopment - Assisted in three different projects that were applications for grants to develop computer capabilities for specific processes.
- F. Museum & History - Assisted the Museum & History Director in the conceptual design of computerized processes for the proposed History Center.
- G. Micro-Computers - Assisted City departments in evaluating applications that may be better suited to process on micro-computers vs. the City's system.

FUTURE SYSTEMS DEVELOPMENT

As an aid to the planning and development of future automated information systems, the Management Information Executive Committee (MIEC), comprised of 8 representatives from the major user departments, was formed. The result of the work of this group is an Information Master Plan including priority systems recognition. A listing of the systems defined by the MIEC for future development follows as Chart 1.

Over the last four months the MIEC has re-evaluated the priorities of all fifty-four Information Master Plan projects and with staff assistance from Data Processing has determined that within the next two years, sixteen new systems could be implemented using the existing data processing programmer/analyst staff. These sixteen systems were determined to be the highest priority needs of the City.

Each of the sixteen projects were analyzed to determine their impact on the City's heavily used computer system. This analysis included a determination of our current status with a projection of the impact each new system would have on the computer and the associated communications network. The analysis was projected over a ten year period and the results indicate that with the estimated increase in the number of transactions, the City's computer system will be extremely overloaded within the next year. A system overload in this case means that the response time (the time it takes to ask a question from an on-line terminal), would approach two to three minutes during peak periods. Response times at this level have been determined to be totally unacceptable, especially to those users dealing with Police or Fire incidents or the public. The utility billing representatives, for example, that answer the public's questions using on-line terminals would not be able to keep up with the current volume of calls when response time nears two minutes per inquiry to the computer. In fact, since it often requires several requests to the computer to get to the specific record(s) containing the necessary data relating to a citizen's question, it would take up to ten minutes to properly handle one telephone call.

ANALYSIS

In predicting data processing systems growth, two factors are important: manpower and hardware capabilities. In the case of manpower requirements, the existing number of programmer/analysts (9) was included in the development of the time chart of priorities within the updating of the MIEC master plan. The master plan schedule assumes that adequate computer power will be available as the projected systems come on-line. Therefore, computer power must be projected which coincides with the expected rate of natural growth and planned new implementation.

To accomplish this requires three steps: 1) projection of the expected normal rate of growth of use of the current information systems; 2) the addition of the projected increased impact of prioritized MIEC master plan developments; and 3) estimated impact of all other developments added to the prior two categories. These projections are presented in the following narrative and illustrations.

1. Existing Systems Transaction Load Analysis

In addition to providing information systems and automated data processing services to the various Departments of the City of Sacramento, the Data Processing Department is also charged with the responsibility of planning and preparing for the future. Inherent within this second charge is the study of trends through an analysis of performance workloads of the various implemented information systems. One of the measurements currently in use within the Data Processing Department is the number of transactions generated by remote terminal users. Data is captured by terminal location and type of transaction and used as a system management tool for monitoring the existing system's performance.

As a general rule, the data generated by the monitoring mechanism is not utilized for in-depth analysis or long-term planning purposes. The orientation is toward continuous performance monitoring giving an indication of bottlenecks and trouble spots. However, where necessary the data collected on terminal transactions can be used to provide a productive tool for future system transaction workloads. That is the purpose of this analysis.

Utilization of existing routinely collected data on transaction counts establishes one variable for this study. The other variable is time. Given that workload volumes

change (either increase or decrease) at a natural rate, the data, shown on Chart 2, provides a representative sample from which to draw general conclusions.

Immediately it is obvious that the count of average transactions per day changes in a regular direction. By taking the difference between the individual weeks, adding them together and dividing by seven (the number of differences) an average growth factor per week can be calculated. This factor is +43 transactions per week or +186 transactions per month. This is displayed in Charts 3 and 4.

2. Planned Systems Impact Analysis

Once a growth function has been established, it can be applied to the plans of the department and help to predict new systems development. As described in the Background section of this report, the priorities and plans of the MIEC can be expressed in terms of numbers of daily transactions generated.

A. Chart 5 displays the 16 priority system projects, the estimated number of daily transactions that will be generated by each, and the date that necessary resources will be required.

B. Chart 6 projects the level of transaction workload that can be predicted by applying the data processing growth function to these 16 prioritized system development projects.

C. Chart 7 displays the non-priority system projects, the estimated number of daily transactions that will be generated by each, and the planned implementation year.

D. Chart 8 is the result of applying these planned system development impacts to the priority projects (Chart 5) and extending workload by the growth function. The result of this analysis is a tool for the prediction of resource needs for city data processing as well as a pictorial representation of the impact of current city data processing plans.

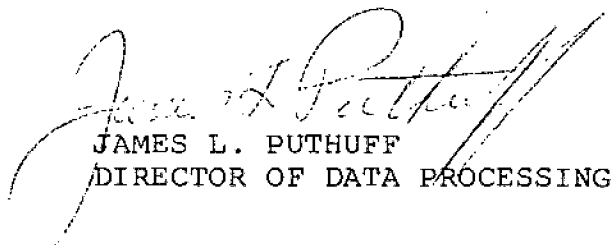
FINANCIAL

There is no financial detail associated with Question 1, "Should the City upgrade?". The financial detail will be provided in the second presentation, Question 2, "How should the City upgrade the computer system?"

RECOMMENDATION

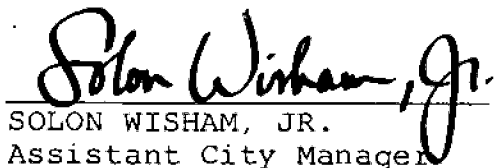
It is recommended that the Budget and Finance Committee approve staff's findings that the City should upgrade its present computer system. It is further recommended that the Budget and Finance Committee direct staff to prepare a report on the second question, "How should the City upgrade the computer system?" for presentation at a subsequent Budget and Finance meeting.

Respectfully submitted,


JAMES L. PUTHUFF
DIRECTOR OF DATA PROCESSING

Attachments

RECOMMENDATION APPROVED:



SOLON WISHAM, JR.
Assistant City Manager

C I T Y O F S A C R A M E N T O

PROCESSING DATE 09/01/82

REPORT NO. Z04R7720-E

MASTER PLAN REPORT BY PRIORITY

PAGE NO. 1

MASTER PLAN PRIORITY

DATA PROCESSING INFORMATION

SUBJECT TITLE	PRIORITY	CATEGORY	RANK	DEPARTMENT INFORMATION DEPARTMENT NAME	DATE	PROGRAMMING	LEVEL	O M MAN L C	HOURS	LOG-NO
UTILITY BILLING INFORMATION SYSTEM	01	CRITICAL	01	FINANCE	82 05 21	DEVELOPMENT	EXTREME	*	18720	99001
SCARS FRONT END PROCESSING	02	ESSENTIAL	02	POLICE	82 05 21	MODIFICATION	MODERATE	*	1040	99002
RETIREMENT INFORMATION SYSTEM (PER/FIN)	03	CRITICAL	01	PERSONNEL	82 05 21	DEVELOPMENT	DIFFICULT	*	1737	99008
PAYROLL MODIFICATION II (FIN/PER)	04	SIGNIFICANT	04	FINANCE	82 05 21	MODIFICATION	DIFFICULT	*	1909	99053
PARKING LOT ACCOUNTING SYSTEM	05	SIGNIFICANT	01	TRAFFIC ENGINEER	82 05 18	DEVELOPMENT	MODERATE	*	520	99007
FIRE DEPARTMENT COMPANY STRUCTURE INSPEC	06	SIGNIFICANT	01	FIRE	82 05 21	DEVELOPMENT	MODERATE	*	697	99005
LABOR RELATIONS COSTING SYSTEM	07	ESSENTIAL	01	EMPLOYEE RELATIONS	82 05 21	DEVELOPMENT	MODERATE	*	520	99023
BUSINESS TAX SYSTEM	08	CRITICAL	05	FINANCE	82 05 21	DEVELOPMENT	EXTREME	*	3124	99031
CITY TESTING/CERTIFICATION SYSTEM	09	CRITICAL	02	PERSONNEL	82 05 21	DEVELOPMENT	MODERATE	*	697	99011
1915 ASSESSMENT BOND	10	SIGNIFICANT	02	TREASURER	82 05 20	DEVELOPMENT	MODERATE	*	520	99047
BUDGET MASTER FILE	11	CRITICAL	06	FINANCE	82 05 24	DEVELOPMENT	DIFFICULT	*	1737	99032
AUTOMATED ROUTING	12	SIGNIFICANT	02	WASTE REMOVAL	82 05 20	DEVELOPMENT	MODERATE	*	1040	99027
BUILDING PERMIT DATA INFORMATION	13	SIGNIFICANT	03	ENGINEERING	82 05 20	DEVELOPMENT	DIFFICULT	*	2080	99009
ENERGY CONSUMPTION REPORTING	14	ESSENTIAL	01	GENERAL SERVICES	82 06 08	CHANGE	MODERATE	*	697	99054
INTEREST APPORTIONMENT	15	SIGNIFICANT	01	TREASURER	82 05 20	DEVELOPMENT	MODERATE	*	1040	99046
EXPANDED PARCEL FILE SYSTEM	16	CRITICAL	01	PLANNING	82 05 19	MODIFICATION	EXTREME	*	2929	99038
ACADEMY PERSONNEL SYSTEM		SIGNIFICANT	10	POLICE	82 05 21	DEVELOPMENT	DIFFICULT	*	0	99045
ACCOUNTS RECEIVABLE		SIGNIFICANT	07	FINANCE	82 05 21	DEVELOPMENT	DIFFICULT	*	0	99020
ACQUISITIONS SYSTEM		SIGNIFICANT	02	LIBRARY	82 05 25	DEVELOPMENT	DIFFICULT	*	0	99035
AUTOMATED GEO-CODING ENHANCEMENTS		CRITICAL	05	POLICE	82 05 21	MODIFICATION	MODERATE	*	0	99004
AUTOMATED GEO-CODING/CAD INTERFACE		ESSENTIAL	03	POLICE	82 05 21	DEVELOPMENT	MODERATE	*	0	99042
AUTOMATED MAPPING SYSTEM		CRITICAL	02	PLANNING	82 05 19	DEVELOPMENT	DIFFICULT	*	0	99039
CASHIERING		CRITICAL	09	FINANCE	82 05 21	DEVELOPMENT	DIFFICULT	*	0	99012
CREATE CRIME ANALYSIS DATA		CRITICAL	06	POLICE	82 05 21	DEVELOPMENT	DIFFICULT	*	0	99043
CRIME AND ACTIVITY SUMMARIES		SIGNIFICANT	09	POLICE	82 05 21	DEVELOPMENT	DIFFICULT	*	0	99015
ELECTRICAL ENGINEERING PLAN FILE		DESIRABLE	03	ELECTRICAL ENGINEE	82 05 13	DEVELOPMENT	DIFFICULT	*	0	99021
EVIDENCE CONTROL SYSTEM		CRITICAL	07	POLICE	82 05 21	DEVELOPMENT	DIFFICULT	*	0	99044
FIELD CONTACT		ESSENTIAL	01	POLICE	82 05 21	MODIFICATION	DIFFICULT	*	0	99006
GENERAL LEDGER/MONEMAX INTERFACE		CRITICAL	08	FINANCE	82 05 12	DEVELOPMENT	DIFFICULT	*	0	99033
GOLF COURSE STATISTICAL REPORTING		DESIRABLE	01	RECREATION & PARKS	76 09 24	DEVELOPMENT	MODERATE	*	0	99022
INSURANCE INFORMATION SYSTEM		SIGNIFICANT	04	PERSONNEL	82 05 21	MODIFICATION	MODERATE	*	0	99037
INVESTMENT ACCOUNTING		SIGNIFICANT	03	TREASURER	82 05 20	MODIFICATION	MODERATE	*	0	99048
CANDFILL WEIGHT INFORMATION		SIGNIFICANT	01	WASTE REMOVAL	82 05 20	DEVELOPMENT	DIFFICULT	*	0	99026
ON-LINE DATA BASE SEARCHING		SIGNIFICANT	03	LIBRARY	82 05 25	DEVELOPMENT	DIFFICULT	*	0	99049
ONLINE CIRCULATION SYSTEM		CRITICAL	01	LIBRARY	82 05 25	DEVELOPMENT	DIFFICULT	*	0	99039
PARCEL OWNER CHANGES		SIGNIFICANT	04	ENGINEERING	82 05 20	MODIFICATION	DIFFICULT	*	0	99024
PAYROLL MODIFICATION I (FIN/PER)		CRITICAL	02	FINANCE	82 05 21	MODIFICATION	MODERATE	*	0	99052
PERMIT CONSTRUCTION DATA		SIGNIFICANT	02	ENGINEERING	82 05 20	DEVELOPMENT	DIFFICULT	*	0	99010
PERT/PERFORMANCE BASED BUDGETING AND MIS		SIGNIFICANT	04	PLANNING	82 05 19	DEVELOPMENT	DIFFICULT	*	0	99041
PLANNING FISCAL IMPACT MODEL		CRITICAL	03	PLANNING	82 05 19	DEVELOPMENT	DIFFICULT	*	0	99040
POSITION CONTROL SYSTEM		SIGNIFICANT	03	PERSONNEL	82 05 21	CHANGE	AVERAGE	*	0	99036
PROCESS CONTROL OF BUILDING PERMIT		CRITICAL	01	ENGINEERING	82 05 20	DEVELOPMENT	EXTREME	*	0	99025
ROUTE NUMBER AND DAY CHANGE		CRITICAL	03	WASTE REMOVAL	82 05 20	DEVELOPMENT	MODERATE	*	0	99028
SCARS ENHANCEMENT		ESSENTIAL	04	POLICE	82 05 21	MODIFICATION	MODERATE	*	0	99003
SERIALS CONTROL SYSTEM		DESIRABLE	04	LIBRARY	82 05 25	DEVELOPMENT	MODERATE	*	0	99050
STOLEN PROPERTY INDEX		SIGNIFICANT	09	POLICE	82 05 21	DEVELOPMENT	DIFFICULT	*	0	99013
STREET LIGHTING DATA SYSTEM		SIGNIFICANT	01	ELECTRICAL ENGINEE	82 05 13	DEVELOPMENT	DIFFICULT	*	0	99018
SUBDIVISION MAP SYSTEM		SIGNIFICANT	02	WATER & SEWER	82 05 18	DEVELOPMENT	DIFFICULT	*	0	99029
SYSTEM INVENTORY		SIGNIFICANT	03	WATER & SEWER	82 05 18	DEVELOPMENT	DIFFICULT	*	0	99030
TAP LOCATION RETRIEVAL SYSTEM		SIGNIFICANT	01	WATER & SEWER	82 05 18	DEVELOPMENT	DIFFICULT	*	0	99051
TRAFFIC SIGNAL DATA PROGRAM		SIGNIFICANT	02	ELECTRICAL ENGINEE	82 05 15	DEVELOPMENT	DIFFICULT	*	0	99019
TRAFFIC SIGNAL PRIORITY RATING & WARRANT		SIGNIFICANT	03	TRAFFIC ENGINEER	82 05 18	DEVELOPMENT	DIFFICULT	*	0	99017
TRAFFIC SIGNS & MARKINGS INVENTORY		SIGNIFICANT	04	TRAFFIC ENGINEER	82 05 18	DEVELOPMENT	DIFFICULT	*	0	99014
ZDD ANIMAL CONTROL CENTER		DESIRABLE	02	RECREATION & PARKS	76 09 21	DEVELOPMENT	MODERATE	*	0	99016

54.0 SUB-TOTAL *****

51.583 38,507

54.0 REPORT TOTAL

51.583 38,507

28

CHART 2

<u>DATE SPAN</u>	<u>AVERAGE DAILY TRANSACTION COUNT*</u>
7/4/82 - 7/10/82	3136
7/11/82 - 7/17/82	3289
7/18/82 - 7/24/82	3305
7/25/82 - 7/31/82	3341
8/1/82 - 8/7/82	3367
8/8/82 - 8/14/82	3385
8/15/82 - 8/21/82	3391
8/22/82 - 8/28/82	3437

* This figure is calculated by taking the total transactions for the week and dividing by the availability of the computer systems. Totals are adjusted by the impact of Holidays on certain systems and their corresponding transaction totals.

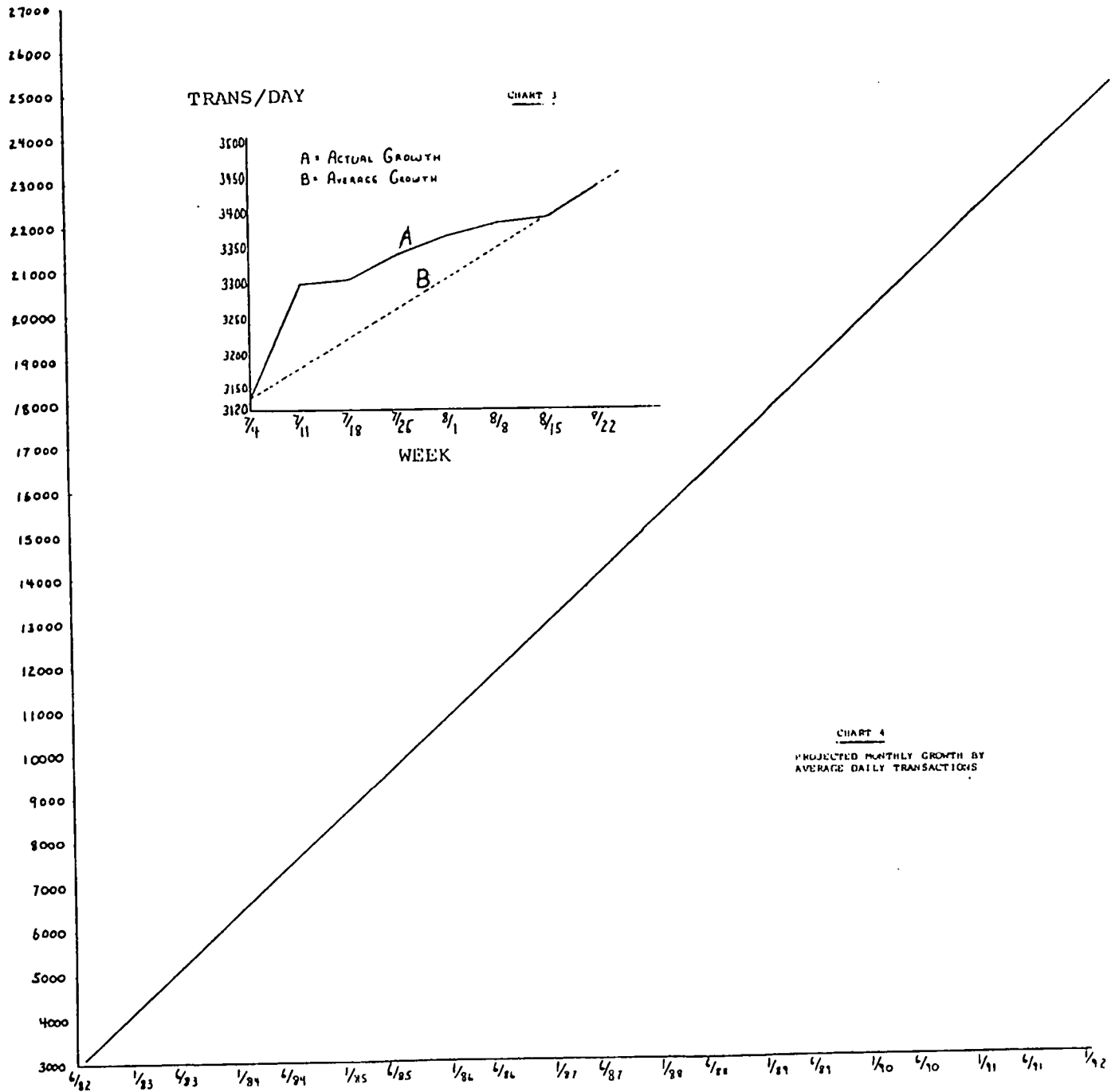


CHART 5

<u>Priority</u>		<u>Per Day Increase in Transactions</u>	<u>Planned Start-Up Date</u>
01	Utility Billing Information System	800	July 1983
02	SCARS Front-End Processing	578	Jan 1983
03	Retirement Information System	-0-	N/A
04	Payroll Modification	100	Jan 1983
05	Parking Lot Accounting System	-0-	N/A
06	Fire Dept. Company Structure Inspection	38	Oct 1982
07	Labor Relations Costing System	10	May 1983
08	Business Tax System	309	Jan 1983
09	City Testing/Cert. System	30	Oct 1982
10	1915 Assessment Bond	-0-	N/A
11	Budget Master File	68	Jan 1983
12	Automated Routing	100	Oct 1983
13	Building Permit Data Information	100	Jan 1984
14	Energy Consumption Reporting	57	Jan 1984
15	Interest Apportionment	-0-	N/A
16	Expanded Parcel File System	100	May 1984

Over the Next 2 Years Total 2,290 Transactions/day Increase

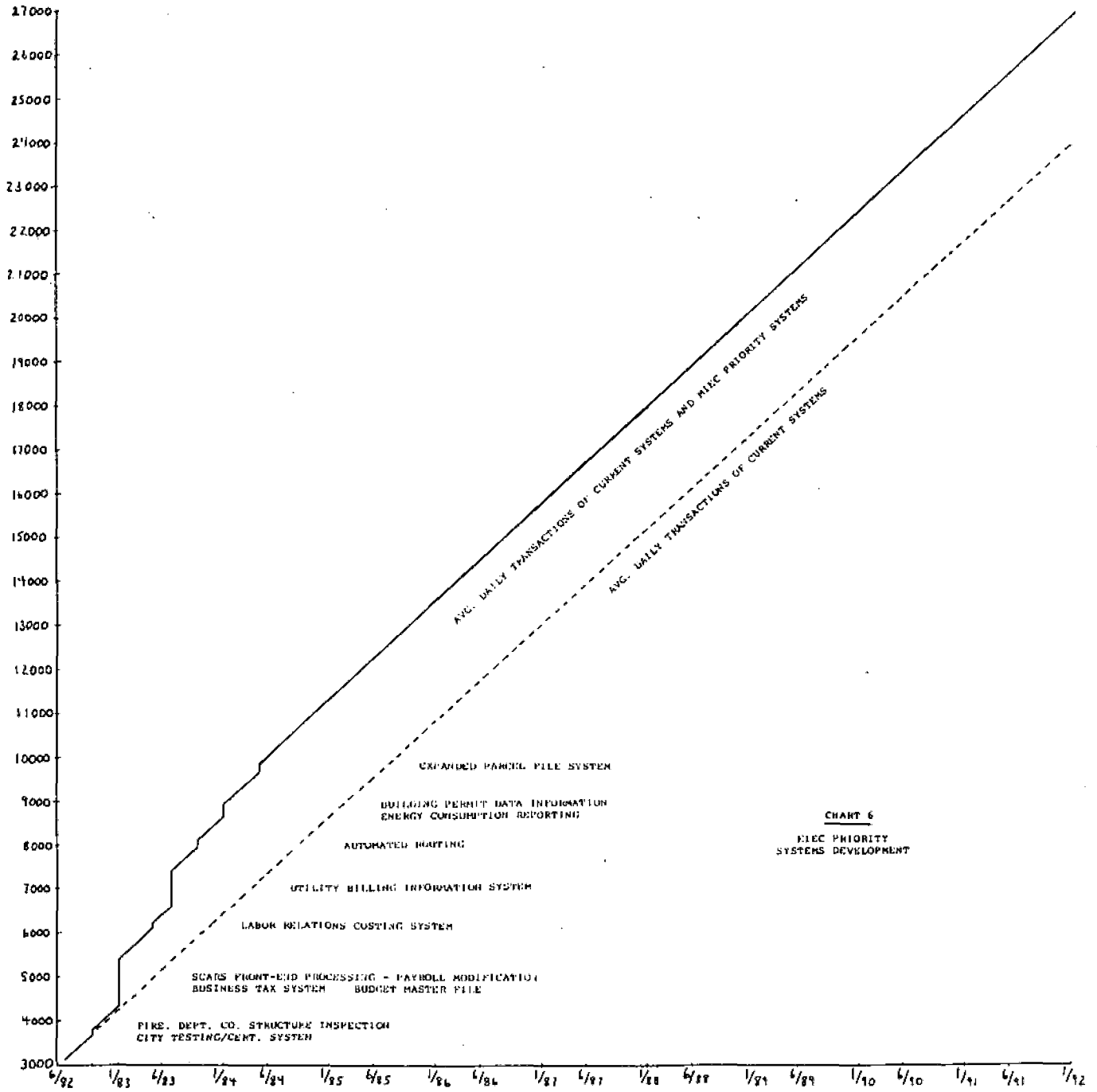


CHART 6
ELEC PRIORITY
SYSTEMS DEVELOPMENT

CHART 7

<u>DEPARTMENT NAME</u>	<u>ESTIMATED</u>	<u>TRANSACTIONS</u>	
	<u>IMPLEMENTATION</u>	<u>DAILY</u>	<u>MONTHLY</u>
01 Personnel	1/85	N/A	N/A
02 Recreation & Parks	1/86	N/A	N/A
03 Electrical Engineering	7/87	08	176
04 Finance	1/89	100	2200
05 Planning	1/88	17	374
06 Library	7/88	N/A	N/A
07 Treasurer	7/90	N/A	N/A
08 Engineering	7/89	82	1804
09 Waste Removal	1/90	N/A	N/A
10 Traffic Engineering	7/90	N/A	N/A
11 Police	7/91	1445	31790

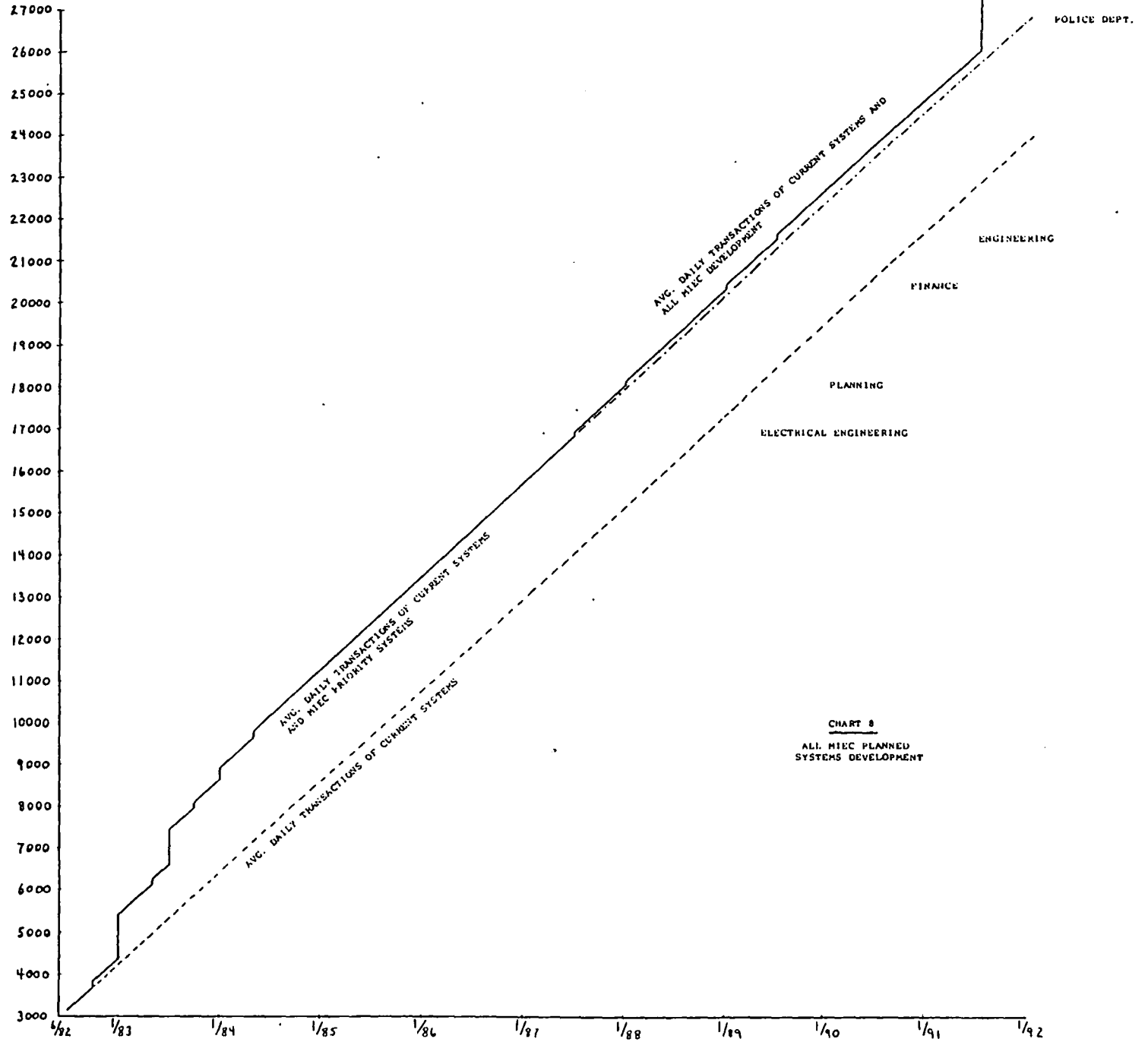


CHART 8
ALL MIEC PLANNED
SYSTEMS DEVELOPMENT



CITY OF SACRAMENTO

DEPARTMENT OF DATA PROCESSING
819 TENTH STREET SACRAMENTO, CALIF. 95814
TELEPHONE (916) 449-3763

JAMES L. PUTHUFF
D.P. MANAGER

December 27, 1982

Budget and Finance Committee
Sacramento, California 95814

Honorable Members in Session:

SUBJECT: Upgrade of City's Computer System, Question 2
"How should the City Upgrade?"

SUMMARY

This is the second of two planned reports on upgrading the City's computer system. The subject of this report is "How should the City upgrade its system?" Staff recommends the Committee approve acquisition of Sperry Univac 90/80 series computer upgrade equipment for a lease cost not to exceed the current budgeted amount of \$25,000/month.

BACKGROUND

The first of the two reports dealt with the question, "Should the City upgrade its system"? That report summarized the various projects completed, the number and significance of major changes to existing automated systems, and provided a detailed report on the various data processing events that have occurred since the City installed its computer in 1978. It also provided a means of relating the various data processing events to the original master plan projects to show that the City was, in fact, continually improving and enhancing the original master plan projects.

The report then explored future systems development and explained the terminal transaction workload as it relates to the computer communications network. Through the use of several

charts the report concludes that the number of transactions are increasing at a particular rate and that the addition of the planned new systems will significantly impact the transaction rate.

The report concludes with the recommendation that the Budget and Finance Committee approve staff's finding that the City should upgrade its present computer system and further that the Committee direct the staff to prepare this second report on "How should the City upgrade the computer system?"

ALTERNATIVES AND COSTS

Three alternatives will be considered in addressing the question of "How should the City upgrade the computer system?"

A. Do Nothing

This alternative is unacceptable because it does not address even the expected problems that will occur through normal growth. As Chart 1 illustrates, within the next year, the City's current equipment will become incapable of handling the workload because the users will be trying to force more data through the system than it can handle. Even before reaching that maximum capacity, current users may begin to return to old, inefficient manual methods resulting in increasing operational costs throughout the City.

If this option is selected, it would still cost the City approximately \$990,000 to maintain the existing equipment over a six year period, and would severely limit further development.

B. Replace the Existing Computer System

This alternative has the advantage of being able to design a hardware configuration around the current and future needs of the City. Current studies indicate that any new system acquired should meet the needs of the City for a minimum of 6 years.

The major disadvantage of this option is the significant capital cost and consumption of staff resources. Replacement of the City's entire current hardware

(processor, disk drives, printers, tape drives, etc.) would cost somewhere around \$2 to \$2.5 million. Conversion costs estimates range from \$750,000 to \$1.5 million depending upon the applicability of existing programs to the new hardware configuration. It is also estimated that it would take about one and a half years to convert totally over to another hardware configuration. All plans for new development would have to be postponed until after the conversion was complete. This delay in new development would halt all master plan projects which would seriously impact user departments.

With a conservative estimate of from \$2.75 million to around \$4 million for this alternative, it is not the best solution to the City's problem. Not only would this be the most expensive option but it would require up to a year and a half of data processing staff time to implement, during which no time would be available for master plan project development.

C. Upgrade the Existing Hardware

The advantage to this option centers around two important considerations: 1) since only some of the hardware would be replaced, approximately \$1.8 million would be required over a six year period. (Or approximately \$900,000 more than Alternative A, "Do Nothing"). These costs are lower because the City's initial investment in disk drives, printers, tape drives, etc. would remain intact. 2) No conversion cost would be required; all existing programs would be totally transferable and current master plan implementation could continue as scheduled. No serious disadvantages can be cited for this alternative. However, one minor disadvantage is that the City would not have the most technologically current "state of the art" equipment.

It is common in the computer industry for a manufacturer to provide an easy, cost effective way to upgrade the central processing unit (CPU) without having to change the peripheral equipment or to convert the programs that run on the existing computer. This process is called "migration". This design characteristic allows for a direct migration up to the next larger computer within the vendor's line of computer systems. The benefits to the City of upgrading the City's Sperry Univac computer are: 1) no cost of new bid or detailed RFP development, 2) no cost of bid or RFP analysis,

3) no cost of new contract development, 4) no cost of converting programs from one computer to another and 5) no delay in developing master plan projects. In most cases, and in our case, migration means exchanging the existing CPU for a more powerful CPU. For the City this would mean acquiring a Sperry Univac 90/80 Mod 2 processor to replace the existing 90/70 processor.

SYSTEM GROWTH

The growth projections suggest that the 90/80 system be upgraded to a Mod 3 in early 1986 and then beyond the six year period the City could upgrade if needed to a Mod 4. Additional disk, tape, printer upgrade and terminal resources are also projected. Each required upgrade would be justified at the time of need. The earliest projected additional peripheral improvement is a printer upgrade and an additional tape and disk drive in FY 83-84. See Chart 2 for details.

FINANCIAL

The Data Processing Department budgeted \$299,340 in FY 82/83 for the computer system. This amounts to \$24,945 per month and includes lease payments and maintenance.

The existing agreement with Sperry Univac terminates in 16 months (May 1, 1984). On that date the City would own the computer system but would continue to pay maintenance charges.

Using a six year comparison period, the costs would be:

1. Existing system with no modifications or upgrades:

16 mo. at \$24,945/mo. plus 10% annual maintenance cost increases (a)	=	\$ 408,572
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56 mo. at \$8,000/mo for maintenance only 10% annual maintenance cost increases (a)	=	<u>582,328</u>
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\$ 990,900

2. Upgraded System (b)

72 mo. at \$25,000 plus 10% annual maintenance cost increases (a)	=	1,964,830
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Total Difference		\$ 973,930
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Therefore, there would be no increase in cost above the present covered fund commitments other than the normal maintenance cost increases. The City would simply not realize the "savings" in dropping from about \$24,945/mo. to \$8,000/mo. starting in the 17th month (May 1, 1984).

- (a) Maintenance costs would be contracted out to allow for annual increases at a rate of no more than 10% over the previous year.
- (b) Equal to the current budget amount for the City's computer system.

RECOMMENDATION

Upgrading the existing Sperry Univac equipment is the most cost effective and timely approach. The MIEC has surveyed the various sources for upgrade equipment and have determined that the costs would be less than the current budget amount. It is, therefore, recommended that a simplified Request for Proposal (RFP) be developed that would require at least the following conditions:

- 1. Provide for "buy out" of the existing contract with Sperry Univac Corporation.
- 2. Provide a contract negotiation position that includes a "funding out" clause, maintenance agreement, and a financial plan for lease or lease/purchase of the equipment.
- 3. Specify equipment characteristics for the upgrade.
- 4. Specify a time period for equipment removal and update equipment installation, not to exceed 5 days.
- 5. Require a performance bond.

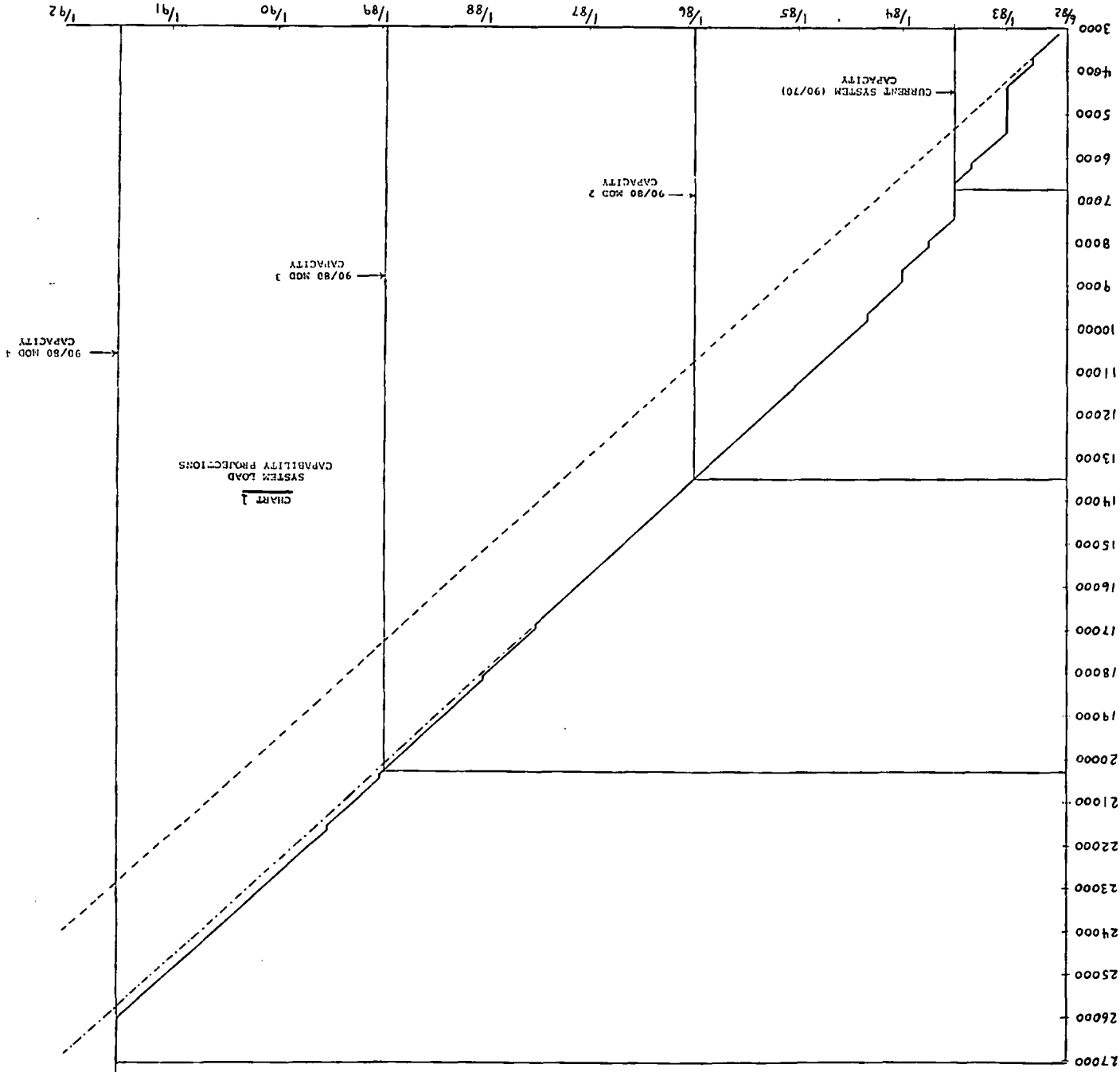
It is further recommended that the staff be directed to report back to the Council with an analysis of the proposals for selection of an upgrade equipment vendor.

Respectfully submitted,

James L. Puthuff
 JAMES L. PUTHUFF
 DIRECTOR OF DATA PROCESSING

RECOMMENDATION APPROVED:

Solon Wisham, Jr.
 SOLON WISHAM, JR.
 ASSISTANT CITY MANAGER



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CHART 2

PROJECTED HARDWARE SCHEDULE

- *January 1983 - (1) Replace 90/70 processor with 90/80 Mod 2
- (2) Add 1 U20 tape drive
- (3) Add 1 disk controller
- (4) Add 2 8433 disk drives

- July 1983 - (1) Add 1 U20 tape drive
- (2) Upgrade 0770 line printer to 1400 lines per minute
- (3) Add 1 8433 disk drive (U.B.)

- January 1986 - Upgrade 90/80 Mod 2 to Mod 3

- July 1986 - (1) Add 2 disk drives

*All items 1 through 4 are included in the recommendation in this proposal.