

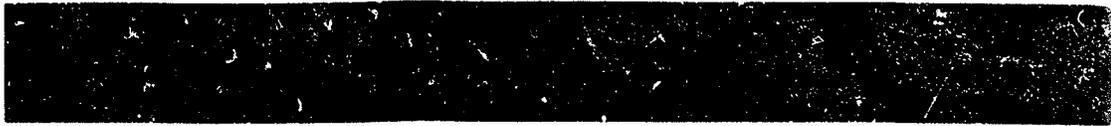
CITY COUNCIL MEETING
FEBRUARY 1, 1984

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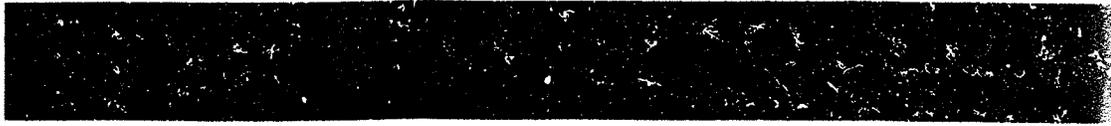
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RECEIPT OF
COMPUTER STUDY

Following a review of the Information Systems Planning
Project Report for the City of Ixli as prepared by Ernst
and Whitney, Council on motion of Mayor Pro Tempore Snider,
Reid second, received the subject document for filing.



CITY OF LODI



Ernst & Whinney

Ernst & Whinney

555 California Street, Suite 3000
San Francisco, California 94104

415/981-8890

January 24, 1984

Mr. Robert H. Holm
Finance Director
City of Lodi
221 West Pine Street
P.O. Box 320
Lodi, California 95241

Dear Mr. Holm:

We have appreciated the opportunity of working with you, the Management Information Systems Steering Committee, and the management and staff of the City of Lodi in and planning for future use of information systems within the City. The attached project report summarizes the findings and recommendations derived from our investigation and analysis. We trust it will provide the Steering Committee and City as a whole with an effective path for meeting the future information needs at the City.

Questions about the report should be directed to Mr. Tom Ihlenfeldt at our San Francisco office, (415) 981-8890.

Very truly yours,

Ernst & Whinney

EW:lb:c/lodi

CITY OF LODI
INFORMATION SYSTEMS PLANNING PROJECT REPORT

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CITY OF LODI

Information Systems Planning Project Report

EXECUTIVE SUMMARY

Ernst & Whinney was retained by the City of Lodi to assist in the development of a long range data processing plan for the future implementation of computerized information systems.

This information systems planning process was designed with the following project objectives:

- o To develop a comprehensive list of data processing information needs of City departments in such a manner that would assist management in addressing these needs;
- o To assess the capability of the City's current information processing resources to support future application implementation;
- o To recommend strategies for implementing future data processing resources, including data processing, word processing and microcomputer technology; and
- o To assist in creating a common forum in which the informational needs of the City may be discussed.

Comprehensive long-range planning for information systems is a relatively new activity within municipal governments. Such planning serves to place information systems in the proper perspective and helps to assure that the City's information systems are responsive to the needs of the entire organization. Planning of computer systems promotes the coordinated growth of data and word processing and serves to limit inefficiency, duplication and incompatibility.

The long-range planning project was structured to define the criteria that should be considered in selecting a systems strategy that can be expanded to meet the growing information needs of the City. This scope excluded a specific review of the practicability or cost effectiveness of department requirements. During the course of our review the following broad tasks were performed:

1. Established objectives by determining information needs;
2. Listed planning assumptions by defining unique City characteristics;
3. Identified alternative courses of action in terms of basic strategies;
4. Evaluated these strategies;
5. Selected the optimum course of action; and
6. Formulated appropriate plans.

The Steering Committee reviewed the results of the needs assessment process and identified the following priorities from a city-wide perspective:

- o Electric and water SCADA system;
- o Electric utility transformer load forecasting;
- o Public safety support systems (Police):
 - Booking/Crime Analysis System,
 - Investigation Case Management System,
 - Labor Analysis System,
 - Evidence Inventory System, and
 - Stolen Property Tracking System;
- o City-wide word processing;
- o Property management system;
- o Personnel/payroll system;
- o Work order accounting system; and
- o Financial modeling (spreadsheet) system.

The efforts of this study concentrated on defining user requirements and the functional information processing capabilities required to satisfy them. User requirements were defined without regard to vendor products.

Following the identification of information needs within the departments, the Steering Committee discussed alternative strategies for implementing systems to meet the needs. The decision processes addressing the strategies focused upon two main issues important to the Committee:

1. Would the adopted strategies provide the required technology to implement user application requirements, and

2. Would the adopted strategies support the City planning objectives of making optimal use of current resources and limiting to as low a level practical ongoing data processing related expenditures.

Among the different basic strategies discussed included:

1. Continued operation of existing data and word processing equipment.
2. Upgrading of existing equipment in the Finance Department to handle most additional application requirements; word processing and specialized applications would be split out in a coordinated manner to dedicated departmental systems as required.
3. Upgrading of existing equipment in the Finance Department to support all data and word processing applications within the City.

We recommend that the City pursue the second strategy. The first strategy does not provide enough processing capability to support the high number of potential applications. The third strategy would add a large overhead burden to the annual City budget, both in terms of personnel and equipment costs.

In upgrading the City's existing data processing resources we recommend that the City stay within the IBM product line which they are currently using. Specifically, the City should upgrade to an IBM System/36 minicomputer.

As a result of our study, we also make the following recommendations to the City:

- o The City should select a multiple-user word processing system to be identified through the Request for Proposal (RFP) process and to be installed in City Hall.
- o The City should adopt a policy of purchasing a standardized line of microcomputer hardware and software to allow distributed support processing in City departments.

- o The City should maintain an ongoing implementation schedule for data processing which is subject to ongoing review and update by the Steering Committee.
- o The City should adopt a strategy of purchasing packaged software applications (e.g., public domain, private vendors) rather than developing the applications from scratch.
- o An additional operator/analyst should be added to the City's Data Processing staff to support future development activities.

An important output of the planning study is the formation of the Management Information System (MIS) Steering Committee. While the Committee was originally conceived as an ad hoc project team to assist in the planning process, we recommend that it become a permanent and active group in the future. The Committee should provide leadership in implementing the long range plan, as well as in making ongoing modifications to the plan in the form of new application requirements and implementation priorities. Through these activities and others, the Committee provides assurance that new requests and/or acquisitions of information processing resources is performed from a City-wide prospective, rather than on a department by department basis.

In order to assist the Steering Committee, we have also recommended information management guidelines for the following issues:

- Long Range Planning
- Application Development & Acquisition
- Project Management
- Application Maintenance
- Data Processing Administration
- Information Use & Control

THE PURPOSE OF INFORMATION SYSTEMS PLANNING

Information system planning may be defined as planning for future systems. More formally, systems planning is "the continuous process of generating systems projects, allocating resources to the projects, and controlling the projects." Systems planning is a relatively new activity within the municipal government community. With computer-based information and operations, and the growing importance of all types of planning within municipal governments, systems planning is becoming more and more essential.

Systems planning helps put information systems in a proper perspective. Without proper planning, it is much easier to lose sight of the supporting role of systems. Systems planning helps assure that the City's information systems are responsive to the most important needs of the City. This process promotes the coordinated growth of information systems use and can help avoid costly and inefficient information and hardware duplication or incompatibility. Finally, long range planning for information processing helps assure that current systems-related decisions are compatible with the long-term needs and plans of the City.

Planning for Systems

The definition of systems planning represents a different concept from the systems planning being presently performed. Currently the City's data processing analyst is involved in planning the details of specific applications, such as vehicle maintenance, which are to be installed immediately. This planning is done on a project-by-project and application-by-application basis without major consideration of interrelationships between projects and systems. Long range systems planning is concerned with the planning for future systems, not the planning of systems. The systems planning function tells the City where to go, not precisely how to get there. Systems planning is the continuous process of evaluating applications and potential applications, of generating new projects, and of implementing and controlling those projects. It also necessitates periodic review of the system projects proposed, those in process, and the systems currently being used.

Planning is a functional process which:

- o identifies changes required for a City government's continuation and financial viability;
- o balances appropriate services with financial and other resources;
- o improves forecasting, budgeting, and management capabilities;
- o produces the information needed in a regulated environment;
- o effectively involves the City council;
- o continuously addresses immediate and longer range problems;
- o integrates community needs, program plans, and financial resources and requirements; and
- o does not create a static plan.

The investment in new systems is extremely large not only in terms of dollars and time, but perhaps more importantly in the dependency of City inputs and outputs upon that system. Therefore, management must not only ensure that a proposed system has detailed implementation plans and checkpoints for installation, but they also must assess risk, security features, and back-up systems for such an installation. Management can no longer turn the task over to a technically-oriented D.P. manager and wait for an assessment of results. Management must be intimately concerned, with all steps from planning through implementation.

CURRENT STATUS OF INFORMATION SYSTEMS AT LODI

The City of Lodi municipal government serves the community of Lodi (population 38,300) and surrounding areas. Among the services provided by the City to the community are utilities (electric, water, sewage, refuse), police, fire, park and recreational programs and a public library. The City government is organized under a Council-Manager organization, and currently employs approximately 285 people in nine different departments. The City's total operating budget during the 1982-83 fiscal year was approximately \$27 million.

The City currently utilizes several data and word processing resources, which are distributed throughout several departments. The different resources and their use are described below.

Finance Department

The Finance Department currently operates an IBM System/34 computer, which is physically located in a special facility in the basement of City Hall. The hardware configuration is made up of the following components:

o Central Processing Unit (CPU)

IBM Model 5340-E34

- Main Memory = 128 kilobytes
- On-line fixed disk storage = 63.9 megabytes
- 2D diskette magazine

o Line Printer

Model 5211-02

o On-Line CRT Terminals

Model 5251-11

(One is used as an operator console and is located with the computer facility; four are used for data entry and inquiry, two being located in the first floor of City Hall in the utility billing and collection area, and two being located in the accounting area in the basement of City Hall.)

The Finance computer currently processes the following financial applications:

- o Utility Billing — Over 1,400 reports are generated annually, four display operations on CRT terminals enable staff to make inquiries as to customers account status. 17,000 accounts are billed monthly, which generates approximately \$20,000,000 in revenue annually.
- o Payroll — Time cards and exception reports are keyed in daily on CRT terminals. 288 full-time employees are paid bi-weekly and, in addition, seasonal part-time employees checks are also prepared. Nine bi-weekly reports are generated in addition to withholding statements at the end of the year.
- o Business Licenses — Over 2,500 business licenses are maintained and annual renewals are processed.
- o Accounts Payable — Checks are prepared on a weekly batch basis and accounting data and history files for all cash disbursements are maintained. Six reports are generated with each batch of invoices.
- o General Accounting -- Revenue subsidiary ledgers, expenditure and appropriation subsidiary ledgers and general ledgers are maintained. All accounting data flow through these files and reports generated on a monthly basis.

The Data Processing section of the Finance Department supports the computer and operates under an annual budget of approximately \$85,000. The section is staffed as indicated below.

- o Data Processing Manager, who reports directly to the Finance Director and performs the following functions:
 - computer operations (40%),
 - application maintenance (50%), and
 - application development (10%).
- o Computer operator.

The City is currently in the final year of a purchase agreement with IBM for the computer and related peripherals. The equipment is currently being serviced by IBM under a single-year maintenance agreement.

Public Works Department

The Public Works Department recently purchased a Hewlett-Packard microcomputer, which is located in the engineering offices on the second floor of City Hall, to provide general engineering support for the department. The system is made up of the following components:

- o Hewlett-Packard 86B microcomputer, and
- o Epson MX-100 dot matrix printer with Graftex.

Currently the computer is used to support scientific calculation and simple graphing applications within Public Works-Engineering.

Word Processing

The City currently owns two "Display-Writer" standalone word processing units from IBM Corporation. Each unit is configured with a separate workstation and printer. One unit is located in the City administrative area on the second floor of City Hall, and is shared primarily by the City Attorney and City Clerk offices. The second unit is located in the basement of City Hall and is shared by the Finance, Public Works and Community Development departments. Several City employees are trained in operating the Displaywriter equipment.

Police Department

The Police Department currently rents access time on San Joaquin County computers, located in Stockton, California, using three ADM terminals located in the Public Safety Building. The terminals are used primarily to access to the Canlis and CLETS systems. In addition, police labor distribution and case reporting applications are processed by the County for the department.

Additional Departments

Two other departments in the City are utilizing data processing equipment in daily operations, although the equipment is owned by department employees instead of the City. The Fire Department currently uses an Apple II microcomputer to track the status of the building inspections they perform. The Electric Utility utilizes a Radio Shack TRS-80 microcomputer to perform inventory control at the Electric Utility warehouse, as well as to perform scientific calculations. Application maintenance and operations support is provided by individuals within each of the departments.

RESULTS OF LONG RANGE PLANNING PROJECT

Ernst & Whinney was retained by the City of Lodi to direct this planning process. We prepared a departmental survey form and conducted interviews with department managers and key department personnel to define perceived information requirements. These needs were documented for each department in the form of possible applications in a requirements document (Appendix A). This information was reviewed by Steering Committee representatives before being distributed to all department managers.

Each department was requested to review their own contribution to the project and provide corrections and additions as necessary. The departments then evaluated each of the potential systems (possible applications) in relation to the urgency of the needs and the benefits perceived. The departments assigned priorities to each of their potential systems based on a three-level prioritization scheme. An Application/Priority Matrix (Appendix B) was developed to summarize the different departments ratings of their systems, grouping applications into those that are perceived as critical, those perceived as desirable with some possible payback, and those perceived as desirable but without an easily quantifiable payback to the City.

Due to the relatively high number of applications rated in the critical group the Steering Committee further prioritized these items to help arrive at an implementation schedule. The non-critical items (levels B, C, & D in Appendix B) were not further prioritized due to the unusually high number of critical applications which needed to be addressed first. The rating by the Steering Committee was designed to assess which potential information systems were of most importance to the City. In general, the Steering Committee did not question the priorities as assigned by the department managers, but did consider the following issues with the assistance of Ernst & Whinney consultants:

- Functional relationships between applications,
- City priorities, and
- Sophistication of technology required.

This process recognized that the potential systems were not totally independent and that an overall strategy must be developed.

Anticipated City Requirements

As a result of the requirements analysis performed within City departments and our review of existing City resources, we identified the following issues that the City will need to address in implementing future information processing resources:

- o Application needs, as identified in the Requirements Outline (Appendix A) and the Application/Priority Matrix (Appendix B).

- o Need for expanded processor capability. In order to start implementing the applications identified in the proposed Implementation Schedule, the City will need additional processing capability in the Finance computer. The current computer resources within the Finance Department have the capability to support a modest expansion of processing capability through an upgrading of the System/34 computer. It is unlikely, however, that even with such expansion the computer could support the significant increase in on-line terminal activity and expanded batch applications that will result from implementing the applications described in Exhibits A and B.

Experience of IBM customers has shown that IBM System/34's normally operate well in either a batch or on-line environment, but not both at the same time. This potential drawback is inherent in the design of the computer itself. The City has already experienced the effects of this problem when they have tried to perform on-line inquiries into files that are being used by data processing - computer response is poor. In order to address these problems, IBM has developed the System/36 computer.

Another reason the City should consider upgrading to an IBM System/36 is that IBM's strategy appears to be steering customers towards this system. It is reflected in the price of the machine - a new System/36

costs about as much as a new System/34, and in support - IBM charges about 30% more in annual maintenance fees for a System/34. It is likely that the support for System/34 will become more and more expensive in the future as IBM upgrades its customers to System/36's. Appendix J contains a cost comparison between upgrading the current System/34 versus acquiring a new System/36.

- o Need for expanded personnel resources. The current data processing staff will not be able to adequately support the future expanded environment anticipated by the departmental requirements. Currently almost 100% of total Data Processing staff time is spent on program maintenance and operations. We expect that at least 50% of the staff's time is necessary to implement the proposed applications (without that percentage of time, it is unlikely that there will be much commitment to developing applications.) A greater percentage of time will be needed if Lodi decides to develop the new applications in-house. This dictates the need for additional staffing.

- o Need for an ongoing MIS Steering Committee, with broad departmental representation, to provide oversight and guidance in the development and use of information within the City of Lodi. The role that the Steering Committee should play is documented in the "Proposed Information Management Activities and Policies" section of this report.

In addition to the applications listed above, the following City departments requested on-line access to information in the Finance Department computer (see Appendix A). They are therefore candidates for additional computer terminal "hookups" in the next few years:

- Fire Department (all stations),
- Police Department,
- Community Development,
- Public Works (MSC),
- Park and Recreation (Stockton Street),
- City Administration (including Personnel Manager), and
- Electric Utility (MSC).

PROPOSED IMPLEMENTATION ARCHITECTURE

The purpose of an implementation architecture for information processing is to assure that both the current and future implications of decisions made today are understood and planned for. The architecture provides a blueprint of how the City's automated information processing systems will fit into a multi-faceted yet cohesive organization. Just as different departments within the City have their own individual ways of operating, differing information needs will have somewhat unique ways of being fulfilled. For instance, some applications will best be implemented on a central computer as a custom development effort while others will be most effectively implemented on a microcomputer within the individual department. And just as the City has built into its operations an overall infrastructure to tie all the departments together (such as the budgeting process), the implementation architecture for information systems should tie the different methods of processing together.

The implementation architecture is considered the overall strategy that the organization wishes to pursue for the use of computer systems. It is determined and reaffirmed as a part of the ongoing planning process and is enforced and adhered to through the different policies and procedures followed by the City to develop or acquire applications.

The City has already recognized the complications that can enter into information processing decisions if an architecture is not well determined, such as the problem of integrating data bases from computers made by more than one company. Beyond solving such problems that could occur, defining an architecture adds several possible advantages to the information systems process, such as:

- o Economies of scale in computer resource acquisition,
- o Reduced personnel resource needed to operate and support computer systems, and
- o Easier expandability of resources.

Proposed Strategies for Lodi

As a municipal governing body, the ongoing planning and decision processes at the City of Lodi are largely formed by a combination of federal and state government entities and a changing local constituency. In such an environment it is somewhat difficult to establish a comprehensive and definitive strategy to guide the management of resources, including information. Therefore the success of the strategies noted below in guiding the City are very much dependent on the ongoing planning and review activity carried out by the Steering Committee.

The strategies (and the related implementation schedules) allow for a good deal of flexibility in adapting to the many anticipated and unanticipated changes that may occur at Lodi. Without the ongoing overview of the Steering Committee, however, the effective development of information systems within the broad guidelines of these strategies cannot occur. An underlying basis of all these strategies, then, is the strong role that the Steering Committee will play in implementing and revising the strategies.

The City of Lodi has already established the following objectives in developing information processing strategies:

- o To make use of existing data and word processing resources to the extent possible in implementing new applications and strategies. To date, the City has made a significant investment in data and word processing resources. In addition, they have spent resources to hire knowledgeable staff to support the computer and to train City employees in the use of data and word processing systems. While these existing investments have already paid off, the project was oriented towards not eliminating this investment by "starting from scratch" with different vendors products;
- o To strive for standardization of data and word processing resources throughout the City departments. A common problem facing many organizations who make use of computerized processing systems is

having multiple vendor environments. This means utilizing equipment or software from several different computer vendors within the single environment. This situation leads to several potential and often very real problems including:

- Inability to share data between multiple applications, leading to duplication of information on file. Like any manual system where data is duplicated, multiple computer files of the same information can often fall out of synchronization, so the data in one location is different than the "same" piece of data in another location. Also, like manual systems, duplicated data in computer systems leads to duplicated procedures for processing the data and requires additional storage facilities, which ends up costing the City additional resources;
- Multiple vendor equipment and software means multiple vendor support. Each piece of equipment or application software is supported by a different vendor, resulting in the City having to rely on several different companies. Invariably this situation leads to arguments between vendors as to whose product failed (e.g., if the payroll application stops running, is the problem that needs to be fixed one in the computer equipment, the application software, the system software, the data format, or in operator procedures?). The more variables that exist, the more difficult it becomes for the City to receive a quick, satisfactory resolution of the problem; and
- Single vendor solutions also open the possibility of volume discounts to the City; so, buying ten pieces of equipment such as microcomputers from a single vendor can cost less than buying the equipment from two or more different vendors.

Computer resource standardization, or moving towards an environment where equipment and software are designed to interact naturally and be supported by a single vendor or related vendors, will minimize the opportunity for the above mentioned problems to occur. This does not mean that a single vendor will always provide the optimal solution to

the City's needs, but standardization must become a conscious factor in selecting systems.

- o To control the distribution of information and information processing resources throughout the different departments. As mentioned, uncontrolled duplication of data, evidenced by uncontrolled dispersion of information processing resources, will lead to higher system costs to the City and possibly could cause data to become inaccurate and inconsistent. This in turn could cause management decisions to be based on "bad" information. Controlling the distribution of resources throughout City departments should reduce the opportunity for such problems to occur; and

- o To include cooperative representation from throughout the government in implementing information processing systems. The City has already identified a great interest among all departments to take advantage of automated processing systems, such as data and word processing. However, limited resources within the City dictate that departmental needs be filled gradually, rather than all at once. In order to eliminate, or at least reduce, dissention between departments, it is important that the planning and implementation of new systems be performed from a City-wide perspective, with departments viewing resources as "City" resources rather than "their department's" resources. One of the most common reasons for system efforts failing is not that a system didn't work or was not well planned for, but that it was not accepted by top management and/or the operating departments. A cooperative City effort would reduce the chance of this problem occurring.

The proposed system architecture and strategies, as well as the recommendations in this report as a whole, are designed to fulfill these objectives.

For the benefit of easier understanding, the strategies have been split into two distinct parts -- word processing and data processing. This seems appropriate given the resources currently possessed by the City, the current information needs of the City, and the technologies likely to be available to the City to fulfill those needs.

In addition, implementation practices for several "general" strategies are proposed for adoption by the City. Some are outlined in the "Proposed Information Management Activities and Policies" section of this report. Others are included in the proposed guidelines included in the appendices of this report. Most are related to the implementation of the information systems plan and the Steering Committee's specific role in it. These strategies are not repeated below.

Word Processing Strategies

The City should pursue implementation of an integrated word processing system to serve the entire City. Integration is meant to provide common application software and common data formats to allow sharing of word processing files between different physical workstations (e.g., departments). Integration will also allow the City to take advantage of economies in training employees in use of the system and sharing personnel between departments.

We recommend the proposed word processing system be implemented in the following manner:

1. Identify the specific needs of the different departments which require word processing capability. These needs should focus on particular features of the word processing system. Such items identified during the study include:
 - The system should include an adequate level of vendor training and on-site support,

- The system should allow physical workstations to be installed at all secretarial desks within City Hall,
- System should be able to share data with the IBM Displaywriters owned by the City,
- System should allow for step by step expansion to some day be available to all departments, and
- The system should be able to operate in both a distributed word processing environment or a centralized word processing "production shop" environment.

Though no particular need was expressed to us during the study, the City might also investigate systems that would provide other "office automation" functions besides word processing, such as personal calendars.

2. Develop a Request for Proposal (RFP) describing the City's needs and an RFP questionnaire to allow the vendors to specifically respond to those needs in their proposals. (See Appendix E for more details on the RFP process.)
3. Evaluate vendor proposals and RFP questionnaires, attend demonstrations, make reference calls, and select a system. Installation should begin in the first floor of City Hall (Finance, Public Works, Community Development). When these areas are installed, the IBM Displaywriter currently located in the basement can be moved to the city administration area so both Displaywriter systems are available to the administration departments (City Manager, City Attorney, City Clerk).

It may be possible that some of the integrated office systems, including word processing, could be placed on the IBM System/36. Our experience is that word processing in general is high utilization system - it tends to "hog" computer resources. For this reason we recommend that if the City would like to integrate word processing with the data processing system

they do so through the use of file-sharing programs. (A good source on how to do this would be the City's IBM customer service representative.) This could be a system requirement specified in the RFP.

Based on the previously mentioned requirements it is likely that the City will be looking for a multi-terminal, shared logic system. While the RFP process should drive the acquisition process, systems that fit into this category are produced by:

- o IBM (5520 system - this is most likely the best system for integrating with the Displaywriters and System/36);
- o NBI (OASys 64); and
- o Wang (OIS).

Data Processing Strategies

- o The City should attempt to centralize data processing resource-related activities to the degree possible. Applications should be implemented on a "single data base" concept. This concept allows that a single set of information be maintained by the City and that it be created and used by the different applications. We recommend the data base be located primarily on the single, centralized computer located currently in the Finance Department. Pieces of the data base could be located on other smaller computers in different departments as appropriate, as long as the computers will share data easily with the centralized computer and the arrangement is not inconsistent with the single data base concept.

(Note - the advantages of such centralization to Lodi include:

- Economies of scale in hardware and software;
- Improved efficiency in systems development and programming;
- Better control of operations, standards and data;
- Greater growth and expansion of CPU, I/O devices, and peripheral devices;

- More efficient usage of magnetic tape storage, data bases, and data base management software;
- Improved total compatibility, thereby allowing for tighter control and security; and
- Reduction in duplication of effort.)

It is likely that situations will occur where a specialized system is needed which inherently cannot be integrated with the centralized computer (such as the electrical and water SCADA system). In such a situation, the City should consider the effect of the distributed system on the centralized data base and take an appropriate action (e.g., if a distributed system maintains data which duplicates that maintained on the centralized computer system, the City should enact a control such as daily file balancing to assure that the two sets of data remain consistent.)

- o The Finance Department will continue their investment in IBM's mid-sized line of minicomputer systems (IBM Systems 34, 36 and 38) for future expansion purposes. This allows maximization of current investments and is consistent with the City's desire to minimize ongoing data processing support costs. These computers are IBM's products for users who need enough computer power to run a mid-sized organization without the need for a large data processing staff. In addition, these systems collectively have one of the largest minicomputer user bases, so they will tend to have a greater number of software products available to them (including public domain) and have a greater availability of equipment and program support than other comparably-sized systems from other vendors.

- o The City should adopt a policy of purchasing and distributing a standardized line of microcomputer hardware and software to allow distributed support processing in City departments. (More detailed recommendations on this point are documented in Appendix I.)

- o The City should maintain an ongoing implementation schedule for data processing activities and this schedule will be subject to ongoing review and update, on not less than a quarterly basis, by the Steering Committee. The schedule should also be communicated to the departments. The purpose of the schedule would be to foster communication and interaction between departments regarding City investments in data processing resources. This, in turn, should lead to a higher degree of understanding and cooperation among departments in implementing information processing systems.

- o The City should attempt to fulfill application needs through acquisition of and minor modification to existing systems (public domain, private vendor) rather than through in-house or contract development. The overall trend in data processing today is one of finding developed and tested products to fill application needs rather than developing them from scratch. This is because in almost every case purchasing the software will result in lower costs than the developing it. If a package does not exactly fit the City's particular needs in certain areas, and such a fit is necessary and cost justified, then modifications can be made to the package to "customize" it. Lodi, with an IBM System/36 computer, has an advantage in purchasing packages as it can utilize one of the largest market bases of packaged software for minicomputers.

PROPOSED INFORMATION MANAGEMENT
ACTIVITIES AND POLICIES

As many experts have noted the 1980's is ushering in the "information age." Increasingly organizations are recognizing that good information is a vital key to their success, much like good personnel. Information is being considered an organizational asset, which needs to be managed much like cash or equipment in order to help the organization prosper. The City of Lodi has recognized the growing need to control the information asset as evidenced by their undertaking of this planning project.

The different activities and proposed policies listed below are issues that the City needs to address if they are to effectively manage their information. The detailed instructions are Ernst & Whinney's recommendations based on the findings of the planning study and our experience at a myriad of other organizations. While the City may choose to modify the suggestions, they should at least be sure that each of the general areas are addressed.

Role of the Steering Committee

It is our understanding that the Steering Committee participating in the planning study is an ad hoc committee which would be dissolved following the study's completion. We recommend that the Steering Committee be established as a formal, management committee that reports directly to the City Manager. The City government operates in a constantly changing environment. In order to provide a satisfactory level of service, the City must respond to the changing environment by changing itself. In order to do so at minimum cost, the City needs to constantly evaluate the effect of change on existing information systems and plan future actions accordingly. This in turn necessitates the development of City policies to guide MIS activity in the City and a City management-level organization, such as the Steering Committee, to bring it to life. (More general information about why steering committees are formed and what they do is contained in Appendix C).

The basic role of the Steering Committee is to oversee the City's investment in data and word processing resources. In this role the Committee would not usurp the responsibilities of the City Manager, Data Processing Manager or other department heads. Rather they would act as an arm of the City Manager function in applying a City-wide perspective to MIS activity. It is important to note that this is an advisory role and not a regular, operational function within the City. As is apparent in the ideas that follow, the primary action that the Committee should take is to address items brought to its attention by departments or Data Processing - the Committee themselves would not be responsible, for instance, for identifying and justifying new applications or determining the effect of a new application on the performance of existing systems. Rather these tasks should be completed by the initiating department, who submits them to the Steering Committee for approval, with the assistance of Data Processing.

Information Management Functions

In any organization there are several basic MIS management functions which need to be performed, including:

- o Long range planning
- o Application Development/Acquisition
- o Application Maintenance
- o Data processing departmental administration (including budget projections)

The City of Lodi is no exception. In order to successfully implement management information systems in the City the Steering Committee must assure that these management items are properly addressed. We recommend that the City develop policies and procedures in each of the above areas to manage future MIS resource investment. The policies and procedures should address the different issues as noted below:

Long Range Planning. Planning the acquisition or development of systems required to meet the City's current and future information needs is one of the Committee's most important responsibilities. Development of a completely updated systems plan (using the existing plan as a starting

point) should be a major activity for the Project Committee every year. In order to stay useful during the interim, the plan should be reevaluated and updated annually. This annual effort should include revising scheduled projects as necessary and reassessing the underlying information needs, management priorities, and system costs and availabilities.

Determination of information needs should be performed through a survey process, much the same as was performed for this planning study. Some needs previously expressed by departments but not yet implemented will exist, and these items should be communicated back to the departments for confirmation that they are still needed. Management priorities should be set based on the city-wide needs expressed by the Steering Committee, the justifications presented by each individual department, and technical issues as addressed by the Data Processing Manager. In setting/revising priorities one ground rule should be established and adhered to:

Projects in process stay in process until complete or completely abandoned.

When projects in the midst of development are so dropped for "higher" priorities, the time spent developing them are invariably lost - it is almost impossible to return to projects with the same level of understanding or progress. The more this rule is broken, the less importance that planning is since priorities as established will no longer carry any weight.

After the basic priorities have been established, the Data Processing department should propose a plan for implementing the applications. This plan would then be approved by the Steering Committee and would serve as the ongoing basis for departmental budgeting.

Application Development/Acquisition. After projects have been incorporated into an approved long-range plan, steps must be taken by Data Processing to implement the projects. In addition, several other

projects may come up which were not appropriately considered during the planning process. In either case the Steering Committee and Data Processing must act together to determine project implementation plans and, if necessary, to determine where the project fits in the City's overall plan.

New projects which need to be merged into the City's plan, if not in all cases, will usually be initiated by user departments and Data Processing. Typically a request for new applications should be accompanied by the following information which is provided by the user department and Data Processing:

- o An accurate design of system requirements has been documented,
- o Alternatives for implementing the system have been considered, and
- o Costs and benefits associated with the system have been evaluated and a justification for the system has been established.

These items would then be reviewed by the Data Processing, who would make a recommendation as to how the application would be implemented and where it will fit in the schedule. This solution would then be presented to the Steering Committee for approval. The role of the Committee here is not to "redo" the background research already performed by the user department and Data Processing. Rather, the Steering Committee should focus on the following issues:

- o Does the department's system design fit into the overall architecture of the City (e.g., if it is a microcomputer based system, does it run on hardware/software that falls in line with the microcomputer acquisition policy)? If it does not fit, has a reasonable justification for the departure been documented?
- o Has the requested system's effect upon the planned or existing City data base been considered (a.g., does the data processing and storage in the requested system duplicate data being maintained by existing systems)?

- o Can the City make use of an alternative implementation strategy than that proposed in the system request, which is consistent with City-wide objectives and will benefit the department? The Committee is in an excellent position to suggest alternative implementation methods that would benefit the department and the City as a whole.)

These issues should all be discussed with representation of the user department and Data Processing present, so the approval process is quick. (This in turn should reflect favorably on the Steering Committee's role in MIS management.)

In setting priorities for new projects the Steering Committee should consider adopting the recommendation of Data Processing. In addition, when a determination of priority has been made the appropriate user department should be allowed to discuss the determination. It may be that as a result of discussion between the Committee, the department and Data Processing, an alternative implementation strategy is developed. This might be based on the inappropriateness of the priority for the department or some other issue. Such action would also foster an environment of ongoing trust between departments and the Steering Committee. Finally, the Committee should consider two other "rules" when evaluating suggested priorities. First, the "squeaky wheel" principle is a relevant and commonly used method of setting priorities. Whether the City plans on considering this method or not, it will probably occur. Second, the rule stated earlier regarding projects in process should be adhered to.

Project Management. Once a project is scheduled and is ready to begin, it is important that it be monitored to assure that deadlines are established and met, and that the anticipated results are being achieved. Project task forces, which would be made up of representatives from Data Processing, the user department(s) and the Steering Committee, would be the most effective method of managing projects. The purpose of the Data Processing and user personnel is self-evident - to develop and implement the required system. The Steering Committee representative would play two roles. First, they are a representative of the MIS Steering

Committee and would carry out the Committee's responsibilities of overseeing the use of MIS resources in the City. Primarily this is a watch dog role to assure that projects are completed as planned. Second, the Committee has important responsibilities in certain problem-solving areas. These include:

- o determining how to overcome delays in projects,
- o resolving disagreements over system design concepts,
- o expediting management or operating department approval of recommended designs and,
- o clearing away roadblocks for successful completion of each project.

Application Maintenance. Once an application is placed into production it is important that it is kept in good working condition. Due to changes in the application's required functions, as well as changes in the EDP environment that affect the application, a certain amount of maintenance will be required. This maintenance activity should represent about 50% of Data Processing's non-operating resources (new development would take up the remaining 50%). We recommend that the Data Processing Manager have full discretion of how to allocate the 50% of time related to maintenance (maintenance priorities, etc.) The Steering Committee's entire role in maintenance process would then be as a resource for Data Processing to call upon, much like their role in project management.

Data Processing Administration. While the MIS Steering Committee will play a key role in overseeing data processing investment within the City, they should not try to fulfill the role of Data Processing Manager. Besides not being qualified, they will make quick enemies of Data Processing. Rather, the Committee should be involved in approving plans developed by the Data Processing Manager regarding such items as staffing requirements or equipment utilization. Naturally, the Committee's primary concern will be whether the proposed activity is in concert with City-wide goals and plans.

Information Use & Control. The MIS Steering Committee should have the overall responsibility for assuring that the City's MIS resources are being adequately safeguarded and so used to provide maximum benefit to

the City. Part of the control function that the Steering Committee should fulfill involves evaluating the resource utilization aspect of ongoing information processing operations. In so doing, the Committee should be responsible for ensuring that data processing resources are effectively utilized and evaluating alternative future systems projects in recognition of their impact on existing systems and data processing resources.

Another control function the Steering Committee should fulfill involves establishing control policies and evaluating the adequacy of existing internal controls. These include controls over the integrity and confidentiality of information, and controls over the City's systems and information processing operations. These control issues will assume broader importance as systems usage expands into more of the line functions of the City and is of major concern to managers.

PROPOSED IMPLEMENTATION PLAN

The proposed plan describes and schedules a series of projects necessary to evaluate and install the needed systems. The plan also includes scheduled re-evaluations by City personnel to ensure that it remains a viable tool for controlling systems activities. In order to remain useful, the plan must be updated as projects are considered and undertaken, and the assumptions upon which the plan is based must be periodically reviewed and reaffirmed.

The plan represents more than just a "wish list" of departmental application requirements. The future of information processing at the City of Lodi is based to a great degree on decisions made today relating to hardware, organization and personnel strategies. And the adoption of these strategies is primarily a function of the City's perception of what information processing should be and how it should serve the City, now and in the future. These strategy decisions made to date are incorporated into the plan itself, and are reflected in the Implementation Schedule.

It is important to note that the proposal plan includes several "preliminary activities" that the Steering Committee and City need to address. These activities address preparing the plan that will be adopted and issued by the Steering Committee itself. While Ernst & Whinney has provided technical and project assistance to the Steering Committee in developing the proposed plan, the City itself must adopt and issue the plan for it to be successful. Without top management support in implementing the plan, which includes ongoing review and update, the planning document itself is worthless.

Beyond Steering Committee activities, the plan becomes a schedule of projects that the City should perform in order to meet their departmental application requirements and implement the adopted architecture and strategies. In general, the projects are defined to include an initial evaluation or design phase and a possible subsequent installation phase. In the case of systems anticipated to be obtained from available vendors, the evaluation phase would include the determination of specific

requirements, the preparation of a detailed request for proposal, a structured comparison of vendor alternatives, selection of the best available alternative, a cost/benefit analysis of the system installation, and negotiation of a contract for the chosen system. For systems envisioned to be developed by the City the initial design phase would include determination of specific requirements, the development of a preliminary design, the determination of equipment requirements, and a cost/benefit analysis of the system installation. It is expected that each circumstance will require different degrees of analysis and have differing implementation tasks. These should be determined in the initial evaluation phase through a feasibility study process.

The Implementation Schedule that follows is divided into several parts. First, several tasks are listed that address General Implementation issues. These items are important for the ongoing support of data processing by the Steering Committee. Second, a schedule for data processing resource implementation exists. This schedule addresses the various application and equipment requirements identified through the department survey and prioritized by the Steering Committee. Third, a Standard Implementation Cycle exists, as was noted in the previous paragraph. This cycle is a "cookbook" of procedures which the Steering Committee should consider when evaluating projects. Circumstances should dictate which steps to perform and which not to perform. Word processing, which is separate from the data processing applications but a high priority nonetheless, should be implemented according to the Standard Implementation Cycle. We recommend that after word processing detailed requirements are identified, the City utilize a Request for Proposal approach to implementing the word processing strategy.

GENERAL IMPLEMENTATION TASKS

<u>Task</u>	<u>Assigned</u>
I. Adopt a MIS Plan (one-time)	
A. Review Consultants Report	Steering Comm.
B. Refine Implementation Strategies and Schedule	Steering Comm.
C. Adopt a MIS Steering Committee Charter	Steering Comm.
D. Final draft and publishing of Long Range MIS plan	Steering Comm.
E. Presentation of Project Findings to Departmental Managers	Steering Comm.
F. Approval of system strategy and plan	City Management
II. Establish Necessary Budget Requests	
(NOTE: Tasks should tie the Steering Committee activities into the City's ongoing budgeting process.)	Steering Comm.
III. Update of Long Range Plan (on-going, annually)	
A. Determine changes in planning environment	Steering Comm.
B. Review implementation progress on to-date projections	
C. Develop updated information requirements	Steering Comm./ Departments
D. Rate application priorities	Steering Comm./ Departments
E. Project revised implementation schedule	Steering Comm./ Data Processing
F. Approval of revised plan	Steering Comm./ City Mgmt.

DATA PROCESSING IMPLEMENTATION SCHEDULE

<u>Priority Matrix Number</u>	<u>Application</u>	<u>Implementation Strategy</u>	<u>Associated Tasks</u>
—	Vehicle Cost System ¹	Finance computer	—
A18, 20	SCADA (water and electric)	Dedicated processor in MSC/substation	<ul style="list-style-type: none"> o RFP submission o Proposal evaluation o Site preparation o Implementation & training
A17, 19	Load Forecasting (spreadsheet)	Microcomputers in departments	<ul style="list-style-type: none"> o Microcomputer policy o Microcomputer (at large) feasibility study and selection of standard hardware/software o Microcomputer installations <ul style="list-style-type: none"> - Utility - Substation - Utility - City Hall - Public Works - City Hall - Admin. - City Hall
—	System/36 Conversion - Conversion Plan	Finance computer	<ul style="list-style-type: none"> o Identification of all RPG, OCL and data file data sets (use of packaged software like Documint might help) o Identification of differences that must be accounted for between IBM Systems 34 and 36 o Identify current and future processing schedules and select a time frame for system change-over. Prepare a user department notification scheme o Identification of conversion steps and related conversion controls
	- Site Preparation (in conjunction with IBM)		<ul style="list-style-type: none"> o Determine adequacy of square footage o Review area for potential hazards o Review suitability for fire protection, wiring, power installation, air conditioning o Determine and plan for installing additional site requirements related to reconstruction

¹ Application was in development at the time the planning study commenced.

DATA PROCESSING IMPLEMENTATION SCHEDULE

<u>Priority Matrix Number</u>	<u>Application</u>	<u>Implementation Strategy</u>	<u>Associated Tasks</u>
	- Program/Data Conversion		<ul style="list-style-type: none"> o Determine and schedule any necessary program code and data conversions o Perform code and data conversions o Perform acceptance testing of code and data conversions o Prepare documentation of scheduled and performed conversions and results of acceptance testing process
	- Equipment Conversion		<ul style="list-style-type: none"> o Perform conversion and acceptance testing
	- Personnel Preparation		<ul style="list-style-type: none"> o Identify additional staffing for System/36 operation/maintenance/analysis o Schedule additional training for all data processing personnel and selected users o Participate in training
A12 - 16	Police Systems - Booking and Crime Analysis - Investigation Case Management - Department Labor Analysis - Evidence Inventory System - Stolen Property Tracking System	Finance computer/Microcomputer in department (to be determined) ²	<ul style="list-style-type: none"> o Standard application implementation cycle (attached) o Install on-line terminals/micro-computers within Police Department
A5, 7	Property Management System	Finance computer	<ul style="list-style-type: none"> o Standard implementation cycle (attached) o Install on-line terminals in <ul style="list-style-type: none"> - Community Development - Public Works Engineering - Fire departments
A3	Personnel System	Finance computer	<ul style="list-style-type: none"> o Standard implementation cycle o Installation of terminal in City Administration (Personnel Manager)

2 While it is unlikely that the primary module of this system, Booking and Crime Analysis, would affectively be implemented on a micro, the following modules could be placed on a standalone micro(s): Investigation Case Management, Department Labor Analysis, Evidence Laboratory System and Stolen Property Tracking System.

DATA PROCESSING IMPLEMENTATION SCHEDULE

<u>Priority Matrix Number</u>	<u>Application</u>	<u>Implementation Strategy</u>	<u>Associated Tasks</u>
	- Program/Data Conversion		<ul style="list-style-type: none"> o Determine and schedule any necessary program code and data conversions o Perform code and data conversions o Perform acceptance testing of code and data conversions o Prepare documentation of scheduled and performed conversions and results of acceptance testing process
	- Equipment Conversion		<ul style="list-style-type: none"> o Perform conversion and acceptance testing
	- Personnel Preparation		<ul style="list-style-type: none"> o Identify additional staffing for System/36 operation/maintenance/analysis o Schedule additional training for all data processing personnel and selected users o Participate in training
A12 - 16	Police Systems - Booking and Crime Analysis - Investigation Case Management - Department Labor Analysis - Evidence Inventory System - Stolen Property Tracking System	Finance computer/Microcomputer in department (to be determined) ²	<ul style="list-style-type: none"> o Standard application implementation cycle (attached) o Install on-line terminals/micro-computers within Police Department
A5, 7	Property Management System	Finance computer	<ul style="list-style-type: none"> o Standard implementation cycle (attached) o Install on-line terminals in <ul style="list-style-type: none"> - Community Development - Public Works Engineering - Fire departments
A3	Personnel System	Finance computer	<ul style="list-style-type: none"> o Standard implementation cycle o Installation of terminal in City Administration (Personnel Manager)

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DATA PROCESSING IMPLEMENTATION SCHEDULE

<u>Priority Matrix Number</u>	<u>Application</u>	<u>Implementation Strategy</u>	<u>Associated Tasks</u>
A10	Work Order Accounting System	Finance computer	<ul style="list-style-type: none">o Standard implementation cycleo Install on-line terminals in Public Works/Utility (MSC) and Parks & Recreation (Stockton Street)
A4	Document Indexing System	Finance computer/microcomputer in department (to be determined)	<ul style="list-style-type: none">o Standard implementation cycle
A9	Facility Scheduling Model	Microcomputer in department	<ul style="list-style-type: none">o Standard implementation cycle
A6	Library Circulation System	Dedicated computer located in the library	<ul style="list-style-type: none">o Standard implementation cycle
A8,21	Vehicle (Equipment Maintenance & Fuel Inventory System)	Finance computer	<ul style="list-style-type: none">o Standard implementation cycle

Note: Additional application requirements were included in Appendices A & B that are not addressed in the above schedule. These additional items were not considered critical by the Steering Committee and departments, and are needed to a lesser degree than the critical items listed above. Thus the additional items should be included in upcoming plan reviews and revisions. Alternatively, they could be inserted into the above schedule as determined by the Steering Committee.

STANDARD APPLICATION IMPLEMENTATION CYCLE

The Steering Committee represents the group by the same name which is described elsewhere in this report. The Task Force is a special team of people assigned to work on a single project. As noted earlier, it is best if the Steering Committee is represented on the Task Force. At a minimum the Task Force should report directly to the Steering Committee. Data Processing refers to employees within the Data Processing section of the Finance Department.

<u>Task</u>	<u>Assigned</u>
Phase 1 - Initial Evaluation	
1. Define the application systems project	Department/ Data Processing
2. Identify problems in existing functional areas	Department/ Data Processing
3. Determine probable benefits (valued in dollars if possible) of automation and/or new system	Department/ Data Processing
4. Obtain approval for detailed project study	Steering Committee
Phase 2 - Installation Phase	
5. Establish project (implementation) task force	Steering Committee
6. Conduct analysis of existing systems	Task Force
7. Document detailed user applications requirements	Task Force
8. Define management reporting needs	Task Force
9. Define external reporting needs	Task Force
10. Determine whether relevant long range objectives related to project are reflected in the City's long range plan	Steering Committee
11. Determine hardware/telecommunications implications and requirements	Task Force
12. Research application availability in the marketplace	Task Force
13. Submit RFP documents (if appropriate)*	Steering Committee
14. Select preferred application	Steering Committee

STANDARD APPLICATION IMPLEMENTATION CYCLE

<u>Task</u>	<u>Assigned</u>
15. Obtain approval for expenditure	Steering Committee
16. Schedule conversion tasks and responsibilities	Task Force/ Data Processing Departments
17. Define input, output and data base requirements	Task Force/ Data Processing
18. Determine City resources required	Task Force/ Data Processing
19. Design input/output forms and procedures	Task Force/ Data Processing
20. Convert data files for new system	Data Processing
21. Test new system for acceptance (e.g. parallel testing)	Task Force/ Data Processing
22. Obtain approval of Task Force and involved users	Task Force/ Departments
23. Prepare User and Data Processing staff documentation	Data Processing
24. Conduct User and Data Processing staff training	Data Processing
25. Begin using new system application	Data Processing/ Departments
26. Post-conversion review	Steering Committee

CITY OF LODI
INFORMATION SYSTEMS PLANNING PROJECT REPORT

List of Report Appendices

- APPENDIX A: City of Lodi Requirements Document
- APPENDIX B: Application Priority Matrix
- APPENDIX C: MIS Steering Committee Suggested Guidelines
- APPENDIX D: Feasibility Study Guidelines
- APPENDIX E: Request for Proposal Guidelines
- APPENDIX F: Vendor Agreement Guidelines
- APPENDIX G: Department Management Survey (Sample)
- APPENDIX H: Data Base Considerations
- APPENDIX I: Suggested Microcomputer Guidelines
- APPENDIX J: IBM System Upgrades

APPENDIX A

CITY OF LODI REQUIREMENTS DOCUMENT

CITY MANAGER

JERRY GLENN, ASSISTANT CITY MANAGER

Functions

- o Department provides overall management of the operation of the City government. Tasks performed by the City Manager's office include:
 - Management and final approval of the City's annual budgeting process;
 - Representing the City in all aspects of labor negotiations, including the internal complaint process;
 - Ongoing review of departmental plans and activities, including monthly performance of each department against their approval budget; and
 - Performance of special studies into the City's operations as deemed necessary by the City Council or other outside agencies.

- o Current staffing of the department includes the City Manager, Assistant City Manager, and a clerical person.

- o Future plans center around continuing to provide service to the community as well as to keep the City running smoothly in spite of all planned internal change.

- o Other planned projects include:
 - Streamlining the annual budgeting procedures currently being performed manually, and
 - Updating and more efficiently monitoring the City's Administration Policy Manual.

- o Information currently utilized by the department include:
 - Management reports produced by each department on a monthly basis;
 - Monthly budget and actual financial performance reports;

- Personnel records for all departments including labor contracting documentation; and
- Minutes of the City Council and archived files in the City Clerk's office.

Interaction with Other Departments

- o The City Manager currently interacts with the following departments:

Finance: Finance assists the City Manager with the annual budget book preparation as well as providing monthly reporting throughout the year of actual expenditures vs. budgeted expenditures.

City Clerk: City Clerk provides the City Manager with archival government documentation on an as needed basis.

Personnel: Personnel provides access to City employee personnel records and reports on an as needed basis.

All Departments: City Manager carries on an on-going communication with the management of all City departments in overseeing the operation of the City.

Major Concerns/Issues

- o It is important to utilize new technology, to reduce the increase in personnel costs that occurs as the City grows, while sharing such technological resources between departments as much as is practical.
- o Would like to streamline the currently complicated and labor-intensive annual budgeting process, as well as improve financial reporting of monthly budget expenditures and operations statements for the City's enterprise funds.
- o Would like to improve available level of personnel activity reporting, including the use of part time personnel.

- o The Administration Policy demand needs revision but current manual techniques of doing so are not economically justifiable.

Possible Applications

1. Improved Personnel Reporting (A3)

- o Purpose: To improve the level of personnel data reporting with which the City Manager's department keeps up on personnel activity.
- o Features:
 - Improved reporting might be available from an existing, operational system such as Payroll or could be implemented on a new Personnel/Payroll system.
 - Primary reporting requirement is an analysis of how much money is spent on part time employees each month and year-to-date by department, including budgeted amount and actual amount.
 - Additional reporting includes a year-to-date historical analysis of employee time not worked by department.
- o Primary Benefit: Better control over personnel-related expenditures within City departments.
- o Priority: 2

2. Improved Budgeting Process (A17)

- o Purpose: To reduce the amount of time required to prepare the annual budget and provide more meaningful data to department managers to use in constructing budgets.
- o Features:
 - Automated production of a budget questionnaire for each department which includes prior year budget and actual expenditure data;
 - Interactive spreadsheet-type capability to produce 'what if' analysis on budget requests;

- Ad hoc reporting and inquiry capability into the current status of budget to actual expenditures, via a computer terminal in the Assistant City Manager's office;
- Improved monthly budget reporting (real time or a memo basis); and
- These features could be added to the General Accounting computer application, or could be part of a new budgeting system.

- o Primary Benefit: Develop more timely and accurate budget reporting without adding additional personnel.

- o Priority: 1

3. Improved Financial Reporting (B2)

- o Would like the General Accounting computer application to produce operating statements of revenue and expenditures for each of the City's enterprise funds (standard statement format).

- o Primary Benefit: Would allow more efficient analysis of enterprise fund operations than current manual methods.

- o Priority: 3

4. Other Capabilities (A17)

- o Would like to utilize word processing to a greater degree within the department for production of correspondence and documentation/revision of the City's Administration Policy Manual.

- o Would like on-line, interactive access to a financial modeling/spreadsheet package for general negotiations such as labor packages and budget analysis.

- o Priority: 3

PERSONNEL DEPARTMENT

BILL HINKLE, ADMINISTRATIVE ASSISTANT

Function

The Personnel Department is responsible for maintaining personnel records of all City employees as well as providing internal and external personnel reporting as required by law. In fulfilling this function, the department performs the following tasks:

- Maintenance of complete personnel files of each City employee as required by law;
- Producing internal reports, such as the employee roster, for use by other departments;
- Providing external reports, such as equal employment opportunity reports, as required by law;
- Administering promotional examinations as required by law; and
- Responding to outside inquiries regarding current and former employee information.

Personnel is staffed by the Administrative Assistant and a clerical person.

Information which the department uses on a regular basis includes:

- Employee personnel records,
- Payroll application generated information on employee vacation and holiday status, and
- Departmental position descriptions for the entire City.

Interaction with Other Departments

Personnel currently works directly with the following City departments:

- o Finance: Finance supplies vacation and holiday-related data as generated by the Payroll computer application.

- o All Departments: Personnel administers testing for employee promotions and reporting of test results (especially Police and Fire Departments) to those departments. Other departments report their personnel activity (hires, fires, etc.) to Personnel on an ongoing basis.

Main Concerns/Issues

- o Concerned that the current data processing resources do not provide support for Personnel in the record-keeping and reporting process, but could;
- o Concerned that Personnel has not been able to make use of word processing equipment for regular, ongoing internal and external reporting; and
- o Concerned that City currently is not currently performing any detailed analysis of Workmens' Compensation claims or Equal Employment Opportunity status for internal management purposes.

Possible Applications

1. Personnel Management System (A3)

- o Purpose: To automate the personnel recordkeeping process and related reporting currently performed by the City, as well as to provide new analytical reporting currently not being performed.
- o Features of the System Include:
 - On-line inquiry and update compability from a Personnel department computer terminal.
 - Ad hoc reporting of information in the personnel files.
 - Production of currently produced reports on a regular basis, including the employee roster on a monthly basis.
 - Production of 'new' reports such as an EEO monthly roster of the City's current employee demographics, and a monthly personnel status and activity report for each department.

- o If possible, an integrated Personnel/Payroll system should be identified. This would allow more creative reporting of:
 - Current period and historical vacation, sick leave, holiday and overtime activity for each department; and
 - Integrated personnel and payroll data analysis.

This would also allow more sophisticated recordkeeping in the area of employee benefit coverage.

- o Primary Benefits: Reduction in manual recordkeeping time requirements of department personnel, and more useful management reporting for all departments of the City.

- o Priority: 1

2. Workmens' Compensation Reporting Capability (B26)

- o Purpose: The purpose of this capability would be to provide internal analysis of workmens' compensation activity by department or employee position.

- o Features of the capability, which could be implemented in a personnel/payroll (or just payroll) system would include:

- Calculation of sick leave split between disability and payroll (first 3 working days as relates to workmen's compensation), and
- Analysis of each department's level and nature of workmens' compensation activity on a monthly basis.

- o The system would provide an internal cost accounting-type report to supplement the legal reporting requirements being fulfilled by the outside compensation contractor.

- o Primary Benefits: Better management of workmens' compensation costs.

- o Priority: 2

3. Word Processing - General (A22)

- o Purpose: To allow the department to place ongoing reporting requirements, such as the EEO 4 report, on word processing. Currently the department does not have qualified word processing operators. Both training and access to any automated word processing system is necessary.

- o Primary Benefits: Less clerical time spent on updating ongoing reports/correspondence, and more timely and accurate reporting.

- o Priority: 3

CITY CLERK DEPARTMENT

ALICE REIMCHE

Function

The City Clerk Department serves the City primarily as an archivist of documentation and records of action taken by the City Council, as well as the administrator of local elections and liability claims against the City. Tasks performed in providing these services include the preparation/assembly, publication, recordation, execution and retention of all documentation of the municipal government, including administration record of local elections and liability claims. Currently the department employs the City Clerk and an assistant. Future plans within the department include expanded archiving requirements as dictated by State statute as well as improving the efficiency and accuracy of internal operating procedures.

The primary information used by the department on the various documents that must be indexed and archived, along with the index itself. In addition, the City Clerk works with:

- monthly liability administration information provided by an outside contract liability administration firm, and
- various election documentation items when local elections are held.

Interaction with Other Departments

The City Clerk interacts with all City departments in providing documentation of City Council actions, contracts and liability claims affecting the various other departments.

Major Concerns/Issues

- o An extensive amount of manual effort is needed to maintain manual archives and indices of City documentation.
- o Word processing is a critical resource to the department in generating the extensive amount of documentation that the department does.

Possible Applications

1. Word Processing - General (A22)

- o Currently the City Clerk's office has access to 1/2 of a word processing machine, and based on increased workload, this does not appear to be sufficient. Also, additional training would help the department personnel in using the full capabilities of the word processing equipment. If technologically possible, the system should provide for OCR (Optical Character Recognition) input capability for more efficient document storage on word processing.
- o Primary Benefit: More efficient work flow and utilization of word processing resources to eliminate extensive clerical tasks.
- o Priority: 1

2. Election Results Processing System (B13)

- o Purpose: To provide timely and accurate recording and reporting of local election results.
- o Features:
 - The system would record election ballot voting results on machine-readable cards and then automatically capture the data from the cards for processing on the computer.
 - Electronic reporting currently required by the locality, the county and the State would be automatically produced with no need for manual computations.
 - An outside service provider, such as Diamond International, could be identified as a possible candidate to supply the system.
- o Primary Benefits: More accurate and timely recording and reporting of election results; reduction in the manual effort needed to run local elections.

c Priority: 2

3. Claim Reporting System (D2)

o Purpose: To maintain status records of outstanding liability claims against the City of Lodi.

o Features:

- Provide a data base of key information on outstanding claims against the City, including such key data as the contract administrator may provide;
- On-line input directly from internal Incident Reports and Citizen's Verified Claim Reports;
- Real-time, and low inquiry based on a number of different use-defined keys;
- Exception reporting of claim status on a regular basis; and
- Dial-in access capability to the liability administrator's computerized data base.

o Primary Benefit: Reduction of manual claim identification and research time.

o Priority: 3

4. Municipal Code Index System (B14)

o Purpose: To provide a key word index and cross reference of the Lodi Municipal Code, resolutions, and other legal documentation produced by the City and achived by the City Clerk.

o Real time inquiry would need to be available, although no special reporting requirements would be necessary.

o Primary Benefit: Quicker access to archived documentation, with reductions in manual effort required of department personnel.

o Priority: 2

CITY ATTORNEY

RON STEIN

Functions

The primary function of the City Attorney's office is to operate as the legal department of the City and render legal advice to the City Council and the other various City departments. In providing these services for the City government, the following general activities are performed:

- representation at all City Council meetings;
- prosecutions of violations of the City ordinances in the municipal and superior courts;
- preparation of all leases, contracts, and ordinances for the City;
- administration of all claims filed against and by the City of Lodi;
- defense of all causes of action brought against the City other than personal injury or property damage; and
- representation on the legal committee of the Northern California Power Agency of which Lodi is a member.

Currently the City Attorney and a single clerical person staff the department. Future plans within the department are to continue to perform the same activities, but to utilize current technology to become more efficient in doing so. Also, plans have been made to revise the Municipal Code.

The City Attorney currently utilizes or maintains the following information in daily operations:

- Municipal Code;
- Various logical research materials, domiciled both in Lodi City Hall and in the San Joaquin County Law Library; and
- Various logical written materials, including briefs, contracts, leases, letters, opinions, resolutions, and other papers.

Interface with Other Departments

Currently the City Attorney must interface with all departments within the City and with the City Council to render advice on legal matters. In addition, research indices and materials at the San Joaquin County Law Library in Stockton are often researched in Stockton by the City Attorney.

Major Concerns/Issues

- o The City Attorney generates a large amount of written documentation, which requires full-time access to word processing equipment. Currently they have access to such equipment on a half-time basis;
- o Writing legal opinions requires direct referencing to results of related cases, which requires extensive legal research. In addition, often such research requires driving to Stockton (County Law Library) for half days;
- o Legal case management is an ongoing requirement of the department; and
- o Constant updating of the Municipal Code is a responsibility of the department, which is currently done manually.

Possible Applications

1. Word Processing - General (A22)

- o Currently the City Attorney's office has access to 1/2 of a word processing machine, and this does not appear to be sufficient. Also, additional training would help the department personnel in using the full capabilities of the word processing equipment. If technologically possible, the system should provide for OCR (Optical Character Recognition) inputting of lengthy legal documents.
- o Primary Benefit: More efficient work flow and utilization of word processing resources to reduce manual typing activity.

- o Priority: 1

2. Word Processing - Municipal Code (A22)

- o The purpose of this requirement is to reduce the amount of time and energy needed to update and revise the Municipal Code. The Code would merely be maintained on word processing files and indexed by the equipment to provide easier cross-referencing and inquiry. Reporting would be limited to printing hard-copy of the Code or selected Code sections.
- o Primary Benefit: Reduction in clerical and contract employee time needed to update Municipal Code, and reduction in clerical and attorney time needed to access Code sections.

- o Priority: 1

3. Case Management System (B15)

- o Purpose: To provide current information on cases being managed by the City Attorney and by the liability administrator under contract with the City.
- o Features:
 - Maintain data base of key information on each case taken by the City Attorney's office; including the status of cases and accumulated legal costs;
 - Allow ad hoc inquiry into the data base through several user-defined indices;
 - Provide exception reporting to highlight key information for the City on a timely basis; and
 - Provide an event calendar reporting function.

- o Primary Benefits: More efficient use of attorney time through more efficient case management.
- o Priority: 2

4. Legal Research System (B16)

- o Purpose: To allow the City Attorney to access one or more of the many available on-line legal research data bases, such as Lexis or Westlaw.

Since the on-line systems are already set up and maintained, the City would need to either access the data bases through a dedicated communications terminal or via a general terminal hooked up to a City computer, which would then handle communications. Shared word processing equipment would not be appropriate since it is likely that the ad hoc research inquiries by the City Attorney would interfere with the clerical activity in the department.

- o Primary Benefit: Reduction of travel and research time and expenses currently expended in traveling to the County Law Library in Stockton.
- o Priority: 2

POLICE DEPARTMENT

CAPTAIN MARC YATES

Function

The Police Department serves as the primary public law enforcement agency in Lodi. Their primary task is the enforcement of laws applicable to the citizens and City of Lodi, as defined by various municipal, local, state and federal statutes. In fulfilling these tasks the department follows the various practices documented in their Policy & Procedures Manual, including such things as protecting life and property, preserving public pence, crime prevention and criminal investigations, detecting and arresting violators of the law, and operating the municipal jail. Currently, the department has 70 full time personnel, approximately 3/4 being sworn in officers and patrolmen.

In performing these tasks, the department uses or maintains the following type of information:

- o criminal complaints filed by non-department personnel;
- o arrest booking records, including data or violation, victims and other parties;
- o case management records related to criminal and other investigations; and
- o inventories and updated lists of the following information:
 - inventory of evidence held by the department,
 - inventory of Police Department property,
 - list of stolen property,
 - list of open moving/non-moving traffic citations and their status,
 - detailed list of pawn-shop activity, and
 - personnel activity distribution for both investigation and patrol areas.

Interaction with Other Departments

The Police Department must interact with the following City departments and outside agencies in the performance of their daily operations:

o San Joaquin County

Lodi Police Department (LPD) uses computer records related to the following:

- patrol labor distribution reports,
- daily case files and missing case audit reports,
- criminal records inquiry for each LPD arrest,
- DMV inquiry regarding the licensing and registrations of motor vehicles,
- case status, transfer and closure information regarding LPD-related cases,
- inquiry into County probation records on an ad hoc basis, and
- inquiry into the status and closure of arrest ADR follow-ups on a daily basis.

o Finance Department

- Manual inquiry into the City's license records regarding the following areas:
 - o business licenses (cardrooms, taxi drivers, solicitors, etc.), and
 - o pet licenses.
- Manual inquiry into utility billing records to identify the occupants of particular addresses in the City, on an ad hoc basis.
- Normal interface with the Finance Department's payroll unit for maintaining up to date payroll records, as well as receiving data on employee time distribution.

o Public Works Department

- Normal interface with the Municipal Service Center division of Public Works, which provides maintenance services for police vehicles.

Main Concerns/Issues

In the course of their daily operations the department has cited the following concerns or high priority tasks which they need addressed:

- o difficulty of maintaining normal inventory records,
- o inability to quickly and easily analyze related records residing in different files,
- o difficulty in scheduling manpower distribution and analyzing officer activity statistics,
- o difficulty in evaluating officer performance due to lack of easy access to necessary information, and
- o need to continue to provide the same or higher level of public service at minimal costs.

Possible Applications

NOTE: All police-maintained data would need to be kept under strict security based on legal requirements.

1. Word Processing - Criminal Complaint System (All)

- o Purpose: To utilize the benefits of word processing in producing criminal complaint filings in accordance with the State Penal Code.
- o Features:
 - Maintain the standard State Penal code language on word processing overlays, requiring department personnel to type in only the details of the complaint; and
 - Maintain simple data base to track the details of each complaint (control numbers would be assigned automatically to each complaint "produced").
- o Primary Benefits: Greater accuracy in complaint production, less time required of investigation personnel, and maintenance of data needed for officer productivity analysis.
- o Priority: 1

2. Investigation Case Management System (A12)

- o Purpose: To automate the case management of the Investigations division, which is currently performed on 3x5" index cards.
- o Features:
 - Maintain a data base of information on each case undertaken, including such things as crime classification, case number, victim, address, phone number and officer assigned;
 - Allow ad hoc inquiry capability by a variety of user-defined indices; and
 - Produce monthly reports currently required by the Police Chief and other outside authorities.
- o Primary Benefits: Less time needed to produce required department reports, more effective management followup capability on investigation capabilities; better ability to analyze level of performance of officers.
- o Priority: 1

3. Department Labor Analysis (A13)

- o Purpose: To provide analysis of patrol officers daily time distribution in order to better manage department resources and calculate officer performance.
- o Features:
 - Maintain a data base of patrol time usage, by officer, in each of several predefined categories;
 - Produce reports as needed by the department, including the reports currently produced by the county; and
 - Automate editing of input data to help prevent inaccurate information from getting in the data base.
- o Primary Benefits: Less personnel time required to produce department reports; more effective management of patrol resources due to more timely and accurate time distribution reports.

o Priority: 1

4. On-Line Booking System (A14)

o Purpose: To provide automated support of the department's booking process and so replace several manual procedures.

o Features:

- Maintain an automated data base of booking and crime information, including data currently kept on the Alpha file and data needed to track crime disposition;
- Provide an automated two-way interface with the San Jouchin County computer files in order to share data; and
- Provide ad hoc inquiry into data base according to user defined parameters.

o System should also be integrated with a Crime Analysis System, which would

- Maintain additional data on crimes, such as modus operandi, suspect description, etc.; and
- Provide inquiry and reporting of an ad hoc nature to the Investigation division.

(Much of this data, which is not currently kept, would be input during the investigation process.)

o 24-hour access would be required of the system, and 1-2 dedicated terminals would be needed.

o Primary Benefits: Quicker and more effective information without an increase in required personnel resources; improved ability to perform all aspects of criminal investigation and arrest recordkeeping, including required reporting, criminal analysis, case management, and personnel management.

o Priority: 1

5. Internal Department Investigation System (CA)

- o Purpose: To record incident of and track resolution of complaints made against department employees.
- o Features:
 - Maintain an on-line data base of department investigation information, which is needed to track such cases; and
 - Provide exception status reporting, monthly departmental reporting, and ad hoc inquiry.
- o Primary Benefits: Less clerical time needed to maintain departmental investigation records and provide related reporting; increased timeliness and accuracy of investigation data resulting in more efficient and effective investigation process.
- o Priority: 3

6. Evidence Inventory System (A15)

- o Purpose: Maintain an automated inventory system to control evidence in the physical custody of the department.
- o Features:
 - Maintain a data base of information describing each piece of evidence held by the department, including location; and
 - Provide on-line inquiry based on user defined search criteria.
- o Primary Benefits: Quicker and more accurate response to inquiries about evidence, and better control over evidence.
- o Priority: 1

7. Stolen Property Reporting System (A16)

- o Purpose: Automate recordkeeping processes related to stolen property reports and pawn shop activity, and provide a method of automatically analyzing the two.

o Features:

- Maintain data bases of information describing reported stolen property and pawn shop sales (both are currently manual);
- Provide automated comparison of records in both data bases on and exception reporting of all possible/requested relationships; and
- Would allow on-line inquiry access on a 24-hour per day basis.

o Primary Benefits: More effective use of stolen goods and pawnshop records in criminal investigation, less time needed to be spent on analysis.

o Priority: 1

8. Training Record System (B10)

o Purpose: To provide an automated training record filing system with reporting such to determine whether the department is sufficiently staffed.

o Features:

- Maintain complete training information on all department personnel as determined by the training coordinator; and
- Provide ad hoc reporting and inquiry into training records necessary to comply with training programs including a "matrix" report which compares department qualifications to particular resource requirements.

o Primary Benefit: Less time needed to perform required analysis of department personnel qualifications.

o Priority: 2

9. General Real Time Inquiry

o The department expressed an interest in having 24-hour a day access to automated records in the following departments:

- Finance: Business License Records
Utility Customer Records

- Stockton Police Department: Fingerprint Record System

o Primary Benefit: Quicker access to required information, resulting in a better level of service by the department.

o Priority: 2

COMMUNITY DEVELOPMENT DEPARTMENT

JIM SCHROEDER, DIRECTOR

Function

Community Development provides services in the areas of City planning and building inspection. In providing these services, the department performs the following tasks:

- Reviewing building permit applications and plans and issuing building permits pursuant to them;
- Providing building inspection services and reporting on the results of such inspections;
- Reviewing and performing follow up investigations of housing and sanitation complaints and issue citations pursuant to laws;
- Keeping updated records of City development including maps, reports, and development plans; and
- Interacting on a day-to-day basis with the general public, builders, and contractors.

Community development currently employs eight total personnel, split evenly between the planning and building inspection functions.

Future departmental plans are to provide more accurate information to the public on a more timely basis by enhancing their document filing system.

Interaction with Other Departments

Community Development interacts with the following departments on a regular basis:

- o Fire Department: Community Development supplies the Fire Department with assessor information on microfiche for helping the department to identify property owners. The Fire Department reviews plans submitted to Community Development and offers the comments on them regarding fire safety and prevention.

- o Public Works, Utility: Public Works, Utility and Community Development interact daily on a great number of projects and coordinated data sharing.
- o City Manager, Police: Community Development provides general information from their files on an as required basis.

Main Concerns/Issues

Currently both the Planning and Building Inspection areas maintain large files of documentation which are very difficult to access, causing long response times in answering public or internal inquiries.

The physical location of word processing equipment makes it very difficult to effectively make use of the equipment.

Generating statistical information to support the City's general development plan is a very time consuming manual task, which requires more personnel as reporting becomes more extensive.

Possible Applications

1. Document Indexing System (AA)

- o Purpose: To provide several indices for documentation filed in the department so access to the documentation is more timely and efficient.
- o Features:
 - On-line inquiry into system files through computer terminals physically located within Community Development and Finance;
 - Free form inquiry parameters by which the files will be accessed by both Community Development and other departments;
 - Cross reference to other related files maintained by other departments such as Finance (Utility Billing) and Fire (Building Inspection), as well as physical location of documents;
 - Periodic reporting for information maintenance purposes;

- Maintenance of additional tickler file information by property relating to building permits, zoning violations, complaints, and other correspondence; and
- Exception reporting on certain information such as unperformed steps in the planning and building permit process.

- o Primary Benefits: Better control of Community Development documentation, and higher level of information service for other departments and the general public.

- o Priority: 1

2. Vacant Lot Inventory System (A5)

- o Purpose: To automate the current manual system used to track the availability and features of vacant lots within the City.

- o Features:

- On-line inquiry into files from computer terminals located within the department; and
- Track vacant lots by location, lot identification and acreage.

- o Primary Benefits: Easier access to vacant lot information.

- o Priority: 1

3. Statistical Abstract System (B6)

- o Purpose: To maintain a statistical data base of information on the City of Lodi.

- o Features:

- Maintain data on land use inventory, sales tax activity, census information, property tax information, school district enrollment data, income characteristics, transportation data, and annexation data;

- Allow ad hoc abstract generation and reporting according to the needs of the City planning commission, including graphic output representation; and
 - Access input information from various outside government agencies such as the State Department of Finance or the Federal Census Bureau.
- o Primary Benefits: More meaningful reporting and analysis capability, and reduction in clerical effort currently needed to produce the report.
 - o Priority: 2

3. Word Processing - General (A22)

- o Would like easier access to word processing equipment and greater level of training in its use. (This would allow more effective use of the equipment in performing ongoing reporting.)
- o Would need access on 2-3 terminals located physically within the community planning department, preferably at secretaries' desks.

FINANCE DEPARTMENT

BOB HOLM, DIRECTOR - CITY TREASURER

Function

The Finance Department is responsible for the planning, organizing and operation of all systems and procedures related to the City's accounting, auditing, and financial reporting. The department is also generally responsible for the billing, collection and custody of City revenues and funds.

In order to accomplish their general responsibilities, the Finance Department is organized into the following units, responsible for the following tasks:

o Administration:

- Planning, organization, and management of the City's financial reporting and control activities;
- Investment of idle City funds in accordance with State laws;
- Plan and control bonded debt administration; and
- Assist City Manager in preparing the annual operating budgets.

o Purchasing:

- Procedures and approves purchase order requests from various City departments;
- Maintains an office stores inventory; and
- Administers the formal bid process within the City, from specification examination to final recommendations.

o Accounting:

- Maintains City's general ledger and subsidiary ledger (Revenue, Expenditures, Fixed Assets);
- Maintains and processes City-wide employee payroll;
- Processes and records accounts payables; and
- Preparation of City's annual financial statements.

- o Billing:
 - Maintain customer account records and generates customer billings for electricity, water, sewage and refuse utility usage.

- o Collection and Credit:
 - Collects, deposits, and records monies received by the City, including utility billings, license payments and parking permits.

- o Data Processing:
 - Supports automated processing of the following applications -- utility billing, payroll, business licenses, accounts payable, and general accounting.

Currently the department employs 26 personnel in daily operations. Future plans include reorganizing staff and work load within the department to reduce transaction time, smooth workflow and reduce overtime and parttime costs.

Interaction with Other Departments

Currently the Finance department interacts with the following units on a regular basis:

- o City Manager:
 - Finance assists in providing the annual budget for the City.

- o All Departments:
 - Finance provides assistance to all City departments in the following areas:
 - o Purchasing and invoice payment,
 - o Payroll processing and reporting,
 - o Regular payment and recording of contract liabilities,
 - o Inquiry in business license and utility billing, and tax role records for owner/occupancy data (largely the Fire and Police Departments), and
 - o Monthly budget and expenditure reporting.

- o Electric Utility:
 - Finance provides meter reading service and handles billing/collections for all utility customers, prepares financial reports.

- o Community Development:
 - Community Development provides Finance with service orders for new construction which Finance in turn bills charges for.

- o Public Works:
 - Finance services orders for new water/wastewater hook ups and prepares all monthly utility billings.

Main Concerns/Issues

- o City has computer resources available within the Finance Department to all departments, although currently its primary use is for Finance applications.

- o The department has completed a reorganization process that has placed its field personnel under a field services supervisor and has the data processing section reporting directly to the Finance Director.

- o The utility meter reading function, which is currently performed in a very simplified fashion, is growing very rapidly as meters are used more and more by the utilities. In addition, calculation of billing amounts is becoming more and more difficult to perform manually, and

- o The City Treasurer function takes extensive manual effort.

Possible Applications

1. Budget Inquiry System (AI)
 - o Purpose: To provide up to date status of each department's approved budgets and status of expenditures to date.

o Features:

- Provide memo-based accounting and tracking of expenditures so as to not affect the City's general ledger,
- Provide real time update and inquiry capability of monthly expenditures and budget balance,
- Allow distribution of inquiry to departments on an as needed basis through computer terminals, and
- Production of a summary month end status report to allow balancing to the general ledger.

o Primary Benefit: Greater control over the accounting functions, and current reporting of departmental budget positions.

o Priority: 3

2. Portfolio Management System (B1)

o Purpose: To provide an efficient and accurate method of performing the City Treasurer recordkeeping functions.

o Features:

- Maintaining a data base of information invested City funds, including interest rates, rate of return, amounts invested maturity dates, and interest earned;
- On-line, ad hoc inquiry into data base through terminals located in the Finance Department; and
- Exception reporting of upcoming maturities or other "decision dates" (i.e. maturity schedule).

o Primary Benefit: Less clerical time needed to maintain investment portfolio, and greater control over invested City funds.

o Priority: 2

3. Audit Worksheet Preparation (B2)

- o Purpose: To automatically generate audit worksheets necessary for the annual independent audit from automated financial records.
- o Features:
 - Produces the required reports from historical files of automated financial records.
- o Primary Benefit: Reduced clerical time in producing these reports for the audit.
- o Priority: 2

4. Meter Reading Management (A2)

- o Purpose: To allow more efficient management of the utility billing and collection process.
- o Features:
 - Data collection through hand held meter reading devices which automatically interface with the computer,
 - Automated meter reading route analysis based on meters read and to be read and the resources available for completing the readings,
 - Ad hoc inquiry and reporting availability into billing files,
 - Utility bill calculation based on a user-defined set of parameters, and
 - Maintenance of utility customer accounts.
- o Primary Benefit: More efficient and effective use of water reading resources, and reduced clerical effort for utility billing process.
- o Priority: 1

5. Improved Personnel/Payroll System (A3)

- o Purpose: To provide additional record keeping and reporting on personnel and employee benefit subjects, including:
 - Calculation and cutting of insurance premiums for employee insurance carriers;
 - Calculation and reporting of current employee benefits; and
 - Historic reporting of employee hour distribution, including part time employees.
- o Primary Benefits: Reduced clerical time currently required for these tasks.
- o Priority: 2

6. Fixed Asset Accounting System (B3)

- o Purpose: To provide automated record keeping and reporting for the accounting of fixed assets within the City (standard asset system).
- o Features:
 - Automated record keeping of all information on fixed assets which is currently kept manually by the department;
 - Automated calculation and reporting of annual depreciation, tax gain/loss, etc. for all fixed assets; and
 - Could be merged with Public Works maintenance systems.
- o Primary Benefit: Reduced clerical effort needed for fixed asset accounting.
- o Priority: 2

7. General Additional Items

- o Automated generation of the City Council report, which summarizes cash disbursements for the period (produced from data in the automated cash disbursement records).

- o Automated record keeping and tracking of subdivision refunds due for repayment, as well as related exception reporting for missed payments.
- o Automated recording of cash collected by the Finance Department through on-line cash register system, including nightly reporting of detailed cash collected and a summary balancing total.
- o Improved reporting of customer year to date utility account history.
- o Additional documentation and system development aids for Data Processing.
- o Centralized Purchasing and related automated inventory system for electric, water and sewer utility Funds.
- o Automated fuel dispensing system with interface to computerized fuel inventory.

FIRE DEPARTMENT

CHIEF DON MacLEOD

Function

The Fire Department is responsible for the protection of life and property through fire suppression, public education, fire prevention and delivery of emergency medical services. They also perform building plan reviews for the entire City population on an as-needed basis. Major tasks which need to be carried out by the department in providing these services include fire suppression/property conservation activities, ongoing management of a building inspection program, reviewing building plans, managing a formal training program, maintaining equipment, vehicles and station facilities, performing arson investigations, and managing a weed abatement program. The department currently is made up of 50 personnel operating three shifts per day, seven days per week.

In performing these tasks, the Fire Department must maintain the following types of information:

- Building inspection records including results of inspection and schedules;
- Building information, gathered during the inspection process, is used continually to provide advice to companies in the field;
- Incident report records are kept to provide a history of department activity as well as reporting to the State;
- Training and personnel records of department personnel;
- Inventory and maintenance records for department equipment, vehicles and facilities;
- Base maps of the City streets and building layouts; and
- Business license, utility and tax role information.

Interaction with Other Departments

Currently the Fire Department interacts with the following City departments on an ongoing basis:

- o Building Department: To provide Building with revisions of building plans, and to receive interpretations of municipal building code from Building.
- o Finance Department: To obtain information from Finance regarding utility/address information, business licenses, and tax role information.

Main Concerns/Issues

In the course of their daily operations and planning the Fire Department has cited the following concerns or high priority plans which need to be addressed:

- Inability to perform a detailed analysis of fire incident records;
- Need to expand the current Apple II-based building inspection tracking system to accommodate more records and more information per record;
- Need by dispatcher to have 24-hour per day, real-time inquiry access to building and property record information;
- Inability to easily perform ad hoc reporting of department training information; and
- Need to have a less labor-intensive method of scheduling and following up on preventative maintenance for equipment, vehicles and facilities.

Possible Applications

1. Property Information System (A7)

- o Purpose: To maintain and provide information necessary to respond to requests from the field for information on particular properties. Also, to help manage the building inspection process.
- o Features:
 - Maintain a data base of information on different properties located within the City of Lodi and related fire districts. Information needed includes:

- . Physical characteristics of building, such as exits, entrances and water taps;
- . Other data that would help department respond to calls such as the storage location of potentially harmful substances; and
- . Data related to building inspection activity such as the data and results of the last inspection;
- Provide on-line, 24-hour access to the data base by the department dispatcher;
- Provide activity and exception reporting related to building inspection process; and
- Meet the requirements for current building inspection data and for new requirements related to sprinkler and hood and duct systems.

This system (or related word processing capability) would also produce a form letter which would announce the inspections in advance, with names and addresses taken directly from the computerized files.

- o Primary Benefit: Improved management of the building inspection process; higher level of fire fighting effectiveness.
- o Priority: 1

2. Equipment Maintenance System (A8)

- o Purpose: Provide automated recordkeeping and reporting related to the maintenance of department equipment and hydrants.
- o Features:
 - Maintain a data base of the following types of equipment:
 - . Fire hydrant location and maintenance,
 - . Pressurized extinguisher, air bottle location and maintenance,
 - . Vehicle preventative maintenance and parts inventory, and
 - . Fire hose location and maintenance;
 - Provide exception reporting of items that require action by the department, based upon the preventative maintenance program that currently exists; and
 - Provide reporting for physical inventory purposes.

- o Primary Benefits: More effective and efficient enforcement of the current preventative maintenance program.

- o Priority: 2

3. Firemen Training Record System (B10)

- o Purpose: To provide information necessary to monitor compliance with the department's internal training program.

- o Features:

- Maintain complete training information on all department personnel as required by the training program;
- Provide on-line inquiry capability into training records; and
- Provide standard reporting as required by the department, including ad hoc and exception reporting.

- o Primary Benefit: Reduced personnel time needed to provide training information to department management.

- o Priority: 3

4. Report Information System (C3)

- o Purpose: Assist in the preparation and maintenance of accident report records filed for each call a company makes.

- o Features:

- Allow on-line data entry through a menu-type overlay identifying information required for each report, allowing the clerical personnel or fireman completing the report to "fill in the blanks" of each circumstance;
- Automatically maintain a file of report information;
- Allow ad hoc inquiry into the data base;
- Produce all reports required by the department (city) and by the State of California; and

- Provide department statistical analysis reporting to assist in performing and scheduling fire prevention and investigation activities.

o Primary Benefit: Reduce amount of time spent in completing incident reports and generating summary reports filed with the State; improve clerical accuracy of report information.

o Priority: 3

5. Utility Information

o The Fire Department needs information related to utility billing roles, which are currently kept on computer in the Finance Department. Two hardcopy utility listings are needed, sorted by address and by last name.

o Such information would save the department time delays in performing their daily tasks.

o Priority: 3

CITY LIBRARY

LEONARD LACHENDRO, HEAD LIBRARIAN

Function

The City Library currently provides free library service to the people of Lodi and surrounding areas (approximately 53,000 people). Their duties include all tasks necessary to provide such service, including material selection, ordering, receiving and cataloging, for both children and adults. They are responsible for maintaining records on material circulation, and also maintain several reference files of non-circulating materials. Currently 10 full time librarians and librarian assistants work at the library, along with 13 part time aides and pages. The library is also responsible for its own operating budget, which includes such things as maintaining the facility and paying for material purchases. The library currently is expanding rapidly, providing new services to the community and a greater selection of materials. As a result, their primary focus is to expand their current circulation system (which is automated) and to develop delivery methods for the new services.

In performing these tasks, the library uses or maintains the following types of information:

- Cataloging records for all materials including card catalogue indices;
- Complete records of materials in circulation including information related to overdue materials and library followup;
- Special interest book lists;
- Local newspaper reference index;
- Records of materials on order; and
- Budgeting records.

Information with Other Departments

Currently the library interacts regularly with only two other departments in the City:

- o Finance: Provides information regarding the availability of funds to the library.
- o Personnel: Ad hoc inquiries into personnel records.

Major Concerns/Issues

The library cited the following major concerns or issues that they felt needed to be addressed as high priority items.

- o The current automated circulation system is quickly running out of storage capacity and would need to be replaced. Without this capability, the current low level of staffing could not be kept unchanged and still provide the same level of service.
- o The local inter-library service of which Lodi is a part may fold within the next year due to lack of funding. Without access to a regional bibliographic utility (such as OCLC), the library could not offer the same level of inter-library material loans.
- o The library currently purchases approximately 6-10,000 books per year, which requires a great deal of clerical activity on their part.
- o Current staffing levels are not adequate to effectively provide the following services to the community on a manual basis:
 - newspaper index file,
 - community information file, and
 - book lists and special interest profiles.(In the case of the former two items, no other city agency is providing these services.)

Possible Applications

1. Circulation System (A6)

- o Purpose: To provide a complete on-line circulation system, including all necessary recordkeeping and reporting.

- o The system should provide the same general capabilities as the current system, as well as:
 - Increased storage and processing capability, and
 - Backup system capability to track basic checking in and out of materials and provide limited reporting.
- o Library requires a very fast on-line response time from the system.
- o Primary Benefit: Provide the current level of service with growing material inventory without adding additional personnel.
- o Priority: 1

2. On Line Public Access Card Catalog (C1)

- o The Library would like to automate the current card catalogue indices and allow special index search and reporting capabilities. Users of the library would have hands on access to 2-4 dedicated computer terminals from which they could inquire into catalogue information. The system would share data directly with the circulation system (for economies of scale purposes).
- o Primary Benefit: More powerful access capability for library users.
- o Priority: 3

3. On Line Ordering System (C2)

- o Purpose: To automate the materials purchasing process with the Library's largest book supplier and with other purchases.
- o Features:
 - Provide access to the Baker and Taylor on-line ordering system (B&T supplies 90% of Library materials.) The system requires the Library purchase a small communications terminal through which orders would be directly placed.
 - Provide a standard automated purchasing system for all other orders.

- o Primary Benefit: Estimated cost savings of \$4-5,000 per year currently spent on manual ordering process; clerical time savings in researching ISBN numbers, which Baker and Taylor will provide with their system.

- o Priority: 3

4. Newspaper Indexing System (B0)

- o The library currently maintains a reference index of various articles which have run in the local newspaper. The Newspaper Indexing System would simply place the index on a computer, allowing for more timely and efficient inquiry and reporting capability.

- o Primary Benefit: Reduced personnel time spent researching and maintaining the index; higher level of service to library users.

- o Priority: 2

5. Reference Tickler File (B7)

- o This system would provide a free-format, computerized "tickler file" from which Library personnel could recall previously researched reference information.

- o Library staff requires real-time access to the tickler file information.

- o Primary Benefit: More efficient use of employee time; higher level of service to community.

- o Priority: 2

6. Community Information File System (B9)

- o The Library currently keeps a manual file of community information for public reference, such as address and phone numbers of public service agencies.

- o The Community Information File System would maintain this information on file and allow real-time access to it for ad hoc inquiry.
- o Primary Benefits: Reduced personnel time spent accessing information; higher level of service to community.
- o Priority: 2

7. General Real-Time Inquiry

- o The Library expressed an interest in having access to information maintained by other city departments through computerized inquiry of such information including:
 - Finance: Access to the current level of funds available.
 - Personnel: Access to employee personnel data IF such a system were automated on a City-wide, centralized basis. (Currently the Library keeps its own set of manual personnel records.)
- o Primary Benefit: Quicker access to the information, allowing for a better level of management information needed to run the Library.
- o Priority: 3

PUBLIC WORKS DEPARTMENT

JACK RONSKO, DIRECTOR

Functions

The Public Works Department is responsible for the physical planning, engineering, construction and maintenance of City facilities such as buildings, streets, water and wastewater systems, and the storm drainage system. In order to provide this service, the department is organizationally divided into an administrative function and four operating divisions -- Engineering, Streets, Water/Wastewater and Equipment, and Building Maintenance.

In providing service to the community the Public Works Department must perform the following broad tasks:

- o Development and implementation of the City's Capital Improvement Program;
- o Completion of special request reports for the City Manager and Council;
- o Administration of formal construction bidding process;
- o Development and maintenance of general and system maps for themselves and other departments;
- o Review of development plans submitted to Community Development planners by the general public;
- o Analyze traffic patterns and propose appropriate changes to the traffic rules;
- o Maintenance of City streets and associated storm drain facilities, street trees and off-street parking facilities;
- o Maintenance and control of the City's water and wastewater systems; - Operation of the White Slough wastewater treatment plant and associated water analysis lab;
- o Maintenance of City-owned buildings;
- o Operation of the Municipal Service Center for City-owned vehicle maintenance; and
- o All associated record keeping and reporting necessary to perform the above-mentioned tasks.

The Public Works Department currently employs 67 full-time and 21 seasonal part-time or work-study personnel.

Interaction with Other Departments

Currently the Public Works Department interacts with the following units on a regular basis:

o Finance:

- Performs monthly billing for meter and sewage charges and shares data with Public Works,
- Provides monthly budget to actual expenditure reports to Public Works, and
- Provides periodic employee sick leave and holiday data to Public Works and processes payroll for the department.

o Community Development:

- Public works shares extensive data with Planning area, including city maps; and
- Public works performs reviews of planning or building projects.

o Electric Utility:

- Utility and Public Works assist each other in specified projects and Public Works furnishes base maps to Utility upon request; and
- Both departments share the Municipal Service Center.

o Police Department and Fire Department:

- Public Works provides Police and Fire departments with maps, and
- Police provides Public Works with accident reporting records.

o Personnel:

- Personnel maintains Public Works department employee records as required by law.

o All Departments:

- Public Works services and maintains all vehicles owned by the City.

Major Concerns/Issues

- o The City's current water and wastewater control system is no longer servicable and needs to be replaced as soon as possible.
- o Highly skilled lab technicians at the White Slough wastewater treatment facility currently spend too much time performing clerical functions and manual calculations that are more efficiently performed by a computer.
- o Economics of scale are not being achieved by operating decentralized inventory and purchasing functions. Also, extensive warehouse space owned by the City which could be used is not.
- o Department management and personnel are currently finding many ways of utilizing computer technology to more efficiently utilize City resources, and would like to exploit such technology for the benefit of the City.

Possible Applications

1. SCADA Water Production System/SD SCADA System (A20)

- o Purpose: To monitor and collect data on the well production levels and flow activity within the City water system.
- o Features:
 - Real time data recording through remote terminal units (RTUs) located at well heads and throughout the system.
 - Maintenance of a large historical data base of water production statistics, which should be available for regular and ad hoc reporting.
 - Detailed specifications for the system are currently being drawn up by the Public Works Engineering division.
- o Primary Benefits: To allow management of the City's water and wastewater systems (current systems are obsolete and will soon not provide necessary data).

o Priority: 1

2. Water Quality Test System (B18)

o Purpose: To provide an automated method of tracking and scheduling water quality testing performed at wells on a 3-year cycle.

o Features:

- Allow for storage of water quality analysis data currently maintained manually;
- On-line inquiry capability of the data base through terminals located at the White Slough Treatment Facility;
- Generation of graphic representation of testing results as required by outside authorities; and
- Exception reporting on an ad hoc basis for managing and scheduling the testing function.

o Primary Benefits: Reduce the amount of clerical tasks currently being performed by the White Slough technicians, and more efficient management of the water quality test program.

o Priority: 2

3. Waste Water Plant Reporting System (B19)

o Purpose: To provide automated recordkeeping and management related to the operation of the wastewater treatment plant at White Slough.

o Features:

- (Initially) On-line entry of water flow, content, etc. data through a computer terminal located at White Slough. (Future plan) Automated data entry through SCADA-type remote terminal units located throughout the plant;
- Perform calculations on data that are currently performed manually;
- Provide regular water test reporting on a daily basis with output being produced at White Slough;
- Provide graphic output; and

- Monitor wastewater output by major industrial areas (all with water meters) and generate usage billing figures based on a predetermined formula.

- o Primary Benefits: Reduce the amount of clerical tasks currently performed by lab technicians; produce more meaningful and timely analysis of plant operation and wastewater discharge.

- o Priority: 2

4. Street Inventory and Maintenance System (B20)

- o Purpose: To provide automated record keeping and reporting of the City's street inventory, as well as managing the ongoing street maintenance program.

- o Features:

- Maintain a data base of street information currently maintained on the manual inventory system, including data on curbs, gutter and sidewalks, structural sectioning, street widths, etc.;
- Provide exception reporting on streets that need to be maintained and of complaints about street condition from the general public; and
- Provide data on incroachment permits issued by the City for each inventoried street parcel.

- o Primary Benefits: Reduce clerical time needed in managing the street maintenance functions.

- o Priority: 2

5. Fuel Inventory System (A21)

- o Purpose: To provide automated record keeping of the City's vehicle fuel inventory. Includes use of Automated Fuel Dispensing System.

o Features:

- Automated data entry through fuel metering devices located in the fuel storage tanks;
- Integrates with the Vehicle/Equipment Maintenance System (#12) or is a submodule of the latter;
- Automated inventory control calculations based on reorder quantities, and exception reporting of fuel ordering requirements; and
- Automated reporting of fuel consumption by department and fuel type, which can be used for interdepartmental billing.

o Primary Benefit: To keep more accurate accounting control over fuel inventories and usage.

o Priority: 1

6. Traffic Reporting System (C7)

o Purpose: To provide automated reporting of traffic accidents occurring in Lodi based on State accident reports.

o Features:

- Ad hoc reporting and analysis of accident locations, frequency, conditions, etc.

o Primary Benefit: More complex and detailed analysis of accidents without corresponding rise in required manual effort.

o Priority: 3

7. Street Tree Inventory System (C8)

o Purpose: To automate the record keeping and reporting functions associated with maintaining data on street trees and in scheduling maintenance of the trees.

o Features:

- Maintain a data base of information on the trees including type, location, etc.;
- Provide automated scheduling of tree trimming maintenance to be performed by the department on an 8-year cycle;
- Tracking of citizen complaints regarding trees; and
- All data entry and reporting would need to be located at the City's Municipal Service Center.

o Primary Benefit: Reduced clerical effort in managing the street tree maintenance program.

o Priority: 3

8. Water Well Maintenance System (B21)

o Purpose: To provide automated record keeping and scheduling of water well and Cl₂ equipment maintenance.

o Features:

- Maintain a data base of the waterwell and Cl₂ equipment inventory and the results of well testing (efficiencies, etc.);
- Provide analysis reporting from historical data (testing results) and exception reporting of wells and equipment due for maintenance; and
- Provide for data entry and output production at the Municipal Service Center.

o Primary Benefit: Reduced clerical effort in managing the water well maintenance program.

o Priority: 2

9. Meter Inventory System (C9)

o Purpose: To provide automated record keeping and scheduling of water flow metering device maintenance.

o Features:

- Maintain a data base of the various metering device inventory, including location, and the results of testing and maintenance performed on the devices;
- Provide analysis reporting from historical data (testing results) and exception reporting of all devices due for maintenance; and
- Provide on-line inquiry capabilities for both the Public Works and Finance (utility billing inquiry) through terminals located at City Hall and the Municipal Service Center.

o Primary Benefit: Reduced clerical effort in managing the water metering device maintenance program.

o Priority: 3

10. Street Sign Inventory System (C10)

o Purpose: To provide automated record keeping and scheduling of the City's street sign maintenance program.

o Features:

- Maintain a data base of the various street signs and markings that the City is responsible for maintaining, as well as other information relating to maintenance of the signs/workings and complaints by local citizens;
- Provide analysis reporting from historical maintenance and complaint data as well as exception reporting of all signs/workings due for maintenance;
- Provide data entry and report production facilities on location at the Municipal Service Center; and
- Provide traffic signal inventory and maintenance record keeping and reporting.

o Primary Benefit: Reduced clerical effort in managing the street sign/marking maintenance program.

o Priority: 3

11. Pump Station Maintenance Program (D1)

- o Purpose: To provide automated record keeping and scheduling of pump station equipment maintenance.
- o Features:
 - Maintain a data base of the pump station equipment inventory, including location, and the results of equipment testing and maintenance performed on the equipment;
 - Provide analysis reporting from historical data (testing results) and exception reporting of all equipment due for maintenance; and
 - Provide data entry and report production capabilities at the Municipal Service Center.
- o Primary Benefit: Reduced clerical effort in managing the pump station equipment maintenance program.
- o Priority: 3

12. Vehicle/Equipment Maintenance System (A8)

- o Purpose: To provide automated record keeping and scheduling of City vehicle and equipment maintenance provided by Public Works.
- Features:
 - Maintain a data base of the various and equipment inventory, including location, and the results of previous maintenance performed;
 - Provide analysis reporting from historical data (operating results) and exception reporting of all items due for maintenance; and
 - Provide on-line inquiry capabilities for both the Public Works and Finance (fixed asset accounting) through terminals located at City Hall and the Municipal Service Center.
- o Primary Benefit: Reduced clerical effort in managing the vehicle and equipment maintenance program.

- o Priority: 1

13. Warehouse Inventory System (B17)

- o Purpose: To provide a standard, computerized inventory system for vehicle and equipment parts and materials used by all City departments, including Public Works.

- o Features:

- Maintain data base of standard inventory information for all warehoused items;
- Perform automated inventory control calculations based on reorder quantities and exception reporting of material ordering that needs to take place, automatic generation of purchase order information;
- Perform automated reporting of inventory consumption by department and capital project; and
- Provide data entry and report production capability from the warehouse location and on-line inquiry capability by the Purchasing unit within the Finance Department.

- o Primary Benefit: Reduce clerical effort needed to maintain and manage the Public Works inventory.

- o Priority: 2

14. Mapping System (B22)

- o Purpose: To provide computer-aided design tools for the production of base and system maps of the City.

- o Features:

- Standard, automated CAD system with the capability to produce map graphics in hard copy.
- Should maintain maps for the Public Works, Community Planning, Fire, Finance, and Utility departments.

o Primary Benefit: Reduction in amount of clerical effort needed to currently drawn, trace and redraw City maps.

o Priority: 2

15. General Work Order Accounting (A10)

o Purpose: To allow tracking of personnel and material costs against defined capital improvement projects.

o Features:

- Tracking personnel time and cost by particular project, including further breakdown by project tasks for Engineering division activity;
- Interface with data on warehouse inventory system for material usage costing;
- Generation of standard project cost analysis statements by work order; and
- Data entry and reporting capability from both City Hall and the Municipal Service Center.

o Primary Benefit: Better management of capital improvement projects.

o Priority: 3

16. Facility Maintenance System (C11)

o Purpose: To provide automated record keeping and scheduling of City facility and building maintenance.

o Features:

- Maintain a data base of the various City properties, including location and maintenance schedules for the facilities;
- Provide analysis reporting from historical data and exception reporting of all building facilities due for maintenance; and
- Provide on-line inquiry and reporting capabilities through terminals located at City Hall and the Public Works area.

- o Primary Benefit: Reduced clerical effort in managing the City's facilities maintenance program.

- o Priority: 3

17. Enhanced Personnel Reporting (A3)

- o Purpose: To allow better tracking of personnel usage within the department.

- o Features:

- Improved reporting might be available from an existing, operational system such as Payroll or could be implemented on a new Personnel/Payroll system;
- Primary reporting requirement is an analysis of how much money is spent on part time employees each month and year-to-date in the department, including budgeted amount and actual amount;
- Summary reporting of sick leave and time-off taken in current period and year-to-date; and
- Additional reporting includes a year-to-date historical analysis of employee time not worked in the department.

- o Primary Benefit: Better control over personnel-related expenditures within the Public Works department.

- o Priority: 3

18. Word Processing - General (A22)

- o Would like to utilize word processing to a greater degree within the department for producing correspondence and other documentation. Each secretary should have a word processing work station, and receive adequate training in its use.

- o Priority: 2

19. Encroachment Permit Inventory (B23)

- o Purpose: To provide an automated tickler file of key encroachment permit information.
- o Features:
 - Maintain key encroachment permit information, including permit life cycle, for quick inquiry purposes;
 - Provide ad hoc inquiry capability to the Public Works and Community Planning department based on several user-defined indices.
 - Provide exception reporting capability based on user-defined parameters.
- o Primary Benefit: Reduced clerical effort in determining the existence and terms of encroachment permits held by the City.
- o Priority: 2

20. Development File Index (B24)

- o Purpose: To provide an automated tickler file of key information related to development and planning agreements made by the City with outside parties.
- o Features:
 - Maintain key information, including document location, from the following types of agreements:
 - . Development Agreements,
 - . Reimbursement Agreements, and
 - . Other conditions and requirements that the City/developers must abide by in developing property within the City's boundaries;
 - Provide ad hoc inquiry from the Public Works department based on several user-defined indices, including property identification; and
 - Provide exception reporting capability based on user-defined parameters.

- o Primary Benefit: Reduced clerical effort in design and planning work; reduced probability of breach of agreement on the part of the City.
- o Priority: 2

21. Other Requirements

- o Access to up-to-date budget vs. actual expenditure information for the department.
- o Use of general civil engineering applications for the department's Hewlett-Packard computer, including:
 - File indexes for documents, maps, etc.;
 - Master Planning tools for the SS/SD systems; and
 - Other miscellaneous functions.

DEPARTMENT OF PARKS AND RECREATION

ED DeBENEDETTI, DIRECTOR

Function

The Parks and Recreation Department is responsible for serving the community by providing recreation programs and facilities. In providing this service the department must perform the following general tasks:

- Identifying, planning and developing community recreation and program needs, along with the necessary facilities to develop the program interests;
- Publicizing recreational programs and encouraging community participation in them;
- Register participants and schedule each activity or class and the use of facilities;
- Form recreational leagues, schedule games, and supervise officials for the leagues;
- Schedule work and maintenance for park and recreational facilities, planning manpower distribution within the departments;
- Maintain park equipment inventory; and
- Maintain an accounts receivable/cash receipts operation for all department-organized recreational activities, as well as for the use of park facilities.

In performing these tasks, the department is responsible for the overall management of approximately 25 full-time employees and 60-120 part time employees. The department also is involved in fund raising activities for recreational programs, such as boys' sports (i.e., BOBS). The primary direction that the department is heading in the future is to expand the present program offerings without requiring additional funds or full-time personnel.

In providing service to the community, the department uses or maintains the following information:

- Program records identifying data regarding the program organization, participants, activity schedules, fee collections, and program costs;
- Schedules and use records related to department facilities and parks;
- Park equipment maintenance and inventory records; and
- Payroll records and time cards related to both full and part-time employees.

Interaction with Other Departments

The Parks and Recreation Department interacts on a daily basis with the following other City departments:

- o Finance Department: Parks and Recreation turns over collected fees and charges to Finance. Parks and Recreation turns over time cards and employee records to Finance for payroll processing.
- o Electric Utility: Utility provides services for Parks and Recreation facilities.
- o Public Works: Public Works maintains and services the Parks and Recreation vehicles.

Main Concerns/Issues

The following items have been cited by the Parks and Recreation department as being concerns or issues that need to be addressed:

- o Analysis of costs and revenues related to a particular program currently is not available. Such information is necessary to set equitable fees for the activities and to perform cost accounting analysis of the programs;
- o Breakdown of park maintenance costs is not adequate to perform cost accounting/budget analysis;
- o Distribution of fees and charges as to which fund they were submitted (general fund, #140 Reserve, BOBS) is not clear and can not be effectively used to manage/control the department; and

- o Maintenance of program and facility schedules is too awkward and error-prone as is currently being performed manually.

Possible Applications

1. Program Management System (B12)

- o Purpose: To maintain and report information necessary to manage recreational programs/classes offered by the department.
- o Features:
 - Provide a data base of recreation program information, including data on:
 - . Participants (name, address, class name, age, etc.);
 - . Class/Program (coordinator, timing, location, enrollment, etc.); and
 - . Employees (coordinator name and address, class/program, rate, etc.);
 - Provide reporting necessary for a program's operation, such as a roster, and after a program is completed, such as participant analysis or follow up mailings; and
 - On-line access to data is not necessary.
- o Primary Benefits: Elimination of extensive manual recordkeeping personnel requirements; availability of program analysis for department planning and analysis.
- o Priority: 2

2. Facility Scheduling System (A9)

- o Purpose: Provide real-time scheduling and related usage analysis of the City's recreational facilities.
- o Features:
 - Maintain schedule data on each of the City's recreational facilities for at least 3 months into the future;

- Provide on request, "what if" rescheduling of facilities automatically (with as little operator intervention as possible) based on changes to different factors that affect the schedule (such as league, day of week, etc.); and
 - Allow on-line terminal access from the department offices for inquiry and data entry purposes.
- o Primary Benefits: Improved service to program participants; elimination of extensive manual calculations and errors associated with facility scheduling and rescheduling.
 - o Priority: 1

3. Program Cost Accounting System (A10)

- o Purpose: To provide the department with cost and revenue reporting by program and activity.
- o Features:
 - Maintain a "work order" type accounting record for each class/program the department sponsors, including data on actual and budgeted costs and revenues; and
 - Provide simple performance reporting on each program, including budget and actual figures and related variance.
- o Primary Benefits: Ability to evaluate the financial feasibility of specific program; ability to set more equitable fee structures between different programs; ability to perform zero-based program budgeting and better cost control.
- o Priority: 1

ELECTRIC UTILITY

DAVID CURRY, DIRECTOR

Function

The Electric Utility provides service to its customers located within the City of Lodi. In providing this service the Utility is not only a reseller of power it purchases from PG&E, but also is a participant in several power generation projects. In acting as both a producer and distributor of electric power for Lodi, the Utility performs the following general tasks:

- o Operation and maintenance of the electric distribution system, including utility substations and hundreds of miles of electrical lines;
- o Management of energy supply and demand, including such tasks as load forecasting, energy cost analysis, and retail rate development;
- o Long range planning for expansion of the utility production and distribution facilities including accompanying economic analysis;
- o Maintenance of department equipment and vehicles and management of a parts and materials warehouse; and
- o Ongoing recordkeeping associated with management of the utility.

Future plans of the Utility focus on assuming its new role as a producer and supplier of electric power and implementing the management systems necessary to do so.

Possible Applications

NOTE: The system requirements of the electric utility are detailed in the R.W. Beck report dated April 1, 1983. These applications are briefly outlined below.

1. Electric SCADA System (A18)

- o Purpose: To provide supervisory control of and data collection from the electric utility system equipment. This would replace the current, obsolete supervisory and control system.
- o Features:
 - Real time operation to control system flow and collect operating data as well as access certain plant equipment data;
 - Operation would require several remote terminal units (RTU) placed throughout the system, linked to a central processor. Data collection would be performed by the RTU system, with the central processor dedicated to data processing and reporting; and
 - The system would be readily expandible to support a larger electric distribution system.
- o Primary Benefit: The system is mandatory to operate safely, efficiently and legally in the present electric utility environment.
- o Priority: 1

2. Load Forecasting System (A19)

- o Purpose: To enable the City to develop in-house load projections based on historical and other data, as required in its agreement with PG&E.
- o Features:
 - Perform extensive mathematical calculations automatically to forecast load, based on historical average and peak data gathered in SCADA;
 - Provide extensive ad hoc analysis and provide input data for spreadsheet calculations (see #3 below); and
 - Availability to the system operator on a 24-hour basis for hourly load forecasting.

- o Priority: 1

3. Mathematical Spreadsheet Capability (A17)

- o Purpose: To allow Utility management and staff to perform relatively complex and tedious, but necessary, calculations required for profitable operation of the utility.

- o Features:

- The system would provide interactive algorithm development and data entry capabilities, adequate to support calculations associated with:
 - . Energy cost analysis,
 - . Retail rate development,
 - . Long range power supply planning,
 - . Capital project economic analysis, and
 - . Analysis of large customer load data; and
- The system should provide the capability to integrate calculations with text and/or graphic representations.

- o Primary Benefits: Extensive reduction in the time needed to manually perform calculations, and greater accuracy in calculations.

- o Priority: 1

4. Inventory Control System (E17)

- o Purpose: To provide automated recordkeeping and control over utility materials inventoried at the warehouse.

A standard inventory control system which could handle up to 2,000 items would suffice, with no special reporting capabilities.

- o Priority: 3

5. Equipment Cataloging System (C5)

- o Purpose: To provide automated cataloging and control over various installed plant equipment.
- o Features:
 - Scheduling and exception reporting of preventative maintenance on plant equipment. Also, downtime analysis reporting based on historical data and other equipment cataloging/reporting as required.
- o Priority: 3

6. Work Order Accounting System (A10)

- o Purpose: To facilitate cost accounting analysis of costs associated with engineering construction projects.

A standard work order accounting system would suffice, with no special reporting requirements. The system would need to provide on request reporting, however, and should provide for cost updating on a monthly basis.

The system should interface directly with an inventory control system for cost capture, if such an inventory system is available (see application #4).

- o Priority: 3

7. Distribution Load/Fault Analysis System (C6)

- o Purpose: To provide "what if" analysis of system load/fault current levels to help identify impact on the electrical distribution system of certain conditions.

This is a very specialized 'industry' application.

- o Priority: 3

APPENDIX B

APPLICATION/PRIORITY MATRIX

CITY OF LODI
INFORMATION SYSTEMS PLANING

APPLICATION/PRIORITY MATRIX

	Departmental Needs Response to Proposed Applications (see attached 'Departmental Identifier, Codes')											
	1	2	3	4	5	6	7	8	9	10	11	12
A. Critical Applications												
A1 Budget Inquiry System							3		3		9	
A2 Meter Reading Management System							1					
A3 Enhanced Personnel/Payroll System	2	1					2		3		9	
A4 Document Indexing System						1						
A5 Vacant Lot Inventory System						1						
A6 Library Circulation System								1				
A7 Property Information System								1				
A8 Vehicle/Equipment Maintenance System										1		
A9 Facility Scheduling System											1	
A10 Work Order Accounting System										3	1	3
A11 Criminal Complaint System					1							
A12 Investigation Case Management System					1							
A13 Department Labor Analysis					1							
A14 Booking System/Crime Analysis System					1							
A15 Evidence Inventory System					1							
A16 Stolen Property Tracking System					1							1
A17 Spreadsheet Capability												1
A18 SCADA Electric System												1
A19 Load Forecasting Modelling												1
A20 SCADA SS/SD System										1		
A21 Fuel Inventory System							2			1		
A22 Word Processing-Expanded Resource	3	9	1	1	9	9					2	
A23 Word Processing-Municipal Code									1			
B. Desirable Applications												
B1 Portfolio Management System												2
B2 Enhanced Financial Reporting												2
B3 Fixed Asset Accounting System	3											2
B4 On-Line Cash Register												2
B5 Finance Application Maintenance												2
B6 Statistical Abstract System											2	

CITY OF LODI
INFORMATION SYSTEMS PLANNING

APPLICATION/PRIORITY MATRIX

	Departmental Needs Response to Proposed Applications (see attached 'Departmental Identification Codes')												
	1	2	3	4	5	6	7	8	9	10	11	12	
F. Desirable Applications (Continued)													
B7 Reference Tickler File									2				
B8 Newspaper Indexing System									2				
B9 Community Information File									2				
B10 Training Record System				2			3						
B11 Access Modifications to Existing Systems				2			3						
B12 Program Management System										2			
B13 Election Result Processing System			2										
B14 Municipal Code Index			2	9									
B15 Case Management System (Legal)				2									
B16 Legal Research System				2									
B17 Inventory Control System										2			3
B18 Water Quality Test System										2			
B19 Wastewater Plant Reporting										2			
B20 Street Inventory & Maintenance										2			
B21 Water Well Maintenance										2			
B22 Mapping System										2			
B23 Encroachment Permit Inventory										2			
B24 Development File Index										2			
B25 General Civil Engineering										2			
B26 Workman's Compensation Analysis													2
C. Desirable Applications													
C1 Public Access Card Catalog													3
C2 Online Ordering System													3
C3 Incident Reporting System							3						
C4 Internal Investigation System					3								
C5 Equipment Cataloging System													3
C6 Distribution Load/Fault Analysis													3
C7 Traffic Reporting System													3
C8 Street Tree Inventory													3
C9 Meter Inventory System													3

CITY OF LODI
 INFORMATION SYSTEMS PLANNING
 APPLICATION/PRIORITY MATRIX

	Departmental Needs Response to Proposed Applications (see attached 'Departmental Identification Codes')												
	1	2	3	4	5	6	7	8	9	10	11	12	
C. Desirable Applications (Continued)													
C10 Street Sign Inventory System													3
C11 Facility Maintenance													3
D. Unidentified													
D1 Pump Station Maintenance													9
D2 Claim Reporting System			9										

Department Identification Code

1. City Manager's Office
2. Personnel
3. City Clerk's Office
4. City Attorney's Office
5. Police Department
6. Community Development Department
7. Finance Department
8. Fire Department
9. Public Library
10. Public Works Department
11. Recreation & Parks Department
12. Electric Utility

Definition of Priority Classifications

The following classifications apply to the priority ratings which appear on the Application/Priority Matrix:

- "1" Critical -- Critical to the operations of the department; has a measurable impact on the direct services provided to the public.
- "2" Desirable -- Desirable to the department and would result in significant cost savings if implemented.
- "3" Desirable -- Desirable to the department, or "nice to have", but would not have a direct effect on services provided to the public or identifiable cost savings.
- "9" Unidentified -- The application was noted by the department as something they might like to have, although no particular priority is associated with it.

APPENDIX C

MIS STEERING COMMITTEE SUGGESTED GUIDELINES

CITY OF LODI
MIS STEERING COMMITTEE
SUGGESTED GUIDELINES

Why a steering committee to manage the data processing function?

Because it is the most effective way to ensure the fit of information systems with the City's corporate strategy.

Two forces are making it necessary that Lodi adopt a steering committee to manage data processing from an "executive" perspective:

1. Decentralization
2. Strategic Choice

Suggested Guidelines:

1. Functional - What the committee does.
2. Empirical - How will the committee operate.

Steering Committee: Functional Guidelines

The most useful analogy for the steering committee is the City's City Council: the committee functions as the computer activity's council. It links business strategy with computer strategy by setting a strategic direction and determining the multiyear financial commitment. It provides a forum where senior managers and users can discuss this direction, match City concerns with technological potential, and build commitment to policies.

The City's "City Council" for its computer activity has five essential functions: direction setting, rationing, structuring, staffing, and advising and auditing. Each of these functions are briefly discussed below.

o Direction Setting

The direction-setting function links the City's corporate strategy and computer strategy. It consists of setting objectives for the use of computers, formulating strategy to focus on these goals, devising policies to ensure that the City's actions are consistent with these objectives, and reviewing and approving the long-range plan for computers to guarantee that the approach for achieving these goals is workable and is in line with the City's priorities and capabilities.

o Rationing

The rationing function reconciles the commitment of City resources to computers with commitments to other City business activities. The City's budget and capital appropriations process should govern their computer activity, as they do other business functions. However, both of these financial processes must have the benefit of a long-range plan since the effective management of computers is a multiyear proposition.

Screening of computer projects is related to capital appropriations, but it has another important dimension: risk assessment. The implementation of computer projects may involve high technology and extensive organizational change. Since both of these aspects involve risk, it is essential to develop a process as an integral part of capital appropriations whereby the potential benefits of proposed computer projects are assessed against their potential risks.

o Structuring

The structuring function focuses on an appropriate organization design to ensure effective use of computers in the City. It deals directly with the centralization-vs.-decentralization issue and establishes charters for various organizational units.

Usually the function is performed in a very low key manner, focusing on the information systems organizational integration rather than on the general organization structure.

o Staffing

The structuring and staffing functions are closely related, because the ideal organization structure should make the best use of the computer activities most important to the City's business objectives and should build around key personnel.

o Advising & Auditing

The advise and audit function keeps the computer activity on track. Through advising, the committee assists top computer managers with problem solving. In execution of a long-range plan, the unexpected inevitably happens. It can take the form of failure of a vendor to deliver a piece of hardware on schedule or even completion of an important project ahead of the due date. Since only the issues that significantly affect the long-range plan or policy should come to the steering committee for its advice, a structure for presenting issues is necessary. The advice function is analogous to the role the City Council performs for the top management at Lodi.

The audit function evaluates the City's performance in using computers. Having a good statement of objectives and a long-range plan is essential to this function. The audit is best done annually and should be conducted by a relative outsider to ensure objectivity. All aspects of the computer activity should be audited against the long-range plan. In addition to evaluating performance, the audit review plays a central role in helping the committee learn about opportunities and issues in applying computer technology.

Each of these various functions and functional tasks have been ranked according to "perceived" importance, both to senior management and DP management, as shown in Exhibit 1. While Lodi's environment is unique and therefore will differ to some extent from the rankings shown here, these rankings will provide a guideline for incorporating the functions into a steering committee charter.

It is important to note also that the committee should not try to take on more than it can handle when adopting a charter. Rather, the committee should evolve into handling all functions, starting with a single function on its initial agendas. Evolution is a necessity, because it allows the committee members to develop an adequate conceptual framework with which to execute all primary functions. Exhibit 2 shows a possible stepwise approach which allows the steering committee to master and function and check how best to execute it before moving on to the next function.

It is also important that the charter evolve because both the strategic objectives of the City and the technology available to support them will change over time. Thus the composition and calendar adopted by the committee in 1984 may not be appropriate in 1985. Finally, while the charter and approach adopted by the City may be sound in the aggregate, organization design is highly dependent on the City's "corporate culture." So this culture must be considered in the ongoing structuring and employing of the steering committee.

Steering Committee: Empirical Guidelines

In order to be successful, the steering committee must not only adopt a charter that is appropriate within the City of Lodi, but they must also set up operational practices that will allow for a smooth and low frustration start-up. The following guidelines should help to develop operational practices for the steering committee.

Frequency of meetings: monthly or quarterly

Length of meetings: one to two hours

Number of members: six to eight (major departments represented)

Staff Support: Task forces of committee and other City personnel as
detailed projects are undertaken

Data processing department

<u>Function</u>	<u>Importance</u>		
	<u>Senior Management (SM)</u>	<u>DP Management (DP)</u>	<u>Overall Rating</u>
Direction Setting:			1
o Establish company-wide objectives and policies for computer technology	1	1	
o Review and approve/update long-range plan	2	2	
Rationing:			2
o Review and approve annual budgets	6	5	
o Review and approve major computer-related capital appropriations (e.g., facilities, hardware)	5	4	
o Major project approval and screening	3	3	
Structuring:			SM: 4 DP: 3
o Develop, maintain and revise steering committee charter.	7	7	
o Review and approve organization structures and changes	8	8	
Staffing:			5
o Selection of key managers for computer activity	10	10	
Advising and Auditing:			SM: 3 DP: 4
o Monitor and review major projects	4	6	
o Advise and audit key manager's performance	9	9	

Exhibit 1 - Rating of EDP Steering Committee Functions
 (Source: Survey performed by Nolan, Worton & Company, Inc., and reported in the Harvard Business Review, July-August, 1982.)

<u>Function</u>	<u>Importance</u>		<u>Overall Rating</u>
	<u>Senior Management (SM)</u>	<u>DP Management (DP)</u>	

Staffing: 5

o Selection of key managers for computer activity	10	10	
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Advising and Auditing: SM: 3 DP: 4

o Monitor and review major projects	4	6	
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o Advise and audit key manager's performance	9	9	
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Exhibit 1 - Rating of EDP Steering Committee Functions
 (Source: Survey performed by Nolan, Worton & Company, Inc., and reported in the Harvard Business Review, July-August, 1982.)

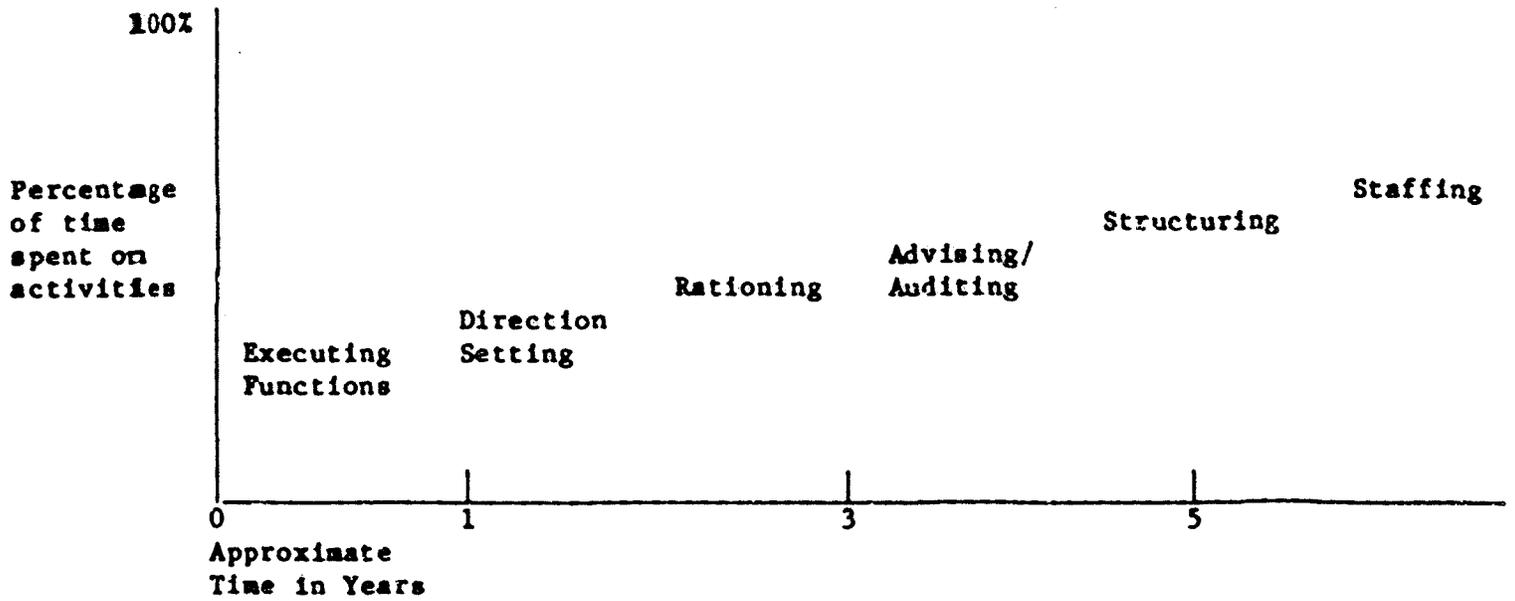


Exhibit 2 Evolution of functions/activities of the City's steering committee

APPENDIX D

FEASIBILITY STUDY GUIDELINES

INTRODUCTION

Feasibility studies represent the primary bridge between long-range strategic planning and actual, data-processing projects. The studies usually address one-time requirements (e.g., a single EDP issue or application) and have the objective of examining present methods of operation and recommending a method of best meeting the requirement. For example, a particular need which is identified as a candidate for automation on the City's long range plan may be implementable through several methods, such as in-house development, public-domain software, contract development or non-public packages (through a Request for Proposal approach). The purpose of the feasibility study is to recommend the optimal approach. The study results would be based on research performed by an ad hoc "study team", made up of a steering committee member, a user department representative and a data processing person. In addition, outside consultants may be used. The study team would be responsible for reporting its results to the steering committee at large as well as the user department(s). They in turn would report, through the budgeting or special appropriation process to the City Manager - Mayor - City Council.

Two thoughts should be considered when preparing to conduct a feasibility study. First, the study should not be oriented to directly modify the long range plan. Rather, they represent different tasks within the long range plan that need to be completed in fulfilling the plan. Second, to as great a degree as possible political or parochial views should be avoided in completing a study, as they may hinder or delay the implementation of the recommendations made in the study. Difficulties do occur in implementing any system, as Machiavelli points out in The Prince:

It must be remembered that there is nothing more difficult to plan, more doubtful of success, nor more dangerous to manage, than the creation of a new system. For the initiator has the enmity of all who would profit by the preservation of the old institutions and merely lukewarm defenders in those who would gain by the new ones.

Organizational structures can be considered during the feasibility study in identifying the optimal solution, but "political" ramifications are best left to the arena of the City Council.

Organizing the Feasibility Study

The initiating party, possibly the Steering Committee, should state in a memorandum the need for the study, and identify:

- o The purpose of the study - Why and what.
- o Brief background of the project - Brief information leading up to the study (specifically reference the long range plan if appropriate)
- o Scope of feasibility study - Activities, and limit of study.
- o Team leader or chairman and members - The leader should be brought in on the planning at the outset.
- o What information and actions are needed - Statistics and parameters should be considered.
- o Problem or problems to be solved - What functional areas or how efficiency will be improved.
- o Progress reporting - Reporting schedule and procedures to follow.
- o Completion date - Realistic, allow sufficient time.

Depending on the particular requirements, different levels of feasibility studies may be performed. Some feasibility studies may require background analysis, in-depth study of the present method of operation of an on-going system, and the future implication of implementing a new or modified system. Some may "require" a less complex involvement. In any case the feasibility study should address a single functional area. For instance, if a task in the long-range plan is to identify an implementation scheme for a specific application and to carry out the implementation, then the feasibility may be divided into the following "sub-tasks":

- Identify unique requirements of application,
- Identify alternate methods of implementing the system within the context of the long-range plan and the costs and benefits associated with each, and

- Recommend an implementation strategy for the application.

The result of the feasibility study would be the recommended strategy, from which a successful implementation could be performed.

Members of a study team should have a current background and experience in the functional areas in which they are to study. The team or the individual should be skilled in systems work, and understand methods and techniques presently in use. Individuals should also possess mature judgment, be expert in the subject matter they are studying, and have technical and working knowledge of computers. The team members' overall background should be heavy in operations rather than technical or programming oriented. The team may be comprised of members from various departments of the City. The members would be "on loan" to the feasibility efforts until the project is finished.

The personnel selected to conduct a study should be dedicated and loyal employees who plan to remain with the City. Regardless of how well a study is documented, invariably many questions arise that only the author of the study can answer. It is important that the team leader, or individual who did the study remain with the project until it is implemented.

A general feasibility study is probably best addressed in three phases:

Part 1. Learn and Understand the Present Methods

- o What are the weaknesses and strong points?
- o What are the functional tasks and activities involved?
- o How are the tasks now performed?
- o What time constraints exist?
- o Where are the tasks performed?
- o What inputs and outputs are involved?

Part 2. Conceptual Design of the New System

- o Determine the present and foreseeable future requirements and objectives.
- o Combine the requirements of the old system with new concepts.

- o Work out the design concepts of the new system.
- o Analyze the design for workability, see if it meets intermediate and longer term requirements, and look for possible alternate approaches.

Part 3. Economic Analysis and Work Plans

- o Cost out the new system including costs of personnel, training overhead, EDP equipment, and supplies. Amortize conversion expenses and costs of study.
- o Cost out old system on comparable items. Project for three years or more.
- o Use discounted cash flow method for evaluations.
- o Set up a schedule for the work to be done, showing cost incurred at the various stages.

Each part and step will vary depending on the particular study subject, but this technique will help to break the study down into functional areas. In some cases, one or two of the parts mentioned above may not even apply. This should be determined at the beginning of the study.

Things to Consider in Performing a Feasibility Study

In order to perform the feasibility study effectively and recommend appropriate actions for the City, the study team or analyst (individual) should consider the following issues. This should help the team or analyst deal with the approach, consideration, techniques and method of writing and presenting a feasibility study.

A feasibility study may be required because of the following:

- o Changes in the hardware or software techniques,
- o An obsolete system or procedure,
- o Converting from a manual to an automated system,
- o Updating an automated system,
- o Recurring software, hardware, or operational problems,
- o Changes in operational philosophy and,
- o New requirement from user/customer, or management.

Before the team or analyst starts the study, they should understand well the purpose of the study. Planning is an important aspect of research. Planning what to write and preparing an outline, will save much time and will ensure the ultimate success of the feasibility study. After the team or analyst has determined what they are to write about and why the study is necessary, they should ask themselves the following questions:

- o What is the study about?
- o What is the purpose of the study?
- o Do I understand clearly the objective for the study?
- o What additional research material or documentation do I need?
- o Who will read the study?
- o What is the reader's background and experience level?

Unless the team or analyst has a background in the system in which they are to write a feasibility study, they may have difficulty in answering the above questions. The team or analyst may have to do considerable reading of existing documentation to get themselves "on-board." They will find it necessary to talk with departmental and data processing personnel who are involved in the software and operational management of the present system.

Until it is clear to the team/analyst what is to be done, they should seek help through existing documentation, and consult with department and data processing personnel. The team/analyst must know what they are to accomplish in order to write a meaningful feasibility study. They should know the following:

- o What they are going to do,
- o What they want to do,
- o How they can do it,
- o The documentation or where to find the material that they need to do the study,
- o The reliability of the source,
- o How it is to be done,
- o The time period to complete the study,
- o The individual or group that they would like to review and critique the study,

- o When to find help in answering questions, and
- o The readers of the study.

If these things are understood by the team/analyst, they will have no difficulty in performing and documenting a meaningful feasibility study.

PREPARING THE FEASIBILITY STUDY

If the team has answered the above questions satisfactorily, they should not have a problem in preparing the feasibility study. The basic format of a feasibility study's results should include the facts and data related to the study, followed by recommendations for a solution to the problem (Remember: the feasibility study should address a particular problem of an EDP requirement.)

The feasibility study should be prepared in an easy reading format. The study should have a title page, giving the subject of the feasibility, the author, and date. There should be a table of contents containing major topic subjects and sub-topics, and a list of appendixes, if any. The title page and table of contents should be prepared after the body of the feasibility study has been typed in final draft copy.

The body of the feasibility study should contain the following major topics as a minimum:

1. Introduction Statement
2. Problem
3. Purpose of Study
4. Factors Bearing on the Problem
5. Discussion
6. Conclusion

1. Introduction Statement, should be the opening topic of the feasibility study and should identify the department or unit that required the feasibility study. Any correspondence that tasked your organization to conduct the study (request for help resource, etc.) and other correspondence relating to the subject should also be in the introduction statement.

2. **Problem**, the second topic of the study, should consist of one or two short paragraphs stating the problem in concrete terms, with no discussion. The problem which has been identified by management should briefly be reiterated. The problem statement reacquaints management with the problem.
3. **Purpose of the Study**, should be the third topic of the study. Here, the writer should restate briefly the purpose of the feasibility study. This should be a brief statement to clarify what the study is about. The writer should identify his solution of the problem in two or three sentences. The details should be saved and discussed under the major topic, Discussion.
4. **Factors Bearing on the Problem**, the fourth topic of the study, is the section that supports the writer's solution to the problem. It contains the pertinent **Facts, Assumptions and Standards** used to guide the writer in developing the feasibility study.

The writer's facts are most important. The writer should research available material on the subject and extract facts that will lend support to his solution to the problems. The writer should list those facts that can be proved, and other supporting evidence that is recognized as customs or practices commonly accepted. The analyst should do his own research. He should not rely on the "swivel chair experts." A writer who misinterprets the facts or lists something that is not factual is committing a serious error. The reader, after discovering an incorrect statement or unsupported evidence, will lose faith in the validity of the study, and the competency of the writer will be questioned.

The analyst should not be too eager to accept the printed facts. He should weigh the facts against his experience and observations. He should not let his mind become cluttered with other people's facts and logic. The analyst should take the time to research and think through the validity of his own logic. He should identify the source of his facts and supporting evidence.

Most people, simply by applying a few sound principles, could THINK more effectively than they do. Too many of us are awed by the experts, preferring to let them do our thinking for us. We fail to realize three fundamental principles about thinking, which, if recognized, will strengthen our confidence in our own ability to think:

1. Knowledge doesn't come from books - it comes from human observations and deductions. That's how it got in the books in the first place. The most important knowledge we possess comes from observing and thinking, not from reading books or listening to professors.
2. It's ALWAYS worthwhile to try to think for yourself. Study the available facts and apply your own imagination and logic. Sometimes you can find the right answer - or a perfectly good answer - despite lack of experience.
3. Be wary of the "expert." If what he says doesn't agree with what you have seen and deduced for yourself, make allowances for the fact that he may be wrong. Books and experts often are.

Assumptions - are the opinions of the writer. His opinions should be based on experience, research, and on observation. Assumptions may or may not be true. But for the purpose of the feasibility study, the assumptions must be accepted as the basis for the writer's reasoning, and they should be considered as true assumptions. The analyst should be careful not to use generalizations. He should present assumptions that are plausible. Too many generalizations in a feasibility study will invalidate the study and degrade the competence of the analyst.

Standards - or city policy, that are binding upon the writer and have a bearing upon the solution should be identified. Standards or policy guides that the study team used to test the validity of the study should be identified also.

These three sub-topics - "Facts," "Assumptions" and "Standards" - should be written in separate paragraphs in sufficient detail to identify the criteria used as the source for the writer's rationale in developing the feasibility study. In presenting facts, assumptions, and standards, the analyst should make sure of the following:

- o That the facts are true and can be proved,
- o That the facts are pertinent,
- o The facts are distinguished from assumptions,
- o That assumptions are logical rather than generalized in nature,
- o That the company standards were accurate and current,
- o That all standards and policy guides have a bearing on the subject, and
- o That the source and authority for the facts, supporting material, and standards are identified.

5. Discussion should be the fifth major topic of the study. Under this topic, the analyst presents his solution to the problem. He outlines his approach and elaborates on the solution that he feels will resolve the problem. He should weigh the solution that he proposes against the facts, standards, and policy guides which the writer should have identified under "Factors Bearing on the Problem."

If the analyst presents several solutions, he should identify the one that he feels most logically would resolve the problem. He should give reasons as to why he chose a particular solution. The writer should use analogies and show how he weighed one solution against the other.

In the majority of feasibility studies, the analyst will not be asked to consider several different solutions to a particular problem. He will be asked to provide only one solution - the best solution to a problem.

This topic Discussion will, no doubt, be the longest section of the study. It may be desirable to give some background information.

This may help to clarify and identify the problem. Although management may have previously identified the problem, due to the time that has elapsed since the feasibility study was assigned and during the period required to complete the study, management may not readily recall the details of the problem. Depending on the nature of the problem, several paragraphs may be required to give sufficient background information.

The Discussion topic should be written in a positive and straightforward manner. The writer should sound convincing. His facts should back him up. He should write as if he were an expert or an authority on the subject of which he writes. If the analyst has done adequate research, he will be able to do this. The analyst should not use hedge words, or verbose or pompous writing. The analyst should keep in mind the following:

- o Make the Discussion as brief as possible but not to the point that clarity is sacrificed.
- o Maintain a coherent and logical thought process throughout the writing.
- o Explain the rationale used by showing the reader how you reasoned the problem through.
- o Let the logic of your argument and facts, rather than your emotions or personal convictions, convince the reader.

If the suggestions contained in this report are followed, the analyst will be able to write a factual, convincing, and meaningful document. To know if he has followed good writing techniques, the analyst should ask himself the following questions:

- o Is the material well organized?
- o Does it follow an easy reading format?
- o Are the paragraphs short and confined to one topic?
- o Are there transition sentences or words from one paragraph to another?
- o Are the sentences concise, clear, and short?
- o Are the modifiers placed close to words they modify?

- o Is the study free of generalizations and prolix writing?
- o Are the sentences logically constructed?
- o Is the punctuation adequate?
- o Are the facts true?
- o Are the assumptions based on experience, research, and observations?
- o Are terms and abbreviations defined in a glossary?

6. Conclusion is the caption of the final topic. This topic would be the writer's summation. Here, the analyst would restate in concise language a workable and realistic solution to the problem, and should not present new facts or alternate solutions. The writer should simply restate the solution and arguments presented in the feasibility study, being careful to limit the conclusion to a few short paragraphs.

ILLUSTRATIONS AND APPENDIXES

The team should use supplemental material to support the feasibility study. If he feels that quotation and footnotes will not support his study, the writer should attach supporting evidence as appendixes and illustrations to the feasibility study. Illustrations such as tables, graphs and diagrams are helpful in clarifying a certain portion of the text, and should be placed close to the text that they support. The text should refer the reader to the illustration that supports the text; otherwise, the reader may not associate the illustration with the text.

If the feasibility study contains terms, abbreviations and acronyms, the analyst should prepare a glossary to define those terms used in the study. The glossary should be included as an appendix.

REVIEWING AND CRITIQUING THE FEASIBILITY STUDY

After the final revision (but before the final typing) of the feasibility study, the analyst should ask someone to review the study. The purpose for the review is to correct misleading or incorrect facts and to test

The soundness of opinions and assumptions and the logic of the concepts as presented in the study.

The document should be reviewed by another analyst or a person knowledgeable on the subject. The writer soon gets to know individuals who "nit-pick" a document and play on words. Such people overlook completely the purpose for the review. They suggest semantic changes that do not change the concept or meaning of a sentence or paragraph.

Corrections to obvious grammatical errors and constructive comments on an awkwardly worded sentence or paragraph are appreciated by the writer. The analyst should shun individuals who try to engage him in a dialogue about semantics. Self-appointed experts of the English language should be avoided also. The English language is not static - it is constantly changing. The language is for communicating ideas. If it does this, it has served its purpose.

DISPOSITION OF THE FEASIBILITY STUDY

After the final critique and production, the feasibility study should be appropriately bound for presentation. In most cases the study should include a transmittal letter, especially if the study is being presented to a particular department, the City Manager or Council.

The transmittal letter, which should be two or three paragraphs long, may serve as an abstract for the study. It should identify the subject of the study, who authorized it, and explain what the document is about. The explanation can be accomplished by briefly stating what is discussed in the study.

APPENDIX E

REQUEST FOR PROPOSAL GUIDELINES

REQUEST FOR PROPOSAL GUIDELINES

A critical task in the hardware and/or software selection process is the preparation of a Request for Proposal (RFP). The RFP performs several functions. First, it should help to define the data processing needs of the City by documenting the requirements. Second, it should communicate those needs uniformly to all vendors. Finally, it should serve as a guideline for evaluating the proposals that will be received from vendors.

The RFP should also serve as the guideline for evaluating proposals. It should be possible to evaluate proposals against a checklist prepared from the RFP. Proposals that are poorly structured, that fail to address significant information needs, or that do not comply with "ground rules" set forth in the RFP may be considered inadequate.

An RFP for a complete hardware and software selection should consist of five major sections:

I. Statement of Purpose/Proposal Guidelines

- A. Cover Letter
- B. General Information
- C. Proposal Guidelines

II. Current Applications Descriptions

III. Proposed Applications Descriptions

IV. Technical Requirements Narratives

V. Uniform Vendor Questionnaires

- A. Vendor Specifics
- B. Hardware Specifics
- C. Application Specifics

The steps, most notably those in the questionnaire, may change depending on the nature of the selection. In the case of a financial application,

the questionnaire would emphasize hardware/system software compatibility with the current IBM environment rather than evaluating a complete new hardware system. In the case of a complete hardware/software solution like SCADA, the complete hardware/software guidelines would be followed in the RFP (the "complete" solution is addressed here for reference purposes).

Based upon the experience of E&W selection engagements we have found that a major task is to identify the best two or three alternatives. After identification of these alternatives, the final screening process of demonstration, benchmarking, and negotiation (if necessary) are relatively straightforward in determining a "best possible" computer alternative. The primary activity, then, is to isolate those two or three candidates from the field of participants. Resolution of how well each vendor has met the requirements presented in the RFP is accomplished by a simultaneous review of the proposal and important control points.

Initial evaluation of each proposed system requires that the City consider and appraise each system on Control Points. Those Control Points should deal with software, hardware, and related vendor capabilities. There are 26 Control Points which we believe must be evaluated, which are:

- Central Processor Performance
- Peripheral Performance
- Remote Device Performance
- Environmental Requirements
- Hardware Expandability
- Hardware Reliability
- Interactive Nature
- Operational Ease
- Vendor Support
- Types of Cost Commitments
- Application Software Suitability
(Processing & Reporting per application)
- Applications Modularity
- Vendor Reputation
- Vendor Experience
- Operating System
- Programming Languages
- Product Compatibility
- Vendor Acquisition Techniques
- System Availability
- Direct Costs
- Indirect Costs
- Applications Documentation
- Applications Controls
- Applications Conversion
- Utility Software
- Support Software

Depending on the purpose of the RFP, certain control points will not apply and should not be considered (e.g., an RFP for application software would not necessarily address all hardware control points).

HARDWARE EVALUATION

Significant dissimilarity in computer hardware (outside of cost) is rare. Therefore, it is the task of the City to find any significant dissimilarities which may impact the relative effectiveness of the computer hardware to support applications requirements. It is the responsibility of the vendor to match the appropriate hardware for the required applications software systems. It is the responsibility of the City to ensure that the vendor has performed that task adequately.

The process of evaluating hardware performance relative to Control Points places a great deal of reliance upon the City's technical familiarity with computers. In addition, the City may have to probe the hardware specifications of the proposal and outside reference sources to fully augment and verify the evaluation of hardware and component performance.

Central Processor

For most applications, the central processing unit specified by the vendor will be adequate, as the CPU typically spends a large percentage of its time waiting for data retrieved from secondary storage. As the number of users of the system goes up, however, central processing unit capabilities become more critical.

As most small systems are targeted for operation by user personnel and not data center operations personnel, the interactive nature of the system becomes an important factor. To support operating software of an interactive nature, the system should be interrupt-driven and have a real time clock. Other factors to consider are:

- o Proposed memory capacity determining the limits of potential storage;
- o Type of memory as an indicator of the state of technology used;
- o Maximum data movement rate as an indication of the speed of the machine;

- o Power failure detection serving to protect circuitry power fluctuations as they occur; and
- o Number of addressable channels providing an insight into the expandability and flexibility of the equipment.

Peripherals

Storage capacities and access times of disks, speed of magnetic tape devices, and print rate of printers specified will help to determine whether the hardware configuration is physically capable of handling applications, exclusive of software overhead considerations. An outline of current offerings in the peripherals area follows below.

Disk Drives

Most random access mass storage is currently provided by disk drives. Some types and general characteristics are:

- o Fixed disk drives (conventional or Winchester technology):
 - Fixed head, capacity 256 K bytes to 8 M bytes, and
 - Moving head, capacity 5 M bytes and up; and
- o Removable media disk drives (utilizing disk packs, data modules, and cartridges):
 - Hard surface disk, capacity 2 M bytes to 200 M bytes, and
 - Floppy disk, capacity 150 K bytes to 2 M bytes.

Magnetic Tape Units

Magnetic tape units are used to store large amounts of sequential data, such as archival volumes, audit journals, or images of disk packs. Three main types are presently available:

- Cassette tape (lowest capacity),
- Data cartridge tape, and
- Reel-to-reel tape (highest capacity).

Printers

There is a wide selection of computer printers for production of hard-copy output:

- Character printers (up to 200 characters per second),
- Dot matrix,
- Thermal (requires treated paper),
- "Daisy wheel" (high quality printing),
- Print ball (high quality printing),
- Line printers (up to 1800 lines per minute),
- Chain train,
- Band,
- Drum, and
- Electrostatic (requires treated paper).

The following criteria should be considered during the selection of peripherals:

- o Transfer rate serves as a limiting factor on the speed of the total system;
- o Capacity in consideration of expected growth factors;
- o Price, both in term of direct and indirect costs (such as media and maintenance);
- o Single vendor availability to avoid considerable difficulties with multi-vendor relationships; and
- o Mean time before failure as peripherals typically are the highest maintenance cost item in a system.

Remote Devices

Remote devices, such as teleprinters, video displays, and associated communications support equipment, serve as the human interface to the system. As these devices are the only part of the system with which many users will have direct contact, an effort should be made to select terminals which take into consideration human factors such as legibility

of displayed characters, the "feel" of the keyboard, transmission rate, etc., within the constraints established by the City.

While terminals have standard electrical interfaces, the transmission modes, edit and display capabilities, and costs can vary widely. Factors to consider are:

- o Maximum number of terminals supported by a single controller to anticipate needs for expansion and backup;
- o Local screen printers provide the option to produce local hard copy of video displays;
- o Vendor installed cabling to eliminate a hidden cost item and provide a guarantee of suitability; and
- o Number of remote devices proposed is an indication of the understanding by the vendor of the City's requirements.

Environmental Requirements

The trend in small business systems is toward operation in a normal office environment. Review of equipment environmental requirements should consider:

- o Maximum power consumption directly impacts the monthly operating costs of the system;
- o Electrical requirements in that special wiring can be an unanticipated cost item;
- o Temperature tolerances indicate the possible need for air conditioning facilities; and
- o Requirement for raised flooring which adds considerably to site preparation costs.

Expandability

Practically all automated systems expand in one way or another. If growth is not in the number and complexity of functions, then it is in file sizes, transaction volumes, and number of user terminals. The

following are hardware expansion considerations to be evaluated in support of this growth:

- o Maximum memory available serves as a limit to expansion;
- o Compatible product line allows for upgrades to larger processors on attractive terms from the vendor;
- o Maximum number of remote devices on a currently installed system serve as a check on vendor claims for terminal capacity; and
- o Networking capabilities would allow for the connection of a multiple systems and preserve the option of expansion.

Reliability

The number and length of failures of the hardware configuration can have substantial impact on a system's operations. Users tend to base their conceptions about the quality of the system on its continued availability. The following are gauges by which system failure and repair rates can be measured:

- o Mean time before failure and mean time to repair statistics serve as an indication of potential maintenance costs.
- o Built-in error diagnosis equipment adds to system cost but reduces ongoing maintenance fees.
- o Scheduled preventative maintenance makes a significant contribution to system reliability.
- o Redundant devices increase costs but reduce the risks associated with equipment failure.
- o Remote diagnostic capability helps to pinpoint the system failure so that the engineer can arrive on the site with the proper repair parts.

Costs

The average purchase price of small systems hardware is steadily declining for most components. The central processing unit is among the least expensive portions of the system, with peripherals generally being

the most costly system components. Review of cost considerations should examine:

- o Hidden cost items such as installation, maintenance, warranty, documentation, and training;
- o Vendor paid shipping costs which can substantially reduce start up costs;
- o Warranty terms which should include all parts, labor, and traveling time; and
- o Type and cost of maintenance agreement, which should be clearly defined.

SOFTWARE EVALUATION

The City should concentrate the greatest amount of effort in determining which vendor most closely meets the needs of each application and system software feature. The weakest link in the history of modern computing has been the availability of acceptable applications and systems software. It therefore becomes a necessity to review the related software-related questionnaire responses in great detail along with supporting documentation from the corresponding vendor proposal.

Programming Language

The City should consider the following criteria when reviewing vendor responses regarding programming languages:

- o Language availability should stress the most popular languages (BASIC, FORTRAN, and COBOL).
- o Standardization of language should comply with the American National Standards Institute's (ANSI) standards.
- o Languages should be implemented in a compiler version to reduce system overhead during processing.
- o Compilation speed is a good measure of the speed of the machine.

System Utilities

This section presents some of the types and characteristics of common system utilities. Among these, the capabilities of the file maintenance and disk backup utilities are typically the most important in normal data processing environments. The following system utilities may prove useful to the City:

- o File maintenance programs should be available to copy, add, delete, and extend data base files.
- o System backup programs to transfer to disk or tape should be available as a safety measure, in addition to the ability to restore the system from one of these media.
- o Sorting utilities must have speed to avoid monopolizing system resources.
- o System message utilities allow communications between terminals on the system.

Operating System

Most computer systems today are interactive, utilizing real time, on-line operating software, and supporting multiple users. The City should consider the following criteria when reviewing vendor responses regarding the operating system:

- o Real time operating system provides interactive capabilities.
- o Memory control techniques can have a significant effect on the throughput and flexibility of the system.
- o Multi-user, multi-tasking capability is essential when there will be more than one terminal being used at a time.
- o System performance displays show the state of the system for tuning and fault detection.
- o Memory requirement for the operating system itself must be considered in evaluating the adequacy of a system.
- o Maturity of the operating system is a matter of compromise between state-of-the-art software, which may be unproven in relationship to reliable, yet antiquated systems.

- o Batch environment involves the ability to run batch and on-line applications concurrently.

System Support Software

System support software ranges in sophistication from simple print spoolers to complete transaction processing environments. The evolution of support software is directed towards the development of report and screen formats by personnel without data processing backgrounds, reducing the involvement and associated costs of programmers. The following system support software may prove useful to the City:

- o Print spoolers are important as they allow terminal operations to continue while reports are being printed.
- o Job accounting enables recording of system use.
- o Password security is important to protect sensitive data.
- o Database management systems facilitate the generation of special reporting on a query basis.
- o Report writers allow custom formatting of existing data and the composition of new reports.

Product Compatibility

It is important that the City considers the extent to which systems vendors adopt a philosophy of consistency across their software product line, as it not only maintains a growth potential for their customers but also reduces costs of system software development, conversion difficulties, and internal and external training. The City should consider the following criteria regarding the vendor's product compatibility:

- o Standard languages can save considerable time, effort, and costs during configuration upgrades.
- o Compatible operating systems across the product line indicate the vendor's commitment to the operating system.
- o Consistent system utilities eliminate the need for new procedures or training during system upgrades.

- o Release dependency is important in that care should be taken to prevent the current release software being outmoded.
- o Uniform file structure throughout the product line assists in the system upgrading.

Interactive Nature

With computer operation's responsibility directed to the user area, factors dealing with the system's on-line procedures, transaction recovery, and response time are becoming increasingly important. We believe the City should consider the following:

- o Ability to specify screen formats should be independent of the programs to increase their flexibility.
- o Transaction logging and recovery assures that all transactions initiated will be followed to completion independent of equipment interruptions.
- o Multiple application access enhances the productivity and backup capabilities of the system.
- o Ability to assign priorities to remote devices ensures that those devices supporting the most critical or time-dependent functions will be given the highest priority.

Operational Ease

Computer system operational procedures are continuing to be reduced in complexity, with the system itself automating functions such as start-up, recovery, and fault diagnostics. Important factors to consider are:

- o Ability to transfer among applications at a terminal (especially important in carrying out successive stages of common functions);
- o Automatic restart after system failures (improves system availability and improves integrity of data);
- o Time required for backup (this daily operation can reduce the on-line time of the system).

Applications Documentation

The objectives of applications documentation should be to: 1) provide an understanding of application inputs, processing, outputs, and interrelationships on both a summary and detail level so as to serve both training and maintenance concerns; 2) clearly specify normal user and operator procedures; and 3) serve as a reference to aid in recognizing and resolving error conditions. The following documentation should be provided by the vendor and be of high quality:

- o Technical documentation serves as a hedge against the discontinuation of the vendor's support;
- o User documentation leads to increased understanding and auditability of the system;
- o Documentation update services should be provided by the vendor;
- o Error messages should be defined as to an explanation of its cause and suggested action for correction;
- o Source Listings should be available and annotated by narrative for each processing step;
- o Record layouts should include the name of the file and names, descriptions, and lengths of fields; and
- o Recovery procedures should be collected in one place and easily understandable.

Applications Control

The loss of segregation of function introduced by modern systems installed and operated in end-user departments mandate strong controls, as does their interactive nature. As changes to the data base take place on a real-time transactional basis, stringent input and authorization limitations and processing histories are a necessity for auditability. Proper controls include:

- o Validation of input should take place before file update;
- o Flagging of errors should explain the cause of the error with suggested corrective action;

- o Password security should be used for system access, application access, and, in some cases, this security should be extended to the file level;
- o Authorization levels should be established for segregation of duties on a functional level; and
- o Hash and batch totals should be fostered to assure the integrity of batch data.

Applications Conversion

An often neglected aspect of the system evaluation process is the amount and type of vendor-supplied conversion support. Conversion of manual or automated data bases is generally a major undertaking and rapidly increases in complexity, time, and resource requirements with the size and number of interrelated files. The following criteria should be considered:

- o Vendor-assisted conversions are desirable where the data base is converted on the vendor's equipment.
- o Conversion software is used to facilitate the records being converted to another format or language.
- o Vendor-supplied conversion plan should state the extent of conversion assistance, cost for these services, and reliability checks to assure data integrity.

Costs

The cost of application software packages can often be 50 percent or more of the price of the hardware on which it runs. Subsequent modifications to a software package are particularly expensive because the cost is dependent on the custom programming effort invested for a single client, not on the original program development spread over several installations.

For the vast majority of computer system vendors, system software is offered as an integral part of the system configuration. Though this software is closely coupled with the equipment, the costs of different

system software elements are often quoted separately. This is especially true in the case of system support programs, such as sorting and telecommunications packages, which are marketed as separate proprietary products. Comparable cost figures should include:

- o Application cost should include base license, desired enhancements, installation and delivery, training, and future enhancements;
- o Source listings (often worth paying extra for to lessen the dependency on small under-capitalized vendors);
- o Right to modify should be defined as many vendors will not be responsible if the software is modified;
- o Cost of system software maintenance and updates is such that vendors may or may not charge separately for these services;
- o Software non-performance should require a refund on the part of the vendor; and
- o Reference manuals may often be an added cost feature.

VENDOR EVALUATION

The structure of a vendor questionnaire contained in the RFP should contain a separate treatment of vendor qualifications, apart from hardware and software. The general success of most computer systems with regard to accomplishing objectives of installation requirements can be directly attributable to vendor capabilities of:

- Support,
- Reputation,
- Experience,
- Acquisition Methods, and
- Availability.

These five items are the corresponding Control Points which must be appraised for each vendor. In many cases, two vendors (hardware and software) will participate in proposing on one system. In those instances each vendor must be evaluated separately. The City must be comfortable in receiving "yes" answers to the following questions prior to recommending vendor choices:

- o Can the vendor provide enough overall support in personnel, training, and other technical capabilities to ensure the success of systems implementation and maintenance?
- o Can the vendor demonstrate that its financial condition and local reputation is sufficient and acceptable to assure a continued ability to support the system?
- o Can the vendor demonstrate and account for enough experience in the computer industry and this municipal government application to satisfy the City?
- o Does the contractual agreement protect the City and force vendor commitment to the system?
- o Is hardware, software, and support readily available and verifiable and is the time frame for implementation reasonable and organized?

Dealing with two or more vendors on a proposed computer system significantly increases the difficulty in obtaining "yes" responses to all of the above questions. However, a great deal of confidence in the vendor(s) is required in order to proceed further in the evaluation/selection process.

All verification of references should be performed by the City prior to attending vendor demonstrations. Each vendor should be required to supply at least two or three references. References for each of the finalist vendors must be verified and a summary of the results of the reference checks should be developed. The reference contact should understand the purpose of the verification function and the importance of their comments.

The reference contact should be asked to evaluate each of the following areas ranging from excellent to poor:

- Maintenance Service (Responsiveness/Effectiveness),
- Ease of Operation,
- Ease of Installation (Conversion),

- Technical Support,
- Hardware Reliability,
- Software Suitability,
- Vendor Commitment to the Site,
- System Growth Capability,
- Management Satisfaction, and
- Overall Satisfaction.

In addition, soliciting any commentary with regard to the vendor's strengths or weaknesses in any area is extremely useful.

Support

Most major systems manufacturers maintain a national service network. However, the quality and timeliness of service is generally a local attribute, as the City has discovered with the present vendor.

Turnkey vendors with OEM arrangements typically rely on the maintenance staff of the equipment manufacturer for system hardware and software support, retaining the responsibility for applications software systems. As this strategy is being recommended, the following vendor support criteria should be considered:

- o Local service centers affect the promptness of maintenance as well as being an indication of the vendor's commitment to the local market.
- o Local support in terms of engineers and the size of the client base they serve may provide an indication of equipment reliability and vendor commitment.
- o Software support should be the responsibility of the primary vendor to eliminate third parties.
- o Vendor user groups can be a significant source of information about the vendor.

Reputation

Vendor reputation is best ascertained through references in the local area who are using the proposed system. The following reputation factors should be ascertained:

- o Industry experience in number of years protects against the high turnover in small systems firms;
- o Financial information can help to establish vendor growth and financial standing;
- o Subsidiaries of non-computer corporations have a high tendency to be disbanded or sold to other firms; and
- o User ratings by trade publications or associations provide additional references.

Experience

Typically, the prime indicators of vendor experience are: 1) the number of systems installed in the municipal government industry of the same type proposed; 2) the resumes of the vendor personnel involved in installation and ongoing contacts; and 3) vendor references. Factors to consider are:

- o The number of systems installed provides assurances that the vendor understands the industry as well as the proposed solution.
- o The amount of customization required is a possible indication that the vendor has insufficient industry experience to recognize its common problems.
- o Similar configurations of other customers identify the limitations, ease of installation, effectiveness of vendor personnel, and hidden cost factors.

APPENDIX F

VENDOR AGREEMENT GUIDELINES

VENDOR AGREEMENT GUIDELINES

The process of establishing a reasonable vendor agreement between the City and the vendor(s) providing the hardware and software services must be considered a separate and distinct (but related) function of the evaluation and selection process discussed previously. The purpose of these suggestions is to provide insight and understanding into vendor contracts and their implications for the City.

To achieve the objectives desired of the negotiation process, it is important to remember that:

- o The RFP (EDP plan) is used as a guide when discussing upgrade provisions, termination rights and costs, and transference of obligations due to acquisition of or by another company.
- o Arrangements should be avoided which are too convoluted or which may be too difficult to monitor and control.
- o Specific language should be used; that is, do not rely on implication or phrases (such as industry terminology) to convey intent.
- o An understanding of the financial implications of the various options (lease vs. rent vs. purchase) should be developed in consultation with City financial personnel as the negotiation proceeds.

The vendor negotiation process also consists of several non-contract related discussions. General agreement and commitment should be received from the vendor with regard to pre-installation decisions. These decisions consist of issues such as:

- o Site Planning -- a formalized location survey and definition of external requirements (power, cabling, lighting, heat, air, etc.);
- o Training Schedules -- verification of City training dates, availability, advance preparation, and formal enrollment;

- o Documentation Procurement -- ordering and receiving advance copies of the correct revision levels of required documentation;
- o Vendor Representation -- designation, by vendor, of hardware, software, and media liaison personnel (along with chain of command) for City inquire handling;
- o Media Support Orders -- finding sources for the correct media (forms, paper, I/O device media, etc.) which meets hardware and software tolerances; and
- o Support Hardware Procurement -- ordering (where necessary) component furniture to provide media storage, seating, and cabinetry for system hardware.

City representatives must also be made aware of system procurement issues with regard to tax, insurance, capital expenditure implications, and terms of sale. The City should also initiate contact/membership in applicable local and national vendor user groups. Finally the vendor should include the City on appropriate software distribution lists/updates.

The City assumes significant liability in entering a vendor agreement where those items specific to data processing performance and expectation are not represented properly. It is essential that a vendor contract clearly spell out timetables, performance levels, and standard comparisons which may be adequately measured during the system life cycle.

The following items provide a basis for features which may need to be properly defined, quantified, or represented in an EDP contract. Provisions similar to those presented here may or may not be found in one or more type of EDP contracts. Not all vendors may be willing to negotiate such items, and guidance of a qualified legal counsel is necessary to examine the appropriate level and use of the following provisions.

- o Attachment of Hardware Configuration and Price List
- o Price Protection - Current Prices
- o Procedure for Changes
- o Rights to Enhancements
- o Inclusion of all Expenses
- o Price Protection - Software Enhancements
- o Hardware Maintenance Contract
- o Installation Responsibility
- o Transportation Costs
- o Delivery - Hardware
- o Municipal Site Access
- o License to Use Supplier Software
- o Acceptance Tests - Hardware
- o Performance Acceptance
- o Patent and Copyright Indemnity
- o User Confidentiality
- o Bankruptcy of Vendor
- o User Right to Modify Software
- o Standards to be Used
- o User Access to all Source Codes
- o Supplied Specification
- o Trade-In Credits
- o Rights to Use Software in Other Locations
- o Disaster Recovery
- o Attachment of Proposal or Request for Proposal
- o Performance and Operating Characteristics
- o Price
- o Payment Terms
- o Exclusion of Specified Taxes
- o Price Protection - Future Hardware
- o Software Maintenance
- o Warranty of New Equipment
- o Installation Costs
- o Delivery - Software
- o Installation Timing
- o License to Use Vendor Software
- o Acceptance Tests - Software
- o Reliability Acceptance
- o Title Transfer
- o Vendor Confidentiality
- o Termination Rights
- o Contents of Documentation
- o Errors and Corrections
- o Constraints on Vendor Use of User Resources
- o Data Conversion Assistance
- o Training Supplied by Vendor
- o Inclusion of Hardware and Software Manuals
- o Response Time for Hardware and Software Maintenance

APPENDIX G

DEPARTMENT MANAGEMENT SURVEY (SAMPLE)

CITY OF LODI

Department Management Survey

Department: _____
Primary Contact: _____
Position: _____
Address: _____
Phone Number (Ext.): _____

Background Data

1. What is the function of the department (services provided, population sector served, etc.)?

2. What are the major tasks performed by the department?

3. How many people are currently involved in the department and what is the role that they play (job classification, etc.)? Give general job function classification and total people filling the function.

4. What are the specific long range goals and objectives for your area of responsibility?

5. What new services will be provided or what changes in current services will take place to meet your goals and objectives?

Departmental Information Processing

1. What major functions within your area are currently on a computer (including word processing equipment).

2. What systems do you work with? Briefly describe each system, your purpose in using the system and any problems inherent in that system.

3. What documents and/or information do you receive (get copies, if possible), and where does the information come from?

4. What are the documents used for?

5. Where does the information go after processing in your department?

6. Can you indicate how many documents, transactions, or how much information you receive each day?

8. How does the department benefit from the use of a computer for these functions?

9. Could the use of the computer be improved? If so, specify what improvements you believe would be helpful.

10. What other major functions require significant manual or clerical effort?

11. From which of the above functions do you believe the department could recognize benefits through the use of the computer?

12. What problems have you encountered which have made your job more difficult or took an inordinate amount of time?

13. What additional information do you need to aid you in your work?

Interdepartmental Information

1. With which other departments in the City of Lodi organization do you interact, and what is the nature of the interaction?

2. Could your interaction with these other departments be improved through the use of a computer? If so, how could the computer be used?

3. Are there any other ways you feel other departments would benefit from the use of a computer?

4. What is your understanding of the City's long range goals and objectives?

5. In light of these goals and objectives, what strategy do you feel the City should take in future automation plans?

APPENDIX H

DATA BASE CONSIDERATIONS

DATA BASE CONSIDERATIONS

In adopting any strategy the City is concerned about what effect development efforts will have upon the accuracy and integrity of the City's data base. With more and more data processing resources being distributed out to the individual departments questions arise as to what effect the distributed activity will have on the overall City data flow. Distributed efforts which are not considered in light of the City's overall strategy and plan can have a detrimental effect on the City. For instance, development projects could be scrapped after significant investment because the project equipment may not interface with other City equipment. Similarly, distributed data bases could accidentally replicate existing data at other locations, leading to potential for inaccurate or misleading data appearing in management reports.

For these and other reasons, the City should begin a practice of reviewing all data processing related requests, possibly by the Steering Committee, to determine the effect on the City's data. This would also allow the City to meld the projects into the long range plans. The purpose of the review is not necessarily to "approve" or "disapprove" the need behind the request, but rather to assure that adequate consideration from a City-wide standpoint has been included in preparing the request.

Each new project will have to be considered on its own merits and implications. In many cases a department may be able to develop "micro-based" applications on their own more efficiently and timely than a centralized data processing department could. And many of these applications may have no effect on the existing City data base. In many cases, however, such applications will affect existing data. And in such cases, whether the application implemented on distributed microcomputers or on a central computer, the high-level review must be performed.

APPENDIX I

SUGGESTED MICROCOMPUTER GUIDELINES

PROPOSED MICROCOMPUTER GUIDELINES

As recommended in the proposed architecture section of this report, the City view microcomputers as a versatile tool which can help departments function more efficiently and effectively. By providing such powerful capabilities at such a low price tag, it is certain that microcomputers will spread in use throughout all departments, whether the City funds them or not - witness the use of non-City equipment in two departments already.

Since microcomputers do represent significant expenditures for a department and since they impact on the overall information management of the City, we recommend that Lodi adopt a standard policy for microcomputer purchases. This policy should be viewed as a method to make it easier for departments to acquire microcomputers. They should not be viewed and enforced as ways of keeping microcomputers out of the City - as mentioned earlier, micro and personal computers will be used in the City and a dictatorial policy will only serve to break down the cooperative environment that is necessary for successfully managing information and MIS expenditures. We recommend the policy contain the following elements:

- o Departmental requests for microcomputers should be made in the same way as new applications. A request with detailed specifications and justification is submitted to the Steering Committee who review it for city-wide impact. In addition, the Committee should make concrete recommendations as to how or when to acquire the needed resources. The Committee might even suggest to the departments some additional features that they might be interested in. While the Committee should not necessarily approve or disapprove department plans, they should document in detail their concerns and negotiate a feasible and accepted solution with the department.
- o We recommend that the Committee specifically comment on "hidden costs" related to microcomputer purchases while reviewing microcomputer requests. While the microcomputer route can add timely support to department operations and take a development load off of data

processing, they are not a "free lunch." Along with increased use of microcomputers in departments come increased responsibilities in:

- system operation;
- system development and maintenance; and
- duplicated databases.

Each of these responsibilities cost money and eventually each department may develop its own data processing "section", eliminating many of the advantages of microcomputers. So this issue needs to be addressed in the review process.

- o We recommend that as software standards develop (see standards recommended below), the City develop employee "experts" who can assist the Steering Committee in reviewing application requests. Very often a standard software system which the City already owns could be used to supplement systems rather than purchasing completely new software.
- o We recommend that the City adopt standards for microcomputer acquisitions. These standards should be flexible and allow for integration with the central IBM computer. Standards help to eliminate many problems being experienced by organizations who acquire microcomputer resources in a haphazard manner. One such problem is incompatibility between machines, which leads to inability to share data, and programs, inability to benefit from single vendor support and volume acquisition discounts, and inability to cross-train City personnel.

The standards adopted by the City should be followed in all cases, however, exceptions will occur when a particular application requires non-standard equipment (such as mapping). In these cases, the particular application needs should overrule the standards. It is up to the department to justify to the Committee that a reasonable search for an application that meets the standards has been performed. Suggested standards include:

1. Equipment

We suggest IBM-PC compatible computers be the standard microcomputer hardware that the City adopts. These systems are appropriate for several reasons, including:

- These systems represent the "industry standard" that is currently being adopted in the microcomputer market. As a result, the opportunity for vendor support, future expansion, and packaged software is much greater on these machines than on any other type of microcomputer. In addition, the large user base helps to assure that users are not abandoned by the vendor once the systems have been purchased.

- These systems by and large have features that will allow them to communicate with the central IBM System/36 computer. As such, data can be shared between the systems rather than being duplicated on each. In addition, the microcomputers can also be used as on-line terminals to the central computer. This will allow departments needing on-line access to the central computer files to acquire a microcomputer instead of a terminal at a comparable price.

Several types of microcomputers fall under these guidelines, including at the present time:

IBM

Personal Computer

Personal Computer XT

Columbia Data Systems, Inc.

MPL (Multi-Personal Computer)

VP Portable*

Corona Data Systems

Corona PC*

Compaq Computer Corp.

Compaq*

Eagle Computer, Inc.
Eagle 1600 computer
Spirit XL*
Dynalogic Info-Tech Corp.
Hyperion*
Seequa Computer Corp.
Chameleon*
Tara Corporation
Tara PC

By far the most popular computers are those made by IBM. They tend to cost more than the IBM compatibles, but cost is more than off-set by IBM support. (Note: The starred * computers are portables. This means they can easily be picked up and carried home to work at night or on weekends. In addition, they can be carried between City locations.)

In addition to the computer, other "equipment" should be standardized, (although it is not as critical as with CPU's.) Other equipment that would be required with CPU's include:

- Printers: It is generally best to buy these from the same vendor who the microcomputer and software is purchased from. Given a choice, very good products are made by the following companies:

Epson America, Inc.
Okidata
NEC
Qume

There are many different types of printers (e.g., dot matrix, letter quality, etc.) and the type selected should depend on its perceived application.

- Plotters: Again, it is generally best to purchase from a single vendor. Industry concurrence is that Hewlett-Packard produces the best plotters.

- **Communication Devices:** These items are really dependent on the communication software which is used (see standard software below). Hayes Microcomputer Products markets the Hayes Smart Modem II, which is generally recommended with IBM PC-type computers.

Again, it should be stressed that while the above equipment is suggested as standard, purchases of equipment should really be based on required software. In other words, software that will do the required job should be identified first. Then, if the software can be run on standardized equipment, that equipment should be purchased. If not, the non-standard equipment should be purchased.

2. System Software

Usually system software comes packaged with the microcomputer itself, so no decision is usually required as to which software to purchase. The standard operating software in the industry is MS-DOS, made by Microsoft, Inc.

What communication software to purchase depends a great deal on what it is to be used for. For hook-up with the central IBM computer, IBM representative should be contacted. For communication with outside service bureaus, the particular service bureau should be contacted to give advice.

3. Standard Application Software

While applications all tend to differ between departments, several "general" products, such as electronic spreadsheets or personal data management, can and should be standardized within the City. Different types of generalized applications and suggested software for IBM PC-type systems include:

Electronic Spreadsheet

- Microsoft Corp. - Multiplan
- Lotus Development Corp. - 1-2-3

Data Management

Ashton-Tate - dBase II
Lotus Development Corp. - 1-2-3

Text Processing

Micropro International - Wordstar
Lifetree Software - Volkswriter

APPENDIX J

IBM SYSTEM UPGRADE

IBM SYSTEM UPGRADE

The attached schedules show the possible paths the City has to choose from in upgrading their central computing resources. As noted in the strategy, both are based on the existing line of IBM products being used by the City. One option is to add memory and storage to the existing IBM System/34. The second option is to convert the System/36 and sell the System/34. As noted in the body of our report, we recommend the second option. A cost justification of such action is documented here.

CITY OF LODI
Configurations

	<u>Purchase</u>	<u>Maintenance</u>
Current System/34		
5340-E34 (128K, 64MB)	---	\$229.50
5211-002 (300 LPM Printer)	---	
Upgrade System/34		
5340-E34 to 5340-F37 (256K, 256MB)	\$40,360.00	169.00*
Communications	<u>3,587.00</u>	<u>27.00*</u>
	\$43,947.00	\$425.50
Less 30%	<u>13,184.00</u>	
TOTAL	\$30,763.00	\$425.50
System/36		
5360-B23 (256K, 200MB)	\$44,600.00	\$165.00
Additional 256K	2,500.00	9.00
Workstation Expansion	2,000.00	3.50
Communications	<u>8,122.00</u>	<u>13.50</u>
	\$57,222.00	\$191.00
Less 30%	<u>17,167.00</u>	
	\$40,055.00	\$191.00
5225-002 (400 LPM Printer)	\$13,945.00	\$142.00
Less 15%	<u>2,092.00</u>	
	\$11,853.00	\$142.00
Software		
System Support Program	\$ 4,700.00	
RPG II	800.00	
Utilities	600.00	
Migration Aid	<u>250.00</u>	
	\$ 6,350.00	
TOTAL	\$58,258.00	\$333.00

*Additional

CITY OF LODI
Cost Justification

	<u>S/34</u>		<u>S/36</u>	
	Purchase	Maintenance	Purchase	Maintenance
S/34 Upgrade	\$30,763	\$425.50	\$	\$
Sales Tax	1,846			
S/36 Purchase including software			58,258	333.00
S/34 Resale (per Bud Kruse)			(16,845)	
S/36 Maint Warranty			(999)	
	<u>\$32,609</u>	<u>\$425.50</u>	<u>\$40,414</u>	<u>\$333.00</u>
2nd Shift Operator**	\$24,000/year			
3 Year Maint Difference	<u>3,052</u>			
First Year Costs	\$59,661		\$40,414	

** Includes fringe benefits. It is anticipated that staying with a System/34 would sooner or later force the City to operate two shifts to accomodate the expanded application processing.

System/34 versus System/36 Intangibles

1. S/36 throughput 50% greater than S/34 (see 2nd shift operator costs).
2. S/36 growth to 400MB versus 256 for S/34.
3. S/36 will support 30 local devices (CRTs and printers), the S/34 16 devices. (NOTE: Experience has shown that System/34 response time starts degrading exponentially at about 6-8 terminals.)
4. S/36 has alternate indexing, a "pseudo database" for multiple access paths to a record; the S/34 does not. This allows multiple individuals within the City to access common data, which is currently a problem being experienced with the System/34.
5. S/36 designed to operate in environment with broader voltage fluctuations than S/34, reducing number of problems that occur during brown-outs.
6. S/36 has ability to produce graphics - charts and graphs for printing or overheads.
7. S/34 to S/36 migration aid converts almost 100% of S/34 source code - i.e., conversion time is minimal.