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M E M O R A N D U M

DATE: May 11, 1999

TO: Metropolitan King County Councilmembers

FROM: Don Eklund, County Auditor

SUBJECT: Management Audit of the Information Technology Planning, Development and Implementation Processes

Attached for your review is the management audit report of Information Technology Planning, Development, and Implementation Processes. The audit objectives were to determine the adequacy of the process used to select which information technology projects within the county should be funded; the adequacy of the process used to plan, develop and implement information technology projects within the county; the adequacy of cost estimates and the causes of discrepancies between the estimated and actual costs; and the Information Resource Council's (IRC) role in information technology project approval and oversight.

The general audit conclusions are that King County is not using a strategic plan to select which information technology projects to fund; projects are approved without a clear understanding of their costs, benefits, or risks; and project managers are not accountable for meeting project performance goals. Additionally, a standard, comprehensive methodology is not used to conduct cost-benefit analyses of projects, including the establishment of contingency funds. The audit also concluded that the IRC is operating in place of the Data Processing Policy Review Committee (DPPRC) although the DPPRC was established by ordinance and still legally exists; and the IRC structure is not fully effective in providing the level of project review needed to ensure that informed decisions are made regarding information technology projects.

The executive response to the audit is included as Appendix 2. The executive response addressed several audit recommendations with a single response rather than responding to each recommendation individually. Because the responses were sometimes related to multiple findings, we have incorporated the auditor's comments into the executive's response rather than into the audit text.

The executive response acknowledges that the audit objectives were to evaluate the adequacy of the processes used to plan, develop, and implement information technology projects in the county; however, it attempts to downplay the seriousness of the shortcomings identified in that process by audit staff. The response suggests that the problems identified by audit staff are really nothing more

than a lack of documentation, without recognizing that the problems identified in the audit go far beyond that or that documentation is a primary method of providing accountability to taxpayers. Furthermore, the response implies an intent to proceed with business as usual, rather than to look objectively at the need to improve the process. The response states that several of the recommendations will be brought to the IRC for consideration but fails to directly address which ones will be implemented or when they will be implemented. While the response includes a "Plan and Timetable for Implementing Audit Recommendations," it lists only five actions to be taken although the audit contains over twenty recommendations. Moreover, not all of the actions listed relate directly to recommendations contained in the audit.

The executive response included two attachments, the IRC Charter and the Information and Technology Investment Business Case, that have not been included in this report. These attachments are available through the Auditor's Office and may be obtained by calling (206) 296-1655.

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MANAGEMENT AUDIT

INFORMATION TECHNOLOGY PLANNING, DEVELOPMENT, AND IMPLEMENTATION PROCESSES

Presented to
the Metropolitan King County Council
by the
County Auditor's Office

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Report No. 99-01

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Abbreviations

BAC	Business Area Committee
DPPRC	Data Processing Policy Review Committee
IRC	Information Resource Council
ITS	Information and Telecommunications Services
LAN	Local Area Network
LSJ	Law, Safety and Justice
O&M	Operating and Maintenance
TSC	Technology Subcommittee
WAN	Wide Area Network

REPORT SUMMARY

Introduction

The management audit of the information technology planning, development, and implementation processes was requested by the Metropolitan King County Council and included in the 1998 Auditor's Office work program. The audit was prompted by council concerns regarding the adequacy of the processes used to plan, develop, and implement information technology projects throughout the county.

Audit Objectives

The audit objectives were to determine:

- the adequacy of the process used to select which information technology projects within the county should be funded;
- the adequacy of the process used to plan, develop and implement information technology projects within the county;
- the adequacy of cost estimates and the causes of discrepancies between the estimated and actual costs; and
- the Information Resource Council's (IRC) role in information technology project approval and oversight.

General Conclusions

The general conclusions are that:

- King County is not using a strategic plan to select which information technology projects to fund;
- projects are approved without a clear understanding of their costs, benefits, or risks;
- project managers are not accountable for meeting project performance goals;
- a standard, comprehensive methodology is not used to conduct cost-benefit analyses of projects, including the establishment of contingency funds;
- the IRC is operating in place of the Data Processing Policy Review Committee (DPPRC) although the DPPRC was established by ordinance and still legally exists; and

- the IRC structure is not fully effective in providing the level of project review needed to ensure that informed decisions are made regarding information technology projects.

MAJOR FINDINGS AND RECOMMENDATIONS

FINDING 2-1 (Page 4)

Although King County has an information technology strategic plan, the plan has not been updated and was not followed when selecting projects.

The county's first information technology strategic plan, published in January 1996, stated that it could be considered accurate for only 12 to 18 months. However, responsibility for updating the plan was not established; consequently, it has not been updated. Thus, there was no comprehensive direction to drive which projects were approved, and some high priority projects in the plan were never funded while other projects not in the plan were funded. The lack of a current plan means that projects are evaluated mostly on their individual merit and not necessarily as part of the county's broader technology needs, or that projects may be evaluated based solely on short-term criteria, such as cost, rather than on how they meet the county's long-term strategic needs. Without a current strategic plan and a clear process for project approval, projects will continue to receive funding on an ad hoc basis.

The audit recommended that the executive establish responsibility for developing and updating the information technology strategic plan, and that the responsible entity create a new strategic plan and develop a policy regarding how to consider projects not in the strategic plan.

FINDING 3-1 (Page 11) **King County has not used a standard, repeatable process to plan, select, and monitor technology projects; projects were implemented without a clear understanding of their costs, benefits, or risks; project managers were not accountable for meeting performance goals; and a history of projects has not been developed for use in future projects.**

The county's procedures did not meet industry guidelines for a standard, repeatable process that would maximize the benefits of technology investments while minimizing the risks. None of the project plans contained all the elements of a complete business case, and the elements included often lacked substance and clarity. Despite these shortcomings, as well as errors and inconsistencies in project planning documents, the projects were approved and funded.

The results of not having a complete business case to aid in screening, monitoring, and reviewing technology projects were:

- project approvals were not based on a clear understanding of costs, benefits, or risks;
- the likelihood of scope creep was high due to the lack of clearly defined project requirements and deliverables;
- project managers were not held accountable for adherence to performance, cost, and schedule goals; and
- lessons learned in post implementation reviews were not used to refine the planning and management process.

The audit recommended that the executive define and clarify the components of the business case that must be submitted for project funding; establish a consistent process for screening, monitoring, and post implementation review; and build and

maintain a history of projects to aid in future planning.

FINDING 4-1 (Page 26) **King County does not use a standard, comprehensive methodology to conduct cost-benefit analyses for information technology projects.**

King County does not have a clear and thorough process for estimating the capital or operating and maintenance (O&M) costs of its information technology projects. Based on industry standards of what a cost-benefit analysis should include, the county's analyses contained numerous deficiencies, including the lack of supporting documentation, detailed cost-benefit estimates, O&M cost estimates, and cost estimate updates during project implementation. Other deficiencies included inconsistencies in how estimates were developed, the inability to track changes in estimated costs, and the exclusion of relevant costs.

Criteria established by industry professionals recognize that a project's final results should be evaluated against the project plan to provide accountability for the planning process and credibility for future project plans. However, deficiencies in the county's cost-benefit analyses indicated poor project planning, gave little or no assurance that projects would be implemented or maintained within their established budgets, and increased the potential to need additional funds to complete projects.

The audit recommended that the executive, in coordination with the Budget Office, develop or adopt a cost model to assist county agencies in developing their cost-benefit analyses for information technology projects, and that the executive develop policies and procedures that require:

- detailed documentation to support cost-benefit analyses;

- the business case to include an O&M cost payment plan;
- tracking of cost and benefit changes among documents;
- independent validation of cost and benefit estimates and documentation of reasons for deviations from those amounts;
- project managers to manage costs by cost category and report to the executive when a category exceeds its budget by more than 10%, based on the percentage of completion;
- accountability for project results based on the approved business case; and
- lessons learned to be fed back into the planning methodology to improve the reliability of future cost-benefit analyses.

FINDING 4-2 (Page 40) **King County lacks a policy regarding the use of contingency funds for information technology projects.**

The lack of a policy regarding how to establish a contingency amount for information technology projects resulted in significant differences in the amount of contingency funds allocated to projects. Although industry standards recommend linking the contingency to risk factors specific to a project, this was not done and the contingency factors used appeared to be purely arbitrary. Additionally, once contingency funds were included in a project's adopted budget, project managers used them to compensate for poor project planning rather than treating them as reserve funds to be used for unknown or uncertain conditions.

The audit recommended that the executive develop policies for

determining a contingency factor appropriate to the information technology project being considered and requiring contingency funds to be managed separately from the project account.

FINDING 5-1 (Page 46)

The IRC operates in place of the Data Processing Policy Review Committee (DPPRC), although the DPPRC is mandated by the King County Code. Consequently, there is no legal authority for the IRC, its current membership, or its responsibilities.

The DPPRC was established by ordinance in 1991 and still legally exists, but the IRC has been operating in its place since 1996 without legal authority to do so. Because the DPPRC was established by ordinance, it must be abolished by ordinance. In addition, the membership of the IRC differs from that of the DPPRC, and some functions of the DPPRC have become outdated and been omitted from the IRC charter.

The audit recommended that the executive draft and present to the Metropolitan King County Council an ordinance to abolish the DPPRC and establish the IRC.

FINDING 5-2 (Page 48)

The IRC and its subcommittees have not been fully effective in providing project review, primarily because the IRC structure is not conducive to unbiased decision-making or critical review and analysis.

The IRC was established, in part, to ensure that decisions regarding information technology project investments are made in the best interests of the county as a whole. However, projects submitted have not undergone in-depth review or

analysis in either the IRC or its subcommittees. Although all projects were supposed to go through a review process, there were no criteria regarding which projects had to go through the IRC or for the level of detail required. This meant that projects could be approved and implemented without IRC review. One primary reason for the lack of detailed review was that the responsibilities of IRC members were secondary to their primary responsibilities as department directors. Thus, other demands on their time limited their ability to devote the time necessary to make informed decisions regarding information technology projects.

The audit recommended that the council choose to either:

A. retain the IRC with its current structure and responsibilities, or
B. retain a modified form of the IRC and establish a permanent group of project review staff to provide technical assistance during project planning and implementation.

If option A is chosen, the deputy county executive and ITS Division manager should modify the IRC and subcommittee charters to ensure adequate review and oversight of information technology projects. If option B is chosen, the deputy county executive and ITS Division manager should determine which DPPRC activities will be provided by the IRC and which will be provided by the project review staff.

AUDITOR'S MANDATE

The management audit of King County's Information Technology Planning, Development and Implementation Processes was performed by the County Auditor's Office pursuant to Section 250 of the King County Home Rule Charter and Chapter 2.20 of the King County Code. The audit was performed in accordance with generally accepted government auditing standards, with the exception of the external quality control review requirement.

1 INTRODUCTION

Background

The management audit of the information technology planning, development, and implementation processes was requested by the Metropolitan King County Council and included in the 1998 Auditor's Office work program. The audit was prompted by council concerns regarding the adequacy of the processes used to plan, develop, and implement information technology projects throughout the county.

Audit Objectives

The audit objectives were to determine:

- the adequacy of the process used to select which information technology projects within the county should be funded;
- the adequacy of the process used to plan, develop and implement information technology projects within the county;
- the adequacy of cost estimates and the causes of discrepancies between the estimated and actual costs; and
- the Information Resource Council's (IRC) role in information technology project approval and oversight.

Audit Scope

The audit reviewed the procedures used to plan and implement information technology projects. Projects selected for review consisted of one large information technology project that was managed by Information and Telecommunications Services (ITS), four projects managed by departments, and one project that was still in the development/implementation stage. The respective projects reviewed were the county's wide area network (WAN), the Public Defense local area network (LAN) system upgrade and regional network projects, the Sheriff's Office mobile computing development and mobile computing

projects, and the financial systems replacement project. The audit also reviewed procedures used by the IRC to prioritize, approve, and oversee implementation of information technology projects, as well as the overall effectiveness of the IRC.

Audit Methodology

Audit methodology included a review of available documentation regarding the planning, development, and implementation of information technology projects; budget and accounting data regarding the capital costs of projects; and documentation pertaining to the IRC's role in approving information technology projects to be implemented within the county. Audit staff researched literature regarding the selection of information technology projects, project planning and monitoring, and developing project cost estimates. (A list of sources is in the bibliography at the end of the report.) Audit staff also met with management from The Boeing Company to discuss their process for selecting, implementing, and monitoring information technology projects. Additionally, audit staff observed several IRC and business area committee meetings and interviewed numerous staff who have been involved in the development of information technology projects throughout the county.

Although audit staff reviewed several information technology projects, similar information was not available for all of the projects. In those instances where information requested for specific projects was not received, audit staff assumed that such information did not exist. For example, audit staff reached some of its conclusions regarding the proposed costs for the financial systems replacement project based on limited information because project staff did not fully respond to several questions regarding the project's costs. Similarly, cost information for the Public Defense LAN system upgrade and regional network projects was unavailable to audit staff due to computer problems

that caused the project budget files to be unretrievable.

2 PROJECT SELECTION

Introduction

This chapter examines the county's techniques for developing an information technology strategic plan, selecting projects, and incorporating projects into an investment portfolio.

Information Technology Investment Portfolio Should Be Based on Strategic Plan

Organizations with successful information technology management practices develop information technology investment portfolios that contain an assortment of projects selected to best achieve the organization's needs and objectives. These portfolios are based on the organization's strategic plan, which includes a mission statement, goals, objectives, and strategies to achieve the goals and objectives. Prior to establishing an investment portfolio, an organization should analyze existing information technology and systems and develop an accurate inventory that will provide the basis for a systems development and replacement strategy. The analysis can provide valuable information regarding the costs, benefits, and risks of current systems so managers can determine whether existing resources should be used before making new investments in information technology.

Systematic Process Needed to Select Projects

Effective information technology investment management requires a systematic process for selecting the projects to be included in the portfolio. All potential projects are carefully evaluated to prioritize and select those that will achieve the most critical business needs, manage risk, and maximize the return on investment. Project selection decisions should be made

using uniform decision criteria, accurate and validated information, and an overall mission focus. The selection process involves several steps, including screening projects; scoring and ranking projects based on benefit, cost, and risk criteria; selecting a portfolio; and establishing a project review schedule. Once the portfolio is established, it should be updated annually and older versions kept for comparison.

FINDING 2-1

ALTHOUGH KING COUNTY HAS AN INFORMATION TECHNOLOGY STRATEGIC PLAN, THE PLAN HAS NOT BEEN UPDATED AND WAS NOT FOLLOWED WHEN SELECTING PROJECTS. CONSEQUENTLY, THE COUNTY LACKS A WELL-PLANNED, CLEAR, AND COHESIVE PROCESS FOR SELECTING INFORMATION TECHNOLOGY PROJECTS.

The County Lacks a Current Information Technology Strategic Plan

The county does not have a current information technology strategic plan. A consultant completed the county's first plan in January 1996. This plan defined major technology strategies and initiatives for the following five years. It also stated that the IRC should review and update the plan annually because it could be considered accurate for only 12 to 18 months. A draft ordinance to establish the IRC also stated that the IRC was to annually approve and issue the county's information technology strategic plan. However, this ordinance was never presented to the council for approval (see related discussion in Finding 5-1), and the strategic plan has never been updated.

Some Projects in the Strategic Plan Were Funded; Other Projects Not in Plan Were Also Funded

The strategic plan identified 76 technology projects that were prioritized into five categories, and the Core Project Management Committee[1] recommended that the projects with a priority rating of 1 through 3 be funded. The total estimated cost of the priority 1 through 3 projects for 1995 and 1996 was $32 million, and the 1995 technology bond provided $30 million (94%) of the funds needed. Although many of the priority 1 through 3 projects were funded and implemented or are still being implemented, not all of them received funding, and other projects that were not in the strategic plan were funded. Additional technology bonds were issued to fund projects that were included in the plan for implementation in later years, as well as to fund other projects that were not included in the plan.

No Overall, Comprehensive Direction to Drive Which Projects Are Approved

The result of not updating the technology strategic plan is that there is no overall, comprehensive direction that drives which projects receive approval. Technology use in the county is not managed as a total investment portfolio and there is not a consistent funding strategy for technology projects. Instead, projects are now evaluated mostly on their individual merit and not necessarily as part of the county's broader technology needs. Moreover, projects may be evaluated based solely on short-term criteria, such as cost, rather than on how they meet the county's long-term strategic needs. Without an information technology strategic plan, some projects may get funded over others that would have been assigned a higher priority had they been evaluated as part of a county-wide plan.

[1] The Core Project Management Committee was a work group formed by the county executive to provide technology planning guidance. The committee was abolished after the IRC was established.

Strategic Plan Needs Regular Updating

The fact that some projects were never funded, while others not in the strategic plan were, emphasizes the need to update the plan on a regular basis. It is obvious that the plan is no longer serving the county's needs. Without a current strategic plan and a clear process for project approval, projects will continue to receive funding on an ad hoc basis. Although ITS staff have indicated that a new information technology strategic plan will be developed during 1999, there is still no process for ensuring that such a plan is actually used as the basis for approving projects or that it will be updated on a regular basis to meet changing needs. Additionally, because the ordinance to establish the IRC was never adopted, it is not clear who has responsibility for revising the strategic plan.

RECOMMENDATIONS

2-1-1 The executive should establish responsibility for developing and updating the information technology strategic plan.

2-1-2 After responsibility for the strategic plan is established, the responsible person/group should create a new strategic plan that is based on the county's current needs and establish procedures to ensure that the plan is updated at least annually.

2-1-3 The executive should develop a policy regarding how projects not in the strategic plan should be considered, if at all. The policy should include criteria that must be met to allow approval of any project not in the strategic plan, and should emphasize that such approvals will be made only in emergency situations.

3 PROJECT PLANNING AND MONITORING PROCESS

Introduction

This chapter discusses guidelines for an effective information technology investment process and evaluates the county's process against those guidelines. The objective of the technology project management process is to maximize the benefits of technology investments while minimizing the risks. Good investment management requires a well-defined, consistent, and repeatable process for planning, screening, monitoring, and reviewing projects.

Planning Process Relates Project to Agency Mission

The planning process establishes clear project requirements and performance measures that relate directly to the agency's mission, and identifies project costs, benefits, and risks before a significant amount of money is spent.

The Business Case

The business case is the foundation for the entire information technology management process. It is the basis for making an informed decision on whether to implement a project because it relates the project to the organization's business needs and analyzes project costs, benefits, and risks. It states the goals that are necessary for monitoring the project and establishing accountability once implementation has begun. Finally, the business case contains performance measures that are used in the post implementation review to evaluate the project's success. A business case includes the following components:

- **Linkage to Program Mission**

  The business case defines the problem(s) that the project will address, shows how it relates to the agency's mission, and describes the agency goals and objectives that the project

will meet. A strong linkage to program mission is especially important for information technology projects where the major benefits cannot be quantified.

- **Project Requirements and Objectives**

  A clear statement of project requirements and objectives defines the project and what it will accomplish. Objectives are further broken out into smaller, manageable project deliverables with time frames for achieving each. This is essential to determine the project's completion, prevent scope creep, and cull out enhancements that would be better included in an add-on phase. The business case also contains performance measures to evaluate the project's success after completion.

- **Cost-Benefit Analysis**

  A cost-benefit analysis identifies and quantifies, where possible, the project's costs (direct, indirect, and ongoing) and benefits (e.g., cost savings, productivity gains, improvements in quality), using as a baseline the costs and benefits of existing processes. It identifies assumptions used to develop these figures and discusses alternatives. (See Finding 4-1 for a detailed discussion of the cost-benefit analysis.)

- **Sensitivity Analysis and Risk Assessment**

  A sensitivity analysis and risk assessment are necessary to manage project risks. The sensitivity analysis models how project results would react to changes in the assumptions used in the cost-benefit analysis. It simplifies the risk assessment by identifying the factors that have little impact on results and so can be dropped from the assessment. The risk assessment then focuses on mitigation strategies for the risks that have a strong impact on project results. A risk assessment should be required to justify any contingency

funds for a project. (See related discussion of contingency funds in Finding 4-2.)

Executive Support

A key executive with a vested interest in the project's success should be involved in the planning process and throughout the life of the project. Involvement includes understanding the project's costs, benefits, and risks. The executive provides leadership, establishes clear expectations for the project, and clears obstacles. Executive support also demonstrates to employees the importance of the project.

User Involvement

In much of the research, user involvement was considered the most critical factor for achieving project success. Since the reason to implement a project is that someone needs a new system, working with users from the beginning helps ensure that the final result meets their needs. Users should be involved throughout the life of the project, from helping to define project requirements and performance measures to finally evaluating project success. If users had unrealistic expectations or did not easily learn the new system, the project probably lacked sufficient user involvement.

Screening Ensures That Every Project Is Driven by Business Needs

The purpose of the screening process is to select the projects that best support the organization's mission and ensure that the decision to implement every project is driven by compelling and well-documented business needs. Projects are reviewed against established, weighted criteria to develop and prioritize a portfolio of projects to be funded. Many organizations recommend a two-tiered screening process to prevent spending significant time and resources on project proposals that do not meet minimum acceptance criteria. The initial screening reviews proposals based on a preliminary business case that includes

the linkage to program mission, project requirements, and basic cost estimates. If the proposal passes the initial screening, a fully developed business case is required for the next level of review.

All information technology projects should be screened, regardless of the funding source. The screening process should outline how projects will be screened for relevance to business goals and identify the requirements that must be met to be considered for funding. The process should also stipulate if and when exceptions are allowed, define additional conditions (e.g., risk mitigation plans) that must then be met, and specify who is responsible for validating the accuracy of the information submitted with the funding proposal. If a project is allowed to proceed when review of the business case raises serious questions, the reason for that decision should be documented.

Monitoring Holds Projects Accountable for Adherence to the Business Case

The monitoring process establishes accountability for projects during implementation. Projects are regularly reviewed for adherence to the goals established in the business case, focusing primarily on ensuring that projects are meeting performance goals and that risks are being managed. The project's progress against program deliverables and timeframes in the business case is also monitored for red flags that may signal the project is in trouble. The business case is kept updated so that all changes are documented and can be tracked. Based on the review, the project may be continued, modified, or canceled.

While establishing accountability, a rational monitoring process must also allow for mistakes. Otherwise, no one is willing to be the one to admit that a project is not meeting its goals and should be canceled or modified.

Post Implementation Review Refines the Technology Management Process

A consistent process for reviewing projects after implementation reinforces accountability for the technology management process. Actual versus expected results are evaluated to assess each project's success and assemble a track record of technology projects. Success is defined as meeting performance goals, including user satisfaction and the project's impact on mission performance, as well as cost and schedule goals. Furthermore, the post implementation review builds credibility for future projects by using the lessons learned to refine the methodology used in the business case and so increase its accuracy. This information facilitates future planning by building a history of project costs, risks, etc.

FINDING 3-1

KING COUNTY HAS NOT USED A STANDARD, REPEATABLE PROCESS TO PLAN, SELECT, AND MONITOR TECHNOLOGY PROJECTS. AS A RESULT, THE DECISION TO IMPLEMENT PROJECTS HAS BEEN MADE WITHOUT A CLEAR UNDERSTANDING OF THEIR COSTS, BENEFITS, OR RISKS; PROJECT MANAGERS HAVE NOT BEEN HELD ACCOUNTABLE FOR MEETING PERFORMANCE GOALS; AND A HISTORY OF SUCCESSES AND PROBLEMS HAS NOT BEEN DEVELOPED FOR USE IN FUTURE PROJECTS.

Audit staff evaluated six county technology projects against the guidelines discussed above and concluded that, in general, they did not meet the guidelines for a consistent, repeatable process for planning, selecting, or review. Instead, the process was what the Carnegie Mellon Institute termed "ad hoc and sometimes chaotic." The success of county projects has therefore depended on individual efforts and heroics instead of being the predictable outcome of a consistent management

process.

The major consequences of not establishing and following a consistent repeatable process through the phases of the investment management process included:

- The decisions to implement projects were not based on a clear understanding of the projects' costs, benefits, or risks.
- Projects selected were not necessarily those that best supported organizational missions or the county's mission.
- The likelihood of scope creep was high due to the lack of clearly defined project requirements and deliverables to determine project completion.
- Project managers were not held accountable for adherence to performance goals.
- Finally, there was no effort to build credibility for future projects because lessons learned were not used to refine the technology management process.

Inadequate Business Cases Indicated Poor Planning

Not one of the business cases that audit staff reviewed contained all of the elements of a business case, indicating poor project planning. When they did include a business case element, such as a linkage to mission needs or a cost benefit analysis, the elements generally lacked substance and clarity. In addition, no single document contained all of the information that should be in a business case. Moreover, there was no continuity between documents and no attempt to explain the differences between documents. Audit staff had to piece together the information from numerous documents, in some cases making assumptions about the connection between documents, rather than having all of these elements explicitly stated in one document. For example, project deliverables would differ between documents without reconciling or explaining the differences. This made it difficult to enforce

accountability for a project, since it would be almost impossible to say exactly what the project was supposed to be. Examples are given below.

- The **linkage to the program mission** was not explicitly stated. For example, the WAN design team study outlined some business requirements from an undisclosed source and briefly described how the WAN could meet those requirements. There was only one paragraph to cover the entire topic of how the WAN would facilitate intersite and interdepartmental communications in King County, and the discussion included vague business goals such as "react to change faster" without any explanation. Audit staff do not doubt that the WAN was effective in promoting the county's mission, but the business case gave little indication of that. Additionally, the payroll/human resources project was linked to business objectives only through a very general statement which indicated that the new system should ". . . support and respond to an organization with an ever changing human resource environment."

- **Performance measures**, when stated, generally were vague and could not be used to evaluate project success or even completion. As an example, one success measure for the payroll/human resource project was that users would be "generating useful, timely information from the new system." The core financials project, on the other hand, did identify usable performance measures, e.g., "Legacy systems turned off when all agencies are on Core Financials." With a little more effort other success measures of the project could be developed into useable performance measures; for example, by defining terms such as "qualified super users" in the measure "Number of 'qualified' super users has increased by 25% within one year after implementation."

- None of the business cases contained a viable **cost-benefit analysis**, although several had a document with that title. None of the cost estimates was supported with detailed documentation, assumptions were not identified (including current capabilities as a baseline), there was no sensitivity analysis, and alternatives were not considered. (See Finding 4-1 for a detailed discussion of cost-benefit analyses.)
- **Risk assessments**, when available, consisted of generic project management risks rather than project-specific ones. Thus, they did not actually identify the significant project risks and were so broad as to be meaningless. Significantly, a risk assessment was never done for the WAN, despite the size and cost of the project and its reliance on new technology. In the financial systems replacement project, the risk assessment sections did not recognize that risks should result from unique aspects of each project component. Consequently, the risks identified for the overall project were almost identical to the risks identified for the payroll/human resources component; and the risk assessment for the core financials component was actually a list of actions to take to prevent problems but none of the actions was correlated to a specific risk. Audit staff noted that the risk assessment form included in the county's Information Systems Toolkit listed the risk factors to be evaluated, thus encouraging generic risk assessments.

Executive Support Varied Widely

Executive support varied widely among projects. The financial systems replacement project has strong executive sponsorship. On the other hand, the executive sponsors of the WAN were not involved in the planning process and disbanded shortly after implementation began, epitomizing what the GartnerGroup

described as “sponsors who come up with the idea, get buy-in, and disappear.” The executive sponsors of the development of the mobile computing project supported the project but did not have a full understanding of the project’s scope.

User Involvement Was Generally Strong

User involvement was the strongest component of the information technology process and most projects relied on user involvement during planning and implementation. The sole exception was the WAN. While user input would not have been useful for technical aspects of the WAN, it would have helped the project team understand the divergent needs and concerns of county agencies. For example, the project team was not aware until implementation had begun that some criminal justice agencies did not want to be connected to the WAN for security reasons. In addition, implementation of e-mail was delayed when the project team found multiple network protocols and operating systems in county agencies. User input would have identified these issues before implementation.

The core financials component of the financial systems replacement project is an excellent example of a high level of user involvement. The project requirements were developed using a team of representatives from county agencies with the most complex needs. The team’s effort culminated in a detailed requirements document that was coordinated with and signed off by all financial managers in the county. Although the results of this effort cannot yet be determined because the project has not yet been implemented, it has a high probability of functional success due to the high level of user involvement in the planning phase of the project.

Screening Process

As discussed above, the business cases that audit staff

Ignored Red Flags That Indicated Poor Planning

reviewed all lacked one or more necessary elements, based on industry standards of what constitutes a complete business case. Even with an incomplete business case, which should have warned reviewers of poor planning, the projects still received approval, indicating an inadequate screening process. Audit staff did not see any plans returned for reworking in order to be considered for funding.

For example, numerous red flags indicated problems with the data in the WAN project documents. These red flags included several cost increases over the life of the project, wide variations in the contingency amounts used in the various cost estimates, lack of clarity regarding the number of projected users, and inconsistencies among documents regarding the number of sites to be connected. Additionally, if anyone had scrutinized the cost estimates, they would have found that the numbers in major documents did not add up to the totals provided and that there were inconsistencies among the numbers within documents. Given these problems and inconsistencies, it does not appear that anyone critically reviewed the business case or attempted to validate the data. Also, no documentation addressed the reason for the decision to proceed with the WAN despite the numerous cost increases.

Project Monitoring Did Not Enforce Accountability

As discussed above, none of the projects reviewed had complete business cases with useful performance measures. Consequently, it was impossible for project managers to evaluate projects against performance goals and enforce project accountability. For example, the WAN project suffered from scope creep, which could have been avoided by developing and adhering to clear project requirements and performance measures. The number of sites connected by the WAN increased by 51%, from 93 to over 140, without any

documented change in the project scope.

Projects were monitored solely against cost and schedule goals. However, because the business cases were not updated as projects were implemented, changes could not be tracked and performance was measured only against the most recently established goals. Thus, performance measures such as the cost and schedule goals were moving targets. For example, the WAN was originally funded for $5.8 million and its original completion date was September 1996. When it received additional funding (see Exhibit A and related discussion in Finding 4-1) and the completion date was moved to December 1996, subsequent presentations on the project gave the new funding and new completion date. Thus, the project would always be on time and within budget.

Monitoring of Project Costs Was to the Bottom Line

Audit staff found that all monitoring of project costs was done to the bottom line, that is, to the total project budget, rather than to smaller project deliverables. This is risky, especially for larger projects, because cost overruns at the subproject level, which could serve as red flags, might remain undetected until it is too late to correct. In addition, monitoring costs only at the macro level makes it difficult to determine where cost variances occurred, does not encourage economy in a project, and increases the possibility of scope creep if changes will fit within the overall budget.

One example of managing a project to the bottom line is the financial systems replacement project. This project contains several subprojects, such as the core financials and payroll/human resources, each with a distinct budget. Although the costs for each subproject are being tracked within the

respective subproject, the total budget is being managed to the bottom line. Since the subprojects are scheduled for completion at varying times, this could result in either insufficient funds or a need to scale back the scope of the subprojects that are completed at later dates.

Audit staff also found that there was no process for canceling projects once they had been funded and implementation had begun, or for making modifications to a project based on project monitoring. Modifications to projects were generally the result of scope creep rather than planned modifications based on regular monitoring.

Post Implementation Reviews Were Not Used to Improve the County's Information Technology Process

While all the completed projects that audit staff reviewed went through a post implementation review, the reviews were not useful for improving the county's information technology management process. This was for three main reasons:

- Many of the post implementation reviews focused on problems specific to the project rather than problems in the project management process. Consequently, the lessons learned were too project-specific to be applicable to future projects. Examples of project-specific lessons include: "The development of Small Platform Application [was] complex and challenging" and "Discrepancies between King County and Metro HR systems greater than anticipated." Additionally, the post implementation reviews did not tie into project risk assessments because the risk assessments were usually too general to be useful and the post implementation reviews were too specific.
- When lessons learned dealt with general project management issues that could be useful, they were not fed back into the process to help agencies learn from others' mistakes. For example, scope creep turned up as a frequent theme in the post implementation reviews of different

projects. However, it did not appear that any measures were taken to improve the process and limit scope creep by requiring clearer project requirements and performance measures.

- Finally, the post implementation reviews did not evaluate project success because, as discussed above, the business cases did not contain useable performance measures against which to determine project success. Post implementation reviews, therefore, were not used to build a history of project successes for use in future projects.

Conclusion

The county has established templates to use in developing a business case and thus has many of the tools for an effective information technology investment process. However, these tools have not been used to the extent necessary to make the business case a useful document for making funding decisions, monitoring projects, or evaluating project success. This is because the documents submitted for project approval follow the form of the templates but lack substance. Furthermore, the screening process has not acted as a check to ensure that the business case is substantive and based on verified data. The failure to require an accurate and complete business case has resulted in an information technology process that lacks accountability and has allowed projects to continue after major problems have surfaced.

RECOMMENDATIONS

3-1-1 The executive should define and clarify the components of the business case that must be submitted in order for information technology projects to be considered for project funding, including:

- defining the roles and responsibilities of executive sponsors;

- clarifying the content of the business case by providing a clear statement of what each component of the business case and supporting documentation should include; and
- establishing a process and format for updating the business case so that all changes are documented and can be tracked.

3-1-2 The executive should establish policies and procedures to strengthen the process for screening information technology projects, including:

- setting minimum acceptance criteria or thresholds that a project must meet in order to be considered for funding;
- ensuring that all project proposals contain a complete and accurate business case when they are submitted for funding approval and that supporting documentation is available at that time;
- specifying if and when exceptions to the business case requirements are allowed; and
- requiring documentation of the reasons for the decision to approve a project when serious questions are raised during the screening process.

3-1-3 The executive should develop a process for regular, objective, and thorough review during implementation to ensure project accountability. The process should include establishing responsibility for:

- evaluating the project against performance, cost, and schedule goals in the business case;
- determining if the project is managing risks;
- identifying and monitoring potential problem areas so that problems can be resolved before they escalate; and
- deciding if the project should be continued, modified, or

canceled.

3-1-4 The executive should establish policies and procedures for the post implementation review to ensure that the review:

- focuses on project management issues in developing lessons learned;
- is tied into project risks and the risk assessment; and
- evaluates project success in meeting project goals, including performance, cost, and schedule goals.

3-1-5 The executive should establish a process to build and maintain a history of information technology projects. The history file should include all aspects of the business case, including evaluations of project successes and problems, and use that history, in combination with lessons learned in the post implementation review, to refine the processes for project planning, screening, implementing and monitoring.

Also see related recommendations in Chapters 4 and 5.

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4 PROJECT COST AND BENEFIT ESTIMATES

Introduction

Cost and Benefit Estimates Complete the Business Case

A business case for an information technology project is not complete unless it includes estimates of the relevant costs and benefits associated with the project, including those that will occur after implementation as part of ongoing operation and maintenance (O&M). Poor estimating in the project planning phase is considered a primary source of project failures. In fact, 45% of the 1,450 respondents to a survey conducted by KPMG Peat Marwick stated that the lack of quantified costs and benefits for information technology projects was one of the most common reasons for project failure. The study defined failures due to budget overruns as projects in which the cost exceeded the budget by 30% or more and stated that budget overruns were likely to be more serious (i.e., at least 50% over the original cost estimates) in organizations with more than 5,000 employees. Additionally, a study conducted by The Standish Group found that 53% of all information technology projects were failures due to budget overruns averaging 189%.

A Cost-Benefit Analysis Is a Critical Part of the Business Case

A cost-benefit analysis assists the project team in identifying all relevant costs (e.g., hardware, software, salaries, training) and benefits (e.g., cost savings, cost avoidances, productivity gains) expected as a result of implementing a project and helps with managing costs and benefits during implementation. Establishing a standard methodology or model for the cost-benefit analysis allows the analysis to be conducted consistently

from project to project, and without bias. Using a standard methodology or model enables the project estimator to identify all relevant costs and benefits, prevent double-counting, and know that certain items must be included while others should not be. An automated model also allows cost or benefit items to be linked so that updates to one item will immediately update other affected items.

Summary Data Sufficient for Decision Making, But Supporting Documentation is Critical

It is not necessary for the details of the cost-benefit analysis to be included in the business case because summary information is usually sufficient for decision-making purposes. However, because the analysis must be reasonably accurate to prevent cost overruns, it is critical that it be supported by documentation that fully details the anticipated project costs and how those costs were developed. Such documentation also ensures that adequate information is available should decision makers need it to answer questions prior to approving a project.

Key Components of the Cost-Benefit Analysis

Information technology professionals have identified several components that must be included in the detailed analysis to increase the accuracy of project estimates. These include:

- identifying the author/developer to increase the credibility of the analysis;
- the source and date of all data used;
- a clear statement of the business, financial, functional and operational objectives used as the basis for the analysis;
- the financial metrics against which the project results will be measured (e.g., net or discounted cash flows, internal rate of return, payback period, return on investment);

- assumptions used in developing the analysis (e.g., average salaries vs. specific salaries, purchase vs. lease);
- scope and boundaries of the project, such as period of time the analysis covers, geographic location of the project, and organizations or functions affected;
- specific costs, by line item;
- specific benefits, by line item and quantified wherever possible or presented in tangible terms if not quantifiable;
- sensitivity analysis that examines how changes in assumptions or input factors, risks, and contingencies will affect the estimated project costs and benefits; and
- alternatives to the proposed project.

It is important that the cost-benefit analysis be conducted by a qualified, experienced resource to increase reliability and to reduce the risk of budget overruns. While it may not be economical to conduct an in-depth cost-benefit analysis for small, low-risk projects, it should be recognized that all projects require at least some degree of analysis. The complexity of the project, based on criteria such as cost or risk, should drive the depth of analysis required.

Moreover, it is important to recognize that the main benefits of an information technology project may not be quantifiable. In fact, a process that emphasizes quantifiable over nonquantifiable benefits may encourage planners to manufacture dubious benefits. As one researcher wrote, asking for a tie-in between computer spending and cost savings is “an invitation to prepare figmental projections. The value of an oil furnace is not in reducing fictional medical bills, but. . . delivering reliable heat.”

King County's Dependence on Information Technology Systems is Growing

King County's dependence on information technology systems to carry out its work has grown significantly over the last fifteen years. During this timeframe, the county has spent millions of dollars to implement major information technology projects, including the county-wide WAN and e-mail systems, the permits system in the Department of Development and Environmental Services, local area network enhancements in Public Defense, and the mobile computing project in the Sheriff's Office, among others. With an estimated cost of $38.3 million, the financial systems replacement project is one of the county's most expensive and complex projects. This growing dependence on information technology makes it even more critical that King County employ a recognized method of conducting cost-benefit analyses prior to approving its information technology projects.

FINDING 4-1

KING COUNTY DOES NOT USE A STANDARD, COMPREHENSIVE METHODOLOGY TO CONDUCT COST-BENEFIT ANALYSES FOR INFORMATION TECHNOLOGY PROJECTS. CONSEQUENTLY, THE ANALYSES PROVIDE LITTLE OR NO ASSURANCE THAT PROJECTS WILL BE IMPLEMENTED OR OPERATED AND MAINTAINED WITHIN THEIR ESTABLISHED BUDGETS.

No Clear, Complete Process for Estimating Capital and O&M Costs of Projects

Despite years of experience in developing and implementing information technology projects, King County does not have a clear and thorough process for estimating the capital or O&M costs of these projects. The county's Information Systems Toolkit includes a template for a cost-benefit analysis that county agencies have used as a model for estimating project costs and benefits. Although the template does not require documentation detailing how the estimated costs and benefits

were determined, knowledgeable analysts developing a cost-benefit analysis would realize the need to maintain a record of source data to support their results. However, audit staff found that cost estimates generally followed the prescribed format but lacked supporting documentation and the substance needed to provide assurance that the projects could actually be implemented for the estimated cost or that the anticipated benefits would be achieved.

Cost Estimates Contained Numerous Common Deficiencies

There were numerous common deficiencies among the cost estimates used as a basis for funding the information technology projects reviewed by audit staff. These deficiencies included:

- lack of supporting documentation;
- inconsistencies in how the estimates were developed;
- inability to track changes in estimated costs;
- lack of cost-benefit analyses;
- lack of O&M cost estimates or exclusion of relevant costs; and
- lack of cost estimate updates as the projects were implemented.

Cost Estimates Lacked Supporting Documentation

Audit staff did not find a single instance where the estimated project costs were supported with documentation indicating how they were developed. Instead, the estimates were summarized into broad expense categories (e.g., salaries, hardware, software, training, consultants, and contingency), and no specific details were available regarding what was actually expected to be purchased. In many instances, the estimates were nothing more than large, rounded numbers (e.g., $2,000,000 for software; $4,000,000 for hardware; $250,000 for software modifications) that did not appear to be based on any

verifiable data. In other instances, the estimates were presented as a potential range of costs, with the high end of the range becoming the basis for the final estimate, although there was still no documentation to indicate why the high end of the range was chosen over any other figure in the range. Additionally, the cost of existing staff was sometimes omitted from the cost estimates although those staff were expected to be used to support the projects.

Furthermore, the cost estimates were generally not validated prior to submission for project funding, which would have provided confidence to the decision-making process. In fact, audit staff identified only one instance, the core financials component of the financial systems replacement project, where the cost estimates had been validated prior to submission for project funding. However, the final cost estimate submitted to obtain project approval was $2.49 million less than the validated amount, and there was no documentation to support why the lesser amount rather than the validated amount was submitted. Additionally, project staff for the payroll/human resources component of the same project stated that the cost figures were "best guess" and were neither validated nor supported with detailed documentation.

Cost Estimates Were Inconsistently Developed

There were significant inconsistencies among the various projects in how their cost estimates were developed. Some examples of this are:

- Salaries. The salary step used to estimate costs varied widely among projects. In some instances, the estimate was based on the salary of the person currently holding a position, while in others it was based on the step chosen at the whim of the estimator. In the financial systems

replacement project, the salary estimates for the separate project components were obviously developed by different people because the cost for identical positions varied by $12,000. Additionally, where salary estimates were calculated to cover a period of years, adjustments were sometimes made, presumably for cost of living allowances and step increases; but at other times, the salary estimate remained constant over several years. Furthermore, the factor used to calculate salary benefits varied among the projects because an average benefits factor had not been established for estimating purposes.

- Contingencies (see detailed discussion in Finding 4-2). Most of the projects added a contingency factor that was a percentage of the total estimated project costs. However, the percentages varied significantly among the various projects and were not based on anything specific, such as risk factors. Additionally, the contingency factor in some projects included inflation, while inflation was added as a separate cost element in other projects. None of the projects reviewed by audit staff provided an explanation as to why a specific contingency factor was chosen or why the factor may have changed from one cost estimate to the next.
- Sales Tax. Some of the projects added a cost element for sales tax, while others did not. However, in those projects where sales tax was included, it was sometimes calculated based on the entire estimated cost of the project, including nontaxable items such as employee salaries.

Changes in Estimated Costs Could Not Be Tracked

Because it is difficult to estimate the actual cost of a project before implementation, it is important to track changes both from a project review standpoint and from the standpoint of establishing an organizational memory to improve the project

planning process. A major issue regarding cost estimates for the county's information technology projects is that it is virtually impossible to track changes throughout the life of a project although the estimates are usually revised numerous times, often significantly. In the projects reviewed by audit staff, the causes of the changes could not be determined because the cost estimates for a project were never presented twice in the same format and reasons for the changes were seldom, if ever, provided. For example, in the WAN project, the cost categories in the estimate developed by the design team were: equipment, software and lease costs for each type of site; personnel; maintenance spares; router maintenance; training; network management system; and contingency. But the cost categories in the estimate that accompanied the funding ordinance were: labor, materials, utilities, miscellaneous, training, contracts, administration/rent, hardware, software, facilities, and contingency. Moreover, there was no explanation for why the labor category increased from $404,000 in the design team estimate to $2.1 million in the final estimate or why the estimated training costs increased from $40,000 to $123,000, and only brief, unsubstantiated reasons for why the total estimated cost of the WAN project (excluding connectivity) increased from $5.1 million to $8.4 million.

Similar to the cost estimates, the benefit estimates changed significantly from one document to the next without explanation. For example, the financial systems replacement project included estimated savings of $6.4 million in the Finance Department Financial Systems Business Plan in April 1995. Those savings were subsequently reduced to $3.7 million in the June 1996 Business Plan update, but by the time the project work program was developed and submitted to the council for approval, no specific savings were identified.

Cost-Benefit Analyses Were Not Performed

All of the projects reviewed by audit staff included estimated project costs, but none of them contained what could be considered a cost-benefit analysis by industry standards. None of the cost estimates identified who developed the estimates or the source and date of the data used to develop the costs. Additionally, none of the projects clearly identified the business, financial, functional, and operational objectives used as the basis for developing the cost estimates although some did vaguely allude to them. All of the projects identified the estimated costs, and in some instances, the estimated benefits, but none of them analyzed these figures together to determine an internal rate of return, payback period, return on investment, or other quantified measure of the value of a project. Some of the projects identified assumptions, but they were general in nature and did not specifically correlate to the costs or benefits. Moreover, none of the cost estimates contained a sensitivity analysis indicating how changes in various factors would affect a project's costs. The project business cases included discussions of what might happen if a project wasn't implemented, but none of them discussed specific alternate solutions or included an evaluation of what alternate solutions might cost.

Furthermore, none of the information technology projects reviewed by audit staff contained a realistic analysis of the potential benefits of a project. Where potential benefits were identified, a timeline for when the benefits were expected to be achieved was not included. A timeline is important because it can prevent anticipated savings (e.g., staff reductions) from being taken before they are actually realized. Although all of the projects discussed some potential benefits, few tried to quantify

them.

However, in at least one instance where an attempt was made to quantify potential benefits, the quantification showed potential savings that were not likely to be achieved. The WAN project estimated potential county-wide savings of $5.1 million for voice mail and e-mail combined (based on savings of 10 minutes per day per employee), $0.6 million for the automated meeting scheduler (based on savings of 6 minutes per week per employee), and $0.26 million for reduced paperwork (based on savings of one hour per week per manager). The flaw in these quoted savings was that they consolidated the savings throughout the county without an accompanying reduction in the number of employees. Therefore, these savings actually represented efficiency improvements rather than real dollar savings because the time saved per employee per day would not result in anything more than a few minutes of freed up time per employee per day to perform other tasks.

Moreover, while the project plan included consolidated efficiency improvements that would actually be distributed throughout the county, it did not consider indirect costs that would also be distributed throughout the county. These include peer and self-support, casual learning, and "futz,"[2] all factors which should be considered in identifying the true total costs of a project. Thus, the plan omitted factors that were likely to have offset the cited efficiency improvements.

This provides a good example of how project planners may focus on manufacturing dubious benefits rather than on describing the real but nonquantifiable benefits and

[2] The "futz" factor is "the annual labor expenses of end users performing unnecessary changes to their computer, network settings, and applications including playing with the screen settings, file organization, folders, sounds, printer settings, and other unproductive configuration/re-configuration." The futz factor excludes other unproductive costs such as playing games or surfing the Internet. ("Total Cost of Ownership (TCO) Model," Microsoft Corporation, 1998)

demonstrating a strong linkage to program mission. In this case, the actual business need for the WAN was for the county to be able to continue to perform its mission in a technology-driven society rather than to achieve the stated dollar savings.

O&M Estimates Were Not Developed or Lacked Relevant Costs

Estimates of the O&M costs for each project were not always developed at the time the project capital cost estimates were developed. Consequently, the issue of how to pay the ongoing costs of some projects and the financial impact of these costs on county agencies were not addressed until such costs were about to be incurred. Additionally, minimal effort went into developing O&M estimates when they were considered prior to project implementation, thus resulting in relevant costs being omitted from the estimates. For example:

- The WAN project included O&M cost estimates in some of the planning documents, but they were significantly understated. The estimates omitted costs such as debt service, rent, supplies, existing staff, and overhead cost allocation. The estimates also omitted O&M costs that would be incurred by county agencies (e.g., departmental LAN administrators). Additionally, the planning documents did not address how the O&M costs would be paid and/or allocated among county agencies until approximately six months before the costs began to accrue.
- The financial systems replacement project included O&M cost estimates, but there was no supporting documentation to indicate how the estimates were calculated, and the costs were grouped into broad expense categories that appeared to exclude costs similar to those omitted from the WAN O&M cost estimates.

- The mobile computing project in the Sheriff's Office and the LAN system upgrade and regional network projects in Public Defense did not include any O&M costs.

Cost Estimates Were Not Updated As Projects Were Implemented

None of the cost estimates reviewed by audit staff was updated during project implementation, except when project managers were seeking additional funding to complete a project. This made it difficult to determine where cost variances occurred, and also prevented county staff from developing a reliable history of project costs that could be used to estimate the costs of future projects.

WAN Project Provides Insight Into the Reliability of the County's Cost Estimating Process

These deficiencies meant that it was virtually impossible to determine the reasonableness of any of the project estimates. Based on the lack of detailed cost estimates against which to evaluate project results, audit staff used the WAN project, which was completed in 1997, to obtain some insight into the reliability of the county's cost estimating process. Exhibit A shows the estimated costs of the project during various times in the planning and implementation phases and compares those estimates to the actual project expenditures.

EXHIBIT A
COMPARISON OF WAN COST ESTIMATES

DATE	SOURCE DOCUMENT	COST ESTIMATE (in millions) CAPITAL	ANNUAL O&M
April 1994	Design Team Report	*$3.85	*$1.64 to 1.92
April 1994	WAN Briefing Materials	$3.6	$1.3
September 1994	Information Systems Division Manager's Letter	$5.73	$1.9
November 1994	First Appropriation (Ord. 11578)	$5.8	not specified
April 1995	Scoping Document	$6.3	not specified
May 1995	"Networks" Summary Budget	$8.7	$2.08
July 1995	Funding Proposal	$11.69	$2.4
December 1995	Second Appropriation (Ord. 12055)	$11.67	$2.4
DECEMBER 1998	**ACTUAL EXPENDITURES**	**$10.05**	**$5.44 to $5.73**

*The design team report provided total costs (i.e., capital and O&M combined) for 1995 and 1996 and O&M costs for 1997-1999. Audit staff calculated the estimated capital and O&M costs for the first two years based on the O&M cost categories for the subsequent three years. The annual O&M cost for the first full year after implementation was estimated to be $1.85 million.

Capital Costs Were 161% More Than Original Estimate and O&M Costs Were 194% to 210% More

Exhibit A shows that the WAN capital cost estimates ranged from $3.6 to $11.69 million, a difference of 225%; and the total project expenditures were $10.05 million, or 161% above the design team estimate. Similarly, the O&M estimates ranged from $1.3 to $2.4 million per year, a difference of 84%; but the actual O&M costs are $5.44 to $5.73 million[3] annually, or 194% to 210% more than the estimated O&M cost for the first full year after implementation.

Portion of Cost Increases Due to Connectivity Project

Part of the increase in the capital estimates was attributable to the connectivity project that was needed to upgrade equipment within county agencies to ensure that all planned WAN users would actually be able to use the WAN. This requirement was

[3] The actual O&M costs are based on the results of audit staff field work from audit report 98-06, Infrastructure Operating and Maintenance Costs, which was based on data from 1997.

not considered until $500,000 was included in the November 1994 estimate, was subsequently increased to $1 million in the April 1995 scoping document, and was further increased to $3.28 million in the December 1995 appropriation. It should be noted, however, that the "networks" summary budget in May 1995 did not include any costs for connectivity, so the increase in that document was all attributable to the WAN.

Portion of Increases Due to Addition of E-Mail

Additionally, the September 1994 Information Systems Division manager's letter indicated that $1.5 million was added to the WAN capital cost estimate to provide e-mail for 5,000 users. E-mail costs were not included in either the design team report or the WAN briefing materials, although the design team report mentioned the need to consider an enterprise-wide e-mail system. The e-mail estimate was later stated in the "networks" summary budget to be $1.282 million for 4,000 users, but remained $1.5 million in all other documents where the estimated e-mail costs were identified separately from the WAN costs. The basis for the e-mail estimates was not provided in any supporting documentation.

Reason for WAN Increases Not Clearly Specified

The reason for the cost increases associated with the WAN project varied among the different documents reviewed by audit staff, but one commonly cited reason was a higher than expected number of users. However, based on figures provided in early planning documents for the number of estimated users at each type of site, audit staff determined that the project planners should have estimated a minimum of 6,450 WAN users. While this number is only 13% less than the 7,441 users

who were connected to e-mail,[4] the final estimate for the WAN project (excluding connectivity) was $6.89 million, or 79% more than the $3.85 million in the design team estimate. Thus, it is reasonable to conclude that most of the cost increases were due to reasons other than an increasing number of users.

Most Cost Increases Due to Poor Project Planning

Audit staff concluded that most of the cost increases were the result of poor project planning. The connectivity and e-mail requirements are both excellent examples of how project costs can rapidly increase due to scope creep. Better project planning would have resulted in development of cost estimates for the connectivity project and an enterprise-wide e-mail system when the original cost estimates were developed since the design team report recognized the need for both of these components.

Furthermore, the continuing cost increases for the WAN project indicate that the process used to estimate costs was inadequate. Although an increasing number of users was cited as a primary reason for the increase in WAN costs, the fact that the estimate of potential project benefits was based on 7,860 users indicates that the original cost estimates also should have been based on at least that many users. Thus, audit staff concluded that the increasing costs were due to poor estimating.

Project Planners Lack Accountability for Results

Audit staff also concluded that the lack of accountability in the project planning phase is a major reason that the costs of information technology projects increased so significantly. There were no incentives or consequences for project planners to ensure that cost estimates were reasonable. This was primarily because the county has not established a process for canceling projects after a significant amount of money has been

[4] The number of e-mail users is a reasonable number to use as an estimate of the number of employees connected to the WAN since virtually every employee connected to the WAN is also connected to e-mail.

invested and there is a general understanding that once implementation of a project has begun, additional funds will be appropriated when the funds already provided are insufficient. In reviewing the multiple WAN planning documents, audit staff did not find any indication that the reasons provided to justify increasing costs were ever seriously questioned by project reviewers.

WAN Project Was a Functional Success but a Financial Failure by Industry Standards

Audit staff conducted a survey of county agencies to determine the functional success of the WAN and e-mail system. The average score of success was 4.97, based on a scale of 1 to 5, with 5 meaning "indispensable." This score indicates that the WAN project was most definitely a functional success. Nevertheless, the project would be considered a financial failure based on the standards of financial success established by organizations such as The Standish Group and KPMG Peat Marwick. These standards recognize that a project's final results should be evaluated against the project plan. If a project is evaluated only in terms of whether the final product was reasonable given the cost, there is no accountability for the planning process and no credibility for future project plans.

RECOMMENDATIONS

4-1-1 In coordination with the Budget Office, the executive should develop or adopt a cost model to assist county agencies in developing their capital and O&M cost-benefit analyses for information technology projects. The model must:

- be comprehensive to ensure that all potential costs and benefits, both direct and indirect, are considered and quantified in as much detail as is reasonably possible;
- include a requirement for sensitivity and alternate solutions analysis, as well as financial metrics against which financial

performance will be measured upon project completion; and

- incorporate standards to be used in developing specific types of costs, including but not limited to salary steps, benefit factors, and inflation factors.

4-1-2 The executive should develop an information technology policy which:

- identifies the level of detail required to support every cost-benefit analysis;
- requires the supporting documentation to include nonmonetary details, such as assumptions made with regard to specific line item costs; and
- requires project planners to develop and include in the business case an O&M cost payment plan.

4-1-3 The executive should establish procedures to ensure that changes in estimated project costs and benefits can be tracked among various project documents. Such procedures should require that:

- clear and specific documentation accompany each change to support why such changes were made;
- cost categories be established at the beginning of a project and retained throughout the project or, if changed, that they be supported by a crosswalk document to facilitate consistent tracking of costs throughout the project; and
- project managers update the cost-benefit estimates during project implementation.

4-1-4 The executive should establish a requirement for cost-benefit analyses to be validated by an independent party prior to information technology projects being submitted for approval. Reasons for deviations from the validated amounts should be documented and included in the project business case.

4-1-5 The executive should establish a policy that requires project managers to:

- manage project costs not only to the bottom line, but also by cost category (e.g., salaries, equipment, software, training); and
- prepare and submit to the executive a statement highlighting potential problem areas whenever costs for a specific cost category exceed the budget for that category by more than 10%, based on the project's percentage of completion.

4-1-6 The executive should develop a policy to establish accountability requirements for project results based on the approved business case. While such a policy needs to allow for a margin of error in the cost-benefit analysis, it should also establish consequences for situations when, due to poor project planning, the final costs exceeded the originally estimated costs by more than 10%, the projected benefits were not achieved, or the projected benefits were more than 10% less than originally estimated.

4-1-7 The executive should establish procedures for feeding lessons learned back into the cost-benefit estimate methodology to improve the reliability of future cost-benefit analyses.

FINDING 4-2

KING COUNTY LACKS A POLICY REGARDING THE USE OF CONTINGENCY FUNDS FOR INFORMATION TECHNOLOGY PROJECTS. CONSEQUENTLY, THERE WAS NO BASIS FOR THE CONTINGENCY AMOUNTS USED AND CONTINGENCIES WERE USED TO MAKE UP FOR POOR BUDGET ESTIMATING RATHER THAN TO COMPENSATE FOR UNFORESEEN CONDITIONS.

Contingency Defined

Webster's New Collegiate Dictionary defines contingency, in part, as ". . . a possible future event or condition or an unforeseen occurrence that may necessitate special measures <a reserve fund for *contingencies*> . . ." King County has not established its own definition for contingency; therefore, it is assumed to have its usual and customary meaning.

No Policy or Criteria Regarding Use of Contingencies

King County has not established either a policy or criteria for determining the amount of contingency, if any, that should be added to information technology project budgets. Consequently, there were significant differences regarding the amount of contingency funds allocated to various projects. Moreover, once contingency funds were included in the adopted budget for a specific project, project managers considered them part of the total budget available for spending and used them to compensate for poor project planning rather than treating them as reserve funds to be used for unforeseen conditions.

Contingency Factors Varied Considerably Among Projects

None of the projects reviewed by audit staff had any documentation indicating how the contingency amounts used were selected. Although ITS staff indicated that a standard contingency factor for information technology projects is 15-25%, audit staff found through research that a more appropriate method for determining a reasonable contingency amount is to link the contingency to specific risk factors. This helps project planners identify and manage those factors that can potentially cause the cost to increase. However, audit staff found that the amount of contingencies varied considerably among projects, primarily because there was no basis for the contingency amounts used.

WAN Contingency Factor Was 8.3% to 24.3%

For example, the cost estimates for the WAN project included a

10% contingency factor in the design team report and the Information Systems Division manager's letter, an 8.3% contingency in the networks summary budget, a 19.3% contingency in the funding proposal, and a 24.3% contingency in the appropriation transmittal. However, none of the documents explained what factors caused the contingency amount to change between estimates. More importantly, none of the

documents provided any reasons for including a contingency or why the amounts used were selected.

Financial Systems Replacement Project Contingency Factor Was 0% to 70%

Similarly, the initial business plan for the financial systems replacement project included a contingency factor of 15% for each phase of the project. However, the business plan update that was issued about a year later included contingency factors that ranged from 0% to 70% for various project components, with an average contingency of 19.5%. The business plan update also included a 1.5% factor for "emerging needs," which were not defined but appeared to be a contingency above and beyond that allocated to each project component. The budget estimate that was issued a few months later for the core financials phase of the project included a 15% factor for the contingency and inflation combined. Finally, the work program that was issued another six months later included a contingency factor of 14.3% for the core financials phase; a 4% inflation factor plus a 15% contingency factor that was based on the project subtotals plus inflation for the payroll/human resources, information distribution and reporting, and integration and interoperations phases; and no contingency for the Year 2000 phase. As with the WAN project, there was no documentation

explaining why the contingency factor changed between estimates or why the amounts used in each estimate were selected.

Variations in Contingency Factors Indicate Lack of Understanding of How to Determine Appropriate Factor

The wide variations in contingency factors indicate that project planners understand that there may be a need to include a percentage of money for unknown and/or uncertain conditions, but that they do not understand how to determine an appropriate contingency factor. The variations also indicate that the factors selected were purely arbitrary, and in some instances, were likely

to have been intended to make up for poor budget estimating in the planning phases of the projects.

RECOMMENDATIONS

4-2-1 The executive should develop a policy regarding how to determine an appropriate contingency factor for information technology projects. The policy should address the need to link the contingency to project-specific risk factors, identify other specific factors that should be considered or excluded (e.g., inflation), and make it clear that contingency funds are not a substitute for poor project planning.

4-2-2 The executive should develop a policy requiring the management of contingency funds for information technology projects. The policy should require the funds to be managed through a separate account and project managers to provide justification supporting why they are using contingency funds. The policy should also address how any leftover contingency funds will be disposed of (e.g., do they revert to the general fund or belong to the agency for use in future projects?).

FINDING 4-3

THE LACK OF CRITERIA FOR DETERMINING WHEN PROJECT EXPENSES SHOULD MOVE FROM CAPITAL TO OPERATING AND MAINTENANCE RESULTED IN SOME INFRASTRUCTURE (I.E., WAN AND E-MAIL) OPERATING AND MAINTENANCE EXPENSES BEING PAID FROM CAPITAL FUNDS.

Implementation Costs Paid With Capital Funds; Ongoing Costs Paid With O&M Funds

Information technology projects are generally implemented using capital funds. Once a project is implemented, the costs of operating and maintaining the system are included in the annual budget and, based on generally accepted accounting principles and the county's accrual accounting method, are expensed in the year in which they are incurred. In the case of the infrastructure project, the capital funds were obtained through the sale of bonds. Funds to pay the principal and interest on the bonds were obtained by charging all county agencies an annual debt service fee based on the maturity date of the bonds.

No Criteria to Determine When Costs Should Start Being Considered O&M

However, King County has not established criteria to specify at what point a project is considered implemented and its ongoing costs should start being considered as O&M rather than capital expenses. Identifying such criteria at the beginning of a project, especially when a project is implemented in phases, would help ensure that capital funds are used only for capital expenses and O&M funds are used for ongoing expenses after implementation. Failure to establish such criteria resulted in some infrastructure O&M costs being paid with capital funds rather than O&M funds. Although audit staff were unable to determine the exact amount of O&M expenses paid with capital funds, one specific instance of $54,079 for fiber maintenance in 1997 was identified.

King County Did Not

The effect of using capital funds to pay O&M expenses is that

Comply with Generally Accepted Accounting Principles

King County is not following generally accepted accounting principles. Instead, O&M expenses that should have been paid by county agencies in the year they were incurred will be charged to agencies over a number of years through debt service.

RECOMMENDATION

4-3-1 The executive should establish a policy to clarify when project costs should be considered capital versus O&M. The policy should specifically address how to identify O&M costs for completed phases of a project when other phases are still being implemented.

5 INFORMATION RESOURCE COUNCIL (IRC)

Introduction

This chapter examines the Information Resource Council (IRC), focusing on its authority and whether it is fulfilling the role of ensuring that King County achieves technological success, both in the projects it pursues and in establishing county-wide policies and standards.

Prior to formation of the IRC, technology projects required the approval of the Data Processing Policy Review Committee (DPPRC). (See related discussion in Finding 5-1.) The IRC was created in 1996 by the Core Project Management Committee due to concerns that the DPPRC was not an adequate forum for governing the use of technology resources and developing information services strategies for King County.

The IRC has five subcommittees – the technology subcommittee (TSC) and four business area committees (BACs). The IRC's responsibilities include allocating information technology capital funds among the BACs, reviewing and providing final approval of information technology projects forwarded from the BACs, providing high-level oversight of information systems projects in progress, and approving county-wide technology policies. The BACs' responsibilities include reviewing, prioritizing, and allocating funds to projects within their respective BACs, and making recommendations to the IRC regarding the approval of those projects. The TSC's primary responsibility is to establish county-wide technology standards.

FINDING 5-1

THE IRC OPERATES IN PLACE OF THE DATA PROCESSING POLICY REVIEW COMMITTEE (DPPRC), ALTHOUGH THE DPPRC IS MANDATED BY THE KING COUNTY CODE. CONSEQUENTLY, THERE IS NO LEGAL AUTHORITY FOR THE IRC, ITS CURRENT MEMBERSHIP, OR ITS RESPONSIBILITIES.

DPPRC Still Legally Exists; No Legal Authority for IRC

The DPPRC was established by ordinance in 1991 and still legally exists (King County Code 2.36.040), but the IRC has been operating in its place since 1996 without legal authority to do so. When the IRC was established, an ordinance to formally abolish the DPPRC and establish the IRC was drafted and discussed at the first IRC meeting; however, the ordinance was never presented to the Metropolitan King County Council. Because the DPPRC was established by ordinance, it must be abolished by ordinance. Furthermore, because an objective of the IRC is to establish policies and standards for technology within the county, the IRC should be formally established by ordinance.

In addition, the manner in which the IRC operates does not ensure that it performs functions mandated in the King County Code for the DPPRC. Two reasons are that the membership and the role of the IRC differ significantly from those stated in the King County Code for the DPPRC.

IRC Membership Differs From DPPRC Membership

The King County Code states that the membership of the DPPRC shall consist of one member from the council, executive, major department heads to be appointed by the executive, prosecuting attorney, assessor, a judicial representative appointed by the presiding judge of the superior court, and members from the county auditor's office and the

Information and Telecommunications Services (ITS) Division of the Department of Information and Administrative Services. The King County Code also states that the chairperson of the DPPRC shall be selected by the members of the committee and shall serve at the pleasure of the committee.

The IRC's structure includes five subcommittees, four of which are business area committees (BACs). Every county department or agency is represented on a BAC by its director or manager, and each department is represented in only one BAC. However, only the chair of each BAC serves as a member of the IRC. The King County Code does not specify which departments are "major" departments requiring representation on the DPPRC, but audit staff do not believe that having only BAC chairs as members of the IRC, rather than all department directors, meets the level of departmental representation that was intended for the DPPRC. Additionally, the IRC chair is not elected by the members of the committee as required for the DPPRC; rather, the deputy county executive always serves as chair.

Role of IRC Differs From That of the DPPRC

Furthermore, the role of the IRC, as defined in its charter, varies significantly from the role of the DPPRC, as defined in the King County Code. Some functions of the DPPRC have become outdated as the county moved from a mainframe-based system to networked personal computers and have been omitted from the IRC charter. Again, since the functions of the DPPRC are mandated in the King County Code, they should have been revised by ordinance. (Appendix 1 shows the differences among the DPPRC, the IRC as it was originally established, and the IRC with its recent changes.)

RECOMMENDATION

5-1-1 The executive should draft and present to the Metropolitan King County Council an ordinance to abolish the DPPRC and establish the IRC. The proposed ordinance should identify the core membership of the IRC, broadly define the role and responsibilities of the IRC, including its authority to create policy, and specify the conditions under which the charters of the IRC and its subcommittees may be amended without enacting new legislation.

FINDING 5-2

THE IRC AND ITS SUBCOMMITTEES HAVE NOT BEEN FULLY EFFECTIVE IN PROVIDING PROJECT REVIEW, PRIMARILY BECAUSE THE IRC STRUCTURE IS NOT CONDUCIVE TO UNBIASED DECISION-MAKING OR CRITICAL REVIEW AND ANALYSIS.

The IRC and its subcommittees have increased the awareness of information technology and the need to coordinate technology projects within the county, and have served as important forums for sharing information about county technology. However, they have not fully achieved their objectives of making informed decisions on technology projects and ensuring that decisions are made in the best interests of the county as a whole. Consequently, millions of dollars have been spent on technology projects without full discussion and understanding of the cost, benefits, and risks associated with the projects.

No In-Depth Project Reviews

The IRC Relies on BACs for Critical Review of Projects

Each BAC reviews and allocates funds to projects within the funding allocation it has received from the IRC and decides which projects it will forward to the IRC for final approval. Projects are presented to the BACs and then the IRC in a

standard slide format that provides a very brief summary of project information. Based on audit staff observations of IRC meetings and review of meeting minutes, there was little discussion or questioning by IRC members to supplement the information given in the presentations. They seldom required substantial project revisions, rejected a project, or even asked in-depth questions. This was mainly because the IRC relied on the BACs to conduct critical in-depth review, and assumed that all projects forwarded to it from the BACs had already undergone scrutiny.

Level of Review by BACs is Inadequate

However, projects were not undergoing in-depth review or analysis at the BAC level either. Members did not verify the accuracy of data in the presentations or request supporting documentation. There was no indication that project sponsors required staff to go back and develop more reliable estimates when questions were raised during the project review. Some members described presentations as “show and tell” and overly optimistic because they did not identify any underlying project management problems.

The Law, Safety and Justice (LSJ) BAC appeared to conduct the most in-depth review and detailed questioning about projects. Even the LSJ BAC, however, relied on detailed review by others – technical review by ITS or the LSJ technical committee (formed in 1998), and financial review by the Budget Office – and requested one- to two-page summaries for their own review. Even so, one member said that it was clear that numbers in some cost estimates had been “pulled out of air.”

Thus, the project reviews are not actually reviews at all, but instead provide only a high-level overview of projects, even at

the BAC level. This means that projects are approved without a full discussion of the costs, benefits or risks, thus increasing the potential for project failure.

The IRC Structure Is a Major Reason for the Lack of Analysis and Review

The reasons for the lack of critical analysis and discussion are primarily related to the structure of the IRC and BACs:

- Members are not comfortable questioning another department's project when they know that they may need that department's support for their own project at a later date.
- The responsibilities that department directors have as members of the IRC and its subcommittees are secondary to their responsibilities to their departments. Directors therefore do not have the time or inclination for in-depth analysis and review of the projects presented to them in the IRC or BACs.
- Due to the demands on their time, some directors frequently send representatives in their place to the BACs or IRC. However, these representatives generally do not raise questions since they are uncomfortable questioning department directors. Additionally, they often attend the meetings only as observers and don't participate at all in the discussion.
- The chair sometimes defers discussion of questions to a later time outside the IRC forum, further limiting the level of review at IRC meetings.

IRC Members Have Little Influence in Final Decisions

In addition to the lack of discussion in committee meetings, there is no established process for reaching agreement. The operating procedures in the committee charters indicate that each member will be allowed one vote. However, audit staff observed that voting did not occur at all in the meetings.

Instead, approval of items was based on the lack of stated opposition by committee members, which, as indicated above, is not likely to occur. In the IRC, final decisions were made by the deputy county executive, who is the chair of the committee. Thus, members have little influence in the final decision-making process of the committees, especially in the IRC.

The IRC Does Not Ensure County-Wide Overview or Coordination of Projects

Moreover, the IRC process does not ensure a county-wide strategic overview or coordination of projects. There are no criteria for which technology projects must go through the BACs and IRC, and projects are selected within each BAC and its funding limitations rather than among a county-wide portfolio. This means that departments have some discretion regarding which projects they want to present, particularly departments that generate their own revenues and do not rely on current expense funds. It also means that the BACs and IRC are not always fully aware of all projects being planned or implemented within the county, which limits the county's ability to identify efficiencies that could be obtained through coordination of projects. In addition, it potentially allows projects to be approved that the IRC otherwise would not have approved and does not ensure compliance with the county's information technology strategic plan, policies or standards (see related discussion in Finding 2-1).

Recent changes to the IRC structure will add a project review board staffed by various ITS and department staff. The project review board is intended to add a component of independence to the project review and monitoring processes. However, audit staff do not believe this change will significantly improve the effectiveness of the IRC. The responsibilities of the IRC, subcommittee and project review board members will still be secondary to their departmental responsibilities, which will continue to limit the ability to provide thorough project review

and oversight. Moreover, because the project review board will be staffed by a combination of ITS and department staff, audit staff believe the project review board will simply add another layer of oversight without the accompanying level of independence, objectivity, and critical review necessary for technological success within the county.

A Change in Direction Is Needed

Audit staff believe that the best way to meet these demands is through the formation of an independent group of professional, full-time staff, under the direction of the deputy county executive, who would be dedicated to technology project planning, review, and monitoring. Given the growing importance of information technology to the county and the increasing number of technology projects, audit staff believe that critical, in-depth analysis, review, and monitoring would be best performed by full-time staff with the requisite technical and financial expertise.

The goals of the project review staff would be to ensure consistency and objectivity in the county's information technology process and compliance with the objectives of the strategic plan. The responsibilities of the staff could include providing assistance to county departments in developing cost estimates and risk assessments for technology projects; conducting detailed project reviews, including verifying the data used in developing project costs and benefits; regularly monitoring projects during implementation for adherence to performance goals; making recommendations to the IRC or other executive body on whether to continue, modify, or cancel ongoing projects; assisting departments in conducting post implementation reviews and using the lessons learned to improve the county's technology management process; and building a history of technology projects to increase the

accuracy of cost-benefit analyses of future projects.

An executive body such as the IRC or cabinet would still be necessary to provide strategic direction and ultimate oversight for county information technology. Responsibilities would include development of a county-wide technology strategic plan and final approval of projects in accordance with the strategic plan.

RECOMMENDATIONS

5-2-1 The council should make a decision regarding the direction of the county's information management process. A choice should be made to either:

A. retain the IRC with its current structure and responsibilities,

–OR–

B. retain a modified form of the IRC and establish a permanent group of project review staff under the deputy county executive to provide technical assistance to project planners and managers during both the planning and implementation phases of information technology projects,

If the council chooses option A, then:

5-2-2 The deputy county executive, as chair of the IRC, and the ITS Division manager should review the requirements of the DPPRC to determine the appropriate forum through which those activities can continue under the IRC structure, and modify the charters of the IRC and its subcommittees to ensure that adequate information technology project review and oversight occurs.

If the council chooses option B, then:

5-2-3 The deputy county executive, as chair of the IRC, and the ITS

Division manager should review the requirements of the DPPRC to determine which activities should be provided under the IRC structure and which activities should be provided by the project review staff. At a minimum, the project review staff should:

- provide technical and financial guidance to project planners as the planners develop information technology business cases;
- review project business cases to ensure that they are accurate and complete, meet industry standards of a business case, and have adequate documentation to support the cost and benefit data included; and
- provide oversight during project implementation, including warning project managers when deviations from the approved business plan have the potential to cause delays in the project schedule, increase the project scope beyond the approved plan, or increase costs beyond the amount allowed through the contingency fund.

FINDING 5-3

THE TECHNICAL SUBCOMMITTEE (TSC) IS RESPONSIBLE FOR SETTING TECHNOLOGY STANDARDS FOR THE COUNTY. HOWEVER, ITS EFFECTIVENESS MAY BE LIMITED BY LOW ATTENDANCE, ESPECIALLY BY NONEXECUTIVE AGENCIES.

TSC Sets County-Wide Technology Standards

Recent revisions to the IRC charter authorize the TSC to establish county-wide technology standards (e.g., publishing standards for county web sites). Previously, the TSC developed standards and forwarded them to the IRC for final approval. Because the TSC members are predominantly technical staff (e.g., Information Systems Managers, LAN Administrators), audit staff believe that the TSC is the appropriate forum for

establishing information technology standards.

Attendance at TSC Meetings Is Limited

However, audit staff are concerned that the TSC may not be fully effective due to limited participation by some members. TSC minutes revealed that executive department representatives attended TSC meetings an average of only 57% of the time and nonexecutive agency representatives attended only 30% of the time. This limited representation means that technology decisions may be made for the entire county without input from everyone affected. Although nonexecutive agencies are not bound by TSC decisions, participating in those decisions is more likely to result in their complying with the decisions and, consequently, implementing systems that maximize efficiencies across agencies and are fully compatible throughout the county.

The growing dependence on information technology makes the need for county-wide standards increasingly important. County agencies should recognize that if they want a voice in setting those standards, they must be willing to send a representative to committee meetings.

RECOMMENDATION

5-3-1 The chair of the TSC should send a letter to all county departments and agencies encouraging their participation in the TSC and its decision-making process for establishing the county's technology standards.

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APPENDICES

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APPENDIX 1

DIFFERENCES BETWEEN THE DPPRC, THE ORIGINAL IRC, AND THE REVISED IRC

	DPPRC	ORIGINAL IRC CHARTER	REVISED IRC CHARTER (July 1998)
Role:	• Review short and long range plans for application and equipment • Promote standardization of systems efforts throughout the county • Review all new systems development for complete justification based on cost and need • Establish priorities for system development • Review allocation of hardware and software between users • Recommend budgetary changes to council when revised appropriations are required • Insure compatibility between systems to avoid overlapping and inflexible systems • Develop procedures to assure adequate user involvement • Assure adequate internal controls and audit trails exist • Advise of general matters pertaining to data processing applications • Not review requests for services costing less than one thousand dollars in total • Establish administrative procedures for documentation of every major county electronic data processing system that meets the requirements for the general public, the using department(s) and state and county auditor(s) • Adopt administrative procedures to handle data processing requirements and make copies available to the council • Recommend the initiation of proposed EDP projects or operational programs to the executive except when the council representative determines that such action should be referred to the council. • At least biannually, make presentations of major systems development before the council	• Approve and issue the county information technology strategic plan • Integrate information technology planning processes with the county's annual capital budget plan • Review, approve and, if necessary, prioritize information systems projects • Recommend the allocation and prioritization of the information systems capital funds to the county executive for approval • Perform high-level oversight of information systems projects in progress, and review and approve scope, funding, and schedule variances • Deliver an annual technology assessment report to the county executive and county council • Approve and issue technical policies, standards, and architecture • Ensure operations and maintenance (O&M) costs for new projects are fully reviewed • Resolve issues referred by business area committees (BACs) or the technology subcommittee and address issues of noncompliance in any of the above areas	• Serve as a policy-setting forum for technology • Identify the county's business imperatives related to technology • Provide technology direction, including technology initiatives • Serve as an approval forum for the county • Ensure goal congruency countywide regarding technology

	DPPRC	ORIGINAL IRC CHARTER	REVISED IRC CHARTER (July 1998)
Membership:	• Representative from the county council • Representative from the executive • Major department heads to be appointed by the executive • Representative from the prosecuting attorney • Representative from the assessor • Representative appointed by the presiding judge of the superior court • Ex officio member from the Information and Telecommunications Services Division • Ex officio member from the office of county auditor	• Chairperson from each BAC • Representative from the county council • Representative from the Office of Budget and Strategic Planning • Manager of the Information and Telecommunications Services Division • Member appointed by the county executive from a private sector company • Others appointed by the executive.	• Chairperson from each Business Area Committee (BAC) • Representative from the county council • Others appointed by the deputy county executive.
Leadership:	The members of the committee shall select a chairperson who shall serve at the pleasure of the committee. The manager of the Information and Telecommunications Services Division shall be the executive secretary to the committee.	The deputy county executive will be the chairperson of the IRC. The IRC should elect a deputy chair, who shall assume the chairperson's duties in the event of absence.	The deputy county executive will chair the IRC. The chairperson will designate an assistant, who shall assume the chairperson's duties in the event of absence.
Operating Assumptions and Guidelines:		• One vote per member • The members will attend whenever possible. Substitutions for the BAC chairs will be another member of the BAC, who will then have voting privileges • The council will focus on policy and strategic information systems needs of the county, except when specific intervention in a project is requested by a BAC or the technology subcommittee • Business decisions will be made based on a majority vote of those present at each meeting • Meetings will be held at least quarterly • Agenda items may be submitted by any member of the IRC and should be submitted to the IRC chairperson at least two weeks prior to the meeting • Minutes of the meeting will include decisions made, and will be distributed to all IRC and BAC members	• Meetings will be held monthly • Members may submit agenda topics to the IRC chairperson one week prior to the scheduled meeting • Meetings will include a record of discussion and decisions made • Minutes of the meeting will be distributed to all IRC and BAC members

APPENDIX 2

EXECUTIVE RESPONSE AND AUDITOR'S COMMENTS

King County Executive
RON SIMS

April 8, 1999

Don Eklund
King County Auditor
Room 402
COURTHOUSE

Dear Mr. Eklund:

Thank you for the draft report titled "Final Draft Audit Report of Information Technology Planning, Development and Implementation Processes," which reviewed the adequacy of the processes used to select information technology projects, as well as plan, develop and implement those projects; the adequacy of project cost estimates and the cause of discrepancies between the estimated and actual costs; and the Information Resource Council's role in information technology project approval and oversight.

While I recognize that many of the individual findings and recommendations may be relevant, reasonable, and even helpful, my overall impression of the audit is that it fails to recognize the remarkable progress King County has made in the area of technology implementation and management. In short, the audit concentrates a great deal on paper work and documentation, while seeming to miss the importance of the unprecedented level of inter-branch cooperation that the County now enjoys in the area of technology. Further, the audit fails to recognize that we are now taking an approach to technology development and oversight that parallels private industry in its methodology. In less than one year's time, the county's Chief Information Officer has established the kind of best practice that will ensure our future success and which nicely compliments your own conclusions. I was therefore perplexed that your audit did not highlight the many areas of our consensus.

There are also issues raised in the report that I believe have been over-simplified and require a richer forum of discussion to determine the appropriate policy directions for the county's technology investments. In particular, issues related to the legitimacy of the Information Resources Council (IRC) as a policy-setting, management forum for the entire county's technology investments are very complex. As with any group whose charge is to allocate scarce county resources, IRC members balance their own agency's perspective against the good of the county as a whole. As many are separately elected officials, they will also balance their own perspectives against others. In this environment, the IRC has arrived at many difficult decisions through consensus, such as deferring some projects so that other more important projects could be funded and moved forward. This consensus approach to decision making is not a weakness, to the contrary, it is a strength. It demonstrates that the varied interests represented at the IRC can and will subordinate their specific interests for the good of the entire county. Through this process trust was built among the participants. My hope is that your office recognizes such intangibles as an invaluable aspect of our planning process.

Don Eklund
April 8, 1999
Page 2

I want to thank you for the countywide user survey on the functional success of the WAN and e-mail system. Given the technology changes that were taking place at that time and the major management restructuring underway as a result of the merger of Metro and the county, I am especially pleased with the fact that the project was successfully completed and now, years later, users find it indispensable. However, your audit report goes on to characterize the Wide Area Network project as a "financial failure". I believe it would be fair to say that the project files did not contain a complete paper trail as to how each decision regarding project changes were made. It should be remembered that this infrastructure project was the first major enterprise-wide technology upgrade in the county's history, and was a dynamic process involving Executive Locke and the Council. As one of the Council Members at the time, I can assure you that I and council staff were well-informed through verbal briefings of the need for the changes proposed to project scope and budget. In fact, we at the Council were strong proponents of making the fullest possible use of this new network. In the final analysis the County finds itself in the enviable role of having a model wide area network which has not only won awards, but which county employees view as a critical tool in their every day operations.

Finally, we must carefully consider the implications of the audit recommendations related to the level of documentation required for each project. A balance must be found between the need to keep a project moving toward successful completion and the need to make sure decisions are well-considered and documented for future reference. The additional cost associated with adding centralized administrative staffing and overhead must be balanced against the value such services truly add to public projects. I have asked my staff to do some research into the level of documentation and administrative investments the private sector is currently undertaking. This information will be presented to the IRC so that an appropriate balance can be determined.

Sincerely,

Ron Sims
King County Executive

Enclosure:
- Draft Response
- IRC Charter
- Information and Technology Investment Business Case
- Plan and Schedule

cc: Paul Tanaka, Deputy County Executive
Sheryl V. Whitney, Director, Department of Information and Administrative Services (DIAS)
David Martinez, Chief Information Officer, Information and Telecommunication Services
Dave Lawson, Manager, Executive Audit Services
Members of the IRC

AUDITOR'S COMMENTS TO EXECUTIVE RESPONSE LETTER	The executive response attempts to downplay the seriousness of the shortcomings identified in the county's processes for planning, developing, and implementing information technology projects. Additionally, the response suggests that the problems identified by audit staff are nothing more than a lack of documentation, without recognizing that the problems identified in the audit go far beyond that or that documentation is a primary method of providing accountability to taxpayers. For example, major decisions regarding technology investments were made based on incomplete information. Moreover, the response includes the revised IRC charter and Information Technology Business Investment Case Guide as attachments, implying that these documents represent improvements made in the process. However, these documents were available to audit staff and were considered in developing the findings and recommendations presented in the audit. Audit staff would like to reiterate that in the past, development of technology project business cases has focused more on form than substance, and that the Guide does not require the supporting documentation recommended in the audit to provide adequate assurance that a project can be developed and maintained within a reasonable margin of the estimated costs. Finally, the response implies an intent to proceed with business as usual, rather than to look objectively at the need to improve the processes for planning, developing, and implementing technology projects. The response states that several of the recommendations will be brought to the IRC for consideration without directly addressing which ones will be implemented or when they will be implemented. *While the response includes a "Plan and Timetable for Implementing Audit Recommendations," it lists only five actions to be taken although the audit contains over twenty recommendations. Furthermore, not all of the actions listed relate directly to recommendations contained in the audit*. For example, the plan states that it has developed a project review board, but that was not an audit recommendation.

RESPONSE TO RECOMMENDATIONS PRELIMINARY DRAFT AUDIT REPORT OF THE INFORMATION TECHNOLOGY PLANNING, DEVELOPMENT AND IMPLEMENTATION PROCESSES

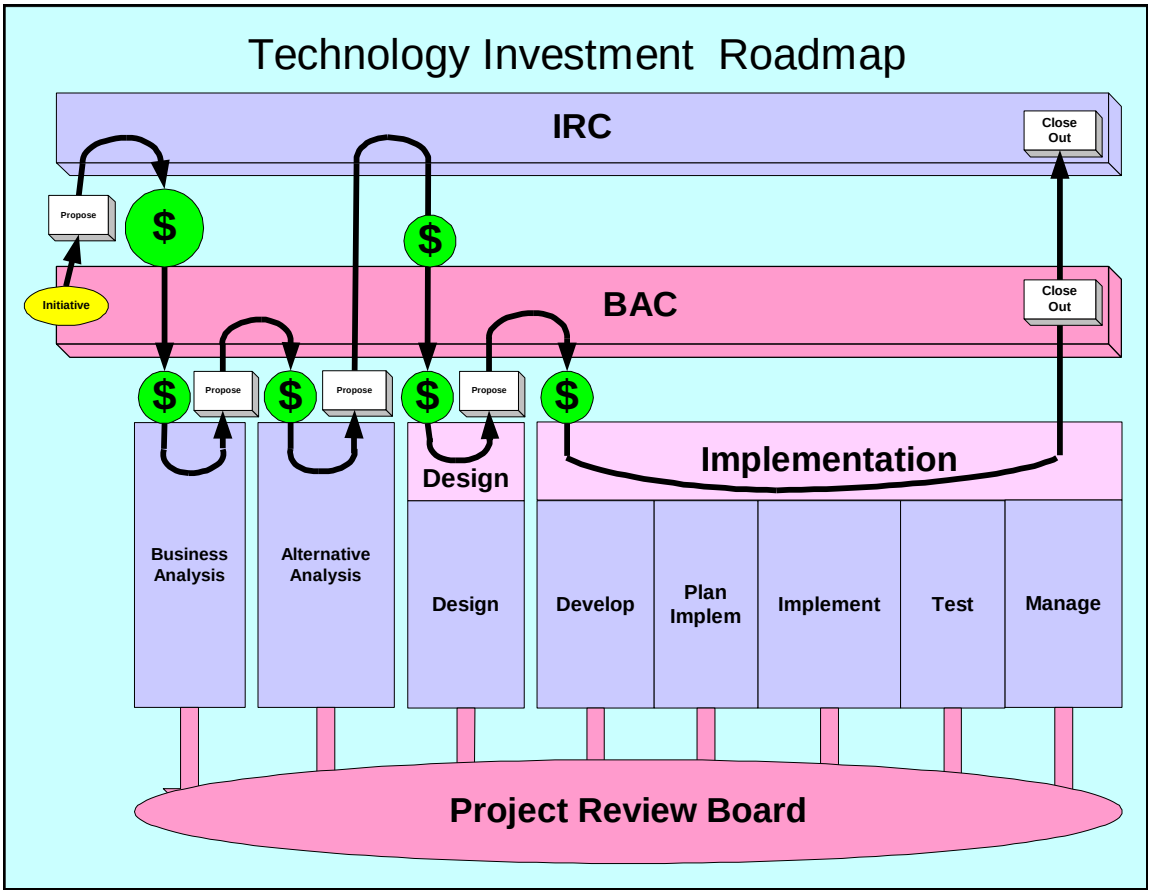
The stated purpose of the audit was to address Council concerns "regarding the adequacy of the processes used to plan, develop, and implement information technology projects throughout the county." In order to provide a clear picture of the process currently in place, this response is organized along the sequential lines of the current process. A response to each of the audit recommendations is included within the related section of the process. The first section is an overview of the entire process and the second section discusses the issues related to governance of the process. The other sections deal with the project selection, monitoring and evaluation phases of the process and the related recommendations.

While we may not agree with all of the audit's findings and conclusions, we do agree with the spirit of the report's recommendations. Planning for technology projects is a highly complex process. It is an art and not an exact science. Because it is an art, there are many valid methods in planning and monitoring progress on technology projects. The audit is recommending one set of methods which is valid. The IRC has recently adopted a different set of methods that we feel is equally valid. While we may disagree with the specific recommendations we do not disagree with the notion that proper planning is an important factor for successful projects.

Process Overview

Each phase of the process the county uses to plan, develop and implement technology projects involves the Information Resource Council [IRC] as the top management authority over technology projects at the County. This forum involves all branches of county government and includes representatives for all separately-elected officials. The charter for the IRC was most recently modified in July 1998 with the approval of all members [see attached Charter].

One of the main success factors of technology projects consistently stated in all current "best practices" articles including those referenced by the audit report is the need for top management support. The IRC provides that support since its members include the highest management of county government: Executive department directors, Deputy County Executive and separately-elected officials. The structure of the IRC also provides for four Business Area Committees [BACs] where detailed discussions of individual projects take place. A diagram of this structure below provides further details of when and how often the IRC and BACs interact with individual projects.



The Information Technology Investment Business Case

In several meetings at the end of 1998 and into 1999, the IRC worked on the components of the Technology Investment Business Case. To provide agencies with project proposal guidelines to use in preparing to request funding for a technology project, a detailed guide with examples has been created [see the attached Information Technology Investment Business Case Guide].

One page initiatives are presented to the BACs for consideration [Note: this is the current process where agencies bring their initiatives forward at any time; however, after the 3-Year Technology Plan is available, initiatives will be included in the plan and be updated annually as part of the annual budget process]. If an initiative is selected, a business case/proposal is prepared and presented to the IRC for approval. The business case contains a detailed estimate and plan for the next phase (in this case, Business Analysis), and a rough estimate for the remainder of the project. If the project is funded, the funds are set aside to be distributed by the BAC. The project receives funding for the Business Analysis phase. The project will gather requirements, study business opportunities and possible improvements.

At completion of the Business Analysis, the project returns to the BAC with an updated proposal re-justifying the project for the Alternatives Analysis phase. If the project is still

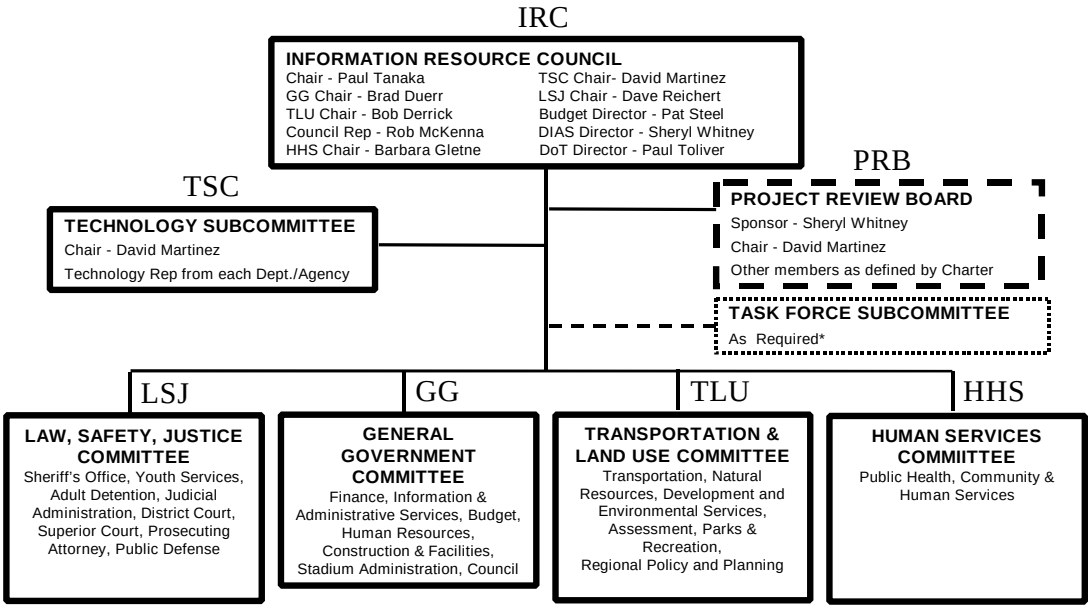
considered to be a sound investment, the BAC approves funds for the Alternatives Analysis phase. Build-versus-buy, Requests for Proposals and proposed vendor contracts will be addressed in this phase.

The project returns with a proposal for a design that includes information on the recommended alternative, a detailed plan for the design phase, and an improved rough estimate for the implementation phase. This proposal must also return to the IRC for approval. If the design phase is approved, the BAC funds the design phase and the project develops a design for the new system. With a completed design in hand, the project returns to the BAC with an accurate plan for implementation and if agreed to by the BAC, the implementation phase is funded.

Additional oversight of each step of a technology project will be provided by the Project Review Board. It is expected that this board will be involved at a level of detail to see early warning signs of overly-optimistic schedules or budgets. The objective is to have this be a forum where problems can be safely brought to light and solutions developed. Lessons learned from other projects can be brought in as applicable.

Another resource for technology projects is the Technology Subcommittee. This group is made up of mid-level managers and systems support professionals. When a project will be impacting the need for systems support across several agencies, the members of this group can provide a way to "get the word out" to their agency's staff and management as well as provide a forum for discussing technical details of projects planned or underway.
The management structure detailed above is summarized in the chart below.

Management of Information Technology
Management Structure



*** Electronic Records Advisory Cmte (ERAC). Others as required.**

1

Governance Issues and Audit Recommendations

As noted in the audit report, the county code provides for a data processing policy review committee [DPPRC] whose main purpose at the time of its creation was to govern the mainframe technology. The chart in the audit report comparing the differences between the stated roles of the IRC versus the DPPRC does not lend itself well to understanding the substance of the actual oversight role of the IRC. The IRC charter was an attempt to lay out its role in a simple, clear format. The DPPRC role was laid out in much more detail within its enabling legislation. However, the substance of the roles is very similar.

Similarly, the membership structure for the DPPRC is very similar to the IRC with the exception of not listing explicitly an *ex officio* representative from the county auditor's office. However, the Councilmember representative has requested a Budget and Fiscal Management Committee staff member to attend IRC meetings and could also request that the council auditor's staff attend the meetings.

At the time of the formation of the IRC several years ago, the need for enabling legislation was not identified as an issue. The first Council representative was Councilmember Ron Sims. After Mr. Sims left his Council position to become the County Executive, Councilmember Rob McKenna became the IRC's Council representative and remains a regular and active participant. Over $70 million in bond-funded technology projects have been approved by the County Council in the intervening years while the monitoring and oversight process was being governed by the IRC. One view of the County Council's decisions to provide funding for projects recommended by the IRC is that such decisions provided an appropriate level of legal legitimacy for the IRC.

However, the audit report's Finding 5-1 and related Recommendation 5-1-1, 5-2-1, 5-2-2, and 5-2-3 are at odds with that view:

FINDING 5-1 THE IRC OPERATES IN PLACE OF THE DATA PROCESSING POLICY REVIEW COMMITTEE (DPPRC), ALTHOUGH THE DPPRC IS MANDATED BY THE KING COUNTY CODE. CONSEQUENTLY, THERE IS NO AUTHORITY FOR THE IRC, ITS CURRENT MEMBERSHIP, OR ITS RESPONSIBILITIES.

RECOMMENDATION 5-1-1 THE EXECUTIVE SHOULD DRAFT AND PRESENT TO THE METROPOLITAN KING COUNTY COUNCIL AN ORDINANCE TO ABOLISH THE DPPRC AND ESTABLISH THE IRC. THE PROPOSED ORDINANCE SHOULD IDENTIFY THE CORE MEMBERSHIP OF THE IRC, BROADLY DEFINE THE ROLE AND RESPONSIBILITIES OF THE IRC, INCLUDING ITS AUTHORITY TO CREATE POLICY, AND SPECIFY THE CONDITIONS UNDER WHICH THE CHARTERS OF THE IRC AND ITS SUBCOMMITTEES MAY BE AMENDED WITHOUT ENACTING NEW LEGISLATION.

RECOMMENDATION 5-2-1 THE COUNCIL SHOULD MAKE A DECISION REGARDING THE DIRECTION OF THE COUNTY'S INFORMATION MANAGEMENT PROCESS. A CHOICE SHOULD BE MADE TO EITHER:

A. RETAIN THE IRC WITH ITS CURRENT STRUCTURE AND RESPONSIBILITIES,

OR

B. RETAIN A MODIFIED FORM OF THE IRC AND ESTABLISH A PERMANENT GROUP OF PROJECT REVIEW STAFF UNDER THE DEPUTY COUNTY EXECUTIVE TO PROVIDE TECHNICAL ASSISTANCE TO PROJECT PLANNERS AND MANAGERS DURING BOTH THE PLANNING AND IMPLEMENTATION PHASES OF INFORMATION TECHNOLOGY PROJECTS,

IF THE COUNCIL CHOOSES OPTION A, THEN:

RECOMMENDATION 5-2-2 THE DEPUTY COUNTY EXECUTIVE, AS CHAIR OF THE IRC, AND THE ITS DIVISION MANAGER SHOULD REVIEW THE REQUIREMENTS OF THE DPPRC TO DETERMINE THE APPROPRIATE FORUM THROUGH WHICH THOSE ACTIVITIES CAN CONTINUE UNDER THE IRC STRUCTURE, AND MODIFY THE CHARTERS OF THE IRC AND ITS SUBCOMMITTEES TO ENSURE THAT ADEQUATE INFORMATION TECHNOLOGY PROJECT REVIEW AND OVERSIGHT OCCURS.

IF THE COUNCIL CHOOSES OPTION B, THEN:

RECOMMENDATION 5-2-3 THE DEPUTY COUNTY EXECUTIVE, AS CHAIR OF THE IRC, AND THE ITS DIVISION MANAGER SHOULD REVIEW THE REQUIREMENTS OF THE DPPRC TO DETERMINE WHICH ACTIVITIES SHOULD BE PROVIDED UNDER THE IRC STRUCTURE AND WHICH ACTIVITIES SHOULD BE PROVIDED BY THE PROJECT REVIEW STAFF. AT A MINIMUM, THE PROJECT REVIEW STAFF SHOULD:

- **PROVIDE TECHNICAL AND FINANCIAL GUIDANCE TO PROJECT PLANNERS AS THE PLANNERS DEVELOP INFORMATION TECHNOLOGY BUSINESS CASES;**
- **REVIEW PROJECT BUSINESS CASES TO ENSURE THAT THEY ARE ACCURATE AND COMPLETE, MEET INDUSTRY STANDARDS OF A BUSINESS CASE, AND HAVE ADEQUATE DOCUMENTATION TO SUPPORT THE COST AND BENEFIT DATA INCLUDED;**
- **PROVIDE OVERSIGHT DURING PROJECT IMPLEMENTATION, INCLUDING WARNING PROJECT MANAGERS WHEN DEVIATIONS FROM THE APPROVED BUSINESS PLAN HAVE THE POTENTIAL TO CAUSE DELAYS IN THE PROJECT SCHEDULE, INCREASE THE PROJECT SCOPE BEYOND THE APPROVED PLAN, OR INCREASE COSTS BEYOND THE AMOUNT ALLOWED THROUGH THE CONTINGENCY FUND.**

The IRC has made several changes to the way it conducts its business over the several years it has existed. Under the guidance of the new Chief Information Officer, additional changes have recently been approved. One of the most recent changes has been that the Chief Information Officer now chairs the Technology Subcommittee. Another, larger change has been the addition of the Project Review Board. Both changes are intended to increase the level of participation and the quality of decisions made.

We feel that it is premature to lock in the current structure through legislation recommended to the County Council. We will be evaluating how well the entire process works over the next year. If the current structure and process is working smoothly over the next year, at that point, we will be more comfortable proposing codification language.

We will return by April, 2000 with language that abolishes the DPPRC and institutes the IRC.

Recommendation 5-2-3 advises that a new staff group be formed to provide assistance to project managers and ensure that all business cases are uniformly accurate, complete and documented. We are concerned about the cost of such additional administrative support. The Project Review Board as described earlier, is intended to provide some of the support described in the audit report, but will use existing staff. As part of the process assessment work mentioned above, we will closely monitor whether existing staff resources can be effectively used in this way, or if the alternative of a separate, dedicated staff group is necessary.

AUDITOR'S COMMENT

Audit staff disagree with several points made in the executive response. First, the executive states that the county council's decision to fund projects recommended by the IRC "provided an appropriate level of legal legitimacy for the IRC." Nevertheless, the IRC cannot legally replace the DPPRC until legislation is enacted to abolish the DPPRC. The executive response also indicates that it is premature to lock in the current structure of the IRC and if the current structure and process of the IRC work smoothly over the next year, an ordinance to abolish the DPPRC and establish the IRC will be presented to the council by April 2000. Audit staff believe that if the IRC is to continue, an ordinance to abolish the DPPRC must be presented to the council so actions taken with respect to information technology projects are not taken in violation of existing language in the King County Code. Abolishing the DPPRC now would be merely a housekeeping task to allow the IRC to continue. Identifying only the core membership of the IRC in the ordinance, as recommended in the audit, would provide the flexibility needed to make changes to the IRC structure without additional legislative action.

Second, the executive response indicates that the IRC membership is "very similar" to the DPPRC with the exception of not listing an ex officio representative from the county auditor's office and suggests that this change be made to satisfy the membership requirement. However, the discussion in the audit text focuses on the lack of departmental representation in the IRC. Audit staff's concern is whether having only the four business area committee chairs attend the IRC meetings meets the intent of the King County Code to have "all major departments" represented at the DPPRC.

APPENDIX 2 (Continued)

Third, the executive response indicates that enabling legislation was not identified as an issue at the time the IRC was established. This is not true. As stated in the audit report, a draft ordinance was written to abolish the DPPRC and establish the IRC, but it was never presented to the council.

Fourth, the executive response indicated that the business case contains a detailed estimate and plan for the next phase of a project. However, the response fails to address the audit finding that these "detailed" estimates and plans are often not based on any reliable data and thus, technology investment decisions are generally made without a full understanding of a project's estimated costs.

Finally, the executive response promotes the Project Review Board as the solution to existing problems with the IRC. As stated in the audit report, audit staff do not believe that the Project Review Board will resolve existing problems with the IRC process because the duties of the board's members continue to be part-time and secondary to their primary responsibilities to their departments. The executive response also expresses concern over the costs of staff dedicated to project review. However, with the county spending over $70 million on technology projects in the last few years, the cost of these projects alone justifies the need to devote more resources to project review than can be provided by a few people on a part-time basis through the Project Review Board.

Finally, it was noted in the audit report that attendance at the Technology Subcommittee meetings was not consistent and the following recommendation was made:

RECOMMENDATION 5-3-1 THE CHAIR OF THE TSC SHOULD SEND A LETTER TO ALL COUNTY DEPARTMENTS AND AGENCIES ENCOURAGING THEIR PARTICIPATION IN THE TSC AND ITS DECISION-MAKING PROCESS FOR ESTABLISHING THE COUNTY'S TECHNOLOGY STANDARDS.

We will take steps to understand the underlying reasons behind the noted lack of attendance. From anecdotal discussions, we believe that because much of the information relayed in the meetings is written up and distributed via e-mail, actual attendance of meetings is not a high priority. Some specialized work has been handled by sub-teams, who have returned with written recommendations that are widely circulated. The sub-teams also make presentations to the main group. The Chief Information Officer chairs the meetings and therefore provides continuity between the work of this group and all other parts of the governance structure. Because the feedback processes related to

technology policy-setting and other informational exchanges seem to be working well, further action does not seem necessary.

AUDITOR'S COMMENT The lack of participation in the TSC is an indicator that the TSC is not as effective as it could be. The executive response states that members have an interest in obtaining the information resulting from these meetings; however, they continue to allow higher priority departmental tasks to take precedence over their TSC responsibilities. Until members see a clear purpose and benefit from their regular participation in TSC meetings, participation will continue to be limited.

Technology Investment Business Case, the Project Selection Phase and Audit Recommendations

When the current Chief Information Officer was hired in the middle of 1998, one of his priorities was to produce a strategic plan for county technology. Work on a 3-Year Technology Plan has been underway since November 1998. This plan will take a high level view and will propose investment initiatives to move the County's technology into the future and align technology with the overall business strategies of the County. These initiatives will be submitted in the budget process, where funding will be set aside to handle the initiatives. Later, after the funding has been approved, the initiatives will be developed into project proposals. The proposals will go through the Information Technology Investment Business Case process detailed in the Process Overview section above. If they are viable and remain viable through each of the four phases, they will be completed. But, the BAC or IRC can stop the project at any phase if they determine that the project will not produce the desired outcome.

Two audit recommendations related to the need for a plan are:

RECOMMENDATION 2-1-1 THE EXECUTIVE SHOULD ESTABLISH RESPONSIBILITY FOR DEVELOPING AND UPDATING THE INFORMATION TECHNOLOGY STRATEGIC PLAN.

RECOMMENDATION 2-1-2 AFTER RESPONSIBILITY FOR THE STRATEGIC PLAN IS ESTABLISHED, THE RESPONSIBLE PERSON/GROUP SHOULD CREATE A NEW STRATEGIC PLAN THAT IS BASED ON THE COUNTY'S CURRENT NEEDS AND ESTABLISH PROCEDURES TO ENSURE THAT THE PLAN IS UPDATED AT LEAST ANNUALLY.

Additionally, the 1999 adopted budget contains a proviso requiring a plan be provided to the Council no later than September 1, 1999.

> ***No later than September 1, 1999, the information and technology services (ITS) division shall forward to the council for review and approval a long-range plan for addressing technological change and the county's response to it. Such plan shall include a description of the technological services to be provided at the end of a three-year period and the costs associated with that service provision and the staffing needed to accomplish the outlined objectives. This plan shall also include measurable standards for determining the value of technological initiatives over the long term and shall address the issue of technological initiatives within individual departments and the division's role in providing guidance, expertise and oversight. The ITS division shall develop, in association with the production of a long-range plan, a mission statement, goals, objectives and performance measures designed to yield on an on-going basis concrete information for use by decision-makers on the success of the agency in implementing the long-range plan [Ordinance 13340, Section 111].***

We agree with the above audit recommendations and expect to meet the proviso's deadline for this material.

One other recommendation concerns the use of the plan as a guideline for approving technology plan:

RECOMMENDATION 2-1-3 THE EXECUTIVE SHOULD DEVELOP A POLICY REGARDING HOW PROJECTS NOT IN THE STRATEGIC PLAN SHOULD BE CONSIDERED, IF AT ALL. THE POLICY SHOULD INCLUDE CRITERIA THAT MUST BE MET TO ALLOW APPROVAL OF ANY PROJECT NOT IN THE STRATEGIC PLAN, AND SHOULD EMPHASIZE THAT SUCH APPROVALS WILL BE MADE ONLY IN EMERGENCY SITUATIONS.

As discussed earlier, the process of approving projects takes place in a political environment. In a perfect world, the policy described in the recommendation above would be the best policy. However, the reality of the county environment may result in project approval outside the plan. For example, the council could fund any project it determines to be worthy, regardless of the plan. An executive policy as recommended would not be binding on council funding decisions.

AUDITOR'S COMMENT While it is true that the council can fund any project it determines to be worthy, every project should be reviewed within the context of the strategic plan. A strategic plan would provide decision makers with adequate information to determine which projects in the plan would not be funded if a project outside the plan is funded or that the original projects should be funded as well.

There are two audit recommendations related to what the business case should contain and how the information in it should be used by the IRC:

RECOMMENDATION 3-1-1 THE EXECUTIVE SHOULD DEFINE AND CLARIFY THE COMPONENTS OF THE BUSINESS CASE THAT MUST BE SUBMITTED IN ORDER FOR INFORMATION TECHNOLOGY PROJECTS TO BE CONSIDERED FOR PROJECT FUNDING, INCLUDING:

- **DEFINING THE ROLES AND RESPONSIBILITIES OF EXECUTIVE SPONSORS;**
- **CLARIFYING THE CONTENT OF THE BUSINESS CASE BY PROVIDING A CLEAR STATEMENT OF WHAT EACH COMPONENT OF THE BUSINESS CASE AND SUPPORTING DOCUMENTATION SHOULD INCLUDE; AND**
- **ESTABLISHING A PROCESS AND FORMAT FOR UPDATING THE BUSINESS CASE SO THAT ALL CHANGES ARE DOCUMENTED AND CAN BE TRACKED.**

RECOMMENDATION 3-1-2 THE EXECUTIVE SHOULD ESTABLISH POLICIES AND PROCEDURES TO STRENGTHEN THE PROCESS FOR SCREENING INFORMATION TECHNOLOGY PROJECTS, INCLUDING:

- **SETTING MINIMUM ACCEPTANCE CRITERIA OR THRESHOLDS THAT A PROJECT MUST MEET IN ORDER TO BE CONSIDERED FOR FUNDING;**
- **ENSURING THAT ALL PROJECT PROPOSALS CONTAIN A COMPLETE AND ACCURATE BUSINESS CASE WHEN THEY ARE SUBMITTED FOR FUNDING APPROVAL AND THAT SUPPORTING DOCUMENTATION IS AVAILABLE AT THAT TIME;**
- **SPECIFYING IF AND WHEN EXCEPTIONS TO THE BUSINESS CASE REQUIREMENTS ARE ALLOWED; AND**
- **REQUIRING DOCUMENTATION OF THE REASONS FOR THE DECISION TO APPROVE A PROJECT WHEN SERIOUS QUESTIONS ARE RAISED DURING THE SCREENING PROCESS.**

Further work on clarifying content and standardization of reporting is ongoing. As each project manager and administrative support staff work with the current business case guide and begin producing reports for the BAC, IRC and Project Review Board, ITS staff will assess where clarifications and changes would help the communication of important information.

The screening process has many components that are more art than science in terms of judging when a proposal's next phase is ready to be funded. We currently require a complete and accurate business case as described in the Process Overview section. Documentation in addition to minutes of BAC and IRC meetings regarding the criteria applied by BAC and IRC members as they approve begins to add a layer of administrative costs for staffing these groups. The costs and benefits of such additional staffing will be added to the items to be brought to the IRC for consideration.

AUDITOR'S COMMENT The BAC and IRC meeting minutes provide

documentation of project approvals, not the detailed documentation to support a business case. There is currently no detailed documentation to support how project costs and benefits were calculated, and the current guidelines do not require such documentation to support the information provided in the business case. Audit staff recommend that previous project business cases be reviewed in addition to those submitted under the current guidelines to determine where clarifications and changes are needed. It is important to note that the example provided in the current guidelines is taken from the financial systems replacement project. That project was one of the six projects reviewed for this audit and formed part of the basis for the findings related to inadequate and incomplete business case documentation. As stated in the audit report, the current guidelines promote form over substance.

The executive response also indicates that the level of documentation recommended would result in additional administrative costs and staffing at the BAC and IRC levels. Audit staff disagree with this comment. If a project is adequately planned, including development of the associated costs and benefits, the information used as a basis for the costs (e.g., vendor price lists, salary schedules) should already be included in a project's supporting documentation. Audit staff also believe that if the county continues to spend significant amounts of money for new technology projects, such as the $70 million it spent over the last few years, it can't afford not to ensure adequate project planning.

One component of the business case is an assessment of the costs and benefits associated with the project being proposed. Three recommendations relate to this analysis:

RECOMMENDATION 4-1-1 IN COORDINATION WITH THE BUDGET OFFICE, THE EXECUTIVE SHOULD DEVELOP OR ADOPT A COST MODEL TO ASSIST COUNTY AGENCIES IN DEVELOPING THEIR CAPITAL AND O&M COST-BENEFIT ANALYSES FOR INFORMATION TECHNOLOGY PROJECTS. THE MODEL MUST:

- **BE COMPREHENSIVE TO ENSURE THAT ALL POTENTIAL COSTS AND BENEFITS, BOTH DIRECT AND INDIRECT, ARE CONSIDERED AND QUANTIFIED IN AS MUCH DETAIL AS IS REASONABLY POSSIBLE;**
- **INCLUDE A REQUIREMENT FOR SENSITIVITY AND ALTERNATE SOLUTIONS ANALYSIS, AS WELL AS FINANCIAL METRICS AGAINST WHICH FINANCIAL PERFORMANCE WILL BE MEASURED UPON PROJECT COMPLETION; AND**
- **INCORPORATE STANDARDS TO BE USED IN DEVELOPING SPECIFIC TYPES OF COSTS, INCLUDING BUT NOT LIMITED TO SALARY STEPS, BENEFIT FACTORS, AND INFLATION FACTORS.**

RECOMMENDATION 4-1-2 THE EXECUTIVE SHOULD DEVELOP AN INFORMATION TECHNOLOGY POLICY WHICH:

- **IDENTIFIES THE LEVEL OF DETAIL REQUIRED TO SUPPORT EVERY COST-BENEFIT ANALYSIS;**
- **REQUIRES THE SUPPORTING DOCUMENTATION TO INCLUDE NONMONETARY DETAILS, SUCH AS ASSUMPTIONS MADE WITH REGARD TO SPECIFIC LINE ITEM COSTS; AND**
- **REQUIRES PROJECT PLANNERS TO DEVELOP AND INCLUDE IN THE BUSINESS CASE AN O&M COST PAYMENT PLAN.**

RECOMMENDATION 4-1-4 THE EXECUTIVE SHOULD ESTABLISH A REQUIREMENT FOR COST-BENEFIT ANALYSES TO BE VALIDATED BY AN INDEPENDENT PARTY PRIOR TO INFORMATION TECHNOLOGY PROJECTS BEING SUBMITTED FOR APPROVAL. REASONS FOR DEVIATIONS FROM THE VALIDATED AMOUNTS SHOULD BE DOCUMENTED AND INCLUDED IN THE PROJECT BUSINESS CASE.

We agree that more detailed guidelines could be developed to help standardize the kind of analysis that is needed to make each business case comparable to other cases. This issue will be brought before the IRC so that a timeline and staff assignments can be worked out to provide more details and standardization.

In considering the recommendation of using an independent party to consult on a validation of each business case's cost-benefit analysis, the Governing magazine article by Ellen Perlman referenced in the audit report's bibliography was particularly helpful. It noted that the state of California spends between 5 and 30 percent of a projects cost for independent oversight on how each phase of a project is going. The validation of just the cost-benefit analyses would not be as extensive as a phase-by-phase assessment of project progress and should not be as large a component of the project budget, but such consultant support would add costs to project budgets.

In general, county managers have not been comfortable requesting administrative or consultant support to their project proposals. The overall sense has been that such support would be nice-to-have but not necessary and would likely be cut from any proposals prior to funding, either by the IRC, the Executive during the budget process, or by the council. As a result, some projects may have a tendency to initially underestimate the administrative resources they will need. The Project Review Board members are aware of this and intend to provide a "reality-check" to project managers at each phase of the project, as outlined in the Process Overview section.

In very large projects that span several years and have been assessed as particularly risky for some reason, it is likely that outside consultants will be proposed in order to mitigate the risks of the project rather than rely on the Project Review Board. In the case of the Financial Systems Replacement Project, a separate quality control/quality assurance function is being provided by a contract managed through the council auditor's office, but that is the exception and not the rule for county technology projects. The cost of this

contract is $250,000 within the $38 million total project budget, or .7% of the total project budget.

AUDITOR'S COMMENT The audit recommendation was that the cost-benefit analyses be validated by an independent party, not necessarily by an outside consultant. Audit staff believe that it would be cost effective to have such a validation performed by county staff who are independent of those who developed the analysis, such as the project review staff suggested in Recommendation 5-2-1. Audit staff also believe that having all analyses validated by the same group of independent staff would increase the reliability and consistency of all technology project cost-benefit analyses within the county. Although the executive response indicates that the Project Review Board will provide a reality check to project managers at each phase of the project, the level of review provided in the past indicates that this effort is not likely to be in sufficient detail to identify many of the potential problems. Additionally, audit staff would like to point out that the example used in the executive response is for a consultant retained for the life of the project to monitor project costs; but the audit recommendation is for validating the cost-benefit analysis prior to a project receiving final funding approval.

The last recommendation that deals with the Project Selection phase advises that the level of a project contingency should be standardized and linked to specific risk factors:

RECOMMENDATION 4-2-1 THE EXECUTIVE SHOULD DEVELOP A POLICY REGARDING HOW TO DETERMINE AN APPROPRIATE CONTINGENCY FACTOR FOR INFORMATION TECHNOLOGY PROJECTS. THE POLICY SHOULD ADDRESS THE NEED TO LINK THE CONTINGENCY TO PROJECT-SPECIFIC RISK FACTORS, IDENTIFY OTHER SPECIFIC FACTORS THAT SHOULD BE CONSIDERED OR EXCLUDED (E.G., INFLATION), AND MAKE IT CLEAR THAT CONTINGENCY FUNDS ARE NOT A SUBSTITUTE FOR POOR PROJECT PLANNING.

It is likely that the distinction between covering for poor project planning versus an appropriate use of contingency funds will, in hindsight, be in the eye of the beholder. However, the recommendation to standardize the establishment of a contingency factor is reasonable and will be part of the work to be brought before the IRC for a timeline and staffing assignment to be worked out.

The Monitoring Phase and Audit Recommendations

As projects are screened and approved for funding, they move into the active phases of design and implementation. There is a need for a central oversight in monitoring progress against budget and plans for these project phases. Several audit recommendations relate to this central monitoring function:

RECOMMENDATION 3-1-3 THE EXECUTIVE SHOULD DEVELOP A PROCESS FOR REGULAR, OBJECTIVE, AND THOROUGH REVIEW DURING IMPLEMENTATION TO ENSURE PROJECT ACCOUNTABILITY. THE PROCESS SHOULD INCLUDE ESTABLISHING RESPONSIBILITY FOR:

- **EVALUATING THE PROJECT AGAINST PERFORMANCE, COST AND SCHEDULE GOALS IN THE BUSINESS CASE;**
- **DETERMINING IF THE PROJECT IS MANAGING RISKS;**
- **IDENTIFYING AND MONITORING POTENTIAL PROBLEM AREAS SO THAT PROBLEMS CAN BE RESOLVED BEFORE THEY ESCALATE; AND**
- **DECIDING IF THE PROJECT SHOULD BE CONTINUED, MODIFIED, OR CANCELED.**

RECOMMENDATION 4-1-3 THE EXECUTIVE SHOULD ESTABLISH PROCEDURES TO ENSURE THAT CHANGES IN ESTIMATED PROJECT COSTS AND BENEFITS CAN BE TRACKED AMONG VARIOUS PROJECT DOCUMENTS. SUCH PROCEDURES SHOULD REQUIRE THAT:

- **CLEAR AND SPECIFIC DOCUMENTATION ACCOMPANY EACH CHANGE TO SUPPORT WHY SUCH CHANGES WERE MADE;**
- **COST CATEGORIES BE ESTABLISHED AT THE BEGINNING OF A PROJECT AND RETAINED THROUGHOUT THE PROJECT OR, IF CHANGED, THAT THEY BE SUPPORTED BY A CROSSWALK DOCUMENT TO FACILITATE CONSISTENT TRACKING OF COSTS THROUGHOUT THE PROJECT; AND**
- **PROJECT MANAGERS UPDATE THE COST-BENEFIT ESTIMATES DURING PROJECT IMPLEMENTATION.**

RECOMMENDATION 4-1-5 THE EXECUTIVE SHOULD ESTABLISH A POLICY THAT REQUIRES PROJECT MANAGERS TO:

- **MANAGE PROJECT COSTS NOT ONLY TO THE BOTTOM LINE, BUT ALSO BY COST CATEGORY (E.G., SALARIES, EQUIPMENT, SOFTWARE, TRAINING); AND**
- **PREPARE AND SUBMIT TO THE EXECUTIVE A STATEMENT HIGHLIGHTING POTENTIAL PROBLEM AREAS WHENEVER COSTS FOR A SPECIFIC COST CATEGORY EXCEED THE BUDGET FOR THAT CATEGORY BY MORE THAN 10%, BASED ON THE PROJECT'S PERCENTAGE OF COMPLETION.**

These recommendations advise that project reporting be standardized so that reports can be followed over the life of the project and will be added to the items that will be brought before the IRC for consideration.

Regarding the last subsection of the Recommendation 3-1-3 above, a Go/No-Go/Modify decision is made before the project is allowed to move through each of the four project phases of Business Analysis, Alternatives Analysis, Design, and Implementation [please refer to the Technology Investment Roadmap diagram in the Process Overview section of

this response]. In support of these milestone decisions, the Project Review Board will meet with the project manager at each phase.

The general approach to funding and managing projects assumes 4 phases for each project, with project proposal approval occurring prior to continuing into the next phase. The proposal for each phase gives an estimate for the next phase that could be held within 10%. The estimate for the rest of the project will then be a range of costs. For example, until accurate business requirements have been gathered, estimates of the implementation phase cannot be detailed. Similarly, until a software package has been selected through the RFP process, the costs of that package, the necessary hardware, the training costs and implementation resources, cannot be estimated in detail.

There is a danger to setting arbitrary exception standards at an early stage of a project: project managers may either overestimate project costs so as to ensure they will not exceed original estimates, or they may underestimate costs so that the project is approved with the idea that once begun, it will be difficult to not fund overruns if they can be justified. One of the objectives of the IRC process is to provide an operating structure so that good information is provided to decision-makers.

Regarding the last subsection of the Recommendation 4-1-3 above, cost-benefit estimates are updated before the project is allowed to move through each of the four project phases.

Regarding the last subsection of the Recommendation 4-1-5 above, rather than reporting to the Executive, given the governance structure currently in operation, the IRC is the more appropriate recipient of the project exception reports. Especially in the case of projects managed by separately-elected officials, the Executive would have a more limited range of responses to project progress issues.

AUDITOR'S COMMENT Audit staff agree that all costs cannot be accurately estimated prior to project implementation. However, improvements still need to be made in the estimating process prior to projects being implemented. As noted in the audit report, the estimates reviewed by audit staff generally included large, rounded numbers that lacked supporting documentation to indicate that they were based on any realistic data. Additionally, some BAC members indicated that it became clear during project presentations that some numbers in the estimates had been "pulled out of the air." Audit staff also identified numerous inconsistencies in the way estimates were developed, such as large differences in salary estimates for identical positions in the various components of the financial systems replacement project. The audit recommendations are intended to address these deficiencies, not to require perfect cost pricing prior to project implementation.

The executive response also indicates that cost-benefit estimates are updated before a project is allowed to move through each of the four project phases. However, once the fourth phase, implementation, has begun, the estimates generally are no longer updated to ensure that

project budgets remain realistic. Additionally, the executive response's comment misses two main points in the audit finding. First, it is difficult to monitor costs throughout the life of a project because estimate revisions are not developed in a way that facilitates tracking the changes between the original funding estimate and the updated estimate. Second, adequate planning will help ensure that the cost estimates are as realistic as possible at the beginning of a project.

The executive response further indicates that the IRC is a more appropriate recipient of project exception reports than the executive. It should be noted that audit staff make recommendations to the executive with the understanding that the executive has the authority to delegate responsibility for implementation of those recommendations.

The following recommendation deals with the management of contingency funds during the life of a project:

RECOMMENDATION 4-2-2 THE EXECUTIVE SHOULD DEVELOP A POLICY REQUIRING THE MANAGEMENT OF CONTINGENCY FUNDS FOR INFORMATION TECHNOLOGY PROJECTS. THE POLICY SHOULD REQUIRE THE FUNDS TO BE MANAGED THROUGH A SEPARATE ACCOUNT AND PROJECT MANAGERS TO PROVIDE JUSTIFICATION SUPPORTING WHY THEY ARE USING CONTINGENCY FUNDS. THE POLICY SHOULD ALSO ADDRESS HOW ANY LEFTOVER CONTINGENCY FUNDS WILL BE DISPOSED OF (E.G., DO THEY REVERT TO THE GENERAL FUND OR BELONG TO THE AGENCY FOR USE IN FUTURE PROJECTS?).

This recommendation advises that contingency funds be managed consistently across all projects. The Process Overview section described the current process where many opportunities for all cost estimates, including contingency funds, be re-justified at various phases of the project. As funds become available through under-expenditures, they are added back to the BAC and IRC process of allocating funds to worthy projects.

AUDITOR'S COMMENT The executive response does not address the main point of the recommendation, which is to justify the need for using contingency funds to identify when the funds are

being used as a substitute for poor project planning. Audit staff want to reemphasize that project planners and managers need to be held accountable for their projects, and one way to do this is to monitor the reasons why contingency funds are being used. This can help identify areas where improvements need to be made in the cost estimating process, which will ultimately improve the county's overall technology project planning procedures.

The following recommendation relates to setting up a policy to guide the determination of when the capital-funded phases of a project are completed and the regular, ongoing O&M costs should begin:

RECOMMENDATION 4-3-1 THE EXECUTIVE SHOULD ESTABLISH A POLICY TO CLARIFY WHEN PROJECT COSTS SHOULD BE CONSIDERED CAPITAL VERSUS O&M. THE POLICY SHOULD SPECIFICALLY ADDRESS HOW TO IDENTIFY O&M COSTS FOR COMPLETED PHASES OF A PROJECT WHEN OTHER PHASES ARE STILL BEING IMPLEMENTED.

Each project will have some unique characteristics that may produce shades of gray on when O&M charges should begin. This will be added to the items to be brought before the IRC so that a timeline and staffing assignment can be determined.

AUDITOR'S COMMENT Audit staff believe that improvements can be made in monitoring the transition from capital to O&M costs, even when some areas may not be as clear as others. The maintenance contract example cited in the audit report was a clear example of an O&M cost being charged to capital funds and is representative of the type of situation to which the audit finding refers.

<u>The Evaluation Phase and Audit Recommendations</u>

After a project is completed, a close-out process begins. The following recommendations relate to this post-implementation phase of a project:

RECOMMENDATION 3-1-4 THE EXECUTIVE SHOULD ESTABLISH POLICIES AND PROCEDURES FOR THE POST IMPLEMENTATION REVIEW TO ENSURE THAT THE REVIEW:

- **FOCUSES ON PROJECT MANAGEMENT ISSUES IN DEVELOPING LESSONS LEARNED;**
- **IS TIED INTO PROJECT RISKS AND THE RISK ASSESSMENT; AND**

· **EVALUATES PROJECT SUCCESS IN MEETING PROJECT GOALS, INCLUDING PERFORMANCE, COST, AND SCHEDULE GOALS.**

RECOMMENDATION 3-1-5 THE EXECUTIVE SHOULD ESTABLISH A PROCESS TO BUILD AND MAINTAIN A HISTORY OF INFORMATION TECHNOLOGY PROJECTS. THE HISTORY FILE SHOULD INCLUDE ALL ASPECTS OF THE BUSINESS CASE, INCLUDING EVALUATIONS OF PROJECT SUCCESSES AND PROBLEMS, AND USE THAT HISTORY, IN COMBINATION WITH LESSONS LEARNED IN THE POST IMPLEMENTATION REVIEW, TO REFINE THE PROCESSES FOR PROJECT PLANNING, SCREENING, IMPLEMENTING AND MONITORING.

RECOMMENDATION 4-1-6 THE EXECUTIVE SHOULD DEVELOP A POLICY TO ESTABLISH ACCOUNTABILITY REQUIREMENTS FOR PROJECT RESULTS BASED ON THE APPROVED BUSINESS CASE. WHILE SUCH A POLICY NEEDS TO ALLOW FOR A MARGIN OF ERROR IN THE COST-BENEFIT ANALYSIS, IT SHOULD ALSO ESTABLISH CONSEQUENCES FOR SITUATIONS WHEN, DUE TO POOR PROJECT PLANNING, THE FINAL COSTS EXCEEDED THE ORIGINALLY ESTIMATED COSTS BY MORE THAN 10%, THE PROJECTED BENEFITS WERE NOT ACHIEVED, OR THE PROJECTED BENEFITS WERE MORE THAN 10% LESS THAN ORIGINALLY ESTIMATED.

RECOMMENDATION 4-1-7 THE EXECUTIVE SHOULD ESTABLISH PROCEDURES FOR FEEDING LESSONS LEARNED BACK INTO THE COST-BENEFIT ESTIMATE METHODOLOGY TO IMPROVE THE RELIABILITY OF FUTURE COST-BENEFIT ANALYSES.

The above recommendations are intended to improve the final documentation of a project with the idea of providing future projects with information so that, to the extent possible, problems aren't repeated. This is certainly a laudable objective and will added to the items to be brought before the IRC for discussion.

Recommendation 4-1-6 contains a punitive tone that may be difficult to set into a written policy without causing good project managers to be wary of taking on a new assignment. Good management requires a certain amount of flexibility and that the oversight environment be supportive so creative discussions can take place when the inevitable problems crop up. With respect to technology projects in particular, the environment changes so rapidly, final costs can exceed original plans by large amounts if, say, a vendor whose cost estimates were used for the original estimates goes out of business or does not bid on the project. It is important to have a process where cost increases that are out of the control of project managers can be evaluated dispassionately without implying that the original project plans are at fault.

In addition, it is very difficult to attract and retain good project managers and staff in today's business environment given the salary limits and working conditions at the county. It's interesting to note that only the "stick" of establishing consequences is recommended with no balance of a "carrot" in the form of a, say, a bonus for coming in under budget, ahead of schedule or with additional benefits not originally foreseen. If such creative

solutions can be considered, the county would have a better chance to develop and retain high-quality project staff, making it more likely that projects are successfully completed sooner than would otherwise be possible.

AUDITOR'S COMMENT

Audit staff agree that incentives for bringing a project in under budget, ahead of schedule, or with additional benefits can improve the county's ability to develop and retain high-quality project staff and that a certain amount of flexibility is needed in project management. However, audit staff would like to reiterate that the audit recommendation was that consequences should be established only for instances where significant overruns are due to poor project planning. Audit staff did not intend the consequences to be applicable for circumstances beyond the control of the project planners and managers.

APPENDIX 2 (Continued)

PLAN AND TIMETABLE FOR IMPLEMENTING AUDIT RECOMMENDATIONS

The Response to Recommendations of the FINAL DRAFT AUDIT REPORT OF THE INFORMATION TECHNOLOGY PLANNING, DEVELOPMENT AND IMPLEMENTATION PROCESSES, explains how recommendations will be addressed. The following timeline identifies when specific actions outlined in the response will be addressed.

Action	**Date**
Develop and Information Technology Investment Business Case	Complete
Develop a Project Review Board	Complete
Develop a Three Year Technology Plan	Sept 1999
IRC Will Evaluate and Consider Staffing and Funding to Address Additional Administrative Support and Tracking of Projects and the Process	2000 Budget Process
Develop language to abolish the DPPRC and institute the IRC.	April 2000

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