King County

Metropolitan King County Council
King County Auditor's Office
Cheryle A. Broom, *King County Auditor*
King County Courthouse
516 Third Avenue, Room W1033
Seattle, WA 98104-3272
206.296.1655 Fax 206.296.0159
TTY 296-1024
www.metrokc.gov/auditor

M E M O R A N D U M

DATE: August 31, 2007

TO: King County Council Capital Budget Committee

FROM: Cheryle A. Broom, County Auditor

SUBJECT: Briefing on Capital Projects Oversight Model Final Reports

The King County Council's adopted 2007 budget funded a Capital Project Oversight pilot program within the auditor's office to oversee major county projects. This pilot project stems from longstanding issues related to project overruns, the adequacy of information provided to the council on capital projects, and the timing of the information transmitted to the council.

On September 5 the consultant team that was chosen to assist the auditor's office in developing and implementing the pilot project will be presenting two reports to the Capital Budget Committee:

> **Part A Report**—"Design of a Model for the Auditor Office's Capital Project Oversight Reporting"
>
> **Part B Report** — "Plan for the Implementation of a Model for the Auditor's Office Capital Project Oversight Reporting"

A draft of the Part A report was presented to the Capital Budget Committee by audit staff on August 1. The Part A report recommends a model for legislative oversight of major capital projects. For such oversight to be effective, the report also makes a series of recommendations to the council, the executive, and the auditor for improving the county's overall capital budgeting process and project reporting. The Part B report, which is more of a technical document, focuses on specific activities, processes, and resources the auditor's office can employ to implement oversight.

Bruce Stephan of PMA Consultants and Gordon Maclean of Saybrook Associates will be making the presentation. Copies of the two reports are attached to this memorandum.

Following the presentation of the Part A and B reports, the next step for the Auditor's Office will be to develop and present to the County Council an action plan. This plan will address any specific legislation that will need to be enacted in the near term by the Council, and identify immediate resource needs related to implementing the oversight model (e.g., hiring an Oversight Manager, finding office space, acquiring additional technical assistance), and continuing oversight efforts currently in progress. We expect to be able to present this action plan to the County Council by October.

Bob Thomas, Senior Principal Management Auditor, is the lead staff person for this project. If you have any questions please contact Bob at 206-296-1655 or me at 206-296-0382.

CB:BT:yr

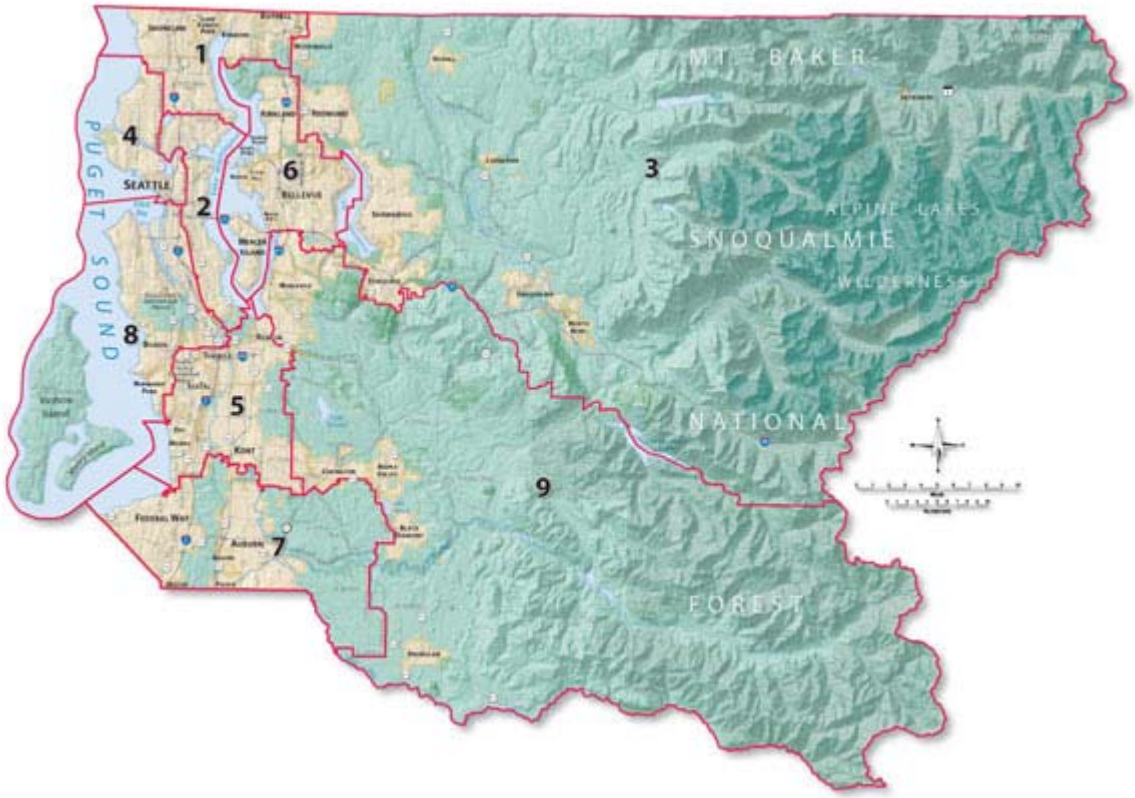
Attachments: Part A Report—"Design of a Model for the Auditor Office's Capital Project Oversight Reporting"

Part B Report —"Plan for the Implementation of a Model for the Auditor's Office Capital Project Oversight Reporting"

cc: King County Councilmembers
Capital Budget Committee Staff

PMA Consultants
Est. 1971

King County
Capital Project Oversight – Phase 1



REPORT A
Design of a Model for the Auditor's Office Capital Project Oversight Reporting

Prepared by:

Bruce Stephan, PE
John Knoke, PE
Joan Stephan, Esq.
PMA Consultants LLC
2 Penn Plaza, Suite 1080
New York, NY 10121
(917) 842-1970
bruce@pmaconsultants.com

Gordon MacLean
Robert Jacobsen
Saybrook Associates, Inc.
2575 E. Camelback Road
Suite 450
Phoenix, AZ 85016
(602) 346-5335
gmaclean@saybrook-associates.com

August 31, 2007

King County

TABLE OF CONTENTS

Executive Summary 3
Overview 3
Summary of the Model 4
Key Elements of the Model 5
1. Background 8
2. Design of the Legislative Oversight Model 9
2.1 General Oversight Recommendations 9
2.2 Organizational Recommendations 15
2.3 Communication Recommendations 17
2.4 Budgeting Phase Recommendations 19
2.5 Contracting & Procurement Phase 23
2.6 Planning Phase 24
2.7 Implementation Phase 25
2.8 Reporting Recommendations 27
3. Conclusion 32

Executive Summary

Overview

In an effort to resolve longstanding issues related to project overruns and the adequacy and timing of capital project information, the County Council retained PMA Consultants LLC and Saybrook Associates, Inc (the PMA Team or PMA) to design a legislative oversight model for major capital projects.[1] The County Council also directed the King County Auditor's Office (KCAO) to implement the model on a pilot basis, in cooperation with executive agencies. The recommended oversight model, presented in its entirety in this report, reflects the PMA Team's extensive expertise and experience in capital project management in the public arena.

Prior to developing the oversight model, the PMA Team initiated a review process that included:

- An intensive series of interviews with a broad cross section of King County's elected and appointed officials, as well as implementing agency project management and oversight consultants.
- A detailed examination of four major capital projects: Accountable Business Transformation (ABT), the Ninth and Jefferson Building (NJB), Brightwater, and the Integrated Security Project (ISP).
- A review of county policies and procedures, Capital Improvement Program (CIP) documentation, contract documents, and project management records and status reports.
- Council-mandated research into best practices for legislative oversight used by peer agencies.

Based on this review process, the PMA Team concluded that complex and fragmented communication is a core issue that must be addressed by King County to institute a successful legislative oversight model. The communication issues have been exacerbated by a lack of trust that sometimes occurs between the executive and legislative branches of King County government. In addition to recommending an oversight model, this report identifies steps that are needed to break this counterproductive communication cycle and build a relationship of trust between the branches. Ideally, the executive and legislative branches would work together to implement a *shared* oversight and reporting model that builds a relationship of trust and meets their joint needs.

Our evaluation found that the executive agencies have professional staff knowledgeable in engineering and construction that follow professional standards of care and are using some best practices for project management, at least on the large projects we reviewed. We also found that there are already some well thought out oversight mechanisms in place in the executive branch that provide appropriate checks and balances.

Where we found problems was in the area of reporting. PMA evaluated King County's existing reports and determined that the information provided is not sorted or summarized to the level needed for a busy non-technical person on the Council. The reports rarely show the original budget, explain changes, or use trending to forecast the project cost and schedule at completion. Moreover, there is not any multi-project reporting. Project status reports are too long for consumption by the Council, and they are not standardized.

[1] King County RFP102-07CMB

Summary of the Model

The table below summarizes the key elements of the proposed model for capital project oversight within King County. It should be noted that many of the elements do not pertain directly to the project oversight by the King County Auditor's Office, but instead to actions that the Council and Executive can take to improve reporting and to allow for oversight to be effective. These are explained briefly in the table and in more detail in the body of the report. A summary of the specific recommendations for implementing the model and for enhancing reporting and oversight are included at the end of this report in the Conclusions chapter.

Goal	Element of the Model that Meets the Goal	Branch
Provide effective independent oversight	• Reassign oversight consultant contracts to KCAO	KCAO to implement
	• Develop a plan for communication of information within and among Council members and staff	KCAO to implement
	• Hire an oversight manager and 2-4 oversight specialists trained and experienced in project management	KCAO to implement
Focus the oversight on high risk projects	• Establish a systematic process to prioritize projects for oversight based on objective criteria and using a model such as presented in this report	KCAO to lead implementation with input from Council and Executive agency staff
Increase the likelihood of continued project success	• Establish policy to facilitate better estimating of costs and schedules for projects proposed for funding ➢ Ensure thorough and consistent budget estimates by establishing an estimating standard all groups must follow ➢ Require that budget estimates be based on design documents available at completion of conceptual design ➢ Require a preliminary construction schedule during design • Require a Project Execution Plan defining roles and responsibilities of team as part of an appropriation request for high risk projects (can select using priority code) • Build in project schedule contingency to construction contracts by selecting appropriate Contract Completion dates	Council to draft policy. Executive to implement
Identify problems in a more timely manner	• For selected major projects of high risk, the Council should approve release of funding in phases tied to the completion of design milestones and performance of best practices • Establish standard forecasting and trending practices, and requirements for the timing of the reporting of overruns and delays to Council • Require project teams to do formal risk assessments on high risk projects (as defined by the risk rating model) before releasing funding for the final design phase • Have oversight staff attend progress meetings on high risk projects to get status first hand	Council to draft policy. Executive to implement KCAO to implement
Provide clear, succinct reports that facilitate decision-making	• Provide multi-project reports with red/yellow/green light early warning system to focus Council's attention on critical issues • Establish a standard one-page project report maintained by Oversight Group	KCAO to implement a short term solution. Council, KCAO and OMB to

Goal	Element of the Model that Meets the Goal	Branch
	• Compare original cost and schedule to latest forecast at completion and trend curves in reports • Show expenditures to date on reports • Oversight Group to publish data in a new online reporting system • Have the Oversight Manager interpret data and provide analysis and commentary for Council	collaborate on a long term, countywide system solution
Facilitate decision-making by the Council	• Show appropriate line item detail in the budget estimates	Council to draft policy. Executive to implement
	• Establish a standard form the executive branch uses when submitting decision packages to the Council, where the Council is being asked to decide among project alternatives	Council to implement

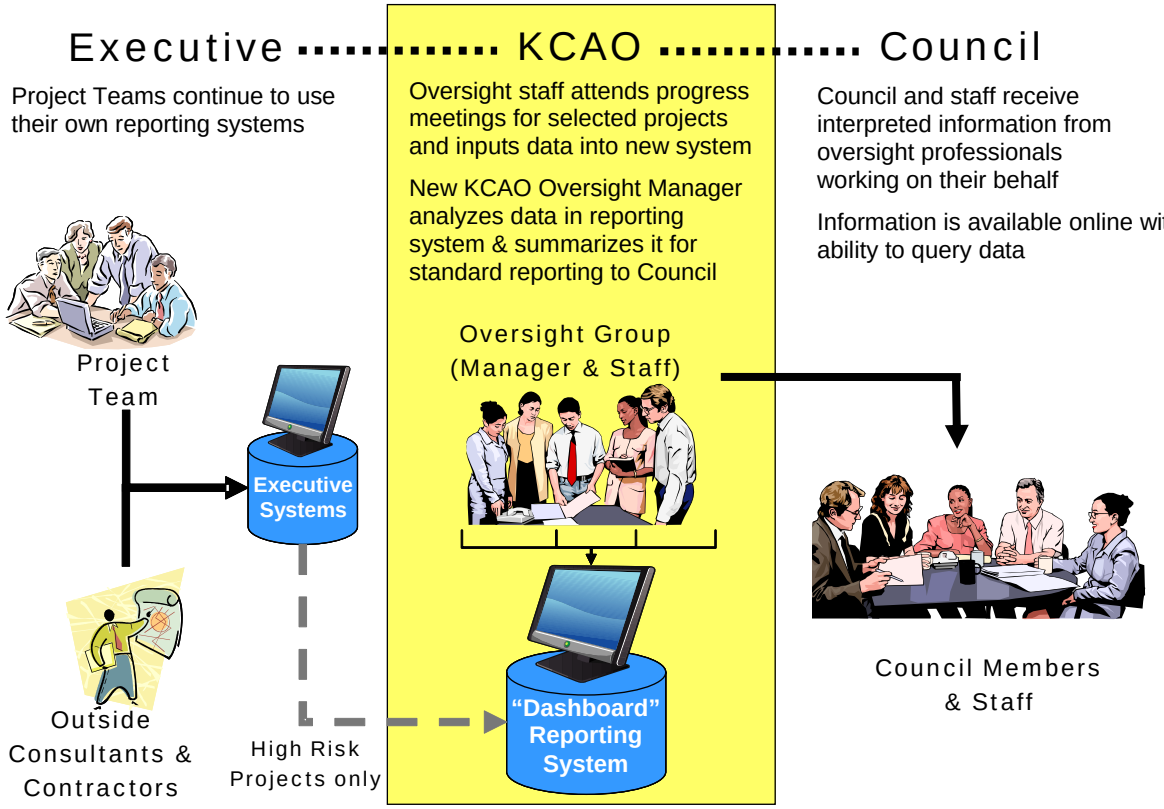
Key Elements of the Model

As indicated in the model summary, the focus of oversight should be on high risk projects. The PMA Team recommends that the Council select a limited number of projects from the approximately 1,500 projects in the budget system for oversight. This report includes a risk rating model that can help in this selection process.

Another key element of the oversight model relates to the staffing of the oversight function within the King County Auditor's Office. Our recommendation is that KCAO should hire a project Oversight Manager (OM) knowledgeable in design and construction project controls. This new position will need to be supported by three to four Oversight Specialists (OS), initially two of whom could be employees and one or two could be consultants. The OS staff will be responsible for gathering project status data first hand by attending the projects' regular progress meetings, and preparing initial project reports. The OM will analyze the project data and structure reports for Council, and will manage the oversight staff. The OM will also be the primary communication link between the oversight staff and the Council.

In order to succeed at oversight, we recommend that the new independent oversight group be provided with a simple reporting system they control so they can produce standardized one-page project status reports and a multi-project report that highlights issues. They should input and maintain the data in the system. The system should be online and available to Council and Executive staff.

The long term vision of this oversight organization is shown below in the graphic representing the proposed model:



In order for our recommendations to succeed, we feel very strongly that the Council needs to keep a tight hand on the "purse strings" of high risk projects by phasing the release of the project funding. Although the full appropriation can be made in the budget process, the Council could condition the release of the money on the project achieving certain milestones. This will require the project teams to return to the Council with better information and to demonstrate implementation of best practices.

Although the scope of work specified in the RFP for this evaluation emphasized oversight during the implementation phase of projects, our research indicates that effective legislative oversight should focus on the entire lifecycle of the capital improvement project, from budgeting to completion of a project. In order to enhance the Council's broader oversight, we recommend that the Council draft policy that requires the Executive to:

- Develop standardized budget development and project reporting formats for capital projects.
- Identify high risk projects that need project oversight by employing a model such as described in this report.
- Prepare better estimates based on conceptual design for projects in the current year's budget.
- Always, in all reports, include original budget and schedule and explain key changes.
- Establish a standard that projects must follow to forecast cost overruns and delays.

The recommended oversight model should not, and is not intended, to increase the Executive's cost of doing business beyond that required to implement best practices that should be followed in any event on high risk projects. Nor does the model represent a new layer of oversight. Instead, it represents a strengthening of the oversight that currently exists. The model strikes the delicate balance between the Council and public's right to know and the Executive branch's right to manage the projects under separation of powers principles. Under the proposed model the oversight staff will receive project information earlier, some of which should remain confidential. Consequently, the

Auditor's Office will need to establish appropriate confidentiality protocols that will give the Executive branch agencies the appropriate leeway to adjust to changing circumstances, but at the same time preserve the Council's right to know. Building trust between these two branches of county government will be the key in ultimately preserving this delicate balance.

The design of the proposed model is explained in more detail in the body of the report.

.

1. Background

King County issued RFP 102-07CMB seeking an independent consultant to design a model for a capital project oversight and reporting function that will ensure that the County Council and public receive sufficient and timely information on the status of major capital projects. The RFP states that "the County Council's intent is that oversight provided by the KCAO will help improve the capital budgeting and implementation process overall, and in particular to better control project overruns and unplanned expansion of project scopes, schedules, and budgets." After a public bid process and in-person interview, the decision was made to award the contract to a team made up of PMA Consultants LLC and Saybrook Associates, Inc. ("the PMA Team" or "PMA").

The PMA Team was issued a Notice to Proceed on Wednesday March 12, 2007. We immediately mobilized three staff to King County offices. Over an eight-work-day period from March 14th to 23rd we conducted nineteen interviews that included 109 County staff and consultants involved in capital project management across a broad cross section of departments. The purpose of the interviews was to identify Council and Executive agency concerns with methods of project oversight historically provided in King County, including perspectives on strengths and weaknesses.

Discussions with County staff continued throughout the month of April and the early part of May via e-mails and phone calls. We collaborated closely with King County Auditor staff, issuing a number of drafts to clarify our understanding of the issues and eliminate any erroneous data or misunderstandings. We also met with Executive and Council staff in late June to get feedback on the report. The interview notes and the information gathered as part of this process were assimilated into this report, which recommends a model for an oversight function tailored to King County's unique needs.

Note that PMA's assignment focused on three county projects managed by the Wastewater Treatment Division (WTD), the Facilities Management Division, and the ABT Program Management Office within the Department of Executive Services, and on a Harborview Medical Center project managed by the University of Washington and NJB Properties. We did not analyze the processes, systems, or any concerns related to Transit, Roads or Solid Waste, the other major players in the capital arena. When this report makes cross-cutting recommendations, these apply generally to the CIP process, but do not necessarily pertain to any findings regarding those agencies we did not interview.

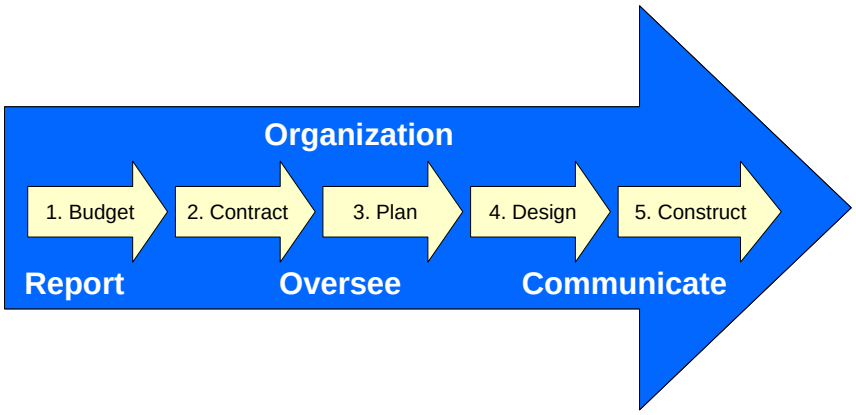
We were also asked to research best practices for legislative oversight methods. The best practices included in this report came from two sources – the direct knowledge and experience of the team gained while working for public agencies, and interviews of peer agencies. To select agencies with legislative oversight we asked the leadership of PMA and Saybrook (representing approximately 30 staff with decades of combined public project management experience) if they knew of any existing legislative oversight models of the breadth indicated in the RFP for this review. Not one agency doing legislative oversight came out of this request, so we instead selected comparable public entities similar in general characteristics, capital program size, and types of capital projects to those of King County.

Once the peer entities were selected, we interviewed (by email and/or phone) their officials who had knowledge of the legislative oversight process or who were responsible for most aspects of the capital project budgeting or delivery process. We discussed legislative oversight best practices used by their respective agencies and collected any related documents or models.

In developing the recommended model, the PMA Team took into account the King County Council's policy-making powers and the "power of the purse" to achieve the stated goals. We also referred to documented best practices from the Project Management Institute (PMI).

2. Design of the Legislative Oversight Model

This section of the report presents our team's recommendations for how the King County business processes can be enhanced to facilitate the appropriate level of legislative oversight. The subparts to this section represent elements in the life cycle of a project. These include oversight; the organization of budgeting, contracting, planning, design, and construction; reporting; and communication, as shown in the graphic below:



2.1 General Oversight Recommendations

This subpart of the model responds to the questions posed within the scope of work of the RFP and discusses the PMA Team's general oversight recommendations. The details of how the oversight is performed are covered by the other subparts of the model section. The following recommendations are included in this section:

- Establish a legislative oversight model that builds on positive aspects of past oversight projects
- Establish a legislative oversight model that complements and enhances, rather than duplicates, existing oversight functions
- Establish objective criteria to provide Council with a list of high profile projects for oversight

Each of these recommendations is explained in more detail below:

Establish a legislative oversight model that builds on positive aspects of past oversight projects

An early example of oversight provided by the County Council through the Auditor's Office came out of a 1998 budget proviso calling for independent oversight of the Financial Services Replacement Project. PMA interviewed Council staff involved in this early oversight and identified the oversight practices that they felt were of particular value. It was reported that the oversight team was truly independent and staffed with strong-willed people willing to stand up to opposition if warranted. Weekly meetings were held between Council staff and the oversight consultant. The status reports were written in layman's terms and identified problem areas using color codes (red, yellow, green light concept). Finally, there was a collaborative relationship among the Executive, Council and oversight team.

These oversight practices, as described, accord with PMA's own experience and opinion about what can work well in providing oversight, and we find the reporting approach and the collaborative relationship to be particularly attractive ideas. Accordingly, this report contains recommendations for adopting several of the elements of this earlier oversight effort.

Establish a legislative oversight model that complements and enhances, rather than duplicates, existing oversight functions

The model of Council oversight recommended in this report is intended to enhance and leverage existing oversight functions where practical. New reporting and oversight responsibilities are suggested only when they follow best practices and add value. In this section we describe the existing methods of project oversight provided by King County's Office of Management and Budget, County Council, the Procurement and Contract Services Section, the Joint Advisory Group, Executive Audit Services, and the Auditor's Office. The types of decisions that are made by each of these entities (from inception to completion), and the types of information that are provided to each entity in support of those decisions, is also discussed.

Office of Management and Budget (OMB)

OMB serves an important oversight role for the budget process. The office is responsible for producing the annual Executive Proposed Capital Improvement Program and the Adopted Budget and, in order to do so, collects the proposed budgets of the various appropriation units within the county. They are responsible for monitoring agencies' budgets during the year and communicating any problems or issues identified to departmental management for resolution.[2] In the second quarter of each year, in a process labeled "CIP reconciliation" the continued availability of revenue is reviewed. Occasionally, expenditure budget adjustments are necessary to rebalance the capital program if a share of the revenues is no longer available. Supplemental budget authority may also be necessary if bid amounts exceed budget and the options to reduce scope are limited.

The annual budget process follows an established calendar which only allows the Council 5-6 weeks to review the budget, ask questions, and seek clarification. This short review period leads to the Council adding provisos to the budget to get questions answered, impose conditions on the funding, or impose oversight. OMB works with the implementing agencies to respond to the provisos between the budget adoption during the week of Thanksgiving and the middle of March.

County Council

The Council is the policy-making body of the county and has broad legislative powers. The Council's primary ability to influence CIP Project success rests in its "power of the purse." The Executive branch agencies receive funds appropriated by the Council to perform capital projects. The Council can influence the success of projects by limiting the amount of money granted at any one time, or by placing conditions on the granting of the money.

The current practice at King County is that the Executive makes initial decisions regarding which projects should receive the limited general fund money, and then presents the Council with a fully funded budget. The Council therefore generally does not see the projects that were not selected. With 1,500 projects to review in five weeks and no ability to sort or query the budget, the Council relies on ad hoc information sources. This leaves the Council at a disadvantage in the selection of projects.

The Council exercises its power of the purse during the budget process through the use of provisos. Unless a proviso is tied to a project, the Council generally does not hear about it again until more funding is needed or issues arise that require Council action.

Procurement and Contract Services Section (PCSS)

The PCSS serves an important role in the Executive's oversight of projects through Project Control Officers (PCO) in each implementing agency and the Finance Division. This role was established to "ensure that the necessary project controls are in place to help produce a quality capital project that is

[2] BUD 9-1 Revision of Budget Administration

completed on time and within budget."[3] PCOs are also responsible for establishing best business practices, process and documentation standards; ensuring that adequate controls over project cost, schedule, and quality are in place; and ensuring that public funds are expended prudently and properly substantiated. This helps make the Executive's project representatives accountable for compliance with the policies and procedures.

Specific areas of the PCO's review defined in the policy include documentation related to project initiation, procurement, use of price/cost analysis, change order/amendment process, progress payment processing, design management, contingency tracking/usage, schedule management, management reporting, and document control process. They review change order files to provide an evaluation of the documentation and ensure standards are being met, such as receipt of authorization from agency directors for all change orders and amendments that cause use of over 10% contingency.[4]

PCOs are assigned to projects whenever the contract value exceeds $2 million for professional service contracts or $10 million for construction service contracts, or when the Project Representative notifies them that the total executed and anticipated change orders/amendments exceed $150,000 or a contract anticipates 7.5% change order growth.

PCOs currently maintain their independence from the project team by reporting to at least one level above the Project Representative. They are responsible for training project management personnel to ensure consistency in policy and procedure interpretation and application. The Finance Division PCO trains the agency PCOs to ensure consistency in the PCO function, periodically reviews the performance of the agency PCOs, notifies the agency director if an agency PCO is not performing adequately, reviews past projects on which the agency PCO was assigned, and recommends further training.

While this procedure establishes an important oversight for the executive branch, it does not benefit the Council because the PCOs are not required to report to Council staff. During our interviews PMA heard from a PCO that there is no official requirement that PCOs report or inform Council of any change in scope, cost, or schedule.

Joint Advisory Group (JAG)

The Joint Advisory Group (JAG) was created by the Council to formally establish a working relationship between the executive and legislative branches and ensure that a cooperative relationship would endure through a permanent, joint process while discussing ongoing proposals regarding major capital projects (over $10 million) and major real estate projects.

This process was also meant to give Council sufficient time to provide due diligence when considering major proposals in order to avoid time pressures. JAG discusses upcoming projects with Council before they are formally presented and before negotiations have been finalized to facilitate approval of a given project. This mechanism is intended to provide the Council with access to capital project policy issues as they arise in order to avoid costly and time consuming project direction changes later in the process.

Executive Audit

All capital projects in excess of $10 million are to be audited by Executive Audit Services. Although implementing agencies (IA's) are required to provide sufficient funding for those audits, PMA was told that Executive Audit does not regularly perform these audits due to budget and manpower limitations.

This audit function could be an integral part of the oversight of projects where the usual oversight may be missing, such as a project built using the 63-20 method. This policy might also come into play when large appropriations are made that take projects out of the Council's oversight, such as in the

[3] Executive Orders, Policies and Procedures CON 7-10-1 (AEP)
[4] Executive Orders, Policies and Procedures CON 7-10-1 (AEP)

case of the $113 million appropriated for Brightwater design. Council may feel more confident that the money is being spent as intended if they were sure that Executive Audit was reviewing the project on a consistent basis.

King County Auditors Office

The King County Auditors Office (KCAO) conducts various types of performance audits and special studies based on a work program approved by the Council. It also includes other independent analytical oversight work directed by the Council that would fall outside of the regular definition of an audit or special study. KCAO is in an ideal position to assist the Council in its oversight function. The fact that they have their own budget and staff ensures their independent and objective judgment thereby earning them the trust of those they audit.

Establish objective criteria to provide Council with a list of high profile projects for oversight

King County's scope of work asks the PMA Team to identify the criteria that have been used in the past for deciding what kinds of projects should receive specific oversight by the County Council. Currently the Council staff identifies projects that are of sufficient concern to merit the drafting of budget provisos. They select these projects in a variety of ways, from advance notice through briefings from the Joint Advisory Group (JAG), by citizen complaints, from the media, and other sources. We recognize that the Council selected for oversight four diverse and high risk projects that represented a good cross section of different branch agencies, delivery methods, and stage of completion (NJB, ISP, Brightwater, and ABT). However, it appears the Council selected these projects predominantly because each had a major problem in the past, bringing them to Council attention. Additionally, all of these projects represent substantial risks because of their size and complexity. However, there may be other projects not selected that are equally risky.

A potential drawback of focusing on projects that have already had a problem is that the bright light of the Council's attention may have already resulted in the strengthening of controls and minimization of the issues that resulted in the original problem. As a result, these projects may now have a lower probability of experiencing problems than other projects. In fact, at least one of the projects that the Council has selected may not merit a high level of oversight over the long term. The Ninth and Jefferson Building (NJB) is now being developed under the 63-20 developer delivery method, which should lower the risk to the County because the developer bears all cost overruns (i.e., those not due to owner-initiated changes) and faces substantial penalties for late delivery. The one remaining element that merits special oversight is the tenant improvements work, because there is only an allowance until the scope is defined sufficiently to merit a Guaranteed Maximum Price (GMP). Once that work is completed, the county should reevaluate the kind of oversight that is needed for this 63-20 project.

The scope document also asked PMA to propose criteria for selecting future projects for oversight. KCAO could follow the criteria established in the policy establishing the PCO position in the Procurement and Contract Services Section (PCSS), which triggers Finance PCO oversight whenever a professional service contract exceeds $2 million, a construction contract exceeds $10 million, a change order exceeds $150,000, or a contract *anticipates* 7.5% change order growth. KCAO could use an initial list of projects meeting these criteria from which to choose projects for added oversight.

Alternatively, a more deliberative approach would be for KCAO to establish a risk rating code through a formula that weighs each project's dollar value, complexity, schedule sensitivity, degree of risk, project delivery method, and the past performance record of the implementing agency. Projects can then be sorted by this risk code in the budget book so that the Council can be presented with a short list of the highest risk projects.

In order for the Council to effectively utilize the risk rating model proposed, the rating needs to be calculated and assigned to each project. The list of projects then needs to be sorted by this rating so the most likely candidates for oversight are at the top of the list. Currently the only place all the projects can be found is in the budget book. It is not practical for the Council staff to look at the approximately 1,500 projects spread between the ten funds in the book to do this.

Therefore, the Executive branch agencies need to score the projects for the Council. Recognizing the inherent danger associated with a self ranking, PMA has attempted to establish clear objective standards. We recommend that KCAO work with the Office of Management and Budget (OMB) to get the risk codes added to the budget database, and that all departments be trained to assign risk scores in a consistent manner.

A secondary sort code that will be needed is the fund of which the project is a part. Each agency has different funding sources, and so all the projects cannot be lumped together without regard for this code. Obviously money raised by sewer rate charges cannot be applied to fix a road, nor can Federal Transit Administration (FTA) funding for transit be diverted to a county building.

PMA proposes a simple spreadsheet that requires the project manager to score the project against seven weighted criteria, using objectively defined values that calculate a single risk code. An example of spreadsheet with criteria scoring values is shown below:

RANKING CRITERIA FOR SELECTING PROJECTS

Criteria	score (see below)	relative weight	ranking
dollar value	4.7	19%	0.893
complexity	4.2	13%	0.546
schedule sensitivity	4	17%	0.68
degree of risk	3.2	16%	0.512
Agencies Capacity to Execute	4	6%	0.24
project delivery method	5	15%	0.75
implementing agency's past performance record	5	14%	0.7
PRIORITY CODE		100%	4.321

Executive staff scores the projects using the objective criteria below

The priority code obtained is then entered into the budget database and used to sort the data

Dollar Value

1 = <$1M
2 = $1M - $10M
3 = $10M - $100M
4 = $100M - $1B
5 = >$1B

Complexity

1 = non complex project that involves one contract and one trade, new construction, proven technology, does not impact operations, such as a landscape contract
2 = low: one contract, only a few trades, new construction, little to no impact on operations
3 = medium: one contract, multiple trades, renovation work, some impact on operations
4 = high-multiple contractors and trades, proven technology, impact on operations
5 = An extremely complex project involving multiple contractors, new technology, impact on an active facility, high degree of community involvement

Schedule Sensitivity

1 = no hard schedule deadline in contract
2 = milestones dates in schedule
3 = schedule dates promised to public
4 = schedule dates promised to court, funding agency, fed government, etc or danger of catastophic result such as building moratorium

Degree of Risk

1 = no risk
2 = low: full design complete, scope clear, fixed price, achievable schedule, cost & schedule contingency
3 = medium: full design complete; scope changes possible, reasonable cost & schedule contingency
4 = high-partial design, scope changes likely, minimal track record, cost & schedule contingency less than 10%
5 = severe: conceptual design only, untried technology, no prior experience, cost contingency less than 5%, no schedule contingency, tight non-competitive market

Agencies Capacity to Execute

1 = agency has successfully performed more than 5 similar projects & has experienced staff
2 = agency has performed 2 or more similar projects & has experienced staff
3 = agency has performed at least 1 similar project & has experienced staff
4 = agency has not performed similar project but has staff with required experience
5 = agency has never preformed a similar project & does not have experienced staff to do so

Project Delivery Methods

1 = 63-20
2 = Design-Build
3 = Lump Sum Traditional Design Bid Build; Fixed GMP
4 = GCCM Phased Guaranteed Maximum Price, escalation clause
5 = Time and Material Contract, Unit Price w/ indefinate quantity

Implementing Agency's Past Performance Record

1 = excellent 75% of projects finish on time & within budget
2 = good 60% of projects finish on time & within budget
3 = average 50% of projects finish on time & within budget
4 = poor less than 50% of projects finish on time & within budget
5 = prior disaster

By assigning a risk code and using it to get a short list of projects meriting Council's attention, the oversight of projects can be more effectively accomplished. This is consistent with a best practice of the Columbus Regional Airport Authority (CRAA). Their Vice President of Planning & Engineering has selected a small subset of "Progress is Building!" projects for board level status reporting, rather than burdening the board every month with all the projects in the larger capital improvement program.

As part of our review of a draft of this report with county agencies, we suggested that agencies work with us to pilot the use of such a scoring and ranking system to see how it would work, how the criteria could be refined, and how to make using such an approach workable for all parties. The response to this suggestion was positive, and we will be working with agencies as we continue our efforts on Part B of this project.

2.2 Organizational Recommendations

This subpart of the model discusses the PMA Team's organizational recommendations. The following recommendations are included in this section:

- KCAO should hire an Oversight Manager
- KCAO should hire oversight support staff
- KCAO should manage oversight consultants
- Regular meetings should be held between Council staff and the oversight consultants and staff

These recommendations are discussed in more detail below. They represent a culture change that must be managed because of people's resistance to change. While organizational and process improvements can increase consistency, timeliness, and accuracy of data, this often comes at the cost of more formality in collecting data and the need for staff to do data entry and maintain the new systems.

Change requires organizational commitment from the top of the organization down to the working staff level. KCAO will need people, training, software, and new procedures. This will require a financial commitment from King County. Both branches must be part of the solution, and staff resistance to change must be managed.

KCAO should hire an Oversight Manager

The Council has decided that KCAO should manage the independent oversight function. The work has already started, with KCAO staff performing performance audits and special studies and direct oversight responsibilities on the ISP, ABT, and Brightwater projects. Having the new oversight responsibilities reside within KCAO presents an opportunity to leverage the staff competencies and experience of current staff and the new staff to be hired.

The oversight team should simultaneously report to the Executive's project representative and the Council. The establishment of a project oversight organization within KCAO will require new hires. In order to be successful at oversight, KCAO would need staff experienced and trained in project management.

Generally if project controls is someone's part time job, added on top of a full workload, the new responsibilities may not be embraced. People have a natural tendency to avoid new tasks they are not familiar with, and any lack of a project control focus could well eliminate any benefit KCAO could realize from the new oversight organization. The model for success is when someone is a career project control specialist whose full time job is to ensure the oversight group is properly utilized and providing value to the organization.

KCAO should hire an Oversight Manager (OM) who would be responsible for the direct management of Oversight Specialists and consultants. The Oversight Manager should have extensive experience in design and construction project management, and have supervisory authority with respect to the Oversight Specialists. He/she should have the ability to analyze the project controls data, specify *ad hoc* reports and would also be a "data gatekeeper" ensuring timely and accurate data. This person would need to be a highly trained user of cost/schedule software that can input data into systems, produce reports and train new users.

KCAO's oversight team will need oversight support staff

KCAO will also need three to four Oversight Specialists (OS), some of whom could be existing staff or oversight consultants. The OS staff will be responsible for gathering project status data first hand by attending the regular progress meetings on the larger projects. The OM and OS should have a Construction Management or Engineering degree, have substantial real world project experience, and be either a Professional Engineer (PE), a certified Project Management Professional (PMP), or a Certified Construction Manager (CCM). Additional detail and recommendations concerning the level and kind of in-house resources needed to provide expert monitoring will be included in a second report (Part B) to be provided by the PMA Team as part of this contract.[5]

KCAO should manage oversight consultants

At the time of our interviews for this project, the practice at King County was that the executive branch directly contracts with the oversight consultants. The two consultants PMA interviewed (Beck and URS) could not be considered independent as they considered themselves working for the agency they contracted with. For example, in the case of the oversight of the Brightwater Project, Beck was under contract to the Wastewater Treatment Division. In the case of URS, although this company has performed an oversight role, its primary function is to act as the owner's representative (a standard industry function) reporting to the Facilities Management Division. As such, it does not provide the kind of oversight envisioned under the new responsibilities for KCAO. Both URS and Beck acknowledged that the requirement that they first submit their reports for internal review through the Executive agency had an effect on how they presented issues in their reports.

The Council staff we interviewed expressed concern that the oversight consultants and owner's representatives were not always reporting back to Council and did not always provide them the information needed to make decisions, and that the information sometimes put the projects in a better light than was warranted. Council staff felt that they needed executive permission to get the project data. They were also concerned that they did not get information in a timely manner, commenting that many reports are released to Council two months or more later.

PMA recommends that all independent oversight not carried out directly by KCAO oversight staff be contracted through KCAO. Their scope of work should clearly point out the reporting to Council that is expected of them. We note that the recent contract with RW Beck to perform oversight of the Brightwater program is still entered into with the Executive branch but has been amended to include clear language regarding reporting to the Council. Reports should be given to Council and Executive at the same time. We further recommend that the OM, OS and oversight consultants should be co-located with the audit staff in the Auditor's Office to the extent possible.

[5] This will be Part B of the Contract: Work Component for the Development of an Implementation Plan for the Auditor's Office to begin Capital Project Oversight and Reporting in 2007.

Regular meetings should be held between Council staff and the oversight consultants and staff

The current practice is that even in the case of the large projects with oversight, the Council is briefed on a quarterly basis only. Our understanding is that when these quarterly briefings occur, they are usually scheduled at the end of the Council meeting. If the meetings run late, as many often do, the project briefings are cut short and Council does not get a full project status briefing. The oversight consultants and owner's representatives we interviewed reported having to condense a 45-minute briefing down to only 10 or 15 minutes. On occasion the briefing has been cancelled and not rescheduled till the next quarter. It was also reported that there were briefings where only a few Council members attended, and that briefings intended for Council have sometimes been given to a staffer instead. In short, the consultants expressed concern that they do not always get the chance to appropriately present important information to Council members.

For their part, Council members and staff expressed concern that the briefings were too long, did not succinctly present the information they needed, and used unfamiliar technical terms.

From PMA's interviews with three Council members we could see that their job responsibilities required a very broad involvement in the entire array of issues facing a major county government. Review of Capital Improvement Project (CIP) issues are only one part of their jobs and not necessarily the most pressing. This broad focus inevitably might lead Council members to view the CIP in a defensive manner, as something to focus on only when there are potential problems for the county. This might help to explain why the Council briefings are so infrequent and why the oversight consultants do not get the opportunity to give a full briefing.

This is corroborated by our best practice research, which found that legislative bodies rarely participate in ongoing capital project oversight, leaving that function to executive branch staff with the specific expertise and responsibility to deal with it.

In the organization subpart of this section PMA recommends that KCAO have, as a member of its permanent staff, an individual who has CIP expertise to analyze the project data and help interpret it for the Council. This person should understand Council members' individual information needs, and understand construction issues and the political process. This position would also help to address a concern expressed by Beck and URS that yearly changing of Council staff liaison to projects hinders knowledge transfer and effective partnering. Whether this individual is the Oversight Manager or a separate position is a decision that can be made at a later date.

In any event, the individual assigned with liaison responsibilities would meet with the oversight consultants on a regular basis and boil down the CIP information in a manner that is appropriate for the Council. The meetings between this individual and the consultants should generally be monthly. This individual would also develop and execute a plan for communication of information among Council members and staff, and give a short succinct briefing to the Council monthly.

If PMA's reporting system recommendation is adopted, KCAO may need a Reporting System Administrator (SA), who would have direct lines of communication to OMB, Finance, and the various other executive agencies that are primary sources of the project data needed. This position would maintain security access, provide help "desk" support, upgrade the software when new versions are released, etc. Further consideration of the need for and responsibilities of this position will be evaluated in the Part B report.

2.3 Communication Recommendations

This subpart of the model discusses the PMA Team's communication recommendations. The following recommendations are included in this section:

- Establish a consistent form that Executive staff is required to use for requesting decisions from the Council
- Establish a countywide forecast model that all projects must follow to predict cost overruns and schedule delays

These are discussed in more detail below:

Establish a consistent form that executive staff is required to use for requesting decisions from the Council

Issues that require Council decisions are not always worded clearly. The Council members and staff have noted that when they are given choices, they are difficult to compare because they are not "apple to apple" comparisons, and that there is no standard format to support decision-making and alternative selection. We feel that a decision matrix with backup should be submitted to the Council, and that this matrix be supported by a supposition sheet that explains what the baseline is and how the alternatives were developed. The Executive should develop guidelines, subject to Council approval, for how decision packages for capital alternatives are presented.

Establish a countywide forecast model that all projects must follow to predict cost overruns and schedule delays so that problems can be identified earlier

King County does not appear to have any standard protocols or guidelines for forecasting cost and schedule overruns, or the timing of when these forecasts are shared with the Council. As an example, on the Brightwater Treatment Plant the project team waited until it issued the 2007 Cost Update in April 2007 to share the latest cost estimate with Council staff, even though the 90% estimate was available months earlier. Furthermore, at the time the Cost Update was issued the project team had bid information they chose not to share because it was still under negotiation. The importance of this delay in discussing cost forecasts with the Council is highlighted by the fact that the construction cost estimate went up over $100 million dollars between cost report updates, as shown below:

Contingency Analysis

Brightwater	Construction Estimate Dec 2005 inflated	2005 Contingency	Construction Estimate Jan 2007 inflated	2007 Contingency
Construction Treatment plant	$ 377,500,000	$ 44,500,000	$ 436,800,000	$ 38,300,000
Construction Conveyance	$ 533,700,000	$ 59,900,000	$ 578,700,000	$ 72,700,000
Construction Subtotal	**$ 911,200,000**	**$ 104,400,000**	**$ 1,015,500,000**	**$ 111,000,000**
Non Construction Costs	$ 599,300,000	$ 111,100,000	$ 505,100,000	$ 22,200,000
Land/ROW	$ 97,600,000		$ 97,100,000	
Mitigation	$ 145,000,000		$ 149,700,000	
Project Total	**$ 1,753,100,000**	**$ 215,500,000**	**$ 1,767,400,000**	**$ 133,200,000**

This construction cost overrun was offset by shifting contingency from design.

A best practice tool that can be used on the high risk projects is an earned value forecasting technique. Earned value looks at both cost and time used to date to forecast problems. To illustrate, if only 25% of the budget has been spent but 75% of the time has passed, this model would forecast a late completion; while if 75% of the budget has been spent in only 25% of the time the model would indicate a possible cost overrun.

On projects that do not merit earned value, a simple forecast tool is to have the Executive branch's project managers report revised estimate amounts, change orders and other cost/schedule events in a timely manner as they occur. The Council could require the reporting of all cost events no later than four weeks after occurrence. These forecasts would show up in the reports prepared by the OS

and OM every month, and any significant cost increases could be highlighted by the OM for the Council.

2.4 Budgeting Phase Recommendations

The following recommendations are included in this section:

- Phase the release of the budget money or rely on a Project Review Board-type process
- Establish standard estimating guidelines
- Establish a policy that requires current year budget estimates to be based on conceptual design
- Revisit the policy on mitigation budgets to see if the policies still meet the Council's objectives

These are discussed in more detail below:

Phase the release of budget money

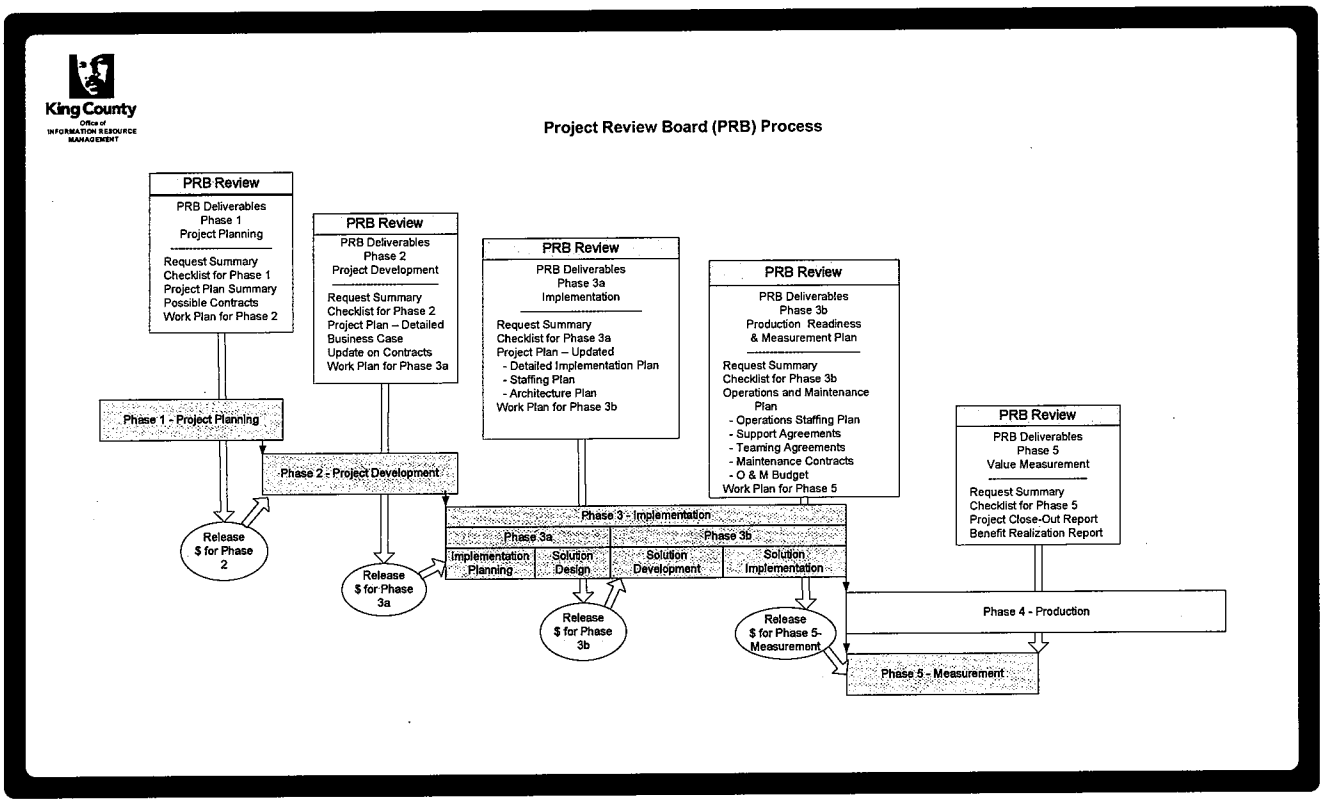
Council staff expressed concern that they are not being notified of scope and budget increases in a timely fashion. They stated that once funds are appropriated there is little ability for Council to see what is being done with those funds.

Even when the projects run out of the original funding, they may not need to come back to Council. Wastewater's CIP flexible response budgeting[6] allows department managers to move 15% of appropriations between projects in the same category. Thus an overrun on one project could be offset by taking money from a comparable project. Allocating budget from one project to another makes it very hard to decipher whether the specific projects have gone over the amount originally appropriated by the Council during the budget process.

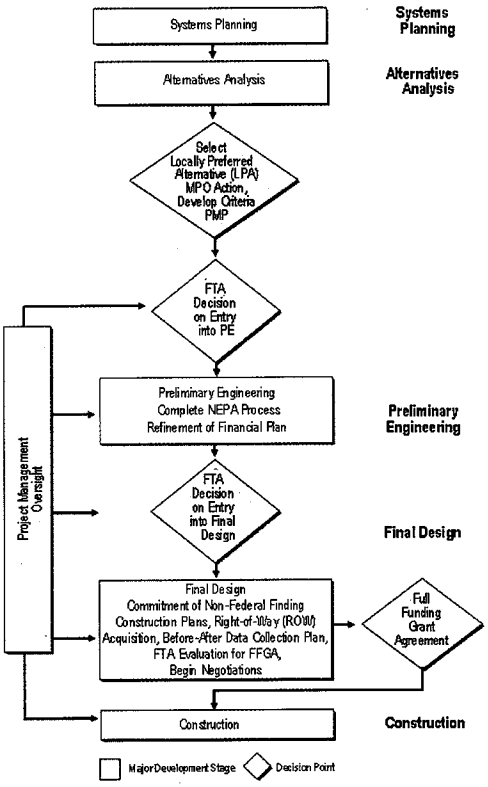
PMA's evaluation of this situation is that once a project is given the money it needs it will generally only come back to Council when it needs more money or when there is a proviso requiring the project to come back. The Council could insist on receiving notice of changes under "CIP exceptions notification" which requires project teams to file a letter with the Council in advance of any action involving changes of 15% or more to an adopted CIP project's scope or schedule or total project costs. Unfortunately by policy this notice requirement is only required during the Council's budget process, so it would not raise issues in a timely manner. Fortunately in actual practice it appears to be used by some groups such as FMD.

The Executive staff recognizes the value of the phased release of funding. Office of Information Resource Management's Project Review Board (PRB) engages in this best practice by phasing the release of funds to IT projects. There are well defined stages during design that represent an increasing degree of certainty in the cost of construction. The PRB releases only the cost of performing the next phase. As one can see from the chart below, the project has to come back at the end of each phase to request more funding (represented by the green circles):

[6] King County Code 4.04.280



A similar best practice by the Federal Transit Administration (FTA) on select "full funding" projects exists. The FTA conditions their granting of federal money to state agencies on the agencies' performance of best practices that increase the likelihood of project success. While not a legislative body, the FTA uses their "power of the purse" to get the implementing agencies to do certain best practices before giving them funding for the next phase. The FTA therefore imposes "checkpoints" on its funding, as shown in the chart to the right.

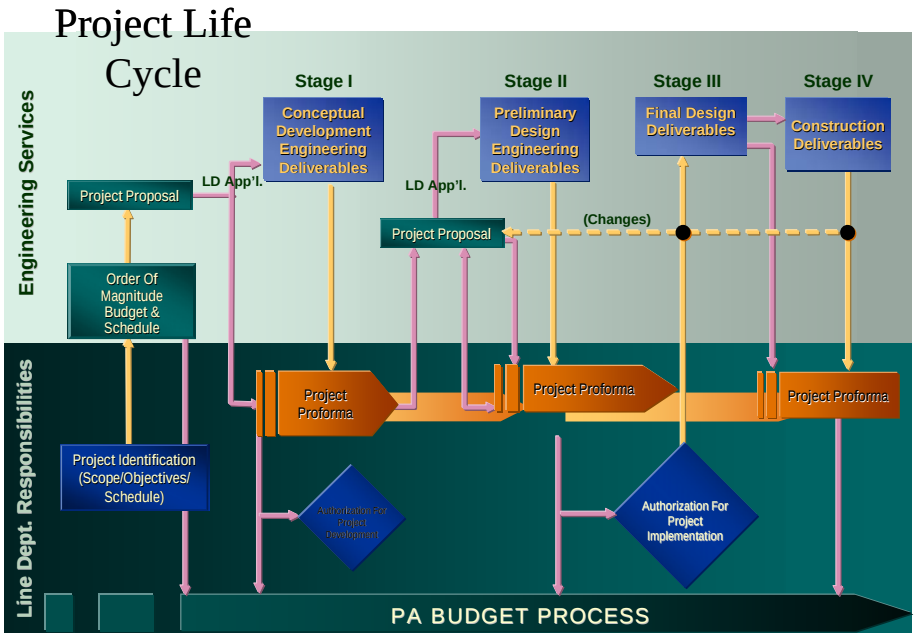


These imposed best practices include requiring the state agencies to submit Project Execution Plans with their initial grant applications, perform value engineering studies of the design when construction costs are estimated to exceed the budget, perform cost and schedule risk assessments as design progresses, and perform special studies as construction delays are encountered.

The Port Authority of New York and New Jersey (see the chart below) also engages in a similar process, releasing project funding after getting better information at the completion of key stages of design or construction.

PMA recommends that the Council phase the release of funding for high risk projects in a manner *similar to* the FTA and Port Authority practices. Specifically, after a budget appropriation is approved a project would need to come to the Council to get money before it could start preliminary design (presumably conceptual design was already completed before the project got in the budget). In order to

request design money a standard request form would have to be filled out. This form, consisting of the type of information typically contained in a Project Execution Plan, would include a full scope description, cost and schedule estimates, justification for the project, organization chart, roles and responsibilities, etc.



Depending on the size of the project, the next funding release would occur either at the completion of preliminary design (30%) or after design is complete and construction bids open. Once bids are open and an award amount known, the Council can very easily determine the amount of contingency funds it is giving the project to cover change orders. Excess funds previously allocated can be diverted to other projects.

Of course if this recommendation is implemented the Council agenda will include more frequent project decisions, thereby increasing the Council's workload. Since this practice will only apply to a select handful of high risk projects that generally will have phases that could span several years, the increase should be minor compared to the benefit gained. As previously mentioned, unless the Council phases the release of the money it will not be able to impose the best practices at these key points in the project life cycle.

All budgets should follow a standard set of estimating guidelines that ensures they include all known costs

There does not appear to be a countywide set of estimating standards. Standards are necessary so the county knows that all costs are covered by the estimate, and estimates can be compared to each other. Without standards some estimates include costs such as escalation, contingency, mitigation, operating costs, etc, and others do not. When these costs are later charged against the project, unexpected cost overruns occur.

PMA was provided with a copy of the ABT project spending plan for $4,115,000 covering the period from June 2006 to October 2007, when the high level business plan phase was scheduled to be complete. PMA was also provided the next release of the same spending plan showing an increase of approximately $1 million (25%) to $5,138,389 and showing the completion of the high level business plan as December 2007. This increase was due to the following costs that were not included in the earlier estimate:

- Costs for KCAO oversight - $137,389
- Costs incurred prior to June 2006 - $555,218 (detail on these costs was not reported)
- A 10% contingency of $418,406

It should be noted that the ABT program provided monthly status and cost reports to the PRB, so they were aware of the increases as they became known. However, this highlights the need to establish a better estimating standard that would help project teams to better predict such expenses. The Council should draft policy requiring that every estimate used in the CIP follow a standard estimating guideline that includes all costs. PMA notes that the WTD has guidelines prepared by URS that could be evaluated for countywide use.

Establish a policy that requires current year budget estimates to be based on at least some design

The CIP budget book contains estimates for projects at various stages in the design and construction process. Newer projects where design has not started generally use "order of magnitude" estimates based on parametric models such as dollars per square foot. These estimates are less reliable and require higher contingency numbers. The likelihood of an unexpected budget increase is greater for projects using these types of estimates.

At the Port Authority of NY and NJ, they recently implemented a best practice which requires projects that are in the current year budget appropriation to have at least completed conceptual design and a conceptual design estimate. By completing conceptual design the project team has made important design decisions that increase the accuracy of the estimate of construction cost. Requiring better estimates improves the overall quality of the CIP budget. Since conceptual design has to be done eventually, this does not represent an increased cost to King County.

PMA recommends that King County impose a similar requirement that project budgets in the current year's budget be based on a conceptual design estimate. In speaking with OMB they confirmed the benefit of this approach and do try to encourage it where possible, but it is not a mandated practice. The Council could allow exceptions to be approved on a case-by-case basis where compliance would delay an important project.

Establish a code that defines budget estimate accuracy

Currently the budget book does not indicate the degree of accuracy of construction cost estimates. Estimate accuracy can range widely between an order of magnitude estimate prepared before design and an actual bid price. The Project Management Body of Knowledge (PMBOK) promulgated by the Project Management Institute (PMI) notes that estimates could vary from -50% to +100% in the earliest stages and be in the -10% to +15% range with advanced design. Since important decisions are made based on the budget estimates, there is an advantage to knowing how much to rely on a particular estimate.

We recommend that a data field be created in the budget system and the estimate accuracy code populated by project managers. Code values used in the field could include Planning, 30%, 60%, 90% Design, Bid and Award.

Provide more detail in the estimates provided to Council

The budget estimates are generally shown with one or limited line items. Council staff would like to see the estimate broken down into more line items. For example, the entire $500-million construction cost of the Brightwater Treatment plant in the budget book is a single line item. More detail is needed for Council to better understand the scope they are approving.

PMA recommends that the budget book show more line item detail for the capital budget estimates of larger projects so Council can see the high level scope.[7] Certain costs resulting from Council ordinances should be included as line items on the monthly reports presented to Council so the increases in project costs resulting from these policies are visible (see example of mitigation costs, below).

An alternate recommendation to adding more estimate detail in the budget book is to make the full estimate readily available online.

Revisit the policy concerning mitigation budgets to see if the policy still meets the Council's objectives

There is an ordinance applicable to Wastewater Capital Improvement budgeting projects that requires 10% of construction cost be allocated for mitigation.[8] As the cost of the project keeps going up, so does the mitigation contingency. It is our understanding that community groups and other beneficiaries see the mitigation contingency as an entitlement and have an expectation that mitigation contingency budgets will be spent. The Council should consider revising the mitigation regulation so that it is less rigidly set at a percentage. One option would be to establish a maximum cap so that mega projects do not struggle to find related mitigation projects in order to spend an increasingly larger mitigation budget. Other options might also be considered. In any event, the Council should revisit the mitigation policies to see if they still meet their objectives.

2.5 Contracting & Procurement Phase

The County should provide for schedule contingency in the contract documents

The County should provide for schedule contingency in the contract documents by establishing the contract completion date that is several months ahead of the delivery date needed to meet project goals (such as a publicly announced opening date). For example, PMA was told by the Brightwater team that there is no schedule contingency between the contractually mandated Completion Milestone in the conveyance contracts and the date the plant needs to be online to avoid real estate development from overtaking the capacity of the existing system. The Brightwater project team indicated that there was a high risk that delays to the contract completion date could occur, and that these could lead to a building moratorium to avoid exceeding the water treatment system's capacity.

The table below outlines a method that the New York City Department of Environmental Protection (NYC DEP) employs. Rigid, Environmental Protection Agency milestone dates are used as a baseline, and contract dates are adjusted with an appropriate level of contingency. This establishment of earlier contract dates resulted in 3.7 to 5.5 months of schedule contingency in the chart below.

[7] For capital projects a data sheet serves this purpose but for other budget items there may be only a short title carried in the CIP budget document. There were many capital budget items listed for the jail but their significance was not always clear based on the budget document.
[8] King County Code Title 28, Chapter 28.86.140

Milestone	Milestone Description	EPA dates as of 2-7-07	Contingency in months (Proposed - Contract Dates)	Proposed Contract dates
1	Commence Installation of Underslab Steel Pipe	**October 31, 2008**	**3.7**	July 9, 2008
2	Complete Underslab Piping in 2nd Quadrant	**July 1, 2009**	**4.4**	February 17, 2009
3	Complete UV Base Slab	**December 31, 2009**	**4.6**	August 13, 2009
4	Complete Concrete Slab at El 334'	**June 1, 2010**	**3.8**	February 5, 2010
5	Enclose UV Building	**March 30, 2011**	**3.8**	December 3, 2010
6	Complete Installation of Electrical Substation	**March 17, 2012**	**3.8**	November 22, 2011
6A	Complete Security System Installation	--	--	December 14, 2011
7	Commence Operation of First Quadrant	**August 3, 2012**	**5.5**	February 17, 2012
8	Commence Operation of Second Quadrant	**August 31, 2012**	**5.4**	March 19, 2012
9	Commence Full Operation	**October 29, 2012**	**5.5**	May 14, 2012
10	Achieve Final Completion	--		September 14, 2012

PMA recommends that King County set future contract completion milestones at dates several months earlier than the date the asset is needed to allow for schedule contingency. This is necessary because delays are likely on complex construction projects and a failure to account for this will lead to unexpected and potentially publicly visible problems. Adding approximately 10% schedule contingency in the contract documents provides a higher probability of successfully completing a project on time. To avoid this causing unrealistically aggressive contract schedules, the County should minimize schedule commitments to the public until design is sufficiently advanced and a preliminary design phase construction schedule developed.

PMA also recommends that the contract documents require contractors to provide for weather contingency in the schedules they submit to the county. This contingency generally takes the form of a special "calendar" in the schedule that shows several non-work days in periods where weather impacts are likely. The amount of non-work days should be established based on historical weather data for the region where the work is being performed. Schedule software used to produce the contract then automatically extends the time to perform work based on the non-work days. This provides a more realistic representation of the true time it will take to perform the work and alerts the contractor in advance of the need to provide more workers to meet the contract milestones.

2.6 Planning Phase

Perform a Project Execution Planning session at the start of all high risk projects to clearly define goals and the responsibilities of the project participants

There is an Executive procedure[9] that calls for a project management plan that includes a summarization of the roles and responsibilities of those involved in the management of the project. This procedure was not followed at the Integrated Security Project, and the result was that neither the Department of Adult and Juvenile Detention nor the Facilities Management Division clearly understood who was in charge, or what exactly their role was.

The Project Management Institute (PMI)[10] recommends that a project charter be drafted by a manager external to the project. The charter should include any assumptions or constraints affecting the project's schedule, budget, scope, or quality. The process of developing the charter involves several meetings with the key project participants and managers. The decisions and agreements

[9] CON 7-9-1, section 7.1

[10] PMI is the primary organization for advancing the profession of project management. It is an international organization and has taken the leading role in identifying and developing standards for project management. It publishes these standards in "A Guide to the Project Management Body of Knowledge (PMBOK®). PMI also sponsors a professional certification in project management. PMI's membership includes a number of special interest groups (SIGs) including a Government SIG. The Government SIG develops and issues an addendum to the PMBOK® which is oriented to the requirements of government owned and managed projects.

made at these meetings are recorded in minutes and then used to draft the charter. The project charter should be refined and reissued at several key points during the project life cycle. FMD has an existing procedure and form which covers many of these topics, which should be uniformly applied.

The development of a project charter or project execution plan is a best practice implemented by innumerable public and private owners. Johnson and Johnson develops one for any significant capital project. The FTA requires state agencies seeking transportation project full funding to submit a Project Management Plan that defines scope, cost, schedule, and roles and responsibilities as part of their FTA grant application. Thus the agency cannot even apply for funding from the federal government unless it can establish through the Project Management Plan that it has an organization capable of managing the project and a well thought out scope, schedule, and budget.

PMA recommends that King County mandate the use of Project Execution Planning (PEP) on high risk projects (as defined by the risk rating model) and require the submission of a preliminary Project Execution Plan as part of the budget allocation request for projects meeting the high risk criteria.

The preliminary PEP should be further refined during the conceptual design phase, or very early in the project development phase. The County's lead representative on the project should take the lead in arranging a preliminary project planning meeting to introduce the project to the groups and departments affected. Subsequent meetings should be held as the project develops to:

- Refine the scope, objectives, rough timetable, and magnitude of cost; and address any special considerations.
- Verify that the roles and responsibilities of all players, including the County Executive and the County Council, have been adequately defined.[11]
- Establish measures of success, key risks and mitigation plans, etc.

One of the fundamental precepts of project management is planning your work and working your plan. Requiring a PEP is an important first step in developing a viable plan.

2.7 Implementation Phase

This subpart of the model discusses the PMA Team's implementation phase recommendations. The following recommendations are included in this section:

- Pursue recovery of cost overruns caused by errors and omissions.
- Maintain a risk register on high risk projects.
- Perform risk assessments at key points of high risk projects.

These are discussed in more detail below:

Pursue recovery of cost overruns caused by errors and omissions or other defects from the responsible firms

During our evaluation of King County practices we did not see examples of the County holding its contractors or consultants responsible for the cost of their errors and omissions. One example involved the original security system installed in the King County Correctional Facility twenty years ago. This critical system was inadequate from the start because of construction defects caused by a poor subcontractor. King County paid approximately $1.7 million to trace and tag the security system wiring just to start the ISP project, because the wires had not been appropriately tagged initially.

[11] The ISP project presented the most severe example of problems resulting from an unclear definition of roles. The project owners, Jail Health and DJAD, were not sure what role URS and FMD staff were playing on the project.

PMA recommends that King County pursue cost recovery from responsible firms. The first step to doing this is to issue a policy on cost recovery standards that requires the Executive to pursue cost overruns caused by outside vendors. King County should publicly announce their intention to pursue cost recovery in order to eliminate any claim by the contracting community that the County does not have the right to enforce the provision because of prior waivers of its right to do so. Once established, the policy needs to be consistently applied to send a strong, consistent message to King County vendors.

In addition, a standard policy needs to be established for tracking the causes of change orders. This tracking would be necessary to facilitate the identification of the errors and omissions discussed in the recommendation above. The change orders should be categorized to assist in assigning responsibility. Some suggested categories include the following:

- Owner-initiated scope change
- Differing site condition
- Design error or omission
- Value engineering change
- Adjustment in unit cost item

Maintain a risk register on high risk projects

The use of risk registers does not appear to be widely used by King County on high risk projects. A risk register is a document that identifies potential events that could impact cost, schedule, or scope, and then formulates associated risk response plans for addressing those risks. A risk register needs to be maintained throughout the project life cycle. A sample risk register, which also includes a probability of occurrence and panelist's comments field, is shown below:

SAMPLE WATER TREATMENT FACILITY

Num	Activity Impacted	Identification						Prob. Occur.
		Risk ID	Threat / Opportunity Events	Risk Description	Response Actions including Advantages and Disadvantages	Panelists' Comments	Type of Risk	
1	All	PM1	Change Orders	Has budget included a line item for normal expected change orders and does schedule have time in it for these changes?	DEP is trying to obtain approval to add contingency funds to the contract to be able to use for change orders.		Cost & Schedule	100%
2	G2, GA2	PM2	MBE/WBE Requirements	MBE / WBE Requirement. If portion of contract is subcontracted out then at least 17% / 5% of total contract value has to go to MBE/WBE businesses.		Minor. Need to differentiate between baseline and alt.1? Impact on bid award activity.	Schedule	20%
3	G2	PM4	Bonding Limitations	Ability to get bids on the the job as presented due to limitations on Bonding and insurance availability.		Mitigation underway: meeting w. bonding companies. Lower risk for alt.1. (all contracts < $260M). Would require moving from baseline to alt.1	Cost & Schedule	5%
4	G2	PM5	Contractors Availability	ALL CONTRACTS -- Availability of two or more qualified contractor teams to bid work, due to NY regional work and the prior bidding of the Croton project.	Potential discussions with building trades and contractors organization about upcoming work to try to attract additional bidders.	Very attractive. New construction, less complex / less coordination w. existing facilities. Bigger risk for H contracts, E and P. G less of a problem.	Cost & Schedule	10%
5	SP1	PM6	SP Delays	What if site preparation contract is delayed more than six months? Does it delay the UV plant contract(s)?		Site preparation just started. On time. Probability of unforeseen conditions is low.	Schedule	5%
6	G2, GA2	PM8	NTP Delays	Risk of delay in scheduled NTP due to bid issue/protest.		Minor risk. Minimum impact.	Schedule	1%

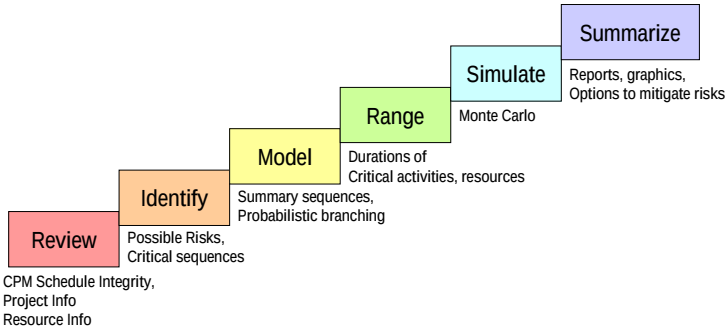
The use of a risk register is a best practice recommended by PMI. In fact, PMI recommends that a risk register be included as part of the project execution plan.

The Brightwater project maintains a risk register where they have identified potential project risks and formulated plans to address the risks identified. For example, WTD identified a risk that they may not get enough bidders or competitive bids on the conveyance contracts. To address this risk they actively contacted several world class tunneling contractors and encouraged them to bid. This resulted in five bidders and prices below the engineer's estimate.

Maintaining a risk register is a best practice that should be expanded to other King County projects. The project manager should take the lead in coordinating risk management meetings and ensuring that risks are identified and plans made to address them should they occur. The detailed maintenance of the risk register could be delegated to a project controls specialist.

The Council should require project teams to perform risk assessments before releasing funding for final design on high risk projects

On larger projects, the information collected in a risk register could be used in conjunction with a software program to forecast the probability of achieving a certain schedule or budget. Risk assessments require the use of a professional risk facilitator to gather additional information from key project participants regarding the probability of a risk and the severity of the impact if it does occur (ranging). This information is collected in a formal risk workshop that lasts several days.



For schedule risk assessments, the risk consultant models a simple project schedule of about 200 activities from the larger project schedule used by the team. This schedule is then used in risk software (Monte Carlo, PertMaster, etc) to run thousands of iterations and calculate probable completion dates. The steps in a schedule risk assessment process are shown in the chart to the right. A cost risk assessment models the budget risks in an Excel spreadsheet and runs them through similar multiple iterations to determine likely costs at completion.

The result of a risk assessment session is a list of the probabilities of achieving the planned date or budget and an estimate of the most likely completion date. This represents a good forecasting tool if a project team wants to prepare for worst case scenarios. It is also a best practice used by the FTA when granting transit funds for final design to states.

PMA saw no evidence that King County performs formal risk assessments on projects. During interviews with the ISP team they mentioned conducting a risk session, but it was more of a risk identification session and not a full risk assessment.

King County should perform risk assessments to minimize, mitigate, and allocate risks. PMA recommends that the Council consider condition funding for final design on the performance of a formal risk assessment to better predict budget and schedule completion dates. This requirement should only apply to high risk projects. The risk assessment results should be used to better forecast the cost at completion and contract completion date.

2.8 Reporting Recommendations

This subpart of the model discusses the PMA Team's reporting recommendations. The following recommendations are included in this section:

- An Oversight Manager who knows construction should analyze and interpret project data on the Council's behalf
- Show the original approved budget and baseline schedule
- Develop a standard report template that all projects use when reporting to the Council
- Implement a central database for project data populated by Executive branch project staff that can be used to produce reports for the Council
- Establish a proactive reporting system that tells Council what it most needs to know or wants rather than requiring them to go to the detailed system
- Establish a multi-project report that has all the projects listed in one place
- Integrate accurate and timely actual cost information into the reporting system

These are explained in more detail in the sections that follow.

The Oversight Manager should analyze and interpret the data on the Council's behalf

The perception of the Council staff is that the reports to Council sometimes contain limited information or understate project problems. Executive staff consultants who prepare the reports indicated that they have to vet the reports through the Executive, and therefore tend to be careful with the wording of sensitive issues.

PMA's evaluation of existing reports is that they are written more for other construction professionals, without any attempt to tailor the reports to the Council's needs. The reports are too long for the Council, yet don't convey the basic information any reader needs in order to be able to determine if a project is performing well. PMA found instances where a reader had to add numbers throughout the report or in different reports to get the entire cost picture. For example, the Brightwater conveyance and treatment plant costs were in different parts of the budget book, and are now in separate monthly status reports. We also feel there is a certain amount of subjectivity and selective reporting.

The main problem with the reports is that raw data is presented without any attempt to interpret it for the Council. Council staff unfamiliar with construction would have a very hard time reading between the lines. It may be difficult for the lay reader to see beyond the information and message in the report and to identify the real issues that need to be addressed.

PMA's solution to this problem is to have someone who is part of the KCAO oversight team and knows construction analyze and interpret the data on the Council's behalf.

The longer term solution is that project teams should consider the Council's needs and clearly report on issues. Under this longer term solution, the Executive staff needs to work toward providing meaningful information that is relevant and clearly of interest to the Council in a succinct manner that the Council can understand without interpretation. The Council and its staff, in turn, need to treat this information as confidential, and to resist the temptation to direct solutions prematurely or to interfere with the Executive's means and methods of performing the project.

Show the original approved budget and baseline schedule and a comparison to last month's update on all reports to Council

One of the most glaring omissions in all the reports PMA reviewed is the lack of a comparison of the original budget or schedule to the latest forecast. Many of the reports PMA reviewed did not display the original budget or baseline schedule of a project. It is a fundamental principle of project management to measure the current status of a project against an original plan. This is especially important to the Council, who may only have seen the original plan when the project funding was authorized.

Various King County project staff indicated that they tracked original budget and supplemental increases (similar to information in the old CIP resource books) in their own systems and passed it on to the budget group. However, based on what we have seen, that original budget is not always included in reports that go to the Council. This makes it difficult for Council to determine how a project is performing against the budget approved when funding was initially requested.

Another important baseline to measure project performance against is the last update. This is done on larger projects like Brightwater, which issues an annual trend report. However, annual comparisons are not a best practice. Best practices for project management reporting, as practiced at the Port Authority, compare the current cost and schedule to the update from the prior month. PMA recommends that the changes from the information previously reported to the Council be clearly highlighted.

Reports at the Port Authority of NY and NJ invariably contain budget and schedule comparisons. As shown in the report below for a project in the design phase, the Engineering Budget was $775,000 and is still forecasting to finish within budget at a point in the project when $600,000 has already been spent. The construction cost estimate of $115 million has no actual or forecast yet, because that work has not yet started. Schedule comparisons are shown just below the cost information.

Develop a standard report template that all projects use when reporting to the Council

The current practice is that there is no standard report, which means that each agency has to come up with its own report format. Council staff expressed frustration with the varying ways project information is presented, complaining that there is no standardization in communicating CIP information to Council. This results in the Council and its staff needing to decode and decipher the information they receive. They stated that it is difficult to quickly scan the documents for the information sought.

A Council member also noted that the names and phone numbers of authors are not shown on reports.

PMA recommends that a standard one- or two-page monthly project report should be developed for larger projects. This report should have information shown in the same place for all projects to facilitate review. All reports should indicate who the project manager is and provide a phone number and e-mail address.

One sample report from the Port Authority that meets this criterion is shown to the right. The Port Authority only uses this report on larger projects. This report provides a description of the project, a comparison of budget to actual cost to date and forecast cost at completion, a comparison of the original schedule to the latest approved and current forecast schedule, a change order log (called E/P Change History) and brief text describing Accomplishments, Issues/Concerns, and Action Required. King County should develop a similar type report.

ENGINEERING DEPARTMENT
Monthly Progress Report
January 1999
Program Management Division - Aviation

Project Title: EWR - Southern Access Roadway Project **Project Code:** CA04-180
Contract No.: EWR-154.206, 211, 212, 213 **Charge Code:** CA04-151206 **Stage:** I
Scope: Engineering to develop Stage I Design for Improved Roadway Access to EWR from the South - NJTPK Inter. 13A, to accommodate 45 MAAP. Create a So. Directory Rd for Inbound traffic. Widen the "Throat" bridges - both inbound and outbound, add a ramp and bridge from So. Directory Rd. to parking / New Arrivals Frontage. Widened the No. & So. Service Rd. Bridges to accommodate the added traffic generated. Brewster Blvd. and NJDOT's Mc Clellan St. Bridge will be widened to accommodate the increased outbound traffic to Rt. 1-9 SB from the expanded Arrivals Frontages/Parking.

E/P-Change History:

Change#	($x 1000)	Submitted	Approved
E-0	$775	3/17/98	8/27/98

Cost Summary:

	Plan	Actual Cost as of 1/04/99	Forecast
Engineering Budget	$775,000	$600,000	$775,000
Engineer's Estimate:	$115,000,000		

Schedule Summary:	**Approved**	**Actual**	**Forecast**
Start	1/31/98	1/31/98	
Signed E-0	3/13/98	8/27/98	
Deliverable	9/30/98		1/11/99
Project Authorization	10/29/98		1/28/99

Organization
Engineering PM: Azzaro
Resident Eng.:
Line Dept. Mgr:. Wolek
Designer: PA Engineering

Actual % Complete: 92%

Accomplishments:
- Reviewed design & prepared a white paper which addressed the impacts of deferring Mc Clellan St. Bridge from the SARP. It also addressed impacts on existing ROW owned by NJDOT, NJTA, City of Elizabeth and Newark.
- Stage I Estimate are complete - entire project is estimated at $115 Million Construction Cost - $188 Million Project Cost - this compares favorably to Original LAP estimates for Phases 1B, 2, 3 (segments) & 4 (segments)
- Stage I Schedule for Construction of all SARP Roadway Packages was reviewed by Construction with no Comments, except to explore 3 Contracts, instead of 4.
- Topographic Survey is in progress - site was flown, ground survey is ongoing - Full Deliverables by End of January 1999

Issues / Concerns:
- Total Wetlands impact will exceed the threshold for a General Permit - Individual Permit will be required, as well as mitigation at a 2 for 1 ratio - for an estimated total of 4 acres mitigation @ a cost of Approx. $1 Million
- Elevations of existing No. & So. Service Rd. Bridge structures are approx. 5 ft. below required NJDEP Hydraulic Clearances; a maximum increase in height of approx. 2 ft. can be tolerated w/o impacting the adjacent signalized intersections
- Facility requested Engineering look at a dedicated ramp/bridge to 1-9 SB from Brewster Blvd. SB - Engineering has not come up with a Feasible Scheme, but will continue to review in Stage II / III

Actions Required:
- APD to finalized approvals from FAA on the Revised ATCT Lease Line and Roadway Layouts
- Prepare for the 1/28/99 Board Meeting - Combined with Authorization for CTA Roadways & Lot E Garage
- Print & distribute the Stage I Booklet, including Plans, Design Criteria, Cost Estimate and Schedule
- PM will Prepare E-1 to reflect latest Schedule and Engineer's Construction Cost Estimate

Implement a central database for project data populated by Executive branch project staff that can be used to produce reports for the Council

Currently, the project reports prepared by the Executive's project teams are done in Microsoft Word and Excel®. A Council member expressed concern about the inability to query (enter word searches that pull up data meeting the search terms). This issue would be resolved by storing the data currently collected in Word and Excel in a database system instead.

PMA's best practice research indicates that many public agencies have established central database reporting systems. The PMA Team has helped numerous agencies, including the Port Authority,

Columbus Regional Airport Authority (CRAA), the City of Portland Oregon, the City of Phoenix, Inland Empire Utility Agency, and Detroit Public Schools establish just such systems. These systems have helped those agencies make data available 24/7. These centralized databases produce the CIP status reports, track actual expenditures, preserve the project history, provide a platform for analyzing lessons learned, and explain all changes to project budgets and schedules. In CRAA and the Port Authority's systems, the data is targeted to the users so they only see the projects that they are responsible for.

KCAO should establish a simple, centralized, multi-project online reporting system maintained by the oversight staff that meets the specialized, high-level reporting needs of the Council that would replace the various project reports being done currently. A database system allows the data to be queried, sorted, organized and filtered by the Council and other users.

The KCAO oversight team should keep project dates, budgets, and other information in this system current (no more than 30 calendar days old, with any significant issue immediately updated). This system should at a minimum contain the original project budget and schedule, all increases to that budget (both approved and pending), and a current forecast cost and schedule at completion.

Establish a proactive reporting system that tells Council what it needs to know rather than requiring them to go to the system

The Council members we interviewed had very little time to devote to capital project issues. In order to facilitate Council members' use of the system they should be *directed* to the online system when new information is available. This can be done by an e-mail with a link, or any other method that is effective for individual Council members. The Reporting System Administrator or Oversight Manager should be responsible for getting information to the Council members.

Establish a multi-project report that has all the projects listed in one place

Currently the only place where the projects in the CIP are shown in one place is in the budget book. This document is updated at most twice a year. This list of projects does not contain any information about when projects are scheduled to occur and does not report on a project's performance.

The importance of having a multi-project list is the ability to focus attention on troubled projects. This builds accountability into the process by identifying who is responsible for the projects that have issues. It also facilitates better management of the overall CIP by allowing the analysis of project manager workload, better utilization of resources on similar type projects, and countless other benefits. Without having all the projects in a list, there is no efficient way to collect the data needed to analyze project performance. A sample multi-project report that shows an early warning system of delays and cost overruns using a red, yellow, green light format is shown below:

Status — Related Actions: Select an action...

Schedule | Earned Value | Index

05 - Active in Construction

Legend: Critical, Warning, Acceptable, Exceptional

	To Date		Forecast at Completion	
	Schedule	Cost	Schedule	Cost
05 - Active in Construction	**192.6 late**	**$197,491.75 over**	**17.0 early**	**$96,112.32 over**
33Rd Street Terminal Station Ventilation Improvement - - PAT684014	on schedule	$768.01 over	on schedule	$771.65 over
4.16Kv Substation Modifications - - HH334014	339.8 late	$153.54 over	on schedule	$3.69 over
800 Mhz Radio Communication System in Building Coverage (HT) - - EXD216		$67.43 over	23.0 early	$67.43 over
800 Mhz Radio Communication System in Building Coverage (LT) - - EXD217		$173.34 over	22.0 early	$173.34 over
A-2 Cooling Tower (Design/Build) - - EWR154268	867.3 late	$1,744.90 over	on schedule	$395.12 over
Access Rdwy Beneath Bridge Rdwy - - AKG226	389.2 late	$7.44 over	on schedule	$47.85 over
Admin Building 1 Landscaping (Maintenance) - - EWR454055M		$116.44 over	on schedule	$202.49 over
Aircraft Parking and Taxiway Modifications - - EWR344065	95.8 late	$435.64 over	20.9 early	$204.61 over
Airtrain Newark Signage - - EWR154283		$2,440.59 over	on schedule	$2,440.59 over
Airtrain Stations, Bldg 60 Roof & Access Safety - - EWR998403	260.5 late	$185.03 over	on schedule	$98.00 over
AirTrain Terminal at Jamaica - - LRS284401	1,099.2 late	$12,501.20 over	on schedule	$15,818.60 under
AKB NJ Abutment Rehabilitation - - AKB264035	1,024.9 late	$1,585.39 over	on schedule	$820.60 under
AKG Removal of Lead Base Paint&Repaintg Truss Sp - - AKG274068	887.8 late	$1,945.28 over	on schedule	$1,221.97 under
AKG- Rehab.of Deck Structuralsteel & Replacement of Sidewalk - - AKG274094	222.1 early	$393.99 under	20.0 early	$1,286.89 under
AOA Guard Post Crash Barrier - Airport Security Enhancements - - JFK925	149.7 late	$307.01 over	651.0 early	$391.12 under
AOA Storm Drainage Rehabilitation - - LGA910111	345.7 late	$302.53 over	on schedule	$189.03 over
Asbestos & Lead Abatement Call In Contract - - JFK216560	0.8 early	$91.31 under	19.0 early	$120.00 under

PMA recommends that various multi-project reports be generated from the centralized database. The database can be populated from a download of information from the budget system. Each project should take up one row and compare original budget and latest approved budget and schedule to a meaningful forecast of the cost and schedule at project completion.

One example of a multi-project report in use at Columbus Regional Airport Authority is shown below. This report only displays projects selected by the board for reporting, although the system that produced it has all the projects managed by engineering. The report displays the project name, phase of work (design, construction), the original schedule and budget, the latest forecast schedule and budget at completion, any variance between the original and forecast, and some text describing the contract status. Since the report is produced by a relational database, other views of the data can be displayed that show the projects with the largest cost overrun or schedule display at the top of the list, the project manager's name and phone number, etc.

Layout: 9. Facilities Committee Report | Filter All: Budget Overrun, Include in Angela's Report, Schedule Update Variance

Project Name	Activity Name	Baseline Finish	Finish	Finish Variance	Budgeted Cost	At Completion Total Cost	Cost variance	Contract Status
PORT COLUMBUS INTERNATION...		08/10/05	12/29/06	-362d	$606,825	$3,583,717	($2,976,892)	
02053 - Construct Concrete Pads & rehab pavement - Cargo Bldgs	TEST AND INSPECTION	12/30/03	10/13/06	-728d	$90,825	$143,656	($52,831)	
02053 - Construct Concrete Pads & rehab pavement - Cargo Bldgs	DESIGN	02/02/04	02/01/06	-522d	$108,700	$168,519	($59,819)	
05040 - ARFF FIRE STATION IMPROVEMENTS	CONSTRU...	08/10/05	05/05/06	-192d	$394,300	$1,151,000	($756,700)	
05046 - AOA CHECKPOINT IMPROVEMENTS (GRANT DEPENDENT)	DESIGN-Site & Roadway	01/03/05	04/14/06	-335d	$13,000	$44,495	($31,495)	
9910 - STELZER ROAD - INTERNATIONAL GATEWAY INTERCHANGE	DESIGN	12/29/04	12/29/06	-522d	$0	$2,076,048	($2,076,048)	ODOT is coordinating the design a of an alignment and preliminary de November 2004. Final design is u completed in 2006. Construction s 2007. Need to go b...
INTERMODAL / INDUSTRIAL DEV...		08/30/06	12/29/06	-87d	$233,853	$378,055	($144,202)	
05051 - CONCOURSE B RESTROOM RENOVATIONS	CONSTRU...	08/30/06	12/01/06	-67d	$160,000	$190,000	($30,000)	To follow after design is complete
9911 - Consolidated Rental Car Facility	Land	02/28/05	12/29/06	-479d	$36,700	$75,207	($38,507)	

Schedule/Cost Variance Report

One of the most important reasons for multi-project reporting is to establish an early warning system that alerts the Council to the next project requiring oversight. In order to do this the database system has to contain change order information so the drawdown of contingency can be tracked. The procurement office keeps close tabs on contingency consumption and a Project Control Officer's review is triggered when 75% of the contingency is spent. This would be a good time for the Council oversight to look closer at projects meeting this criterion. A multi-project system containing change info therefore is an important tool in the Council's oversight system.

Integrate accurate and timely actual cost information into the reporting system

Currently, actual costs at King County reside in several financial systems and are difficult to extract. KCAO staff has described a difficult process required to pull all the life-to-date expenditures together for a project. Exacerbating the problem of figuring out the total project cost is the practice of taking out separate CIP numbers for portions of the same project, and charging project-related time to general accounts. All aspects of a project's cost need to be tied together in order to determine the total expenditures to date for a project. As an example, there are several different CIP projects for the ISP jail renovation. They should all be under an overall program number so the total expenditures are known. Also all indirect costs should be coded to the same number (i.e., cost of guard escorts, etc).

One concern King County staff raised was ISP's inability to properly track and monitor the construction support operations costs that had been directed by Council to be capitalized. KCAO needs to develop a rigorous set of rules associated with using a code of accounts that tracks all costs.

Timely actual cost expenditure information is crucial to the accuracy and usefulness of reporting. Currently at King County actual cost information tends to be between six weeks to three months old. This is due in part to the fact that staff waits to report expenditures until the books are "closed." However, it appears that actual unverified data is available at an earlier time. PMA recommends that King County pull down earlier unverified cost data into its project reporting systems, and then overwrite each month's data with the new so any errors are not perpetuated.

At the Port Authority one of PMA's early accomplishments in its system implementation was improving the timeliness of the data being reported. Timeliness was improved by taking earlier unverified data before the accounting books closed, and then overwriting it each month with new data to self correct any changes that occurred since the time the data set was used.

KCAO should take CIP reporting needs considerations into account when it designs and implements new components of the new budgeting system.

3. Conclusion

King County hired the PMA Team to recommend the design of a model for capital project oversight by the King County Auditor's Office (KCAO). We conducted an intensive set of interviews with a broad cross section of King County staff, looked at four major capital projects, reviewed extensive documentation, and conducted research into best practices for legislative oversight used by peer agencies.

We found that while King County manages many of their projects well, there is a complex communication breakdown caused by a lack of trust between the two branches of King County government. This problem manifests itself in the area of reporting.

PMA recommends a structure for the new oversight group that includes several new positions and the restructuring of existing reporting relationships. We also recommend that the new independent oversight group be provided with a simple reporting system they control. This will facilitate the production of a standardized one-page project status report and a multi-project report that highlights issues; both available online to Council and Executive staff.

We also propose that for selected high risk projects the Council release funding to those projects in phases as key milestones are achieved. Only by maintaining the power of the purse and conditioning funding on the use of best practices, can the Council influence project success. This conforms to best practices of the FTA when granting transportation funding to the states.

The implementation of these recommendations will help King County establish the lines of communication and the countywide infrastructure needed to improve cost and schedule performance reporting on its large capital program. A summary of recommendations included in this report follows, broken down into those directed to the County Council for consideration, those specifically related to the new oversight function in the Auditor's Office, and those to be implemented by the Executive branch.

The following recommendations require Council Action:

- Establish a legislative capital project oversight (CPO) model in the Auditor's Office (KCAO) that builds on past successes
- Establish objective criteria for determining which projects will receive KCAO oversight

- Authorize the County Auditor to hire an Oversight Manager and oversight support staff
- Approve release of the funding for selected major capital projects in phases
- Require the Executive to establish a standard that all projects must follow to predict cost overruns and schedule delays
- Establish policy that requires current year budget estimates to be based on conceptual design
- Establish policy that requires standardization of county capital project estimating guidelines
- Require the Executive staff to provide more detail in the estimates provided to Council
- Revisit the policy concerning mitigation budgets to see if the policy still meets the Council's objectives

The following recommendations pertain to the King County Auditor's Office:

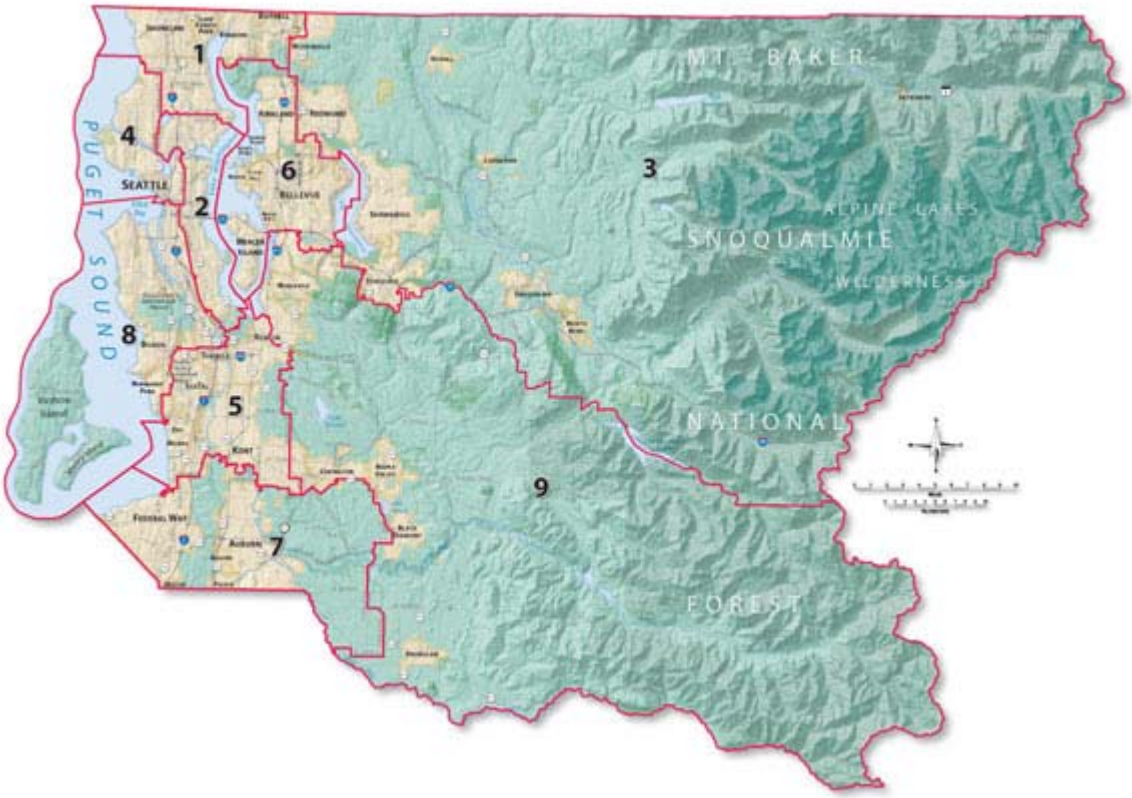
- Task the Oversight Manager to analyze and interpret project data on the Council's behalf
- Develop a standard decision request form Executive staff is required to use
- Reassign oversight consultant contracts to KCAO
- Hold regular meetings between Council staff and the oversight team
- Develop a standard report template that all projects use when reporting to the Council
- Implement a central database for project data populated by Executive branch project staff that can be used to produce reports for the Council
- Establish a proactive reporting system that tells Council what it most needs to know or wants rather than requiring them to go to the detailed system
- Establish a multi-project report that has all the projects listed in one place
- Integrate accurate and timely actual cost information into the reporting system

The following recommendations in this report apply to the Executive, but the Council may condition funding on the performance of these best practices:

- Provide for schedule contingency in the contract documents
- Perform a Project Execution Planning session at the start of all high risk projects
- Pursue recovery of cost overruns caused by errors and omissions
- Maintain a risk register on high risk projects
- Perform risk assessments at key points of high risk projects
- Show the original approved budget and baseline schedule in all reports
- Compare the latest cost/schedule forecast to the original budget/schedule in all reports
- Highlight changes between reporting periods in monthly reporting

PMA Consultants

King County
Capital Project Oversight – Phase 1



REPORT B
Plan for Implementation of a Model for the Auditor's Office Capital Project Oversight Reporting

Bruce Stephan, PE
John Knoke, PE
Joan Stephan, Esq.
PMA Consultants LLC
2 Penn Plaza, Suite 1080
New York, NY 10121
(917) 842-1970
bruce@pmaconsultants.com

Gordon Maclean PMP
Robert Jacobsen PMP
Saybrook Associates, Inc.
2575 E. Camelback Road
Suite 450
Phoenix, AZ 85016
(602) 346-5335
gmaclean@saybrook-associates.com

August 31, 2007

King County

TABLE OF CONTENTS

Executive Summary 3

1. Staffing Plan and Organization to Provide Effective Independent Oversight of Selected Capital Projects for the Council. 5

2. Outline and Definitions of Capital Project Oversight Report Requirements and Project Management Deliverables Required to Standardize Information Reported to Council and to Align With Proposed Appropriation Stage Gates 12

3. Provide Reporting Models and a Recommended System Outline to Provide Improved Information Flow to the Council 23

4. Oversight System Rollout Plan 24

Executive Summary

Introduction

The King County Capital Project Oversight Report B sets forth the implementation plan for the Auditor's Office capital project oversight model. This is a companion report to the Capital Project Oversight Report A, which evaluated the King County capital project delivery process from the standpoint of improving the process of legislative oversight and providing the King County Council with consistent performance information on high risk capital projects.

This report proposes the establishment of a Capital Project Oversight Group within the Auditor's Office, and describes the roles, responsibilities, and processes required to ensure that the legislative oversight model described in Report A is implemented successfully. We are proposing a phased implementation of the capital project oversight model due to the level of effort required and the importance of developing an effective interface with the County Executive's current capital management processes and systems. The King County Auditor's Office will shortly submit to the County Council a Capital Project Oversight Action Plan that outlines the early implementation steps that will be initiated by October 2007, and proposed legislation in support the oversight implementation efforts.

Implementation Plan Summary

Report B contains a comprehensive discussion of the organization; staffing; roles and responsibilities; processes; and systems necessary to ensure effective and independent oversight. Highlights include:

- The role of the County Auditor is to provide vision, strategy, direction, and support to the Oversight Manager in carrying out effective independent oversight of selected capital projects for the County Council. The County Auditor will also supervise coordination of the work of the audit staff with the oversight staff to ensure that information from audits and special studies can help to inform oversight efforts, and that issues identified through oversight can be evaluated by audits as appropriate. The County Auditor will also be the liaison with the Council and Executive on sensitive capital policy and project issues.

- Proposed staffing for the Capital Project Oversight Group would consist of an Oversight Manager, two to three Oversight Specialists and a System Administrator. The Oversight Manager, who would report directly to the County Auditor, would be responsible for daily management of the Oversight Specialists and System Administrator, administering consultant oversight service contracts, and for continuous interface with the Auditor's Office, Council, and Executive on project oversight matters (detailed job descriptions, staffing qualifications and estimated salary ranges for the Capital Project Oversight Group are included in report).

- A Draft Scope of Work Outline/Template for Outside Consultant Services to ensure that oversight tasks are clearly defined, deliverables delineated, and county contracting standards and procedures are followed (a detail Request for Proposal Template is provided in Appendix A).

- Additional detail on the Part A Report's recommendation for staged appropriation requests based on the four stages of a typical capital project life cycle: planning, design, construction (implementation for IT projects), and closeout. The intent of staging the project appropriation requests for high-risk projects is to provide Council with an improved view into the scope of the project and an ability to influence the project at critical stages. The report also identifies the

minimum project information that should be submitted to the Council along with a standard *Proposed Capital Project Appropriation Request Form.*

- A discussion of oversight report design assumptions, definitions and objectives, and identification of project budget, cost, schedule and change management data to be gathered by the Capital Project Oversight Group for those capital projects selected for oversight. An immediate goal of the oversight reporting effort is to summarize and standardize the project report submitted to the Council, and emphasize changes, negative and positive trends, and impacts. A long-term goal is to establish a centralized project control system that summarizes cost, schedule and other performance information for all high risk capital projects. The development of a single high risk project database would also allow the Council and other users to query the data efficiently.

- An extended oversight rollout plan from the inception to the completion of the capital project oversight implementation. Consistent with the legislative oversight model developed in the Part A Report, the oversight rollout plan offers more comprehensive descriptions of the Council's, Executive's, and Auditor's Office responsibilities for developing or refining the county capital project processes and systems, including the proposed capital project risk ranking scoring module; general and project-specific Council, Executive, and Auditor's Office project management plans and communications; oversight training and orientation plans; and capital project cost estimating guidelines.

Implementation of the legislative capital project oversight model will be a dynamic and challenging effort. However, the proposed model and implementation plan reflect current and proven project management and oversight practices that will promote public trust by ensuring fiscal integrity and accountability in the use of tax dollars.

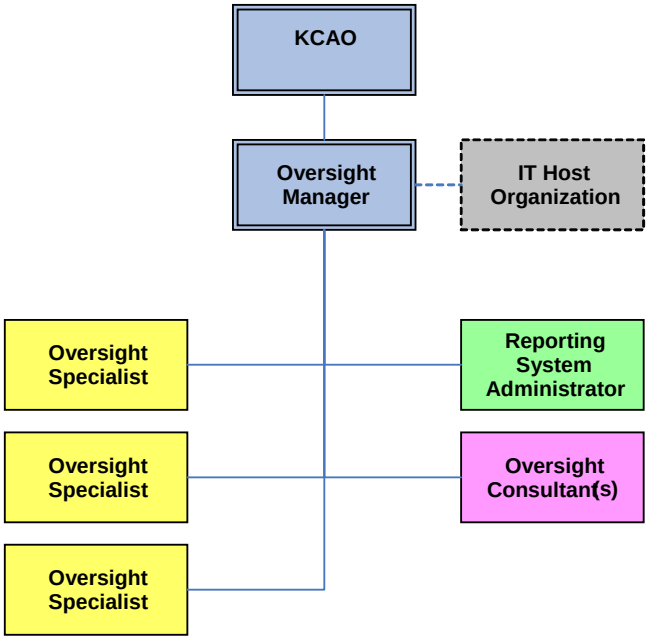
1. Staffing Plan and Organization to Provide Effective Independent Oversight of Selected Capital Projects for the Council

1.1 Capital Project Oversight Group (CPOG) Organization

In Report A, we developed a model in support of the County Council mandate to establish a legislative oversight function in the King County Auditor's Office (KCAO). We recommended that a Capital Projects Oversight Group (CPOG) staff the oversight function. This group is critical to ensure effective and independent oversight of selected capital projects for the Council. A dedicated, full-time staff is needed to ensure that the recommendations in Report A and this report are followed so meaningful oversight is provided that brings value to the county.

We feel that King County should hire people who are either from outside county government or do not have preconceived ideas about current projects or past controversies. Dedicated, full-time oversight personnel are needed because oversight responsibilities cannot be successfully added to the existing workload of current staff. People generally have a tendency to avoid new, unfamiliar tasks if those tasks are part-time or added to existing responsibilities.

Proposed staffing for the CPOG would consist of an Oversight Manager (OM), two to three Oversight Specialists (OS), and a Reporting System Administrator (RSA). The group would be organized with the Oversight Manager as leader of the group reporting to the KCAO as follows:



CPOG would need to be supported by a King County IT system support host external to CPOG. This could potentially be an existing King County IT person already managing other databases.

1.2 Roles and Responsibilities

The roles and responsibilities of each member of the CPOG staff are outlined below. The group in general will act as an early warning system that helps both Council and Executive staff make timely and fully informed decisions that improve capital project success. As such, we recommend that CPOG should report simultaneously to the executive's project representative and appropriate Council staff.

The role of the County Auditor is to provide vision, strategy, supervision, and support to the Oversight Manager in carrying out effective independent oversight of selected capital projects for the County Council. The County Auditor will also coordinate the work of the performance audit staff with the oversight staff to ensure that information from audits and special studies can help to inform oversight efforts, and that issues identified through oversight can be evaluated by audits as appropriate. Specific tasks include:

- Identify high risk projects through audits
- Provide policy guidance that allows the creation of detailed procedures
- Review status reports and recommend enhancements
- Coordinate supplemental oversight with Auditor's Office staff and other mandates as needed
- Audit projects identified by the Oversight Manager
- Act as liaison to the Council and Executive on sensitive issues
- Manage the change associated with process improvements, including orienting legislative and executive staff as required
- Assist Oversight Manager in promulgating consistent and formal data collection formats across the agencies
- Foster the Executive and Council's organizational and financial commitment to oversight
- Help the OM enforce procedures necessary to effective oversight

The role of the Oversight Manager is to provide leadership and management of the CPOG and to identify and communicate potential problems to Council, Executive, and County Auditor staff. Specific tasks include:

- Daily management of the Oversight Specialists and Reporting System Administrator
- Continuous interface with KCAO, Council staff, and Executive department heads to determine their needs and disseminate project control information
- Interface with Council staff and other key users of the data to determine their reporting needs
- Specify standard and ad hoc reports for development by the Reporting System Administrator
- Specify data input screens and user interfaces for reporting system
- Identify data integration opportunities by interfacing with Office of Management and Budget (OMB), Finance, and other owners of databases containing relevant project data
- Draft and disseminate detailed procedures, flow charts, and other documentation of the oversight process
- Promote and facilitate processes, procedures, and system usage throughout King County
- Analyze the project control data collected by the OS to:
    - Identify potential problems in timely manner
    - Identify trends
    - Highlight changes in last month
    - Highlight changes since initial and last project appropriation
    - Ensure data accuracy and integrity
    - Ensure data is timely
- Identify potential solutions to issues identified by the Oversight Specialists and share them as appropriate
- Train King County staff in process, procedures, and online reporting system
- Disseminate key CIP information obtained from oversight staff to all Council members as appropriate
- Report all major issues and trends to KCAO

The role of the Oversight Specialists is to provide oversight of the project to avoid filtering, obfuscation, or delay in the dissemination of accurate information about the project status. Specific tasks include:

- Attend all key project meetings, including but not limited to, progress meetings, change order negotiations, bid openings, community briefings, etc.
- Interface with the implementing agency project manager and project team
- Interface with contractors, designers, and consultants
- Gather relevant project information and documentation
- Condense data down to a level understandable to the general public
- Compare the data to original budgets and baseline schedules and recent updates
- Input data into the new reporting system
- Independently assess progress status using cost /schedule software to identify issues and potential solutions
- Report major trends and issues to the OM

The role of the Reporting System Administrator is to provide technical programming and administration support in operating, maintaining, and updating the online reporting system, developing and maintaining user interface screens, creating data interfaces to other databases, and creating and posting reports. Specific tasks include:

- Interface with Oversight Specialists to maximize proper usage of reporting system
- Interface with Oversight Manager, Council staff, and other key users of the data to determine their reporting needs
- Develop reports from the system
- Interface with database administrators in OMB, Finance, and other executive agencies that are primary sources of project related data
- Develop interfaces to other data as approved by the OM
- Assist the Oversight Specialists and Oversight Manager in the input of project data into the system
- Maintain security access to reporting system
- Provide help desk support to report system users
- Upgrade the software when new versions are released
- Draft technical documentation of the system
- Train staff in the use of the system
- Acts as liaison to King County IT system host

The role of the oversight system IT host organization is to provide the platform and maintenance for the online oversight system. This role requires all IT support normally associated with King County installed software and hardware. It is possible that the oversight reporting system might be “piggy backed” onto an existing King County financial and/or budgeting database system such as the OMB budget system, thus requiring less expenditure and time to establish the oversight system compared to a “new” purchase.

1.3 Staffing Qualifications & Position Descriptions

The qualifications for all of the CPOG staff hinge around knowledge, expertise, and experience in the project management and project controls areas within the engineering and construction industry. Substantial experience is required of the Oversight Manager and a high degree of exposure to project controls is required of the Oversight Specialists. The qualifications and job descriptions for each CPOG position are as follows:

<u>Oversight Manager</u>

Qualifications – The Oversight Manager should possess a bachelor’s degree in Engineering, Construction Management, Architecture or a related field. Additional certification as a PMP (Project Management Professional) or CCM (Certified Construction Manager) is highly desirable. The

individual should also have 15 to 20 years documented experience[1] as a project manager or project controls manager in the engineering and construction industry. Experience on large public infrastructure projects with a construction cost of $50 million and greater is preferred. Of these 15 to 20 years experience, the Oversight Manager should have at least five years employment experience in at least one of the following project controls areas: estimating, scheduling or cost engineering, and at least five years as a manager of staff in one of these areas. As such, practical knowledge of project controls software such as Primavera, MS Project, Expedition, Prolog, etc. is required in order to demonstrate the ability to understand and/or develop project reports which will include baseline to actual performance comparisons, critical path analysis, resource utilization analysis, and other project controls techniques. Fundamental knowledge of scope management, project delivery methods, procurement, risk management, communication, and quality is also required.

Job Description – The Oversight Manager will be responsible for the operation and management of the Capital Projects Oversight Group and report to the County Auditor. The manager provides leadership, management, and direction to a staff of three or more oversight group professionals who in turn provide oversight to several medium and large size projects. Responsibilities include design and development of standard oversight project status reports on a periodic basis as well as preparing special reports on an ad hoc basis; analysis of project data; trend and variance analysis; cause determination; solution/mitigation alternatives development and recommendations proposal. The manager will also act as the chief analyst of the group and assist and develop the Oversight Specialists in this regard. The Oversight Manager holds a pivotal communication responsibility as the primary channel between the CPOG and KCAO and secondary channel to the County Council. As such, the manager interprets project status data reported from Executive Agencies Project Managers, determines the “health” of the project on an ongoing basis, identifies new and continuing risks, recommends alternatives and communicates to KCAO and the Council the facts, problems, possible solutions and recommendations through standard and ad hoc reports and other supporting media. The Oversight Manager acts as the independent expert representative for the KCAO regarding project management and project controls. As such, the manager assists the KCAO in formulating policies, procedures, and best practices for capital project oversight including the design and implementation of a detailed communication plan for the Oversight Group.

Oversight Specialists

Qualifications – The Oversight Specialist should possess a bachelor’s degree in Engineering, Construction Management, Architecture or a related field and an additional certification as a PMP (Project Management Professional) or CCM (Certified Construction Manager). The individual should have 5 to 10 years documented experience as a project controls professional in the engineering and construction industry, preferably on infrastructure projects with a construction cost of $50M and greater. The Oversight Specialist should have at least five years employment experience in at least one of the following project controls areas: estimating, scheduling, or cost engineering. As such, practical knowledge of project controls software such as Primavera, MS Project, Expedition, Prolog, etc. is required in order to demonstrate the ability to understand and/or develop project reports which will include baseline to actual performance comparisons, critical path analysis, resource utilization analysis, and other project controls techniques.

Job Description – The Oversight Specialist will be responsible for overseeing a portfolio of several (three to six) medium to large engineering/construction infrastructure projects. The Oversight Specialist will be placed on distribution for copies of all weekly, monthly, or quarterly project reports, cost reports, schedule updates, and similar project documents. The specialist will be copied on correspondence outbound from the project team to all King County stakeholders and to any outside agencies. Responsibilities include attendance at all regularly scheduled project meetings and ad hoc

[1] Documented experience is defined as verifiable employment in this career field.

project meetings; including meetings where project status is reviewed and any major project issues or risks are discussed. The specialist will use project controls tools and methodologies to bring independent project oversight on operational cost accounting, scheduling, and scope issues. The Oversight Specialist will make an independent assessment of the physical progress and quality of the project and highlight any issues or risks which are not already addressed within the project reports to the project team and the Oversight Manager. The specialist will also provide an assessment of the testing and turnover process to assure that the specified testing is performed and any test failures are addressed. At all times the specialist will provide oversight services as a neutral party as opposed to providing management services of the project. The specialist will also input project performance data into the reporting system and maintain monthly data on budget, actual cost, and schedule allowing identification of trends to the project team and Oversight Manager. Additionally, the specialist will make recommendations for improvement of the project outcome to the Oversight Manager. After review with the Oversight Manager, these recommendations will be presented to the project team. The Oversight Specialist will input and maintain project status data into the oversight system and run reports on a scheduled periodic basis and assist the Oversight Manager as needed.

The Oversight Specialist initiates both formal and professional courtesy recommendations to the Oversight Manager which are then provided to the Project Team executing the project. It is envisioned that courtesy recommendations would be the norm and that formal recommendations would be necessary when courtesy recommendations are not acted upon or some other action by the executive agency fails to resolve the problem at hand. All recommendations and all identifications of potential issues for a project would be made part of the monthly oversight report for the project regardless of form.

Reporting System Administrator

Qualifications – The Reporting System Administrator should possess a bachelor's degree in Information Technology, Computer Engineering or a related field, and an additional certification as a Microsoft Certified Solution Developer or equivalent. Candidate should have at least five years experience in systems administration, programming, analysis, and design of relational databases and web-related business application systems with experience in several (but not necessarily all) of the following programs:

- **Operating Systems**: Windows NT 4.0; Windows 95/98/2000; MS DOS
- **Languages**: Java; C, C++, and VC++; FORTRAN; SQL 7.3
- **Front End**: Visual Basic 5.0/6.0; JavaScript; VB Script
- **Web**: JSP; ASP; Servlets; Struts; Active X Technology; HTML; Tomcat
- **Databases**: Oracle 8.0; MS SQL Server; MS Access
- **Reporting**: Crystal Reports

Experience for a large public or private sector owner in the engineering and construction industry is preferred. The Oversight Administrator must be highly experienced in MS Access report design or Crystal Reports or similar data reporting software.

Job Description – The System Administrator will maintain and update the oversight reporting system. As such, duties include adding, maintaining and removing users from the system, administering access rights, trouble shooting user problems and assisting users in using the system, and acting as the KCAO liaison between the CPOG and supporting IT host. As liaison, assist the supporting IT host as necessary in upgrading/loading new versions of the oversight system software; loading and testing on staging site and loading on production site. Develop, maintain, and upgrade all standard reports and produce ad hoc reports at the request of the Oversight Manager. Develop and maintain interfaces to other databases.

1.4 Procurement of Staff

The following labor rates are subject to adjustment based on specific qualifications and experience:

- Oversight Manager; $90K - $150K salary per year; midpoint $120K
- Oversight Specialist; $70K - $130K salary per year; midpoint $100K
- Reporting System Administrator; $60K – $100K salary per year; midpoint $80
- Outside Oversight Consultants; $120/hour - $250/hour depending upon role/duties

1.5 Initial Independent Oversight Staffing Estimate

This estimate is based on the midpoint of the ranges given above. The costs of benefits and fringes would need to be factored in. The need for consultants will be dependant on the number of projects to be given oversight which is not known at this time.

Position	Yearly Rate
Oversight Manager	$ 120,000
Oversight Specialist 1	$ 100,000
Oversight Specialist 2	$ 100,000
Oversight Specialist 3	$ 100,000
Reporting System Admin	$ 80,000
Oversight Consultants	$ 200,000
10% for software, laptops, rent, furnishings and supplies	$ 70,000
Estimated Annual Total	**$ 770,000**

1.6 Use of Oversight Consultants during Peak Demand

The “span of control” of the Capital Projects Oversight Group is limited by the number of projects that could be placed into oversight as constrained by the oversight resources available. Initially, the selected high-risk projects recommended for oversight would include those projects currently of high interest to the Council (e.g., Brightwater, NJB, Jail ISP and ABT projects) and those additional projects selected as a result of the prioritization and risk assessment of the balance of the projects in the capital program. Testing of the risk prioritization model and feedback from executive agencies is planned but even if the risk-ranking model works with few hitches, there is not a clear demarcation for when a given project becomes “high risk.” The KCAO should solicit the opinions of both the executive and the council in reviewing the ranked projects in order to reach a practical cutoff level for the number of projects to be placed under the oversight regime.

The primary constraint to span of control for a single oversight specialist is the logistics required to attend meetings and follow up issues. How many meetings can an Oversight Specialist attend per project per week, month, etc.? How much time is required per project for data input, report preparation per week, month, etc.? We believe that the constraints imposed by logistics limit the number of projects covered by a single oversight person to the range of three to six depending on complexity. The high side of this range represents smaller and less complex projects. The practical range might be extended by having a trusted on-project consultant do most of the legwork, and report to the Oversight Specialist or Manager and/or by leveraging the work already being done by the King County Owner’s Representative.

The decision whether to use in-house CPOG staff or consultants should consider the following elements:

- Use consultants when the number of high-risk projects of interest is greater than can be handled by the CPOG group internal staff.

- The nature of the project which would require special expertise not found among the CPOG group – an example would be the ABT project where budgeting, accounting, and human resource system implementation experience would be invaluable.
- Historical experience with the agencies and projects might suggest that existing players be maintained in an oversight role rather than bringing in a new person who would face a steep learning curve – an example would be the ISP project where KCAO staff has participated and is already familiar with the complex structure of the project.

Annual Consultant Demand and Cost Estimate

The information needed to estimate consultant costs is dependant on both demand and the number of permanent staff authorized. The "demand" side of project oversight has not been confirmed and an initial test by WTD of the risk ranking system was done on August 23rd. The initial test indicates that the risk scoring method requires further development prior to being used to rank projects.

1.7 The Role of KCAO Oversight Group Contrasted with Executive Agencies Project Management Role

The oversight role is intended to provide Council with project update information and to emphasize any significant changes to the structure, scope, cost, or schedule of selected high-risk projects. The role does not have a direct management input to the workings of the capital projects which remain the responsibility of the implementing executive agency or department. However, during the ongoing process of providing project oversight, the oversight specialists, oversight manager, and KCAO staff will interface with the project team, with the King County Project Representatives, with the King County Procurement and Contract Services Section, and other agencies. The primary focus of the oversight effort is to assure the Council that all of the significant project issues have been identified and that the executive has developed a plan to address the issues. When the issue is substantial (e.g., significant additional funding is now required), then the intention becomes one of facilitating the participation of Council early enough in the change management process to allow their voice to influence the eventual choice or outcome. Since the KCAO in its oversight capacity is another set of eyes and minds directed at high-risk projects, there are potential benefits to the project of listening to the issues and opinions formed by them and of the informal dialog which may occur between them and the project manager.

The fundamental role of the KCAO oversight group would remain to identify issues to the Council and request resolution from the executive agencies who are implementing the project.

1.8 Draft RFP Scope of Work Outline Template for Outside Consultant Oversight Services

The primary purpose of the Draft Request for Proposal (RFP) Scope of Work Outline Template for Outside Consultant Services is to provide checklist when preparing an RFP. It can be followed exactly but in some instances should be modified to suit the particular situation and scope of work to fit the need. The major points to be made are that:

- The scope of work has to clearly define the tasks that the Oversight Consultant will perform
- The scope of work has to clearly designate the deliverables to be prepared and frequency of preparation and delivery
- The deliverables format needs to be clearly defined as to whether the consultant is to follow a CPOG standard or the consultant will be allowed license to develop a format with approval from CPOG
- All other requirements should follow King County procurement standards

A detailed RFP template is provided in Appendix A.

2. Outline and Definitions of Capital Project Oversight Report Requirements and Project Management Deliverables Required to Standardize Information Reported to Council and to Align With Proposed Appropriation Stage Gates

2.1 Project Life Cycle and Proposed Appropriation Stage Gates

A typical capital project life cycle consists of four stages: planning, design, construction (implementation for IT projects), and closeout. The intent of staging the project appropriation requests for high-risk projects is to provide Council with an improved view into the scope of the project and an ability to influence the project at critical stages.

We recommend that project appropriations for selected high-risk projects be approved in a three-step process:

1. Planning Authorization - For large projects where the existing planning budget is not sufficient to obtain conceptual design, an initial appropriation stage would cover funds needed for project planning and studies.

2. Design Authorization - At an early point in design stage – the completion of conceptual design (approximately 10% of design is complete). The requested appropriation would include funding for the completion of design up to completion of contract documents.

3. Construction Authorization - Prior to construction, when design has progressed to approximately 80 % and/or a guaranteed maximum price (GMP) contract has been agreed. The requested appropriation would fund the construction and any associated budget items required to complete the project, including a contingency for change orders.

If sufficient funds are available within each implementing agency or department to cover the planning and study process, then the initial appropriation step would not be necessary.

2.1.1 Project information required for initial budget appropriation (if needed for projects in the planning phase)

- Project description and scope of work
- Project budget estimate and basis of estimate. A project level contingency should be specified and assumptions used to reach the contingency amount should be stated.
- Proposed Project Level 1Schedule showing a high-level outline of activities through to project completion, including proposed project milestones and any interrelationships with other projects.
- Project Execution Plan
- Project Risk Score and Rank

2.1.2 Project information required for design budget appropriation (projects at completion of conceptual design)

- Project description and scope of work
- Description of design services to be provided
- Project budget estimate (revised) and basis of estimate. The budget should be subdivided into Planning, Design, Construction or Implementation, Closeout, and a project level contingency should be specified and assumptions used to reach contingency amount should be stated. Any significant variance from the Planning phase budget should be identified and explained.
- Proposed Project Level 2 Schedule (revised) showing a medium level of activity detail through to project completion, including project milestones and any interrelationships with other

projects. Any significant variance of project completion date compared to the planning schedule should be identified and explained.

- Project Execution Plan (revised)
- Project Risk Score and Rank
- Project Value Management Plan – This plan refers to the planned effort to review proposed scope during the early programming and design stage to make considered trade offs which optimize the capabilities of the completed project versus the costs thereof.
- Project Risk Management Plan

2.1.3 Project information required for construction budget appropriation (projects at approximately 80% completion of design and/or GMP agreement)

- Project description and scope of work. Detailed description of the construction or implementation scope of work should be included.
- Detailed project budget estimate (revised) and basis of estimate. Any bid information available at this stage should be included to provide the Council with the best information regarding scope and cost. A project level contingency should be specified and assumptions used to reach contingency number should be stated. Any significant variance in the budget as compared to the design budget should be identified and explained.
- Proposed Project Level 2/3 Schedule (revised) showing a high level of activity detail through to project completion including the constructor's input (except where delivery method is Design-Bid-Build) and project milestones and any interrelationships with other projects.

  Any significant variance between the project completion dates as shown with the design schedule should be identified and explained.

- Project Execution Plan (revised)
- Project Risk Score and Rank
- Value Management Report
- Risk Management Assessment Report

2.2 Proposed Standard Form for Capital Project Appropriation Requests (Appendix B)

We have proposed a standard form to be used by executive departments to provide key project information to the Council when requesting capital appropriation.

2.3 Oversight Report Design Assumptions, Definitions, and Considerations

2.3.1 Overview

The basis of project management practice is to view the entire project from initiation of the project to completion and closeout. This involves defining the project scope, budget, and schedule to include all the components necessary to complete the project. The corollary to the life cycle view of the project is the reality that project information becomes progressively more detailed and reliable as the project progresses. The goal of the oversight reporting effort is to summarize and standardize the project reporting that is received by Council and to emphasize changes, impacts, negative, or positive trends.

In gathering and reporting project budget, commitment, and cost data, the fiscal year accounting and budgeting cycle is also important from an overall financial management perspective but less so from a project performance and progress point of view.

2.3.2 Project system

The best possible source of individual project performance information is a project controls system consisting of a critical path schedule and a Cost Management system which are updated on a regular basis by staff directly responsible for the management of the project. These systems are normally available to King County on a project-by-project basis once a Construction Manager firm is brought on board.

2.3.3 Overall master system

As a long-term solution, King County should establish a centralized project control system that summarizes cost and schedule information for all high-risk projects. Having multiple projects in a single database allows the identification of troubled projects that need Council attention. It also could provide a single place on the network to get information about high-risk projects, and allow the querying of data. King County should consider upgrading the Capital Budgeting system to capture the additional information needed to use it as a project management system. PMA has already explored this possibility with the Office of Management and Budget, but KCAO needs to continue these discussions and clearly establish functional requirements if the decision to use the budget system is made.

The initial form of this system could be an MS Access database with either Access or Crystal report outputs that could be viewed on a shared drive or on a Web page. Further refinements to this setup could be made as experience and user demand are factored in.

A preliminary estimate for programming and testing the system, with the assumption that the work is entirely done by a consultant, is presented below. The job requirements for the Reporting System Administrator include database and programming experience. Therefore, that person could do most of this work. The interface with the King County budget and accounting systems is best done internally by staff persons who are very familiar with those systems rather than an outside consultant (or could be done by a consultant already performing this type of work for the Finance Department).

Estimate to program and test KCAO Oversight system database and reports				
Item	Description	Hours	Rate	Subtotal
1	Build MS Access database structure and db dictionary	60		
	Determine hosting location, hardware, database			
2	Develop Admin reports using Crystal Reports	30		
	Master List of oversight Projects			
	Master List of all Projects >$1M			
	Parent Child Listing			
3	Develop Single Project Report in Crystal	20		
4	Develop Multi-Project Report in Crystal	10		
5	Develop manual input form(s)	40		
6	Develop and test queries against accounting systems	60		
	for commitments			
	actual costs			
	change orders			
	and against Budget system for total project budgets			
7	Pilot test update process	30		
	report output and content			
8	Test financial integration	60		
9	Develop system data validation reports	30		
10	Deploy reports onto intranet site	20		
	shared folder or webpage			
11	Contingency	50		
	TOTAL	**410**	**$125**	**$51,250**

2.3.4 Schedule

Prior to bringing on a construction manager, any projections on project completion come from the King County project manager who may not have a schedule tool in use. On significant projects, King County should make the extra effort to develop and update an owner level schedule showing high-level summary activities and milestones. The schedule should be updated on a monthly basis to forecast the latest completion date based on the current status of funding, planning, or design.

2.3.5 Baseline

Performance monitoring of the project involves setting baseline expectations and then measuring actual performance compared to the baseline. For King County capital projects, we recommend that project baselines for cost and schedule be established in the three appropriation requests (Planning, Design, and Construction).

2.3.6 Source of financial data

Financial data should come from the King County financial systems – accounting and budget systems wherever possible. To backfit financial data into oversight reports might be done via a manual exercise to obtain the life-to-date amount for commitments and actual costs and to obtain the original and current budget data. It is also possible to use a one-time query to obtain this data and then accumulate periodic data.

For 63-20 projects which are leased properties, the King County accounting systems might not have the required in process financial data necessary to provide reporting and monitoring. For these projects, it is necessary for the Oversight Group to capture budget and expenditure data from the construction manager and developer on a manual basis.

2.3.7 Actual cost

Financial data to obtain the life-to-date amount for commitments and actual costs and to obtain the original and current budget data should come from the King County financial accounting and budget systems. A short-term solution might be to manually input financial data into oversight reports, but eventually the financial data should be integrated with the central project oversight database. It is also possible to use a one-time query of the accounting systems to obtain this data for ongoing projects and then accumulate periodic data.

2.3.8 Forecast cost at completion

The trending of actual costs in order to forecast a cost at completion is a primary tool used to monitor project performance. Without a prospective forecast there is no early warning system. An early warning system is one of the key benefits of implementing project oversight, because it facilitates timely decision-making and influences project success. Generally the Executive's project team closest to the project should be making the forecasts, since they have the best knowledge of the project's true status. However, for most projects at King County this will be a cultural change. As a short-term solution, KCAO may want to consider having the Oversight staff develop forecasts that they discuss with the Executive project team before publication. The long-term solution is to change the culture so the Executive staff does the cost forecast. The forecast should be done following an established standard like an earned value methodology to avoid subjectivity in forecasting.

2.3.9 Subproject level monitoring

For large projects over $100 million, King County should consider tracking costs at the subproject or even contract level. King County's accounting system and project structure has been set up on the Brightwater project (and others) to track costs for several subsidiary projects representing part of the whole scope of work (there are separate project/contracts for the Treatment Plant and for the Conveyance). This is a Parent to Child relationship that would require a mapping table in the reporting system which would summarize the child projects for reporting purposes. It is also recommended that in these situations the child projects should have individual reporting (which may be forwarded to Council if and when issues warrant) otherwise they would just receive the summarized report. For the Brightwater parent project, several child projects will have dollar values over $200 million, thus it is important to track their performance individually.

2.3.10 Brightwater project monitoring

For the Brightwater project, since it is a very large financial commitment and critical to King County, we recommend that WTD provide quantity versus time graphs for the three conveyance tunnel projects, for the liquid side project, and for the solid side project. For example, for Conveyance Contracts #1, #2, and #3 provide a graph of planned feet of tunnel drilled per week for each contract

and then plot actual feet of tunnel drilled each reporting period by the contractor. For liquids side and solids side treatment plants, provide a graph of planned cubic yards of concrete to be placed and then plot actual cubic yards placed each reporting period by the contractor. If there is a performance problem, these graphs will highlight it better than any other method except earned value management system (EVMS).

2.3.11 Use EVMS for very high risk projects

For selected very high-risk projects, King County should mandate the use of an EVMS, which provides the best possible tracking of project performance. This system requires complete definition of work scope, congruity between work tasks and budgets, and a cost-loaded schedule. These requirements must be specified in the contracts – it is generally not feasible to backfit an EVMS system once the contracts have been approved. The ABT project would be a candidate for the EVMS approach. The value of this system is the ability for the owner to predict final project cost and schedule outcomes much earlier in the project (at approximately 20% complete) than would otherwise be possible.

2.4 Key Performance Metrics

Most public agencies with large capital programs have established key performance metrics that they use to check the health of projects, report to the executive level, identify problem projects requiring action, and identify trends affecting the whole program that may require a change in policy. The emphasis in these metrics is the attempt to forecast the final result rather than merely report the project status as a snapshot in time. Program wide metrics should be compared to similar measures for other large public owners. Examples of common metrics that King County should consider tracking for high-risk projects include:

- Project Cost – comparison of Original Appropriation to Final Cost at Completion
- Program Cost – comparison of annual capital budget to actual expenditures over several years
- Program Completion – comparison of Planned vs. Actual Substantial Completion Dates for all completed projects
- Project “Engineer’s Estimate” of Construction Cost – comparison of engineer’s estimate of construction costs to actual bids received from Contractors
- Inflation Trends – a comparison of project estimate and pricing data by year to identify pricing trends.
    - Change Order Reasons – a pie chart showing the magnitude and reasons for change orders. See Appendix D for a recommended coding of change drivers
- Design Completion – number and magnitude of planned vs. actual construction contract awards on annual basis
- Construction in Place – planned vs. actual construction dollars spent on annual basis and/or planned vs. actual quantities installed

2.5 Reporting Cycle

A standard reporting cycle should be established and published in advance to inform all stakeholders as to when they can access the most current oversight reports. The accounting system period close date cycle determines when fresh data for commitments and actual costs are available – the IBIS system operates on every two-week cycle tied to payroll; the ARMS system operates on a twice per month basis. The other primary determinant is the availability of cost and schedule information from the various contractors/designers employed on King County projects; the contractor and designer updates are generally once per month and tied to month end, but there is a lag to process the cost and schedule data and produce information – usually at least a week.

2.6 Project Budget, Cost, Schedule, and Change Management Data to Be Gathered by KCAO Oversight Group for Capital Projects Selected for Oversight

2.6.1 Project header data

- Project ID – from the financial accounting system
- Project Title
- Department, Division, or Agency Project Sponsor
- Project Stage – Planning, Design, Construction, Closeout – Where in the project life cycle is the project?
- Project Manager and Phone #
- Name of KCAO Oversight person reporting and Phone #
- Reporting Period – accounting system last period closing date is normally used
- Report Date
- Report # - unique report number using Project ID and sequential number
- Project Scope of Work – Concise description of the project deliverables

2.6.2 Budget data – Source – Originating department/division via OMB

- Project Current Total Budget – all phases, all fiscal years
- Project Current Budget – all phase codes, by fiscal year
- Project Original Budget – all phases, all fiscal years
- Project Contingency Budget amount – total all fiscal years
- Project Contingency amount utilized – total life to date

The project total budget is established by the initiating department or division and consists of all planned expenses associated with completing the project including an estimate for design and construction costs and all King County internal charges. The total budget includes planned costs for all fiscal years where the project is expected to be active – this may include the time where the project is in warranty and has not been closed out in the accounting system.

The original project budget should be maintained in King County's financial systems to enable comparison with current budget and forecasted cost at completion. It is normal practice to establish a project budget and schedule baseline during the early planning stage of a given project and then to reset these baselines at significant milestones such as completion of schematic (conceptual) design and completion of construction contract documents or GMP agreement.

The mechanics of budget tracking is as follows: The first approved budget that is established should be recorded as the "original budget." This budget is preserved for historical purposes and to track budget change as it occurs over the life of the project. If during the annual capital budgeting process or when a specific appropriation request results in a change, then the original budget is increased or decreased to reflect a new budget to be known as the "current budget." As multiple budget changes are approved over time, the current budget will reflect all of the changes applied to the original budget. The current budget is the budget of record at the point of time it is updated. Therefore if there are no changes, the original budget is the current budget. This maintenance of budget can be shown as follows:

Original Budget	+	Budget Changes	=	Current Budget
Historical Record		Historical Record		Budget of Record

For reporting purposes, retention of these budgets for any phase of the project such as design and construction will facilitate trend analysis without the burden of researching and compiling data. The forecasted cost at completion is updated on a monthly routine and compared to the current budget for variance analysis.

A similar concept applies to schedules where the original approved schedule, overall duration, and completion date is the first "baseline" and subsequent approved schedule changes are reflected in the "current baseline." Any forecasts or status applied to a separately maintained schedule is known as the "current schedule" which can be compared to the current baseline for variance analysis.

A project contingency amount should be included and itemized as part of the project budget. The amount of contingency is based on the nature of the project, the completeness of design information, and an assessment of risk by the project team. It is expected that in normal circumstances the contingency budget will be spent. It also possible that the contingency budget can be reduced once the project has passed key milestones and the degree of risk has been decreased. A Contingency Drawdown graph should be maintained to highlight the utilization of contingency (Appendix C).

Note: For 63-20 lease projects, budget information would not appear in the King County financial systems. It would come from the King County agreement with the developer.

2.6.3 Commitment data – Source – Financial accounting systems

Commitment data (Contracts) is important to track since it indicates the rate of progress in "converting" the project budget into contracts and also is the point at which changes to contract scope are tracked. We recommend that King County adopt a standard for the coding of Contract Change Orders to facilitate trend analysis. A recommended set of change driver codes are included herein (Appendix D).

- Project Total Commitments – life to date, grouped by phase code
- Project Commitments – last accounting period (month or four-week period)
- Forecast Remaining to Commit – from current reporting period to end of project – Source – Project Manager
- Project Total Change Orders Approved – life to date, grouped by Change Driver code. Change Driver code to be standardized for all King County design and construction projects.
- Project Total Change Orders Pending – grouped by Change Driver code. Standard Change Driver Codes (Appendix D)

  Note: For 63-20 lease projects, this data not available in King County accounting systems but would come from the construction manager and developer.

2.6.4 Actual cost data – Source – Financial accounting systems

- Project Total Actual Cost –life to data, grouped by phase code. Note: For projects in the construction stage, any accrued retainage to be considered as actual cost
- Project Actual Cost – current fiscal year
- Project Actual Cost – last accounting period (month or four-week period)
- Last Accounting period ending date

For the standard project report, cost data may be grouped in different groupings dependant on the type of project. For 63-20 lease projects, the grouping should be 1) core and shell and 2) tenant improvements in lieu of phase codes. For IT projects, the design stage might be subdivided into smaller parts.

Note: For 63-20 lease projects, this data might not be available in King County accounting systems but could come from the construction manager and developer.

2.6.5 Forecast cost at completion – Source – Project manager

When the project enters the Design stage, the Design Consultant provides project estimates at designated milestones – these would include estimated cost of construction. These estimates normally would not include King County internal costs which should be estimated and added in by the Project Manager. As noted in Report A, King County should clearly identify the stage at which the estimate was performed which in turn gives an indication of the accuracy of the estimate. A standard coding is recommended such as:

- Planning
- Conceptual
- 30% Design
- 60%Design
- 90%Design
- Contract Award

Once the project goes into construction (or a GMP is agreed), then the Forecast Cost at Completion should come from the constructor's cost system and the project manager again will have to add in costs other than those in the constructor's scope.

- Forecasted Cost at project completion – Total project costs including all phases forecasted at project completion
- Forecast Remaining to Expend – from current reporting period to project completion. This is calculated from: (Forecast Cost at Completion minus Project Total Actual Cost Life to Date)

A graphic of the project's Forecasted Cost at Completion from each monthly project update and the Current Project Budget should be maintained to show the trend in forecasted cost. (Refer to Appendix E)

2.6.6 Project schedule data – Source – Project manager

When the Construction Manager is mobilized and a critical path schedule is agreed, this data should come from the Construction Manager's planning software. On high-risk projects, King County should input key schedule data from the construction manager's system into KCAO's Oversight Reporting system. On high-risk projects where significant scope is to be performed by King County and/or where several prime contractors are to be used, King County should develop an integrated "Owner's" schedule to plan and track the entire project from conceptual design through to operation.

- Project "Stage" – is the project in planning, design, construction, or closeout stage?
- Planned Start date
- Actual Start date
- Planned Completion date
- Forecasted Completion date/ **OR** Actual Completion date
- Intermediate Milestone planned start or finish dates

- Intermediate Milestone actual start or finish dates
- Schedule Float – number of days of schedule float based on current schedule update
- Schedule Contingency – scheduled number of working days of contingency
- Schedule Contingency Utilized – number of contingent working days utilized to date

2.6.7 Project risk score – Source – Initiating department or division

- Project Risk score as scored by initiating Department or Division
- Project Risk rank within Department or Division
- Project Risk rank within entire King County capital program

The proposed project risk scoring method recommended in Report A requires pilot testing, feedback, and adjustment prior to countywide use. The intent of the risk score is to use a consistent method to select high-risk projects which would be candidates for Auditor's Office oversight. We recommend that the risk scoring process be employed on an annual basis and in a timeframe that supports getting the risk score data to OMB in time to appear on the annual departmental capital project appropriation requests.

The scoring should be done by each department, division, or agency since they have the most knowledge of the individual projects and their experience factors. The ranking should be reported as the rank within the group of projects sponsored by the individual agency.

An overall ranking (all projects countywide) could be reported but may suffer from scoring bias as each group may have different perceptions of the scoring. The ranking should be viewed as an important factor in project selection for oversight but not the sole factor. As a practical matter, the projects selected for oversight will be influenced by the Council and by other stakeholders. In addition, the number of projects selected for oversight will be limited by the resources available.

2.6.8 Project issues, risks, accomplishments

The Oversight Specialists and Manager should distill the issues and risks facing the project into a short version which could be quickly scanned by the Council. Actions planned or underway to address these should be highlighted and the responsible person(s) noted. When significant accomplishments and milestones have been made, they should also be highlighted.

2.6.9 KCAO oversight reporting system data source diagram (See Appendix F)

2.7 Proposed Standard Capital Project Execution Plan Outline

Each major capital project (and/or selected project) should have a Project Execution Plan with the items as shown in the outline below. The purpose of this plan is to solidify the planning of the project and to communicate the intentions of the initiating department or division regarding the project to others in the King County government including the King County Council.

The Project Execution Plan is a "living" document. It should be produced early in the project planning process and then revised as the project progresses and more detailed or modified information becomes available.

Project Execution Plan Outline

- Project Description and Budget
- Project Goals and Objectives; How does project meet strategic plan and/ or regulatory requirements
- Alternatives considered

- Impact on Public
- Technical Issues
- Project Funding
- Organization
    - King County Internal Roles and Responsibilities
    - External Interfaces Roles and Responsibilities
- Plan and schedule
    - Milestones
    - Constraints
    - Interfaces with other projects
    - Resource requirements
    - Phasing of work
    - Risk identification
- Procurement Plan
- Operation Life Cycle Costs and Considerations

3. Provide Reporting Models and a Recommended System Outline to Provide Improved Information Flow to the Council

These appendices provide mockups of the standard project reports and trend graphics which we recommend be implemented by the KCAO Oversight Group.

3.1 Data source Diagram for Oversight Reporting – Appendix G

3.2 Oversight Single Project Report Proposed Format – Appendix G

3.3 Multi Project Report Proposed Format with Traffic Light Indicators –Appendix H

3.4 Key Performance Indicators, Trend Graphs and Charts

3.4.1 Forecast completion date trend - Appendix I

3.4.2 Forecast cost at completion trend - Appendix E

3.4.3 Contingency drawdown trend - Appendix C

3.4.4 Change order summary by change driver - Appendix J

4. Oversight System Rollout Plan

4.1 Form the Oversight Organization (KCAO Responsibility)

4.1.1 Develop oversight organization chart and add to Auditors Office organization chart; determine chain of command for the new position of Oversight Manager.

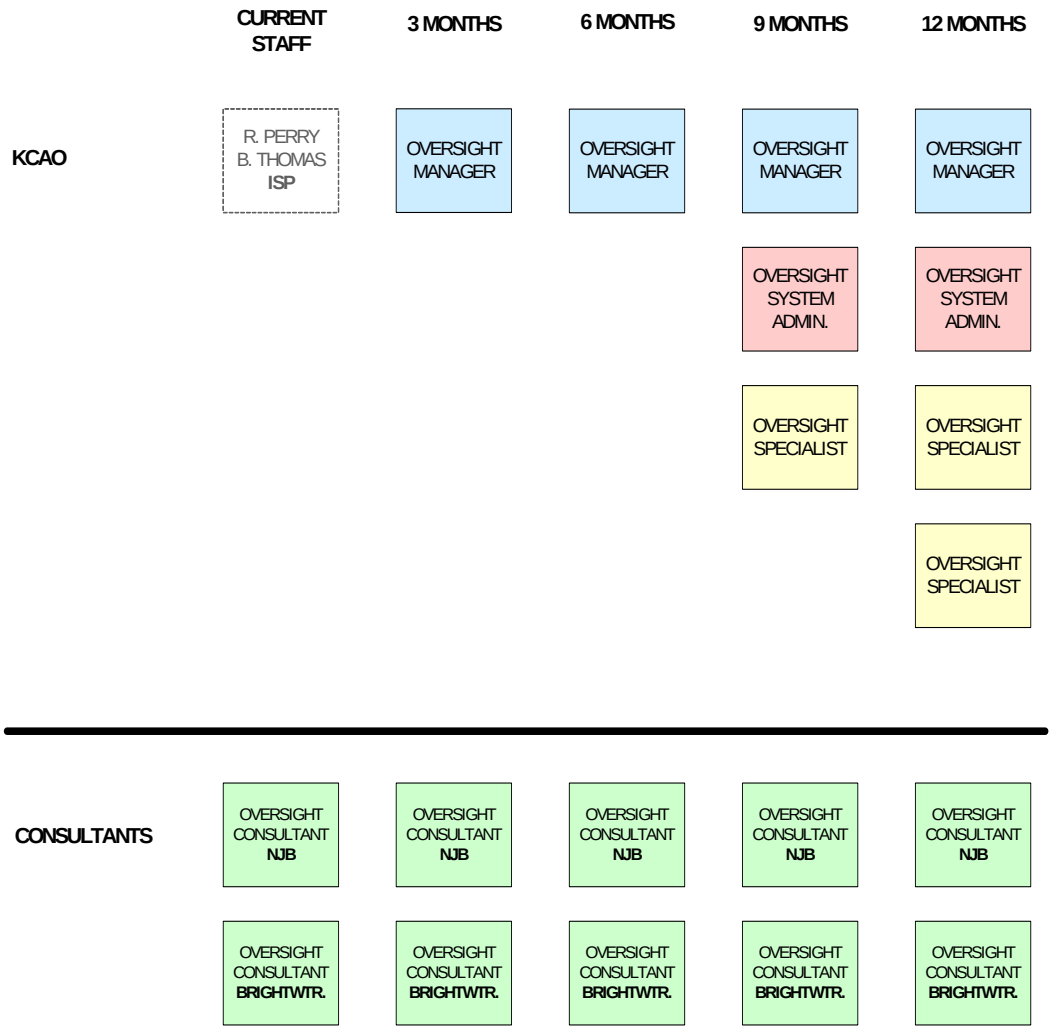
4.1.2 Review and approve proposed staff position descriptions

- Oversight Manager
- Oversight Specialists
- Reporting System Administrator

4.1.3 Develop oversight consultant's role and responsibilities

4.1.4 Hire the staff

- Identify staffing source
    - King County/Auditors Office – some of the existing King County staff might wish to be considered for the new Oversight Group.
    - New hire
- Planned Phase-in of staff (see chart on next page)
    - First 3 months hire Oversight Manager
    - First 6 months OM establishes CPOG and begins hiring process for Reporting System Administrator and one Oversight Specialist
    - First 9 months OM hires Reporting System Administrator and Oversight Specialist and conducts CPOG orientation
    - First 12 months OM hires additional Oversight Specialist (as required from current demand study) and conducts CPOG orientation



Demand for consultant staff is dependant on the number of projects selected for oversight, the timing of those projects, and the acquisition of new permanent staff. Additional consultant staff will likely exceed those shown in the diagram.

4.1.5 Develop oversight system roles and responsibilities for all stakeholders

- Auditors Office
- Council Members
- Council Staff
- Executive Departments and Agencies
- Finance
- Office of Management and Budget
- Oversight Consultants

4.1.6. Existing oversight

These projects of high interest to the Council would be included in the list of high-risk projects to place into oversight. A full-time oversight consultant is contracted to WTD to provide oversight of the Brightwater set of projects. A consultant, Jones Lang LaSalle has recently been contracted by KCAO to provide oversight of the Ninth and Jefferson Building (NJB) project. These contracts should be maintained for the project durations and the new KCAO Oversight Manager should provide the

primary communication path and set the expectations for these consultants in terms of reporting status and issues to KCAO Oversight Group and the Council. For future projects, we recommend the KCAO should be the contracting authority regarding project oversight.

Project	Oversight Provided by	Type of Oversight	Effort	Participation
Brightwater	WTD	Outside Consultant - RW Beck	Full -time	All Meetings
NJB	KCAO	Outside Consultant - Jones Lang LaSalle	Part-time	Most Meetings
ISP	No Official Oversight	In-house; assistance by Owner's Rep - URS	Part-time	KCAO - Some Meetings
ABT	In Planning Stage			

We also recommend that the KCAO work closely with the executive agencies early in the planning stages of selected high-risk projects to facilitate a smooth establishment of legislative oversight for the project from the beginning.

The executive agencies would continue to provide for the project management functions of King County Representative or Owners Representative per their own policies and guidelines. The Auditor's Office Oversight Group and role is not intended to replace these necessary executive functions. At times, the KCAO would ask for information and/discuss issues with the project King County Representative but from the perspective of clarification and oversight reporting only.

4.1.7 Establish office space and co-locate all oversight staff and oversight consultants within the Auditors Office

4.1.8 Oversight staff attendance at executive agencies progress meetings

- Develop a policy statement for publication
- Publish the policy to all executive agencies
- Request progress meeting calendar for Auditors Office selected projects from executive agencies. Also request Oversight Specialist to be put on distribution for all progress meeting materials and reports
- Oversight Specialist attends meeting(s)

4.2 Set up the Oversight System

4.2.1 Refine proposed project risk ranking scoring system and process. (KCAO and Executive responsibility)

4.2.2 Establish the communication process (KCAO Oversight Group responsibility)

- Establish the Project Appropriation Request Form
  - A standard form for use by all capital project appropriation requestors
  - Develop instructions for use
  - Develop a policy statement for publication
  - Publish the policy, form and instructions to all executive departments
- Establish the Project Oversight Report
  - Program the recommended standard monthly oversight report
  - Develop instructions for updating, distribution, and use
  - Develop a policy statement for publication
  - Publish the policy to all executive departments
- Establish communication plan
  - Determine all stakeholder roles and responsibilities regarding capital projects

Who are the stakeholders? For example, individual Council members, Council committees, Council staff, King County implementing departments, King County Executive, external agencies such as HMC. Discover the preferences of the stakeholders for receiving information. Which method(s) do they like?
  - Define the intent of the oversight communication. What is the proposed content and intended purpose?
    Differentiate levels of importance – routine, significant change or impact, immediate action required
  - Determine the frequency of planned communication – weekly, monthly, quarterly
  - Define the level of sensitivity – public, possible business impact, confidential
  - Determine the methods of communication to be used – face to face, hard copy reports, Web site reports, phone, and scheduled briefings
  - Define the situations where one way communication does not address the needs, and develop possible alternatives
  - Develop a communication channel matrix showing information and reporting to be sent to each stakeholder and the methods and frequency planned
  - Develop a policy statement for publication
  - Publish the policy to all stakeholders
- Oversight Staff attendance at executive agencies project progress meetings
  - Develop a policy statement for publication
  - Publish the policy, form, and instructions to all executive departments

4.2.3 Project budgeting and appropriation (KCAO and Executive responsibility)

- Establish new policy for capital project budgeting and appropriation
  - Develop new appropriation guidelines and stages of approval
  - Publish guideline to Council and executive departments
- KCAO sponsors/assists the executive agencies to establish standard estimating guidelines (see Appendix K)
  - Publish draft estimating guidelines/standards for review and comment to Auditors Office and executive departments
  - Develop instructions for use
  - Develop a policy statement for publication
  - Publish the policy, guidelines/standards, and instructions for use to all county departments

4.2.4 Project contracting and procurement (KCAO and Executive responsibility)

- Establish oversight requirements for contract documents
  - Develop requirement for schedule contingency
  - Develop requirement for weather contingency for construction contract documents
  - Develop instructions for use
  - Develop a policy statement for publication
  - Publish the policy and instructions for use to all executive departments. This should be accomplished by use of the Interdepartmental Forum with the Oversight Managers and Specialists participating and recommending standardization and best practices.

4.2.5 Project execution planning (Executive agencies responsibility)

- Develop policy/requirement for formal project planning and documentation
  - Project Execution Plan
  - Develop instructions for use and review/submittal requirements
  - Develop a policy statement for publication
  - Publish the policy, guidelines/standards, and instructions for use to all county departments. This should be accomplished by use of the Interdepartmental Forum with

the Oversight Managers and Specialists participating and recommending standardization and best practices.

4.2.6 Project execution (Executive agencies responsibility)

- Develop Project Cost Recovery Policy and Standards
  - Develop policy and instructions for use
  - Develop a policy statement for publication
  - Publish the policy and instructions for use to all County Departments
- Develop Project Change Order Tracking Policy
  - Develop policy and instructions for use
  - Develop a policy statement for publication
  - Publish the policy and instructions for use to all County Departments
  - KCAO assist Executive Agencies in implementing a standard coding of change drivers
- Develop Project Risk Register Policy
  - Develop policy and instructions for use
  - Develop a policy statement for publication
  - Publish the policy and instructions for use to all County Departments
  - KCAO to assist Executive Agencies in implementing a standard definition of risk drivers
- Develop Project Risk Assessment Policy for all High Risk Projects
  - Develop policy and instructions for use
  - Develop a policy statement for publication
  - Publish the policy and instructions for use to all County Departments

4.2.7 Reporting (KCAO, OMB and Finance responsibility)

- Establish reporting database
  - Confirm that programming resources are available in-house to develop KCAO oversight reporting database and reports. If in house resources are not available, engage a consultant to perform (an estimate for this work is given on page 14).
  - Engage in-house resources or contract out programming/development
  - Develop functional specification based on design from Consultant
    - System Intent and Functions
    - System platform – existing intranet db/software or new intranet db/software
    - Screens and Forms
    - Integration with existing Financial Accounting software and existing OMB Capital Budget system.
    - Reports
      - Summary Project Report – one page (based on proposed design herein)
      - Multiple Projects Report (based on proposed design herein)
      - System Administration Reports (based on proposed design)
      - System Data Validation Reports (to be developed during programming)
  - Distribute functional specification to all stakeholders for review and comment
  - Incorporate comments to functional specification
  - Engage programmer/developer
  - Input sample data into database
  - Test database input and output functions (reports)
- Develop project data updating (status) requirements
- Develop policy and instructions for use
- Develop a policy statement for publication
- Publish the policy and instructions for use to all county departments

4.2.8 System documentation (KCAO Oversight Manager)

- Prepare an oversight system users guide
- Distribute draft oversight system users guide for review and comment to KCAO and executive agencies
- Incorporate comments to oversight system users guide
- Publish and distribute the oversight system users guide

4.3 Orient and Train All Stakeholders (KCAO Oversight Manager)

4.3.1 Develop lesson plans for orientation and training (See Appendix L)

4.4 Operate and Maintain the Oversight System

4.4.1 Executive agencies risk scores projects (Executive agencies responsibility)

4.4.2 KCAO reviews and selects initial projects for oversight and submits the list to Council for review, amendment, approval (KCAO responsibility)

4.4.3 KCAO assigns Oversight Specialists to oversee projects of interests on a continuing basis (KCAO responsibility)

4.4.4 Oversight Specialists attend oversight projects progress meetings (KCAO responsibility)

4.4.5 Oversight Specialists run oversight reports, interpret data, and provide analysis and commentary for Council (KCAO responsibility)

4.4.6 KCAO Oversight Specialists attend Council meetings as required and make recommendations to Council (KCAO responsibility)

4.4.7 KCAO provides oversight feedback to executive agencies (KCAO responsibility)

- Trend Identification
- Participate in evolution of executive agencies project management systems
- Advise and assist executive agencies with development of their project management standards

4.4.8 KCAO annually reports to Council regarding Oversight Group effectiveness and impact

APPENDIX A

Draft Request for Proposal (RFP) Scope of Work Outline Template for Outside Consultant Oversight Services

The following outline is designed to be used for soliciting outside consultant oversight services:

RFP COVER SHEET – *Per King County Boilerplate*
SECTION I – GENERAL INFORMATION – *Per King County Boilerplate*
SECTION II – PROJECT SPECIFICATIONS AND SCOPE OF WORK

- PART 1 – INTRODUCTION
- PART 2 – BACKGROUND AND PURPOSE
- OVERSIGHT PROJECT OVERVIEW

  This section describes the individual project for which oversight will be given. It will include at the minimum the background of the project to include purpose, location, scope of work that defines the project, project management organization that will execute the project, project communication matrix identifying reporting requirements to include internal and external stakeholders, project budget summary, summary project schedule, any specialized software that will be used to execute the project such as Primavera P3e/c, P5; MS Project, Prolog, etc.

- PART 3 – SCOPE OF WORK
  - Scope

    The scope of work for the Oversight Consultant should describe the tasks that will be expected of the Oversight Consultant to be performed as part of the Capital Projects Oversight Group (CPOG). Since they are considered to be a staff augmentation of the CPOG during the oversight project period of execution, they will perform the same tasks as the Oversight Specialists. The scope of work would entail the following:

    Attend Oversight Consultant's orientation to the KCAO Capital Project Oversight Group to include orientation of the online oversight system.

    Input monthly project status into the oversight system and prepare (run) reports that will be distributed to the CPOG for acceptance and analysis. Prepare quarterly reports for the CPOG that will ultimately be distributed to the County Council on the project status, including the identification and assessment of potential risks that may impact the project scope, schedule, and budget. Prepare any other ad hoc reports requested by the Oversight Manager.

    Review the monthly reports prepared by any consultants, sub-consultants, contractors and sub-contractors normally submitted to the project management group of the project. Immediately notify the CPOG of any issues raised in the reports that could impact the project scope, schedule, or budget, or of any disagreements with the consultants, sub-consultants, contractors and sub-contractors assessments of the progress of the project.

    Meet with the project's construction representative, County Council, and CPOG staff on a monthly basis to discuss the project status and emerging issues.

Immediately notify the CPOG of any events that could impact the project scope, schedule, or budget.

Schedule ad hoc meetings as necessary to deal with emerging risks or other issues that require immediate attention or rapid response by the project, KCAO, Council or the county.

Attend project team meetings with the project's construction representative on at least a monthly basis.

Monitor the process for programming, designing, and budgeting for the project, and assess whether this process provides for sufficient due care in protecting the county's interests and fulfilling its responsibilities. If applicable, make recommendations for improving the process or providing additional due care. The project management processes should include breaking out the project scope of work into a reasonable Work Breakdown Structure (WBS) that can be utilized in establishing project management and control, estimating method/formats used to establish budgets for subordinate work and change orders that can fit the structure of the WBS, use and maintenance of schedule and cost baselines, current schedule and cost status, variance analysis, and critical path analysis. Establishment of project risk management, project procurement procedures, change management, and project delivery methods should also be reviewed and monitored as well as reviewing and commenting on the project management plan.

Monitor the process for ensuring that the engineering and construction meets contractual specifications and assess whether this process provides for sufficient due care in protecting the county's interests and fulfilling its responsibilities. Monitor the change management process. If applicable, make recommendations for improving the process or providing additional due care.

Prepare and submit a template or checklist to the Auditor's Office for reporting the results of the monitoring process.

Conduct onsite visits at monthly intervals to confirm construction project status; spot check quantities installed with quantities reported as installed. These visits should coincide with critical path construction activities as practical. For engineering visits, review of drawing registers, and spot checking drawings progress with progress reported.

- Deliverables

Since the tasks of the scope of work described above will be performed in a staff augmentation role, the monthly project status reports, analyses, ad hoc reporting, and attendance at project status meetings described in the scope of work will constitute the project deliverables under this contract. Payment under the contract will be contingent upon the completion of each project deliverable to the satisfaction of the King County Auditor. The first project deliverable will be due on Month DD, YYYY and the final project deliverable will be due on Month DD, YYYY.

The following reports/documents will be considered deliverables under this contract:

- Monthly Project Status Report
- Quarterly Project Status Report for County Council

- Periodic Project Schedule Analysis Report
- Periodic Project Budget/Cost Analysis Report
- Project Risk Register update
- Project Open Items
- Ad hoc reports prepared at the request of KCAO or CPOG
- Ad hoc reports prepared based upon the judgment of the consultant that they fill a unique need in the management or problem identification for the oversight project

o Budget – The budget for this scope of work is $.

o Schedule – The schedule for this scope of work is approximately X months, beginning Month DD, YYYY and ending Month DD, YYYY.

o Disclosure Requirements – *Per King County Boilerplate*

o Proposal Format – *Per King County Boilerplate*

- PART 4 – CONSULTANT SELECTION PROCESS – Per King County Boilerplate
- PART 5 – KING COUNTY CONTRACTING OPPORTUNITIES PROGRAM - Per King County Boilerplate

SECTION III - NONDISCRIMINATION AND AFFIRMATIVE ACTION – *Per King County Boilerplate*
SECTION IV - GENERAL CONTRACT REQUIREMENTS – *Per King County Boilerplate*
SECTION V - ADDITIONAL INFORMATION & REQUIREMENTS – *Per King County Boilerplate*
SECTION VI - MAINTENANCE OF RECORDS/AUDITS – *Per King County Boilerplate*
SECTION VII – REQUIRED FORMS – *Per King County Boilerplate*
SECTION VIII – BID PROPOSAL CHECKLIST – *Per King County Boilerplate*

APPENDIX B

Proposed Capital Project Appropriation Request Form

King County Council
Capital Project Appropriation Request

Control Number:	Dept/Division:	Prepared By:	Date:
Project ID:	Project Title:		
Project Stage:	Project Risk Score	Risk Rank (Dept./Div.)	

1. Proposed Scope of Work:

2. Project Justification and Consequences of Deferral or Disapproval:

3. Alternatives Considered and Rationale for Selection:

4. Proposed Summary Budget and Basis of Estimate:

5. Life Cycle Cost Estimate:

6. Proposed Milestone Schedule:

7. Attachments: 1) Project Execution Plan
2) Other Supporting Information

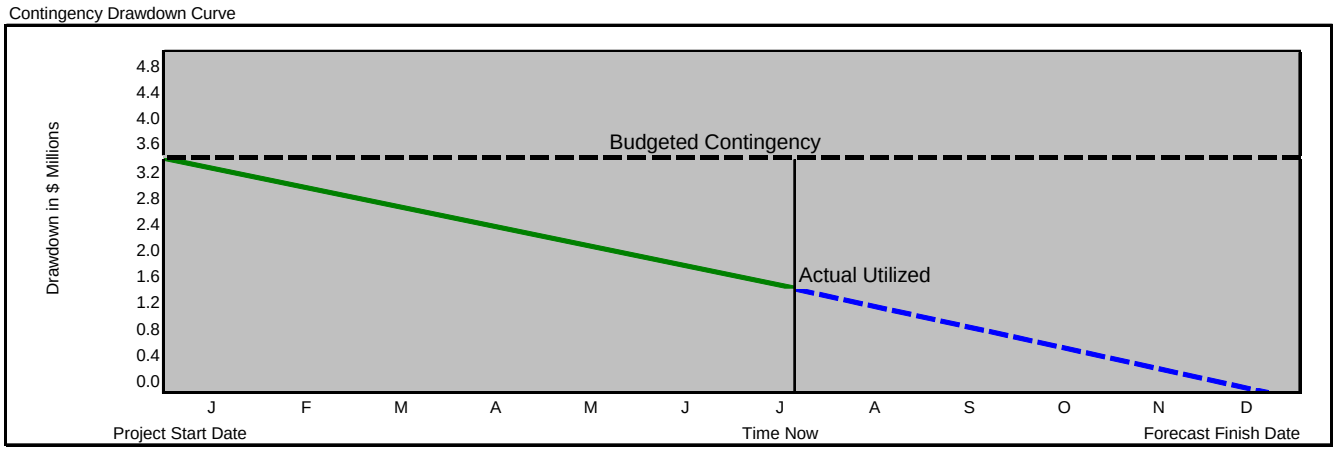
APPROVALS

_____
Department or Division Requesting ☐ Approved Date _____

_____
King County Council ☐ Approved ☐ Not Approved Date_____

APPENDIX C

Proposed Contingency Drawdown Trend



	CONTINGENCY BUDGET	CONTINGENCY USED THIS PERIOD	CONTINGENCY USED TO DATE
Contingency	$3,400,000	$48,000	$2,000,000
PCT Remaining	41.2%		

APPENDIX D

Standard Change Driver Codes and Definitions to Be Used on Change Orders

---

1. Programming Evolution
   Change in/to the underlying Basis of Design that reflects the originally intended functional, technological, and operational scope and scheme as captured in the baseline project budget.

   Caused by:
   - Functional Enhancements to existing design (Newer, different, better intended use of functions – or more of the same)
   - Operational Enhancements to existing design (Payoff is in greater ease in or lower cost of operating and maintaining facility over its life cycle)
   - Programming Changes in which intended use and process of the facility is modified.

   Because of:
   - Technological evolution
   - Owner budget shifts, realignment of priorities
   - Cost Enhancements, Value Management
   - User desires, preferences

2. Market Conditions
   a. Unbudgeted, unanticipated shortage of materials, labor, or capital that bid-up pricing beyond rates used in baseline budget.

3. Oversights, Errors, and Omissions
   a. Errors and mistakes within the contract documents
      - Ambiguities
      - Clarifications
      - Inconsistencies
      - Conflicts
      - Incompleteness
   b. Estimating errors in identifying scope and quantity

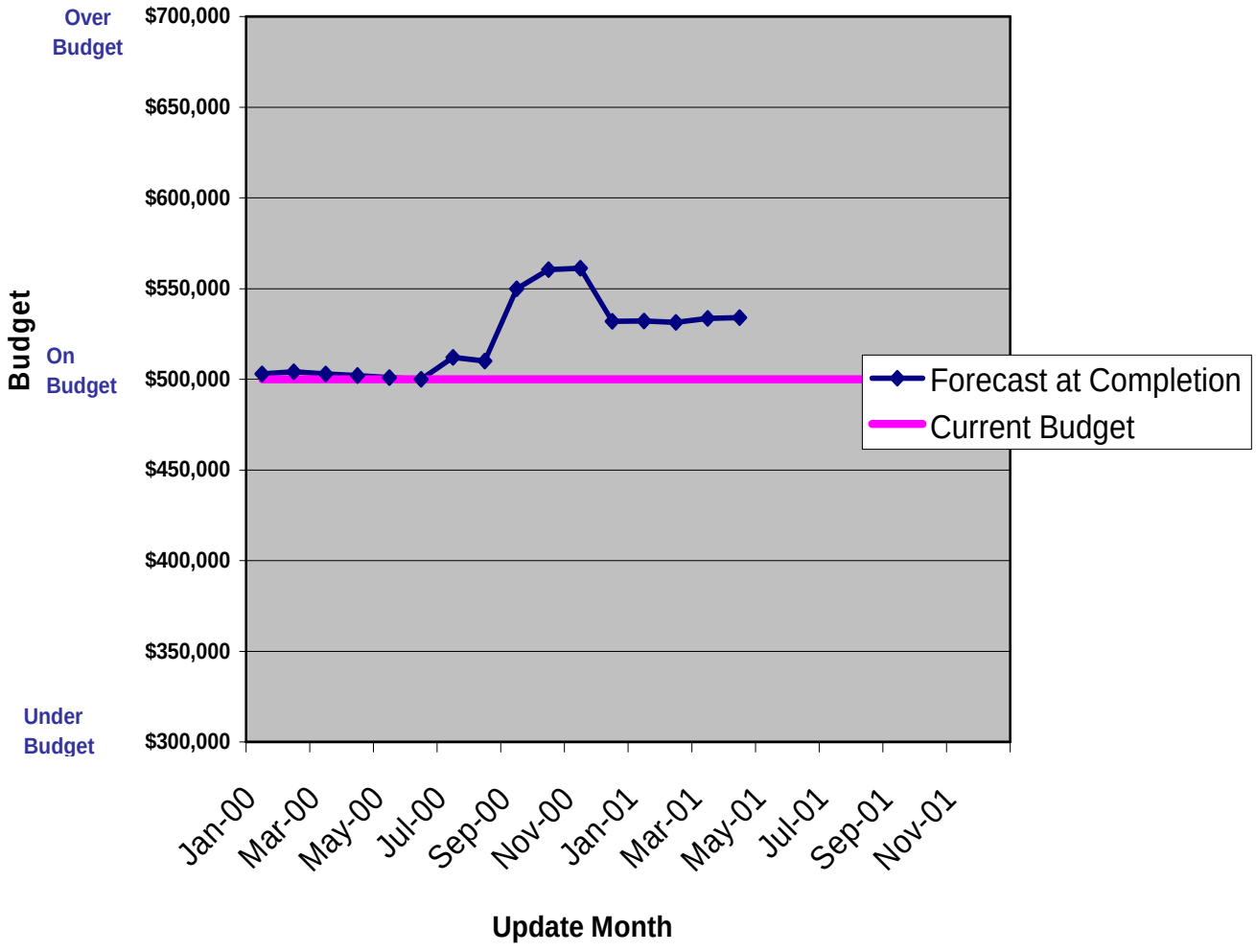
4. Failures in Performance
   Failure to provide complete or timely delivery of contractually committed events:
   a. Drawings
   b. Materials, labor, or equipment
   c. Payments
   d. Direction, leadership, or coordination
   e. Clarification
   f. Permits, approvals, or access

5. Changed Conditions
   Unbudgeted changes to baseline budget assumptions as they pertain to:
   a. Site Conditions
   b. Weather

6. Time Related
   Deliberate and proactive decisions to 'purchase time' in the project execution plan, these are considered to be causes rather than consequences of other changes.
   a. Schedule Enhancements – Premium for actions related to schedule gain or earlier-than-scheduled completion.
   b. Schedule Recovery – Premiums for actions associated with overcoming or mitigating schedule loss due to impacts associated with *other* changes.

Appendix E

Forecast Cost at Completion Trend



APPENDIX F

KCAO Oversight Reporting System – Data Source Diagram

DATA	SOURCE	CYCLE	OUTPUTs
Item 1. Project Oversight Master List Data: Project ID's – all projects selected by KCAO for oversight	Source : KCAO Manual Entry	Daily Input Add & Delete	Item A. Project Oversight Master List
Item 2. Project Oversight All Projects List Data: Project ID's – all projects > 1M	Source : OMB Query against Budget db	Monthly Update Overwrite	Item B. All Projects > 1M Master List Item C. Parent/Child Project Mapping Table
Item 3. Project Oversight Parent Child List Data: Project ID's – all projects > 1M Parent/Child Mapping	Source :Finance Query against Accounting db's	Monthly Update Overwrite	Item D. Project Monthly Oversight Report
Item 4. Project information Data: Project Header Scope of Work Issues & Concerns Accomplishments	Source : KCAO Manual Entry	Daily Input Add, Edit, Delete	Item E. Project Monthly Oversight Graphics
Item 5. Project Budget and Risk Scores Data: Original Budget by phase code Current Budget by phase code *Project Risk Score* *Project Risk Rank – within Dept*	Source : OMB Query against Budget db	Monthly Update Overwrite Orig Budget one time query	Item F. Capital Projects > 1M Monthly Summary Report Item G. System Data Validation Report TBD during programming
Item 6. Financial Data Data: Commitments – life to date by phase code Approved Change Orders -life to date by phase code and by change driver code Actual Cost – life to date Actual Cost – current fiscal year to date Commitments – this period by phase code Approved CO's – this period by phase and change driver codes Actual Cost – this period Accounting Period Ending/close date	Source :Finance Query against Accounting db's For 63-20 projects, this will require manual entry from Construction Manager reporting	Monthly Update Add & Overwrite LTD query could be run once, then period data cumulated	

KCAO – Capital Project Oversight Reporting

Data Source Diagram – page 1 of 2

DRAFT – GM 15AUG07

DATA	SOURCE	CYCLE
Item 7. Schedule & Forecast Data Data: Project Start Date – Planned from baseline CPM schedule or project manager Project Completion Date – Planned from baseline CPM schedule OR project manager Project Start Date – Forecast OR Actual – from current CPM schedule OR project manager Project Completion Date – Forecast OR Actual from current CPM schedule Forecast Cost at Completion – from project manager Forecast Remaining to Spend – from project manager	Source : KCAO Manual Entry	Monthly Input Add, Edit

KCAO – Capital Project Oversight Reporting

Data Source Diagram – page 2 of 2

DRAFT – GM 15AUG07

APPENDIX G

Proposed KCAO Oversight Single Project Report

[3.6.1] PROJECT REPORT - CAPITAL PROJECT OVERSIGHT - KING COUNTY AUDITOR'S OFFICE

PROJECT ID		TITLE		RPT DATE	
				REPORT #	
DEPT or DIV		PROJECT MANAGER		RPTED BY	
		PHONE		PHONE	
PROJECT STAGE		RISK SCORE	[3.6.7]	RISK RANK	[3.6.7]

SCOPE OF WORK

[3.6.1]

SCHEDULE SUMMARY [3.6.6]

	PLAN START	PLAN FINISH	FCST FINISH	PERCENT COMPLETE
PROJECT				
ENGINEERING				
CONSTRUCTION				

COST SUMMARY [3.6.2 through 3.6.5]

	ORIG BUDGET	CURRENT BUDGET	FCST @ COMPL	COMMITMENTS	ACTUAL COST TO DATE
PROJECT					
ENGINEERING					
CONSTRUCTION					

Option 2 - group by Phase Code, Option 3 by custom grouping e.g. Core/Shell and TIP for NJB

	BUDGET	UTILIZED	PCT REMAINING
CONTINGENCY			

CHANGE ORDERS

COST	% OF BUDGET

ISSUES & CONCERNS

1
2
3
4
5
6

ACCOMPLISHMENTS & MILESTONES

1
2
3

APPENDIX H

Proposed KCAO Oversight Multi Project Report

CAPITAL PROJECTS SUMMARY REPORT - CAPITAL PROJECT OVERSIGHT - KING COUNTY AUDITOR'S OFFICE

PROJECT ID	PROJECT TITLE	DEPT	STAGE	RISK SCORE	RISK RANK	CRT BUDG	FCST BUDG	PLAN CMPL	FCST CMPL
413427	Capital Project #1	WTD	DESIGN	3.8955	4	$17,500,000	$19,200,000	July-09	May-09

default group & sort : group by DEPT
sort by PROJECT ID

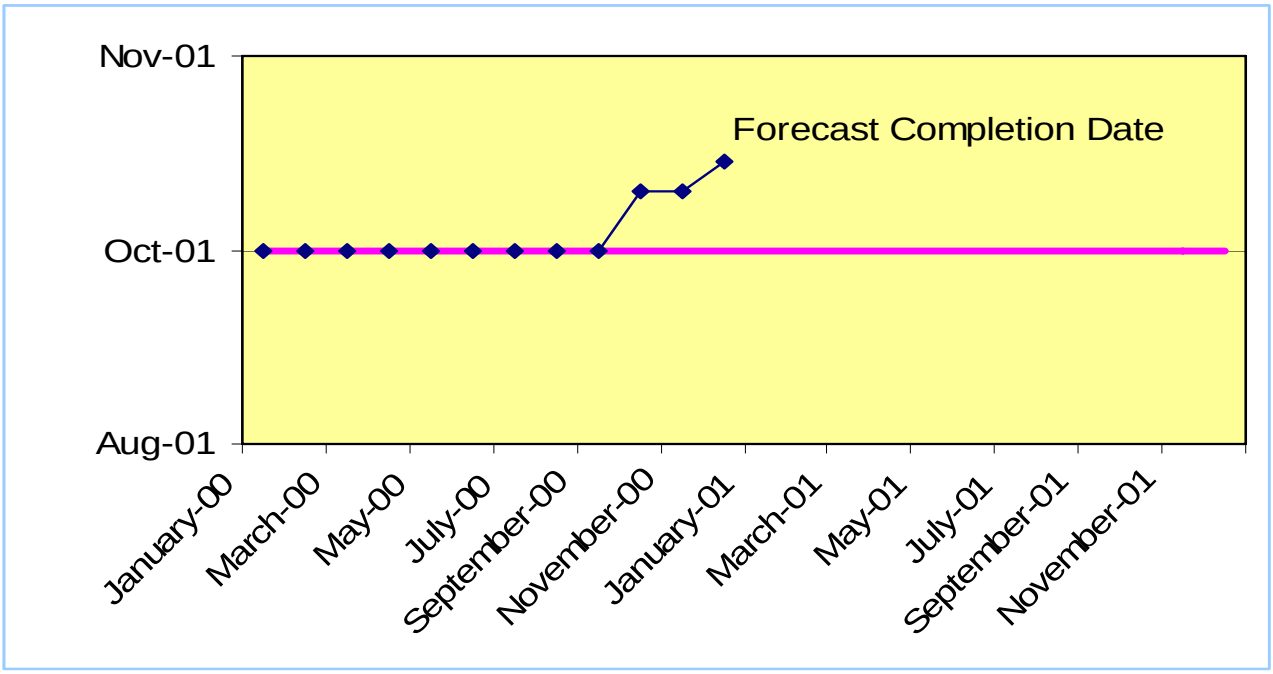
alternate group & sort: group by DEPT
sort by RISK SCORE

alternate group & sort: group by ALL
sort by RISK SCORE

alternate group & sort: group by ALL
sort by FCST BUDG

APPENDIX I

Proposed Forecast Completion Date Trend



APPENDIX J

Proposed Project Change Order Summary Grouped by Change Driver Code

Project Change Orders Grouped by Reason Code						
						$35,000,000
Change Driver Code	Approved	Pending	Total	Change Order Number	% Original Budget	% Current Budget
Contract Time Extension	$762,415	$325,000	$1,087,415	8	2.18%	**2.06%**
Existing Conditions, Unforseen Conditions, New Conditions, Design Refinements	$1,332,535		$1,332,535	2,3,6,7,10,11,13,14,17, 18, 19	3.81%	**3.60%**
Scope Additions, Includes JHS phase II = $6,875,767	$13,817,958		$13,817,958	1,5,12,15,16,4,20,9, 4, 20	39.48%	**37.35%**
Unidentified	$120,596		$120,596	21, 22	0.34%	**0.33%**
Total	**$16,033,504**	**$325,000**	**$16,358,504**			**46.74%**

APPENDIX K

Estimating Guidelines/Standards Development Outline

Develop estimating guidelines/standards

Budget

- Techniques
  - Bottom-up
    - Detailed estimating is done for each activity (if available) or work package (if activities are not defined) and the estimates are then rolled up into an overall project estimate
  - One-cost
    - One estimate per activity
  - Analogous
    - Analogous estimating is a form of expert judgment usually based on recent or past experience
  - Parametric
    - Parametric estimating is used if you do not have detailed information on which to base the estimate. It uses a mathematical model to calculate projected costs for an activity based on historical records from previous projects or other information. There are two models: Regression Analysis and the Learning Curve.
  - Three-point
    - Three cost estimates per activity is superior to one cost estimate because a weighted average is used instead of the most likely estimate.
- Inputs
  - Scope Statement
  - Historical
  - Design level
  - Other special criteria (e.g., mitigation)
- Accuracy
  - Rough Order of Magnitude (ROM; -50% to +100%)
  - Definitive (-10% to +15%)
    - Planning
    - 30% Design
    - 60% Design
    - 90% Design
    - 100% Design (Bid and Award)
- Outputs
  - Formats
    - Standard estimate report
    - Budget estimate accuracy indication
    - Standard level of detail

Schedule

- Overall Project
  - Techniques
    - One-time
    - Analogous
    - Parametric
    - Heuristics
      - A heuristic means a rule of thumb. The results of parametric estimates can become heuristics.
    - Three-point
    - Reserve Analysis
      - There are two types of reserve: contingency and management. Contingency reserve is for the risks remaining after risk response planning. Management reserve is any extra amount of funds to be set aside to cover unforeseen risks.
  - Inputs
    - Scope statement
    - Defined activities
    - Activity sequencing
    - Activity resource estimating
    - Activity duration estimating
  - Outputs
    - Formats
    - Network Diagram
    - Baseline Schedule
    - Current Schedule

Design

- Techniques
  - One-time
  - Analogous
  - Parametric
  - Heuristics
  - Three-point
  - Reserve Analysis
- Inputs
  - Scope statement
  - Defined activities
  - Activity sequencing
  - Activity resource estimating
  - Activity duration estimating
- Outputs
  - Formats
  - Network Diagram
  - Baseline Schedule
  - Current Schedule

Construction

- Techniques
  - One-time
  - Analogous
  - Parametric
  - Heuristics
  - Three-point
  - Reserve Analysis
- Inputs
  - Scope statement
  - Defined activities
  - Activity sequencing
  - Activity resource estimating
  - Activity duration estimating
- Outputs
  - Formats
  - Network Diagram
  - Baseline Schedule
  - Current Schedule

Design/Build

- Techniques
  - One-time
  - Analogous
  - Parametric
  - Heuristics
  - Three-point
  - Reserve Analysis
- Inputs
  - Scope statement
  - Defined activities
  - Activity sequencing
  - Activity resource estimating
  - Activity duration estimating
- Outputs
  - Formats
  - Network Diagram
  - Baseline Schedule
  - Current Schedule

APPENDIX L

Training Outline for KCAO and Stakeholders

- Orientation
  - Develop orientation materials
    - Develop overview of Oversight System by component
      - Who
      - What
      - When
      - Where
      - Why
    - Student Pamphlet/Handouts
    - PowerPoint Slides
  - Determine attendee groups by role/responsibilities
  - Develop attendee list
    - Auditors Office
    - Council Staff
    - Council Members
    - Executive Agencies
    - Finance
    - Office of Management and Budget
    - Oversight Contractors
  - Determine orientation schedule
  - Trainer(s) to conduct dry orientation run(s)
  - Conduct orientations
- Training
  - Develop training materials
    - Develop Oversight System operation training by component
      - Who
      - What
      - When
      - Where
      - Why
    - Student Pamphlet/Handouts
    - PowerPoint Slides
  - Determine attendee groups by role/responsibilities
  - Develop attendee list
    - Auditors Office
    - Council Staff
    - Council Members
    - Executive Agencies
    - Finance
    - Office of Management and Budget
    - Oversight Contractors
  - Determine training schedule
  - Trainer(s) to conduct dry training run(s) to obtain feedback
  - Revise training material if required and conduct training