OFFICE OF THE CONTROLLER

CITY OF PHILADELPHIA PENNSYLVANIA

Water Billing System

Corrective Action Needed To Prevent Recurrence of Prior Implementation Failures

August 2007

Alan Butkovitz
City Controller

CITY OF PHILADELPHIA

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City Controller

August 20, 2007

Honorable John F. Street, Mayor
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We have reviewed the City of Philadelphia's last four failed efforts at replacing the Water Revenue Bureau's water billing system, which cost customers and City taxpayers an estimated $35-$40 million. Our objective was to identify lessons learned that might be useful in implementing the latest initiative, which is expected to cost $6.7 million. We conducted the review pursuant to Section 6-400 (d) of the Philadelphia Home Rule Charter, and the results are contained in the attached report, which also includes an executive summary.

We have discussed the findings and recommendations contained in this report with representatives of your administration at an exit conference, and their responses are included in the report. The responses, however, have not been subjected to any further work and, accordingly, we express no assurances on them. Our recommendations have been numbered to facilitate tracking and periodic follow-up by our office. We believe, if implemented by management, these recommendations will improve the chances that not only the current technological initiative will be successful, but additionally, any projects that may occur in the future.

We would like to express our thanks to the management and staff of the Department of Revenue's Water Revenue Bureau, the Philadelphia Water Department, and the Mayor's Office of Information Systems for the courtesy and cooperation displayed during this review.

Very truly yours,

ALAN BUTKOVITZ
City Controller

cc: Honorable Anna C. Verna, President
and Honorable Members of City Council
Members of the Mayor's Cabinet
Romulo L. Diaz, Jr., City Solicitor
Bernard Brunwasser, Commissioner, Philadelphia Water Department
Nancy Kammerdeiner, Commissioner, Department of Revenue
Terry M. Phillis, Acting Chief Information Officer, Mayor's Office of Information Systems

Water Billing System Review

Executive Summary

Why The Controller's Office Conducted the Examination

Since the late 1980's, the City of Philadelphia (City) has spent an estimated $35-$40 million in four separate failed attempts (the last known as "Project Ocean") to replace its 30-year old "Customer Billing Information System" (CBIS), a system used for generating monthly water bills. With the City now in the process of its fifth attempt to replace the CBIS — estimated to cost yet another $6.7 million — the City Controller's Office believed it was necessary to evaluate the past failures so as to identify lessons that might be useful in guiding City management through this and future information technology iniatives.

What The Controller's Office Found

Our study of the past four ill-fated attempts identified five conditions that, in our opinion, significantly contributed to the previous failures. These conditions include the unsuccessful efforts of City management to: (1) clearly define goals, visions, and expectations of the projects; (2) obtain the necessary buy-in of key departments; (3) adequately assess the practices and processes, organizational structure, and staffing; (4) provide effective and consistent oversight and accountability; and (5) develop a realistic time frame for project completion.

Extensive interviews held with key players involved in past efforts and individuals engaged early-on in the latest initiative (referred to by City management as the "new" Project Ocean), as well as a review of several related reports prepared by various City consultants, suggested that at the time of our fieldwork, in March through September 2006, many of the previous problems still existed. Without corrective action, we concluded that the "new" Project Ocean could also suffer significant delays and cost overruns.

Additionally, we noted that City management obtained the "new" Project Ocean software (basis2) through a settlement agreement. The City also awarded a $2 million contract to Prophecy for implementation of its software. The Controller's Office has identified questionable issues related to the settlement agreement. However, the City Solicitor issued an opinion that he possesses the authority to conclude such an agreement. We would urge restraint by the City Solicitor in exercising similar settlement agreements in the future.

What The Controller's Office Recommends

The City Controller's Office is recommending that the Water Revenue Bureau, the Philadelphia Water Department and the Mayor's Office of Information Services let the lessons learned from past failures guide them in bringing the latest initiative to fruition. We urge these agencies to implement the specific suggestions that we detail in the body of this report. We will continue to monitor progress of the "new" Project Ocean. Any indication of failure will trigger an immediate hold on future vendor payments.

How The City Administration Responded

City management acknowledged that many mistakes were made in their previous attempts to replace the CBIS, including uncertain and ineffective project management. However, key sponsors of the latest initiative believe that lessons of past failures have been learned, that corrective actions have been implemented, and that the "new" Project Ocean will be successfully completed on time and within budget.

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BACKGROUND

With approximately 550,000 customers paying the City of Philadelphia (City) over $2 billion for water usage over the past ten years, the fees collected by the Water Revenue Bureau (WRB) are an important source of revenue for the City. Responsibilities for the collection of water revenues reside with the Philadelphia Water Department (PWD) and the WRB.[1] The PWD manages the computer system that collects data pertaining to customer accounts and generates monthly water bills. The WRB is responsible for collecting the water fees billed, enforcing the collection of delinquent accounts, and dealing with various customer service issues.

In the mid-1970's, the City automated the revenue collection processes by implementing the "Customer Billing Information System" (CBIS). CBIS is a "customized"[2] mainframe-based information-technology system designed specifically for the City's water revenue processes including meter reading, customer billing, payment processing, as well as monitoring and tracking collection efforts. Over the past 30 years, there have been several hundred enhancements to the original CBIS system.

In the early 1980's, the City became concerned that limitations in the CBIS system were hampering water revenue collection and enforcement efforts. To enhance water revenues, the City embarked on a series of efforts to replace the CBIS.

Since that time, the City has made four separate attempts, and is now embarking on a fifth endeavor to replace CBIS (see Table 1 on page 2 for a summary of these projects). Not including the current initiative, these attempts have cost the City an estimated $35 - $40 million dollars. Each of the previous four efforts failed to produce an updated water billing and customer information system. The fourth endeavor (known as "Project Ocean") was a multi-year initiative with Oracle that terminated during June 2005 — again with no workable water billing system despite having spent nearly $20 million. Notwithstanding the substantial expenditures and effort on the part of city employees, the PWD and WRB continue to rely on the thirty year-old CBIS.

The City's fifth attempt to replace the CBIS (referred to by management as the "new" Project Ocean) began in January 2007. The Law Department, the Mayor's Office of Information Services (MOIS),[3] Oracle, and Prophecy International have negotiated what they perceive as a solution to salvage implementation of the previous Project Ocean. Oracle recommended that the City purchase a utility billing software package called b*asis2*, which is a product of the Australian based company, Prophecy International. The City estimates that the cost for this latest initiative will be approximately $6.7 million dollars. In light of the substantial costs already incurred as a result of the prior four failed attempts, the City Controller's Office believed it was necessary to evaluate the past failures and identify lessons that might be useful in guiding City management through the latest initiative. Our goals are to highlight the lessons learned from the prior failures and to assist management in bringing this fifth attempt — as well as any future information technology initiatives undertaken — to fruition.

[1] The Water Commissioner is appointed by the Mayor and reports directly to the Managing Director. The WRB is part of the City's Revenue Department. The Chief of the WRB reports to the Revenue Commissioner who in turns reports to the City Finance Director.

[2] "Customized" information technology systems are those that are created and designed to meet the existing and specific business processes unique to the user of the system, in this case the Water Department and the Water Revenue Bureau.

[3] MOIS is the City agency charged with coordinating and deploying information technology resources to support effective delivery of public services.

Table 1: Summary of Attempts to Replace the CBIS

Attempt	Time Frame	Summary of Failed Implementation.
1	1987 - 1989	PWD and WRB attempt to create a new billing system by purchasing packaged software from Actron. The purchased software is mainframe-based and offers a customer-based billing application as opposed to the current system that is based on billing the premises where water is used. Millions of dollars and countless employee and consultant hours are dedicated to implementation of the software, but project implementers are unable to adapt the WRB's business processes to the packaged software.
2	1998 - 1999	PWD technical staff and two outside consultants work to develop a technical prototype to replace CBIS. After spending over $2 million dollars in consulting fees and countless personnel hours, the prototype proves to be too slow for the City's billing needs and the second attempt at replacing CBIS is abandoned.
3	2000	WRB and PWD undertake a third try to replace CBIS with a customized billing system called the Customer Data Information System (CDIS). The system is to be developed in-house by PWD and WRB staff, along with several outside consultants. The anticipated completion date of the project is December 2002. While the CDIS project is well underway, a new Chief Information Officer is appointed in April 2001 to head the City's MOIS. PWD requests additional funds for professional services to continue the project, but MOIS disapproves the additional expenditures and advises the PWD to terminate the project, which followed shortly thereafter.
4	2001 - 2005	MOIS decides the City would benefit from the implementation of a multi-agency work-order information technology system known as the Customer Information Work Management System (CIWMS). MOIS envisions the system as part of a larger initiative that would automate and integrate every business function within the enterprise and include all aspects of prospect and customer relationships. With the assistance of a consulting firm, MOIS issues a several-hundred page Request For Proposal, in which only two pages are dedicated to a water billing system. A vendor is selected for the project from among four that bid. After the selection, MOIS then solicits various City departments to ascertain their interest in participating in the initiative. Interest in the project is wanting, and no departments are willing to participate or dedicate funds from their budgets. With no willing participants or funds, the CIWMS project is never initiated, and the focus of the project now turns toward replacing only the CBIS with the chosen vendor's 11ie-business suite software. Approximately one year into the project (known as Project Ocean), it becomes obvious that the software cannot satisfy the PWD and WRB requirements without costly customization. The project is suspended in June 2005.
5	2007	Settlement with the previous unsuccessful project vendor is reached, which allows the City to go forward with a commercial off-the-shelf utility billing system known as *basis2.* The "new" Project Ocean begins in January 2007 with an estimated cost of $6.7 million dollars, and an expected completion date of January 2008.

KEY LESSONS LEARNED FROM PAST IMPLEMENTATION FAILURES SHOULD GUIDE CURRENT WATER BILLING INITIATIVE

With the City now conducting a fifth attempt to replace the CBIS, the City Controller's Office studied the past four ill-fated efforts (the last effort known as "Project Ocean") to identify lessons that might be useful in guiding management through the latest initiative. We identified five conditions that, in our opinion, significantly contributed to the past failures. These conditions include the unsuccessful efforts of City management to: (1) clearly define goals, visions, and expectations of the projects; (2) obtain the necessary buy-in of key departments; (3) adequately assess the practices and processes, organizational structure, and staffing levels; (4) provide effective and consistent oversight and accountability; and (5) develop a realistic time frame for project completion.

Extensive interviews held with key players involved in past efforts and individuals engaged early-on in the latest initiative (referred to by City management as the "new" Project Ocean), as well as a review of several related reports prepared by various City consultants, suggested that at the time of our fieldwork, in March through September 2006, many of the previous problems still existed. We believe that after the millions of dollars spent on the four ill-fated attempts, given that management expects the new endeavor to cost yet another $6.7 million, it is critical to minimize the risk of failure by giving careful attention to what previously went wrong as identified in this report and taking immediate corrective action.

Goals, Visions, and Expectations Were Not Clearly Defined

One significant problem that led to the failure of the fourth attempt to replace the CBIS was that management did not clearly define its goals, visions, and expectations to ensure they were compatible with the goals, visions, and expectations of project participants and end-users. For instance, in 2001, MOIS decided that the City would benefit from the implementation of a multi-agency work-order information technology system, which it referred to as the Customer Information Work Management System (CIWMS).[4] MOIS envisioned this work-order system as part of a larger city government information technology initiative known as an "Enterprise Resource Planning and Customer Relations Management" (ERP/CRM) system.[5] The new system was to encompass a water billing system, but members of the WRB and PWD were unclear as to how the proposed system would impact and address their needs to bill and account for water usage.

[4] Some of the agencies that were to be part of this work order management system included the Water Department, Water Revenue Bureau, Licenses & Inspections, Streets, Recreation, and Public Property.

[5] An ERP is a comprehensive integrated information system that automates and integrates every business function within an enterprise. A CRM is an integrated information system that is used to plan, schedule, and control the presales and post sales activities in an organization. A CRM includes all aspects of prospect and customer relationships, including the call center, sales force, marketing, technical support and field service. The primary goal of a CRM is to improve long-term growth and profitability through a better understanding of customer behavior.

The lack of clearly defined goals, visions, and expectations for the CIWMS project was apparently still very evident during the spring of 2003. The consulting firm of Goldenberg Rosenthal, LLP had issued a report on behalf of the City titled "Organizational Assessment and Forensic Review." In the report, Goldenberg outlined critical issues facing the WRB that needed to be immediately addressed to "…ensure that the WRB, which is vital to the economic health of the City, operates at maximum performance." Two key findings included in the report were that

- the WRB did not have a clearly stated and understood vision and mission, and
- the organization as a whole appeared relatively uninformed about the CIWMS project.

At the time of our work, when the City was on the verge of starting the "new" Project Ocean, it appeared that management still had not clearly defined the goals, visions, and expectations for the new water billing system. For example, during January 2006, MOIS retained TMG Consulting, Inc. to conduct an assessment of CBIS and to make recommendations as to the various options available to the City related to the water billing system.[6] TMG presented the City with its report in April 2006, a copy of which we obtained in September 2006.[7] In its report, TMG suggests that the expectations for the "new" Project Ocean initiative being considered by management still had not clearly been defined.

Based upon its analysis, TMG noted that the City had not prepared any cost justifications for implementation of a new billing and customer information system and failed to identify any examples of a reduction in costs associated with a new system. Moreover, at the time of its review, TMG said the implementation and operational costs for an entirely new system over five years will cost the City approximately $49 million dollars compared to benefits of only $14 million. And these costs only include implementation of a basic core billing system. They do not take account of the costs of implementing an extended system with capabilities such as "change management, bill production, and data warehouse" which TMG indicated would increase the implementation costs to $55 million.

Further to the point that the expectations of a new CBIS were not clearly defined was the impetus for acquiring a new billing system, as apparently understood among participants. The original and long-standing movement behind creating a new billing system had been to enhance revenue collections. The TMG study stated, however, that the City was replacing CBIS strictly as a strategic business initiative to (1) alleviate the risks associated with maintaining CBIS in the long-term and (2) enable the PWD and WRB to become a customer focused organization with the ability to respond immediately to customer requests for new services, products and programs.

As part of our fieldwork, we interviewed the executive project "sponsors" from the PWD, WRB, and the Revenue Department. Their responses and/or lack of detailed replies suggested the conclusions reached by TMG were indeed valid. Although there was widespread agreement among sponsors that a "successful implementation" of the "new" Project Ocean meant the

[6] The TMG assessment was yet another evaluation of the CBIS. Earlier, during the fall of 2001, MOIS had retained Arthur Anderson Consulting to conduct a two-week evaluation of the CDIS project and to assess the City's options for a new water billing system.

[7] The City Controller originally requested a copy of this report during April 2006, but did not receive it until September 2006, when negotiations with Oracle were nearly concluded.

software being considered —*Utility Billing Software* (*basis2)* — must be able to generate accurate and timely bills and provide customers with alternative methods of paying their bills, they were unable to identify any additional services, products, or programs that the City planned to initiate or offer. There was disagreement among them as to whether the system should be a premise based billing system versus a customer based billing system.[8] The fact that, through the end of our fieldwork, such a basic issue had yet to be resolved or even discussed by the key agencies was, in our opinion, indicative of inadequate planning.

Clearly defining the goals, visions, and expectations of a project is fundamental, but it needs to be resolved before a project, such as replacing the CBIS, gets underway. In our opinion, grappling with these complex issues during the implementation phase will inevitably result in costly delays. They may even result in the realization, yet again, that the chosen software package does not meet the City's needs. For these reasons, in moving forward with the fifth attempt at replacing CBIS, it is important that the City define comprehensible goals, set clear visions, and delineate expectations for the project.

Recommendation:

We urge MOIS, the PWD, and the WRB to clearly define the goals, visions, and expectations as they relate to the water billing and customer information system. Clearly defining these aspects of the project will ensure compatible visions and expectations by all project participants and end-users. [47007.01]

In the process of defining the goals, visions, and expectations of the project, City management must also thoroughly assess, evaluate, and clearly define the role, responsibilities, and mission of MOIS. These definitions must be communicated to the appropriate City agencies. If a determination is made that the City's information technology systems are going to be centralized under the MOIS's jurisdiction, the City must ensure that this agency is appropriately staffed, resourced, and funded. Failure to clarify and resolve these issues may result in future failed technology initiatives at great expense to taxpayers and end-users of City services.

Management's Response:

The reconfigured and reorganized Project Ocean now has clearly defined goals, visions, and expectations, which include the following:

- Replacement of a 30-year old inflexible and unmaintainable high-risk system.
- Use of a highly configurable and highly functional Commercial-Off-The-Shelf (COTS) system, with no custom development or software customization, which inherently defines scope and eliminates scope creep.

[8] Under the current water revenue collection processes, the City bills the premises where the water usage occurs and not the customers (including residents and commercial establishments) who occupy the premises. When a customer leaves the premises, unpaid water bills remain with the premises. The new occupants/owners of the premises thus inherit water bill debts.

- Improved collections, enforcement, and customer service as identified by best practices in the industry.

- Implementation of strategy that requires the City to be its own systems integrator, which controls costs, scope, and provides better oversight and accountability.

- Agreement that MOIS will operate the system — the project team is setting up the operations, as well as training and transition. The *basis2* COTS system requires less operational effort than the legacy CBIS system, which makes it practical and feasible to operate the system on MOIS mainframe computers, saving the added cost of duplicate computing facilities at the Water Department.

With respect to a billing system that is premises based versus customer based, the City has decided to generally retain premises based processing as it is the most accurate way to capture and collect receivables — a decision shared by most municipalities. However, *basis2* was selected in substantial part because it is totally flexible in this respect, and can also process customer based transactions, given the *basis2* relational database design. The *basis2* software can process concurrently on both a premise and customer approach, because it supports many-to-many relationships between premises and customers. The City can adapt its billing process as needed because *basis2* is already configured to handle both approaches. It makes no sense to pick one of the two approaches in *basis2* given its flexibility in this respect.

As to the Controller's reference to the TMG report that suggest implementation and operational costs for an entirely new system will be $49 million, this number is based on industry averages and generic industry experience in larger utilities with multiple services where the implementation starts from scratch. The actual total costs to complete Project Ocean will be about $25 million, including *basis2* implementation costs. This cost is achievable because (1) the City's license to *basis2* was not purchased or paid for by the City, but furnished to the City by Oracle, at its cost, pursuant to the City's settlement of contract disputes with Oracle; (2) approximately $6 million of the work performed between 2003 and 2006 will be reused; and (3) a low total implementation cost for the *basis2* software, based on its high "configurability," which eliminates the need for more than minimal customization (*basis2* has a 93 percent functional fit to City billing processes, as determined by TMG Consulting, Inc. and Oracle and validated in work-to-date on the reconfigured project) as well as the *basis2* technical architecture and ease of use.

Additionally, the Controller's report infers by way of the TMG report that cost estimates do not account for the costs of change management, bill production, and data warehouse, which will increase total project costs to $55 million. For the "new" Project Ocean, these statements do not give consideration to the following facts:

- Change management techniques and principles are being applied across the board with PWD Information Technology staff, and WRB staff to implement this system. The Program Director and Program Management Office manager are using established change management principles and methodologies, including sponsorship, inclusion of change agents on project teams, communication

methodologies, and participation and inclusion of users in key areas where change is involved.

- Bill design is included in the $6.7 million cost to complete the project, although the Steering Committee has decided that a new bill format will not be necessary for the go live phase. The cost of revising the City's current bill is expected to be well under $500,000 using *basis2*; designing a new bill and related changes to fit a less flexible software system would likely cost a few million dollars by itself, because of the extensive programming required to design a new bill with less flexible tools than are available in *basis2* — a further cost saving attributable to the selection of *basis2*.

- The size of the database, and City's reporting and information requirements, are such that a data warehouse is not required. Data warehouses are generally required where the billing database does not have enough details or history to meet the business needs. The *basis2* software meets the City's business needs and will not require a data warehouse. Data warehouses are copies and summaries of production databases, generally several days older or more that are used for reporting and business analysis to avoid performance conflicts with daily and nightly processing on the production databases. They are generally used in much larger data intensive enterprises such as banks and insurance companies. Since the database is not large by industry standards, and *basis2* permits concurrent online and batch processing (where the current CBIS does not) and will be running on much more powerful machines than the current PWD mainframe used for the CBIS, a data warehouse is not required. Under these circumstances, reporting can and will be done from the production database to provide real time business analysis and intelligence.

Necessary Buy-In of Key Departments Was Not Obtained

One significant problem that led to the demise of the City's earlier "Project Ocean" initiative was the lack of "buy-in" or support by the PWD and the WRB. Strained relations between MOIS and these two agencies, about the manner in which Project Ocean was developed, had significant negative impact on the support of the project.

In the fall of 2001, MOIS hired the consulting firm of Acetech[9] as project manager for the preparation of a Request for Proposal ("RFP") for the CIWMS initiative. The RFP was issued on February 1, 2002, and the deadline for receipt of proposals was March 18, 2002. As mentioned earlier, the CIWMS was to encompass a water billing system; however, only two pages in the several hundred-page RFP were dedicated to this system.

Four vendors responded to this RFP including Oracle, SAP, Motorola, and Peoplesoft. Oracle's "11i e-business suite"[10] software system was selected for the CIWMS project.[11] After the selection of Oracle, MOIS finally solicited each department to ascertain their interest in participating in this initiative. None of the pertinent departments were willing to participate in, or dedicate funds from their budgets to this project. Interviews with key participants in the selection process revealed that the overall lack of interest in this initiative was attributable to the following reasons:

- Participating City agencies did not believe that the CIWMS proposal was feasible. There was widespread consensus that a single software package could not accommodate the widely disparate business practices and processes of each department. Additionally, there was widespread consensus that Oracle's e-business suite software was inappropriate for the City since the software system had been designed for use by private-sector enterprises where business practices and processes are generally standardized. Oracle's e-business suite had never been successfully implemented in the public sector and several major implementation failures of Oracle's e-business suite had occurred in the private sector.

- MOIS was the prime proponent of this initiative. City departments were unwilling to participate in any project in which it appeared that MOIS would obtain control of their agency's information systems. City agencies consistently resisted these efforts because they did not believe that MOIS had the ability to properly manage their information technology applications. These concerns appeared to be valid, as historically MOIS has not had sufficient staff, expertise, funds, and other essential resources to oversee the widely varied and complex computer systems embedded in the various City departments, or to effectively respond to agency issues and needs. City agencies regard MOIS as

[9] The principal of Acetech, Jeanette Foxworth, was the subject of a separate investigation by the City Controller's Office. The results of that investigation were released in July 2006.

[10] 11i e-business suite is Oracle's version of an ERP/CRM software system and is comprised of numerous applications or modules that manage a wide range of business functions.

[11] Despite repeated requests by the City Controller, MOIS never produced records regarding the selection process or reports generated by the Selection Review Committee.

deficient in data management, standards compliance, security, and repair and maintenance. Additionally, MOIS experiences high executive and staff turnover, which results in an ever changing and inconsistent organizational mission and priorities.[12] Under these conditions, City agencies were understandably nervous about relinquishing major and complex information technology systems that are critical to their operations.

A basic guideline relating to major technology implementations is that the organizational executive and the end-users of such systems should be the principal proponents of technology initiatives that impact business practices, processes, and policies (in this case the PWD and the WRB), rather than the organization's information technology division (in this case MOIS). The conclusion we reached throughout our extensive interviews with key players of past projects is that this was not the case.

Major technology implementations typically result in changes within organizational structure and operations. Change is oftentimes frightening for those being affected and can be met with overt and covert resistance that undermines the implementation of new systems. Many information technology implementation failures are attributable to organizational resistance and lack of project "buy-in." For this reason, initial involvement and corroboration by the target audience is critical to creating a sense of ownership, cooperation, and "buy-in" of the project that are necessary for a smooth and successful implementation.

Creating the internal organizational desire and will to change requires consistent leadership that is both highly skilled and experienced in effective change management and possesses excellent diplomacy and inter-personal skills. These conditions were virtually non-existent as it related to the CIWMS project and Project Ocean.

Interviews we conducted with key City personnel revealed poor rapport between City agencies and top level MOIS staff, particularly the former Chief Information Officers (CIO). Rather than solicit or encourage input and corroboration, representatives from City agencies stated that MOIS executives independently decide what City agencies need and what was good for them, and resisted agency input or involvement in strategic planning. One participant in the CIWMS project indicated that MOIS appeared skeptical of questions asked by agency representatives involved in the project. Personnel from the PWD and WRB expressed the belief that the Oracle project was being forced on them, whether they wanted it or not.[13]

[12] A independent study of MOIS operations that was conducted by the Gartner Group, Inc. that was commissioned by MOIS in 2002 clearly indicated that MOIS did not have the necessary resources, infrastructure, policies, and standards to support centralization of the City's information technology operations MOIS. This study also found that MOIS was having difficulty in providing basic level support for technology systems already under its control.

[13] The CIWMS RFP contained an unusual provision that specifically authorized the RFP Project Director (in this case, Jeanette Foxworth) to have role in the implementation of the subsequent contract with the successful vendor. One of the original advocates for utilizing Oracle software to replace CBIS was former city Finance Director Janice Davis. Janice Davis and Jeanette Foxworth had a prior history working together in other cities implementing Oracle products.

With no willing participants or funds, the CIWMS project was never initiated. Despite this setback, MOIS was determined to implement a city-wide ERP/CRM using Oracle's 11ie-business suite software. The focus of the effort turned to replacing the CBIS, since the PWD had the substantial funds available to do it from the Water Revenue Fund. According to WRB and PWD officials, whether they desired or approved of the Oracle 11i e-business suite software for a water billing/customer information system was irrelevant. It was their belief that Oracle e-business suite was going to be implemented in their departments because they "had the money" and because MOIS wanted to implement Oracle's e-business suite.

Additional factors contributing to the overall lack of support included (1) the City never conducted a comprehensive, open, and fair evaluation of the available products on the market before choosing Oracle; (2) Oracle was selected even though its 11i e-business suite software did not specifically include a public water utility billing component; (3) Oracle had no prior experience in installing a water billing system for a public utility; and (4) the City continued to have Oracle work on the project despite many red flags suggesting that it was failing in its attempt to install a water billing component .

Recommendation:

Make every effort to address and improve issues regarding employee morale as well as project support and "buy-in" at all levels of the WRB and PWD. [47007.02]

In our opinion, repeated failures of information technology implementations can be disheartening to all involved and, if not handled properly, might lead to another failed implementation. While it is clear that the executive sponsors of the "new" Project Ocean were fully committed to its successful implementation, at the time of our fieldwork, this enthusiasm and commitment was not evident among personnel below the executive level. Some employees from the PWD and WRB that were interviewed were not aware of the new planned implementation and those that were expressed skepticism, weariness, mistrust, anger, and lack of interest. Similar to what occurred during the original Project Ocean — at the time of our fieldwork, little, if anything, was being done to involve WRB and PWD employees in the planning process; to elicit their feedback; to keep them fully informed; or to gain their trust in, and support for the project.

Management's Response:

The Controller states that "One significant problem that led to the demise of the City's Project Ocean" was the lack of "buy-in" or support by the PWD and the WRB. This was true a year ago, but it is entirely inaccurate today.

At the executive level, the department heads of PWD, WRB, and the MOIS CIO are in full alignment of goals, objectives and visions including dates, scope, project organization, and implementation strategy. At the next level, all supervisors and managers contributed to and accepted the project plan. PWD's Information Technology unit is working hand in hand with MOIS on operations, reviewing and approving the operations plan for the system and most importantly, contributing actively to recommendations to the Steering Committee on operations. The level of team integration and user "buy-in" is high and accounts for the

considerable success achieved to date in the *basis2* ["new" Project Ocean] implementation, as well as the high morale and motivation that was missing from the prior project.

The current CIO has developed a high level of collaboration and teamwork with these agencies, and others. Today, PWD and WRB chose Prophecy and *basis2* because this solution meets the goals and objectives of the project. MOIS has certified the applicability of the underlying technology and its unique advantages, and together, they have all agreed to the *basis2* approach, without anyone being forced.

By way of specific examples, all managers in WRB and PWD Information Technology participated in the *basis2* software review and the development of the project plan. All users on the project were involved in review of the scope and timeframes and approach, and are now participating in the project. Project members from PWD Information Technology, WRB, and contractors, who are on the project, work together and meet daily. PWD Information Technology has signed off on the legacy data conversion approach, and has completed deliverables to make this a reality. Data conversion has been completed. To date, no PWD or WRB manager at any level has raised concerns to the Program Director or the Steering Committee, which is strong evidence of buy-in and alignment given that the joint project team contributes to project decisions.

In summary, MOIS, PWD, and WRB are fully aligned at all levels, including department heads, business managers, and individual contributors. Multiple communications have occurred, with many chances to participate and craft the vision, plan deliverables, and steps for project success.

Practices and Processes, Organizational Structure, and Staffing Levels Were Not Adequately Assessed

During the City's first attempt to replace the CBIS in the latter 1980's, the PWD and the WRB attempted to create a new billing system by purchasing a pre-designed software package. The software application purchased was a mainframe based pre-packaged program that offered a "customer-based" billing application as opposed to the premises-based approach. The belief that changing the billing system from a premises-based system to one that is customer based would enhance revenue collections was one important impetus for replacing CBIS.

Pre-packaged programs are frequently known as COTS software. Users of COTS software must adapt their business practices and processes to the software package design. While COTS software can be customized to fit the specific needs of the end-user, customizations are extremely costly and time consuming and may preclude the ability to obtain software upgrades, an important benefit of utilizing COTS software systems.

According to several key people, who were intimately involved in the project back then, the project implementers were unable to adapt the WRB's processes to pre-packaged software, particularly as it related to changing from a "premise-based" billing system to a "customer-based" billing system. During the implementation efforts, it became apparent that extensive and expensive customizations were necessary, negating the benefits of a packaged software system.

In a report prepared by the firm of Arthur Andersen Consulting during the fall of 2001, the firm concluded that replacing CBIS with a pre-packaged program involved the following risks:

- A package-system implementation might require the end-users to significantly change their processes. The users that participated in the design of the CBIS system had become accustomed to the development of a customized system where the system can adapt to the procedures existing among the user group. Installing a packaged system would force a great deal of changes in the user's day-to-day operation and such a project could potentially face a great deal of resistance.

- Replacing a customized system with a packaged system can often lead to a very expensive package implementation with the end result being a highly customized package system. Depending on the software maintenance policies of the vendor, it could become quite expensive to maintain the customizations as subsequent versions of the packaged system are released.

- The morale of the project team members as well as the users of the project needs to be considered. Starting another packaged system implementation after two failed tries could prove to be disheartening to all involved and if not handled properly, might lead to another failed implementation.[14]

[14] Arthur Andersen Report, "Customer Data Information System Review" page 23, December 2001.

It is a fundamental principle that implementing a COTS software package requires the organization to adapt its business practices to fit the package. The City's experience with the earlier failed Actron implementation and the 2001 Anderson report clearly informed the City that the installation of a packaged software system to replace CBIS would require that the WRB, and possibly the PWD, significantly change their business practices and processes and that any attempts to institute major changes would likely result in a great deal of resistance.

Instituting major changes in a well-functioning and healthy organization is inherently challenging. However, the City was also clearly on notice that the WRB faced a number of additional challenges that made it particularly resistant to change. These problems were thoroughly documented in Goldenberg Report (referred to earlier on page 4) during the spring of 2003. With the impending rollout of Oracle, it was imperative that all processes be delineated, perfected, documented, and clearly understood prior to computerization.

However, the Goldenberg report noted the following conditions:

- A lack of internal controls permeated the WRB organization.
- Significant gaps existed in the personnel management "fabric" within the WRB.
- Business performance tools did not exist and/or were not being utilized effectively by management to run the business. The WRB work processes were largely un-documented and a formal organization-wide process did not exist for capturing, retrieving and transferring knowledge. The WRB needed to document existing work processes to understand how work was being performed (which would provide the baseline tool for process improvement), identify and eliminate redundancies, ensure a smooth workflow, and incorporate essential tasks that were not being supported.
- There was a distinct lack of internal skills and management training.
- There was an inequity in resource allocations within and between various units in the organization.
- Morale was very low, there was a general sense of complacency among the staff, and many felt that little could or would be done to improve it.

In our opinion, these findings provided clear evidence that the WRB was an organization in need of significant restructuring and re-engineering at many levels. In order to minimize delays and cost overruns and maximize the chances of a successful outcome, these vital issues related to organizational structure, mission and vision, culture, leadership, training, and business practices and processes needed to be addressed prior to project implementation.

However, these changes did not occur in the case of the earlier Project Ocean. Project officials believed the installation of Oracle's software would force the necessary changes. In our opinion, this approach was risky. In fact, what transpired during the earlier Project Ocean, and the three prior attempts, was that the WRB attempted to maintain the status quo by designing a system that was similar to CBIS.

Recommendation:

Assess the need to redesign the City's business practices and associated processes, its organizational structure, and its associated staffing levels prior to the implementation of a new billing/customer information system. [47007.03]

A comprehensive assessment of the WRB's business practices and processes must be done. This should involve thoroughly documenting practices and work processes and the creation of formal organization-wide processes for capturing, retrieving, and transferring knowledge and information in order to eliminate redundancies, ensure a smooth workflow, and incorporate essential tasks that are currently not being supported.

Business performance tools must be devised and utilized effectively by management to run the business. During this process, the City also needs to gain a clear understanding of specific business processes and practices that are legally mandated by city ordinance or other governmental regulations and the extent to which these regulated processes can be modified to fit packaged software systems. Attempting to do this during the implementation phase will inevitably result in project delays and escalating costs, particularly if software customizations become necessary. This re-engineering will also greatly assist the City in selecting the system options and software best suited for the City.

Management's Response:

The "pre-designed software package" from the 1980"s and the rigid COTS software solutions that require customization in order to meet business practices referenced in the Controller's Audit Report were typical of the times in which the City was considering these options. The *basis2* software is much more flexible, provides significant opportunities for configuration, and can be implemented with little if any customization. Although some business practices will need to change (and in many cases should change to meet best practices standards), these changes will not be as dramatic or meet the resistance envisioned in the report from the Arthur Andersen Consulting firm in 2001. For example, the project team works on configuring *basis2*, the WRB staff has suggested and endorsed changes to the way penalties are handled, the replacement of the old "control day' configuration with routes and billing cycles, and changes to the format of the duplicate bill so that it mirrors the format of the original bill.

As to the poor health of the WRB and the morale of its staff, these problems have been corrected. Since February 2003, a new Bureau Chief has been in place. She has focused her attention on the organization and staffing of the Bureau, working to place people in the proper civil service positions for the work they are performing and identifying managers and supervisors who not only understand the work that needs to be accomplished by WRB, but also understand that they must be flexible in finding ways to accomplish those tasks. As a result of the Deferred Retirement Option Plan (DROP) and in keeping with the City's efforts to streamline its workforce, the WRB staff is considerably smaller today than it was just a few years ago. A smaller workforce demands increased flexibility from staff and managers and also places increased emphasis on the benefits that can be obtained from using an effective, flexible software system like *base2*. The staff today has already been through

significant organizational change and is open to the business process changes that the new billing system will support.

While the Controller's report points out the problems with customized applications such as difficulty in implementation and difficulty in maintenance, the *basis2* software is a COTS system that is configured, not customized, and does not have those problems. Therefore, maintenance is reasonable and cost effective, including upgrades to subsequent versions. In fact, during this phase of implementation, the City is utilizing a new version of basis 2 that has enhanced collections functionality, with no impact on the project. This is only possible because the City is not customizing, but is configuring the package to meet City business processes.

The Controller's Report rightly notes that implementing a COTS software package requires the business to conform business processes to the software. This is true to the extent the software does not support current business processes. The project to date has not identified current business processes that are not achievable in *basis2*, including processes specific to the City. This has been validated through project workshops and user signoff. The Steering Committee is united, however, in its decision to change processes to conform to the best practices incorporated in *basis2*.

The Controller's Report also rightly stresses that all existing business processes must be delineated, perfected, documented, and understood prior to computerization if the automation is to be successful. This was in fact achieved under prior project efforts, which delineated and documented current business processes in great detail.

This part of the work performed under the prior project was reusable for the current Project Ocean, and has in fact saved the considerable time and expense that would be required to collect this information — one reason why the project is ahead of schedule. This past work has been validated by the current project team, perfected where appropriate, and documented business processes are being configured in *basis2* as required.

The Controller's Report points out morale issues in the prior implementation effort. These issues have been addressed in the current implementation by putting the new governance structure in place and resolving management issues before restarting the project. The project management team, and specifically the Program Director, has taken this on as a major managerial objective. On the current project, morale is high for several reasons:

- Responsibility — management started with governance and lessons learned.

- Inclusion — all City employees that are on the project team are included and integrated into the team — not just called upon for information. City staff provide input to the project plan, are involved in all aspects of decision making, and are equal members of the team. This is a benefit of the City acting as its own systems integrator.

- Respect — WRB and PWD users, MOIS staff and all project personnel are treated as subject matter experts who are capable of participating fully in the implementation of the system and whose knowledge of City water billing practices is essential to the

project. This has led to better and faster decisions, less user pushback and more user buy-in, which is a condition of success, as the Controller's Report rightly notes. This project means that certain roles in PWD and WRB will change, and acknowledging that up front instead of hiding it or ignoring it has made it possible for the affected users to participate in the transitioning, resulting in acceptance and support in place of the resistance experienced in the prior implementation and noted by the Report.

- Results — Morale and project commitment are high when results happen. Early in this project, we made migrating legacy data and printing bills the first priority. Both are ahead of schedule and bills have been printed with legacy data. When users see a working system with their data, morale is good. Examples include a supervisor who is so excited about the project's achievements to date, that she wants to frame the system output and hang it on the wall, and another manager who wants to postpone elective surgery in order to further support the project. Nearly all PWD and WRB critics of the last effort have a different view today than when interviews were conducted for the Report because the project is showing results.

Oversight and Accountability Were Not Effective And Consistent

While consistent and effective oversight is essential to the successful outcome of any complex information technology implementation, it became even more critical in light of the challenging circumstances facing Project Ocean. These challenges included the fact that three City agencies with a history of strained relations were required to work together; that many of the end-users did not believe in the project and morale was low; that the WRB was being forced to redesign its business practices, a process that met with great resistance; and that complicated data conversion efforts were necessary to enable CBIS data to conform to the Oracle's software.

From the beginning, Project Ocean was plagued by a high turnover in project management teams, executive sponsors, as well as project directors. Two of the original "project champions" including the City Finance Director Janice Davis and the former WRB Chief Denise Garrett[15] left their employment with the city in the early phases of the project. The PWD Commissioner, who was opposed to the implementation at the outset, resigned his position. Repeated turnover of Finance Directors, WRB Chiefs, project directors from the PWD, WRB, MOIS, Oracle, and consulting firms hired as project managers, caused setbacks, lack of focus and continuity in oversight, blurring of authority, breakdown in communications, and a lack of effective accountability to deal with the constant change orders, delays, and escalating costs. The problem of chronic turnover in project management, executive sponsors, and project directors was further exacerbated by the lack of independent and objective oversight at the highest levels of authority in the City.

The City currently has an Information Technology Governing Board (ITGB) that is staffed by the Mayor's Chief of Staff, the CIO of MOIS, the City's Finance Director, Managing Director, and Budget Director. The purpose of the ITGB is to provide high level executive oversight and authority over complex and costly information technology projects and to monitor implementation developments, to insure that the projects remain on-course and to quickly address problems that arise.

Inherent weaknesses in the composition of the ITGB impacted on effective and objective oversight which was critical to Project Ocean's scope and complexity. First, the only person on the ITGB with a significant understanding of and experience in information technology issues was the CIO for MOIS, and she was heavily invested in a successful project outcome. Additionally, a strong alliance existed between the CIO for the MOIS and the Mayor's Chief of Staff, both of whom were heavily invested in the implementation of Oracle 11i e-business suite. This strong alliance of non-neutral executives resulted in a lack of objective oversight at the highest levels and created an environment that was not conducive to the full and open ventilation of issues or frank discussions regarding the viability of the project by other ITGB members.

During our fieldwork, MOIS presented the City Controller's Office with a "Governance Chart" for implementation of its latest Project Ocean effort — *basis2*. This chart did not appear to be significantly different from the project management structure for the earlier Project Ocean attempt. Pursuant to this chart, the executive sponsor of this project is the Revenue Commissioner who has no authority over the PWD. This could result in difficulties and delays as inter-agency problems arise during the implementation. Additionally, the weaknesses in the

[15] The Philadelphia Inspector General's Office has been conducting an ongoing investigation of Ms. Garrett.

structure of the ITGB at the time of our fieldwork need to be addressed to insure independent and objective oversight and authority at the highest level.

Recommendation:

Create an effective project management structure that includes objective and independent oversight by a top level City official with authority over the involved City Departments. Effective measures to insure accountability must be devised and consistently enforced. [47007.04]

This recommendation is very important because the "new" Project Ocean, if not timely completed, could be a multi-year initiative and early 2008 coincides with the end of the current Mayor's term in office, as well as the retirements of the Revenue Commissioner and the PWD Commissioner. As a new administration takes office, the project will experience turnover in management teams, executive oversight and sponsors, project directors, and possibly consultants. As was clearly demonstrated with the earlier Project Ocean, lack of continuity in oversight and management can be detrimental to the successful completion of the project.

Management's Response:

While past issues resulted in high turnover, no such problem has been experienced in this implementation. Dedicated resources from the City have all been assigned, and have agreed to stay on the project to completion. All contractors were given this requirement as well. Contractors are committed for the duration of the project, and are known to the Program Director as committed professionals.

Independent and objective oversight is provided by the Program Director and Steering Committee. The ITGB provides senior independent and objective oversight. The project was fully reconstituted with ITGB approval. It is not an Oracle project. Pursuant to the City's settlement of contract disputes with Oracle, Oracle furnished the *basis 2* software at Oracle's cost. Oracle is not, however, performing or responsible for implementing the *basis2* software. The implementation is being performed by consultants under the direction of MOIS, pursuant to MOIS professional services contracts.

The City does not concur with the Controller's assessment regarding the revised Governance Chart for the current Project Ocean. The current project structure provides for checks and balances that were absent in the prior effort. The Revenue Commissioner and Water Commissioner both participate in Steering Committee decisions because Revenue and Water are both stakeholders. The water billing system is, however, a billing and revenue system for which the Revenue Department and its Water Revenue Bureau are responsible, and the majority of system users are WRB users. This is why the Revenue Commissioner is the project's Executive Sponsor, with ultimate authority over and responsibility for the project, as reflected in the current organization chart.

Additionally the Information Technology staff of PWD has been involved in every step of the current implementation, unlike the prior effort. The Steering Committee, which includes the CIO as well as the two Commissioners, is responsible for ensuring alignment and

collaboration of the operating departments, as opposed to any one department making unilateral decisions based on its perspective and concerns. Project governance has for this reason been effective and cooperative.

Technology issues are properly handled at the project level and by the Steering Committee. The ITGB is responsible for resolving management problems, cost issues, and project structure issues. The ITGB has carried out this role by reviewing and approving, then monitoring implementation of the new project organization. MOIS is responsible for project management and is the facilitator for technology solutions.

Project management for this project relies on review and oversight using industry standard project management methodology, including:

- Monthly reporting to ITGB by MOIS CIO and Executive Sponsor.
- Biweekly Steering Committee review from Program Director
- Weekly review of project by Program Director from project managers
- Use of standard Project Management Institute (PMI) project methodology, which is well documented.
- Appointing a PMI certified project manager.

Time Frame for Completion of the Project Was Not Realistic

Another problematic issue for City management in earlier efforts appears to have been its inability to develop realistic time frames for completion of the projects. For instance, in the late 1990's, the PWD was required to migrate the CBIS system from the mainframe housed in the PWD's headquarters to another mainframe supported and managed by MOIS at MOIS's headquarters. This was part of MOIS's efforts to centralize the various city agencies' information technology operations. But after a nine month effort, the migration of data was significantly behind schedule and the project was abandoned.

With the CIWMS project, even under the best of circumstances, the scope of the project that eventually evolved into Project Ocean was unreasonably ambitious and not likely to succeed within the time frame outlined in the City's contract with Oracle. Oracle had agreed that within 18 months, it would install several complex applications that would be fully operational. These applications included:

- Revenue and receipts including billing, general ledger, accounts payable and accounts receivable; collections, and on-line marketing, scripting, i-receivables, and i-payment and telesales;
- Geographic Information system;
- Field Service Scheduling; and
- CRM Business Intelligence.

Oracle further agreed that within the same time frame, the following 11i e-business suite applications/modules would be available for use;

- Enterprise Asset Management,
- Fixed Assets,
- Inventory, and
- Project Costing.

Numerous red flags should have alerted the City, particularly MOIS that Oracle did not have the ability to implement the terms of the contract within 18 months. First, Oracle's 11i e-business suite did not include a municipal water utility billing and collections application. Second, the WRB and PWD business practices and processes did not conform to pertinent 11i e-business suite applications. Third, existing CBIS data was unable to interface with the e-business suite software, and it was obvious that extensive, time consuming, and costly data conversion and cleanup was going to be required. Fourth, successful implementation of this project required the full cooperation of the PWD and WRB, two agencies with strained relations, who were being forced to implement a project, which at the time neither agency supported.

At the time of our fieldwork, executive sponsors from the PWD, WRB, and MOIS informed us that the expected completion date for the implementation of the "new" Project Ocean was January 2008, 12 months from the expected restart of the project in January 2007. In our opinion, based on the City's previous failures and comments made by consultants in their reports to City management, this time frame appears perhaps very ambitious.

Recommendation:

Establish a realistic time frame for completion of the project. [47007.05]

Throughout this review, the City has defended the past four project failures by noting the inherent difficulties and risks associated with these types of information technology implementations. The City has also pointed out that such failures are not unique to Philadelphia, but have occurred in other jurisdictions. These realities, however, argue for the City to take a circumspect, methodical, and prudent course of action taking the necessary and critical steps to mitigate the existing risks that contributed to the prior four failed attempts.

Management's Response:

The City acknowledges that many projects such as Project Ocean can take 18-24 months. However, the 12-month completion date for the fifth attempt is realistic because:

- The City was able to re-utilize the "current state" (current business processes) analysis and other deliverables from the past project, saving time and money.

- As projected, the City was able to convert legacy data and print bills within the first 90 days of the project — 9 months ahead of the projected go-live date; the first iteration of data cleansing and conversion is projected to be completed May 31.

- The City has put in place an experienced project team of City employees and skilled IT professionals.

- The *basis2* software can be implemented relatively quickly because of its high configurability, high functional fit with City business process requirements; and a technical architecture that integrates natively with the Oracle eBusiness Suite.

- The project is currently ahead of schedule. The project plan called for data conversion and production of sample bills in May 2007. Both were achieved in February 2007. Bills in the City's format and with City information were scheduled for May, but were produced in April. The City currently believes that it can complete the project 30 days ahead of schedule.

- The City's 12 month completion schedule for basis 2 was validated, prior to the start of the project, by research showing that *basis2* was implemented in 10 months by a municipality with a customer base of 500,000 and a complexity of billing requirements similar to Philadelphia's.

QUESTIONS CONCERNING THE ORACLE AGREEMENT, THE PROPHECY CONTRACT AWARD AND THE CITY SOLICTOR'S LEGAL OPINION

It was an unusual contracting process to extinguish the City's right of recourse against a deep pocket vendor Oracle, by the substitution of a smaller vendor, Prophecy, and to award Prophecy a $2 million contract for implementation of Prophecy's basis2 billing system which was obtained through a settlement agreement[16]. In the absence of the settlement, the City could have incurred substantial litigation costs against Oracle. With the settlement, the City received a new utility billing system (basis2), which put it in a better position than before the settlement. However, if the Prophecy basis2 system fails then the City's prospects of recovering damages could be limited. The City Solicitor has opined that the power of the City Solicitor to settle potential legal claims is legal authority for this arrangement and that the exercise of that legal authority and that power in this case has been exercised appropriately in order to minimize the City's potential losses.

With exceptions, the City of Philadelphia Home Rule Charter by Section 8-200, generally requires competitive bids awarded to the lowest responsible bidder as emphasized below. The City asserts the legality and propriety of its actions pursuant to the exceptions in the Philadelphia Home Rule Section 8-200(1) for "unique articles" and "professional services" to the standard competitive bidding process for the City as indicated by italics below.

> **CONTRACTS, PROCUREMENT, PROPERTY AND RECORDS**
> **§ 8-200. Contracts.**
>
> (1) *Except in the purchase of unique articles or articles which for any other reason cannot be obtained in the open market,* **competitive bids shall be secured before any purchase, by contract or other-wise, is made or before any contract is awarded for construction, alterations, repairs or maintenance or for rendering any services to the City** *other than professional services* **and the purchase shall be made from or the contract shall be awarded to the lowest responsible bidder**; provided, however, that City Council may, by ordinance, prescribe bid preferences for businesses located in or doing business in Philadelphia, and provided further that Council may, by ordinance, regulate the process by which purchases and contracts not subject to the lowest responsible bidder requirement of this paragraph are awarded, and may require that contracts with agencies (as that term is defined in subsection 6-400(c) of this Charter) or with other entities include provisions obligating such agencies or entities to comply with any process established by Council under the authority of this subsection, except that such regulations may not require Council authorization of

[16] Prophecy International has a business relationship with Oracle in that the two companies partner in the implementation of *basis2*. This partnering exists because *basis2* has been designed by Prophecy to interface with Oracle's eBusiness suite platform.

a contract unless Council authorization is required by some other provision of this Charter.

(2) **If any purchase or contract for which competitive bidding is required involves an expenditure of more than twenty-five thousand ($25,000) dollars**, which amount shall be adjusted every five (5) fiscal years as rounded to the nearest one thousand ($1,000) dollars to reflect the percentage change in the most recently published Consumer Price Index for All Urban Consumers (CPI-U) All Items Index, Philadelphia, Pennsylvania, United States Department of Labor, Bureau of Labor Statistics, the following procedure shall be applicable:

(a) The Procurement Department shall **advertise for sealed bids** at least once a week for two weeks in one of the three newspapers having the largest paid circulation in the City and in such other newspapers as it deems necessary. The Department shall require a certified check in an appropriate amount which shall be stated in the specifications to accompany all bids unless a bidder has filed an annual bid bond in excess of such amount;

(b) Bids shall **publicly be opened and tabulated** in the presence of a representative of the City Controller at the time specified for their opening. The Department may reject all bids if it shall deem it in the interest of the City so to do. Otherwise the contract shall be awarded to the lowest responsible bidder;

(c) Within ten days after the award of a contract, the successful **bidder shall substitute for his certified check a performance bond**, and where appropriate, a labor and materials bond containing such terms as the Department and the City Solicitor shall require and in such amount as the Department may determine;

(d) The contract shall be in writing and shall be executed in behalf of the City by the Procurement Department but **only after it has been approved as to form by the City Solicitor and as to availability of funds under the budget and appropriations by the City Controller and the Director of Finance**. It shall contain a provision that in the performance of the contract the **contractor will not discriminate** nor permit discrimination against any person because of his race, color, religion or national origin;

ANNOTATION

Sources: See Act of June 25, 1919, P.L. 581, Article XX; the Administrative Code of 1929, Act of April 9, 1929, P.L. 177, Sections 2408-2410, as amended; Purchasing Laws for State, County and City Governments (1941) pp. 26 et seq.

Purposes:

1. **Competitive bidding is required as a rule to assure the City's obtaining its purchases and let-ting its contracts at the lowest prices**. However, since the bidder submitting the lowest bid may by experience, reputation or resources not be capable of the performance required, the lowest bidder must also be a "**responsible" bidder within the meaning of that term as established by many judicial decisions**.

> 2. **Unique articles and other articles which cannot be obtained in the open market are not subject to the requirement of competitive bidding. Obviously they are not articles as to which a best competitive price may be obtained. Nor are contracts for professional services subject to the competitive bidding requirement for there is a personal, intangible quality involved in the rendition of such services which would be lost sight of if such contracts had to be awarded to the lowest bidder**.
>
> 3. Although purchases and contracts are as a rule subject to the requirement of competitive bidding, only contracts in an amount above $2,000.00 are subject to the procedure detailed in subsection (2). Contracts below this amount bulk so large in number that to make them subject to subsection (2) would be economically prohibitive.
>
> 4. Subsection (2) seeks to obtain by the **requirement for newspaper advertising the widest practicable solicitation of bids;** to protect the interests of the City through requirements for certified checks accompanying bids, bid, performance, labor and materials bonds written contracts and the right of the City to reject all bids; to protect the interests of bidders and of the City through sealed bids and the opening and tabulation of such bids publicly and in the presence of a representative of the City Controller; and by requiring a non-discriminatory practices provision in all contracts, to effectuate the policy of the Charter, that City funds shall not be used to promote practices of discrimination because of race, color, religion or national origin.

After paying Oracle nearly $19 million, the fourth attempt to replace the CBIS was suspended in June 2005 because it became obvious to the City that the planned software implementation could not satisfy the PWD and WRB requirements without costly customization. In an effort to salvage the project and minimize losses, the City negotiated a settlement with Oracle in November 2006. This settlement included, among other items, the *basis2* software license, continued infrastructure consulting, and Oracle's eBusiness Suite support. The settlement gave rise to over $2 million in contracts with Prophecy International for project management, software implementation, and subsequent license and maintenance of *basis2*.

The City Solicitor has opined that first; the City did not purchase the *basis2* license from Oracle, Prophecy, or any other contractor. The *basis2* license, he asserts, was furnished by Oracle, entirely at Oracle's cost, pursuant to the terms of the City's settlement of its contract disputes arising from Oracle's work on Project Ocean. The City Solicitor also indicated that where no City funds are expended to acquire the license, the Charter's competitive bidding requirements do not apply.

Second, the City Solicitor opined that even if the City had expended City funds to purchase the *basis2* license, the sealed bid requirement of Section 8-200(1) would still not apply because the *basis2* COTS software falls within the "unique article" and "professional services" exceptions to those requirements. He noted that the *basis2* software is readily differentiated from other available COTS utility billing systems, and asserted these differences have been documented in the due diligence efforts that led to the decision to select *basis2*. Moreover, he indicated that

basis2 technology is unique among COTS water billing systems in that it integrates "natively" with Oracle's eBusiness Suite. This, the Solicitor stated, is because *basis2* is written using the same programming tools and programming standards as eBusiness, and because integration with eBusiness functionality is "built-in" as a part of the *basis2* architecture. As a result, the City Solicitor concluded that *basis2*, unlike other COTS billing products, interfaces without the need to develop and program a separate software interface, that is, write custom code, to achieve the required integration and exchange of data with eBusiness Suite modules.

The City Solicitor indicated that as to maintenance and support of the *basis2* software, this can be provided only by the manufacturer of the software, as is the case for nearly all proprietary COTS software packages. Such services, he explained, cannot be obtained in the open market as they are uniquely available from *basis2*.

For the above reasons, the City Solicitor opined that contracts for the completion of the water billing project comply fully with the Home Rule Charter and City procurement requirements.

At this point, the Controller's Office respectfully relies upon the City Solicitor's rendition of a legal settlement with Oracle and the resulting legal opinion concerning the propriety of the City obtaining a non-competitively bid contract with Prophecy International to finish Project Ocean. We do not challenge the City Solicitor's authority to conclude the settlement agreement.

The Home Rule Charter Section 4-400 provides that the City Law Department provides legal *advice* to the City, represents the City in matters of litigation and has a degree of binding legal authority for contracts and contract formation.

> **§ 4-400. Functions. Law Department.**
>
> The Law Department shall have the power and its duty shall be to perform the following functions:
>
> (a) Legal Advice. It **shall furnish legal advice** to the Mayor, to the Council and to all officers, departments, boards and commissions concerning any matter or thing arising in connection with the exercise of their official powers or performance of their official duties and except as otherwise expressly provided, shall supervise, direct and control all of the law work of the City.
>
> (b) Litigation. The Department shall collect by suit or otherwise all debts, taxes and accounts due the City which shall be placed with it for collection by any officer, department, board or commission, and **it shall represent the City and every officer, department, board or commission in all litigation**. It shall keep a proper docket, or dockets, duly indexed, in which it shall make and preserve memoranda of all such claims, showing whether they are in litigation and their nature and status.
>
> (c) **Contracts** and Bonds. **The Department shall prepare or approve all contracts,** bonds and other instruments in writing in which the City is concerned, and shall approve all surety bonds required to be given for the protection of the City. It shall keep a proper registry of all such contracts, bonds and instruments.

ANNOTATION

Sources: Act of June 25, 1919, P.L. 581, Article XIII, Sections 3 and 4; the Administrative Code of 1929, Act of April 9, 1929, P.L. 177, Article IX, as amended.

Purposes:

1. The Law Department is to be the legal advisor of the Mayor, the Council and all the agencies of the City government. Its work will be primarily concerned with civil rather than criminal aspects of law enforcement. It will thus handle all City litigation. **It will prepare and approve for legal sufficiency all City contracts and bonds.** It will assist the Council, the Mayor and City agencies in the preparation of ordinances for introduction into Council.

The Home Rule Charter in Section 8-410 further provides that City Departments and Officers including those involved with Project Ocean and the Office of the Controller may rely upon the City Law Department for legal advice and interpretation for the dispute between Oracle and the City.

§ 8-410. Legal Advice and Services.

Whenever any officer, department, board or commission shall require legal advice concerning his or its official business or whenever any legal question or dispute arises or litigation is commenced or to be commenced in which any officer, department, board or commission is officially concerned or whenever any taxes or other accounts of whatever kind due the City remain overdue and unpaid for a period of ninety days it shall be the duty of such officer, department, board or commission, to refer the same to the Law Department.

It shall be the duty of any officer, department, board or commission having requested and received legal advice from the Law Department regarding his or its official duty, to follow the same; and when any officer shall follow the advice given him in writing by the Law Department he shall not be liable in any way for so doing upon his official bond or otherwise.

Before the Law Department shall render any opinion interpreting any appropriation ordinance or ordinance authorizing the expenditure of money, it shall notify the City Controller of the question upon which its opinion has been requested and afford him an opportunity to present his views upon the question.

It shall be unlawful for any officer, department, board or commission to engage any attorney to represent him or it in any matter or thing relating to his or its public business without the approval in writing of the City Solicitor.

ANNOTATION

Sources: The Administrative Code of 1929, Act of April 9, 1929, P.L. 177, Section 512; Act of June 25, 1919, P.L. 581, Article XIII, Section 5.

Purposes:

1. This section implements Section 4-400. It seeks to prevent the practice of each officer and agency having its own counsel. It thereby makes possible an effective and well organized, central law agency.

2. Officers and agencies requesting and receiving legal advice from the Law Department must follow it. Resort may not be had to other counsel, except with the consent of the City Solicitor, for other advice nor may such other advice even if obtained be followed except at personal risk, a consequence from which an officer or agency is absolved if the advice of the Law Department is followed.

3. Questions involving the interpretation of appropriation ordinances or other ordinances authorizing the expenditure of money must be referred to the City Controller for his views since he is the City's auditor and will ultimately be required to pass upon the propriety of all expenditures of City funds.

We do, however, as a policy matter recommend that due consideration be given in the future to restraint in the exercise of the City Solicitor's settlement authority in contexts such as the Oracle contract because the following questions exist concerning the City's dealings with Prophecy and Oracle.

- The *basis2* software arguably may or may not be unique as asserted by MOIS, but arguably one of numerous "off-the-shelf" water billing packages that could have been obtained on the open market. As the TMG report clearly illustrated, and experts concurred, there are numerous water utility billing and customer information software packages currently on the market that have been successfully implemented in other jurisdictions in the United States. While each water utility billing system may contain unique features, these products all serve the same function. The declaration of the *basis2* software as unique could have the effect of exempting any product from competitive bidding requirements because nearly every product including any similar products from competing vendors may be marketed as "unique" despite sharing a common function.

- It would be prudent to defer the RFP process for things like the CIWMS project until it has been determined which City agencies would participate and how the project would be funded.

- The City should promulgate standards for use of discretion in the future purchase of technology products based on lessons learned from the Oracle failure. In retrospect, it appears inevitable that Oracle's eBusiness Suite would fail to meet the City's needs in light of the fact that the software system was designed for use by private sector enterprises, had never been successfully implemented in the public sector, and had several major implementation failures even within the private sector.

- The City should promulgate standards for the use of its discretion that would define when a major redefinition of the project, such as the change from a plan implementing a multi-agency work order information technology system to one focused solely on replacing the CBIS, should be re-bid. In such cases, there should be recognition of the potential benefit to the City which would accrue from the consideration of bids from vendors who might have products more suitable to the City's new objective. Moreover, the City should not be constrained in its choice of options by a perceived need to extend on a track that has been a failure. Bad initial decision-making should not be disguised or protected by the appearance that "everything worked out in the end" when a new start could create better options at the time the project was redefined.

- In the future, the City should, as an analytical tool, perform an industry survey which should be available to the Controller and Council, evaluating the range of potential products and services available, and the cost range thereof, as a comparison to the risks and benefits of proceeding through a settlement such as the one herein in which existing contract rights with Oracle were extinguished (with Prophecy as the new obligor). This would provide an objective check against the impulse to justify the original decision at all costs.

The City Controller's Office will continue to monitor progress of the "new" Project Ocean. Any indication of failure will trigger an immediate hold on future payments to any vendors associated with the project.

APPENDIX I: SCOPE AND METHODOLOGY

The Controller's Office evaluated the City's past four initiatives to replace the Customer Billing Information System, which is used to generate monthly water bills to customers in Philadelphia. Our purpose was to identify past lessons that might be useful in guiding City management through the latest initiative. As part of this evaluation, we also studied the status of administration's current endeavor to replace this billing system. Our goal in doing this was to determine whether the City is taking the necessary steps and precautions to maximize the probability of a successful completion.

To identify the past lessons, we conducted extensive interviews with over twenty key individuals who were involved in the prior four projects. We also examined relevant records and reports pertaining to these projects; spoke with an expert in the field of complex computer system design and implementations; and reviewed guidelines and articles pertaining to best practices in the successful completion of installing complex computer systems.

To understand the status of the City's current endeavor, we interviewed City officials and consultants who are integral to the project. Many of the City officials to whom we talked were involved in the previous four ill-fated attempts. We also obtained and reviewed the latest "Governance Chart" for the project's implementation.

We performed our fieldwork between March and September of 2006.