Austin City Council

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Audit Report

Performance Audit of the Customer Care & Billing System: Testing Prior to Go-Live

September 21, 2011

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City of Austin

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Date: September 21, 2011

To: Mayor and Council

From: Kenneth J. Mory, City Auditor

Subject: Performance Audit of Customer Care & Billing System: Testing Prior To Go-Live Audit

I am pleased to present this audit report on the Customer Care & Billing (CC&B) System: Testing Prior to Go-Live. This audit was conducted as part of the Office of the City Auditor's FY2011 strategic plan.

We found that the CC&B project management has implemented a number of improvements since our prior audit. However, functional requirements cannot be traced to individual test scenarios; as a result, we could not validate whether all requirements have been successfully tested and are functioning as intended. Finally, CC&B project management is aware of, tracking, and monitoring a large number of project-related risks; that if not resolved in a timely manner could impact the successful deployment of the system.

Based on our work, we recommend that the CC&B project manager continues to track and monitor the CC&B System risks identified and ensure that acceptance of remaining risks be approved by senior management; ensure that the requirement traceability issue raised in this audit be discussed with the project governance boards; and develop a formal and comprehensive fall-back plan.

We appreciate the cooperation and assistance we received from the CC&B System project management during this audit.

cc: City Manager
Assistant City Managers
Austin Energy General Manager
Public Information Officer

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COUNCIL SUMMARY

This report presents the results of the Customer Care & Billing (CC&B) System: Testing Prior to Go-Live audit. The City is replacing its existing utility billing System, Customer Information System (CIS), with an Oracle's CC&B system. Implementation of this new system is scheduled for October 3, 2011. This is a citywide project, conducted under the leadership of Austin Energy.

We found that the CC&B project management has implemented a number of improvements since our prior audit including:

- Evaluating the feasibility of the April 4, 2011 go-live date;
- Ensuring that risks are managed;
- Incorporating Go/No-Go decision points for the project Acceptance Phase;
- Incorporating some aspects of independent Quality Assurance; and
- Ensuring consistent communication of project issues to all stakeholders.

We also found that functional requirements cannot be traced to individual test scenarios; as a result, we could not validate whether all requirements have been successfully tested and fulfilled.

Finally, CC&B project management is aware of, tracking, and monitoring several project-related risks; however, the large number of outstanding issues could impact the successful deployment of the system. Some of the issues include:

- A large number of outstanding test scenarios for the User Acceptance Test Phase;
- A large number of Test Problem Reports (TPRs) that have not been fully resolved;
- System generated reports that have not been fully developed and tested; and
- Some project-related plans that are not yet formalized.

Based on our work, we recommend that the CC&B project manager continues to track and monitor the CC&B System risks identified and ensure that acceptance of remaining risks be approved by senior management; ensure that the requirement traceability issue raised in this audit be discussed with the project governance boards; and develop a formal and comprehensive fall-back plan.

<u>Other Issues</u>

Although outside the scope of this audit and not part of the initial CC&B project, one issue raised by stakeholders during the September 8, 2011 SRB meeting is the possible inability to incorporate new rate changes (approved by Council as part of the City budget on September 12, 2011) in the new billing system by the established timelines.

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ACTION SUMMARY
CUSTOMER CARE & BIILING

	Recommendation Text	Management Concurrence	Proposed Implementation Date
1.	The CC&B project manager should continue to track and monitor the CC&B project risks identified and ensure that major issues that may impact the successful implementation of the system are adequately evaluated and addressed prior to go-live, and that acceptance of remaining risks be approved by senior management.	Concur	Sept 30,2011 and at least once per month for 120 days post go-live.
2.	The CC&B project manager should ensure that the requirement traceability issue raised in this audit be included as part of the Executive Steering Committee and Stakeholder Review Board discussion, and that and acceptance of remaining risks be approved by senior management.	Concur	Oct 31, 2011 *Continuously reviewed and validated for 120 days post go-live as part of system acceptance
3.	In light of the significant outstanding issues facing the CC&B project, the CC&B project manager should develop a formal and comprehensive fall-back plan to ensure business continuity in case of unexpected system failures at deployment	Concur	Sept 30, 2011

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BACKGROUND

This report presents the results of the Customer Care & Billing (CC&B) System: Testing Prior to Go-Live audit. The City is replacing its existing utility billing system, Customer Information System (CIS), with an Oracle CC&B system. Implementation of this new system is scheduled for October 3, 2011. This is a citywide project, conducted under the leadership of Austin Energy. The CC&B system is being implemented and hosted by IBM under a $56M eight-year contract signed in May 2009 and last amended in June 2011.

Austin Energy (AE) is responsible for producing utility statements that reflect charges for all City utility services. The charges included on the utility bill reflect metered consumption for electricity (managed by AE), water and wastewater (managed by Austin Water Utility), and garbage carts based on size (managed by Solid Waste Services). The AE bill also includes miscellaneous fees and charges, such as initiation of service fees, tampering fees, late payment fees, and extra garbage bag fees. Finally, the bill includes pre-determined monthly fees for "non-metered" services provided by the City.

The CC&B project team includes representatives from the following departments:

- Austin Energy
- Austin Water Utility
- Solid Waste Services
- Watershed Protection
- Controller's Office
- Communication and Technology Management
- Austin Police Department, and
- Transportation Department.

OBJECTIVES, SCOPE, AND METHODOLOGY

The CC&B System: Testing Prior to Go-Live audit was conducted as part of the Office of City Auditor's FY2011 Strategic Plan, as presented to the City Council Audit and Finance Committee.

Objectives

Our overall objective was to evaluate project management to identify potential risks to the successful implementation of the CC&B system, with regard to functionality, controls, and performance. For this CC&B audit we focused on testing prior to the October 3, 2011 go-live.

Scope

The audit focused on testing activities in the acceptance phase of the system development process for the CC&B project.

Methodology

To accomplish our audit objective, we performed the following steps:

- Conducted interviews with CC&B project management and staff.
- Obtained and evaluated applicable project documentation.
- Conducted two surveys of CC&B stakeholders, after the first and final dress rehearsals respectively.
- Conducted onsite observations and visits as applicable, including attending Executive Steering Committee and Stakeholder Review Board meetings.

We conducted this performance audit in accordance with Generally Accepted Government Auditing Standards (GAGAS). Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

AUDIT RESULTS

The CC&B System is currently in the Acceptance Phase and as shown in Exhibit 1 below, is scheduled to go-live on October 3, 2011. This audit report discusses issues related to the project as of the week ending September 10, 2011.

EXHIBIT1
CC&B System Project Milestones

SOURCE: http://cityspace.ci.austin.tx.us/services/csp/csp-project

FINDING 1: Project management has implemented a number of improvements since our prior audit.

The CC&B System Project Phase 1 audit issued in February 2011 underscored a need for the CC&B project management to:

- Evaluate the feasibility of the April 4, 2011 go-live date;
- Ensure that project-related risks are adequately managed;
- Exercise Go/No-Go decisions at the end of major milestones to assess the readiness to move forward with the project;
- Establish an independent Quality Assurance (QA) team; and
- Ensure consistent communication of project issues to all stakeholders.

During our current work, we have observed the following:

1. Project management evaluated the feasibility of the April 4, 2011 go-live: Project management, in consultation with the Executive Steering Committee (ESC) and the

Stakeholders Review Board (SRB), evaluated the go-live date and determined that it was not feasible. A new go-live date, October 3, 2011, was identified.

2. Risks are managed: As discussed in subsequent sections of this report, project management is currently identifying and managing project-related risks. Such risks are tracked and consistently communicated to and discussed by the project team, SRB, and ESC.

3. Go/No-Go decisions are exercised as part of the Acceptance Phase: Management has incorporated several Go/No-Go decision points for the CC&B Acceptance Phase to assess the readiness of the project to move to the next milestone.

4. Some aspects of independent Quality Assurance (QA) have been incorporated in the project: Management has obtained an independent review of two key project plans; the CC&B Test Process audit (April 2011) and the CC&B Training Program audit (March 2011). Apart from these two reviews, quality assurance is still being provided by the project management and the project team, rather than an independent QA team.

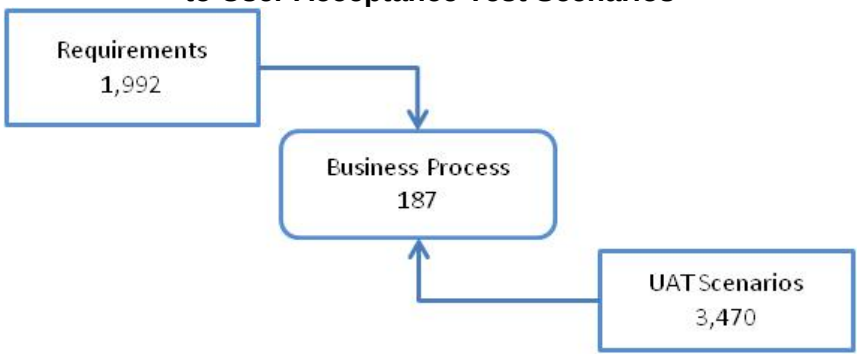
5. Communication has substantially improved:
   - Based on our survey of CC&B stakeholders, the majority of the respondents were satisfied with project communication management.
   - Our observations during the ESC and SRB meetings and our review of project documentation indicated that project management communicated consistent messages.
   - Project management has introduced weekly webinars, during which management presents project progress and observed risks to interested parties
   - The frequency of SRB meetings and project team meetings, where project issues and work status are discussed, has increased.

FINDING 2: Functional requirements cannot be traced to individual test scenarios; as a result, we could not validate whether all requirements have been successfully tested and fulfilled.

As indicated in the project testing plans, the focus of testing is to ensure that the implementation of the system enables the City to manage an application that meets functional and technical requirements. Requirements are defined as "a condition that must be met by a system or a system component to satisfy a contract, standard, specification." The project test plans indicate that the City has the responsibility to develop test scenarios and specifies that test scenarios should be mapped to contractual requirements. Test scenarios describe how the components of the system should function. They include the execution of relevant scripts, which detail the steps required to execute the test and the conditions to be tested. In this way, once all aspects of a requirement have been successfully tested by identified scenario(s), then the test design activity for that requirement can be considered complete.

We found that the project management has only mapped scenarios to requirements at an aggregate level via Business Processes, and only for a subset of scenarios, those included in the User Acceptance Phase of testing, as shown in Exhibit 2.

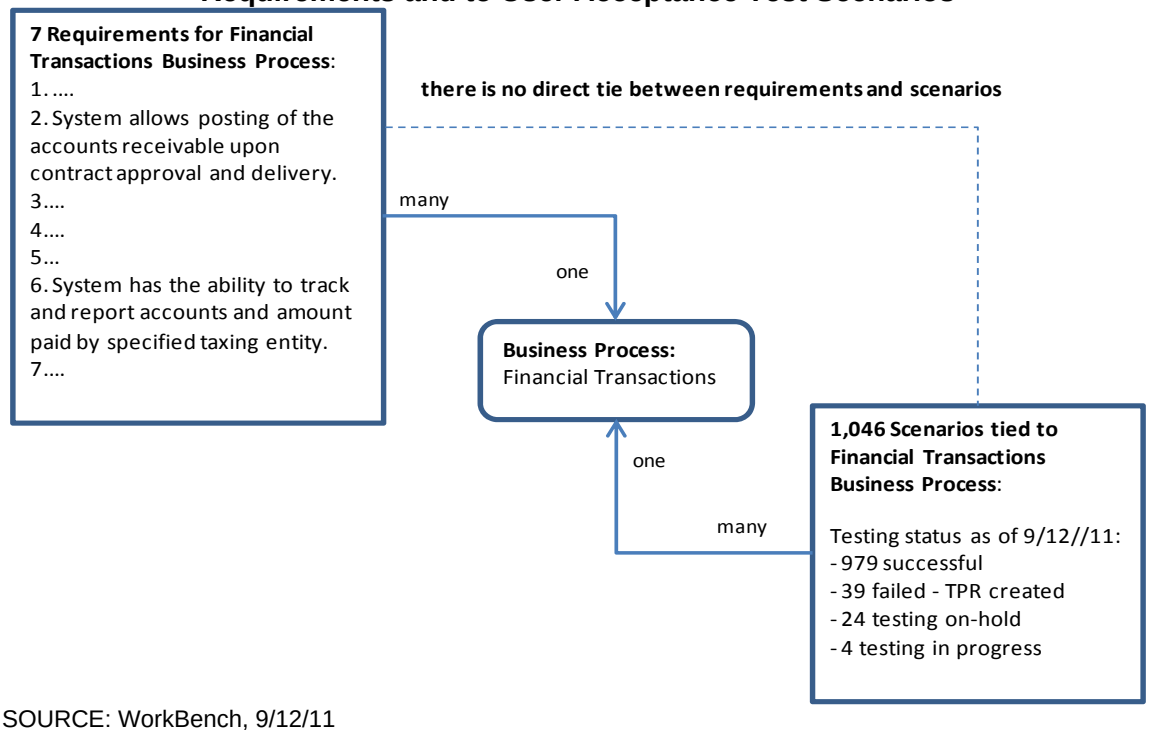
EXHIBIT 2
Business Processes are Tied to Requirements and to User Acceptance Test Scenarios



SOURCE: CC&B System project documents and WorkBench.

Mapping scenarios and requirements at the Business Process level allows for less accurate analysis of the test coverage, as failure of a test scenario means the inability to validate successful completion of all requirements tied to the specific Business Process. Exhibit 3 shows an example of how a Business Process (Financial Transactions) relates to 7 requirements and to 1,046 scenarios, and the fact that specific requirements cannot be traced to their respective test scenarios.

EXHIBIT 3
Relationship of the Financial Transactions Business Process to Requirements and to User Acceptance Test Scenarios



SOURCE: WorkBench, 9/12/11

As discussed later in this report, five percent of the scenarios have not been successfully tested to-date. The outstanding scenarios are mapped to a total of 26 Business Processes, which are associated with approximately 750 requirements. Because scenarios were mapped to requirements at an aggregate level via Business Processes, this would imply that, to-date, the 26 Business Processes cannot be signed off and that the 750 requirements cannot be validated as successfully tested.

The lack of requirement traceability had been identified by a Quality Review of the test plans in April 2011, and resulted in the effort to tie UAT scenarios to Business Processes.

FINDING 3: CC&B project management is aware of, tracking, and monitoring several project-related risks; however, the large number of outstanding issues could impact the successful deployment of the system.

In order to decrease the probability and impact of negative events in the project, the Project Management Body of Knowledge (PMBOK) advises project management to identify, monitor, and control risks that may hinder a project from achieving its goal(s).

Our work revealed several efforts by project management to identify, track, and manage project-related risks. These identified risks have been discussed in both ESC and SRB meetings. Also, project management has identified 81 acceptance criteria that are being tracked and will be evaluated at the formal Go/No-Go vote prior to moving the project to deployment. However, although project management has been tracking and monitoring the identified risks, these risks have not been fully resolved to-date. These outstanding challenges could impact the successful implementation of the project. Exhibit 4 shows the status of the project based on the established Acceptance Score Card criteria, measured after the first and the final dress rehearsals respectively, and the anticipated go-live status as of September 15, 2011.

EXHIBIT 4
Status of CC&B System Based on the Acceptance Scorecard as presented to the CC&B Executive Steering Committee on 09/15/2011

Area	Overall Grade after Dress Rehearsal #1 (8/22/11)	Overall Grade after Dress Rehearsal #2 (9/5/11)	Anticipated Go-Live Status (9/15/11)
Application Readiness	Yellow	Yellow	Yellow
Application Readiness (Portal)	Yellow	Yellow	Yellow
Application Readiness (Performance)	N/A	N/A	Yellow
Business Readiness	Green	Yellow	Green
Financial Balancing	Yellow	Yellow	Green
Conversion Readiness	Yellow	Green	Green
Implementation Planning	Yellow	Yellow	Green
Infrastructure Readiness	Green	Green	Yellow
Interface Readiness	Yellow	Yellow	Yellow
Project Management	Green	Green	Green
New Scope	N/A	N/A	N/A

- ***Red*** *means that the individual Acceptance Criteria in the area scored less than 80% of the measurable target criteria*
- ***Yellow*** *means that the individual Acceptance Criteria in the area scored greater than or equal to 80% of the measurable target criteria*
- ***Green*** *means that the individual Acceptance Criteria in the area is greater than or equal to the measurable target criteria*
- ***N/A*** *means that the individual Acceptance Criteria in the area has not yet been rated or is not applicable*

SOURCE: Acceptance Criteria Matrix as presented at the 9/15/2011 ESC meeting.

Some of the major challenges facing the project include the following:

1. A large number of outstanding test scenarios for the User Acceptance Test Phase. The CC&B project has entered the first dress rehearsal with approximately 16 percent of UAT scenarios not successfully tested. At the second (final) dress rehearsal 6 percent of UAT scenarios were reported as outstanding. Exhibit 5 shows a breakdown of the outstanding scenarios to-date. Specifically, 74 scenarios are categorized as failed and have resulted in the creation of Test Problem Reports; further there are a number of scenarios which have not started, are on hold, or in are progress. Having outstanding scenarios at this stage of the project may result in identifying additional system issues that potentially require configuration or code changes and impact other aspects of the system, without having adequate time to thoroughly address them.

EXHIBIT 5
Test Execution Status in the User Acceptance Phase as on 9/11/2011

Total Scenarios	Failed – TPR Create	Not started	Testing in Progress	Testing on hold	Passed with work-around	Testing Successful
3470	74	20	18	59	6	3293

SOURCE: WorkBench 9/11/2011.

2. A large number of Test Problem Reports (TPRs) have not been fully resolved to-date. Carrying out test scenarios and test scripts may result in the identification of system or software defects. These defects are referred to as Test Problem Reports (TPRs) and

based on project documentation are categorized according to their severity. Exhibit 6 illustrates the number of TPRs, by criticality, which were outstanding at two critical check-points, after the first and the final system dress rehearsals. Despite the team effort to decrease the outstanding TPRs, Project management has indicated that the volume of open TPRs is a one of the main challenges faced by the project and has indicated that the current focus is on addressing Critical and High TPRs prior to go-live. Having outstanding test scenarios and TPRs at this stage of the project may result in identifying the need to perform configuration and code changes. Project management is actively trying to limit these types of changes, which –due to system dependencies – may impact other aspects of the system/software.

EXHIBIT 6
Number of Test Problem Reports

Open TRPs as of 8/22/2011 (Dress Rehearsal #1)		Open TRPs as of 9/5/2011 (Dress Rehearsal #2)	
Critical	19	Critical	12
High	47	High	30
Medium	170	Medium	82
Low	10	Low	3
Total	***246***	***Total***	***127***

SOURCE: CC&B Acceptance Criteria Matrix, 9/8/2011 SRB meeting.

3. System generated reports have not been fully developed and tested. The Project Acceptance Criteria mentioned above identifies several system generated reports required for go-live. In addition, departments have identified 86 additional reports needed to manage their work processes. To-date not all reports have been successfully completed. Management has assigned the responsibility of addressing the reports issue to a specific group comprised of representatives from the various stakeholder departments. Exhibit 7 shows the status of the reports' development.

EXHIBIT 7
Status of CC&B System Generated Contractual Reports

Reports developed by	# of reports	Needed by go-live	In progress (development)	On-hold	In testing	Successfully completed
IBM developed	48[1]	48*	-	8	11	27
CC&B Base IBM developed	11[2]	11	-	1	1	7
COA Base developed	24[3]	24	5	4	14	-

SOURCE: CC&B Report Lead, 9/12/2011.

4. Some project-related plans are not yet formalized. After system deployment, there are outstanding items that will need to be addressed, including deferred requirements, outstanding TPRs and change management requests. Project management has identified a body, the current CIS Operations Review Board (CORB), which will be

[1] Two of the 48 requirements have been scrapped (not needed by COA).
[2] Two of the 11 reports have been scrapped (not needed by COA).
[3] One report has been scrapped (not needed by COA).

in charge of overseeing the CC&B project after the go-live date. This board will be in charge of ensuring that deferred or new requirements are implemented and all pending issues are addressed. However, the CORB's charter has not been updated to reflect the new mandate of the CORB, and responsibilities have not been formally identified and communicated to stakeholders. Based on discussions during the SRB meeting of September 8, 2011, management has identified a person to address this issue.

Per contract, the CC&B project should develop a fall-back strategy, which is a document that details steps to be performed in case a major problem arises during system conversion and deployment of the new system needs to be halted. Also, the contract requires the development of a disaster recovery plan for the CC&B System. Project management has indicated that they are currently working on developing both plans, and have also executed an agreement with the current billing system vendor for the use of the old billing system. Furthermore, these plans are part of the acceptance criteria.

Other Issues

Although outside the scope of this audit and not part of the initial CC&B project, one issue raised by stakeholders during the September 8, 2011 SRB meeting is the possible inability to incorporate new rate changes (approved by Council as part of the City budget on September 12, 2011) in the new billing system by the established timelines.

Recommendations:

The recommendations listed below are a result of our audit effort and subject to the limitation of our scope of work. We believe that these recommendations provide reasonable approaches to help resolve the issues identified. We also believe that operational management is in a unique position to best understand their operations and may be able to identify more efficient and effective approaches, and we encourage them to do so when providing their response to our recommendations. As such, we strongly recommend the following:

1. The CC&B project manager should continue to track and monitor the CC&B project risks identified and ensure that major issues that may impact the successful implementation of the system are adequately evaluated and addressed prior to go-live, and that acceptance of remaining risks be approved by senior management.

MANAGEMENT RESPONSE: Concur

Project management will continue to update and brief the Executive Steering Committee (ESC) and the Stakeholder Review Board (SRB) on project risk. The special ESC session to review and vote "go/no-go" prior to the start of the go-live conversion is scheduled for 9/21/11.

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2. The CC&B project manager should ensure that the requirement traceability issue raised in this audit be included as part of the Executive Steering Committee and Stakeholder Review Board discussion, and that and acceptance of remaining risks be approved by senior management.

MANAGEMENT RESPONSE: Concur

Requirements are being mapped to individual test scenarios. Some requirements are validated by other means as applicable, to include contract deliverables and technical reviews.
The results will be reviewed by the executive Steering Committee (ESC) and the Stakeholder Review Board (SRB).

3. In light of the significant outstanding issues facing the CC&B project, the CC&B project manager should develop a formal and comprehensive fall-back plan to ensure business continuity in case of unexpected system failures at deployment.

MANAGEMENT RESPONSE: Concur

A formal and comprehensive go-live conversion fall-back plan is being finalized and will be ready prior to the go-live conversion and activated in the case a checkpoint decision is made to roll back to eCIS. After go-live, a fall-back to eCIS is not the most viable option.

APPENDIX A

MANAGEMENT RESPONSE

MEMORANDUM

TO: **Kenneth J. Mory, City Auditor**

FROM: **Larry Weis, General Manager**

DATE: **September 19, 2011**

SUBJECT: **Response to Customer Care & Billing System: Testing Prior to Go-Live Audit**

Austin Energy has carefully reviewed the performance audit and concurs with the three recommendations.

I am pleased that you have validated the number of improvements made by the project management team since the first audit, which include: schedule feasibility, risk management, decision checkpoints, quality assurance and improved communications. As recommended, the project team will continue to: manage and communicate risks, discuss traceability requirements with the Executive Steering Committee and Stakeholder Review Board, and will finalize the conversion fall-back plan to e-CIS.

Austin Energy appreciates the collaboration of the City Auditor's Office to limit the impact of this audit on the project teams.

Enclosure: Austin Energy's Response to the Customer Care & Billing System: Testing Prior to Go-Live Audit

ACTION PLAN
Customer Care & Billing System: Testing Prior to Go-Live

Rec #	Recommendation Text	Concurrence	Proposed Strategies for Implementation	Status of Strategies	Responsible Person/ Phone Number	Proposed Implementation Date
01	The CC&B project manager should continue to track and monitor the CC&B project risks identified and ensure that major issues that may impact the successful implementation of the system are adequately evaluated and addressed prior to go-live, and that acceptance of remaining risks be approved by senior management.	Concur	Project Management will continue to update and brief the Executive Steering Committee (ESC) and the Stakeholder Review Board (SRB) on project risk. The special ESC session to review and vote "go/no-go" prior to the start of the go-live conversion is scheduled for 9/21/11.	Underway	Karl Popham, IS Division Manager, 512-505-3714	Sep 30, 2011 and at least once per month for 120 days post go-live.
02	The CC&B project manager should ensure that the requirement traceability issue raised in this audit be included as part of the Executive Steering Committee and Stakeholder Review Board discussion, and that and acceptance of remaining risks be approved by senior management.	Concur	Requirements are being mapped to individual test scenarios. Some requirements are validated by other means, as applicable, to include contract deliverables and technical reviews. The results will be reviewed by the Executive Steering Committee (ESC) and Stakeholder Review Board (SRB).	Underway	Karl Popham, IS Division Manager, 512-505-3714	Oct 31, 2011 * Continuously reviewed and validated for 120 days post go-live as part of system acceptance.

Rec #	Recommendation Text	Concurrence	Proposed Strategies for Implementation	Status of Strategies	Responsible Person/ Phone Number	Proposed Implementation Date
03	In light of the significant outstanding issues facing the CC&B project, the CC&B project manager should develop a formal and comprehensive fall-back plan to ensure business continuity in case of unexpected system failures at deployment.	Concur	A formal and comprehensive, go-live, conversion fall-back plan is being finalized and will be ready prior to the go-live conversion and activated in the case a checkpoint decision is made to roll back to eCIS. After go-live, a fall-back to eCIS is not the most viable option.	Underway	Karl Popham, IS Division Manager, 512-505-3714	Sep 30, 2011